

The UK National Ecosystem Assessment.

Putting the Value of Nature into policy and decisions.

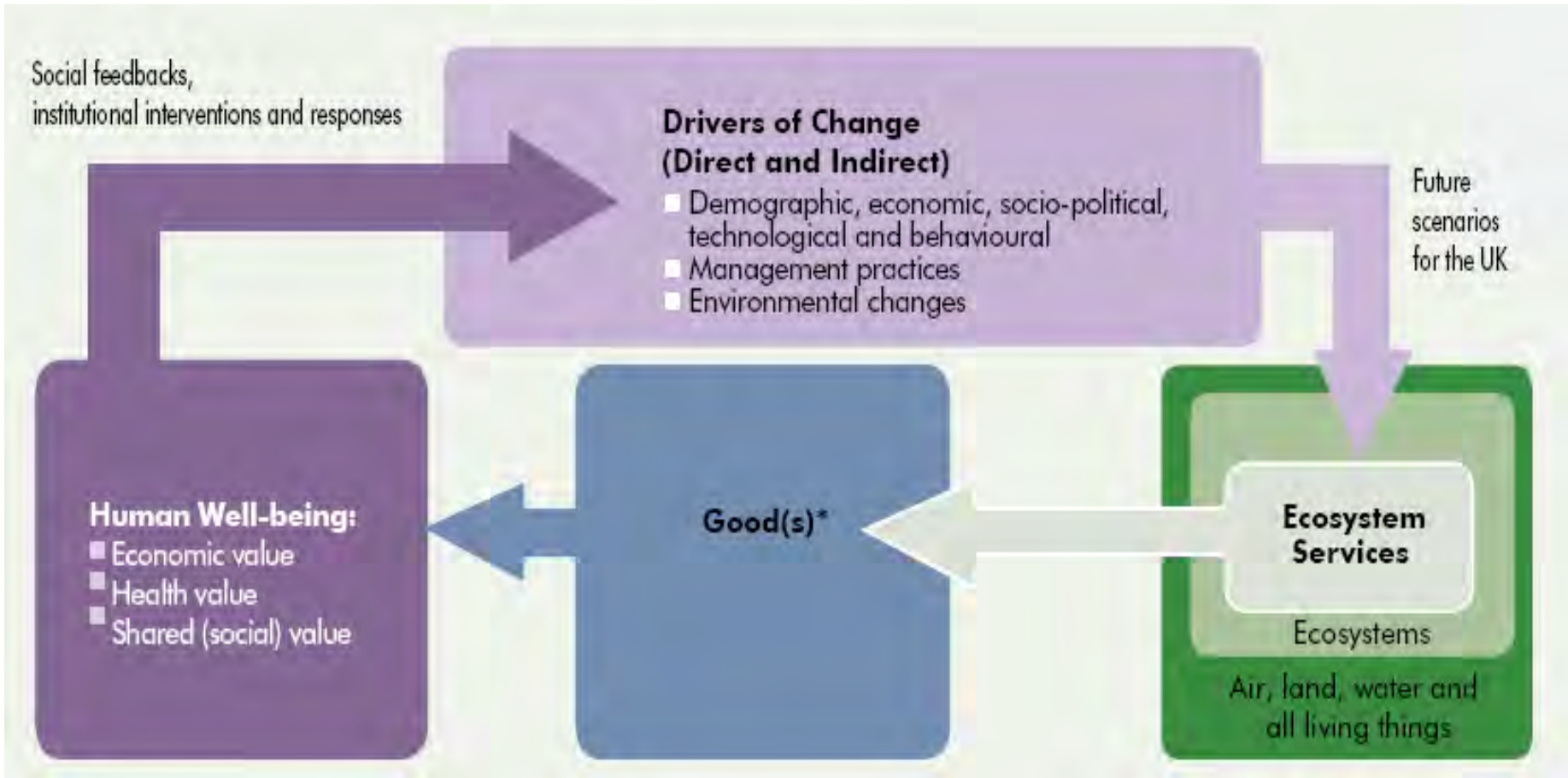
UK Government

February 2012

Analysis of UK's natural environment - Benefits for People



Conceptual Framework



Broad Habitats



Freshwaters -
Openwaters, Wetlands
and Floodplains



Urban



Marine



Coastal Margins



Mountains, moors and
heathlands



Semi-natural grasslands



Enclosed farmland



Woodlands

Summary of changes to ecosystems

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		↔	↔	↗	↗	↔	↔	↔	~	

Figure 5 Relative importance of Broad Habitats in delivering ecosystem services and overall direction of change in service flow since 1990. This figure is based on information synthesized