

CPRE South East eBulletin

The Natural Environment White Paper and the UK National Ecosystem Assessment

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Editor's Note

'They paved paradise and put up a parkin' lot... They took all the trees, and put em in a tree museum' Joni Mitchell 1970

Reaction to the 'National Ecosystem Assessment' (NEA) has been mixed. Some greens have condemned it as putting a price on priceless nature, arguing that this will lead to yet more concrete pouting over landscapes. But this is not what the NEA says. It is quite explicit that if the environment—and the ecosystem services it supplies—suffers from a surfeit of global capitalism, then both the economy and the quality of life of the UK will decline over the coming decades. The NEA is a vitally important study that uncovers the value of ecosystems to the economy, quality of life and a sustainable future. To paraphrase its outcomes: you can't create a successful economy and happy society by destroying nature.

Of course there are those that will try to exploit the NEA cynically. They will claim that it does support concreting over green fields and biodiverse landscapes. They will be helped by the academic nature of the study. The NEA urgently needs an accessible guide that signposts how this report can be used in policy at every level from local neighbourhoods through planning authorities to the national governments. Caroline Spelman may feel that, for England, much of that accessible guide is provided by her white paper, 'The Natural Choice'. Sadly the White Paper does not do the NEA justice. Yet no one can claim the existing relationship between nature and the needs of our population is working. A new approach to reconciling development and the environment is needed, and it must be delivered with sensitivity and care.

Caroline Spelman's department will have a major role in this, as will Chris Huhne's team at energy and climate change. But the most critical parts of this task will fall to Vince Cable over at Business, George Osborne at the Treasury and above all Eric Pickles at Communities. Despite all the promises and ideals expressed in the White Paper, the main action for protecting the environment lies elsewhere—in the planning system. The Localism Bill and the National Planning Policy Framework will have by far the biggest roles in delivering the ambitions of Spelman's White Paper.

Given the reality of this political landscape, no one should doubt for one moment that the environmental balance called for by the NEA is still firmly tipped heavily in favour of unsustainable development. But neither should anyone doubt that the White Paper gives an urgently needed and welcome impetus to environmental protection at a point when many in the government are ploughing on with business as usual—forgetting that this is meant to 'the greenest government ever'.

But if I was to single out one worry about the White Paper it would be biodiversity offsetting. How long will it be before this cash compensation mechanism displaces other government funding for the natural environment? For a precedent, we only have to look to the way that the National Lottery fund has allowed successive governments to withdraw most funding for heritage schemes. To fund the protection of nature, we may in the future need to destroy it first.

Andy Boddington

Definitions, Abbreviations and Links

Biodiversity offsets are conservation activities designed to 'deliver biodiversity benefits in compensation for losses in a measurable way'. Good developments incorporate biodiversity considerations in their design but are still likely to result in some biodiversity loss. One way to compensate for this loss is by offsetting: the developer secures compensatory habitat expansion or restoration elsewhere.

Ecosystem. A dynamic complex of plant, animal, and microorganism communities and their non-living environment interacting as a functional unit.

Ecosystem service. The benefits people obtain from ecosystems, including *provisioning services* such as food and water; *regulating services* such as flood and disease control; *cultural services* such as spiritual, recreational, and cultural benefits; and *supporting services* such as the nutrient cycling needed to maintain the conditions for life on Earth.

Environmental settings. The locations and places where humans interact with each other and nature that give rise to the cultural goods and benefits that people obtain from ecosystems.

The **Lawton Report**, *Making Space for Nature*, published in 2010, was a review of England's wildlife sites and ecological network. It recognised the need to connect isolated islands of biodiversity in the landscape (<http://bit.ly/lawtonrep>).

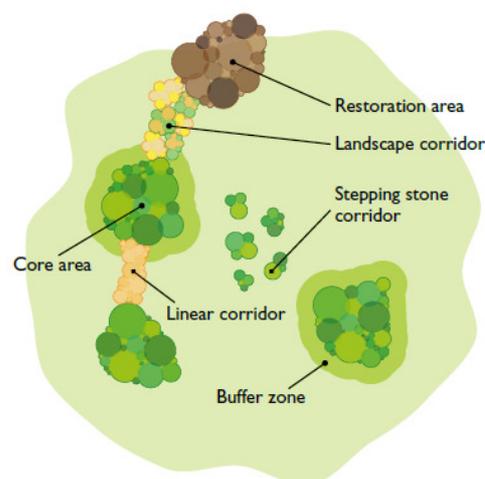
Local Nature Partnerships (LNPs) are the environmental equivalent of Local Enterprise Partnerships and will be responsible for delivering the Nature Improvement Areas.

The **Marmot Review**, *Fair Society, Healthy Lives*, published in 2010 outlined strategies for reducing health inequalities in England. It explicitly recognised the health benefits of green space (<http://www.marmotreview.org/>).

Natural Environment. Living things in all their diversity: wildlife, rivers and streams, lakes and seas, urban green space and open countryside, forests and farmed land; food, fuel, air and water; the natural systems that cycle water, clean out pollutants, produce healthy soil, protect from floods and regulate climate; and landscapes and natural heritage.

Nature Improvement Areas (NIAs) will be the ecological restoration zones called for in the Lawton report, where nature will be restored and connected on a 'significant scale'.

The components of ecological networks



NEA. UK National Ecosystem Assessment (<http://bit.ly/NEA>).

White Paper. The Natural Environment White Paper, *The Natural Choice* (<http://bit.ly/newhpa>).

The Read Report. *Combating Climate Change: a role for UK forests*, Forestry Commission 2009 (<http://bit.ly/readrep>).

