Nurturing Nature

Policy to protect and improve biodiversity

Guy Newey
Edited by Simon Less

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Policy Exchange

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Contents

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Executive Summary

The world's natural environment is under tremendous pressure. Human development is threatening the resources and services which nature, through its habitats and its wildlife, provides. This creates considerable economic, as well as environmental risks. However, it is possible for policymakers and communities to reverse this decline, harnessing economic growth to avoid environmental degradation.

This report examines natural environment policy in England[1] and the UK's international contribution to protecting important habitats and biodiversity. It recommends policy measures to not just halt the decline in the state of the natural environment, but to restore and improve it.

The report finds three key reasons why policy has failed adequately to halt and reverse the decline in biodiversity over the past 60 years:

- A failure to properly value the services provided by a robust and connected natural environment.
- Shortcomings in design or implementation of many of the instruments aimed at ensuring that protection of biodiversity value is properly accounted for in decisions on how land is used.
- Failure to take advantage of the potential benefits of market mechanisms in policy design.

Why should we care about biodiversity?

The natural environment is the fundamental basis for all economic activity and human well-being. Its natural resources, including oil, timber and food, provide the raw materials for economic progress. Ecological processes deliver these resources, as well as other services such as clean air and water. Humans benefit from the pleasure of enjoying wildlife and green space. Moreover, nature has an intrinsic importance which we have a moral responsibility to protect.

The state of the natural environment – its ability to withstand shocks and deliver the crucial ecosystems services identified above – is in large part measured through the quality of its biodiversity. Biodiversity is a measure of the quantity and variability of life among species of plants, animals and microorganisms, as well as the genes they contain. Protecting the quality and quantity of biodiversity provides a form of insurance against the risk of undermining the crucial services, 'ecosystems services', nature provides.

The importance of protecting biodiversity has often been ignored by policymakers. Partly, this is because the benefits of biodiversity are often undervalued in conventional economic analysis. There has been a severe decline in the quality of the natural environment both within the UK and internationally. Some experts characterise the current loss of important international habitat and

1 Biodiversity protection is a devolved issue.

species as the 6th great mass extinction. In the UK, 11 out of 15 most important types of habitat are declining, with remaining sites increasingly fragmented and isolated.

In recent years, new efforts have been made to ensure that biodiversity and the 'ecosystems services' it underpins are properly valued. Internationally, The Economics of Ecosystems and Biodiversity (TEEB) project has tried to place a value on the natural environment. The UK's National Ecosystems Assessment has made a similar attempt. Both have shown the considerable benefits that a well-protected and connected natural environment provide, not just for its own sake but also for economic development.

In recognising the strong economic arguments for biodiversity protection, we must also recognise the need for development and changes in land use to support economic growth. Valuing, protecting and enhancing overall biodiversity can be consistent with securing the benefits of high value land development. Those who argue economic growth and the improvement of the natural environment are incompatible set up a false choice. This report aims to show how biodiversity protection and enhancement can become more fully a *part of* decisions about how land is used and developed.

Methodology

This report assessed current policy to support biodiversity in England and how the UK supports international biodiversity. It focused on land habitats, rather than marine conservation. It considered the success of the planning system, the system of agri-environment subsidies delivered through the Common Agricultural Policy (CAP) and the UK's international support for biodiversity in protecting *and* enhancing the natural environment.

The report looked at approaches to protecting biodiversity in other countries. In particular, it considered the market-based mechanisms for biodiversity 'offsetting' and conservation auction schemes. Biodiversity offsetting is a system of compensating for damage to biodiversity, in a measured and consistent way. It can be designed to allow developers to purchase 'biodiversity credits' in return for permission to develop a piece of land. The money for these credits, which can be pooled, is used to support conservation schemes in high value biodiversity areas.

Our research included a Freedom of Information Request to all 354 Local Planning Authorities in England to try and assess, for the first time, what level of compensation to offset the impact of development has taken place under existing legislation. Our report tries to assess how successful it has been and how well projects have been monitored.

Key findings

Our analysis of existing policy came to the following conclusions:

- ***A failure to properly value the services provided by a robust and connected natural environment.***

England has successfully designated key habitats that enjoy strong protection from development, such as Sites of Special Scientific Interest. These 'priority areas' have ensured that examples of important habitats have been maintained and should be kept in place. However, this system has not delivered a sufficiently resilient

network of biodiversity protection, where the important areas are supported by connecting corridors and areas of green space. Such connections allow species to migrate between different areas, ensuring the biodiversity of important areas is more robust. The system of designating areas has led to a degree of 'ghettoisation' of important habitats. These areas are isolated and fragmented. Land that is not designated, but still of relatively high biodiversity value, is often effectively treated as having low biodiversity value. As a result of this crude valuation, many important habitats have disappeared over the past 60 years under pressure of farming intensification and development.

This weakness in properly valuing England's natural environment has been mirrored by a failure to recognise the importance of the most internationally significant sites. As a result, there has been significant declines in the most important international biodiversity sites, so-called 'conservation hotspots' as well as other important areas.

- ***Inadequate design or implementation of many of the instruments aimed at ensuring that protection of biodiversity value is properly accounted for in decisions on how land is used.***

Policy instruments which aim to complement the system of designated areas, including through the planning system and agri-environment schemes, suffer from design or implementation failures. This risks creating confusion for both planners and developers.

For example, our FOI request on the use of compensation, or offsetting, mechanisms found that only 41% of Local Authorities had used them, despite planning guidance suggesting that development should deliver a 'net gain' in biodiversity 'wherever possible'. The failure to clearly define 'wherever possible' likely contributes to the inconsistent use of such compensation tools (a similar, vague formulation is used in the new National Planning Policy Framework). Moreover, under the Section 106 planning mechanism, which aims to capture some of the benefits of development for local communities, biodiversity protection competes against other political priorities, such as increased social housing.

Our research found that even when compensation mechanisms are used, it is far from clear they provide sufficient compensation, with on average biodiversity compensation schemes enhancing area only 58% of the size of the land being developed. This compares to a mandatory offsetting scheme in the United States, which delivered a 29% *increase* in high biodiversity value land. There was little evidence that protection or enhancement measures, including offsets, had been considered as part of wider ecological networks. In many cases, actions were small scale or seemed more like an ad hoc box-ticking exercise, such as simply moving affected species to a new area. Moreover, there was an almost total absence of monitoring or enforcement of offset projects, undermining the potential to learn from success or failure of schemes, and providing no sanction on developers who failed to deliver what they promised. There was some evidence of good examples of offsetting schemes and innovative, effective compensation mechanisms among Local Authorities. However, these examples appeared rare.

There are other weaknesses of the planning system in protecting biodiversity value in planning decisions. Environmental Impact Assessments (EIAs) and the

Biodiversity Duty are both meant to ensure the natural environment is properly considered. However, EIAs are provided by the developer themselves, who are not in a fully objective position to assess the potential environmental impacts of their development. Research has shown that EIAs are inconsistent and often poor quality. The Biodiversity Duty is a rather vague requirement for Local Authorities to 'consider' biodiversity, and there is no evidence it has improved decision-making. These failures are compounded by the lack of Local Authority ecologists. Only 41% of LAs had a full-time ecologist, according to our FOI request. Our research found a significant correlation between the presence of an ecologist and whether any compensation had been undertaken.

The design of UK efforts to protect international biodiversity, including forest protection could learn from others' experiences. UK funding for international forestry and biodiversity projects has focused on channeling funds through multilateral institutions. However, analysis of how multilaterals institutions have spent the money show there is often considerable delay in distributing the money, and money has been spent on capacity-building, rather than delivering actual projects. Other countries have concentrated on a bilateral approach to funding, and also focused on outcome-based contracting, with some success.

- ***Failure to take sufficient advantage of the potential benefits of market mechanisms in policy design.***

Current policy design has failed to make sufficient use of the potential of market mechanisms to deliver the greatest biodiversity improvements for the resources available. Market mechanisms have the potential to provide greater information about the true costs of biodiversity protection measures; to allocate resources to the highest value biodoversity schemes; to encourage a wider-range of participants in conservation efforts, including more activity by charities and NGOs; and to provide incentives for greater innovation in how biodiversity is protected.

The design of agri-environment schemes, under the Common Agricultural Policy (CAP), demonstrate this weakness, failing to reveal information about the true costs of conservation, to stimulate sufficient innovation, or to deliver the most challenging but high value biodiversity measures. In contrast, international examples of conservation auctions have demonstrated potential for delivering greater biodiversity benefit for a given amount of money. The proposed reforms to CAP risk making this situation worse, with a highly rigid and inefficient allocation of biodiversity protection effort.

In addition, the deficiencies in the exploitation of biodiverity compensation mechanisms (described above) have further limited the role of market mechanisms. Defra's decision to pilot a more sophisticated offsetting scheme is therefore to be welcomed. However, Defra's decision not to include a pilot of compulsory offsetting, where developers are *required* to fund offsets, means the piloting is unlikely to reveal nearly as much as it could have done about the potential of offsetting, design issues, costs and benefits.

England is well-placed to develop markets in conservation. There is a healthy number and diversity of suppliers: Landowners and farmers have built-up considerable experience of delivering conservation projects through

agri-environment schemes and this is supplemented by thriving conservation NGOs. The excess demand for the Higher Level Stewardship element of agri-environment funding also suggests that there is untapped supply of potentially high-value biodiversity improvements to England's greenspace. There is good data on the state of the natural environment and strong academic and voluntary networks adding to it all the time. There is a strong legal framework and considerable UK experience with developing new markets, including environmental markets. Although it is too early to make a full assessment, the apparent success of Defra's Nature Improvement Areas competition highlights the potential for competitions and market-based mechanisms to deliver innovation in conservation.

Policy recommendations

1. The National Planning Policy Framework should state that all developments requiring an Environmental Impact Assessment need to deliver an overall 'net gain' in biodiversity.

Planning guidance on biodiversity says development should aim to enhance biodiversity "where possible". This caveat should be removed to be clear that that all relevant developments, having a certain level of impact, demonstrate a 'net gain' in biodiversity. A 'net gain' principle is appropriate for the following reasons:

- The past 100 years has seen a significant decline in the quality of national biodiversity. As a result, policymakers should ensure threatened species and habitats do not simply survive, but thrive and recover. Defra's Natural Environment White Paper reflects this.
- International experience shows that where planning systems give clearer guidance, for example that offsets should deliver a 'net gain' in biodiversity, they deliver improved outcomes compared to vaguer formulations.
- The principle removes doubt for planners and developers.
- Recreating degraded habitats, creating new ones or moving species all have less chance of success than maintaining existing sites. This justifies requiring those developments which adversely impact biodiversity, make good or offset this impact including a 'risk premium' – i.e. with the goal actually to enhance biodiversity – in order to give more assurance that any replacement will at least replace the quality and quantity of biodiversity (offsetting mechanisms should only be used once the mitigation hierarchy[2] has been followed).

The 'net gain' principle would not be appropriate for every development, especially small-scale activity. An appropriate threshold would be that for which Environmental Impact Assessments are required (developments over 0.5 Has or those with significant environmental impacts). This balances encouraging development and ensuring its impact on biodiversity is recognised. Ensuring a proper biodiversity valuation would ensure that development, at the margin, is pushed towards low quality biodiversity land, be it brownfield or low value greenfield land.

2 The mitigation hierarchy, where biodiversity damage from development should first be avoided, then mitigated onsite and finally, as a last resort, offset, is a well-established approach to planning.

2. *Defra's offsetting pilots should include testing of a compulsory offsetting scheme, to better inform future decisions about nationwide offsetting arrangements.*

Biodiversity offsetting offers considerable potential for improving the level and quality of biodiversity protection in England. Such a system would create assured demand for conservation activity from farmers and landowners, attracting a wider range of offset providers. It would also encourage greater innovation, likely bringing forward some of the more complex and important schemes that agri-environment schemes have struggled to provide. This increase in innovation and participants would likely lower the cost of biodiversity protection. It also offers a clearer system for developers when considering a new project.

There are weaknesses in the design of Defra's proposed pilot, undermining its aim to reveal new, useful information to inform decisions about the development of offsetting nationally. The biggest weakness is not to pilot a compulsory scheme. International experience shows that the most successful offset schemes are all based on regulation that *mandates* compensation for land-use changes. Without the certainty of a compulsory scheme, there is much less incentive for potential offset providers, like farmers and NGOSs to make investments in developing conservation proposals. Giving developers the choice over whether they participate provides them with a negotiating advantage over LAs and is likely to lead to less conservation.

Policymakers appear to have been cautious about a mandatory scheme because of concerns and uncertainty about the costs and benefits, particularly raising the cost of development. However, the point about a pilot is that it should shed light on what the costs and benefits would be if a nationwide compulsory scheme was introduced (if indeed there were additional costs). A well-designed pilot may show what developers *should* be paying under existing legislation to compensate for biodiversity loss, but are avoiding because of the weaknesses of the planning system. It is unlikely this information will be revealed by the current design.

While our recommendation is for a pilot, we ran a cost-benefit analysis of a national compulsory offsetting scheme. This found that a compulsory scheme could add around £70.7 million to the total cost of development every year, around 0.1% of the annual value of new build construction in the UK (our extreme scenario saw a cost of up to £253.3 million a year). This sum would help meet the annual shortfall in biodiversity funding, estimated at £110.3–157.3 million.

3. *The government should set up a public registry of all offsetting and compensation projects, as well as for Environmental Impact Assessments.*

One of the key weaknesses of current mechanisms for protecting and enhancing biodiversity is that compensation agreements are poorly monitored and there is little or no enforcement. Our FOI only found evidence of one enforcement measure. 74% of the identified compensation measures did not provide any evidence of monitoring. This absence of records and evaluation data prevents the spread of best practice, stops scrutiny of projects by Local Authorities or civil society and removes a key element in the design of successful markets: some kind of discipline, including through the fear of sanction. Moreover, it means central

government, when developing national policy cannot benefit from experience of LAs. This has been demonstrated in the admission by Defra that it knows offsetting has taken place, but does not know how much.

A simple, easy-to-search register of compensation schemes, as well as Nature Improvement Areas would help overcome these weaknesses and ensure that successful approaches are replicated and there are consequences for non-delivery. The data could allow the preparation of league tables comparing the performance of Local Authorities in protecting important biodiversity, replacing the scrapped National Performance Indicator regime. Again, this could increase competition between LAs over the quality of provision, and allow civil society, citizens and media to highlight good (and weak) performers. Including Environmental Impact Assessments would also allow greater scrutiny of this important, but inconsistently-used, tool.

4. Environmental Impact Assessments should be commissioned by Local Authorities (but still be paid for by developers). Information about EIAs should also be collected in a central registry.

Environmental Impact Assessments are produced during the planning application by developers for developments over a certain size. They suffer from considerable inconsistency in their quality, further undermining the ability of planners to properly protect the biodiversity value in relation to a particular development.

Requiring the Local Authority, rather than developer, to independently commission Environmental Impact Asessments, combined with other measures, should mean greater attention is paid to the biodiversity impact of development. Moreover, by making sure EIAs are collected in a central registry, it will improve the spread of best practice and ensure that civil society groups can help monitor how well they have been implemented.

5. Competition for Nature Improvement Areas should be extended when funds are available.

The initial success of the NIA competition highlights the potential supply of conservation projects for any offsetting scheme and the enthusiasm for biodiversity protection in England. The scheme attracted a wide number of applicants for the 12 slots, and was praised by biodiversity experts as stimulating unprecedented creativity and innovation in biodiversity.

The NIA innovation highlights the potential of market mechanisms, such as competitions, to deliver cost-effective and innovative biodiversity improvements. This experience should be transferred to other areas, in particular agri-environment schemes and international biodiversity protection.

6.The Government should use funding under Pillar 2 of the Common Agricultural Policy to test auction and other market-based system to deliver environmental improvements.

Agri-environment schemes have delivered some significant improvements in the quality of the farmed natural environment and overcome some of the traditional tension between farming and conservation. However, there remains significant potential for improvement. The checklist approach to Entry-Level Stewardship schemes (ELS) is crude and unlikely to maximise outcomes. Inevitably, some

farmers and landowners, armed with greater information about the costs of measures, have provided the easiest and cheapest options for gaining the subsidy. This means more expensive but more valuable projects on the checklist have been underprovided.

Higher-Level Schemes (HLS) are more sophisticated and the responsible agency, Natural England, has made improvements to the scheme to ensure that the available money is targeted at the most important biodiversity areas. However, HLS finds it harder to deliver some of the most complex but valuable enhancements to habitats. This again reflects that landowners are not properly incentivised to deliver the most difficult schemes.

Evidence from international efforts shows that auctions can, in some circumstances, deliver significant improvements in value for money, with estimates ranging from at least a 33% premium over checklist systems to much higher levels of cost-effectiveness. Conservation auctions, where landowners can bid to provide a level of biodiversity protection for a share of a pool of money, offer a method of discovering the real cost of biodiversity protection. In addition, they can encourage greater innovation by, for example, allowing neighbouring landowners to group together, and, for more complex and valuable schemes, to get funding. There have been problems in how some international auctions have been designed and a cautious approach is recommended. Again, this suggests the need for experimentation and pilots to understand whether auctioning could provide a significant, and greater value for money, contribution to biodiversity improvement.

7. The EU should abandon its proposed approach to 'greening' of Pillar 1. Instead it should increase payments to Pillar 2 (under a reduced overall CAP budget), and encourage market-based approaches to maximising environmental improvements.

Proposals for reform of CAP from 2013 are likely to exacerbate the weaknesses of the current system and deliver less biodiversity benefit. First, it will provide less direct funding for Pillar 2 in real terms, and therefore reduce its levels of biodiversity protection. Second, the proposed approach to 'greening' of Pillar One is also flawed. Its crude insistence that all farms seeking a CAP payment take the same steps, including compulsory set-aside at an arbitrary level of 7%, fails to reflect the range of biodiversity value of different land. As a result, it will likely make biodiversity protection more expensive than it needs to be – and therefore achieve less.

Instead of these clumsy reforms, the EU should implement a system that provides greater funding to biodiversity protection, currently delivered mainly through Pillar 2. At the same time, it should ensure than Pillar 2 funding is spent as cost-effectively as possible, through piloting market mechanisms discussed above.

8. The UK should switch some of its international forest and biodiversity funding towards bilateral projects, where possible testing payment-for-outcomes mechanisms. In due course, it should also consider experimenting with allowing international biodiversity projects to 'bid in' to emerging UK offsetting and compensation schemes.

There is potential for the greater use of bilaterial projects rather than channeling money through multilateral funds, which has often been very slow to distribute

money. Such an approach would allow greater piloting to discover what leads to successful conservation projects and the greater use of outcomes-based contracting, as other countries have begun to use. The success of the Darwin Initiative demonstrates the potential of experimentation and piloting, backed by rigorous assessment, in conservation activity.

The UK should also consider linking emerging domestic offsetting schemes, as proposed above, with international projects, allowing NGOs and others to bid for international biodiversity funding alongside domestic projects. This would follow the CDM model developed in carbon markets.

1
Introduction

"There are no economies without environments, but there are environments without economies."

The Economics of Ecosystems and Biodiversity[3]

The natural environment is the basis of all economic activity and human well-being. Its natural resources, including timber and food, provide the raw materials for economic progress. These natural resources are created and delivered through ecological processes, some of which take thousands of years (such as turning dead plant matter into oil).

The natural world – both internationally and within the UK – is under increasing pressure, mostly as a result of human development and resource use. This project assesses existing policy to protect the natural environment in the UK and internationally, and proposes any necessary improvements.

Biodiversity

Biodiversity is a measure of the variety of life on earth. It is the quantity and variability of life among species of plants, animals and microorganisms, as well as the genes they contain. It also measures the diversity of and between ecosystems. There are estimated to be between 5–50 million species on earth, but only 1.5 million have so far been properly identified.[4]

International state of biodiversity

While debate rages among biologists about whether we are living through a 6th mass extinction[5] (defined as where at least 75% of the earth's species are wiped out), there is a consensus that current extinction rates across the world are very high in historical terms. The last major extinction was 250 million years ago. Unlike previous extinctions, the consensus is that this one is likely being driven by one species, humans, rather than an external event.

International policy is failing to reverse this destruction. The UN dubbed 2010 the International Year of Biodiversity, and held a summit in Nagoya. The resulting Strategic Plan for Biodiversity 2011–2010 noted that previous commitments, made in 2002, to significantly reduce biodiversity loss had not been met.[6] The new agreement extended the aim to halt biodiversity loss by 2020. The deal was warmly welcomed by some observers, but the agreement itself left no legally binding commitments.[7]

State of UK biodiversity

The UK's wildlife has come under increasing pressure over the past 60 years. To assess the state of the England's biodiversity and what may be required to

3 TEEB (2008) *The Economics of Ecosystems and Biodiversity: An interim report*. p13

4 May, R. M. (1988). How many species are there on earth? *Science* 247: 1441–49

5 Barnosky, A., Matzke, N., Tomiya, S. Wogan, G., Swartz, B., Quental, T., Marshall, C., McGuire, J., Lindsey, E., Maguire, K., Mersey, B., Ferrer, E. (2011) Has the Earth's sixth mass extinction already arrived? *Nature* 471, 51–57

6 Convention on Biological Diversity (2010) *Conference of Parties 10 Decision X/2: Strategic Plan for Biodiversity*. Available at http://www.cbd.int/decision/cop/?id=12268

7 Monbiot (2010) 'We've been conned. The deal to save the natural world never happened." http://www.guardian.co.uk/commentisfree/cif-green/2010/nov/01/deal-to-save-the-natural-world-never-happened

improve it, the previous Labour Government commissioned a review by Professor John Lawton. The report, released in 2010 under the Coalition government, concluded.[8]

- Since the Second World War, England's wildlife habitats have become "increasingly fragmented and isolated". This makes it harder for species to move between different havens and cope with external shocks, such as climate change.
- There have been significant declines across a range of species. This includes a 50% decline in well-known species such as Hedgehogs, House Sparrows and Common Toads over the past 25 years. There has been a more than 80% decline in farmland birds since the 1960s. 76% of all UK butterflies have declined since the 1970s.
- Loss of habitats and species has led to declines in the provision of some ecosystems services (the services that nature provides, see Chapter 2).
- More specialist species tend to be in decline, while generalists (those that can adapt more easily to different and changing environments) are faring better. England's natural environment is becoming more uniform.
- There have been some improvements. Decline in some habitats and species has slowed and, in some cases, reversed (often through efforts of NGOs and landowners). Examples include an increase in habitats such as woodlands and ponds, as well as some types of amphibians, lizards and butterflies, such as the Big Blue.

The report concluded that England's current pattern of protection does not "comprise a coherent and resilient ecological network." Lawton called for a "step change" in policy to improve the level of nature conservation in England. Other studies have drawn a similarly gloomy picture. The Biodiversity Action Plan (see Box 4.1) found that 42% of England's most threatened habitats, such as mudflats, and 24% of endangered species, such as the skylark and the red squirrel, were declining.[9]

Policy developments

The UK and international governments are currently examining how to better protect wildlife:

- International: Nagoya made commitments to halt biodiversity loss by 2020. In addition, global climate talks are examining how forests can be better protected to absorb carbon, a move which also has important implications for biodiversity.
- European: The EU has made a similar commitment to reverse biodiversity loss. It is considering policy options to meet this target. At the same time, it is reforming the Common Agricultural Policy, including how it supports environmental schemes.
- UK and England: The Government released the Natural Environment White Paper (NEWP) in 2011 which committed, for the first time, to 'enhancing' the levels of England's biodiversity. In addition, England's planning guidance has recently been rewritten through the National Planning Policy Framework, which will affect how important biodiverity areas are protected.

8 Lawton, J., Brotherton, P., Brown, V., et al (2010) *Making Space for Nature: A review of wildlife sites and ecological network.* Report to Defra.

