

Nature@work: The basis of a green economy?

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Overview

- Reconnecting people and nature
- Thinking about the future
 - The role of the UK NEA
 - The national ecosystem assessment scenarios
- The challenge of '*Nature@work*'
 - One possibility amongst many
 - Scenarios as tools for communication and learning

Reconnecting people and nature

- The **Ecosystem Approach** has been championed as a way of delivering the conservation of biodiversity and sustainable forms of development .
- People claim that it can bring a richer body of knowledge into the decision making arena...

Reconnecting people and nature

- **BUT**
 - Evidence to substantiate such claims is often lacking.....
 -we need to identify whether and how the Approach can stimulate the uptake and use of new *ecosystem knowledge*

This is why the
Liverpool City Region Local Nature Partnership and GI Framework
is important!

Thinking about the future

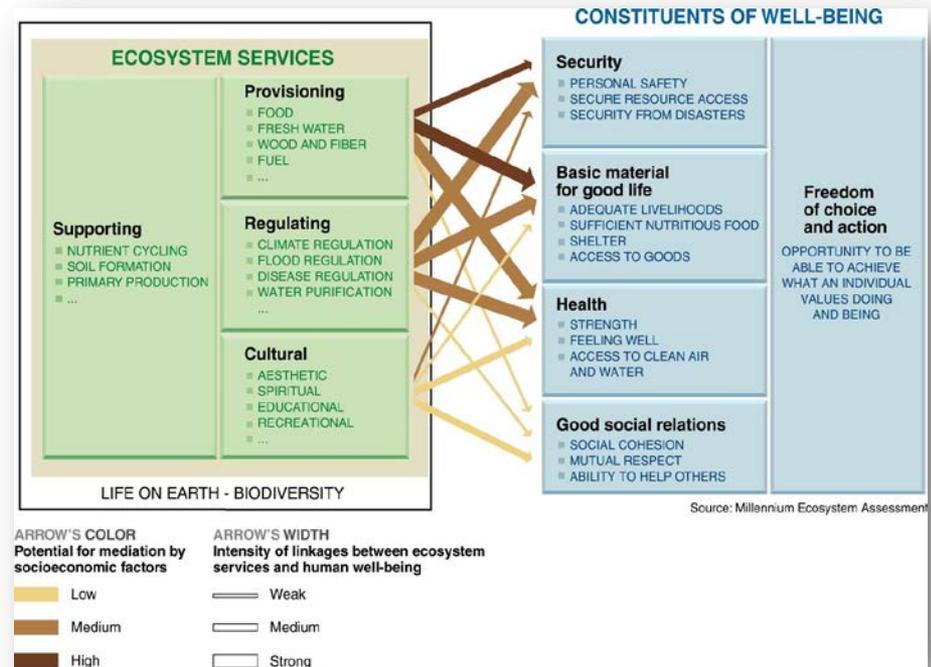


Ecosystem services....
*Changing the terms of
environmental debate?*

Ask not what you can do
for nature – ask what
nature can do for you.

Thinking about the future: The UK NEA

- The UK National Ecosystem Assessment (UK NEA) is a sub-global assessment, stimulated by the publication of the Millennium Ecosystem Assessment, MA (2005).



Thinking about the future: The UK NEA

NEA

- Analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity....
- ...A new way of estimating our national wealth.

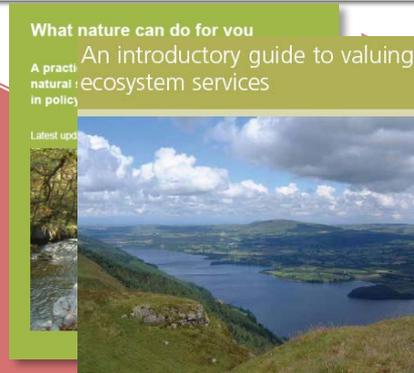
NEAFO

- To further develop and communicate the evidence base of the UK NEA and make it relevant to decision and policy making at different spatial scales across the UK