from the habitat and ecosystem service chapters of the UK NEA Technical Report (Chapters 5–16), as well as expert opinion. This figure represents a UK-wide overview and will vary nationally, regionally and locally. It will therefore also inevitably include a level of uncertainty; full details can be found in the Technical Report. Arrows in circles represent where there is high evidence for or confidence in the direction of service flow amongst experts; arrows in squares represent where there is less evidence for or confidence in the direction of service flow. Blank cells represent services that are not applicable to a particular Broad Habitat.

Importance of Broad Habitat for delivering the ecosystem service

- High
- Medium – High
- Medium – Low
- Low

Direction of change in the flow of the service

- ↑ Improving
- ↗ Some improvement
- ↔ No net change
- ± Improvement and/or deterioration in different locations
- ↓ Some deterioration
- ↓ Deterioration
- ~ Unknown



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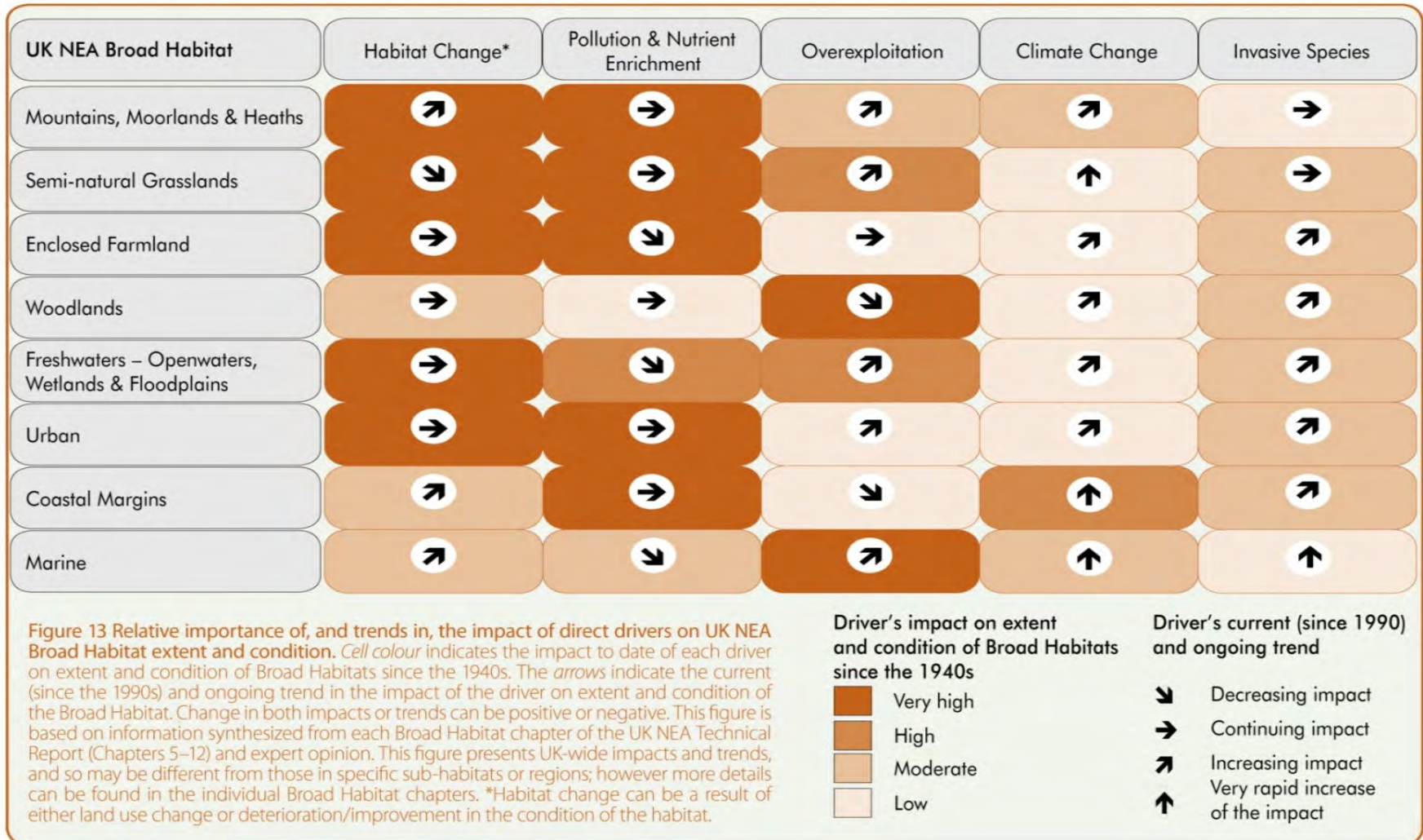
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Service Group	Final Ecosystem Service	Mountains, Moorlands & Heaths	Semi-natural Grasslands	Enclosed Farmland
Provisioning	Crops		↔	↑
	Livestock/Aquaculture	↓	↔	↔
	Fish			
	Trees, standing vegetation, peat	↘	↔	↘
	Water supply	↔	↘	↘
Cultural	Wild species diversity	↔	↓	↓
	Environmental settings: <i>Local places</i>	↔	↔	?
	Environmental settings: <i>Landscapes/seascapes</i>	↔	↔	↔

