Living With Environmental Change
LWEC

UK National Ecosystem Assessment

Overall Progress and Insights into Mountains, Moorlands & Heaths

Steve Albon
Macaulay Land Use Research Institute

IUCN UK Peatland Programme Conference
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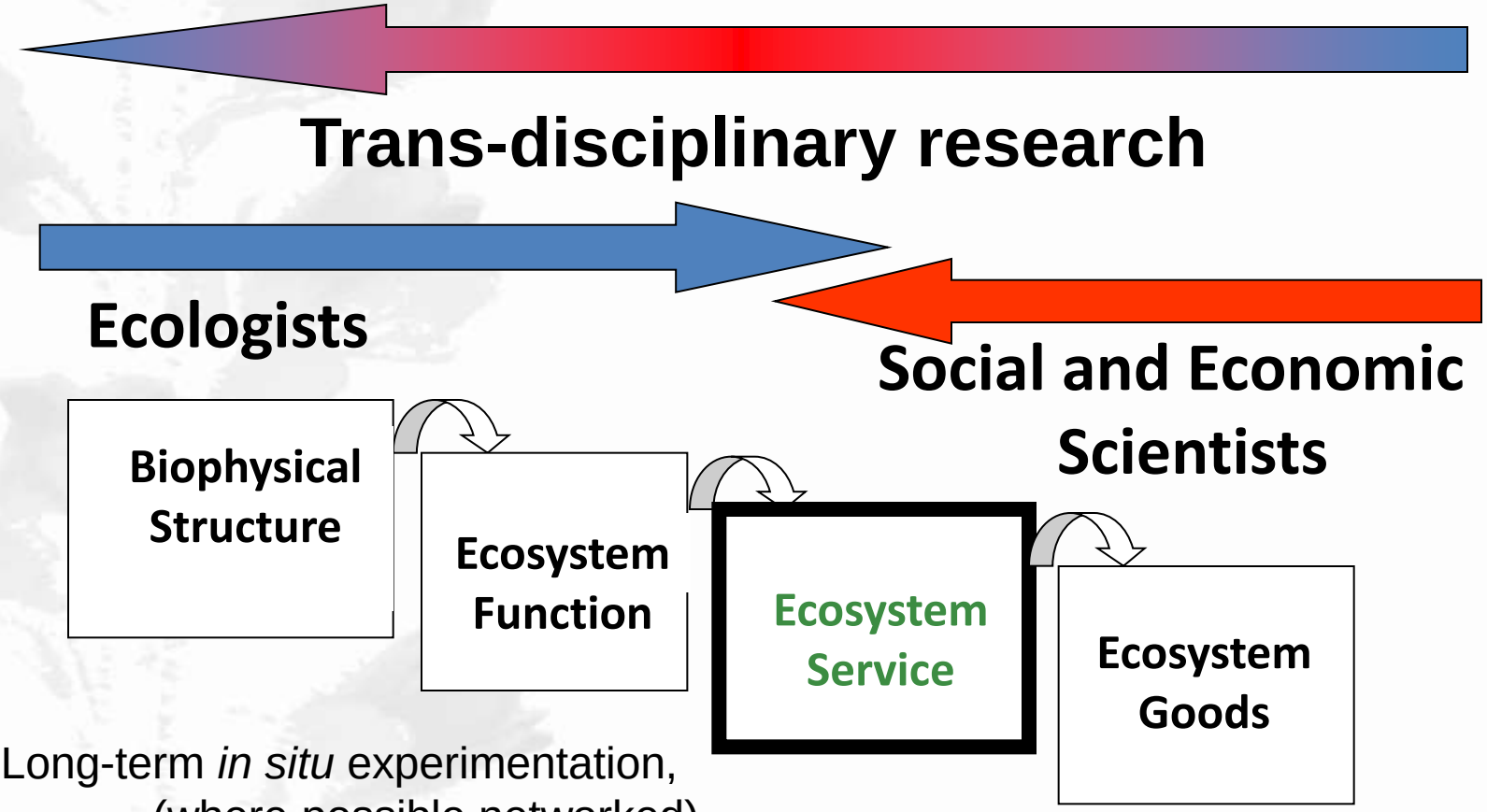
Countryside Council for Wales
defra
NATURAL ENVIRONMENT RESEARCH COUNCIL
NIEA Northern Ireland Environment Agency
The Scottish Government
Llywodraeth Cynulliad Cymru Welsh Assembly Government
UNEP WCMC

NEA Background and Scope

- House of Commons Environmental Audit Committee recommended that, **'ultimately the Government should conduct a full MA-type assessment for the UK to enable the identification & development of effective policy responses to ecosystem service degradation'.**
- Covers terrestrial, freshwater marine ecosystems across the UK.
- Primary aims are to:
  1. Provide a high level picture of the **current state and trends** since WWII in ecosystems (habitats) and ecosystem services
  2. Look to the future (2050) to evaluate change under **plausible scenarios** and consider a range of possible **policy responses**
- More than 200 researchers integrating environmental, economic and social science knowledge. Co-construction of scenarios with stakeholders to enhance policy relevance. Guided by 'Expert' panel.
- Responds to Client group (funders) and User (stakeholder) group

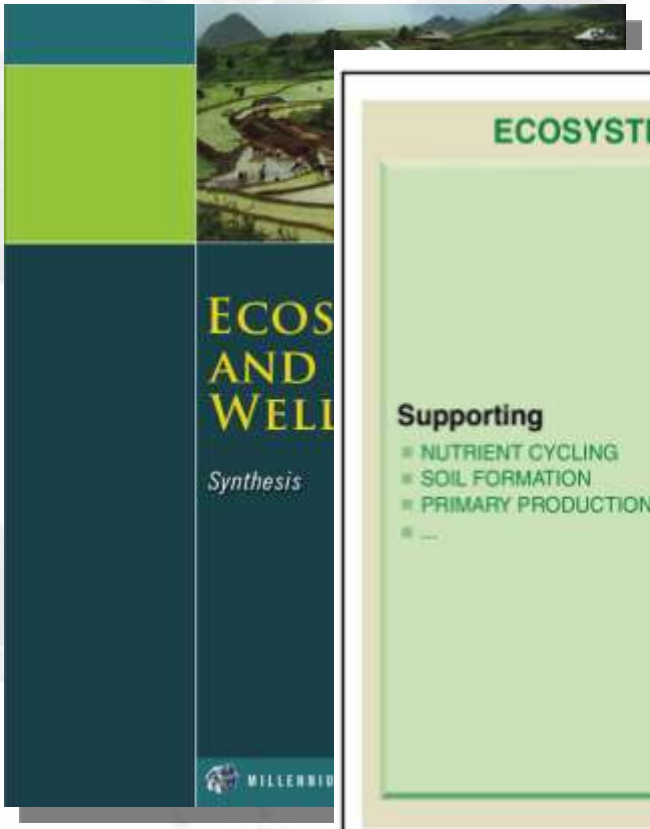
Conceptual Approach – socio-ecological system