<http://uknea.unep-wcmc.org/>

Thinking about the future: The UK NEA in context

Sustainable
development
strategy



Action plan
to embed the
Approach,
2007 & 2010
update

England
White Paper,
NEA, 2011



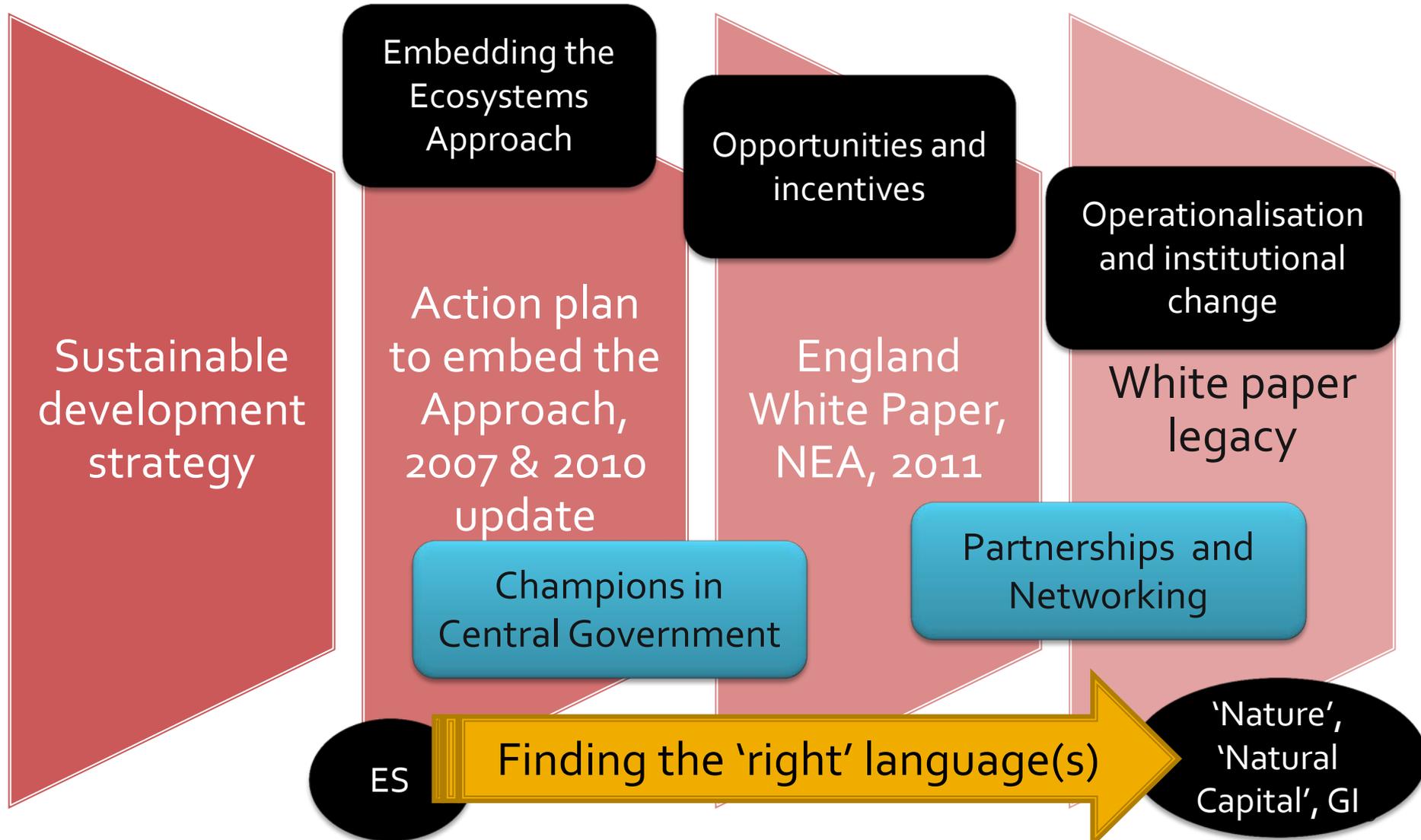
White paper
legacy

Commissioned
research and
NEA Scoping

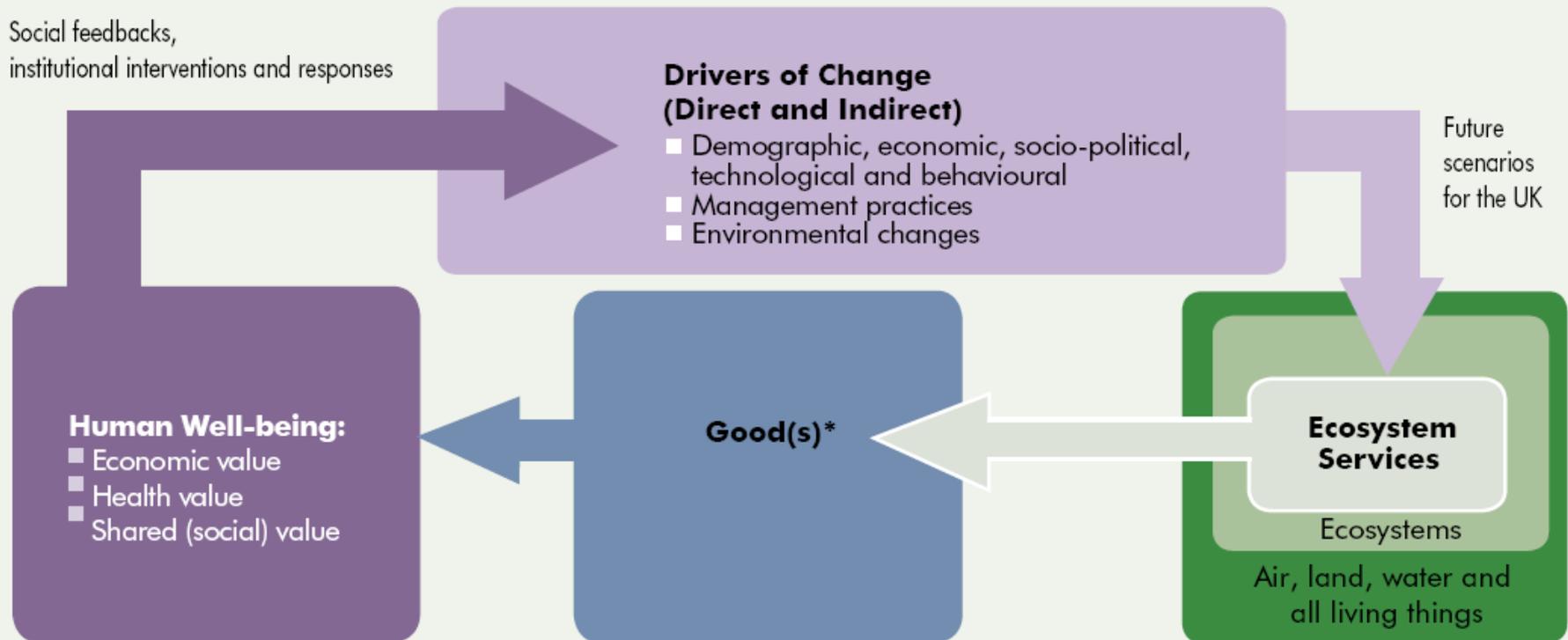


NEA
Follow-on

Thinking about the future: The UK NEA in context



Thinking about the future: The UK NEA in context



Thinking about the future: The UK NEA in context

Service Group	Final Ecosystem Service	Mountains, Moorlands & Heaths	Semi-natural Grasslands	Enclosed Farmland	Woodlands	Freshwaters – Openwaters, Wetlands & Floodplains	Urban	Coastal Margins	Marine	
Provisioning	Crops		↔	↑		↓	↗	↘		
	Livestock/Aquaculture	↓	↗	↔	↔	↓	↔	↘	↗	
	Fish					↓	↔	↘	±	
	Trees, standing vegetation, peat	↓	↔	↗	↗	↓	↔	↘		
	Water supply	↔	↓	↓	↔	↓	↔	?		
	Wild species diversity	↔	↓	↓	↗	↓	↔	↘	↘	
Cultural	Environmental settings: Local places	↔	↔	?	↗	↗	↔	↔	?	
	Environmental settings: Landscapes/seascapes	↔	↔	↔	↗	↔	↔	↗	?	
Regulating	Climate	↔	↔	↗	↗	↔	↘	↗	↘	
	Hazard	↘	↔	↘	↗	↘	↘	↔	↘	
	Disease and pests	↔	↔	±	↘	↘	?	±	↘	
	Pollination	↘	↘	↘	↔		↔	↔		
	Noise	↔	↔	?	↗	↔	↘	↔		
	Detoxification & purification	Water quality	↔	↗	±	↔	±	±	?	↔
		Soil quality	↔	↘	↘	↔	↘	↘	↘	
Air quality		↔	↔	↗	↗	↔	↔	↔	?	