Importance of Broad Habitat for delivering the ecosystem service

- High
- Medium – High
- Medium – Low
- Low


Drivers of change







Drivers of change

UK NEA Broad Habitat	Habitat Change*	Pollution & Nutrient Enrichment	Overexploitation	Climate Change
Mountains, Moorlands & Heaths	↗	→	↗	↗
Semi-natural Grasslands	↘	→	↗	↑
Enclosed Farmland	→	↘	→	↗
Woodlands	→	→	↘	↗
Freshwaters – Openwaters, Wetlands & Floodplains	→	↘	↗	↗

Driver's impact on extent and condition of Broad Habitats since the 1940s

-  Very high
-  High
-  Moderate
-  Low

Driver's current (since 1990) and ongoing trend

-  Decreasing impact
-  Continuing impact
-  Increasing impact
-  Very rapid increase of the impact

Valuing Ecosystem Services

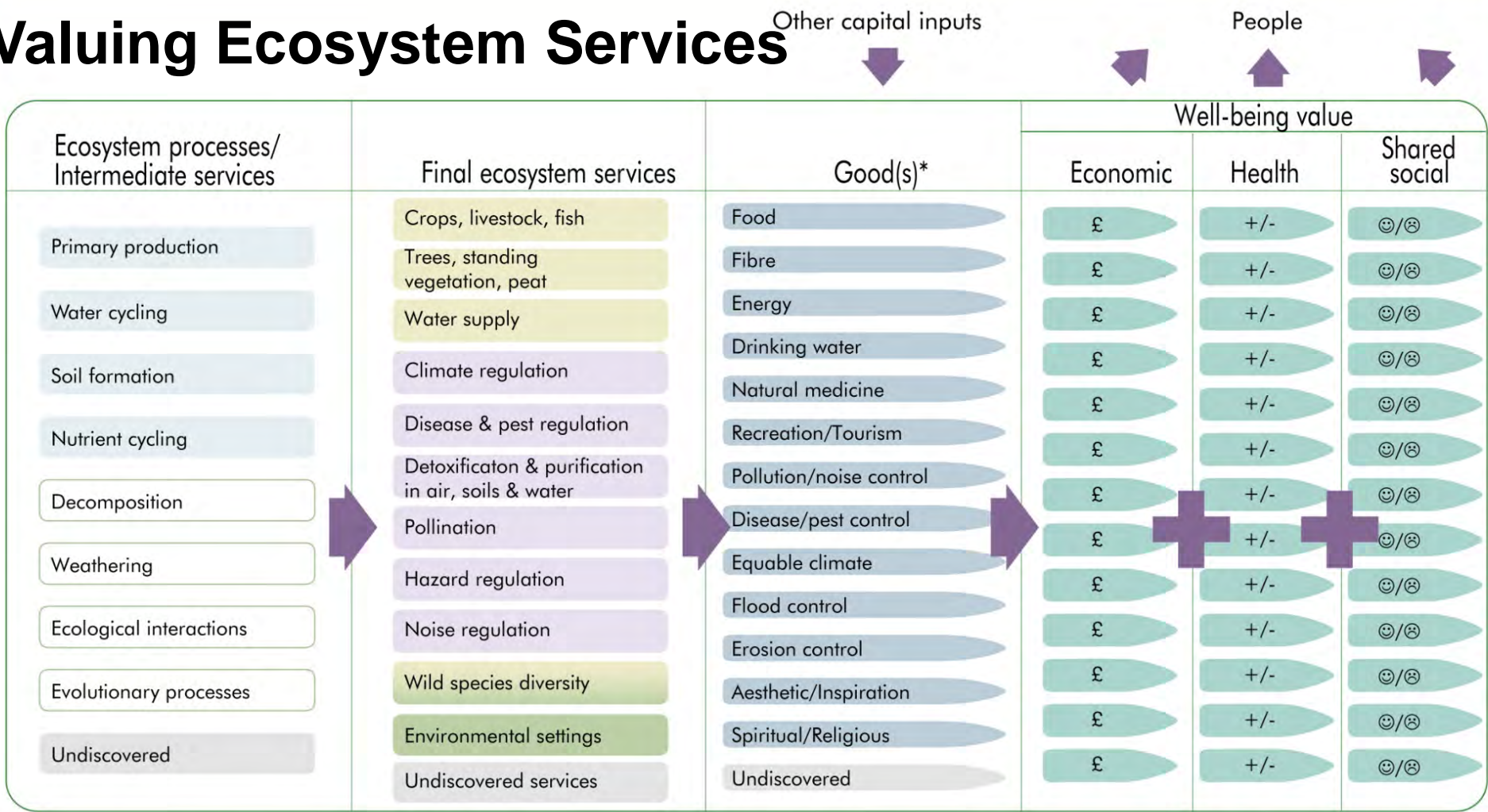
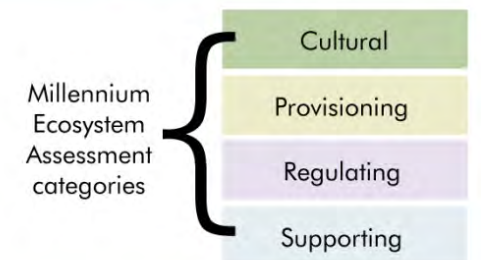


Figure 10 The full set of ecosystem processes, services, goods/benefits and values used in the UK NEA. Note that some ecosystem services can be both intermediate and final services. For simplicity, in this figure, services are shown only in the most final position that they occupy. Services such as pollination and climate regulation that also play important roles further back in the chain are not represented here. Cells with no colour are ecosystem processes/services that were not in the Millennium Ecosystem Assessment classification. *Note that the term good(s) includes all use and non-use, material and non-material outputs from ecosystems that have value for people. Source: adapted from Fisher *et al.* (2008).