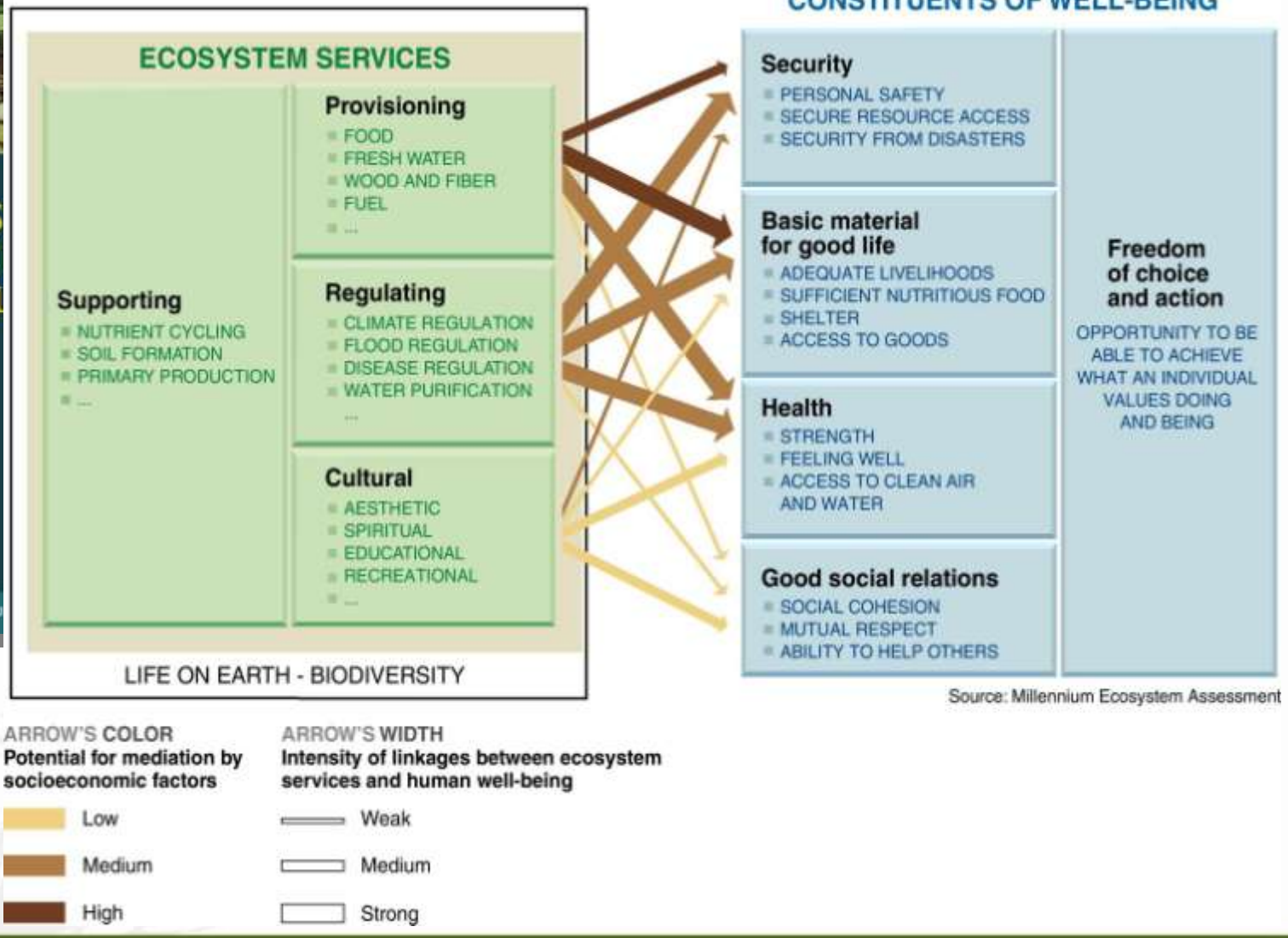


- Long-term *in situ* experimentation, (where possible networked)
- Specific *ex situ* experiments (ecotron)
- Dynamic process-based models

- Benefits for human well-being
  - Economic valuation of goods/benefits
  - Physical and psychological health benefits
  - Social (shared) values