UK NEA Key findings, 2011

Thinking about the future: The UK NEA scenarios

RESEARCH ARTICLE

Bringing Ecosystem Services into Economic Decision-Making: Land Use in the United Kingdom

1. Saheman,^{1*} Anil R. Harwood,¹ Georgina M. Mace,² Robert T. Watson,³ David I. Forster,^{1,4} Barbara A. Jones,¹ Amy Slinner,¹ Andrew Cowe,⁶ Brett H. Day,¹ Steve Dwyer,¹ John Fozz,¹ Jo Foden,¹ David G. Jones,^{1,2} Roy Haines-Young,⁸ Mark Hulme,¹⁰ James Jones,¹¹ Konstantinos,¹¹ Andrew A. Lovett,¹ Paul Munday,¹ Orla O'Riordan,¹ James Patterson,¹¹ Grischa Pfister,^{1,14} Antara Sen,¹ Gavin Sirlwardena,¹⁰ Daan van Soest,¹¹ Mette Termansen¹⁴

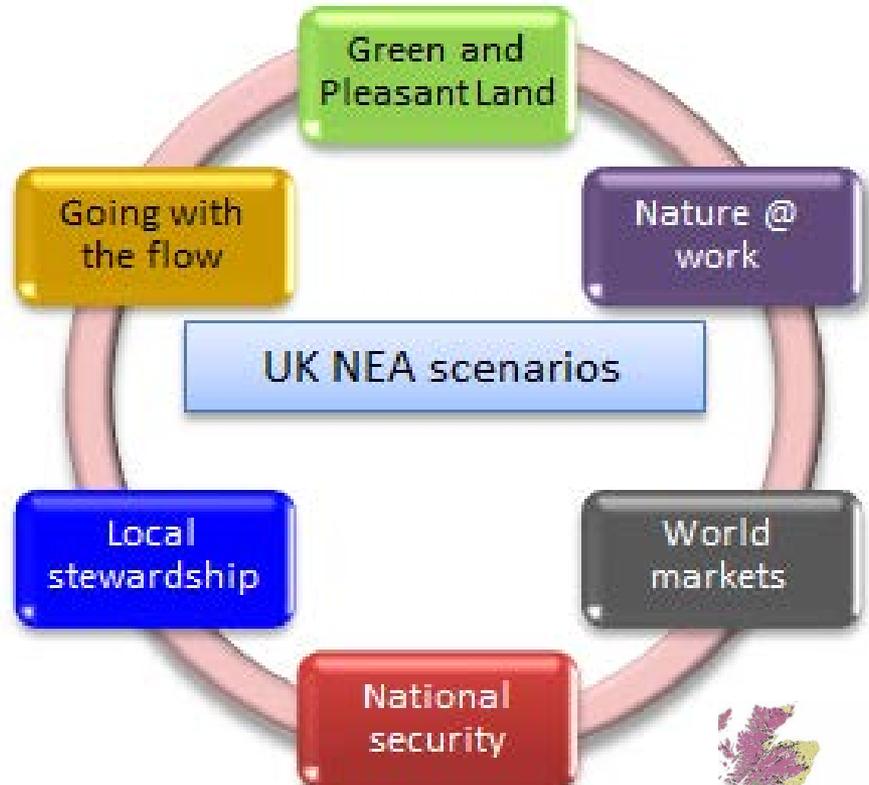
Landscapes generate a wide range of valuable ecosystem services, yet land-use decisions often ignore the value of these services. Using the example of the United Kingdom, we show the significance of land-use change not only for a global carbon footprint but also for emissions and sequestration of greenhouse gases, open-access recreational visits, urban green space, and wild-species diversity. We use spatially explicit models in conjunction with valuation methods to estimate comparable economic values for these services, taking account of climate change impacts. We show that, although decisions that focus solely on agriculture reduce overall ecosystem service values, highly significant value increases can be obtained from targeted planning by incorporating potential services and their values and that this approach also increases wild-species diversity.