9 JNCC (2010) *Main Results of the 2008 UK Biodiversity Action Plan Reporting Round*

This paper assesses how well existing policies protect the natural environment, whether the new proposals are adequate to overturn its decline and what more needs to done or done differently. The project will focus on policy within England. However, it will also consider how well the UK is playing its part in meeting international biodiversity goals. Its scope is terrestrial biodiversity, rather than that in oceans.

2
Valuing Biodiversity

"The natural environment provides us with a range of benefits – ecosystems services including food, water, materials, flood defences and carbon sequestration – and biodiversity underpins most, if not all of them."

Lawton Review[10]

Why is biodiversity important?

Biodiversity is a proxy for the fragility or robustness of an ecosystem. It underpins the services from which humans derive economic benefit. A higher level of biodiversity makes a particular habitat or ecosystem more likely to withstand external shocks, disturbances and changes more easily[11]. In effect, the quality and quantity of biodiversity allows an ecosystem to continue to provide its crucial services, know as 'ecosystem services'.

Box 2.1: Ecosystems services

The services provided by nature to humans are called 'ecosystems services'. These services fall under four broad categories:[12]

Provisioning services
- food (crops, livestock, aquaculture, fish)
- trees, standing vegetation, peat
- water supply (for plants and humans)
- medicine (e.g. aspirin comes from willow tree)

Regulating services
- climate (weather and stores carbon)
- pests and disease
- pollination
- water quality (recharging groundwater, cycling)
- air quality (absorbs pollutants)
- hazard (flood protection)
- noise

Amenity or cultural benefits
- tourism
- health, recreational and educational benefits of access to greenspace
- cultural value placed on wildlife protection.

Supporting services
- soil formation
- photosynthesis
- nutrient cycling

Complex natural processes have developed through evolution and adaptation. These interactions between different animals and plants and micro-organisms are, in many cases, not fully understood. As a result, reducing the biodiversity

10 Lawton et al, p.v

11 UK National Ecosystems Assessment (2011) *The UK National Ecosystems Assessment: Chapter 4: Biodiversity in the context of ecosystems services*.

12 Adapted from UK NEA and Millennium Ecosystems Assessment (2005) *Ecosystems and Human Well-being. Available* from http://www.maweb.org/en/Framework.aspx

of an ecosystem has unpredictable effects, both on the variety of life and the services provided. These may be negligible or they could be catastrophic. In some ways, protecting biodiversity may provide a form of insurance against ecological tipping points.

Valuing biodiversity

> *"Those who claim that biodiversity should be maintained regardless of cost cannot simultaneously justify biodiversity by reference to its economic benefits."*
>
> Economist John Kay[13]

Many environmentalists feel uncomfortable with attempts to value nature, arguing that nature has an intrinsic worth beyond comparison with money. They argue that comparing the costs and benefits of the services nature provides is therefore unnecessary; as it should be protected for its own sake. Such an approach has two weaknesses. Firstly, it means that nature will continue to be undervalued in conventional economic analysis and will lose out as priorities for limited funding resources. Secondly, it misunderstands that using cash terms is simply a convenient tool of comparison. It does not imply that money is 'the goal'.[14]

However, valuing nature is difficult. Many of the ecosystems services listed above are difficult to value. While items such as food and tourism are priced in different marketplaces, the value of other benefits is much harder to quantify. Moreover, because ecological systems are complex and often not fully understood, comparing the economic value of different habitats or species can be problematic. Such comparisons are much more complex than carbon accounting.[15] The relationship between biodiversity and ecosystems services is also complex. While improving biodiversity often leads to improvements in the value of ecosystems services, this is not always the case. In addition, valuing moral obligations to protect nature is even more obscure (although economists have inevitably attempted to do so, assessing something called 'ethical value').

The Economics of ecosystems and biodiversity

> *"The failure to account for the full economic values of ecosystems and biodiversity has been a significant factor in their continuing loss and degradation."*
>
> The Economics of Ecosystems and Biodiversity[16]

In recent years, policymakers have tried to overcome some of these difficulties and place a clearer value on biodiversity and the services it provides. The United Nations Environment Programme set up The Economics of Ecosystems and Biodiversity (TEEB) project, to create a more robust valuation. It hoped to ensure policymakers and businesses would no longer be able to take the benefits of the natural environment for granted. The TEEB reports recognised that placing a clear monetary value on nature's services is extremely difficult and quantitative data attempting to do so was sparse. With this caveat, its research drew the following conclusions:

13 Kay, J. (2003) *The Truth About Markets*. Allen Lane, London. p.176

14 Kay (2003) p.173

15 Despite these complexities, useful efforts have been made to produce useful comparisons between different sites (see chapter 5 for more discussion).

16 TEEB (2010) *Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB mainstreaming. p.9*

- Establishing and managing a network of the most important protected areas across the world would cost $45 billion a year. The benefits of preserving the current species richness would be worth more than $4 trillion a year. Current annual expenditure on the global network of proteced areas is about $6.5–10 billion.[17]
- Conserving forests avoids greenhouse gas emissions, worth $3.7 trillion by 2030.[18]
- It is the world's poor who are most at risk from biodiversity loss (as they rely more on ecosystems services than anyone else).[19]

The TEEB reports argued that by placing a clearer valuation on the benefits of particular natural environments, policymakers, businesses and individuals will be more likely to use resources more efficiently and protect them where necessary. It recommended that national governments and businesses develop measurements and policy measures to encourage this. The report also recognised that present systems of measuring a country's economy, and its success, fail to take into account the value of changes in the state of natural environments. As a result, it leads to a less efficient resource allocation.

Valuing biodiversity in the UK

> *"Ecosystems services are critically important to our well-being and economic prosperity, but are consistently undervalued in conventional economic analyses and decision making."*
>
> National Ecosystems Assessment[20]

To complement the TEEB process, in 2011 the government published the National Ecosystems Assessment (NEA) to try and estimate the value of the UK's biodiversity and ecosystems services. The report recognised that much more work is required to understand the economic benefits and costs of ecosystems services. However, it was able to quantify some of the benefits of ecosystems services. These include:

- Pollination – provides £430 million of services to agriculture for free.
- Living close to green space – this provides a benefit of £300/person/year.
- Inland wetland – provides £1.5 billion of flood protection and water filtration services.
- Of the services provided by the UK's eight broad aquatic and terrestrial habitat types, 30% are 'declining' (although food production, where there is a clear market value, has thrived over the past 60 years). Others are in reduced or degraded states.

The report also modelled six broad scenarios of what could happen to the UK's natural environment by 2060, based on examination of a limited number of ecosystems services: agricultural output; GHG emissions; recreation; and benefits of urban greenspace. It estimated the cost of 'unfettered' economic growth would be £20.7 billion a year, mainly through the loss of urban greenspace which has a very high amenity value. At the opposite end of the scale, its Nature@Work scenario saw huge increases in green space, and a greater capture of the

17 TEEB (2009) *TEEB for national and international policymakers*

18 TEEB (2010)

19 TEEB (2008)

20 UKNEA (2010) p.13

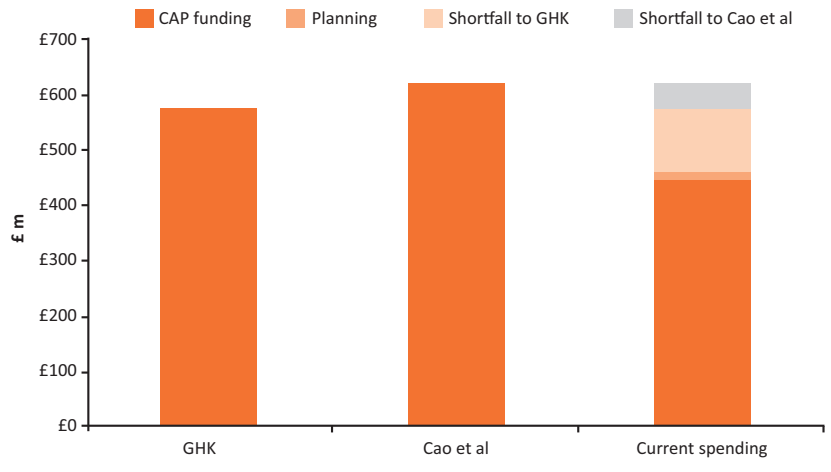
recreation and amenity value of such a space. However, there was considerable loss of agricultural output. Overall, this leads to £33.0 billion *benefit* per year.[21] Like many estimates of the benefits of green space, the report focused on the amenity value of the natural environment, which is perhaps easier to measure compared to the 'regulating' or 'supporting' environmental services backed by biodiversity (see Box 2.1).

A key message from both TEEB and NEA is that protection of the natural environment can have economic, as well as environmental benefits. As a result, the objective of protecting nature and the services it provides should play an important role in influencing how development, land use and economic resources generally are directed.[22]

Spending on biodiversity in England

Estimates vary as to how much is needed to protect and enhance England's wildlife in line with stated biodiversity aims. Cao et al put the figure at £620 million,[23] while GHK estimate it will cost £573 million a year to meet the Biodiversity Action Plan commitments,[24] which is the main framework for achieving biodiversity improvements (see Box 4.1 for more detail). A survey of ecological experts on the causes of continuing biodiversity loss found 75% who believed a lack of funding or incentives was leading to a failure to protect important habitats.[25]

Figure 2.1: Annual shortfall of biodiversity spending in England



Currently spending through CAP's Agri-Environment Schemes is around £446 million a year. Under proposals for CAP reform from 2013, this will likely decrease (see Chapter 5). In addition, Department for Communities and Local Government data found that the planning system delivered £235 million each year for 'open space', which includes provision of open space, general environmental improvements, allotments, sport facilities, and pollution and waste management, in addition to ecology and nature conservation (see Chapter Four).[26] In fact, ecology and nature conservation support represented only a small fraction of this total,

21 Such approaches are necessarily based on crude assumptions and should be treated with caution.

22 NEA did not attempt to monetise biodiversity, arguing only the services it underpinned could be valued (see technical chapter 22,26)

23 Cao, Y., Elliott, J., McCracken, D. et al (2009) *Estimating the Scale of Future Environmental Land Management Requirements for the UK.* Report to the Land Use Policy Group.

24 GHK (2010) *Costs of the UK Biodiversity Action Plan Update.*

25 JNCC (2010)

26 Crook A., Dunning, R., Ferrari, E. et al (2010) *The Incidence, Value and Delivery of Planning Obligations in England in 2007–08: Final Report.* For Department of Communities and Local Government.

around £16.7 million.[27] This annual spend of around £463 million is a shortfall of around £110.3–157.3 million a year on what is required to meet key biodiversity targets. The RPSB put the annual shortfall at £275 million a year[28] (although this figure is for the UK as a whole). It is worth pointing out that these figures are for protecting and enhancing important biodiversity, not necessarily providing all the amenity benefits or wider ecosystems services that green space provides. While there are some overlaps, it is likely a greater sum will be required to meet all the amenity demands for green space.

Against the backdrop of austerity, it is unlikely that government will be able significantly increase the amount of public money directed at biodiversity. This underscores the need to make sure existing funding delivers the greatest possible biodiversity improvement for the available funds. This, of course, should be the case in any economic environment, but the pressures on the public finances makes the imperative even greater.

27 The CLG data does not give a precise breakdown of how the money spent through the planning system on 'open space' is divided between the different categories. However, it is possible to use the survey data, which is grossed up to make the £235 million figure, to estimate what proportion was spent on ecology and nature conservation -- around £16.7 million. While our figure is not exact, it provides a useful guide to ecological benefits captured through planning system.

28 RSPB (2010) *Financing Nature in an age of austerity*. p.v

3
Principles and Aims of Policy Intervention on Biodiversity

While policymakers should generally take a cautious approach to intervention in markets, it is justified in certain situations. For example, if the characteristics of a good or service mean it is a public good. These are when consumption by one person does not limit the consumption by another (non-rival) and where it is hard to regulate access to the good (non-excludable). Ecosystem services such as the provision of clean air or pollination are both public goods. Their characteristics lead to free-riding, public goods are often undervalued and therefore underprovided, as we have seen. In such cases, government intervention may be able to improve on the market outcome. Related to some public goods are negative externalities, where the full costs of activities are not reflected in market prices. Chopping down rainforest, where the full ecological cost of the action is not reflected in the price of the timber, is one example.

Within a conservation context, governments are therefore faced with several broad policy options to try and overcome such market failures:

- Command and control regulation. For example, it can set up a system of designated areas where land use change is prohibited.
- Subsidies. The government can subsidise landowners and others to provide environmental services.
- Establish tradable property rights recognising the biodiversity value of land.
- Taxation. It can tax the environmental bad (ie, the move to agricultural intensification or development on high biodiversity value land).

The advantages and disadvanatges of these different approaches will be discussed over the next few chapters, in the context of existing policy.

Principles and aims of policy design

Policy Exchange believes that well-regulated, well-functioning markets often provide the most efficient way of delivering policy outcomes. The economist John Kay argues that successful market and policy design follows the two overarching principles:

- ***Incentive compatibility.*** Participants are provided with clear signals and incentives, both price and non-price, as to what the policy is trying to achieve.
- ***Disciplined pluralism.*** Policy should encourage multiple participants (pluralism). This helps drive down the cost and improve the quality of providing the

> services, by encouraging competition and innovation. In addition, the successes and failures of participants are subject to processes of discipline and pressure for improvement, whether through monitoring and incentives for performance or market discipline. Even where pluralism is not possible, for example in a natural monopoly, regulators should aim to provide discipline, for example, through independent regulation.[29]

These two principles will help inform this report's assessment of the success of existing and proposed natural environmental policy. However, while assessing the success of UK and international biodiversity policy, it is helpful to establish clearly what we believe policy should be aiming to achieve. We believe the following policy aims, in part derived from Kay's principles as well as the government's own commitments, should form the basis for decisions about what the natural environment policy framework should look like.

Policy aims

1. Policy and actions should aim not just to protect existing biodiversity, but to enhance it.

As discussed in Chapter 1, there has been a significant decline in the quality of international and national biodiversity, driven by human activity. As a result, current policymakers should ensure endangered species and habitats do not simply survive, but thrive and recover. The government's Natural Environment White Paper states that its aim is not just to protect biodiversity, but to 'enhance it'.[30] The Strategic Plan for Biodiversity, signed at Nagoya, said that countries should safeguard biodiversity and "where necessary, restore biodiversity and ecosystems services".[31]

This approach is important in considering whether policymakers should create compensation mechanisms that permit development and land use change, as long as the ecological damage is compensated for. Such approaches are attractive in balancing the need for economic growth with environmental protection, and are discussed throughout this report. However, recreating degraded habitats, creating new ones or moving species all have less chance of success than maintaining existing sites. The greater risk involved in replacing lost biodiversity justifies requiring those changing how land is used, in a way which has an environmental cost, to fund replacement that is expected to more than compensate for the lost quality and quantity of biodiversity – in other words pay a 'risk premium'. The mitigation hierarchy, a key principle in planning guidance, where biodiversity damage from development should first be avoided, then mitigated onsite and finally, as a last resort, offset, is in part derived from this recognition.

2. Policy should ensure that the value of biodiversity is reflected in decisions about land use.

As we have seen, biodiversity and the ecosystems services it underpins are often not properly valued in decisions about how land is used. Better valuation allows better decisions to be made about how land is used.

One common way of protecting existing important biodiversity sites is to simply prevent any development or land use change on them. However, this

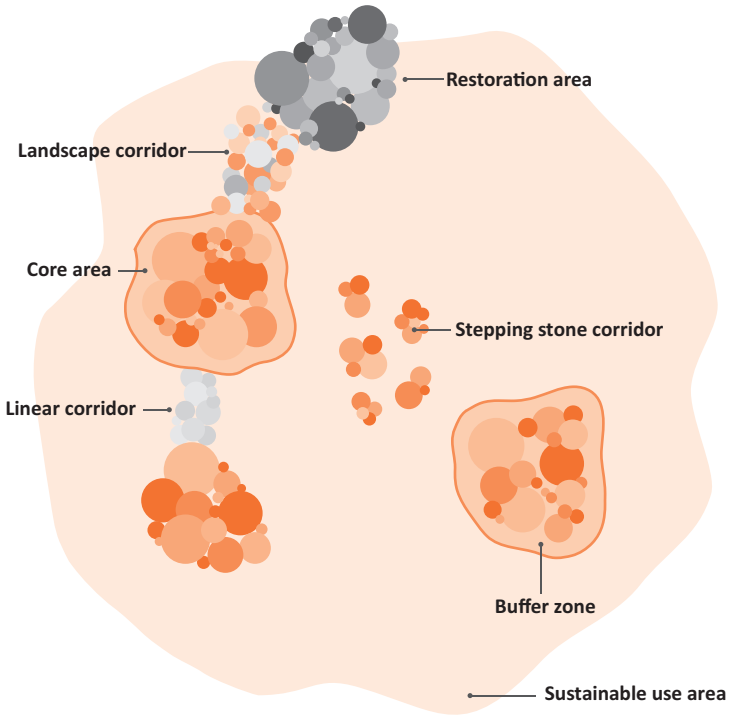
29 Kay (2003)

30 Defra (2011) *The Natural Choice: securing the value of nature*

31 Convention on Biological Diversity (2010)

system of 'designation' risks under-emphasising biodiversity in other areas. It may encourage the impression that all development/land use change outside protected areas is environmentally cost-free, rather than recognising different grades of biodiversity value and directing development accordingly.

Figure 3.1: Simplified ecological network



Crucially, such an approach also misunderstands how ecological networks operate. Important areas of biodiversity should not be considered in isolation, but as part of a connected 'network'. Figure 3.1 shows how the biodiversity importance of a piece of land depends on how close it is to other high biodiversity value areas and how well they are connected. Land that is close to existing areas of rich biodiversity, or land that acts as a corridor or stepping stone between different protected areas, is more valuable, in terms of biodiversity, than non-connecting land as it allows species to move between different high quality sites, therefore increasing the overall resilience of the network. The Lawton review and the NEWP support such a 'landscape approach' to biodiversity protection.

3. Funds available for biodiversity protection must be spent as efficiently as possible. This is best achieved by encouraging innovation and wide range of conservation providers.

Innovation and competing new ideas about how biodiversity is protected, managed and monitored should be encouraged. In biodiversity protection, market processes may have the potential to lead to a greater range of conservation activity ('pluralism') and encourage landowners and others to offer new and different

conservation schemes (innovation). Market mechanisms to select schemes for funding would encourage the best value and best implemented to be rewarded, while poor providers would lose out through the discipline that a market would provide. This would lead to better value for money than alternative, one-size-fits-all subsidy systems. Policy design should therefore try to ensure that most protection should be provided to the most important biodiversity sites (while reflecting policy aims two and three).

4. Policy should recognise that there is a trade-off between maintaining biodiversity within a local area and spending the same resources to achieve greater biodiversity enhancement overall at a national or international level.

Well-maintained biodiversity provides benefits or services to people who live close to it, often through amenity or cultural benefits. Often these people, through planners or ownership, are the ones who make decisions about how land is used.

However, money used protecting local biodiversity (including the opportunity cost of foregoing local development) could in some instances lead to greater biodiversity gain if spent somewhere else, nationally or internationally. People also gain value from areas of wider national and international biodiversity importance (including 'hot spots', the most densely-gathered and important biodiversity, see Chapter 8). This includes some of the global regulating services that support rainfall patterns and clean air, or medicines derived from their biodiversity.

"Money used protecting local biodiversity could in some instances lead to greater biodiversity gain if spent somewhere else, nationally or internationally"

Balancing these competing local and global demands is not easy, but policymakers must be mindful of such trade-offs if we are to secure maximum biodiversity gains from the resources available.

5. Policy should be clear, transparent and easy-to-use for farmers, developers, landowners, NGOs and other participants.

Policy should be designed so that it is as straightforward as possible for participants to understand. This includes making sure incentives are aligned to achieve policy aims. Streams of funding, measures and results gained in relation to biodiversity protection schemes should be as transparent as possible. This allows the spread of best practice and for poorly-designed schemes to be improved or dropped (market discipline).

4

Protection of England's Biodiversity and the Planning System

"What is needed is a step-change in nature conservation. We need to embrace a new, restorative approach which rebuilds nature and creates a more resilient natural environment for the benefit of wildlife and ourselves."

Lawton Review[32]

The protection and management of England's and the wider UK's wildlife is currently provided through a mixture of instruments. These can be divided into three broad categories:

- Areas that enjoy varying levels of legislative protection (Sites of Special Scientific Interest, Areas of Outstanding Natural Beauty etc).
- Such designations are part of the wider system of planning, which includes non-legislative guidance on which developments are environmentally appropriate. The planning system has mechanisms to recognise the environmental cost of development, including how damage to wildlife or important habitats should be mitigated or offset.
- Agri-environment schemes. These are subsidies to farmers and others to manage land to achieve environmental goals.

The next four chapters assess the success of this framework. This chapter looks at designated sites and planning policy and makes recommendations for reform. The next chapter will look at agri-environment schemes, funded by the Comon Agricultural Policy. Chapters 6 and 7 will assess offsetting, a mechanism that compensates for damage to biodiversity from development. The report will also assess recent policy proposals, including in the Natural Environment White Paper and the National Planning Policy Frawework.

What is driving biodiversity loss in England?

Lawton identified two main drivers of biodiversity decline in England:

- ***Habitat loss.*** There has been a huge loss of certain habitats in the past 60 years. Much of this is driven by agricultural intensification, through ploughing,

32 Lawton et al (2010) p.v

draining and fertilising. Heaths, chalk grasslands and lowland wet grasslands have suffered. Development of some greenfield sites, including infrastructure projects,[33] and forestry also contributed.

- ***Habitat deterioration.*** While very few parts of the UK are true wildernesses, many non-urban habitats are defined as "semi-natural". These habitats are influenced by man and include species that depend on land being managed. As traditional farming practices have been abandoned, such as grazing on flower-rich chalk grassland and a lack of coppicing in woodland, species that depend on these processes have suffered. The effect is to reduce the variety in landscapes, and isolate surviving sites. As a result, generalist species have benefited rather than specialist ones.[34]

In addition there are several other important reasons for biodiversity loss:

- ***Pollution.*** This includes eutrophication caused by agricultural fertilisers, the burning of fossil fuels and intensive livestock farming. These process inject a much higher level of nitrogen and other chemicals in the natural environment. This favours some species at the expense of others.
- ***Exploitation.*** Illegal collection and persecution of protected birds, animals and plants.
- ***Invasive species,*** introduced from abroad, have sometimes threatened or overtaken native species. Reversing this is often extremely difficult, expensive and controversial.
- ***Climate change.*** There is emerging evidence that a warming climate has led to a northwards shift in some flowering plants, meaning they become less common in the south of England.[35]

Protected areas

Over the past 60 years, layers of legislation have built up to protect parts of England from development. The designations are identified in Table 4.1, using Lawton's three-tier classification. A third of England's land area, including many of the most important conservation areas, already enjoy protection (see Figure 4.1). This rises to around 42% when the Green Belt is included.[36] This is a considerable area.

However, only 6.9% of England's area is protected primarily for biodiversity reasons. Most of England's most important ecological sites, identified under the Biodiversity Action Plan (see Box 4.1), fit within one of the designations. 71% of BAP priority habitats are classified as Sites of Special Scientific Interest (SSSIs). A further 19.5% of BAP sites are in Local Wildlife Sites (these enjoy less protection than SSSIs and are potentially more vulnerable to development).