The **value of UK fish landings** is about £600 million per annum (p.a.), while that of aquaculture (fish and shellfish farming) is around £350 million p.a..

Timber values are just under £100 million p.a.

Biodiversity pollination services are estimated at £430 million p.a.



The **water quality** benefits of inland wetlands may be as high as £1,500 million p.a.

The total value of **net carbon sequestered** currently by UK woodlands is estimated at £680 million p.a.

3,000 million outdoor recreational visit each year generate a social value in excess of £10,000 million annually



Valuing ecosystem services: non-monetary valuation



Table 4.2 The importance of different biodiversity groups in underpinning the final ecosystem services based on expert opinion. Importance is colour-coded: high (maroon), medium (beige), low (green), unimportant on the basis of available evidence (blank). The size of the circle in each cell is used to illustrate the level of uncertainty in the available evidence. Further details are given in Appendix 4.1.

Final ecosystem services (based on the UK NEA Conceptual Framework)	Biodiversity groups																
	Microorganisms		Fungi		Lower plants			Higher plants		Invertebrates		Fish		Amphibians	Reptiles	Birds	Mammals
	Terrestrial	Marine	Non-lichens	Lichens	Phytoplankton	Macroalgae	Bryophytes	Seagrasses	Land plants	Terrestrial	Marine	Freshwater	Marine				
Crops, livestock, fish	●	●	●		●	●		●	●	●	○	●	●			●	●
Trees, standing vegetation & peat	●		●	●		○	●	○	●	○				●			○
Climate regulation	●	●	●		●	●		○	●		●		●				○
Water supply	●	○	●		●		○		●								
Hazard regulation	●	○	○	○		●	●	●	●		●		●				
Waste breakdown & detoxification	●	●	●		●	○		●	○	●	●		●			●	
Wild species diversity	●		●	●	●	●	●	●	●	●	●	○	○	○	●	●	●
Purification	●	●	○						●	○	○			●			
Disease & pest regulation	●	○	●	●	○	●	●	●	○	●	○	○	○	●	●	○	●
Pollination										●					●	●	
Meaningful places*	○	○	○			○	○	●	●	●	●	○	○	●		●	●
Socially valued land & waterscapes*	○	○	○	○		○	○	○	●	○	○	○	○	●	○	●	●

* Note: For the purposes of the Cultural Services chapter (Chapter 16), Cultural services have been combined into 'environmental settings'.

High Importance	Amount of evidence (theory, observations, models) →
Level of agreement ↑	● ● ●
	● ● ●
	● ● ●

Medium Importance	Amount of evidence (theory, observations, models) →
Level of agreement ↑	○ ○ ○
	○ ○ ○
	○ ○ ○

Low Importance	Amount of evidence (theory, observations, models) →
Level of agreement ↑	● ● ●
	● ● ●
	● ● ●

Importance of different aspects of biodiversity



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Importance of different aspects of biodiversity

Final ecosystem services (based on the UK NEA Conceptual Framework)	Biodiversity groups										
	Microorganisms		Fungi		Lower plants			Higher plants		Invertebrates	
	Terrestrial	Marine	Non-lichens	Lichens	Phytoplankton	Macroalgae	Bryophytes	Seagrasses	Land plants	Terrestrial	Marine
Crops, livestock, fish	●	●	●		●	●		●	●	●	●
Trees, standing vegetation & peat	●		●	●		●	●	●	●	●	
Climate regulation	●	●	●		●	●		●	●		●
Water supply	●	●	●		●		●		●		
Hazard regulation	●	●	●	●		●	●	●	●		●

High importance	Amount of evidence (theory, observations, models) →
Level of agreement ↑	● ● ●
	● ● ●
	● ● ●

Medium importance	Amount of evidence (theory, observations, models) →
Level of agreement ↑	○ ○ ○
	○ ○ ○
	○ ○ ○

Low importance	Amount of evidence (theory, observations, models) →
Level of agreement ↑	● ● ●
	● ● ●
	● ● ●

Scenarios development

Green and Pleasant Land

A preservationist attitude arises because the UK can afford to look after its own backyard without diminishing the ever-increasing standards of living.