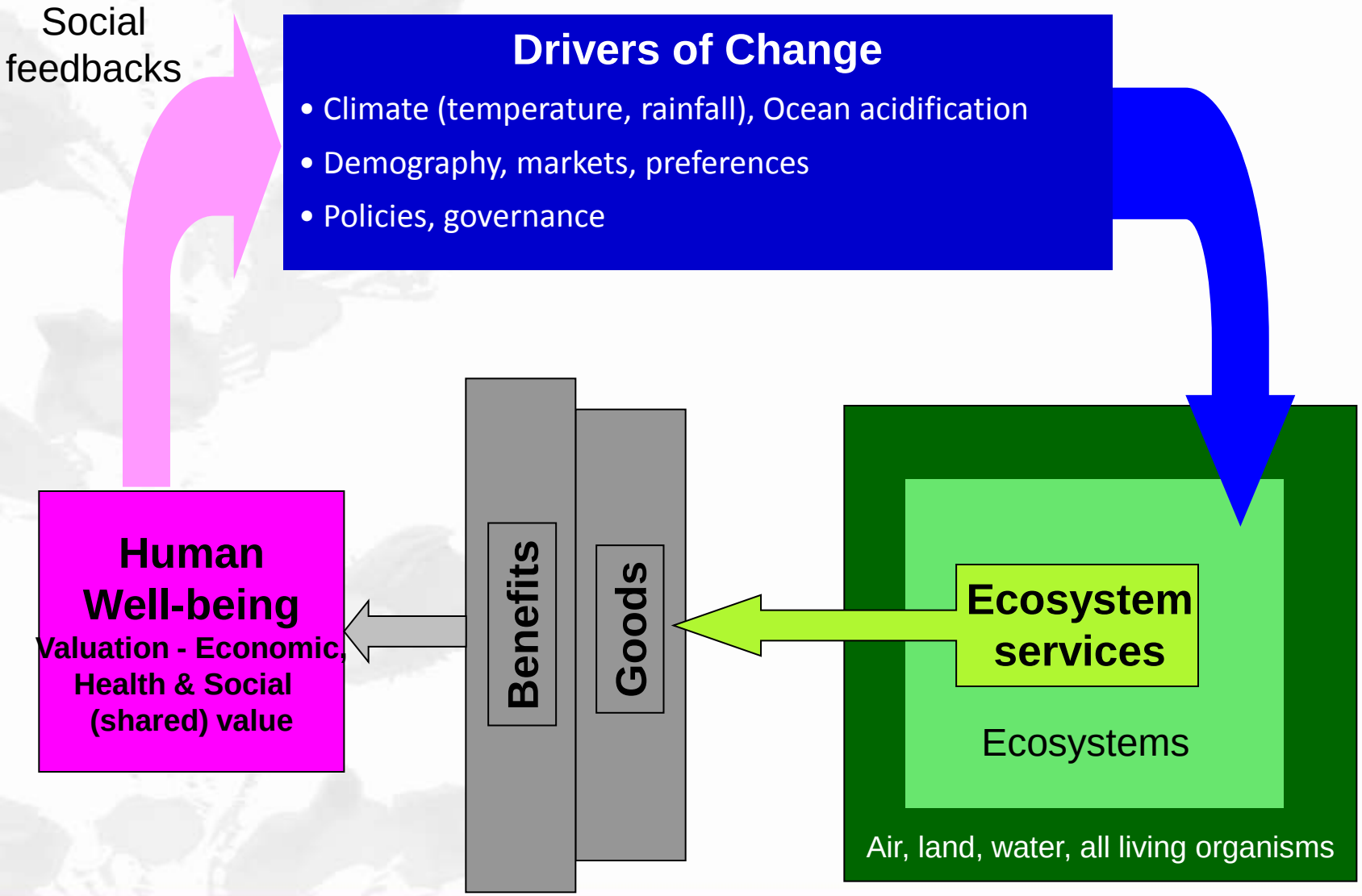
MA Constituents of Human Well-being



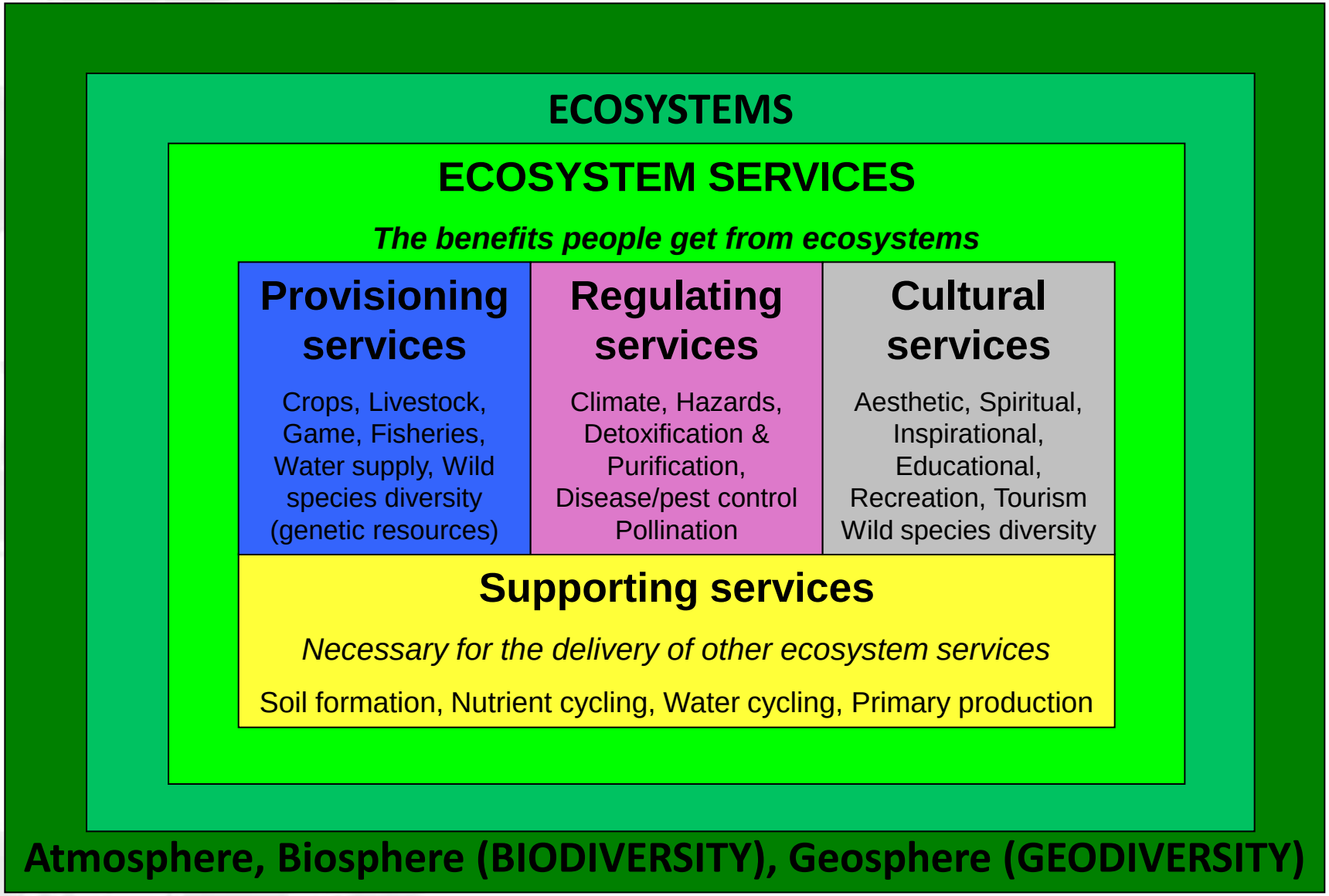


Source: Millennium Ecosystem Assessment