The apparently high rates of priority habitat falling within designated sites is misleading. The original reason for designating sites was to give a high level of protection to some *examples* of certain important habitats, while hoping that non-designated examples would continue outside of SSSIs and other classifications. However, partly because the biodiversity value of non-designated land is not properly recognised in the planning system, non-designated, but still important, habitats have gradually disappeared as a result of some of the

33 JNCC (2010)

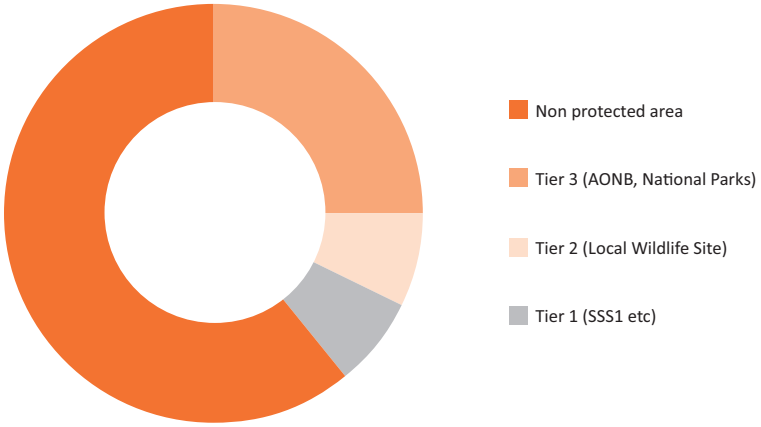
34 UKNEA (2011) *Biodiversity in the context of ecosystems services*. p.74

35 Ibid. p.75.

36 While efforts have been made to avoid overlaps between different classifications, it is difficult to ensure all have been removed.

pressures identified above. In effect, important habitat types have been ghettoised and fragmented (many of the remaining BAP habitat sites are very small).[37] There has been a huge decline in some grasslands, such as chalk, and heathlands over the past century. The disappearance of such habitats has left the protected areas isolated and the species within them very vulnerable.[38]

Figure 4.1: Proportion of England under different levels of protection



This underlines the success of clearly defined, well-protected areas in ensuring important habitats remain in place. But it also suggests that designation on its own is not enough to create a robust network of protection, nor necessarily always the appropriate approach. Lawton found this system of designation did not form a coherent structure for environmental protection.

Box 4.1: Biodiversity Action Plan (BAP)

Introduced in 1994, the UK Biodiversity Action Plan covers the most at-risk and important habitats and species. It now covers 1,150 species and 65 habitats which are under threat and require conservation action to improve their status. Priority habitats cover around 2 million hectares or 16% of England.[39] The latest survey of the state of the UK's biodiversity found:[40]

- 38% of priority habitats were stable or improving. 42% were declining or probably declining.
- 50% of priority species were stable or improving. 24% were declining or probably declining.
- Eight priority species have been lost since 1994. It has since been established that an additional 11 species on the original priority list had already disappeared by 1994.

37 Lawton et al (2010) p.41

38 Ibid.

39 GHK (2011) *Costing potential actions to offset the impact of development on biodiversity – Final Report.* p.11.

40 JNCC (2010)

Table 4.1: Summary of England's protected areas

	Number of sites	Area (ha)	% of England	Average size (Ha)	Legislation	Summary of protection
Tier 1 – high level of protection, wildlife focused						
Sites of Special Scientific Interest (ex geological, marine)	3,174	810,314	6.1	255	Wildlife and Countryside Act 1981	Main designation – important for flora, fauna or geological or physiographical features
Special Areas of Conservation	240	535,207	4	2,230	Habitats Directive 1994	High quality conservation sites
Special Protection Areas	79	477,244	3.6	6,041	Birds Directive	Rare or vulnerable species' habitats
Ramsar Sites	70	124,645	0.9	1,781	Ramsar Convention	Wetlands of international importance
National Nature Reserves	223	63,384	0.47	284		Most sensitive features, best SSSIs, pristine habitats, research
Local Nature Reserves	1,437	37,768	0.28	26	National Parks and Access to Countryside act 1949	Either conservation or recreational
Voluntary Conservation Organisation land managed for nature	3,313	185,425	1.4	56	N/A	National Trust, RSPB, Wildlife Trusts and Woodland Trust
Total Tier 1 coverage (excluding overlaps)		**925,124**	**6.93**			
Tier 2 – low level of protection, wildlife focused						
Local Wildlife sites	42,799	694,494	5.2	16	Non-statutory	Led by LAs, protected through planning system in theory
Ancient Woodland Sites	27,724	354,583	2.7	13	Non-statutory	Continuous woodland cover since 1600. Protected through planning or forestry guidance; includes 148,290 planted with conifers
Total Tier 2 coverage		**870,084**	**6.5**			
Tier 3 – high level of protection, non-wildlife-focused						
National Parks	10	1,216,117	9.1	121,612	National Parks and Access to Countryside Act 1949	Enhancing beauty, wildlife and cultural heritage; education
Areas of Outstanding Natural Beauty	34	1,925,951	14.4	56,646	National Parks and Access to Countryside Act 1949	Natural beauty of landscape; quiet enjoyment of landscape; regard for those who live there
Total Tier 3 coverage		**3,142,068**	**23.5**			
Total Tier 1,2,3 protection		***4,414,294***	***33.1%***			
Green Belt		1,619,727	12.1%		1947 Town and Country Planning Act	To prevent urban sprawl and encourage development within urban areas
Green Belt not under Tier 1,2,3		1,251,714	9.4%			
Total Protected area England		***5,685,841***	***42.6%***			

Planning system guidance for wildlife and biodiversity

The system of designated areas listed in Table 4.1 opposite informs planning decisions. In addition, various policy instruments are used to try and ensure that the planning system accounts for the effect development has on biodiversity. These include:

Environmental Impact Assessments (EIA)

First introduced in 1985, EIAs are reports required if a new development project has likely 'significant' environmental effects (over a certain size, or poses specific environmental risks). EIAs aim to ensure that the environmental impacts of development, including on the ecology of a development, are taken into account in planning decisions. Developers are responsible for paying for and preparing them. The best EIAs suggest measures to minimise the environmental impact of a development, including consideration of alternatives to the development and possible compensation for unavoidable damage.[41] Proposed developments that will affect sites or species identified under the Habitats Directive require an "Appropriate Assessment", a similar assessment of the impact of development and measures to reduce and compensate for it.

The success of EIAs is hard to establish and there is not a centrally collected database of when the tool has been used. This makes it difficult to assess the quality of EIAs, and whether their suggestions have fed through well into planning decisions. However, research has found both decisions about whether to use EIAs and the quality of EIAs are haphazardly applied.[42] This may be the low quality or lack of rigour in the initial assessments or a failure to translate suggested mitigation measures into final planning agreements. The weakness of the current system may be the result of misaligned incentives. Developers may be more concerned with minimising disruption to their project rather than protecting the environment, yet they are responsible for the provision of EIAs. Local Authorities, many of whom do not have in-house ecologists (our FOI request found only 41% did, see Chapter 7) may lack skills to assess whether the assessments are needed and whether those provided are of sufficient quality. The success of the EIA system, which should support good quality development, is therefore dependent on the level of interest from – and political pressure on – planning departments (see below on Section 106 for discussion of competing pressures on planner). NGOs and the wider public therefore have a crucial role in assessing EIAs.

Section 106 agreements

Established under the Town and Country Planning Act 1990, the Section 106 system was set up to help Local Authorities (LAs) capture some of the value of granting planning permission. The agreements are between developers and LAs and specify improvements to the local area that the developer has to provide or pay for, such as social housing, improved roads or new leisure facilities. Section 106 agreements can also mandate compensations for environmental damage or the loss of open space (this mechanism is a form of offsetting, discussed in more detail in Chapters 6 and 7). This includes any damage to designated sites.

Section 106 agreements, which are present in around 7% of planning applications,[43] secured £4.9 billion of benefits for LAs in 2007–8, according

41 For major developments, plans or programmes a Strategic Environmental Assessment may be required. Examples include offshore oil/gas licensing rounds or river basin management plans.

42 Treweek, J. (1996) Ecology and environmental impact assessment, *Journal of Applied Ecology* 33, 191–199; Treweek, J. and Thompson, S. (1997) A review of ecological mitigation measures in UK Environmental Statements; Defra (2011) *Options Stage Impact Assessment: Offsetting the impact of development on biodiversity;* Tinker, L., Cobb, D., Bond, A., Cashmore, M. (2005) Impact mitigation in environmental impact assessment: paper promises or the basis of consent conditions? *Impact Assessment and Project Appraisal*; 23, 4, 265–280.

43 Crook et al (2010). This figure is higher for larger developments; 85% of 15–50 dwelling developments have a Section 106 agreement.

to a survey for the Department of Communities and Local Government. This was up 24% from the previous CLG survey in 2005–6. Of this, only £235 million (5%) was for 'open space' improvements, which includes provision of open space, general environmental improvements, allotments, sport facilities, and pollution and waste management, in addition to ecology and nature conservation. As calculated in Chapter 3, around £16.7 million of this was spent on ecology and nature conservation, what might broadly be classed as 'biodiversity' protection. This level of spending is much smaller than the money spent on nature protection from other sources, such as agri-environmental schemes under the Common Agricultural Policy that contribute around £446 million each year (see Chapter 5). It is far short of the £620 million or more annual spend needed for England to meet its biodiversity targets (see Chapter 3 for more discussion).

Under the Section 106 system, conservation has to compete with other, perhaps more pressing, political concerns, such as the need for additional housing. Therefore the success of Section 106 in protecting biodiversity may be limited and will depend on the priorities of the relevant officials and local councillors. In addition, different 'services' provided by green space have to compete, with potential ecological benefits competing with more general amenity benefits, like the provision of parks, which are likely to enjoy greater political support. This tension between pure biodiversity protection and wider ecosystems services, discussed in Chapter 3 is tricky for policymakers to balance. Currently, services provided by green space linked to human amenity seem to attract greater funding, demonstrated by 'open space' enjoying a much greater proportion of Section 106 payments than more targeted conservation. It is important that planners are mindful of this tension in deciding how to capture the benefits of development.

Treweek et al found that while the Section 106 system offered significant potential for delivering environmental compensation, current practice is "patchy and there is inadequate guidance to enable developers to determine whether and when a biodiversity offset is appropriate and required."[45]

Crook et al also found that monitoring of delivery of schemes was "less well developed than the original negotiations",[46] although it is improving. The quality of monitoring was inconsistent between different LAs. This lack of monitoring, a key tool of market discipline, is likely to lead to poor quality biodiversity protection. This is discussed in more detail in Chapter 7.

It is not yet clear what if any impact the new Community Infrastructure Levy will have on Section 106 agreements and, in consequence, on the provision of biodiversity funding.

Biodiversity duty and national performance indicators

The 2006 Natural Environment and Rural Communities Act introduced a Biodiversity Duty on Local Authorities. This said that "Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity". This vague wording and a lack of concrete proposals meant the duty itself has had little apparent effect. Research has found that the duty was a weak driver of action on its own.[47] Lawton also said the duty needed to be made clearer and to use understanding of ecological networks.[48]

44 This figure is dervied from Crook et al survey data, which breaks down money spent on ecology and nature conservation based on respondents. This is then grossed up to estimate its proportion of the overall £235 million. While our figure is an estimate, it provides a useful guide to ecological benefits captured through Section 106.

45 Treweek et al (2009) *Scoping Study for the Design and Use of Biodiversity in an English Context.*

46 Crook et al (2010) p.6

47 Treweek et al (2009); Entec (2010) *Review of the Biodiversity Duty contained in Section 40 of the NERC Act 2006*

48 Lawton et al (2010) p.71

Local Authorities were previously required to report data related to biodiversity under the National Performance Indicators regime, including the percentage of important wildlife areas that were being actively managed. The NPI regime was scrapped by the Coalition Government. Data from the only reporting year (2009), shows that many local authorities were struggling to actively manage the wildlife areas for which they were responsible. Only 23 out of 152 Local Authorities who reported said they were actively managing more than 50% of their sites.[49] The absence of data before or after means it is hard to know whether these figures represent an improvement.

Making Local Authorities report their environmental performance is a good idea. Firstly, it ensures that protected areas are at least monitored. Secondly, by comparing the performance of different LAs, it may help make wildlife conservation a greater priority.

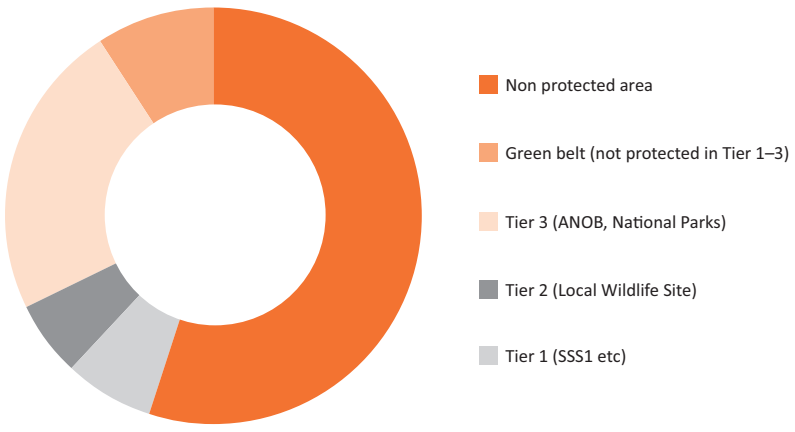
Green belt

The first Green Belts were introduced in London and Sheffield in the 1930s. Local Authorities got further powers to designate areas not suitable for development in the 1947 Town and Country Planning Act. The Green Belt has expanded ever since. The area covered by Green Belt has doubled since 1978 and the 14 Green Belts now cover 13% of England.[50]

The use of Green Belt land varies considerably. 66% of Green Belt is agricultural land, although not all of it is in productive use and it sometimes supports only marginal farming activity (meaning it is not in full productive use). Some studies have argued that the designation can actually drive the degradation of urban fringe land as it is not viable for agriculture and development is restricted.[51] Almost a quarter of the Green Belt is classified as small paddocks, small holdings and large gardens. With strong protections against development, residential areas tend to be small scale. One critic has said the Green Belt risks becoming a "museum of inactivity".[52]

The condition of Green Belt land varies considerably. While 39% of the land is being maintained, only 1% is being enhanced. 18% of the land was neglected, although only 0.2% was vacant, damaged or derelict. The remaining 36% of the land is of 'diverging quality', where the land use is changing, with some of its key qualities being lost.[53]

Figure 4.2: Protected land in England including green belt



49 Policy Exchange analysis of data available at http://www.audit-commission.gov.uk/performance-information/performance-data-collections-and-guidance/nis/Pages/niguidancesearch.aspx

50 Campaign to Protect Rural England & Natural England (2010) *Green Belts: a greener future*

51 Andersson, J., Gallent, R., Oades, R. et al (2003) *Urban Fringe – Policy, Regulatory and Literature Research. Report 2.3: Green Belts*. p.13

52 RTPI (2000) Green Belt Policy: A Discussion Paper. p.10

53 CPRE (2010)

The Green Belt is not a designation to protect biodiversity, although its contribution to nature conservation is recognised in planning policy.[54] Its main purposes are to prevent urban sprawl and encourage development within urban areas.[55] The Green Belt has some ecologically important areas and, in some cases, acts as a supporting system for more important areas. However, the majority of it is not especially ecologically important. The Higher Level Stewardship agri-environment scheme (HLS, see Chapter 5), which focuses on the most important land for biodiversity, supports only 16% of Green Belt land compared to 36% across the England as a whole. This "suggests lower environmental quality (in the Green Belt compared to other areas)".[56] 13% of BAP Priority areas are in Green Belt, while 8% of SSSIs are. Some ecologists also argue the doughnut shape of many Green Belts is less ecologically useful than north-south corridors that allow species to migrate northwards as the climate warms.[57] The Green Belt also puts more pressure on urban green space, leading to infill development and the loss of playing fields.

> "54% of respondents thought that more than half of England is developed. In fact, only around 13.5% is urban land"

The Barker Review of Land Use Planning called for a review of Green Belt boundaries to encourage development, but also to improve England's environmental outcomes. The report argued that efficient use of land "does not imply minimal use of land but rather the best use of limited land resources, taking all factors into account".[58] The Barker Review calculated that the social value of important conservation areas was £1.3 million per hectare, while the value of urban fringe green belt was just £180,000.

Policy Exchange has advocated redrawing of the Green Belt to allow cities to expand for economic reasons, including in the recent *Cities for Growth* report.[59] The lack of housing and land for commercial and industrial purposes places significant burdens on businesses and families, who have to struggle with high commercial rents and house prices. It has also stifled economic growth. Meeting these demands can be achieved while still protecting areas important for biodiversity (and amenity), as long as a recognition of the biodiversity value of land is built into the planning system. Such a system would also require a clear mechamism to compensate for any loss of biodiversity with enhanced biodiversity locally or elsewhere. It could also enhance areas of genuine biodiversity importance.

Of course, any move to change the Green Belt boundaries would face huge political opposition. Successive government have ducked the challenge. It is interesting to highlight two surveys commissioned by the Barker Review. The first found that 54% of respondents thought that more than half of England is developed. In fact, only around 13.5% is urban land (even the South-east, commonly perceived as heavily developed, 82% of land is not developed).[60] The second survey found that respondents believed the types of land for which it was most important to protect for development were: land with important or endangered wildlife (71%), land with significant landscape or scenic beauty (54%) and green space within urban areas. Only 17% considered that because land was on the edge of towns or cities was an important reason to protect it.[61]

54 'Objectives' of green belt include: to secure nature conservation interest.

55 Under Planning Policy Guidance 2 (1995), the purpose of the Green Belt is to check the unrestricted sprawl of large built-up areas; to prevent neighbouring towns from merging with one another; to assist in safeguarding the countryside from encroachment; to preserve the setting and special character of historic towns; to assist with urban regeneration, by encouraging the recycling of derelict and other urban land.

56 CPRE (2010) p.71

57 Barker, K (2006) *Barker Review of Land Use Planning: Final Report: Recommendations*

58 Barker p.48

59 Morton, A. (2011) *Cities for Growth: Solutions to our planning problems*

60 Barker (2006) p.45

61 For more detail on politics of Green Belt see Morton (2011)

National Planning Policy Framework

In July 2011, the Government released its draft National Planning Policy Framework (NPPF). The final version was released in March 2012. The new NPPF aims to simplify 25 different Planning Policy Statements (including one focused on biodiversity, PPS9). The new document, which is 59 pages compared to thousands of pages of planning guidance, faced considerable opposition during its consultation.[62] This was, to a certain extent, muted by the release of the final report.

62 See *Daily Telegraph* 'Hands off our land' campaign, as well as arguments from groups like the National Trust, Campaign to Protect Rural England.

Table 4.2: Comparison of NPPF and PPS9 on biodiversity protection

Subject	PPS9	NPPF	Comment
'Net gain'	"Planning, construction, development and regeneration should have minimal impacts on biodiversity and enhance it wherever possible."	"The planning system should contribute to and enhance the natural and local environment by: minimising impacts on biodiversity and providing net gains in biodiversity where possible."	No substantive change. 'Where possible' remains poorly defined.
Mitigation Hierarchy	"If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused."	"If significant harm resulting from a development cannot be avoided ... adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused."	No substantive change. NPPF clearer that compensation is 'last resort'.
SSSIs/Habitats Regulation	Development in or outside SSSIs which is likely to have an adverse effect on an SSSI "plannning permission should not normally be granted". Exceptions only when benefits "clearly outweigh" impacts on SSSI and national network of SSSIs.	Proposed development within or outside a SSSI which is likely to have an adverse effect on an SSSI "should not normally be permitted". Exceptions only if benefits of the development "clearly outweigh" impact on site or on national network of SSSIs.	No substantive change. Final NPPF much tougher than draft, which did not mention SSSIs.
Environmental value of land	Ensure "that developments take account of the role and value of biodiversity in supporting economic diversification and contributing to a high quality environment".	Allocations of land for development should prefer land of lesser environmental value.	No substantive change.
Habitats and Birds Directive	Sites under the Habitats and Birds Directive enjoy stautory protection.	"The presumption in favour of sustainable development does not apply where development requring appropriate assessment under the Birds or Habitats Directive is being considered, planned or determined."	No substantive difference. Again much tougher protection compared to draft NPPF.
Ecological networks	Local Authorities should aim to maintain networks by avoiding or repairing the fragmentation and isolation of natural habitats.	Planning should contribute "to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks."	Clearer role for ecological networks in NPPF.
Local Green Space	N/A	The NPPF introduced a new type of designated area, Local Green Space. These could include non-Green Belt areas, close to urban areas or centres of population that hold a '"particular local significance", including for the "richness of its wildlife."	This may provide a stronger level of protection than existing Local Wildlife Sites, which Lawton called for. It is not yet clear how they will work in practice.
On-site biodiversity	Local Authorities should "maximise" opportunities to building-in beneficial biodiversity features as part of good design.	Opportunities to incorporate biodiversity in and around developments should be encouraged.	No substantive difference.

As discussed, Treweek et al's review of planning and biodiversity found that biodiversity policy was being inconsistently applied. The complexity and quantity of planning guidance may be part of the reason why many LAs have struggled to implement adequate biodiversity protection.[63] So there may be scope for a more focused document to ensure more is actually delivered, provided the NPPF has addressed natural environmental impacts adequately.

Policy Exchange's report Cities for Growth looked in detail at planning reform, and further detailed examination of all aspects of planning is beyond the scope of this report. However, it is useful to consider its implications for biodiversity. The following table compares the NPPF's language in relation to biodiversity protection with previous biodiversity planning guidance (PPS9).

The table above shows that the final NPPF, responding to criticism from many conservation groups, provides much clearer protection for biodiversity than the draft NPPF, in particular in relation to SSSIs. There appear to be few substative changes on the aspects of biodiversity protection identified above when compared to previous policy guidance. Moreover, Local Green Space may provide a clearer protection than Local Wildlife Sites, although it is too early to say for sure. Perhaps the key question is to what extent the "presumption in favour of sustainable development" will encourage development that impinges on the natural environment. This will depend on how the new presumption is interpreted by Local Authorities.

One missed opportunity in the new NPPF is its failure to provide a clear 'net gain' principle, retaining the vague caveat 'where possible'. To some extent this conflicts with some of the arguments made in the Natural Environment White Paper.

Natural Environment White Paper

> *"Our 2020 mission is to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people."*
>
> The Natural Choice: Securing the Value of Nature[64]

In June 2011, the Government released its Natural Environment White Paper (NEWP). It aimed to reform how England's countryside and green space is managed. Informed by the Lawton Review and the National Ecosystems Assessment, one of the main priorities of the white paper was to not just to protect biodiversity, but to improve it: "We will move from net biodiversity loss to net gain."[65]

The white paper committed to:

- An increase of at least 200,000 hectares (10%) in 'important' habitats.
- 50% of SSSIs to be in a favourable condition by 2020, with 95% in recovering or favourable. 90% of priority habitats should be in a favourable or recovering condition.
- At least 17% of England's land and inland water managed effectively in order to safeguard biodiversity and ecosystems services.
- 15% of degraded ecosystems that are important for climate change mitigation and adaptation will be restored

63 Defra (2011) Impact Assessment p.18

64 Defra (2011) p.17

65 Ibid. p.3

In order to meet this ambition, the paper made the following main policy proposals:

- Nature Improvement Areas. The government set up a competition for 12 new large areas which will both restore and connect nature, as recommended in the Lawton Review. £7.5 million in funding was made available. Although too early to draw firm conclusions, the scheme appears initially to have been very successful. 76 applications were made for the 12 funding places, and the winners included transformation of urban wastelands, as well as more traditional rural improvement projects. Professor Lawton, who chaired the panel picking the winners said: "Never in [40 years working in conservation] have I seen the sort of creativity, partnership working and sheer enthusiasm that the NIA competition has released".[66] Its initial success indicates how competition may drive innovation in biodiversity protection and attract a wide range of participants.
- Local Nature Partnerships. These will be set up by and between Local Authorities to manage the natural environment and will include different stakeholders. The white paper hoped around 50 would be set across England. Experts say such bodies are already in place, but are poorly attended and lack clout.[67] It is difficult to see how the new bodies would be any different.
- UK Environmental Accounts. An independent Natural Capital Committee will set up a system where the UK's natural resources, including its biodiversity and ecosystems, can be measured in the same way as the national budget is prepared.
- Proposed new approach to biodiversity offseting (see Chapters 6, 7).

The NEWP is clearer about the principle of a 'net gain' in biodiversity than the NPPF. It states "the Government expects the planning system to deliver the homes, business, infrastructure and thriving local place that the country needs, while protecting and enhancing the natural and historic environment".[68] The NPPF is more equivocal, reiterating previous guidance that planning should enhance biodiversity "where possible".