Nature@Work

The belief that the promotion of ecosystem services through the creation of multifunctional landscapes is essential for maintaining the quality of life in the UK is widely accepted.

Local Stewardship

This is a future where society is more concerned with the immediate surroundings and strives to maintain a sustainable focus on life within that area.

Go with the Flow

This scenario is essentially a projection based on current trends and results in a future UK that is roughly based on today's ideals and targets.

National Security

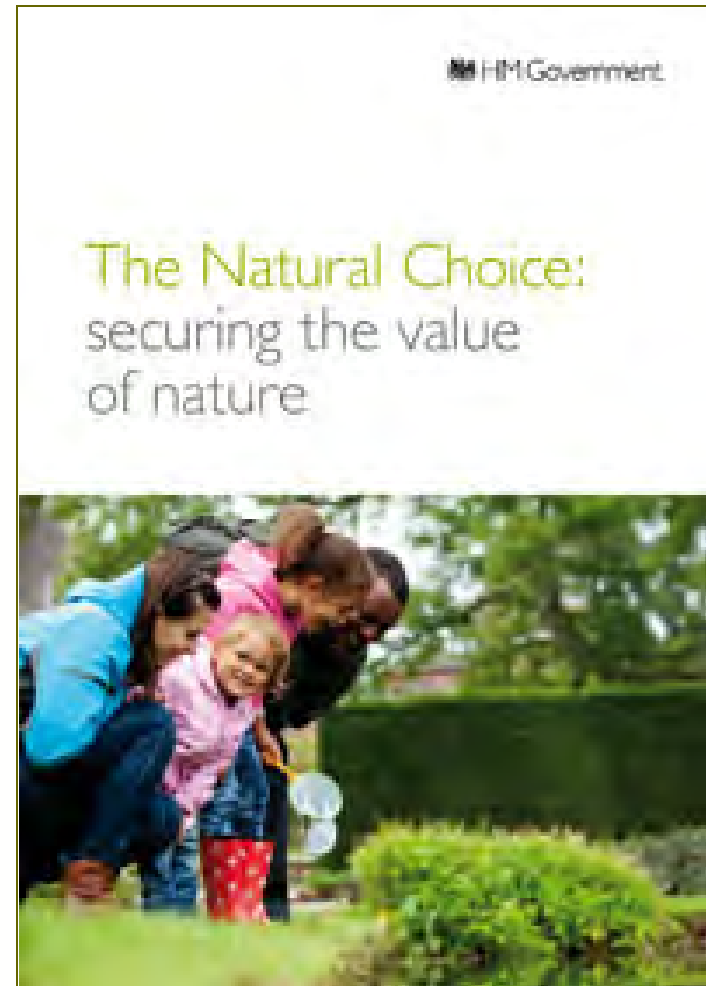
Under this scenario climate change results in increases in global energy prices forcing many countries to attempt greater self-sufficiency (and efficiency) in many of their core industries.

World Markets

High economic growth with a greater focus on removing barriers to trade is the fundamental characteristic of this scenario.

Figure 8 An overview of the six scenarios developed for the UK NEA. All share the common characteristics of a decline in global resource availability and an ageing UK population. They also include some level of technological innovation, although there are differences in the sectors involved.