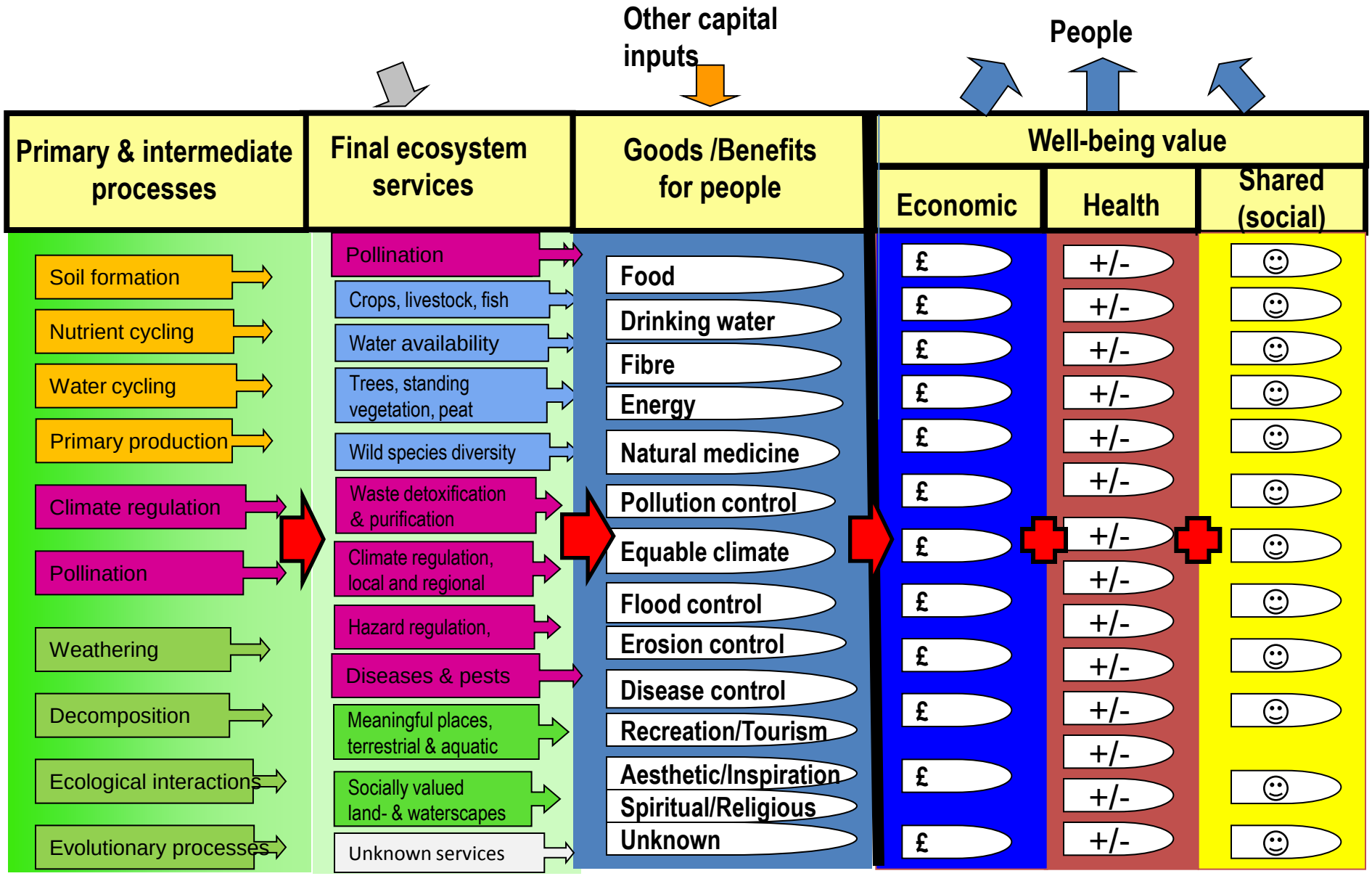
NEA Conceptual Framework



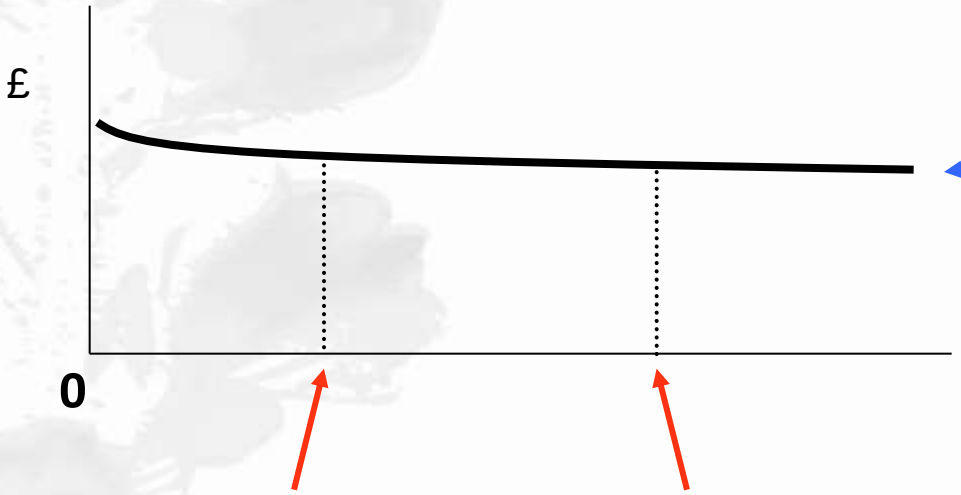
Building on the MA – dealing biodiversity