THE NATURAL CHOICE SECURING THE VALUE OF NATURE

This is the first government white paper on the natural environment since the publication of *This Common Inheritance*, more than two decades ago. Caroline Spelman claims the proposals in *The Natural Choice* (hereafter the 'White Paper') 'set out a detailed programme of action to repair damage done to the environment in the past, and urges everyone to get involved in helping nature to flourish at all levels – from neighbourhoods to national parks.'

The White Paper lists ninety two commitments; many are not new, many are not specified in sufficient detail, and many of the dates for delivery are vague.

Ambitions

By 2060. 'Our essential natural assets will be contributing fully to robust and resilient ecosystems, providing a wide range of goods and services so that increasing numbers of people enjoy benefits from a healthier natural environment.'

By 2020. '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'.

In a paragraph beginning 'by 2020 we want to achieve an overall improvement in the status of our wildlife', the White Paper sets the following targets 'over time' (leaving it unclear whether 2020 is actually the target):

- ◆ 90% of priority wildlife habitats in recovering or favourable condition
- ◆ more, bigger, better and less-fragmented areas for wildlife, with no net loss of priority habitat and at least 200,000 extra hectares in the overall extent of priority habitats
- ◆ at least 50% of Sites of Special Scientific Interest 'will be in favourable condition, while maintaining at least 95% in favourable or recovering condition'
- ◆ at least 17% of England will be managed effectively in order to safeguard biodiversity and ecosystem services
- ◆ at least 15% of degraded ecosystems that are important for climate change mitigation and adaptation will be restored.

The logic of the White Paper, though it is not explicitly stated, is that much of the finance to meet these targets will come from biodiversity credits.

Delivery Mechanisms

The White Paper announces a number of new delivery mechanisms:

Nature Improvement Areas (NIAs) will enhance and reconnect nature on a significant scale—where the opportunities and benefits justify such action. A competition will identify 12 initial NIAs and will provide £7.5 million to support the Local Nature Partnerships to deliver them.

Local Nature Partnerships (LNPs) will deliver the NIAs. They could operate across administrative boundaries. They will strengthen local action and enable local leadership and will raise awareness about the services and benefits of a healthy natural environment. LNPs will contribute to the green economy and link with Local Enterprise Partnerships.

Natural Value Ambassadors 'with credibility in their own fields of expertise' will inspire action in others.

Biodiversity offsets. This is the most controversial part of the White Paper. The proposal is that where developments destroy biodiversity, payments will be made for biodiversity enhancement elsewhere.

Local Nature Partnerships

Ambition. The government will encourage and support Local Nature Partnerships where local areas wish to establish them. These partnerships will work at a strategic scale to improve the range of benefits and services we get from a healthy natural environment.

Role. LNPs will demonstrate local leadership, raising awareness about the vital services and benefits that a healthy natural environment brings for people, communities and the local economy.

Delivery. Local Nature Partnerships will work in a cooperative and constructive fashion with Local Enterprise Partnerships (LEPs) to drive forward green growth locally. Such partnerships may cross administrative boundaries, so that they can reflect natural features, systems and landscapes, and work at a scale that has most impact. They might join up on cross-boundary issues, such as landscape-scale action for biodiversity, water management, green infrastructure, air quality and ecosystem services more widely. At this strategic level, there could be around 50 partnerships across the country. Membership of LNPs will include local authorities, businesses, statutory authorities, civil society organisations, land managers and local environmental record centres, 'as well as people from communities themselves'. Effective partnerships will be those that 'engage and win the support of local people and communities they serve'.

Carrots. A one-off fund in 2011/12 worth £1 million will support development of the partnerships, amounting to £20,000 each if there are just 50 LNPs. Successful LNPs will be 'invited to an annual ministerial event at which partnerships can come together to share best practice, discuss implementation issues and celebrate success'.

Nature Improvement Areas

Ambition. 'To enhance and reconnect nature on a significant scale'. The White Paper does not attempt to define 'significant scale' saying it depends on 'the particular interest of those involved locally, aesthetic or cultural characteristics, natural features... or recognised areas such as the 159 National Character Areas.'

Role. The Lawton Report concluded the quality of natural habitats must be improved throughout the countryside, while strategic action must be taken to plug gaps in the ecological network. The government want to see NIAs wherever these opportunities or benefits are greatest, driven by local partners, based on a local assessment of opportunities for restoring and connecting nature on a significant scale.

Delivery. Natural England will set up a competition to identify twelve Nature Improvement Areas. The NIAs will be defined through the planning system, including 'identifying them in their local plans where they choose, while not deterring sustainable development... The National Planning Policy Framework will provide communities with the tools they need to achieve an improved and healthy natural environment as part of sustainable growth, taking account of the objectives set out in this White Paper.'

Carrots. £7.5 million over 2011-12 to 2014-15.

The **Ecosystems Knowledge Network** will be established to learn from landscape scale approaches to restoring nature. Run by an independent organisation, this network will involve environmental bodies and include local projects, drawing on practical experience to share learning and good practice. It will facilitate a 'joined-up approach to ecosystem management', helping local communities to learn from each other.

Natural Value Ambassadors

Ambition. The NEA found that the economic and social value of nature is neither understood nor taken into account by decision-makers. Evidence shows that passionate individuals with credibility in their own fields of expertise can help inspire action in others.

Role. Defra will inaugurate a network of 50 Natural Value Ambassadors to engage key decision-makers and opinion-formers using the latest evidence and materials available.

Delivery. Local Nature Partnerships will be invited to nominate candidates, as will professional bodies from other sectors such as business, health and education.

Carrots. None.