change) fundamentally alters decisions regarding optimal land use. The NEA analyses are based on highly detailed, spatially referenced environmental data covering all of Great Britain. These data supported the design and parameterization of models of both the drivers and consequences of land-use decisions, by incorporating the complexity of the natural environment and its variation across space and time (7, 8). Model outputs provide inputs

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- Market agricultural value
- Non-market GHG emissions
- Non-market recreation
- Non-market urban green space

green space amenity	space from each 2-km grid square	breeding bird survey (42)	linking distance from households to green spaces, their size and quality	Monte Carlo simulation
Wild bird-species diversity	Wild bird diversity (20) per 2-km grid square	breeding bird survey (42)	Regression model linking wild bird diversity to land use and location.	Monte Carlo simulation



Spatially explicit scenarios

Thinking about the future: The UK NEA scenarios

Bringing Ecosystem Economic Decisions into Use in the United Kingdom

Ian J. Bateman,^{1*} A Mill R. Hanwood,¹ G. Barnaby Andrews,¹ Amy Slinner,¹ Andre Jo Foden,² David Hadley,^{3,4} Roy Haine,⁵ Andrew A. Lovett,¹ Paul Munday,¹ Una Antonia Sen,¹ Gavin Sirlwardena,¹⁰ Daa

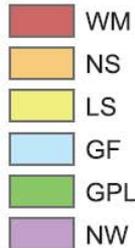
Landscapes generate a wide range of visual value of these services. Using the example of change not only for agricultural production, open access is recreational visits, urban green made in conjunction with valuation methods taking account of climate change impacts, agricultural reduce overall ecosystem services from targeted planning by incorporating all or reserves wild-species diversity.

The Millennium Ecosystem Assessment provided important evidence of the global degradation of ecosystem services and highlighted the need to incorporate this into the economic analyses that underpin world decision-making. Previous studies shows that the overall values of unconserved natural habitats can exceed the private benefits after conversion (2, 3), due to knowledge of scope heterogeneity and ecological processes support cost-effective land planning (4-6).

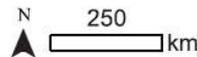
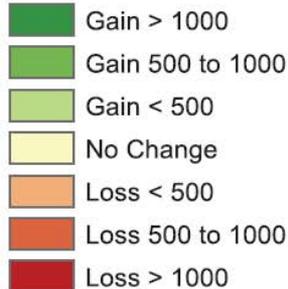
Table 1. Summary of the ecosystem services

Ecosystem service-related good	Metrics (in year specific)
Agricultural production	Proportion and area of land use in 2-km grid square
Greenhouse gases	Net metric tons of CH ₄ and N ₂ O 2-km grid square
Recreation	Visitors per 2-km grid square
Urban green-space amenity	Distance to green space from each 2-km grid square
Wild bird-species diversity	Wild bird diversity (20) per 2-km grid square

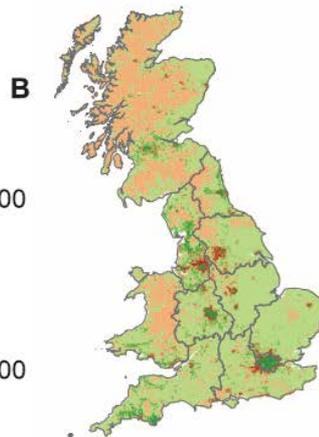
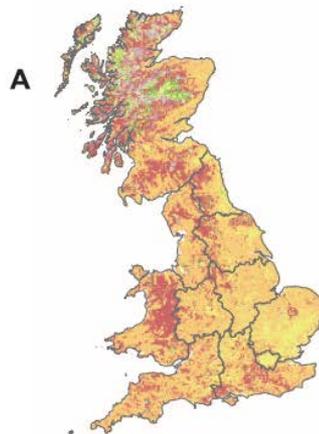
Top row: Scenario (from Fig. 2)