Valuation of goods and ecosystem services in the NEA



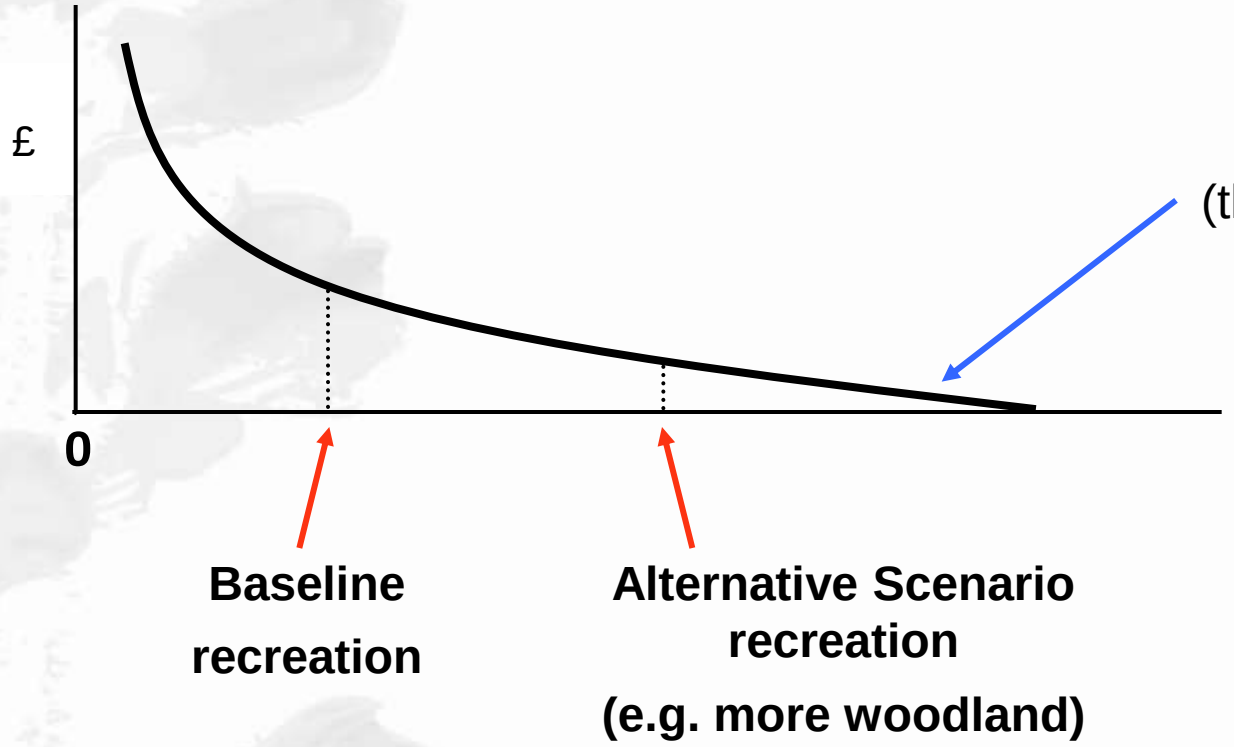
Economic valuation: carbon



The value of sequestering a unit of carbon (the Marginal Benefit of carbon storage)

- Flat (roughly) curve: the Marginal Benefit of carbon storage is approximately constant across this range
- This makes aggregation of values relatively simple. We just need the number of tonnes stored under the baseline and alternative scenario and then just multiply the difference by the (approximately) constant value per tonne stored.

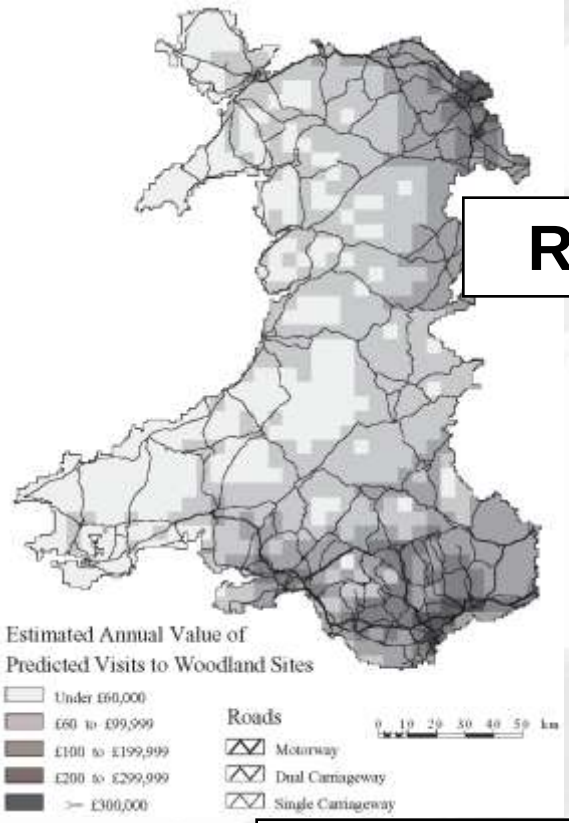
Economic valuation: recreation



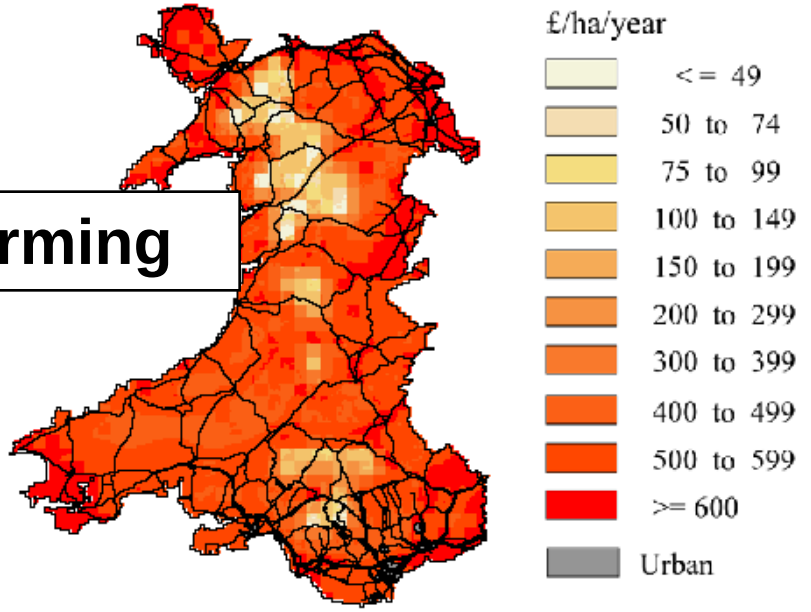
The value of providing a unit of recreation (the Marginal Benefit of recreation)

- Declining curve: the Marginal Benefit of recreation is diminishing across this range
- Aggregation is now more complex as we have to know both the number of units generated and how marginal benefits alter with that provision change.