Biodiversity Offsetting

Ambition. ‘To make requirements to reduce the impacts of development on biodiversity simpler and more consistent’.

Offsetting. The white paper argues that ‘a consistent framework for biodiversity offsetting’ could improve biodiversity outcomes, for example by pooling of offsets to create larger conservation areas, and would reduce costs for developers. Offsetting could safeguard biodiversity more effectively, for example, by encouraging the pooling of resources to achieve higher quality compensation. Such biodiversity compensation payments would also make the process of managing the impacts of development on biodiversity simple for all involved by providing a straightforward and cost-effective way to assess the impact of a development and to agree the requirements for compensation. Offsets should help to expand and restore the ecological network in England. Used in a strategic way they can help to deliver more, better, bigger and joined up networks of habitat.

Pilots. The White Paper proposes pilots in which ‘local authorities... will offer developers the option of delivering their biodiversity planning policy requirements through offsetting’, with a two-year pilot from 2012. Defra wants local authorities, developers, conservation and community groups to express an interest in testing offsetting.

Carrots. Biodiversity is swapped for cash and cash is swapped for biodiversity, a simpler process for developers and planning authorities.

The Role of the Planning System

Ecologically coherent planning. The White Paper declares an ambition for ‘ecologically coherent planning, retaining the protection and improvement of the natural environment as core objectives of the planning system... Through reforms of the planning system, we will take a strategic approach to planning for nature within and across local areas [to] guide development to the best locations, encourage greener design and enable development to enhance natural networks.’ This will be delivered through the Localism Bill and National Planning Policy Framework.

Impact of renewable energy. The White Paper promises the government will ‘work with others to establish a research programme to fill evidence gaps about impacts on the natural environment of the level of infrastructure needed to meet 2050 [renewable] objectives, in particular with respect to the cumulative and indirect effects.’

Farming and the Environment

Food and the environment review. Acknowledging the tensions between improving the environment and increasing food production, the White Paper promises to ‘bring together government, industry and environmental partners to reconcile how we will achieve our goals of improving the environment and increasing food production.’ The conclusions will be published within the next 12 months.

Farming and the environment review. In 2012, Defra will review the effectiveness of voluntary industry-wide approaches, such as the voluntary Campaign for the Farmed Environment and the Greenhouse Gas Action Plan. If progress is insufficient, government intervention will be considered.

Environmental Stewardship. Defra will explore how Environmental Stewardship can best contribute to nature restoration through the creation of buffer zones, stepping stones and wildlife corridors as set out in the Lawton Report. It promises to develop and pilot a flexible approach to that increases its focus on outcomes.

Diverse and Living Landscapes

There are a number of promises relating to landscapes:

Green corridors. The natural areas at the edges of strategic roads and railways cover approximately 60,000 hectares. Better management could connect and enhance fragmented habitats. Defra plans a forum with environmental stakeholders to inform future priorities for enhancement of these green corridors.

Green infrastructure. Urban green infrastructure is needed to complete the links in the national ecological network. The government wants urban green spaces to be recognised as an ‘essential asset and factored into the development of all our communities’. They will be managed to provide diverse functions for the benefit of people and wildlife, including cooling urban areas and reducing flood risk.

National Landscape Character Area profiles will be updated to identify the environmental potential of landscape areas, to inform national policies such as agri-environment schemes and help local communities and planners to make informed decisions about land use.

Tranquillity. ‘For many people, a sense of tranquillity contributes to their enjoyment of the natural environment. We are committed to delivering the Noise Policy Statement for England that promotes good health and quality of life.’ Defra will work with local authorities to establish mechanisms for formally identifying and protecting urban Quiet Areas.

Light pollution is a growing problem. Stargazing is a form of contact with the natural world which is becoming more difficult for people living in built-up areas. The Royal Commission on Environmental Pollution found evidence of potential ecological impacts from artificial light. Defra will work with industry and other bodies to reduce the negative impacts of artificial light and protect existing dark areas.

Soils. By 2030, all of England’s soils to be managed sustainably and degradation threats tackled successfully.

Peat. Reduce peat use to zero by 2030, via a phase-out target of 2015 for the public sector; a voluntary phase-out target of 2020 for amateur gardeners; and voluntary phase-out target of 2030 for professional horticulture.

Water. The catchment-level partnerships for creating and maintaining healthy water bodies will be supported and extended. The abstraction regime will be reformed. A Water White Paper will set out further details.

Woodland and Forests

More woodland. The White Paper welcomes the Read Report's call for a growth in forest area and says the government's 'ambition is for a major increase in the area of woodland in England, better management of existing woodlands, and a renewed commitment to conserving and restoring ancient woodlands'.

Better woodland. Defra has asked the Independent Panel on Forestry (<http://bit.ly/indywood>) to provide advice on: the right level of ambition for woodland creation and management; the mechanisms and market conditions needed; the options for ensuring that everyone has the opportunity to experience and enjoy woodland; and the opportunities for restoration of open habitats and plantations on ancient woodland sites.

Green Economy

Natural capital. Defra proposes inclusion of natural capital in the UK's national accounts of economic progress. It believes such accounting 'will be a catalyst for wider change, and put us on a course for a greener economy'. Defra will work with the Office for National Statistics to fully include natural capital in the UK Environmental Accounts, with early changes by 2013, and further improvements up to 2020. Over time, it plans to move from measuring the value of the physical stocks to systematically valuing the services they provide.