This appears a subtle difference but it is an important one. "Where possible" is even less clearly defined in the NPPF than in previous planning guidance. Indeed, compensation mechanisms such as offsetting allow the possibility that a greater biodiversity benefit can be delivered for *every* development with an impact on biodiversity. The vague caveat is likely to continue confusion among Local Authorities about whether they should insist on biodiversity improvements for all development. Again, its implementation will rely on their political priorities and the quality of information they are provided. The arguments for a 'net gain' approach are discussed in Chapter 2 and are discussed further in the chapters on offsetting.

Conclusions

The following table examines the set of policies discussed above against the aims and principles we identified as crucial to the success of biodiversity policy in Chapter 3.

66 Natural England (2012) Available from: http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/funding/nia/projects/niawinners.aspx

67 Interview with Brian Eversham, The Wildlife Trust

68 Defra (2010) p.21

Table 4.3: How well do current policies that affect biodiversity meet aims identified in Chapter 3

Policy	Protects and enhances biodiversity?		Reflects biodiversity valuation?	Efficient use of resources?	Balances local vs national priorities?	Clear, transparent, easy to use?
	Protects?	*Enhances?*				
Designated areas – Tier 1	Strong protection	No, as only protects site. Risks ghettoising habits	Very crude. Most important biodiversity areas are most strongly protected, but other areas have little value	Risks fragmenting ecological networks	Most important national sites are protected. Local needs not accounted for	Clearly designated.
Designated areas – Tier 2	Some protection, but weaker than Tier 1,3	Only protects site	Crude, but most important biodiversity areas are designated	Risks fragmenting ecological networks unless joined up	Most important local sites are protected	Clearly designated
Designated Areas – Tier 3	Strong protetion	Only protects site	Not biodiversity designations	Risks fragmenting ecological networks unless joined up	Most important national sites are designated. Local needs not accounted for	Clearly designated
Green Belt	Gives strong protection for sites, but not a biodiversity designation. Often low-quality biodiversity	Only protects site.	Not biodiversity designation. Often poor quality sites. May hamper development of ecological networks.	Not a biodiversity designation. Often land is of poor biodiversity quality.	Beneficial only for those who live nearby. Risks encouraging reduction in urban greenspace	Clearly designated
Biodiversity Duty	Weak	Weak	Weak. Only if a local priority	No resources committed	Focus on protecting biodiversity in Local Authority Area	No, as fails to provide clear message for planners
National Indicator reporting	Encourages greater focus on protection	Encourages protected sites to be improved	Focuses on SSSI condition	Yes. Nudges Local Authorities to make improvements, without commiting them to do so	Data is on biodiversity in Local Authority area, but focuses on most important national sites.	Simple measurements. Could be expanded to additional measures
EIAs	Depends on both quality of EIA and follow up. Unclear developers best placed to do them	Depends on both quality of EIA and follow up	In theory, they should ensure biodiversity of a site is properly valued. However, inconsistenly applied in practice	Depends on quality and how Local Authorities and developers use the information	Depends on quality. Likely to focus on local priorities, as local planners make decisions	More complex and depends on quality
Section 106	Yes, although depends on priorities of planners and councillors	Depends on commitment of planners. Only improves biodiversity "where possible"	Yes. If done properly	Yes. Should try and find the cheapest way of maintaining biodiversity	No. Will focus on local concerns	Difficult, as will involve negotaitions, including competing priorities (such as housing). 'Net gain, where possible' is a confusing formulation
Local Green Space designation[69]	Potentially strong protection	Weak. Only protects site.	Crude. Not necessarily a biodiverity designation.	Not a biodiversity designation.	Priority is local, rather than national, importance	Clearly designated, but may overlap with other designations
Nature Improvement Areas	Yes. Should support existing important sites	Yes. Focuses on creating new, important areas	Yes. Money will go to most valuable sites. Competition will reveal value of new sites	Yes. Competition should help reveal best value sites. Will also have added benefits of identifying other important sites which may receive funding elsewhere	Focused on nationally important areas	Transparent competition with clear rules
Local Nature Partnerships	Weak	Weak	Weak	Overlaps with existing bodies	Will focus on local priorities only	Depends on design

Weak incentives Medium incentives Strong incentives

The analysis in the table opposite shows that legislative measures and planning guidance have focused on simple protection of designated important biodiversity sites. It also shows that clear designations are relatively straighforward for developers and Local Authorities to use. The current planning system also makes some effort to balance local and national priorities, through different levels of protection (Local Wildlife Sites vs SSSIs).

However, the table highlights why planning policy has struggled to support the creation of a complex, coherent network of ecological protection in England:

1. While the designated areas themselves are well protected, they are effectively ghettoised. The system largely focuses protection inside these ghettoes and provides insufficient incentives for protection and enhancement of other areas. This means they are underprovided, and has resulted in a fragmented system.
2. Some elements of the planning system that attempt to provide mechanisms to properly assess the biodiversity value of land are poorly designed. The poor quality of information undermines the potential of the planning system to provide adequate compensation for damage to biodiversity (and to improve it). As a result, the system's ability to protect wider biodiversity has been 'patchy'. In particular:

- ***Section 106 Agreements.*** Because these agreements balance a raft of competing pressures, biodiversity is often submerged by more immediate political priorities.
- The ***National Planning Policy Framework*** states that development should deliver a 'net gain' in biodiversity 'where possible', although this is not clearly defined. This is likely to confuse planners, and again relies on the level of political commitment to this issue. This contrasts with the Natural Environment White Paper, which makes a clearer commitment to enhance biodiversity protection.

Policy recommendation: The National Planning Policy Framework should state that all developments requiring an Environmental Impact Assessment need to deliver an overall 'net gain' in biodiversity.

- ***Environmental Impact Assessments*** are haphazardly applied, depending on the level of interest from Local Authorities. Partly this is the result of making the developer commission and provide them. Developers are not incentivised to provide the most detailed possible environmental analysis as it may mean delay in their projects. This means planners are not always provided with adequate information about the biodiversity cost of a development, hampering their ability to protect the natural environment.

Policy recommendation: Environmental Impact Assessments should be commissioned by Local Authorities, but still be paid for by developers.

3. The competition for ***Nature Improvement Areas***, in the Natural Environment White Paper, was an excellent innovation. It fostered competition and

69 This was also introduced in the NEWP.

therefore price discovery. There should be additional benefits beyond those innovative, prize-winning projects, highlighting the potential for biodiversity improvement across England.

Policy recommendation:. Competition for Nature Improvement Areas should be extended when funds are available. These areas should enjoy the same level of designation as current high value biodiversity sites.

5
Agri-Environment Schemes

This chapter considers how policies funded by the Common Agricultural Policy (CAP) have contributed to biodiversity protection and how they may be reformed. Farmland covers 70% of England and includes some of the most important sites for biodiversity. CAP is the largest source of funds for biodiversity protection in England through Agri-Environment Schemes. The EU is currently reviewing the structure and amount of CAP funding.

Brief History of Agri-Environment Schemes (AES)

The first AES in England was set up in 1985 in East Anglia, where farmers were paid not to drain or plough grazing marshland. In 1987, the government set up Environmental Sensitive Area (ESA) schemes. As well as promoting biodiversity, these schemes also focused on important landscape and cultural sites. A further scheme, the Countryside Stewardship Scheme, was set up in 1991 to cover important habitats outside ESAs.

Box 5.1: Rough guide to CAP funding

CAP funding is divided into two pillars. The first, and much larger, pillar goes towards direct support for food production. In England, around £1.5 billion is shared between 100,000 farmers every year. Pillar 2 payments are used for environmental protection and rural development. The EU imposes limits on how much can be spent in each pillar, but allows some transfers (or modulation, in the jargon) between the different pots. England transfers the maximum possible amount to Pillar 2 payments. Defra also provides considerable support for the scheme.

Currently, around £600 million is spent each year on Pillar 2 in England. Of this, around £446 million is spent on 58,000 agri-environment schemes. The money is mainly directed towards farmers and landowners, but other organisations, including conservation NGOs, also benefit. The UK gets 3.5% of the EU's CAP budget compared to 17.5% for France. Pillar 2 funding, spread over the usable farming area of England, is £48/ha/yr, one of the lowest rates in Europe, despite the maximum modulation from Pillar 1 funding.[70]

Following the introduction of 'Pillar 2' CAP funding in 2000 (see Box 5.1), a review of agri-environment schemes proposed significant changes. The Policy Commission on the Future of Farming and Food recognised that the schemes had helped reverse some of the damage to the natural environment from

70 Natural England (2009) *Agri-Environment Schemes in England 2009: A review of results and effectiveness*

farming intensification, but had not been as successful in dealing with more complex, high quality habitats.[71] It recommended any new scheme had a 'broad and shallow' element to complement the 'narrow and deep' existing schemes. As a result, in England ESA and CSS ('classic schemes') were replaced by the Environmental Stewardship Scheme (ESS).[72] ESS has two elements – Entry Level Stewardship and Higher Level Stewardship. The ESS has five priorities:[73] looking after wildlife; maintenance and enhancement of landscape; protecting the historic environment; protection of soils and reducing water pollution; educational and visiting opportunities.

Current structure of Agri-Environment Schemes (AES) in England[74]

Entry Level Stewardship (ELS). This is the 'broad and shallow' section of the scheme. It rewards farmers and others for meeting basic environmental management requirements. Using a points system, farmers are paid for taking steps such as improving boundaries, including hedgerows, or providing buffer strips at the side of fields. Agreements typically last five years. An average ELS annual payment is £4,000, but can range from £20 to £180,000 depending on the size of the farm and type of environmental management undertaken. There are around 33,000 ELS schemes in England, out of a total of 58,000 agri-environment schemes.[75]

Higher Level Stewardship. This is the 'narrow and deep' element of the scheme. It focuses on the most important biodiversity areas, and is particularly targeted at supporting the management of SSSIs and BAP habitat areas. There is a much wider range of options available under HLS. Administration costs are higher as more detailed measures are developed in consultation with Natural England, including floristically enhanced grassland, maintenance of species-rich grassland, and arable reversion by natural regeneration. Agreements last for 10 years. HLS annual payments range from £200 to £327,000, with an average of £18,000.

The Coalition government increased the funding for HLS schemes, rising from £84 million in 2011/12 to £156 million in 2013/14 (at the expense of money to fix farm buildings and improve access to the countryside). This move appears to have led to a significant increase in the number of HLS schemes during 2011 (projected figures see a rise from 1,738 schemes in 2009/10 to 2,400 schemes in 2011/12).[76] The decision to increase funding was a response to the excess demand from landowners to take part in the scheme.[77] This suggests considerable appetite from farmers and other landowners to use their land for conservation, if the incentives are attractive enough.

In order to best target funding to the most important areas, in 2008 Natural England developed a map of 110 important areas in which HLS schemes should be focused.[78] Applicants in those areas are much more likely to receive funding than those outside. This moves beyond the designation approach of the planning system and recognises that important habitats need supporting connections and buffer areas. It is therefore a welcome effort to try and place a clearer value on the most important biodiversity areas and avoid the ghettoisation of important habitats identified in Chapter 4.

71 Policy Commission on the Future of Farming and Food (2002) *Farming and Food: a sustainable future.*

72 Many of the original ESA and CSS schemes are still in place, but the last will expire in 2014.

73 Secondary objectives of flood management and conserving genetic resources are also included. Climate Change adaptation and mitigation was added as overall theme in 2008.

74 There are also Organic Entry Level Stewardship, Organic Higher Level Stewardship and Upland Entry Level Stewardship Schemes. These are less important in terms of biodiversity protection.

75 Natural England (2009) p.28

76 Natural England (2011) 'Record number of HLS agreements to start in 2011/12'. Available from http://www.naturalengland.org.uk/about_us/news/2011/290311.aspx

77 Defra (2011) *Options Stage Impact Assessment: Offsetting the impact of development on biodiversity.* p.32

78 Natural England (2008) 'HLS Targeting'. Available from http://www.naturalengland.org.uk/ourwork/farming/funding/es/hls/targeting/default.aspx.

Assessment of AES schemes[79]

Success:

- Coverage. There are 58,000 AES schemes in England. 19,000 'classic schemes', established before the introduction of ELS and HLS regime, remain in place. The schemes cover around 6 million hectares, around 66% of England's agricultural land (against a target of 70%).
- The schemes have been crucial in "defusing long running tensions between farming and environmental interests and providing a way of maintaining our most cherished landscapes, even during a period of agricultural intensification."[80]
- Impact on food production is marginal. Only 1% of ELS agreements involve stopping agricultural production.
- Coverage of important biodiversity areas. 84% of BAP priority habitats benefit and 93% of eligible SSSIs are under agreement. This is a considerable contribution to the most important biodiversity areas.
- The schemes do seem to improve the biodiversity quality of the areas. 93% of areas covered by AES are 'favourable/unfavourable recovering', compared to just 73% in non-AES sites.
- Some threatened farmlands birds, including Cirl Buntings, have seen significant improvements in number (out of 59 BAP bird species, 29 are associated with farms).
- HLS has "produced a definite improvement in the approach to habitat creation".[81] This has begun to overcome the weaknesses of earlier schemes.
- There remains considerable uncertainty about the economic benefits of such schemes, and more work is required in trying to value their success.[82] Different assessments have identified benefits per £1 million spent ranging from positive £81.3 million (South Downs ESA) to negative £0.94 million (Somerset Levels and Moors ESA).[83]

Shortcomings:

- ELS has not yet reversed declines of some widespread species of farmland birds. More evidence is needed to assess the effect on skylark or yellowhammer numbers. Part of the reason for this decline may be conflict with other policy measures, such as the ending of compulsory set-aside in 2007 (see below).
- The ELS system of contracting based on a set list of measures is an unsophisticated method of achieving desired outcomes. Perhaps inevitably, farmers have tended to prefer the simplest or cheapest options for gaining the subsidy (hedgerow management, permanent grassland) while there is a low uptake of the more valuable, and expensive options (in-field options, such as crop rotation). To try and overcome farmers' reluctance to take on more complex measures, the Campaign for the Farmed Environment was set up (see Box 5.2).
- There is evidence that HLS has so far failed to provide the number of high quality, complex schemes that it hoped to, such as species-rich grassland and habitats for breeding waders. Standards of management of HLS sites are "variable".[84]
- In addition, some of the schemes are not adequately tailored to local conditions, and necessary market correction mechanisms such as feedback, monitoring and adjustment have not yet taken place.

79 This draws on Natural England's *Agri-Environment Schemes in England 2009,* the most comprehensive review of agri-environment schemes.

80 Natural England (2009) p.98

81 Natural England (2009) p.4

82 Defra is currently exploring this with Natural England.

83 Hanley, N., Whitby, M., Simpson, I. (1999) 'Assessing the success of agri-environment policy in the UK'. *Land Use Policy* 16:67–80

84 Natural England (2009) p.102

Box 5.2: Campaign for Farmed Environment

This was set up as a voluntary approach to mitigating the impact of lost set-aside, in collaboration with the National Farmers Union. The campaign encourages farmers to take measures to help farmland birds, protect water and soil resources and biodiversity provision. In particular, it aims to nudge farmers towards taking up more complex measures under ELS, which are currently neglected, rather than mandating them. Surveys show CFE is failing to meet some of its key targets on set-aside and uncropped land. The Government is due to review the success of CFE in 2012.[85]

Proposed CAP reforms

In October, the European Commission released its proposed reformed CAP budget for 2014–2020.[86] It has important implications for biodiversity policy. The major relevant proposals are:

- Overall CAP budget reduces 2% a year in real terms up to 2020. Pillar Two budgets will remain the same in cash terms for the next seven years. In effect this is likely to lead to a cut in the level of funding for supporting the most valuable biodiversity.
- The Commission proposed the 'greening' of Pillar One. 30% of Pillar One payments will now depend on farmers making key greening measures. These include:
  - Arable farmers growing at least three different crops, with none exceeding 70% of the total farm area.
  - Farmers leaving 7% of their land fallow (set-aside)
  - Ensuring permanent pasture is maintained.
- Cap of EUR 300,000 for a single farm. This is to counter criticism that giant farms were swallowing up most of the subsidies.

These measures have faced considerable criticism from the UK government, particularly the design of 'greening' of Pillar 1.[87] By making each farm's payments dependent on providing set aside and other listed requirements, it makes little attempt to direct the subsidy to the highest priority biodiversity areas. It could, in theory, mean that land with low biodiversity value is taken out of food production, at a considerable cost which could have been used to enhance land with higher biodiversity value. Similarly, by specifying particular techniques, it limits the ability of farmers and landowners to identify the most appropriate conservation measures.

Assessment of current agri-environment schemes

Table 5.1 shows that, while the current system of agri-environment schemes has delivered considerable biodiversity enhancement, which has reversed some of the long-term trends, there still remains potential to improve their cost-effectiveness, their ability to deliver the most complex measures and how successfully they are monitored.

85 Defra (2001) p.24

86 European Comission (2011) *Impact assessment: Common Agricultural Policy Towards 2020*

87 Defra (2011) 'CAP plans don't get to the heart of challenges' Available from: http://www.defra.gov.uk/news/2011/11/14/cap-devolved-administrations/

Table 5.1: Assessment of existing policies and proposals against aims

Policy	Protects and enhances biodiversity?	Reflects biodiversity valuation?	Efficient use of resources?	Balances local vs national priorities?	Clear, transparent, easy to use?
ELS	Yes. Has helped overcome traditional tension between food production and environmental management	No. All farms are eligible, no matter the biodiversity of the land	No. Checklist approach encourages cheapest measures, rather than most important measures for biodiversity	Available to all farmers	Yes. Easy for farmers to apply. However, there have been considerable problems with the Rural Payments Agency, which administers the scheme[88]
HLS	Yes. Most important policy to maintain high value, protected sites and improve quality of England's biodiversity	Money is more targeted at most important biodiversity areas since mapping was introduced	While money is targeted at most important areas, HLS has not delivered the most complex schemes. Still potential to improve cost effectiveness	Focused on most important national priorities thanks to mapping	More complex than checklist, therefore higher administration costs. Monitoring and feedback have not been as effective as hoped
CAP reform proposals – greening of Pillar 1	Yes. Will provide biodiversity benefit	No. All farms will be eligible, no matter biodiversity quality of the land	No. Support will go to all farms who take measures, not those with the highest biodiversity value	Available to all farmers	Yes, although will require considerable monitoring
Pillar 2	Yes, but less money available than current system	Assume as above, but less money available	As above, but less money available	As above	As above

The main weakness of the ELS is that it offers a single payment for carrying out a set list of prescriptions. Inevitably, farmers are placed in an advantageous position compared to regulators. Farmers have a much better idea about the costs of different measures and are likely to choose the cheapest options. This has been borne out by the difficulty of getting farmers to choose the more complex measures listed under ELS. It is unlikely that the voluntary Campaign for the Farmed Environment will be able to overcome this. This problem of information asymmetry is a fundamental weakness.

Moreover, payments are often based not on outcomes but on efforts towards a pre-determined goal. Such a system relies heavily on monitoring and enforcement in relation to activities to ensure compliance. As we have seen with HLS, it is not always clear if these checks are always in place, creating moral hazard. Only a small number of ELS sites will be inspected. As a result, management of sites can be patchy. If landowners do not think their management of biodiversity sites will be scrutinised, they are less likely to keep to their agreements. HLS has also struggled to deliver the most complex schemes, which may reflect both the difficulty of ecological restoration and a system that does not adequately reward innovation.

Unfortunately, some of these weaknesses will likely be exacerbated under the proposals for CAP reform. The proposals fail to recognise that different pieces of

88 Environment, Food and Rural Affairs Committee (2007) *The Rural Payments Agency and the implementation of the Single Payment Scheme*

land have different values in terms of biodiversity protection. Its likely effect will be to keep low value biodiversity land out of food production, while reducing the funds available to protect the most important biodiversity.

Alternative and innovative potential policy mechanisms

The weaknesses of the current approach lead to information asymmetry, moral hazard and a struggle to reward innovation. As a result, it is less likely to deliver the most cost-effective conservation activities. This suggests a potential role for the greater use of market mechanisms, which are often adept at overcoming these problems.

The Natural Environment White Paper said it wanted to: "pilot an approach to Environmental Stewardship that … increases its focus on outcomes, including the possibility [of allowing greater flexibility] within agreements in how these outcomes are achieved."[89] This supports findings from Natural England that argued for the further consideration of market mechanisms in improving outcomes for agri-environment schemes.[90] So what policy mechanisms could use the available funds more flexibly – and also efficiently and in ways which encourage innovation and price discovery in conservation measures? Below, we consider two of the most-promising mechanisms, auctions and outcome-based contracts.

Auctions

One way to address the information problem – that a farmer knows more about his costs that the funder – is through the use of auctions. Such a system allows the cost of conservation measures to be revealed through a competitive bidding process. For example, in a 'reverse auction' landowners would bid for a share of a pot of money to provide an environmental enhancement. This would reveal more about the compliance costs of different conservation options and, in theory, ensure the available money is spent more efficiently. In addition, an auction can encourage greater innovation by allowing new entrants (perhaps NGOs) or new conservation techniques to bid in. This is likely to reduce the overall cost of biodiversity protection.

There are various design considerations when thinking about an auction for conservation. Some of these questions have been dealt with by international and domestic attempts to develop conservation auctions (see Box 5.2).[91] In particular:

- Discriminatory vs uniform price. In a discriminatory auction, the winner is paid an amount equal to the winning bid to deliver the conservation activity. The risk of such an approach is that participants overbid to win. However, in a uniform price auction all successful bidders earn the cut-off price, either the highest accepted or the lowest rejected bid. This leads bidders to bid only their opportunity cost, as the amount they receive will not be based on their own bid. As a result, the revealed information is more useful.
- Fixed budget vs cap. Auctions can set a fixed budget or fixed target (a cap) where the desired level of spending or conservation outcomes are set. All bidders are accepted up to the point that a target is exceeded (such as the area of conservation activity).[92]
- Comparing bids. Unlike some goods or services, it is not straightforward to compare different biodiversity protection measures. However, metrics

89 Defra (2011) p.25

90 Natural England (2009) p.105

91 The most comprehensive examination of potential market mechanisms is Lactacz-Lohmann, U. & Schilizzi, S. (2005) *Auctions for Conservation Contracts: A review of the Theoretical and Empirical Literature.* Report to the Scottish Executive Environment and Rural Affairs Department.

92 There are no theoretical advantages to either, but politicians may prefer the certainty of a fixed budget.

have been developed to compare different habitats (including by Defra, see Chapters 6, 7). The work by Natural England to identify the most important habitats for HLS funding should also make comparisons possible. Innovative auction design can also allow joint bids by neighbouring landowners to attract a premium, potentially increasing their biodiversity value. Such an 'agglomeration bonus' can recognise the additional biodiversity connected strips of land can provide to ecological networks.[93]

- Repeated auctions. The risk of repeat auctions is that bidders learn to 'game', in particular where to pitch bids to receive the maximum payment. It is therefore crucial that some information about the outcome of a previous round of bidding is withheld or that auction rules are amended for each round.

Box 5.2: International experience

1. Conservation Reserve Programme, USA. Set up in 1986, the scheme pays landholders to retire lands from farm production for 10–15 years. Interested bidders have the biodiversity quality of their land assessed, and then bid into an auction for different environmental protection actions. Around 13.6 million hectares are now protected. While the scheme was successful initially, its effectiveness has diminished as the auction design has allowed landholders to learn where the cap lies, highlighting the risks of repeat auctions.

2. BushTender pilots, Victoria, Australia. Landholders expressed interest in the auction and then a governing agency assessed the quality of the land by a visit. Bids were ranked according to the ratio between the bid price and the land quality. The highest per dollar value bids were then chosen, until the budget was reached. Some analysis has found the scheme delivered a 700% benefit compared to that obtained by a fixed price scheme, although the methodology of this assessment is questioned by others.[94] Transaction costs were high, around 50–60% of the amount spent in the auction. The auctions lasted from 2001–3.