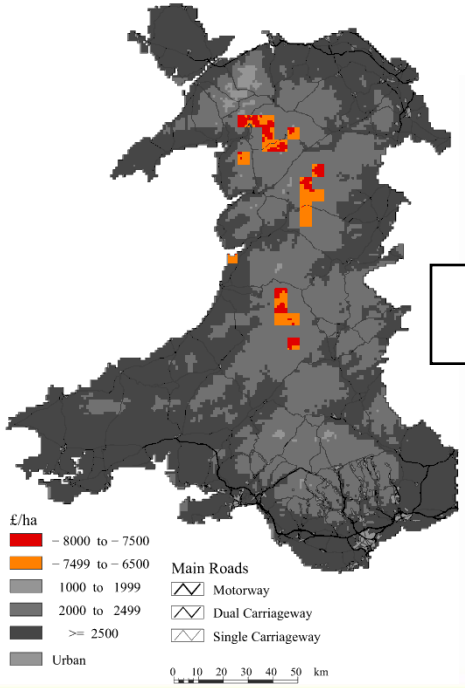
Cost benefit analysis of converting farmed land to multi-purpose woodland



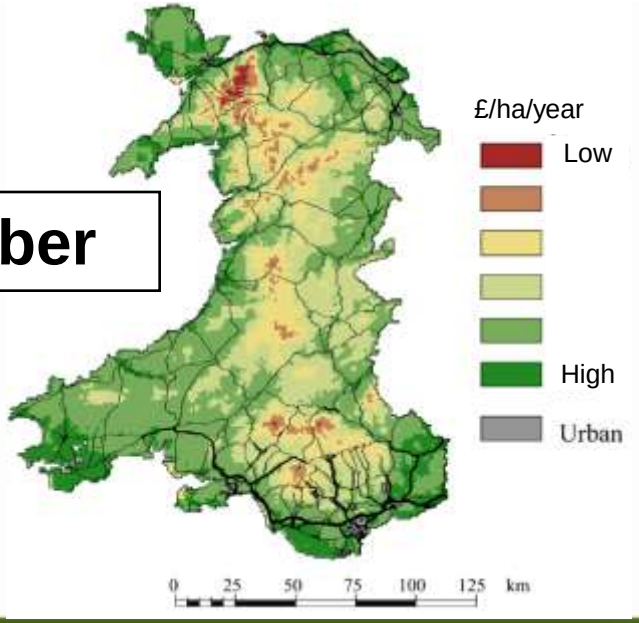
Recreation



Farming

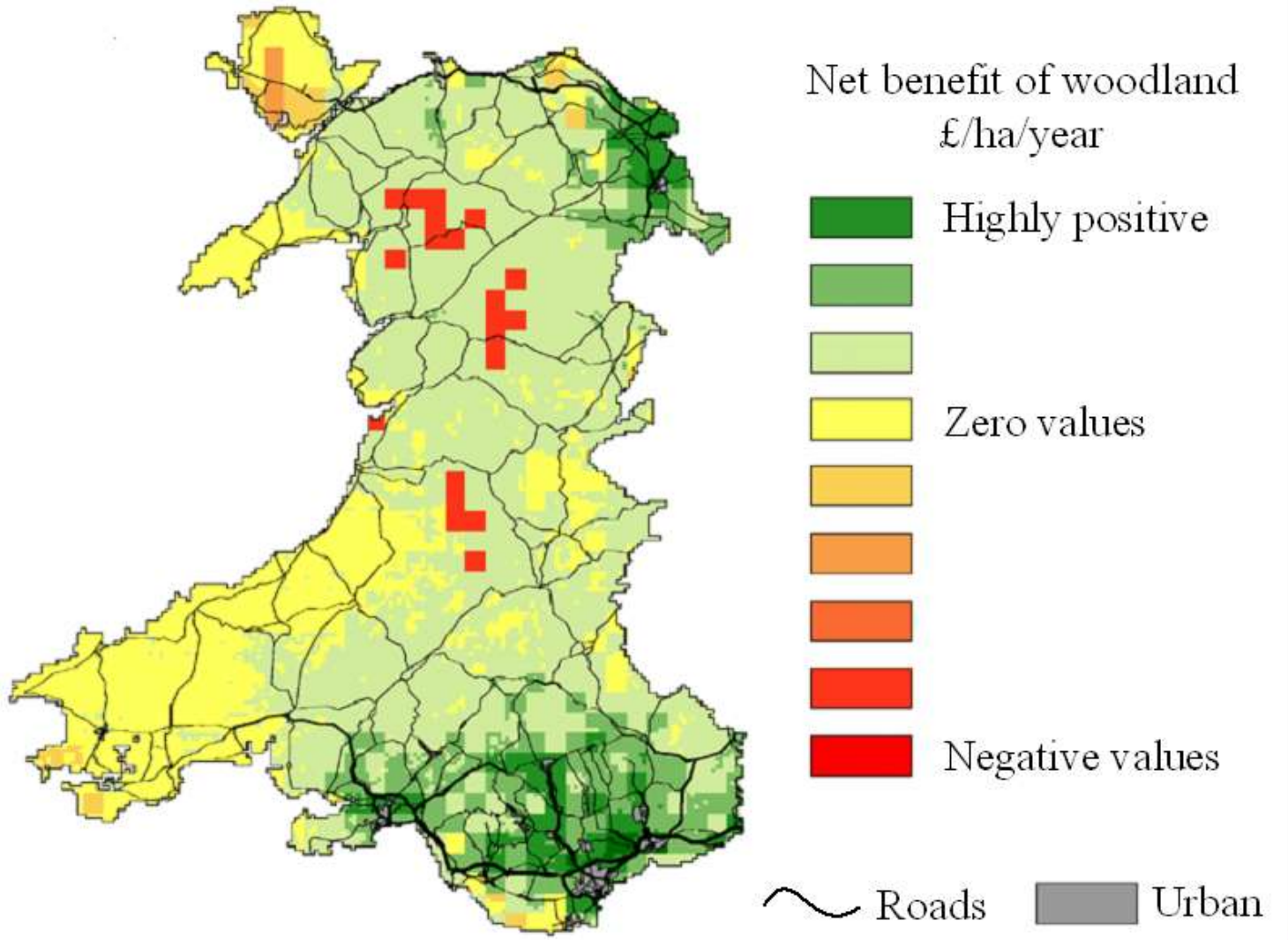


Carbon



Timber

Net benefits of converting farm land to multi-purpose woodland



UK Ecosystems (Broad Habitats)