The Natural Choice: *securing the value of nature*



White Paper



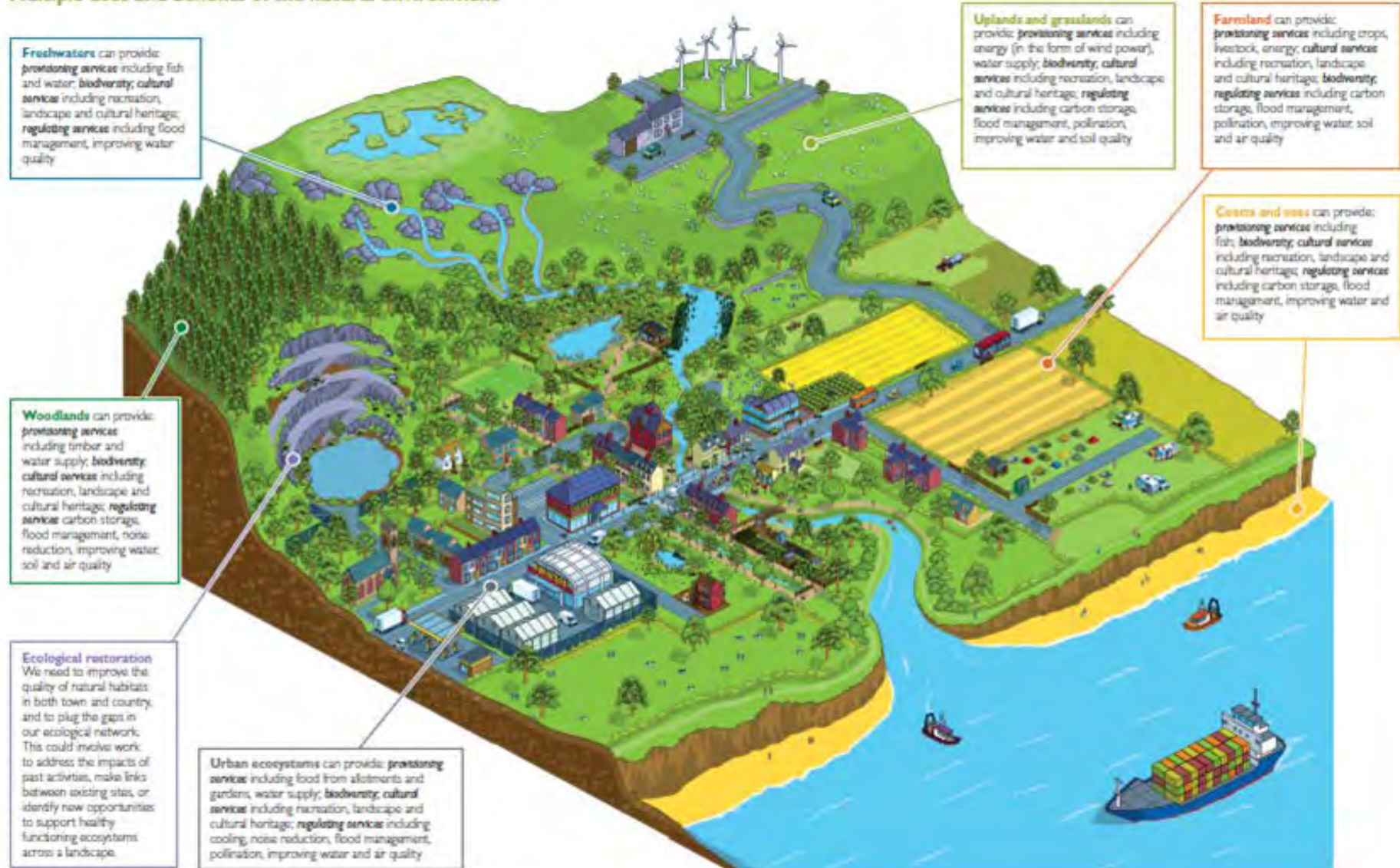
An integrated approach: landscape scale approach seeking multiple benefits from land



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Multiple uses and benefits of the natural environment



Growing a green economy





NEA reports available at:

<http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>

White Paper on the Natural Environment available at:

<http://www.defra.gov.uk/environment/natural/whitepaper/>