3. Auction for Landscape Recovery, Western Australia. Interested parties submitted bids, including details about the anticipated environmental outcomes. The bids were then assessed, including a metric of how they fitted within regional priorities (ie those sites which are closest to the most important areas, or link them, have a higher value). Tentative estimates of the benefits for round one of bidding varied from between 207–315% compared to a fixed price scheme. In round two, this fell to 165–186%.[95] Administrative costs were not higher than other similar schemes.

4. EcoTender, Victoria, Australia. The scheme uses information about a catchment area to determine value of bids. In addition, a farmer can bid for several projects together or each separately, and bids can be pooled between landowners. Like the Western Australia scheme, this aims to recognise that combined efforts from neighbouring landowners are more valuable than individual entries. In addition, payments are both input-based and output-based.

93 Lab experiments show that bonuses can lead to greater co-ordination. See Parkhurst, G. & Shogren, J. (2007) Spatial incentives to coordinate contiguous habitat. *Ecological Economics* 64 (2):344–55

94 Stoneham, G., Chaudhri, V., Strappazzon, L. (2003) Auctions for conservation contracts: an empirical examination of Victoria's BushTender trial. *The Australian Journal of Agricultural and Resource Economics* 47(4):477–500

95 White, B. and Burton, M. (2005) Estimate of adminstrative and allocative efficiency of the Auction of Landscape Recovery. Provisional Report for the National Market Based Instruments program. Cited in Lactacz-Lohmann & Schilizzi (2005)

5. Challenge Funds, Scotland. Bidders applied to the Forestry Commission and the best value bids were chosen. Research found that to achieve the same increase in forest under a fixed price scheme would need a budget 33–36% higher. However, the fund was scrapped after it was criticised for being 'unfair' as it created too much uncertainty for applicants.[96]

6. Grassland Conservation Pilot Tender, Germany. Designed to maintain low intensity grazing schemes. Failed to attract enough participants, as uncertainty over yield losses and reform of CAP undermined interest.

Outcome-based contracts – payment by results

Rather than paying farmers and landowners based on their activities to improve habitats, an alternative is to pay them only when they have achieved specified environmental outcomes (eg higher number of species) or at least link part of the payment to outcomes. This would encourage farmers, who have much of the knowledge about what works best in delivering outcomes and an ability to innovate, to focus on achieving the desired outcomes.

Latacz-Lohmann and Schilizzi argued for policymakers to consider greater experimentation with such contracts. However, they warn contracts may prove unattractive to participants, as achieving biodiversity outcomes depends on a large number of factors, many of which might be outside the farmer's control. In addition, observing environmental outcomes is difficult. One compromise is to allow at least a proportion of any subsidy payment to be paid on delivery of specified outcomes.

Potential of market instruments in agri-environment schemes

Auctions, and other market-based mechanisms, should in theory encourage innovation and improved price discovery, leading to greater environmental outcomes for a given amount of funding than fixed price schemes, such as ELS. And in practice, amongst the existing market-based schemes examined in Box 5.2, are examples of some substantial improvements in bang-for-buck on environmental outcomes. However, the examples also highlight problems which have been encountered, such as bidder learning and lack of participants. Each potential market will have its own relevant characteristics. Market-based schemes need to be carefully designed, to ensure that schemes account for relevant characteristics, and address problems which arise with experience.

In any case, the test for trying an innovation is not whether it will be perfect first time, but whether it is likely to improve on current arrangements, and whether it can be improved with testing. It too early to recommend roll-out of an auction or outcome-based contracting for all agri-environment schemes. But there looks to be a very good case for experimenting and piloting in this area.

Conclusions

1. The current system of agri-environment schemes has enjoyed considerable success. It has helped reduce the traditional tension between food production

96 CJC Consulting (2004) *Economic Evaluation of the Central Scotland Forest and Grampian Challenge Funds*. Final report for Forestry Commission Scotland.

and environmental protection. It has led to some significant successes in improving numbers of threatened species.

2. However, there is significant potential to focus the funding on the most important biodiversity sites, encourage greater innovation in conservation activities and improve the cost-effectiveness of how the funds are spent. In particular:
   - Farmers using the ELS system have, inevitably, focused on the cheapest possible measures under its crude checklist design. While this makes it easy for farmers to use, the scheme has struggled to direct money to the most important, but more expensive, biodiversity measures. This is partly a result of inevitable information asymmetry between regulators and landowners.
   - The HLS scheme has struggled to provide new, more complex and high value biodiversity sites.

   In addition, there are concerns that the management of different sites is patchy, possibly as a result of a lack of monitoring and enforcement.
3. Proposals for CAP reform risk undermining conservation activity and doing even less to focus available resources and costs on the most important biodiversity areas and activities. The greening of Pillar 1 provides a crude way of valuing biodiversity.

“Proposals for CAP reform risk undermining conservation activity and doing even less to focus available resources and costs on the most important biodiversity areas and activities”

Policy recommendation: The EU should abandon current plans for the 'greening' of Pillar 1. Instead it should increase payments to Pillar 2 (under a reduced overall CAP budget), and encourage market-based solutions to environmental improvements.

4. More market-based mechanisms, including auctions for conservation schemes, could overcome some of the problems of information asymmetry, encourage greater innovation and provide greater value for money. It is not yet clear which design of an auction or other market-based mechanism is best suited to different biodiversity improvements. However, this area is ripe for policy experimentation and piloting.

Policy recommendation: Common Agricultural Policy. Government should use funding under Pillar 2 to test auction and other market-based system to deliver environmental improvements.

6
Biodiversity Offsetting

Biodiversity offseting is a tool that allows the negative environmental impact of development or land use change to be compensated for by providing the equivalent level of, or additional, environmental benefit at another location (see Box 6.1). This chapter assesses the benefits of such an approach, as well as considering the risks and how they can be managed. Offsetting is currently being piloted in England.

Box 6.1: Rough guide to offsetting

Biodiversity offsetting works by creating an effective property right over the biodiversity quality of a particular piece of land. The more ecologically important (or scarce) the particular piece of land, the higher biodiversity value is attached, and therefore the more valuable the property right. Offsetting works by requiring a developer to compensate for the damage to this property right by undertaking or funding a scheme which delivers at least the equivalent biodiversity value as that lost.

Most offsetting schemes follow the "mitigation hierarchy", a key principle of planning policy. Offsetting is allowed only when the developer has already tried to find ways to *avoid* damage to biodiversity and made attempts to mitigate any residual damage on site. There are three main types of offsetting:[97]

- The developer implements the offset, either by itself or in partnership with an NGO or an environmental consultancy.
- The developer pays the government or regulatory authority to implement an offsetting scheme which will compensate for the level of damage. These first two are currently possible in England under existing legislation.
- Biodiversity banking. The developer buys 'biodiversity credits' from a regulator, 'conservation bank' or a landowner, with equivalent biodiversity value to the damage the development has caused. The credits represent conservation improvements that have been made elsewhere and can be generated in advance on the expectation that there will be demand from developers (and others). In addition, debits from different developments can be pooled, and used to fund larger biodiversity improvement schemes.

International experience[98]

There is considerable and developing international experience of a range of environmental offsetting schemes. There are 39 existing schemes worldwide, with a further 25 in development. This represents an annual offset market of

97 Parliamentary Office of Science and Technology (2010) *Biodiversity Offsetting*

98 This section is based on findings from Madsen, B., Carroll, N., Moore Brands, K. (2010) *State of Biodiversity Markets: Offset and Compensation Programs Worldwide*; and Treweek et al (2009).

$1.8–2.9 billion. The most developed are in the United States and Australia, but there are also programmes in Asia, Africa and Europe.

US Wetland Mitigation Scheme

The scheme, developed following the Clean Water Act in 1972, is the most mature offset system in the world. The scheme works on a 'no net wetland loss' principle. Once the mitigation hierarchy has been followed, any developer who drains, fills or dredges a wetland or stream is allowed to buy offsets to compensate for the damage. Offsets must be located in a similar landscape. The permits are administered through the Army Corps of Engineers. The Corps is also responsible for monitoring the scheme. The scheme takes place separately within 38 different regions of the United States, with different rules for each region. The scheme allows a choice from all three offsetting mechanisms: developer provides its own offset; developer pays relevant authority 'in-lieu' of an offset; developer buys a credit from an authorised mitigation bank which restores, enhances, creates or preserves a similar wetland.

The scheme has created around 800 mitigation banks, many of which are 'sold out' or have been fully funded by development. In 2008, it created conservation payments of between $1.1–1.8 billion, providing 9,784 hecatres of wetland offsets. This was compensation for development on 7,608 hecatres (£72,400/ha), representing a net increase in wetland area of 29%.[99]

Strengths of schemes

- The scheme has stimulated considerable private sector, NGO and government involvement in the creation of offsets. This is because compensation is mandatory.
- Offsets are provided 'in perpetuity'. Funding is set-aside for long-term management.
- Liability for the quality of the offset is passed to the offset provider, rather than the developer. This creates an incentive for the developer to buy an offset, rather than manage it itself (although 'own offset' schemes are still favoured). In addition, it reduces uncertainty and the time it takes to deliver permission for a development.
- By consolidating schemes through banking, it reduces the number of schemes that require monitoring, and therefore the administrative cost of doing so.

Flaws in design

- Developers have tended to prefer to develop their own schemes, and these still make up the majority of offsets. These have proved not as reliable as mitigation banks in delivering conservation improvements. To recognise this, the rules of the scheme were changed in 2008 to favour mitigation banking.
- Previously, some offsets were not well-planned and did not work on a landscape scale. Offsets now must take place in a similar ecological area or habitat to where the development has taken place. In addition, the rules now favour developers buying credits from already-established conservation schemes, rather than new ones.
- The scheme's application in different regions has been patchy, depending on the quantity of wetland in a region, but also how the scheme is administered.

99 PX calculation. Based on Madsen et al (2010) figures, p.13

US Conservation Banking (species)

Any development which effects an endangered species must preserve or restore the habitat elsewhere of that species (once the mitigation hierarchy has been followed). Again, developers have the choice of three systems. The vast majority of offsetting takes place in California. The scheme is based on a species recovery goal. 65,078 acres (26,300 Has) have been conserved through banking, with $200 million was spent on new habitats in 2009 (data is only available for the banking element of the scheme). The cost of different credits ranges widely between different species, from $1,500/acre for a gopher tortoise relocation to $325,000/acre (£2,390/Ha to £517,922/Ha) for the preservation of a vernal pool.[100]

Strengths of scheme

- All conservation banks must be created before the impacts of development take place. This is a precautionary approach to conservation, which also provides some certainty to new offset providers that there will likely be a buyer for their project.

Flaws in design

- Patchy take-up rate by states, California dominates, with 83 'banks'. Only nine other states participate, with a maximum of three 'banks'
- Poor data and transparency. Lack of central registry for projects.

Australia's BushBroker

Set up in 2006 in Victoria state, it aims to protect native vegetation. Any clearance of native vegetation must gain a permit, a process that includes finding offsets. Offsets must be provided on a like-for-like basis, depending on the type of vegetation destroyed, after the mitigation hierarchy has been observed. They should also deliver a 'net gain' in biodiversity provision. Offsets are compared through the 'Habitat Hectares' system where the size and quality of the biodiversity affected or preserved is measured and scored, allowing easy comparisons (see Box 6.2). Development or offsets in areas of very high, high or medium conservation value areas are generally not allowed.

Suppliers of certified offsets post their schemes on the BushBroker website, a kind of offset exchange. The price is then negotiated with developers. Developers can also advertise for 'wanted' types of offsets. This has delivered around 700 Ha in purchased offsets, worth around AUD11.4 million (£7.3 million, around £10,400/Ha) with an assessed stock of around 2,750 Has advertised.[101] The BushBroker scheme is likely to expand considerably if Melbourne expansion plans are agreed.

The scheme has not delivered as many protected hectares as Victoria's auction schemes. BushTender (see Chapter Five) has achieved 17,000 Has of protection and PlainTender 5,000 Has, even though the potential income from these schemes is much lower than through the BushBroker scheme. However, the Tender schemes only require 4/5 years of guaranteed protection compared to the permanent protection required under BushBroker. The Tender schemes' administrative costs are also lower.

100 Ibid. p.17

101 Ibid. p.

Strengths of scheme

- Compulsory. 'Net gain' principle encourages participants, and reflects difficulty of recreating habitats compared to maintenance of existing sites.
- Transparent – offsets are listed on the Bushbroker website. This helps buyers and sellers to find appropriate compensation measures easily.
- Excellent quality of Australian biodiversity data has led to good biodiversity valuations, and allowed easy comparisons. While the credit system describes 2,500 different types of ecological vegetation (in effect that number of markets have been created), in practice only around 50–100 are actively traded.
- Liquidity – good supply of potential offets, curently outstripping demand.

Flaws in design

- Scheme is still developing, not yet full range of market participants.
- Not particularly flexible, offsets must be like for like in terms of habitat and relatively close to offset site.
- Need for permanent protection of sites and administrative costs have put off some participants in comparison with BushTender auctioning schemes (even with lower rewards).

Australia – biobanking

The New South Wales scheme was established in 2007. Any urban development is required to 'improve or maintain' the damage it creates. The damage is assessed in a biobanking statement. One option for offsetting is buying credits from a mitigation bank, or 'biobank'. Developers must meet an 'improve or maintain' test.

Offset providers register their projects, or biobanks, on a public registry. A trading floor allows buyers to find sellers. Currently, there are only six biobanks and it is too early to see how successful the scheme will be. Early assessment suggests that developers still prefer to line up the credits themselves, rather than use the central registry (which is what happened in the US schemes). Offset providers can charge any amount, but there are high upfront costs to participation, which may be putting participants off.

Strengths of Scheme

- Public registry of available information and retired credits.
- 'Improve or maintain test' may encourage greater action than simply 'no net loss' principle.
- May create demand for landowners to provide offsets, rather than operating on an ad hoc basis reacting to development.

Flaws in design

- Early evidence is that high upfront costs are putting off offset developers, such as landowners, from registering. This could limit the number of participants, and therefore keep the price of offsets high.
- The scheme is voluntary. Developers are likely to prefer to provide their own offsets, rather than buy biobank credits.

Box 6.2: Comparing biodiversity

Comparing economic values of biodiversity and ecosystems services is hard in comparison with more uniform environmental problems, such as carbon or SO2 emissions. Despite this, useful efforts have been made to produce simplified systems for comparing different sites. Factors to be considered in the design of such a system include the size of the area affected, the scarcity of such a habitat, a risk premium in creating new sites compared to maintaining existing sites, the condition of the land being developed and its position in a wider ecological network. Habitat Hectares in Australia is one of the most sophisticated systems. It measures 10 different characteristics of a site including tree canopy, patch size and proximity to ecologically important, or core, areas. These are assessed against benchmarks to arrive at a compensation ratio.[102] The scheme requires expertise to operate, and therefore has high administrative costs (though these may be offset by the benefits from better prioritising enhancement resources).

Defra and Natural England have created a simpler comparison metric for use in the voluntary offsetting pilot scheme (See Chapter 7).[103] The metric was based on: the type of habitat (ranging from very important BAP site to intensive agriculture); the condition of the site; and the connectedness of the site. In addition, there was an additional risk premium added, reflecting the difficulty of restoring a site compared to maintaining one. The metrics are combined to provide a number of 'credits' that any development would need to offset in order to be granted planning permission.

The benefits of offsetting markets

The evidence from international experience suggests there are considerable potential benefits of using offsetting market mechanisms. As discussed Chapter 5, markets can provide significant environmental benefits in overcoming some of the problems with existing policy tools. In particular, a well-designed market in offsetting may deliver the following benefits:

- Dealing with information asymetries. As the experience of agri-environment schemes shows, authorities find it difficult to establish the actual costs of conservation measures, given farmers' private information advantage. Market-based schemes may be able to reveal the real costs of conservation activity by promoting competition between different providers. The ability of current offsetting mechanisms in England to achieve this is explored in the next chapter.
- Pluralism and innovation. A well-organised credit scheme should stimulate the provision of offset schemes. By providing a clear demand for offsets, this should increase supply and competition. It will also encourage innovation from landowners, farmers, NGOs and others to provide offsets. A system that relies on development-by-development offsetting will be less likely to encourage the same demand for offsets. Attracting a wide number of participants is crucial to the success of the scheme.
- Efficiency. Competition ought to help the best quality and value offset providers win out, achieving greatest amount of biodiversity protection for a particular sum of money.

102 Defra (2011) *Technical Paper: the metric for the biodiversity offsetting pilot in England*

103 Ibid.

- Banking schemes allow both larger offsetting projects to take place, as well support ecological networks rather than one-off, ad hoc compensations. Debits can be pooled to pay for larger schemes that individual developments on their own would compensate for. This could provide more valuable benefits for England's overall biodiversity.[104]
- Market and contractual discipline. Poor quality providers will generally find it harder to access the market. Two mechanisms operate here. Firstly, participants who develop a reputation for good offset provision will naturally do better in a competitive market and secure more funding. Secondly, the general contractualisation of biodiversity provision, including enforcement mechanisms that censure offset providers who fail to deliver satisfactory conservation schemes, should provude a quality-enhancing discipline. As a result, many conservation NGOs are likely to benefit from such a market.
- Transparency through the contractualisation of a market process will allow civil society and others to play a role in monitoring the success of schemes, providing further discipline on the market.
- Administrative costs: Credit schemes, if well-designed, can provide a more straightforward mechanism for developers to use, compared to negotiations with authorities over how measures should be designed.[105]

Designing robust policy for biodiversity offsetting

Despite the successes of international offsetting schemes, it is important for policymakers to consider the potential pitfalls of designing an offsetting scheme and what good design looks like. These are discussed below, as well as potential steps to mitigate these risks.

104 Defra (2011) Impact Assessment. p.40

105 Ibid. p.1

106 Adapted from POST (2010)

Table 6.1: Potential risks of offsetting schemes

Risk[106]	Desciption	Potential mitigation
Comparisons/ valuations	Comparing the biodiversity 'value' of different types of land is difficult.	• Comparison metrics have succeeded in international examples. • Using different approaches to different types of land. Development on land with highest level biodiversity value could simply be stopped, while less important areas could have offsetting system. However, such an approach may limit a market's ability to provide the cheapest offsets as it reduces demand.
Re-creation of sites	Transporting species to a new area, or trying to recreate a particular habitat is less likely to succeed than maintaining existing habitats.	• Observe mitigation hierarchy. Offsetting could be additional to/ follow onsite mitigation or avoidance. • Comparison metrics recognise a risk premium. As a result, creating new conservation schemes would receive fewer credits than maintaining existing sites. Used in several international schemes. • System could impose a 'net gain' principle.
Licence to pollute	By allowing developers to offset the impacts of their development, it absents them responsibility for the ecological impact of their development. In extreme cases, developers can build wherever they want, as long as they provide compensation.	• Observe mitigation hierarchy. • Restrict development on most important areas for biodiversity (SSSIs etc). • A properly designed scheme should direct development towards the areas of least biodiversity value and ensure adequate offsetting where no alternative.
Additionality	Ensuring that the improvements would not have happened anyway. Landowners could be paid for work they would have done without any incentive.	• A market-based system can overcome some of these problems by minimising such information asymmetries. A market in biodiversity protection will encourage cheap projects to 'bid' nearer actual cost. • Importance of monitoring projects and ensuring they are additional. Strong fines/penalties for breaches.

Risk	Desciption	Potential mitigation
Leakage	In creating a regulated system, polluters may just move to less restricted areas. This could causing more overall biodiversity damage if the area is more ecologically important than the site from where polluter has relocated. May happen if offsetting introduced in England, but not other UK or European jurisdictions.	• Offsetting, by identifying cost-effective biodiversity enhancements, ought to minimise the costs of environment policy. • Importance of trying to set up similar protections in different countries/jurisdictions. • Potential for using your system to support biodiversity protection in other countries (see chapter 8).
Long term management	How do you ensure that the offset scheme is well managed in the long-term? What does long-term mean in the context of biodiversity protection?	• Any new areas created could automatically become protected sites. However, this may rule out future changes to how land is used. • Funding for the offset should include the cost of long-term management. This could be for a set period or 'in perpetuity'. • Offsets could be established before they are purchased, to demonstrate effectiveness. • Offset providers with strong reputations and track records, such as conservation NGOs, will be more desirable. Good transparency and monitoring in a market should allow such groups to flourish.
A focus on low cost, low value	Creating a market with offsets transferable between different types of habitat (or species) will mean offset providers simply concentrate on the cheapest possible offsets without considering the wider balance of biodiversity provision in England. E.g. all offsets could be in the north of England, while the south is concreted over.	• Develop separate markets for different important categories of habitat. • Role for market-design – including effective comparative valuations – in directing offsets towards most important areas, not just cheapest. As a particular habitat becomes more scarce, its biodiversity value should increase, therefore making development less attractive and offsets which enghance it more attractive. • Observe the mitigation hierarchy • But there is a trade-off. By limiting the potential of supply of offsets to a particular ecological feature, you risk limiting the potential of a market to maximise overall biodiversity improvements for given resources.
Perverse incentives	When baselining the condition of habitats, landowners could deliberately degrade or neglect high biodiversity areas so that they could benefit from a payment by restoring it.	• Fines/penalties if found to have deliberately degraded land. • Importance of baselining/using existing good data of existing English habitats.
Local vs value for money	An offset market will finance schemes that provide the most ecological improvement for a set amount of money. This may mean offsets occur hundreds of miles away from the development. This may cause concerns for local residents who get amenity benefits from the green space near to them.	• Observe the mitigation hierarchy (see Chapter 3). • Amenity value of land should be protected through other existing legislation. It already enjoys considerable protection in the planning system and Green Belt. • Appropriate valuation of a system could include the recreational/ amenity/cultural benefits it provides, although this would likely increase transaction costs.

The table raises several key questions for policymakers to consider when they are designing offsetting schemes:

1. Should a scheme operate on a 'Net Gain', 'No Net Loss' or other principle?
2. How to design a fair and practical comparison system?
3. Should the offsetting scheme favour pooling of credits (banking)? Or should it be neutral in allowing developers to provide their own offsets?
4. Should the scheme only allow developers to purchase credits which have already been created, ensuring they have demonstrated some biodiversity benefit?
5. Should offsets be protected in perpetuity, or for a limited period of time?
6. Do you create a single market in biodiversity or create several different markets for different types of habitats?

7. Should areas of very high biodiversity value fall under the same system as low values areas?
8. Do you want national body to administer the scheme or should it be organised at a local level?

Conclusions

International experience shows that offsetting schemes have delivered considerable biodiversity improvements. They offer significant potential for price discovery and innovation, and improving cost-effectiveness. The schemes which have delivered the most significant biodiversity benefits have the following characteristics, which should be borne in mind when developing England-based schemes:

- Mandatory for developers. Such schemes have stimulated wide levels of participation from farmers, landowners, NGOs and many other support sectors, by providing greater certainty that conservation schemes will find a market.
- Systems where credits are pool, or bankeded, or 'banked', provided the best quality offsets, in comparison with allowing developers to provide their own offsets or allowing them to make 'in lieu payments'. Mature schemes have made mitigation banking their preferred option to reflect this, without banning alternatives. Larger mitigation projects are also easier to monitor than many smaller schemes.
- Most successful schemes have 'no net loss', 'improve or maintain' or 'net gain' principles.
- Transparency within schemes is beneficial. Firstly, it allows monitoring of schemes to be easily carried out by regulators and third parties. Secondly, it allows detailed comparison of different schemes (including cost, size, biodiversity characteristics). Thirdly, effective exchanges also allow buyers and sellers to easily identify each other, encouraging greater participation.
- Complex, but usable, systems and metrics to compare the biodiversity value of different pieces of land have been developed and work well.
- Schemes have tended to require that offsets replace the same type of habitat as that which is being lost. In effect, this creates multiple markets in different types of habitat or species. While this provides greater assurance that a particular type of habitat will be maintained, there is a trade-off as it may limit liquidity and cost-effectiveness compared to a more flexible scheme.
- High compliance costs risk putting off potential offset providers, who may prefer simpler schemes. There is therefore a need to try and keep schemes as simple as possible. Long-term commitments to protect a site have also been less attractive to offset providers than shorter-term ones, even if the rewards are not as great.