Natural Capital Committee. The Government will establish an independent committee to advise the Government on the state of English natural capital. It will report to the Economic Affairs Cabinet Committee chaired by the Chancellor of the Exchequer. Firstly, it will provide advice on when, where and how natural assets are being used unsustainably. Secondly, it will advise the Government on how it should prioritise action to protect and improve natural capital, so that public and private activity is focused where it will have greatest impact on improving wellbeing in our society. Finally, it will advise the Government on research priorities to improve future advice and decisions on protecting and enhancing natural capital.

Reconnecting People and Nature

The new **Green Areas Designation** will 'empower communities to protect local environments that are important to them.' There will be a consultation later this year and the designation will be introduced by April 2012. Defra proposes that green spaces should be identified in neighbourhood plans and local plans 'which complement and do not undermine investment in homes, jobs and other essential services'.

Health. The White Paper commits the government 'improving public health locally, by making high-quality green space available to everyone'. 'Local Nature Partnerships and the Health and Wellbeing Boards should actively seek to engage each other in their work. Forthcoming guidance will make clear that the wider determinants of health, including the natural environment, will be a crucial consideration in developing joint strategic needs assessments and joint health and wellbeing strategies.' Its proposals include action to get more children learning outdoors and help for everyone to 'do the right thing', at home, when shopping or as volunteers.

Rights of way. Defra will consult on simplifying and streamlining the processes for recording and making changes to public rights of way, based on proposals made by Natural England's working group on unrecorded rights of way. It 'will make it easier for local communities and civil society groups to get involved in developing and maintaining networks of paths and accessible green space'.

Reaction

CLA. 'Farmers, land managers and champions of country pursuits have always been the Big Society in the countryside, long before it had been provided with a catch-all title. The countryside is not just an experiment or recreational area Management has to be locally specific in order to remain sustainable and cannot be dictated to by a centrally set target, a risk this White Paper runs' (Spectator: <http://bit.ly/m62r90>).

Countryside Alliance. The government 'has missed an opportunity to support the big society that already exists in the countryside. Rural communities undertake hundreds of millions of pounds worth of unpaid conservation work each year for the benefit of all and the government should make it a priority to support them in this role' (<http://bit.ly/mOpEJr>).

CPRE. 'There is much that will get three cheers from those who love and want to improve the English countryside. Most encouragingly Caroline Spelman highlights the intrinsic value of nature in her foreword showing that she understands that the natural environment is at least as much about inspiration as economic value.' The big disappointment of the White Paper says – and doesn't say – about planning' (<http://bit.ly/ISXS3P>).

Friends of the Earth. 'Putting nature's economic value at the heart of government policy makes sound financial sense - our green spaces are worth billions in keeping us healthy and happy, and protecting them goes hand in hand with building a greener economy' (<http://bit.ly/I9afCq>).

Green Party. 'Putting economic evaluation of the natural world might be a well-intentioned effort to convince economists and the business community of its importance, but putting a price on the environment only serves to further commodify it – perpetuating the idea that natural resources are simply there to be exploited' (Guardian: <http://bit.ly/mLASpA>).

Greenpeace. 'Ordinary people were disgusted by the plan to sell off the countries' [sic] forests, and they will be equally mystified and horrified by proposals to 'offset' the destruction of one habitat or species, by the 'voluntary' creation of another. How many badgers or hedgehogs do you save, to offset one dead otter? It's madness' (Telegraph: <http://tgr.ph/jTZYi>).

Labour: 'Today's natural environment white paper provides few clues about the Conservative-led Government's plans for nature. The white paper fails to set out a clear plan for major challenges such as reforestation or biodiversity loss; nor does it deal with concerns about planning policy.'

National Trust. 'The white paper leaves some tantalising gaps which will only be filled when we know more about the future of our planning system and the final form of the localism bill... Planning is beginning to look increasingly vulnerable to powerful interests who will only need to say the word growth to get the permissions they seek' (Guardian: <http://bit.ly/ifxOkz>).

Ramblers. 'The white paper fails to fully recognise the important role that access and recreation play in facilitating the public's understanding and enjoyment of the natural environment... The fact that there is no mention of coastal access, and the future roll out of the English Coastal Path, is indicative of the Government's apparent disregard for public access.' The Open Spaces Society said it was sceptical about provisions to simplify and streamline the process for making changes to public rights of way (Grough: <http://bit.ly/kv3pkH>).

WWF. 'The trouble is a lot of the report seems to be underpinned by the ideology of the Big Society, which is fine if we assume local communities will do the work. We have reservations about whether it will deliver in the end' (<http://bit.ly/kEffeG>; Independent: <http://ind.pn/mfTAaG>).

THE UK NATIONAL ECOSYSTEM ASSESSMENT

In Brief

'The natural world, its biodiversity and its constituent ecosystems are critically important to our well-being and economic prosperity, but are consistently undervalued in conventional economic analyses and decision making... We already have enough information to start managing our ecosystems more sustainably and good evidence of the benefits of doing so... Contact with nature gives pleasure, provides recreation and is known to have a positive impact on long-term health and happiness.'

The study. The UK National Ecosystem Assessment (UK NEA) provides a comprehensive overview of the state of the natural environment in the UK and a new way of estimating our national wealth. It reveals how we have under-valued our natural resources and their contribution to the economy and quality of life. This UK wide independent and peer-reviewed assessment of the state and value of the UK's natural environment and ecosystem services involved over 500 UK natural scientists, economists, social scientists and other stakeholders from government, academic, NGO and private sector institutions at a cost of £1.3 million.

Methods. It assesses the services provided by eight habitat types across Britain — including woodlands, urban environments and farmlands — by assigning them a financial value. That value takes into account a range of non-market goods provided by ecosystems, including flood and erosion control, recreational enjoyment and spiritual inspiration, as well as market goods, such as energy and food.