Mountains/Moors/Heaths

Semi-natural grasslands

Woodlands

Enclosed farmland

Freshwater/Wetlands

Urban (settlement)

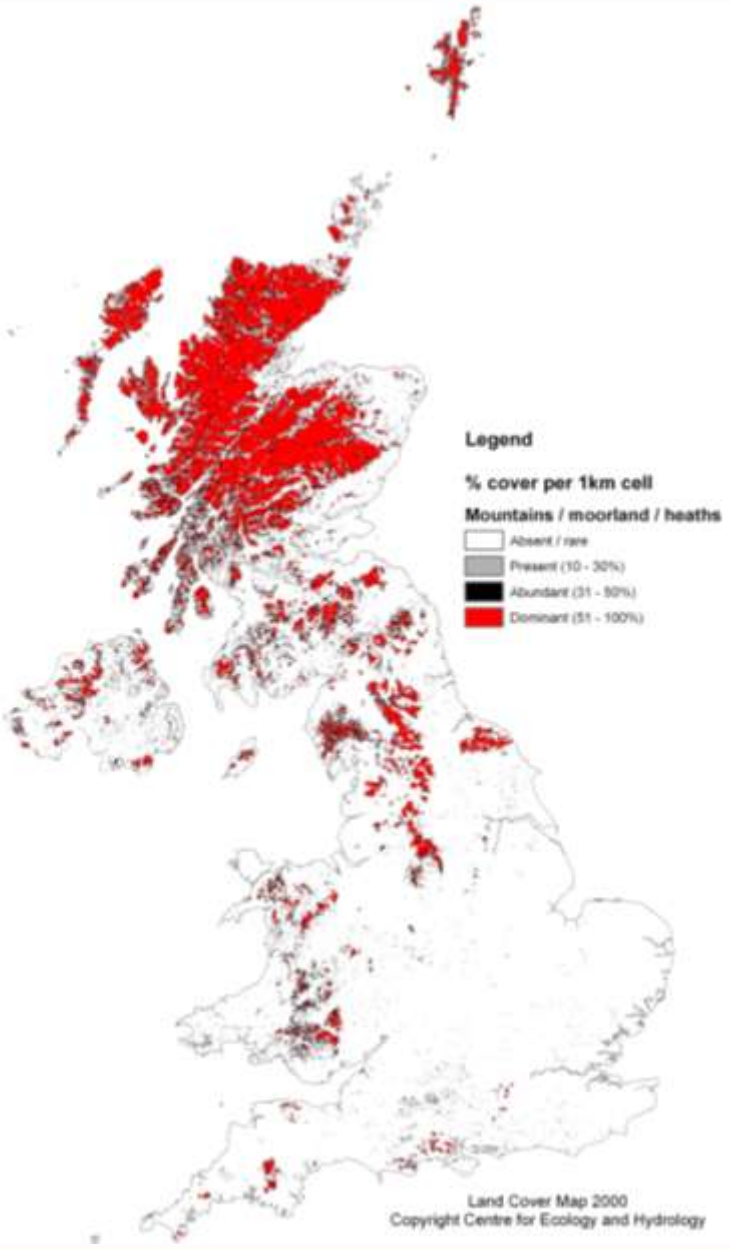
Coastal margins

Marine

Mountain, Moors and Heathland

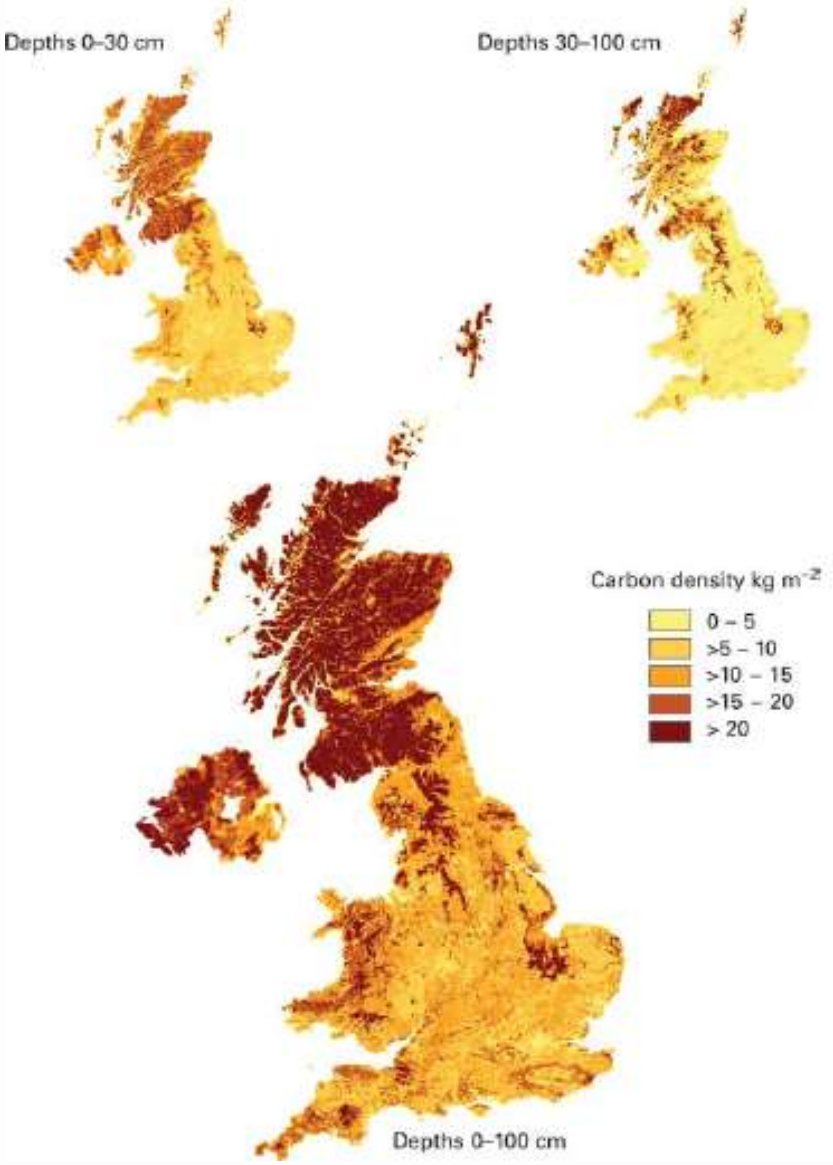
- Mountains, moors and heaths (MMH) cover c.18% of UK, and comprise the great majority of our semi-natural habitats.
- Substantial changes since WWII, both in extent and condition and use by people.
- Key drivers include

  afforestation,
  agricultural development,
  high grazing pressures,
  airborne pollution,
  climate change.