While there are significant risks in designing such an offsetting system, many of these risks are common to other markets, including environmental ones. Well-designed markets are adept at overcoming such risks, as well as improving cost-effectiveness.

7
Offsetting in England

This chapter considers what biodiversity offsetting that has already taken place in England under current planning legislation. It also assesses the system proposed under the Natural Environment White Paper (NEWP).

Supporting documents for NEWP showed that there was little understanding in central government about how much offsetting or use of similar biodiversity compensation mechanisms has taken place.[107] The lack of data underpinning NEWP is a severe weakness, both in trying to establish the success of previous policies and the ability to design new policy that can help reach Defra's biodiversity targets. We set out to try to remedy this, as described in this chapter. Defra has commissioned its own report to try and identify the extent of offsetting.

Offsetting in England – Freedom of Information Request

To try and establish the extent of offsetting in England, Policy Exchange sent out a request to 354 Local Planning Authorities in England, under the Freedom of Information Act 2000 and Environmental Information Regulation 2004.[108] It hoped to gather the following information:

1. Details of any planning permissions that required offsetting (action taken offsite) under the EU Directives, in particular the Habitats Directive.[109] Details of any offsetting schemes that were mandated under Section 106 agreements.
2. Details of how much each offsetting scheme cost.
3. Evidence of monitoring or managing of existing offsets, and what state they were in.
4. The extent of enforcement action taken against developers who had failed to carry out, or manage the offset agreements.
5. Whether the Local Authority had an in-house ecologist, or if they relied on outside expertise.

We used the following definition of offsetting, consistent with Defra's guidance: "Offsetting is where the impacts of a development are compensated for by creating a habitat on a separate site (as opposed to mitigation which takes place on site)". This was less specific than some of Defra's guidance, as we wanted to try and establish the extent of offsite compensation that had taken place under existing legislation. Legislation under the EU Habitats and Birds Directives mandate that if a development takes place on a well-protected site and the damage cannot be avoided or mitigated, developers must compensate for the environmental damage.

107 Defra (2011) *Options Stage Impact Assessment: Offsetting the impact of development on biodiversity.* p.10

108 A copy of the request is in the appendix

109 Where development may be allowed if unavoidable, *as long as* adequate compensation is provided. This is normally achieved by the provision of new habitat.

In addition, offsetting can take place under Section 106 agreements, driven by legislation on threatened species, planning policy guidance or local preferences.

Quality of data

Freedom of Information (FOI) is a useful, but somewhat haphazard tool. Success of any request can depend on the attitude of Local Authorities to both gathering and revealing data. Particular weaknesses of the data received include:

- Inconsistent approach to FOI between different councils. Some were excellent and prompt, keen to clarify any points raised by the request. 22 councils failed to respond properly, or claimed exemptions as the request would take too much time to answer or cost too much. One LA did not acknowledge our request.
- No Local Authority held any registry of offsetting schemes. Responses were therefore far from comprehensive and may favour more recent or 'live' schemes. Relying on institutional memory may be unreliable as a large number of Local Authorities do not have dedicated ecologists, who are most likely to be responsible for such compensation schemes. This is often the result of constraints on resources.[110] Equally, relying on memory alone may explain why the number of schemes appears to have increased in recent years.
- Lack of clarity over what legislation was driving individual offsets. Section 106 agreements were often not clear about what piece of legislation or planning guidance was driving the offset. As a result, it is hard to assess the success of individual pieces of legislation in driving improvements.
- Inevitably, it is impossible to establish through an FOI request whether the appropriate environmental procedures were followed for all appropriate developments. Our findings only show offsets that have taken place and are remembered, not where they *should* have taken place. This is an important area for further research.
- Confusion over what is an offset, and what is not. Our request defined an offset as simply schemes that takes place outside the footprint of the new development. This means offsets which lay very close or even across the project boundaries may have been included. While in line with Defra's definition, our approach was as broad as possible to try and understand what level of compensation had taken place.

Despite these weaknesses, the FOI request has provided a very useful starting point to assess how biodiversity offsets have been and are being implemented across England.

Key findings

Our FOI requests were sent to all 354 Local Authorities in England. These include unitary authorities, county councils and district councils.

Table 7.1: Summary of FOI request

Local Authorities sent FOI request	Responded with some information	Failed to acknowledge request	Failed to respond with useful detail	Response rate (those that provided some useful information)
354	331	1	22	94%

110 Treweek et al (2009)

Of those responding, 181 Local Authorities said they had no agreements that had used offsetting or offsite compensation schemes, while 132 said they had used some form of agreement. If we assume that LAs that did not respond carried out offsetting at the same rate, 42% of all LAs had carried out some form of offsetting.

In total, the FOI identified 197 examples of where some kind of offsite compensation had taken place. These range from one-off relocations of threatened species, as well as more sophisticated schemes that pool together sums from different developments to pay for large conservation projects. It is hard to gauge what proportion of the actual number of offsetting projects this figure represents. Interviews with those familiar with offsetting suggest it is conservative,[111] highlighting the weakness of record-keeping in this area. There are around 179,000 approved planning permissions in England each year and 7%, around 12,530, are subject to some kind of Section 106 agreement.[112] However, only a minority of these Section 106 agreements are linked to conservation.

The FOI findings suggests that there was a significant level of experience of biodiversity compensation among Local Authorities. Therefore, this highlights how Defra's assumption in the Natural Environment White Paper that no offsetting had taken place was flawed.

Types of compensation identified

The most detailed offsetting schemes appears to have taken place on very large sites, where the level of protection is high and compensation is compulsory (such as sites that fall under the Habitats Directive).[113] Coastal developments such as ports and flood defences, as well as road building schemes appear to have the most thorough offsetting schemes and documentation (eg Harwich, Immingham, Medmerry). These are likely to have had the greatest Local Authority and public scrutiny.

Examples of innovative compensation schemes

There are several example of innovative and useful compensation mechanisms where the benefits of development are directed towards the most high value biodiversity sites. This suggests that the prcinples of offsetting are already operating at a local level. These examples include:

- *Capturing the benefits of development and directing towards the highest value sites.* There were several examples of the pragmatic use of offsetting-type agreements that cleverly captured the benefits of development. In one example, a small development near an important protected area in Derbyshire was given permission as it was the only way to get funding to maintain the habitat.
- *Co-ordinating resources between Local Authorties.* One of the most innovative examples of the use of offsetting mechanisms was in the Thames Basin Heathland project. In this example, 11 Local Planning Authorities have developed a co-ordinated approach to new housing and development in or close to an important heathland. While development is likely to be refused very close to the important area, some development is allowed further away as long as it funds adequate provision of suitable greenspace.

111 Author interview with Brian Haversham, The Wildlife Trust.

112 Defra (2011) Impact Assessment. p.18

113 These are sites such as Special Areas of Conservation that are strictly protected sites under the Habitats Directive. Development is only allowed in exceptional circumstances.

The amount developers need to pay is made very clear beforehand on a per house basis and is used to support greater provision of greenspace and improvements to the heathland. More than 1,100 new dwellings have been given planning permission under this scheme in the past year, which could deliver £1.1 million of improvements to local greenspace.[114] This pragmatic and shared approach is an excellent example of capturing the benefits of development and directing the resources to the most important biodiversity sites.

- *Clear guidance for developers.* The Dorset Heathlands framework provides a similar co-ordinated approach between different planning authorities, and also offers very clear guidance to developers on what compensation they will be expected to pay for new housing near the important site. This is £1,724 for each new house and £1,034 for each new flat, which goes toward management and improvement of the Heathland. This certainty for developers is much easier than some of the complex negotiations through Section 106 agreements.
- *Directing resources to third parties, including conservation charities.* There are several examples of where developers have been instructed to make contributions to existing conservation projects. The Forever Meadows project in Lancashire, which restores and protects wildlife meadows, received funds from several projects, including a new waste gasification plant and a new rugby league stadium. Other payments were made by developers to Wildlife Trusts. In one project in Stockton-on-Tees, developers of a new industrial area were mandated to give a piece of land for the RSPB to manage. These examples show how Local Authorities can direct resources to the most important biodiversity sites. They also show that NGOs and conservation charities are seen as trusted bodies for delivering biodiversity protection.
- *Evidence of recognising 'risk premium' of creating new habitats.* Suffolk Coastal County Council agreed to the deepening of Harwich Port Channel on the basis that compensation measures included such a high risk premium that the offset could fail for five years and still reflect no net loss. This shows that well-designed compensation mechanisms recognise the greater risks of creating new habitats. As a result, they factor in a 'net gain' in any compensation measures they, as discussed in Chapter 4.

While these examples demonstrate welcome innovations and determination to deliver cost-effective biodiversity protection, they are backed by strong regulation such as the Habitats Directive. They are very much the exception. In general, the FOI suggested that the mechanisms designed to ensure the planning system protects and improves biodiversity were inconsistently applied and poorly monitored.

Comparisons

The incompleteness of most of the FoI returns makes comparisons difficult. Often the area of the development, the area of the offset and the cost of the scheme were not included or were hard to locate in the planning material. The table below extracts data where possible from the FOI responses (the number of responses that the figure is based on is included in brackets).

114 Documents available on Surrey Heath website at http://www.surreyheath.gov.uk/planning/tbh/meetings.htm

Table 7.2: Key results from FOI

Total spent on offsetting (n=71)	£9,277,803[115]
Total compensation areas (Has) (n=53)	1,916
Average size of compensation (Has) (n=53)	36
Compensation ratio (area of offset per 1ha of development). (n=33, where both size of development and size of offset provided)	0.58
Cost of offset per hectare (n=22, where both cost of offset and size provided. Cost per offset ranged from £1,000/ha to £140,000/ha)	£5,506

The actual quantity of offsets, both in terms of area and money spent, is likely much higher than these figures suggest. However, the responses do provide sufficient data to make some tentative extrapolations. We can estimate the total amount spent through offsets on biodiversity improvements under existing legislation across England at £35.8 million.[116] As discussed in Chapter 3, its is estimated that £16.7 million is spent every year through the planning system on conservation improvements (although many of these will be on site). Both figures are much lower than the amount spent on biodiversity through agri-environment schemes, at around £446 million a year. Offsetting is therefore a small contributor to the overall money spent on biodiversity protection in England. Such a sum is tiny when compared with the $1.8–2.9 billion invested in offsetting schemes worldwide.

Compensation

The FOI found that the average compensation ratio (the area of offset provided per hectare of development) was only 0.58. This suggests that current legislation is struggling to compensate for the ecological cost of development, even in cases where there is clear legislation. This is far from providing 'no net biodiversity loss', although it could depend on the quality of the offset provided (as well as what area it is actually compensating for). The US Wetland banking scheme saw compensation ratio of 1.29 hectares created for every hectare of development.[117] Other schemes, with a strong 'no net loss' or 'net gain' basis also deliver better compensation ratios.

Some schemes were poorly carried out or never materialised (although the reasons are not always clear from the information provided). In some examples, the Local Authority changed its mind over providing offsets, despite earlier agreement. These changes can even be driven by the developer (this appears to have happened with an application by a sports club in Stockport that would damage some grasslands. The developer has applied to change how the compensation was spent). This underlines the precarious position of biodiversity when it is effectively competing for Section 106 benefits with more politically pressing demands.

Translocation of wildlife was the most common offset, with 38 schemes set up specifically to move species, such as newts of slow worms. This suggests that where particular species are well-protected by legislation *and* there is a high level of awareness about the need to protect them, planners sometimes make efforts to

115 This figure does not include the Medmerry Flood Flood defence scheme, which costs around £8–10 million. This is because the cost include flood protection and did not separate the biodiversity element.

116 Calculation. The average cost per hectare of offset is £5,506. Average size of offset is 33Has. Number of offsets is 197. 5,506*33*197=£35.8 million.

117 See previous chapter.

ensure their safety. However, these offsets appeared to be carried out on an ad hoc basis, with little or no evidence that they were part of a wider system of ecological protection, or that they were the best use of funds. Often the impression given is that they appear to be the result of a box-ticking exercise.

Of course while there was considerable offsetting activity, the majority of Local Authorities provided no evidence of offsetting, even though planning guidance suggests enhancement to biodiversity should be incorporated "wherever possible" (once the mitigation hierarchy has been followed). This inconsistency supports finding from Treweek et al's scoping study ahead of the Natural Environment White Paper, which found current practice is "patchy".[118] The NEWP Impact Assessment supports this: "In other cases, although compensation is required, it is either token, piecemeal and small scale (and therefore not an effective use of funds), not commensurate to the harm done by the development or is simply not enforced."[119]

Cost

The average cost of an offsetting scheme was £130,700. This is higher than previous estimates, which puts the average cost of payments under Section 106 for conservation payments at £35,000.[120] This high figure likely reflects how larger projects, such as ports, roads and windfarms were more likely to provide clearer costings in planning material than much smaller projects. Therefore the FOI has a bias towards identifying the costs of larger projects (partly because they may have required more attention from planners and are therefore fresher in their memories).

The average cost per hectare of offsetting found in the FOI was £5,506. Work for GHK estimates that the present value of establishing and managing the high value biodiversity areas is £3,374 (based on £117/year for 200 years), on top of a one-off restoration cost of £1,077/hectare.[121] We use our figure in our cost-benefit analysis of a compulsory offsetting scheme in Annex 1.

Size

If the area of offsets provided is extrapolated to the full 197 projects, it suggests that 7,122 Has of offsets have taken place. Compared to the 5.6 million Has of land enjoying some kind of protection in England, including 1.6 million Has of Green Belt land, activity is very small.

Of the 47 responses that did provide clear data about the size of the offset, 7 were small (<0.5ha), 16 were medium (0.5–5ha), 23 were large (5–100ha) and 6 were very large (>100ha) (see Figure 7.1). The range was huge, from major, multi-million pound coastal projects to offset the damage of dredging for port construction to small scale projects, often transporting newts, slow worms and bats. However, descriptions of the other schemes which did not provide data about the size of offsets suggest the majority of the 197 schemes took place on a small scale. Again, this underlines the finding that many offsets were not considered as part of an ecological landscape, failed to benefit from the potential of 'pooling' credits that would be possible in an offsetting scheme and were simply box-ticking measures. Again, this is likely to limit the cost-effectiveness of the planning system in protecting biodiversity.

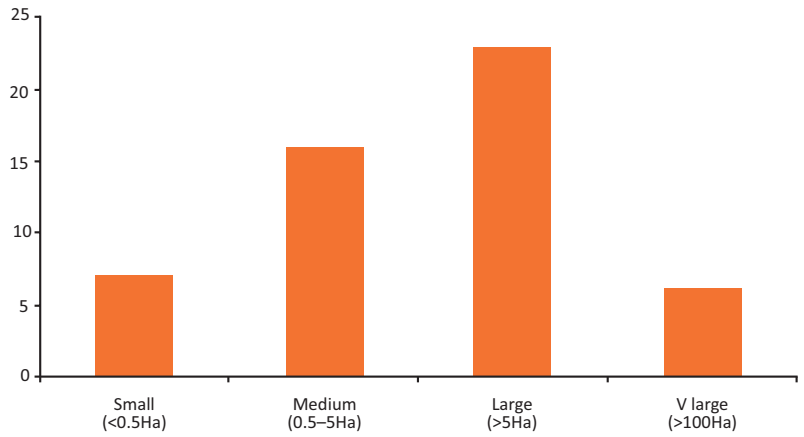
118 Treweek et al (2009) p.6

119 Defra (2011) Impact Assessment p.13

120 RSPB (2010)

121 GHK Consulting (2010) *Costs of the UK Biodiversity Action Plan* – Update. Report for Defra.

Figure 7.1: Size of different offsets from FOI



Monitoring and enforcement

Inconsistencies in how planning legislation was applied were compounded by a failure to assess the ongoing success of projects. A key finding from the FOI responses was that monitoring of projects was very poor. 146 out of the 197 projects failed to monitor the outcome or to provide any evidence that they had been adequately monitored. Sometimes it was left to the developer to continue monitoring a particular site, risking a potential conflict of interest as the developer has little incentive to do so in the long term. This supports criticisms in a CLG review of Section 106 agreements about inconsistent monitoring of commitments by developers.[122]

This weakness was further underlined by an almost total absence of enforcement for failure to meet the terms of an offsetting agreement. There was only one example of enforcement mentioned, which followed a complaint about protected trees in Birmingham. The complexity of habitat recreation and the risks of moving species, mean it is extremely unlikely that not a single scheme has failed to deliver its promised biodiversity protection. It is much more likely that projects are poorly-monitored and over-stretched ecologists have had little opportunity to assess the quality of new projects. A lack of political commitment to monitoring and the absence of processes to enforce it has meant it is not a priority. The absence of public registries also makes it practically impossible for civil society to monitor the success of projects. This lack of market discipline in the system reduces the chances of offsets delivering biodiversity improvements.

Local authority ecologists

Our FOI request found that 132 Local Authorities had in-house ecologists (out of 320 responses on that question). This represents 41% of respondents or just 37% of all 354 Local Authorities.[123] The Association of Local Government Ecologists puts the figure at 35%.[124]

Our research found there was a significant correlation between whether a Local Authority has an in house ecologist and whether it has run an offsetting scheme.[125] Of course, this correlation does not mean that one factor causes the other. The

122 Crook et al (2010)

123 The FOI found that some LAs' in-house ecologist also had additional responsibilities.

124 Association of Local Government Ecologists (2012) 'Written evidence submitted by the Association of Local Government Ecologists (ALGE)'. Available from: http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenvfru/writev/whitepaper/newp68.htm

125 Chi2 test based on count data in table 7.3 demonstrated this correlation (x2=16.3, d.f.=1, p<0.001)

presence of an ecologist may simply make it more likely that offsetting cases will be remembered. Or it may fit the political reality of a LA. Authorities that care about biodiversity and therefore scrutinise planning applications for ecological damage, are more likely to employ in-house ecologists. However, this finding may indicate that good quality ecological scrutiny of planning applications makes it more likely that adequate compensation measures will take place.

Table 7.3: In-house ecologist FOI results

	Offsetting scheme	No offsetting scheme	Total
In-house ecologist	71	56	127
No in-house ecologist	59	121	180
Total	130	177	307

Natural Environment White Paper (NEWP)

In NEWP, Defra proposed a voluntary offsetting scheme to be piloted in four Local Authority areas, or groups of areas. The voluntary scheme was chosen over a compulsory scheme despite the Impact Assessment (IA) showing the benefits of a compuslory scheme would likely outweigh the costs (best estimate was a net benefit of £15 million.[126] However, the IA argued that the government did not have enough information to make the case for implementing a mandatory scheme. The IA also considered a national voluntary scheme (which effectively already exists under Section 106 agreements), but did not appear to consider piloting compulsory schemes.

The Impact Assessment assumed that all offsets will involve providers purchasing the land on which the conservation activity rests. Models see this is the most expensive element of conservation programmes. However, it is likely that many offset scheme could be provided by existing landowners simply readjusting the way they use their current land. As we have seen, there is already considerable interest from farmers and other landowners in providing agri-environment schemes (if the incentives are right). As a result, it is likely they will use land they already own. This will bring down the overall cost of an offset scheme (this is discussed in more detail in Chapter 9). We attemped our own cost-benefit analysis of a compulsory scheme in Annex 1.

Well-designed pilots offer considerable potential for policymakers to learn the advantages and weaknesses of different approaches and mechanisms,without the risk of national-scale deployment. They offer significant potential when there is a lack of information. However, they have been underused in UK policy development.

It appears that one factor for not making the proposed offsetting scheme compulsory is the coalition commitment not to increase the regulatory burden on housebuilders.[127] However, it is not clear whether an offsetting scheme would increase the cost of development, or simply provide a system that would ensure existing obligations are actually met, as may not currently be the case. In any case, what is needed in the first instance is not a national compulsory scheme but piloting of a compulsory scheme. The pilot has some useful measures, such as testing whether a grouping of neighbouring LAs can deliver more cost-

126 Defra (2011) Impact Assessment

127 Defra (2011) Impact Assessment p. 16. There are also additional technical concerns about whether a compulsory scheme would have to be scored as a tax.

effective offsets than LAs acting alone. It will provide some useful information. However, the decision not even to pilot a compulsory scheme was mistaken for the following reasons:

1. The choice of a voluntary scheme was based on the assumption that no offsetting had taken place.[128] In fact, as our FOI found and Defra has conceded, significant experience of biodiversity compensation has built up over the past 10 years. Our FOI request showed that it was poor data about local activity that impeded a fair assessment of policy options.
2. International experience suggests the most successful offset schemes are all based on regulation that mandates compensation for land-use changes. Without the certainty of a compulsory scheme, there is little incentive for potential offset providers, like farmers and NGOs to develop and bring forward proposed conservation actions. There will be fewer market participants and less innovation, increasing the cost of offsets. In addition, the most robust international schemes encourage that offsets are created *before* the development is completed, providing greater certainty that they will be successful. A voluntary scheme makes this desirable approach very unlikely.

   Data from the FOI requests supports this view. Where there is strong legislation (eg Habitats Directive), offsetting schemes are often well designed. Where it is based on a weak Biodiversity Duty or unclear planning guidance, appropriate compensation is haphazard.
3. Giving developers the choice over whether they participate provides developers with a negotiating advantage over LAs. The developer will only be incentivised to take part if it is a cheaper option than under Section 106 agreements (unless for wider corporate responsibility reasons), potentially creating peverse incentives. And Section 106s appear to have delivered a low level of biodiversity protection. The lack of ecological expertise in many Local Authorities may reinforce this problem. Assumptions in the Impact Assessment that most developers will take up the voluntary pilot schemes therefore seem likely to be optimistic.

Conclusions

Defra's assumption in the Natural Environment White Paper that no offsetting had taken place was flawed. There has been considerable activity and experience with biodiversity offsets in England, with their use by perhaps 40% of Local Authorities. Some of it is innovative and impressive, crossing Local Authority boundaries, working on a landscape scale and providing good quality compensation measures. One area of innovation is where Local Authorities have provided simple compensation guides for developers, where one new house would require a certain amount towards biodiversity protection. This provides clarity for developers, and also ensures that biodiversity loss is appropriately compensated for. But, in general, the mechanisms have been used haphazardly, on a small scale overall and often focused very locally.

The FOI supported findings in Chapter 4 that the current system of planning and protection has failed to provide an effective framework for compensating for damage to biodiversity through development. Where compensation mechanisms

128 Defra (2011) Impact Assessment p.30

were used, the low ratio of land protected to land developed on suggests these mechanisms are not always working well in comparison with international examples.

There is very limited evidence of effective monitoring of the quality of offsets or enforcement for failed schemes. 74% of compensation schemes identified in the FOI provided no evidence of any monitoring. This problem is reinforced by the lack of central or local registries of offseting projects. Knowledge about historical projects often relies on institutional memory, which is further undermined by the low number of in-house ecologists. This has several effects:

- It is very difficult to assess the success of projects, both by Local Authorities and by civil society groups. This results in a lack of incentive for high quality provision of biodiversity compensation.
- It hampers the spread best practice, possibliy preventing the reducing of costs of offsets.
- Central government finds it difficult to assess the effect of existing legislation, so it can develop better biodiversity protection and improvement.

To overcome this weakness the government should:

Policy recommendation: The government should set up a public registry of all offsetting and compensation projects, as well as for Environmental Impact Assessments.

As the previous chapter demonstrates mandatory offsetting schemes deliver the greatest improvement in biodiversity. However, Defra's proposed offsetting pilot fails to include even a test of a compulsory scheme. This is a weakness, and is likely to undermine the pilot's potential to understand the potential costs and benefits of a national scheme. As a result:

Policy recommendation: Defra's offsetting pilots should include testing of a compulsory offsetting scheme, to better inform future decisions about nationwide offsetting arrangements.