The threats. The study found that ecosystems and ecosystem services and the ways people benefit from them have changed markedly in the past 60 years. Contemporary society is less sustainable than it could be. While the UK's ecosystems are currently delivering some services well, others remain in long-term decline. The future will bring increasing pressures on ecosystem services as the UK population and its expectations continue to grow, and as climate change has an accelerating impact. A third of the services nature provides to the UK, from fish stocks for food to the pollination of plants on farmland which allows them to fruit, are being damaged.

Ecosystems ignored. The study says ecosystem services are typically 'ignored' and given a 'value of zero' in political decision-making. It claims that ecological damage has been brought about due to a culture which viewed nature has in terms of what can be exploited and sold, particularly for resources such as timber and food crops, while caring for the environment was seen as an unwanted cost.

The value of ecosystems. Ecosystems and the services they deliver underpin our very existence. The UK needs 'a better grasp of the values of the full range of ecosystem services, including cultural values based on ethical, spiritual and aesthetic principles. The values of most ecosystem services are currently omitted from national economic frameworks and local decision making.' Failure to include the valuation of non-market goods in decision making results in a less efficient resource allocation, with negative consequences for social well-being. However, a major challenge is to develop systems to define the values of non-market ecosystem services to land managers. The study puts a precise value on some aspects of nature, while others are harder to define. Inland wetlands are considered to be worth £1.5 billion for their benefits to water quality while bees and other insects which pollinate fruit and crops have a value of £430 million a year to British agriculture.

The value of landscapes. Ecosystem services are crucial to the more than 3,000 million outdoor recreational visits which UK residents make each year. Analyses conducted for the NEA shows that these visits generate a social value in excess of £10 billion annually. The health benefits of simply living near to a green space are worth up to £300 per person per year. 'Contact with nature gives pleasure, provides recreation and is known to have a positive impact on long-term health and happiness.'

The scenarios. The NEA explored six scenarios for the future and concluded that the greenest options were the most sustainable. Assessment estimates the change in ecosystem value over the next 50 years compared with a year 2000 baseline for six policy scenarios. It concludes that if market values were alone allowed to determine the future of the UK, both economy and the quality of life would suffer. The *World Markets* scenario, a drive for unrestrained economic growth, produces a gain in agricultural output of £420m a year but losses in non-market values, particularly through lost green space and extra greenhouse gas emissions, giving an overall loss of £20.6bn a year. The *Nature@Work* scenario, promoting biodiversity and varied landscapes, produces a loss of £510m a year in farm incomes, but an overall gain of £33bn a year through increased recreation and other green space values.

Ecosystems and Services

Trends. The NEA gives a useful historical perspective on farming, forestry and biodiversity trends. During the second half of the 20th century, the production of food from agriculture increased dramatically but many other ecosystem services, particularly those related to air, water and soil quality declined. Crop production and species diversity in woodlands were among the few services that improved. Wheat yields doubled between the 1960s and 2010, reaching around 8 tonnes per hectare, owing to the use of more productive crop varieties and fertilizers. But the biodiversity of farmland birds declined by 43% between 1970 and 1998 (see graphs below).

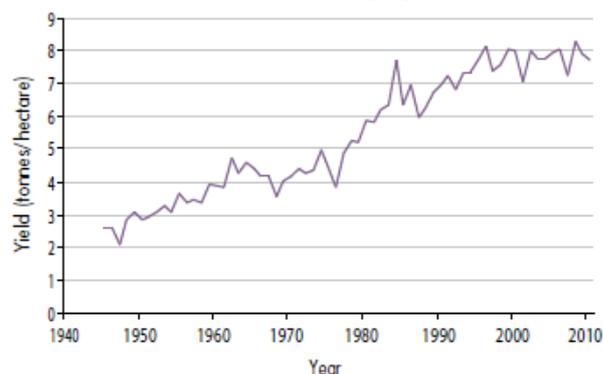


Figure 1 Average yield of wheat in the UK from 1945 to 2010.

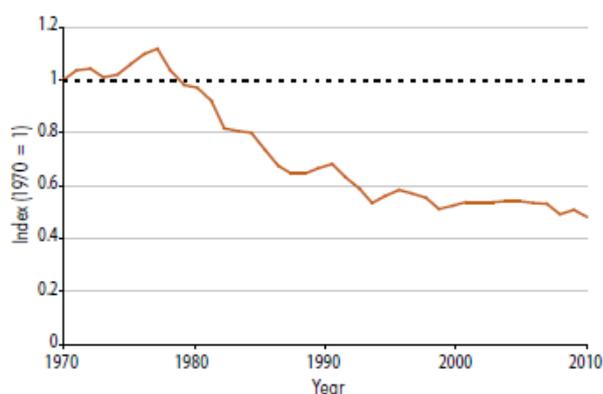
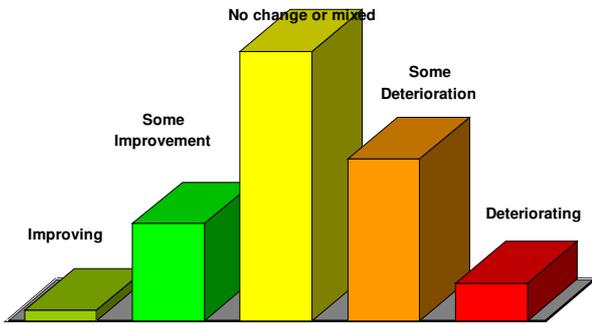


Figure 3 The UK Farmland Bird Index, 1970 to 2009

Ecosystem services in decline. Many ecosystem services continue to decline or have shown little improvement. About 30% are currently declining (see graphic on page 8 of which the graph below is a partial summary). Many other services are in a reduced or degraded state, including marine fisheries, wild species diversity and some of the services provided by soils.