Mountain, Moors and Heathland

- Hold about 40% of UK soil C and opportunity for short-term reduction of UK CO_2 emissions.
- Source c.70% of UK drinking water and buffer water quality against effects of atmospheric, diffuse & point-source pollutants.
- Of great importance for biodiversity, with a large part under national and international designation for conservation.
    - 16% in National Parks
    - 20% in SSSIs



Mountain, Moors and Heathlands

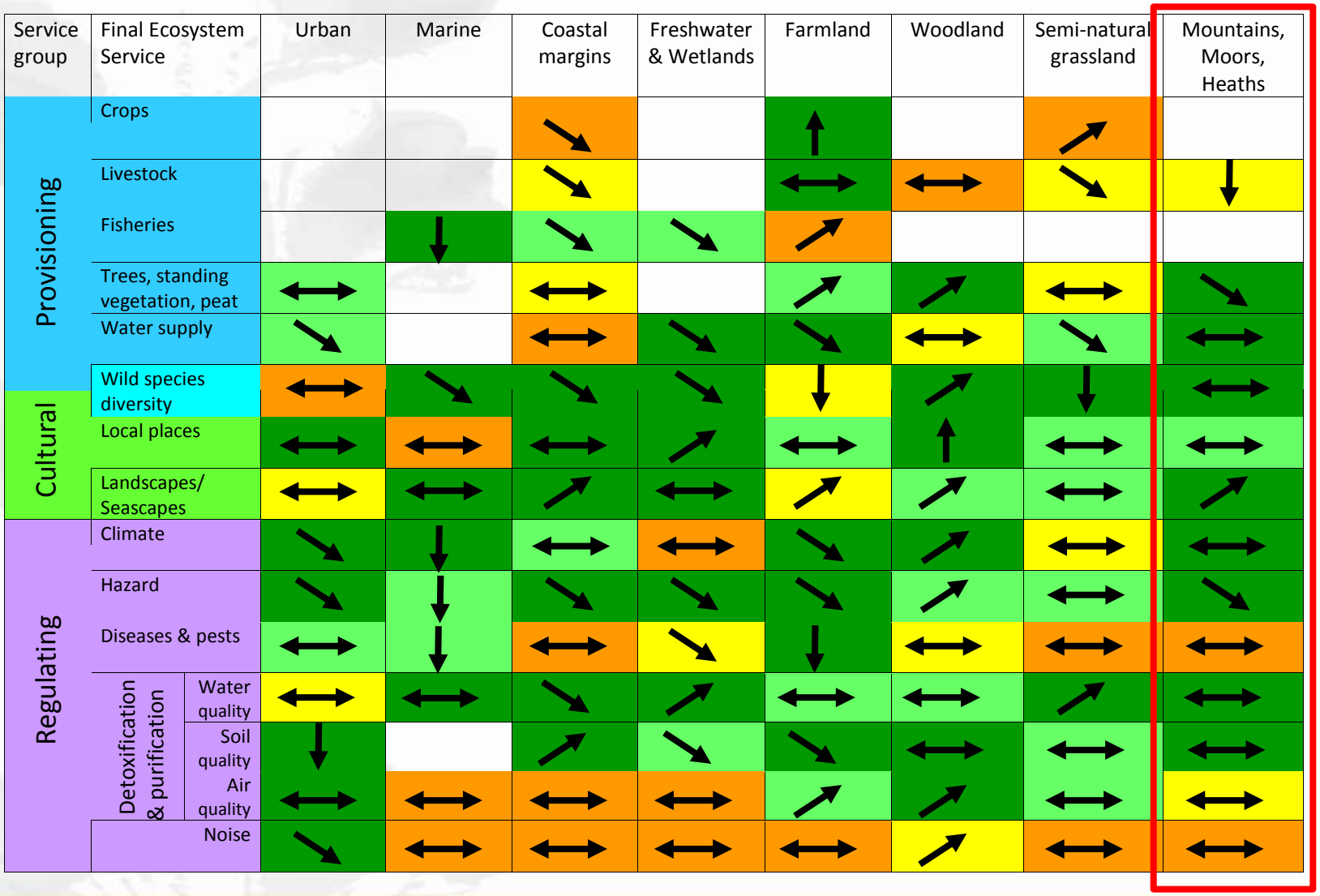
- Important cultural landscapes steeped in history.
- Nationally treasured, providing breathing spaces for people living in and around them.

Feature	History	Place	Inspiration	Calm	Leisure/ activities	Spiritual	Learning	Escape
Water, rivers streams	Low	Medium	High	High	High	High	Medium	High
Bogs & Marshes	Low		Low		Medium	Low	Medium	
Mountains & Hills	Medium	Low	High	Medium	High	High	Low	High
Moorland	Low	High	High	Low	Medium	High	Low	High

- MMH habitats are highly multi-functional landscapes, of importance for a wide range of Ecosystem Services.

Importance of habitats in delivering UK Ecosystem Services

The importance and trends are likely to differ at National, Regional and Local scales



KEY	Importance of ES
	High
	High - Medium
	Medium - Low
	Low
	Not applicable
Direction of Change	
↑	Improving
↗	Some Improvement
↔	Equivocal changes
↘	Some Deterioration
↓	Deteriorating

Next Phase – Plausible Scenarios & Response Options

- Explore contrasting scenarios

  Green and Pleasant Land
  Ecosystem Services
  World Markets
  National Security
  Local Stewardship
  Business as Usual

- Response Options

  Adapting and mitigating consequences