8
International Biodiversity

While the UK has some internationally significant sites and species, the majority of the most globally important biodiversity sites are overseas. This chapter considers the UK's contribution to international biodiversity protection and whether current support and policy can be improved.

Which are the most important international sites?

Ecologist Norman Myers came up with the 'biodiversity hotspot' concept to identify the international areas which required the greatest attention from conservationists and policymakers. Conservation International lists 34 hotspots,[129] ranging from the Atlantic Forest in South America to Western Ghats in Sri Lanka (none are in Europe). These are areas with a high number endemic species *and* which face major threats. These areas contain around 50% of the world's different plants species and 42% of terrestrial vertebrates. The hotspots originally covered 15.7% of the earth's land area, but they now only cover 2.3%,[130] highlighting the pressure the world's most important biodiversity is under. While there is a significant amount of important biodiversity outside these areas, international efforts should target these as conservation priorities. Protection and expansion of these areas will likely deliver the greatest biodiversity benefit per amount spent.

Currently, 13.9% of the world's land area is protected. Nearly a 6th of the world population depend on these areas for a major part of their livelihood.[131]

Why should the UK care about international biodiversity?

The UK relies on many international ecosystems for our wellbeing. Our air quality, climate, water supply and weather are all supported by international ecosystems, and are based on processes that take place on a global scale. These are supported and underpinned by biodiversity, often in the most important biodiversity sites. Such services include our weather systems and many medicines that are derived from species in biodiverse regions of the world, and tourism.

While there are markets for many of these services, such as food, timber or tourism, it is not always clear that the price we pay reflects the full ecological costs of providing and protecting the good or service. Many, in particular regulating, services such as filtering of pollution and provision of rain are effectively provided for free. The UK therefore has an economic imperative to protect biodiversity (as well as a moral one). In addition, Britain's Overseas Territories and the surrounding seas contain considerable important biodiversity. They range from the Antarctic to the Caribbean, and include threatened and rare species, some of whom are endemic to the particular territory.

129 In order to qualify as a hotspot, the region must have more than 1,500 endemic plant species and have lost more than 70% of its original habitat.

130 Conservation International (2012) 'The Biodiversity Hotspots'. Available at: http://www.biodiversityhotspots.org/xp/hotspots/hotspotsscience/key_findings/Pages/default.aspx

131 TEEB (2009) *The Economics of Ecosystems and Biodiversity for National and International Policymakers -- Summary: Responding to the value of nature.*

International policy on biodiversity protection

As discussed in Chapter 1, international biodiversity policy is rooted in the Convention on Biological Diversity, signed at the Rio Earth Summit in 1992. In 2002, the signatories to the convention agreed to achieve a "significant reduction of the current rate of biodiversity loss at the global, regional and national level by 2010". However, at the 2010 conference at Nagoya, Japan, the agreement recognised that, while some actions had been taken, "such actions have not been on a scale sufficient to address the pressures on biodiversity".[132]

At Nagoya, the international community committed to "take effective and urgent action to halt the loss of biodiversity, [so] that by 2020 ecosystems are resilient and continue to provide essential services".[133] In addition, the agreement committed signatories to 20 targets, including:

- By 2020, rate of loss of all habitats, including forests, is at least halved, and, where possible, brought close to zero.
- By 2020, 17% of terrestrial and inland waterways, and 10% of coastal and marine areas are conserved.
- Prevent eradication of all known threatened species.
- Eliminate subsidies that are harmful to biodiversity.
- 15% of degraded ecosystems should be restored.

It is not yet clear how such measures will be financed, or what sanctions will apply to those countries who fail to meet the targets. As a result, it has been criticised as a weak agreement by some critics.[134] Without further commitments or legally binding targets there is a risk that, once again, the aims will not be achieved. It is hoped that firmer commitments on financing will be made at later summits, including at the 20th anniversary of the Rio Summit later this year.

> "The Eliasch Review estimated it would cost between $17–33 billion per year to halve global deforestation rates by 2020"

Many of the world's most important conservation hotspots are forests, and this is where lots of policy attention has focused. This is partly because of the carbon capturing services of forests, which has been a higher political priority than biodiversity. Protection of major forests is seen as fundamental in the need to reduce global greenhouse gas emissions. But there has also been an important recognition that biodiversity protection should be part of this process (see Box 8.1).

The Eliasch Review, commissioned by the UK government, looked at mechanisms to finance the protection of the world's most important forests, and gives a useful guide to how much is required to protect these sites. The review estimated it would cost between $17–33 billion per year to halve global deforestation rates by 2020.[135] It said this would provide benefits of $3.7 trillion (NPV), just from reduced carbon emissions. If the wider ecosystems services benefits were included, the total is likely much higher. Current commitments to forest protection under REDD+ (see Box 8.1) during the 2010–12 period are $4.5 billion, well below what it is estimated is needed.[136]

132 Convention on Biological Diversity (2010) Annex. Article 5

133 Ibid. Annex. Article 12

134 Monbiot (2010)

135 Eliasch, J. (2008) *Climate Change: Financing Global Forests*

136 PWC (2011) *Funding for Forests: UK Government support for REDD+.*

Box 8.1: Reducing Emissions from Deforestataion and Forest Degradation (REDD)

REDD is set of activities established to try and finance the protection of global forests. It was set up in response to increasing awareness that forest protection was a crucial part of mitigating the effects of climate change. Partly, the initiative aims to make sure that the 'ecosystem service' of carbon absorption is properly valued, as currently there are weak financial incentives to protect important forests and strong ones not to (logging, need for space for agriculture and development etc).

Some governments have committed to provide finance to begin meeting these aims, including the UK (see table below). In the future, such a system may be linked to existing carbon markets, whereby increasing carbon use by companies or governments could be offset by payments for the protection of forests or their expansion.

There have been concerns that such a carbon offsetting market would clash with other environmental goals, in particular biodiversity. If the ecosystem service of carbon absorption was prioritised, it may lead to current forests being destroyed and replaced with new plantations (which have greater carbon-absorbing properties). Such an outcome is obviously not desirable for protecting the species that depend on particular types and locations of forests. To reflect some of these concerns, the policy developed into "REDD+", which recognises that finance should also be available for activities such as conservation and forest management, not just carbon.

UK international biodiversity commitments

1. Forest commitments

As discussed, a large part of UK funding that supports biodiversity goes to support forest preservation. Making sure this money is not just focused on protecting the carbon absorbing services of forests, but also their wider biodiversity benefits is a crucial challenge. A summary of the different UK funding associated with forest protection is in Table 8.1. We have calculated how much of the money has been disbursed using publically available databases at Climate Funds Update. The work updates some of the work by PWC in its report, *Funding for forests: UK Government support for REDD+*.

The table below shows that the UK has so far funded at least £165 million of forest protection activity through multilateral funds. The International Climate Fund represents a further commitment on global environmental measures for £2.9 billion over the current parliament, a significant increase on previous spending under the Environmental Transformation Fund – International Window. While decisions about what environmental measures the money will go towards are still to be made, it is estimated that around £400 million of the £1.5 billion of fast start finance (2010–2012) under the ICF could go to REDD+ projects. Secretary of State for the Environment, Caroline Spelman, committed to an additional £100 million of spending on forests at Nagoya.[137] It is not yet clear if this money will be delivered through bilateral projects (see below for more discussion), or multilateral projects.

Most of the £165 million already spent has been directed through multilateral funds. Analysis of the performance of these funds show the ability of such institutions to disburse money quickly is often limited. The Forest Carbon Partnership Facility

137 Defra (2010) 'Defra commits £100 million international forestry funding up to 2015' Available from: www.defra.gov.uk/news/2010/10/27/forestry-funding/

and the Congo Basin Forest Fund are both examples of how slow some of the organisations are to spend money. The Forest Investment Programme has only distributed around 4% of its funds since it was established in 2009. The GEF was criticised in 2006 as it was taking 66 months to approve projects. While this has since decreased, slow distribution of funds remains a problem.

Table 8.1: UK funding for international forest protection[138]

Name of fund	UK donation (worldwide total)	Adminstrator	Assessment
Forest Investment Programme	£100m (£348.3m)	World Bank	Only 4.0% disbursed since fund established in July 2009
Congo Basin Forest Fund	£50m (£100m)	African Development Bank	Only 15.7% disbursed since set up in June 2008
Forest Carbon Partnership Facility (FCPF)	• £3.5m to Readiness Fund[139] (£207.6m) • £11.5m to Carbon Fund (£179.3m)	World Bank	2.9% disbursed since June 2008
Global Environment Facility	£188 million for phases 4,5 (2006–2014) • Of the c. $3.3bn donated globally, £154m pledged to forest management and REDD+ (PWC) (UK. 8 million – on proportional basis)	UN	Not specific to REDD+. 83% of phase 4 disbursed. Funds took 66 months to be disbursed in 2006. Some improvement, though still very slow
UN-REDD	£0, although $14m from EU (£97.3m)	UN	93.5% disbursed since 2008
Green Climate Fund	TBD	UN	Announced at Copenhagen, still in progress. Mandate will include REDD+
International Climate Fund	£2.9bn committed between 2011–15. Fast start finance with be £1.5 billion over first 2 years	UK umbrella fund for finance to tackle climate change, includes support for REDD+	REDD+ will be a priority. 20% of fast start finance will go to REDD+, around £300 million
Forest Governance, Climate and Markets Programme	£54m[140]	DFID	£2.1 million has been spent so far. • Coordinates with EU's Forest Law Enforcement, Governance and Trade (FLEGT) to tackle illegal logging, as well as purchase of illegal wood. Spending may reach £250m by 2021. • Money comes from International Climate Fund

The second criticism of multilateral efforts to support forestry projects is that they focus too much on capacity building, planning and institutional strengthening with not enough money spent on deployment through 'learning by

138 Source for distributed fund. www.climatefundsupdate.org. PX calculations. As at November 2011.

139 PWC (2011)

140 DFID (2012) 'Project Details: Forest Governance, Markets and Climate'. Available from: http://projects.dfid.gov.uk/project.aspx?Project=201724

doing' practical projects. Only the GEF has any focus on deployment or payment by results' schemes.[141] DFID's Multilateral Aid Review, a general look at the performance of multilateral institutions, found that "there is not enough evidence of multilaterals consistently delivering results on the ground, particularly in fragile states."[142]

Bilateral funding

According to PWC, around 67% of funding for REDD+ forest protection was given on a bilateral basis. Japan and Norway are by far the biggest donors in this way, providing £2.4 billion since 2008. A study of international forest funding by PWC found a number of successful examples of such bilateral support. It found bilateral models offered considerable advantages to the multilateral models and the potential to accelerate the amount of forest protection. In particular, it found bilateral funding:

- offered greater speed and flexibility of delivery. As we have seen, this is a major problem with some of the multilateral funds;
- demonstrated greater political commitment from the donor country. High-level leadership is crucial in the success of such projects. The large sums involved in some of the bilateral projects motivated the donor nation to put the projects under greater scrutiny;
- Encourages greater innovation. A more flexible funding system allows the donors to test new policies and learn from them, in comparison to the more bureaucratic multilateral bodies;
- allows donor countries to focus on using their particular expertise to support projects.

The UK has adpoted such an approach in its funding of a forestry programme in Nepal,[143] although this was started before previous commitments to REDD+. There, the Livelihoods and Forestry Programme supports the management of 800,000 Has of community forests, and appears to have delivered significant carbon and economic benefits. This may provide a useful model for other forest programmes, as well as other schemes that concentrate more specifically on biodiversity protection.

Increasingly, money allocated through bilateral funding is being spent on 'payment by results' schemes and larger scale deployment. In these examples, such as Norway's support for work on forest protection in Indonesia, donor money or a proportion of it will only be paid out when there is clear evidence of success. PWC found such an approach is "likely to deliver results at scale most quickly and to ensure value for money",[144] although it recognised that this would depend on clear agreements and a sound institutional framework.

2. Darwin Initiative

The Darwin Initiative is a UK government-funded organisation set up after 1992's Rio Summit. It provides support to poor countries which are rich in biodiversity to meet their international obligations.[145] It has spent £80 million on more than 700 projects in more than 155 countries. The Coalition has committed to spending £25 million over the course of the parliament, which is an increase of annual funding.[146]

141 PWC (2011)

142 DFID (2011) *Multilateral Aid Review: Ensuring maximum value for money for UK aid through multilateral organisations.* p.v

143 DFID (2010) UK International Climate Fund: Tackling climate change, reducing poverty

144 PWC (2011) p.8

145 The money is used to fund projects that support commitments under three international obligations: Convention on Biological Diversity; Convention on International Trade in Endangered Species of Wild Flora and Fauna; Convention of the Conservation of Migratory Species of Wild Animals.

146 Defra (2011) 'Government gives £25 million boost to global wildlife initiative'. Available at: http://www.defra.gov.uk/news/2011/04/08/government-gives-25m-boost-to-global-wildlife-initiative

Typical projects funded under Darwin include helping develop national biodiversity strategies, research on biodiversity loss or endangered species, training, education and public awareness campaigns, environmental impact assessments, data management, monitoring and evaluating existing projects. A typical project lasts for up to three years and cost between £50,000 to £80,000. The projects are typically partnerships between UK institutions and individuals and local providers. One example is the relocation of the Paradise Flycatcher, in the Seychelles. The relocation was required as the rare bird had become extinct on several nearby islands. The project did not just support the relocation, but also recognised the need to build public support for the controversial move. The project has led to a small population increase, which may eventually lead to it being removed from the critically endangered list.[147]

The Darwin Initiative offers a potentially good example for the future of wider UK funding to support biodiversity. It is experimental and uses a piloting approach to try new systems of conservation, and has rigorous systems of testing the success of projects.

EU biodiversity policy

In May 2011, the European Commission released its proposed 2020 Biodiversity Strategy. It recognised the failure to meet the 2010 targets, and called for a new overall target that would halt the loss of biodiversity by 2020 and restore them "in so far as feasible".[148] However, six weeks later the Council of European Environment Ministers failed to endorse the six headline targets to achieve the goal and the 20 concrete measures[149], including a 'no net loss' principle. Ministers said they needed more time to conisder the cost implications of such targets.

Using UK offsetting scheme to fund international biodiversity

As we have seen, the most important global biodiversity (and therefore that with the highest value) is largely not in the UK, but in international hotspots. There is an economic argument for directing funds raised to protect biodiversity to those areas where it can make the biggest difference, including international hotspots.

Such an argument could be used to justify using some money raised in any national UK offsetting scheme, such as one discussed in the previous chapters and Annex 1, being used to fund international biodivesity improvements. This is because it would deliver a greater global-level biodiversity improvement for a particular sum of money. The scheme could work by allowing an NGO operating a conservation scheme at an important international site to sell credits into any UK-based offsetting system. This would be analogous to the Clean Development Mechanism, which allows approved international carbon reduction measures to be sold back into the European Emissions Trading Scheme. The effect is to support the cheapest possible carbon reductions. In the case of biodiversity, it would be to provide the greatest amount of biodiversity benefit for a particular sum of money. PWC's report advocates a finance facility that could support private sector (or indeed NGO) conservation projects. Such a link with a domestic scheme could offer a potential source of funds for such a facility.

Of course, any such aspect to a future UK biodiversity offseting scheme must recognise that many of the important benefits of biodiversity that are local. As a

147 Defra (2011) *The Darwin Initiative: thirteenth annual report*

148 European Commission (2011) *Our life insurance, our natural capital: an EU biodiversity strategy to 2020.* p.2

149 Euractiv (2011) 'Member states fail to endorse concrete actions to protect biodiversity'. Available at: http://www.euractiv.com/sustainability/member-states-fail-endorse-concrete-actions-protect-biodiversity-news-505840

result, there would therefore probably need to be a limit to proportion of any offset pot which could be used on international (or indeed non-local national) schemes.

However, as already discussed, there is much work to do to get offsetting functioning better and more widely in the UK. In the longer-term, if offseting builds up scale, there is a good case for international biodiversity enhancements to be allowed to 'bid-in' for a part of the funding.

Conclusions

1. The UK has an economic, as well as a moral, obligation to protecting international biodiversity. International efforts have so far struggled to overcome the decline in biodiversity and internaitonal commitments to halt loss have proved weak.
2. The UK has previously concentrated much of its funding to protect forests on multilateral institutions. However, these can be slow to distribute money. They also focus on capacity building and institutional development, rather than acutal protection schemes. International examples show such schemes tend to be funded through bilateral funding. The UK should explore whether it this would be a better use of funds, particularly if it concentrates on outcome-based schemes. The successful forestry project in Nepal show the potential of such an approach. Moreover, the work of the Darwin Initiative provide a good example of how piloting and an experimental approach can deliver significant results and learning.
3. As biodiversity offsetting develops in the UK , some offsets benefitting from the schemes could be international, so that support is able to have an impact in global 'hotspots' where biodiversity protection is most valuable.

Policy recommendation: The UK should switch some of its international forest and biodiversity funding towards bilateral projects, where possible testing payment-for-outcomes mechanisms. In due course, it should also consider experimenting with allowing international biodiversity projects to 'bid in' to emerging UK offsetting and compensation schemes.

9
Conclusions and Policy Recommendations

This chapter considers why the various policies discussed in the previous chapters have failed to provide a coherent and robust network of biodiversity protection in England. It proposes detailed policy recommendations to improve protection of the natural environment. It also considers how the UK's commitments to protecting international biodiversity can be progressed.

Shortcomings of current policy

There are three key reasons why policy has failed adequately to halt and reverse the decline in the quality of England's biodiversity over the past 60 years:

- A failure to properly value the services provided by a robust and connected natural environment.
- Inadequate design of many of the instruments designed to ensure that protection of biodiversity value is properly accounted for in planning decisions.
- Failure to take advantage of the potential benefits of market mechanisms in policy design.

The strong policy focus on protecting key 'priority areas' has ensured that examples of important habitats have been maintained, but it has not delivered a resilient network of biodiversity protection. This is because while areas protected by legislation are effectively awarded a high biodiversity value because of their designated status, land that was not designated but still of high biodiversity value is effectively treated as having low biodiversity value. As a result, much has disappeared over the past 60 years under pressure of farming intensification and development.

The result has been to ghettoise the most important biodiversity areas, failing to protect many of the surrounding ecological systems that support them. Measures aimed at complementing designated areas, including through the planning system and through agri-environment schemes, have suffered from design or implementation failures, or have not taken sufficient advantage of the potential of market mechanisms to deliver the greatest biodiversity improvements for the resources available.

While the existing policy instruments offer significant potential if they are improved, the Lawton Review was right that a further step-change is required

to meet England's biodiversity objectives. The following recommendations aim to improve how current measures work and stimulate new systems for valuing the biodiversity quality of land, and increase the use of market mechanisms in conservation.

1. The National Planning Policy Framework should state that all development should deliver a 'net gain' in biodiversity.

Planning guidance is a key mechanism for ensuring that the biodiversity value of land is properly considered in decisions about development. However, as our FOI study found and other research has shown, current planning guidance is often haphazardly applied. The FOI found that where compensation was required it, on average, only covered 58% of the area on which development took place. Only 41% of Local Authorities demonstrated that they had used compensation schemes, even though planning guidance and the Biodiversity Duty are clear that biodiversity should be central to decisions on development. Many of the compensation schemes were small-scale and ad hoc. They often failed to provide clear evidence that the measures were taken as part of a wider ecological network. These factors suggest that the planning system fails to properly reflect biodiversity value.

Part of the reason for this is that guidance on biodiversity protection is vague. It says that development should look to enhance biodiversity "where possible". "Wherever possible" has been not well-defined in previous guidance or in the new NPPF and appears lead to a situation where biodiversity is not even fully protected let alone a gain achieved. As a result (and in combination with the weaknesses of other valuation mechanisms, such as the Biodiversity Duty), it fails to provide clear guidance to planners and Local Authorities.

A much-clearer alternative is to insist that all developments, over a certain size, demonstrate a 'net gain' in biodiversity. A 'net gain' principle would provide an unequivocal signal that biodiversity should be considered in decisions over major developments that impact biodiversity. Such a principle is appropriate for the following reasons:

- The past 100 years has seen a significant decline in the quality international and national biodiversity, driven by human activity. As a result, current policymakers should ensure endangered species and habitats do not simply survive, but thrive and recover. Defra's Natural Environment White Paper reflects this and explicitly states that its aim is not just to protect biodiversity, but to 'enhance it.'
- International experience shows that where planning systems give clearer guidance, for example that offsets should deliver a 'net gain' in biodiversity, there is evidence of improved outcomes compared to vaguer formulations.
- The principle removes doubt for planners and ensures that biodiversity is considered in every application. This should help direct development, at the margin, to areas of least biodiversity value.
- Recreating degraded habitats, creating new ones or moving species all have less chance of success than maintaining existing sites. This risk justifies requiring those proposing to change how land is used to provide greater builds in a

'risk premium' – aiming to actually to enhance biodiversity – in order to ensure that any replacement will at least replace the quality and quantity of biodiversity. Of course, compensation mechanisms should only be used once the mitigation hierarchy has been used.

The 'net gain' principle would not be appropriate in every decision on development, especially small-scale activity. An appropriate threshold would be that for which an Environmental Impact Assessments are required. in broad terms, this includes developments over 0.5 Has or those which have significant environmental impacts. This would strike the right balance between encouraging development and ensuring the impact on biodiversity is recognised. Ensuring a proper biodiversity valuation would ensure that development, at the margin, is pushed towards low quality biodiversity land, be it brownfield or low value greenfield land.

Developing effective systems of offsetting (see below) will ensure that an offsetting measure to increase overall biodiversity value will always be available, as well as downward pressure on costs.

2. *Defra's offsetting pilots should include testing of a compulsory offsetting scheme, to better inform future decisions about nationwide offsetting arrangements.*

Biodiversity offsetting offers considerable potential for improving the level and quality of biodiversity protection in England. Firstly and alongside a 'net gain' principle, the biodiversity valuation used in offsetting would ensure that the biodiversity value of the land on which development is proposed is properly considered. It is also a potentially simpler and more certain system for developers to use, in comparison with the sometimes awkward Section 106 negotiations.

If well-designed, it would take advantage of the potential of market mechanisms. Firstly, it would create assured demand for conservation activity from farmers and landowners. This would stimulate a wider range of offset providers. It would also encourage greater innovation in how conservation is delivered, likely bringing forward some of the more complex and important schemes that agri-environment schemes have failed to provide. This increase in innovation and conservation providers would likely lower the cost of biodiversity protection. Crucially, such a scheme would provide an opportunity to set a good example of other countries considering how to protect biodiversity in the most cost-effective way.

England is well-placed to develop offsetting schemes for the following reasons:[150]

- Many groups, including farmers, landowners, NGOs and developers have built up considerable experience of delivering conservation, as part of agri-environment schemes. The initial success of the Nature Improvement Areas competition and excess demand for Higher Level Stewardship agri-environment scheme funding indicates that there is considerable potential supply of biodiversity conservation schemes that would provide offsets. A variety of market participants is likely to lead to a good level of competition and innovation, increasing the cost-effectiveness of such a scheme.

150 For more see Caldecott, B., Dickie, I. (2011) *Creating Wealth Worth Having* for Climate Change Capital.

- Strong legal framework and wide experience with markets, including environmental markets. A well-designed market would be able to leverage private sector expertise, including financial expertise. The Environment Bank, a private company, has already set up a voluntary system for certifying and trading offsets,[151] demonstrating the enthusiasm for such a scheme.
- Organisations like the National Biodiversity Network and other monitoring programmes mean that there is good quality data on the state of biodiversity. National Character Areas and Natural England's HLS mapping pinpoint which areas are the most important in terms of biodiversity. Such biodiversity mapping has been the backbone of the success of schemes like the one in Australia. However, it is not clear that the existing data is being properly used.

Defra's decision to test biodiversity offsetting is therefore welcome. However, there are considerable weaknesses in how the pilot has been designed. This will likely undermine the purpose of piloting which is to reveal new, useful information to inform future decisions about the development of offsetting nationally. The biggest weakness is the decision not even to test pilot compulsory schemes.