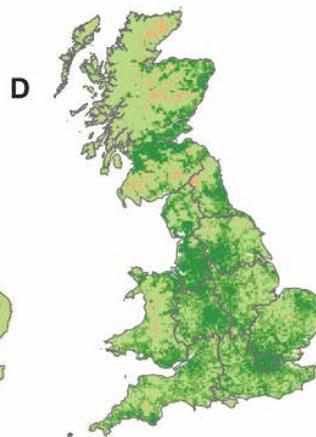
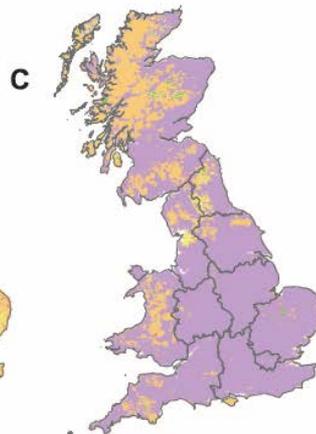
Bottom row: Change in total value (£/ha/yr)



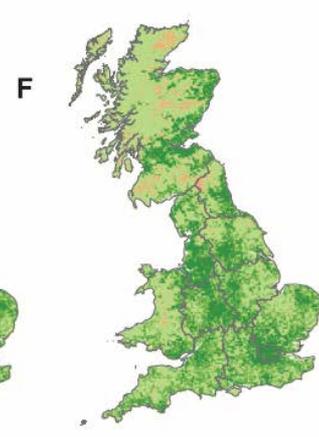
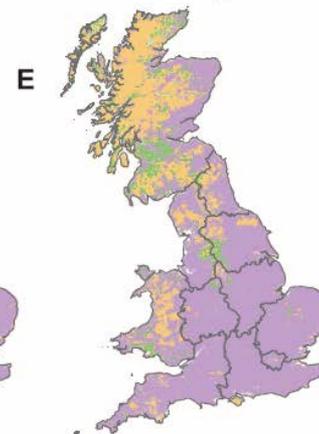
Targeted objective:
Maximize market values only



Targeted objective:
Maximize all monetary values



Targeted objective:
Maximize all monetary values with a biodiversity constraint



Thinking about the future: The UK NEA scenarios

Decision component	Maximize market (agricultural) values only (Fig. 3, A and B)	Maximize all monetary values (Fig. 3, C and D)	Maximize all monetary values with biodiversity constraint (Fig. 3, E and F)
Market agricultural value	971	-448	-455
Nonmarket GHG emissions	-109	1,517	1,510
Nonmarket recreation	2,550	13,854	12,685
Nonmarket urban green space	-2,520	4,683	4,352
All monetary values	892	19,606	18,092

- The conventional focus upon market-priced goods alone can result in decisions that lower overall values...
- All the major ecosystem services generated by a change in resource use need to be assessed – spatially/temporally...
- Significant value increases can be obtained from targeted planning by incorporating all potential services and their values and that this approach also conserves wild-species diversity

Bateman, I. et al. (2013): Bringing Ecosystem Services into Economic Decision-Making: Land Use in the United Kingdom. *Science*, 341, 45- 50.

The challenge of *nature@work*

NATIONAL

- National capital committee
- Ecosystem markets task force
- Research funding

LOCAL

- Local nature partnerships & nature improvement areas
- Biodiversity offsetting pilots
- PES schemes
- Knowledge networks



Policy impacts

The challenge of *nature@work*

- Is *Nature@work* an appropriate vision?
 - The argument cannot be made on the basis of the findings or analysis of the NEA alone....
 - In any case the NEA scenarios were not presented as choices....
 - More as a set of possibilities against which we can test the robustness of our strategies and plans....

The challenge of *nature@work*

- What can scenarios provide?
 - Predictive power?
 - Decision support?
 - Social learning?



- Scenarios as deliberative tools....
- Scenarios as a way of promoting 'citizen science'...
- *How can we communicate the benefits to those who may not currently be involved or understand the ecosystem approach?*

The challenge of *nature@work*



*Reconnecting people
and nature: the basis of
a green economy*

Ask not what you can do
for nature – ask what
nature can do for you.

Thank you

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