The current state of ecosystem services

Urban greenspace declining. There has been a marked decline in the condition and accessibility of urban greenspace, driven by high land values and demand for housing to meet the needs of a growing population. Around 10,000 playing fields were sold between 1979 and 1997, while allotments are now down to 10% of their peak level, just 10,000 hectares compared with over 100,000 hectares in the late 1940s.

Public interest increasing. Membership of organisations involved in nature conservation has increased dramatically. The RSPB now has over 1 million members and the 45 Wildlife Trusts have a total of 800,000 members.

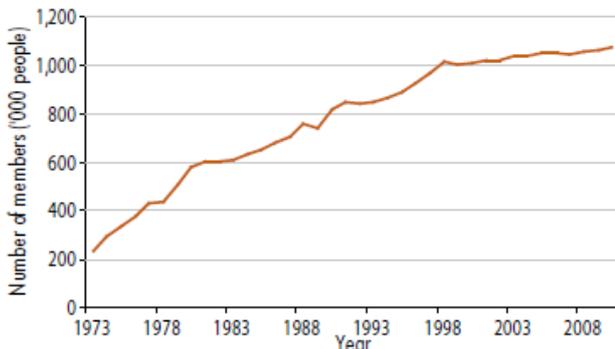


Figure 18 The total number of members of the Royal Society for the Protection of Birds (RSPB) between 1973 and 2010. Source: data provided by RSPB (2011).

An Ecosystem under Pressure

Population and climate change. The UK's population will grow by nearly 10 million in the next 20 years bringing increased demands and expectations. This will raise pressures on ecosystem services in a future where climate change will have an accelerating impact both here and in the world at large. Climate change is expected to lead to more frequent severe weather events and to alter rainfall patterns, with implications for agriculture, flood control and many other services.

Food imports to grow? If current consumption and waste patterns persist, and domestic production remains stable, food demand will drive up imports of food as UK population grows. Imports could rise from the current 33 million tonnes to almost 50 million tonnes in 2030, requiring an additional overseas land demand of 5 million hectares. This demand growth could be mitigated by food waste reduction, increased domestic production, and changes in consumption patterns.

Biomass imports to grow for energy? As the UK complies with the European Union Renewable Energy Objective, the demand for production of biomass will exceed the UK's domestic capacity before 2020. Additional biomass imports of 27 million tonnes per year of may be required for energy, needing at least an additional 7 million hectares of land overseas by 2020, equally divided between boreal forest and temperate grassland systems.

Landscape vs. biomass. The UK dependence on overseas biomass could increase if the UK 'takes a preservationist attitude towards its own landscape', or if free markets are allowed to determine the source of UK biomass with little regard for environmental issues. Increased UK production of biomass is needed, as well as its more effective use of biomass through decreased waste.

Actions taken and decisions made now will have consequences far into the future for ecosystems, ecosystem services and human well-being. One of the major challenges is to increase food production, but with a smaller environmental footprint through sustainable intensification. Allowing decisions to be guided by market prices alone will forgo opportunities for major enhancements in ecosystem services, with negative consequences for social well-being. Recognising the value of ecosystem services more fully would allow the UK to move towards a more sustainable future, in which the benefits of ecosystem services are better realised and more equitably distributed.

The Six Future Scenarios

The scenarios. The NEA outlines six future scenarios, some of which emphasise environmental awareness and ecological sustainability, while others stress national self-sufficiency or economic growth and the removal of trade barriers:

- ◆ *Green and Pleasant Land*: (essentially) preservationist
- ◆ *Nature@Work*: ecological
- ◆ *Local Stewardship*: devolved sustainability
- ◆ *Go with the Flow*: business as usual
- ◆ *National Security*: protectionist
- ◆ *World Markets*: globalist.

Assessment. Each of the NEA scenarios was assessed in terms of the changes they induce from the present day. Assessments examined monetary benefits and those from five major ecosystem services: i) agricultural food production; ii) net change in greenhouse gases from land use; iii) open-access recreation; iv) urban greenspace amenity; and v) biodiversity (assessed using birds as indicator species).

The outcomes are green. The three greenest scenarios give the most significant gains: *Green and Pleasant Land*, *Nature@Work* and *Local Stewardship*.

- ◆ If the value of **market goods** is the only factor considered, then *National Security* and *World Markets* yield the highest values, while the *Nature@Work* and *Green and Pleasant Land* scenarios are ranked last with negative market values. *World Markets* and *National Security* show significant losses compared to both the present and *Go with the Flow*.
- ◆ When both **market and non-market** values are considered the ranking is completely reversed. The *Nature@Work* and *Green and Pleasant Land* scenarios both yielding very substantial net benefits to society, while both *National Security* and *World Markets* are found to actually lower overall social values. *Nature@Work* also provides the greatest adaptability to future challenges including climate change.

Green and Pleasant Land. A preservationist attitude arises because the UK can afford to look after its own backyard without diminishing its ever-increasing standards of living. It has many of the characteristics of *Nature@Work*, but takes a less pragmatic view of nature, emphasises more of its intrinsic values and is characterised by a more preservationist perspective. The reduction in agricultural intensity leads to a decline in farm incomes. However, this pro-environment scenario results in substantial gains in terms of reduced net greenhouse gas emissions, accompanied by an increase in recreation and urban greenspace, and resulting in an overall gain in economic value.