- International experience, as outlined in Chapter 6, shows that the most successful offset schemes are all based on regulation that *mandates* compensation for land-use changes. Without the certainty of a compulsory scheme, there is much less incentive for potential offset providers, like farmers and NGOSs to make investments in developing conservation proposals. There will be fewer market participants and less innovation, increasing the cost of offsets.
- Giving developers the choice over whether they participate provides developers with a negotiating advantage over LAs. The developer will only be incentivised to take part if it is a cheaper option than under Section 106 agreements. The assumption in the Impact Assessment that all developers in the pilot areas will take advantage of the scheme is therefore likely to be optimistic.

In effect, a voluntary offsetting scheme already exists under current planning policy. in some examples, Local Authorities have developed effective offset mechanisms that provide clear guidance to developers about what compensation is required and deliver biodiversity protection. However, as we have seen, in general the opportunities in the planning system have been applied inconsistently and have often failed to properly value the biodiversity importance of land. The low ratio between the area of land developed and the offset provided is a further indication that the current system is failing to deliver adequate compensation. While the pilot will raise the profile of offsetting, the weaknesses of a voluntary approach will remain.

Policymakers appear to have been cautious about introducing a mandatory scheme, even as a pilot, because of concerns about raising the cost of development. However, the motivation behind using experiments is to establish what these costs may be if a nationwide compulsory scheme was introduced (if indeed there are additional costs). In addition, a well-designed experiment backed by a clear net gain principle and allowing banking may show what developers *should* be paying under existing legislation to compensate for biodiversity loss, but are avoiding because of the weaknesses of the planning system. It is unlikely this crucial information will be revealed by the current design of the pilot.

151 Environment Bank (2012) 'Environment Bank and Mission Markets Launch Online Conservation Credit Platform'. Available at: http://www.environmentbank.com/docs/Environment%20Bank-Mission%20markets%20release%20feb2012.pdf

The potential costs and benefits of a nationwide compulsory scheme require more discussion and more information from piloting, are considered in more detail at the end of this chapter.

While our recommendation is for a pilot, we attempted a crude cost-benefit analysis of a national compulsory offsetting scheme. This is set out in Annex 1. The main findings were:

- A compulsory scheme would cost around £70.7 million to the cost of development every year, around 0.1% of the annual value of new build construction in the UK.
- Our extreme scenario saw a cost of £253.3 million a year.
- This compares to around £16.7 million currently spent under Section 106 each year on 'Ecology and nature conservation', or £235 million spent on 'open space'.
- While a compulsory scheme would therefore represent a significant increase on current levels of spending on biodiversity, it may also represent what the current system *should* be delivering if it was working properly.
- Several pieces of research have identified considerable social benefits from protecting and improving important biodiversity areas, which considerably outweight the likely costs of such a scheme.

3. The government should set up a public registry of all offsetting and compensation projects, as well as for Environmental Impact Assessments.

One of the key weaknesses of current mechanisms for valuing biodiversity is that the quality of Section 106 offsets are poorly monitored and there is little or no enforcement. A key reason for this is a lack of easily comparable and available list of schemes. The inconsistent response to the FOI response underlined this well-established problem. There was only evidence of one enforcement measure. This absence of records and evaluation data has several effects:

- It prevents the spread of best practice. It is not clear how other Local Authorities will learn about successful (or failed) projects or schemes.
- It prevents scrutiny of projects, by Local Authorities or by others. The absence of a registry and monitoring means it is difficult for Local Authorities to monitor whether projects have delivered the promised compensation. The FOI showed monitoring was often left up to developers themselves. Scrutiny could be provided by NGOs, media and other civil society groups, but without a clear, easy-to-use public record this is very difficult. The one reporting system that made Local Authorities accountable for the state of important biodiversity sites in their area, the National Performance Indictaor for biodiversity, has been scrapped.
- The absence of records means that, in developing national policy, central government will struggle to benefit from experience. This has been demonstrated in the admission by Defra that it knows offsetting has taken place, but does not know how much.
- It removes a key element in the design of successful market discipline, the fear of sanction. With little fear of scrutiny or sanction, developers are less likely to ensure schemes are properly delivered and well-maintained.

A compulsory register of offsetting schemes, Nature Improvement Areas and Environmental Impact Assessments would overcome these weaknesses and ensure that successful approaches are replicated and and there are consequences for non-delivery or poor quality assessments. Finding clearer ways to present data on agri-environment schemes could also lead to greater scrutiny of their success.

The collection of this data could also allow the preparation of league tables comparing the performance of Local Authorities in protecting important biodiversity. This would replace the loss of comparisons when the National Performance Indicator regime was scrapped. Again, this would increase competition between LAs over the quality of provision, and allow civil society, citizens and media to highlight good (and weak) performers.

4. Environmental Impact Assessments should be commissioned by Local Authorities, but still be paid for by developers. Information about EIAs should also be collected in a central registry.

The failure of planning guidance, Section 106 and the Biodiversity Duty to ensure that biodiversity protection is properly valued in decisions on investment is compounded by the weakness of another key planning mechanism, Environmental Impact Assessments. These reports are produced during the planning application by developers for developments over a certain size. However, developers will potentially benefit from such reports minimising the environmental impact of such a development. Therefore they are incentivised to commission reports that do not provide adequate information. This can be exacerbated by lack of expertise in Local Authorities. Our research found that only 41% of Local Authorities had a dedicated ecologist. This has led to considerable inconsistency in the quality of EIAs, further undermining the ability of planners to properly reflect the biodiversity value of a particular site.

Biodiversity protection is effectively forced to compete against other concerns that fall under Section 106, such as social housing or improved transport infrastructure. Outside clear legislation such as the Habitats Directive, the weight that planners and councillors give to biodiversity protection often depends on political priorities, and not just a proper evaluation of the ecological impact of a development. Weak Environmental Impact Assessments therefore do not help secure proper prioritisation of biodiversity.

Without adequate information for those making planning decisions, it is hard for the biodiversity value of a proposed development to be properly assessed and compensated for. Stronger evaluations of the environmental impact of a development could help to tip the balance in biodiversity's favour. The EIA ought to be a crucial part of that process with the Local Authority able to commission and specify the scope of these. Of course, such a system would not be perfect. Local Authorities are often in favour of development and could still choose to ignore biodiversity concerns. As we have seen, many also lack in-house ecologists to assess the quality of EIAs. However, such an approach is more likely to make EIAs a more central part of the planning proceess, and therefore increase the chances they are taken seriously by planners.

Moreover, to improve the overall quality of EIAs, it would be helpful to get Local Authorities to collect EIAs in a central registry. Similarly to a registry for offsets, this would allow the spread of best practice and for civil society to more easily establish whether EIAs have been well done and their suggestions properly implemented.

5. Competition for Nature Improvement Areas should be extended when funds are available.

The initial success of the NIA competition highlights the potential supply of conservation projects for any offsetting scheme and the enthusiasm for biodiversity protection in England. The scheme attracted a wide number of applicants for the 12 slots, and was praised by biodiversity experts as stimulating unprecedented creativity and innovation in biodiversity.

The experience of the NIA suggests the potential of market mechanisms, such as competitions, to deliver cost-effective and innovative biodiversity improvements. This experience should be transferred to other areas, in particular agri-environment schemes and international biodiversity protection.

6. The Government should use funding under Pillar 2 of the Common Agricultural Policy to test auction and other market-based system to deliver environmental improvements.

Agri-environment schemes have delivered some significant improvements in the quality of the farmed natural environment. The system has challenged some of the traditional tension between farming and conservation, while recent improvements have also increased its focus on the most important biodiversity areas.

However, there remains significant potential for improving the cost-effectiveness of the scheme, and its ability to deliver the most complex biodiversity schemes. Firstly, the checklist approach to Entry-Level Schemes (ELS) is an unsophisticated approach, which is unlikely to maximise outcomes. Inevitably, some farmers and landowners, armed with greater information about the costs of measures, have focused on providing the easiest and cheapest options for gaining the subsidy. This means more expensive but more valuable projects on the checklist have been underprovided.

Higher-Level Schemes (HLS) are more sophisticated and the the responsible agency, Natural England, has made improvements to the scheme to ensure that the available money is targeted at the most important biodiversity areas. However, HLS has not delivered some of the most complex enhancements to habitats. This again reflects that landowners are not properly incentivised to deliver the most difficult schemes, some instead focusing on easier alternatives for the same amount of money.

Evidence from international efforts shows that auctions can in some circumstances deliver significant improvements in value for money, with estimates ranging from at least a 33% premium over checklist systems to much higher levels of improved cost-effectiveness. Auctions, where landowners can bid to provide a level of biodiversity protection for a share of a pool of money, offer a method of discovering the real cost of biodiversity protection. In addition, they can encourage greater innovation by, for example, allowing neighbouring landowners to group together, and for more complex and valuable schemes to get funding. The initial success of the Nature Improvement Areas competition demonstrate the potential of such competitive mechanisms to stimulate innovation.

However, there have also been problems in how some international auctions have been designed. Again, this suggests the need for experimentation and pilots to understand whether auctioning could provide a significant contribution to biodiversity improvement, while providing greater value for money.

Auctions and other market-based regimes should be tested to see if they can deliver specific environmental improvements at a lower cost. Such schemes should also test outcome-based contracts when providers are only paid, or receive part of their payment, once the biodiversity outcome, for example an increase in the number of a particular species, has been delivered.

7. The EU should abandon its proposed approach to 'greening' of Pillar 1. Instead it should increase payments to Pillar 2 (under a reduced overall CAP budget), and encourage market-based approaches to maximising environmental improvements.

Protecting biodiversity is a much more justifiable use of public funds than support for production (as it reflects the public good qualities of nature protection, while food production already benefits from a well-functioning market). But the proposals for reform of CAP from 2013 are likely to exacerbate the weaknesses of the current system and deliver less biodiversity benefit.

First, it will provide provide less direct funding for Pillar 2 in real terms, and therefore reduced its levels of biodiversity protection. Second, the proposed approach to 'greening' of Pillar One is also flawed. Its crude insistence than all farms seeking a CAP payment take the same steps, including compulsory set-aside at an arbitrary level of 7%, fails to reflect the different biodiversity value of different land. As a result, it will likely make biodiversity protection more expensive than it needs to be – and therefore achieve less.

Instead of these clumsy reforms, the EU should implement a system that provides greater funding to biodiversity protection, currently delivered mainly through Pillar 2. At the same time, it should ensure than Pillar 2 funding is spent as cost-effectively as possible, through piloting market mechanisms discussed above.

8. International. The UK should switch some of its international forest and biodiversity funding towards bilateral projects, where possible testing payment-for-outcomes mechanisms. In due course, it should also consider experimenting with allowing international biodiversity projects to 'bid in' to emerging UK offsetting and compensation schemes.

Over the past 10 years, most of the UK funds for international projects to protect forests (and therefore important biodiversity) have been distributed through multilateral funds, while other countries, such as Norway, have focused on bilateral funding for specific projects. Evidence shows some of the multilateral funds have been very slow to distribute money and focused on capacity building, rather than piloting projects that deliver conservation activity.

Moreover, there is significant potential for the greater piloting to discover what leads to successful conservation projects and the greater use of outcomes-based contracting, as other countries have begun to use.

The UK should also consider linking, in the long term, emerging domestic offsetting schemes, as proposed above, with international projects, allowing NGOs to bid for biodiversity funding alongside domestic projects. This would follow the CDM model developed in carbon markets.

Annex 1: Modelling Costs and Benefits of a National Compulsory Offsetting Scheme

Various researchers have tried to estimate how much a compulsory offsetting scheme would deliver in terms of biodiversity improvement.[152] Modelling is a useful to give some idea of the potential costs and benefits. It should be noted, though the model applies to a compulsory scheme across England, we are recommending at this stage only that pilots should be undertaken, in order to learn more.

Of course, it is impossible to precisely predict the costs (and benefits) of such a scheme using this approach and its findings should be treated with caution. Only the establishment of a market mechanism will reveal the full costs and benefits.

Potential compensation costs from compulsory offsetting scheme

Our methodology follows that used in the RPSB's Financing Nature in an Age of Austerity.[153] The RSPB project aimed to assess the potential scale of new development in England, how much compensation would be required to offset damage to habitats and how much that compensation would cost. However, we make some different assumptions, based on arguments made in this research:

1. All new development will require some offsetting. If 240,000 new homes were built a year, as the government has called for,[154] this would lead to 9,600 hectares of new housing. This is based on a conservative density of 25 homes per hectare (currently around 30) and covers 0.07% of England. For our central assumption, we we follow the RSPB's assumption that 60% of housing takes place on land that is either greenfield or high biodiversity-value brownfield sites. Our upper estimate assumes that all development takes place on land that will require offsetting.

2. There would be a further 4,128 hectares of industrial, commerical or transport (based on historic average of 43% of housing land).[155] This means a total of 13,728 hectares would require offsets. For reference, the RSPB model's upper estimate assumes 11,154 Has of offsets would be required. GHK's upper estimate is 16,891 Has.[156]

3. Offsets are delivered at 1:1.2 ratio. This is different from the RSPB model which assumes a 1:1 ratio. This reflects our finding that planing should aim to deliver a "net gain" in biodiversity, to reflect the risk premium of creating new habitats as well as aims stated in the Natural Environment White Paper.

152 This includes GHK (2011) Costing potential actions to offset the impact of development on biodiversity -- Final Report. Defra.

153 RSPB (2010)

154 CLG (2007) *Homes for the future: More affordable, more sustainable*

155 Foresight Land Futures Project (2010) Final Project Report. The Government Office for Science

156 GHK (2011)

It is also close to the compensation ratio achieved by successful international (compulsory) schemes. As a result, 16,474 Has of offsets would be required to offset development. Of course the final number would depend on the quality of biodiversity on the proposed development and the offset, as well as other factors, and not just the area requiring compensation.

4. Offsets cost £5,506/hectare. This is based on the average cost from the FOI response, effectively a present value. This is a lower estimate than some other models and will, of course, vary depending on the type of offset being required. The more complex the habitat to create, the more expensive it is (and the higher its value for an offsetting scheme). The other key factor affecting the costs of such schemes is whether offset providers will have to purchase new land in order to provide offsets, or whether existing landowners will change land use to provide credits (which would be cheaper). Our model has examined both options, with the lower estimate assuming it is likely that many offsets will be improvements to existing land, rather than purchases, at least initially. Farmers and NGOs have developed expertise in providing conservation projects, through both agri-environment and voluntary schemes and so would be well-placed to provide offsets using land they already own, rather than purchasing new land.

   Moreover, we have taken a lower figure as we believe such a market-based system will likely deliver cheaper offsets through improved competition than through the current patchy Section 106 system (although increased scrutiny by regulatory bodies may push up the quality of offsets, and perhaps the price). Of course, the extent of these factors would only be revealed by a market or a well-designed pilot.

   To reflect the potentially higher costs, we have also include a scenario where 50% of offsets require land purchases, at a cost of £15,177/Ha.[157]

5. The administration of the scheme would add an additional 30% to the cost of the scheme. This is in line with the RSPB upper estimate, and international examples.

Table A.1: Estimated cost of compulsory offset scheme

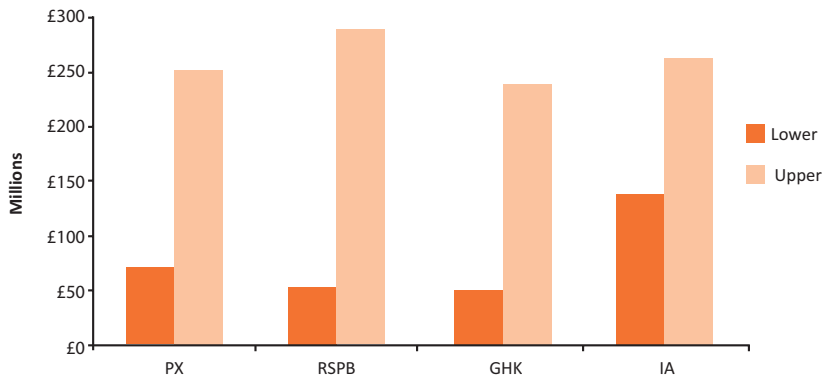
	Unit	Lower	Upper
Number of homes built per year		240,000	240,000
Average size of home	ha	0.04	0.04
% requires offsetting	%	60	100
Area needed for housing	ha	5,760	9,600
Industrial and commercial etc	ha	2,477	4,128
Total development that needs offset	**ha**	**8,237**	**13,728**
Development needing offset, including net gain principle (*1.2)	ha	9,884	16,474
Cost of managing offset	£	5,506	5,506
Total cost of management	£	54,422,185	90,703,642
Land purchase			
Price of bare arable land	£	15,177	15,177
Total cost of purchase	£	0	104,174,928
Admin/profit	£	16,326,655	58,463,571
Total cost	**£**	**70,748,840**	**253,342,140**

157 RSPB ADD source

- RSPB for a compulsory scheme. £52.8–289.8 million

This calculation leads to an estimate of the annual cost of offsetting of £70.7 million, with an upper estimate of £253.3 million. Comparisons with other models can be seen in Chart A.1. Our figure of £70.7 million would represent around 0.1% of the annual value of new build construction (£47.5 billion, 2009 figures),[158] while the upper figure would represent 0.5%. This compares to around £16.7 million currently spent under Section 106 each year on 'Ecology and nature conservation', or £235 million spent on 'open space'. While a compulsory scheme would therefore represent a significant increase on current levels of spending on biodiversity, it may also represent what the current system *should* be delivering if it was working properly. There would be substantial new biodiversity benefits. In addition, if a thriving offsetting market is created, it will likely reduce the costs of such protection. This is the equivalent of a cost per new house of around £200. This is less than existing schemes such as Dorset Heathland (£1,724/house) and Thames Basin (range between £1,678–2,331/house).[159] This reflects the higher biodiversity value of land on which such schemes take place.

Figure A.1: Comparison of models to estimate annual cost of compulsory offsetting schemes



Although many would assume this cost would likely be born by developers, Defra's offset pilot Impact Assessment says that it is likely that the cost would be passed on to landowners.[160] Because new development competes against existing development it cannot pass on additional costs to buyers. As a result, the costs are likely to be borne by the landowners (although in some instances the developer and landowner will be the same organisation). The effect of such a market is to make high biodiversity quality land less attractive for developers, exactly the scenario such a market-based system is trying to encourage. However, it will also make the same land more valuable as a site for providing offsets.

The benefits of biodiversity protection

- The Impact Assessment calculated that a compulsory scheme could deliver a net benefit of £105 million a year, with a range from 0 to £595 million. This

158 GHK (2011) p.30

159 Based on information from FOI.

160 Defra (2011) Impact Assessment. p.30

was based on a calculation that improving a hectare of BAP priority habitat delivered £29,850 of benefits.[161] This compares favourably to the £5,506/hectare cost of providing an offset (£7,157/Ha including admin costs. In our land purchase scenario, the cost is £26,888/Ha). Moreover, the estimate of benefit is based on a just seven ecosystems services, and therefore may be conservative itself. The considerable uncertainties around these figures highlight the need for proper piloting.

- The IA was based on work by Christie et al.,which put the overall benefit of the current UK BAP schemes at £1.4 billion a year, of which the habitats, rather than the species, elements was £1.2 billion.[162] This compared to annual spending on protection and enhancement of BAP priority species and habitats of £469 million (mostly through agri-environment funding). This is a benefit-cost ratio of 2.91.[163]
- The report modelled that in order to meet BAP improvement targets, it would provide a further annual £750m in benefits for a likely extra cost of £557 million. This suggests that there is diminishing marginal returns from increased spending on biodiversity, although benefits still significantly outweigh the costs at that level of spend.[164]
- Work by GHK on the econmic value of SSSI found that the public is willing to pay £827 million for the benefits currently provided by SSSIs.[165] To get all England's SSSIs to a favourable condition, the willingness to pay was an additional £666 million. It estimated that £101 million is currently spent each year protecting SSSIs.
- The Barker Review of Land Use Planning put the benefits even higher. It calculated the social present value of natural and semi-natural wetlands at £1.3 million per hectare, while the value of urban fringe Green Belt is only £180,000/hectare. Agricultural intensive land was just £20,600, while city parks was £10.8 million. This indicates a "potential misallocation of resources".[166]
- In addition to these benefits, creating a market will also help develop a more mature conservation sector. This will drive competition and innovation, which will bring costs down. In the longer term, it may also allow subsidies to be reduced. The fact that HLS funding and the NIA competition are oversubscribed shows that there is a significant interest in providing conservation schemes.

While policymakers should be cautious about these estimates, they do indicate that high quality biodiversity sites do deliver benefits that are "substantial and significantly exceed the costs of the policy."[167] Any offsetting scheme, which could deliver high quality biodiversity protection, would likely deliver similar benefits.

161 Ibid. p.41

162 p.11 IA

163 Christie, M., Hyde, T., Cooper, R. (2011) *The Economic Valuation of the Ecosystem Service Benefits delivered by the UK Biodiversity Action Plan: Policy Makers Summary.* Report for Defra. p.89

164 Not all habitats benefited from increased spending, according to the Christie et al modelling.

165 GHK (2011)

166 Barker et al (2006) p.155

167 GHK (2011) *Benefits of Sites of Special Scientific Interest*. p.6

Annex 2: FOI Request

Sent to 354 Local Authorities:

I am writing to request information under the Freedom of Information Act 2000. In order to assist you with this request, I am outlining my query as specifically as possible. Please confirm that you have received them and that you are the right person to contact with these requests, if this request is best directed to another person or organisation you have my permission to transfer the request to them.

I am trying to put together a full list of biodiversity and habitat offsetting schemes across England (as well as other examples in the UK). Offsetting is where the impacts of a development are compensated for by creating a habitat on a separate site (as opposed to mitigation which takes place on site). The questions are as follows:

1. Can you provide details of any planning permissions granted by your Local Planning Authority which mandated any habitat or biodiversity offsetting schemes under Conservation (Natural Habitats, &c) Regs 1994 (Commonly known as 'Habitats Regulations' under the EU Habitats Directive)?

2. Have you undertaken any other offsetting scheme under other planning legislation (such as Section 106 planning agreements)? Are you aware of any voluntary or other offsetting agreements that have taken place by developers?

3. Can you send all the relevant documentation relating to any offsetting schemes (preferably as PDFs). This could include, but should not necessarily be limited to:
   - Environmental Impact Statements
   - Any Section 106 documentation relating to the offsetting schemes
   - Details of long-term management plans
   - Evidence of any monitoring and follow-up
   - Evidence of current condition of offset sites
   - Evidence of effect on transported species

4. How much did each individual offsetting schemes cost?

5. Has your local authority instigated any enforcement action if the offsetting was unsuccessful? What was the outcome of the enforcement for each offsetting scheme?

6. Does your Local Authority employ an in-house ecologist? If not, how do you get advice on ecological matters in planning?

Define: Offsetting -- where the environmental impacts of a development are compensated with some environmental activity that takes place at a different location. This is different from mitigation, where the impacts of a particular development are compensated on the same site.

Public interest arguments

There is a clear public interest for disclosure of this information, in that disclosure will:

- Further the understanding of and participation in the public debate of issues of the day, and will allow a more informed debate of issues under consideration by public bodies.
- Promote accountability and transparency by public authorities for decisions taken by them.
- Promote accountability and transparency in the spending of public money. Allow individuals to understand decisions made by public authorities affecting their lives and, in some cases, assisting individuals in challenging those decisions.
- Bring to light information affecting public health and public safety. Promote accountability and transparency in relation to the actual operation of the Freedom of Information Act, illustrate how the organisation has met its new legal responsibilities, shed light on the reasoned explanations that the organisation has used when disclosing or not disclosing information, and highlight what information has been released under the Act, which in itself will assist the public scrutiny of the work and administration of the organisation. Further to Section 16 of the Act (duty to provide advice and assistance), if you have any queries relating to these requests or need clarification on any issue, I would be grateful if you could contact me.

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