Nature@Work. The belief is widely accepted that promotion of ecosystem services through the creation of multifunctional landscapes is essential for maintaining the quality of life in the UK. This results in a more sustainable world through investment in public services, recognition of the importance of the market in economic growth, commitment to global trade, and strong links to European Union and global obligations. Industry is focused upon technological innovation and sustainable resource use, while public behaviour is driven by a recognition of the importance of nature's services. The promotion of multifunctional landscapes under this scenario results in a decline in agricultural lands and with it, farm income. However, this reduction fuels the largest improvements in greenhouse gas emissions, recreation and greenspace amenity, resulting in the most substantial net benefits for society of any scenario.

Local Stewardship. A future where society is more concerned with the immediate surroundings and strives to maintain a sustainable focus on life within that area. Immigration is more controlled, power and taxes are devolved to local governments, technology is developed for self-sufficiency and public behaviour is driven by recognising the importance of nature's services. This scenario appears to offer win-win situation in terms of its monetised benefits. Agricultural incomes, recreation and urban greenspace amenity all improve while the level of greenhouse gas emissions increases only slightly.

Go with the Flow. A projection based on current trends resulting in a future UK based on today's ideals and targets. It appears to be an improvement over current conditions because current policies and interventions start to have a positive effect. However, gains are modest and opportunities to adapt to changing circumstances may be missed. Most significantly, the value of the UK's natural capital is not fully realised. Overall agricultural incomes rise, as do recreational values. These gains are partially offset by an increase in greenhouse gas emissions and losses of urban greenspace. Nevertheless, overall wellbeing increases under this scenario.

National Security. Climate change results in increases in global energy prices forcing many countries to attempt greater self-sufficiency and efficiency in many of their core industries. Climate change, population growth and competition for resources result in increases in global energy prices, forcing many countries to attempt greater self-sufficiency, including the UK. Protectionist policies and trade barriers are designed to defend UK interests. This scenario leads to significant losses of natural capital compared to the present situation and all the other scenarios. It delivers the greatest gain in market-priced goods as agricultural incomes increase markedly. Recreation increases, while net greenhouse gas emissions fall. However, the prioritisation of output and resources results in very substantial falls in urban greenspace.

World Markets. With high economic growth with a deregulation of markets and environmental protection. In this world the public does not recognise the value of nature. It is a society where technological innovation is driven by private profits. Competition for land coupled with reduced rural and urban planning regulations on housing, agriculture and industry mean that biodiversity is often the loser. This scenario leads to significant losses of natural capital compared to the present situation and all the other scenarios. The drive for unfettered economic growth leads to substantial rises in agricultural prices. However, these trigger increases in greenhouse gas emissions and are huge, exacerbated by substantial increases in population. This storyline results in the most substantial reduction in net social values of any scenario.

Reaction

RSPB. Martin Harper said the document showed that carrying on with a 'business as usual' approach to nature meant that 'we are selling ourselves, and our children, short... The problem is, viewing nature as a 'nice to have' spectacularly misses the point. We are part of nature. The many tiers of human civilisation we overlay on top occur within, not separate from, our natural environment. If we ignore that inter-connectedness for too much longer, we will shoot ourselves in the foot' (Guardian: <http://bit.ly/jIw3Oi>).

India Pollock, BBC. 'Priceless and beyond value... people... cannot put a price on their natural surroundings despite what the National Ecosystem Assessment reports' (BBC: <http://bbc.in/1IG5m1>).

Ian Bateman, UEA. 'I am opposed to releasing massive total figures just to impress, because they are meaningless,' said Ian Bateman, professor of environmental sciences at the University of East Anglia and a senior author of the NEA. 'Ultimately the value of the environment is infinite' (FT: <http://on.ft.com/1QW5n3>).

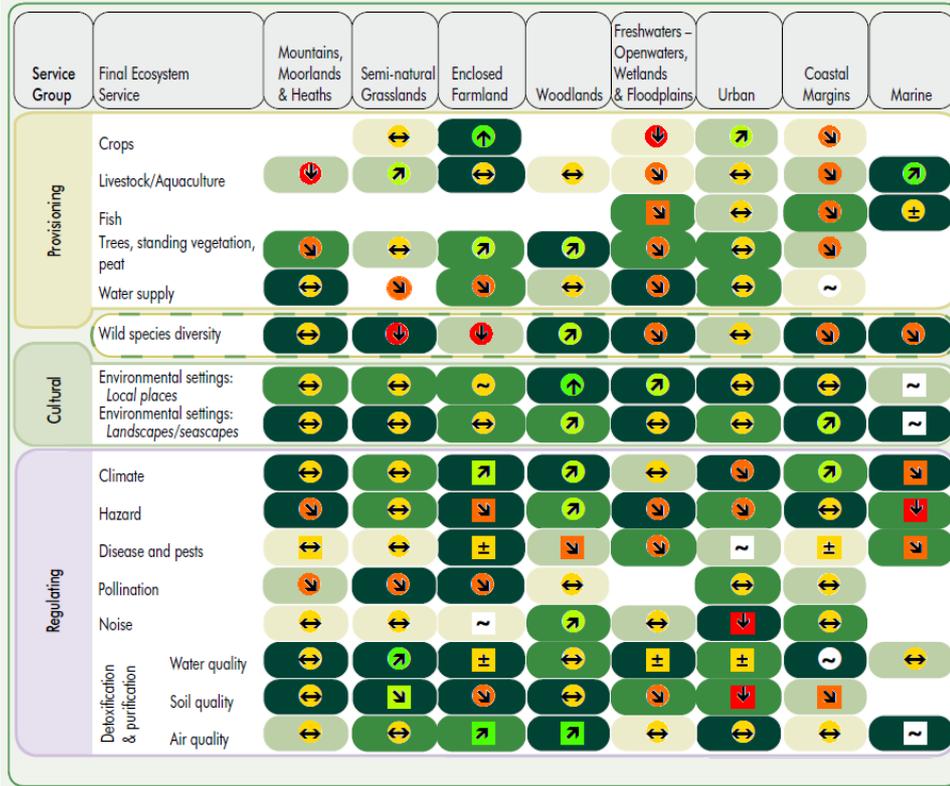
Nicholas Milton, Guardian. 'Putting a monetary value on the natural environment... may fit well with the government's world view that everything has a price but it also smacks of Oscar Wilde's maxim that they know the price of everything and the value of nothing. Treating nature this way will be a disaster for the environment.' Two of the NEA authors responded: 'It is important that its key messages are not lost in a debate over economic valuation, which is not what this report is about... the NEA explicitly recognises that wellbeing is not reducible to what can be economically counted, and our attitudes to nature need to recognise the shared social values (such as the song of the nightingale), the mental solace and other health benefits we derive from a walk in the bluebell woods, alongside the limited economic values that we might be able to estimate' (Guardian: <http://bit.ly/mK3Q4d>; <http://bit.ly/kn5Trv>).

NFU. Diane Mitchell of the National Farmers Union said: 'The model used is far too simplistic and uncertain.' NFU Cymru said the report was short-sighted for recommending more woodland in Wales and said that food production was the priority (Farming UK: <http://bit.ly/musXKE>).

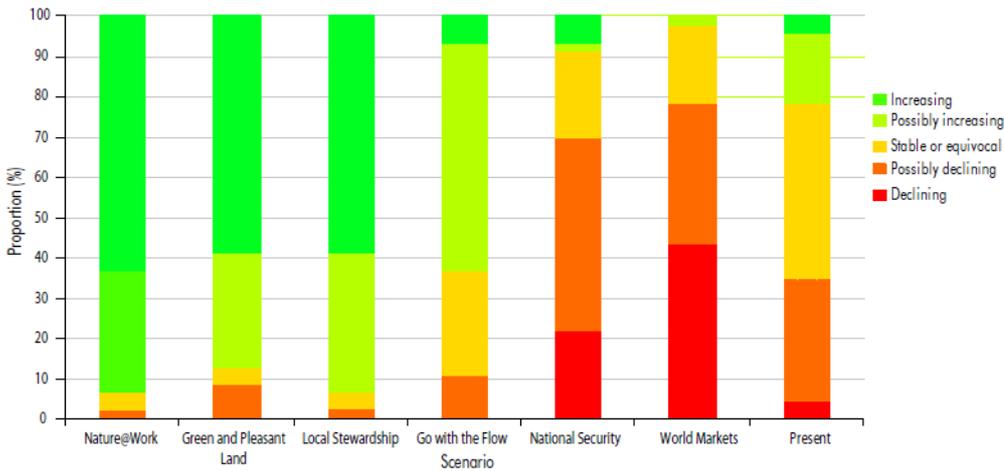
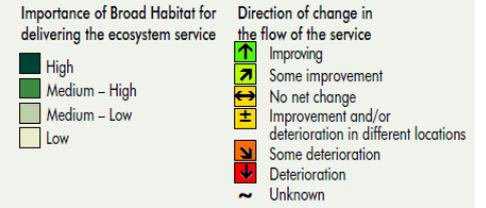
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Andy Boddington, Editor.

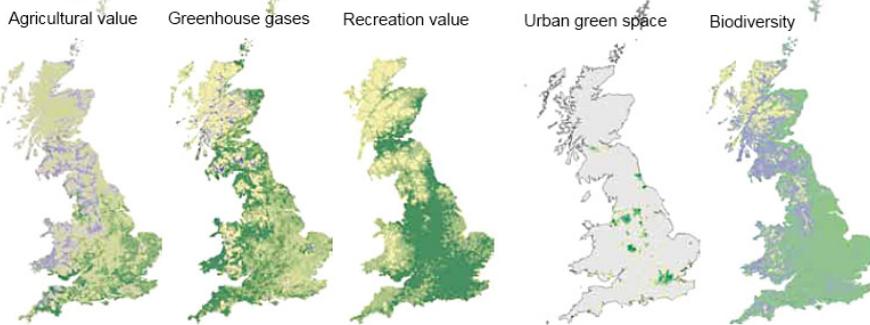


Relative importance of Broad Habitats in delivering ecosystem services and overall direction of change in service flow since 1990

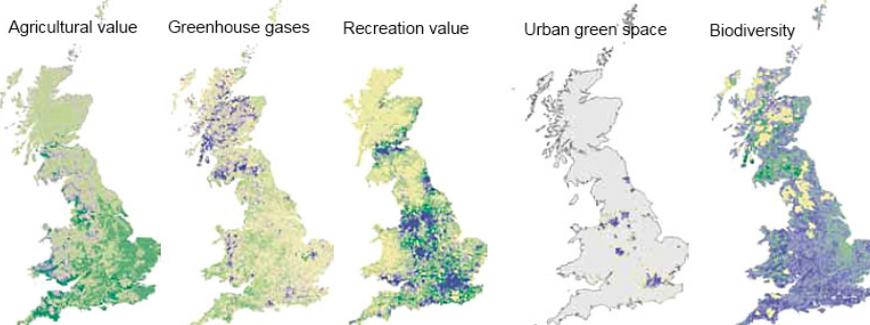


The fate of ecosystem services under the six scenarios

Nature@Work



World Markets



The maps left show the Nature@Work and World Markets scenarios.

The darker the green, the better the outcome; the darker the blue the worse the outcome