Work Package 7: Response Options

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Aim: To assess the robustness of current policies/practices/institutions against future change, and therefore the implications for the design of future response options.

Using the Ecosystem Approach to manage change and enhance resilience:

- Both Risks & Opportunities
- Across Sectors
- Across Scales
- Including **full range** of values and benefits (economic, shared, social)

What are the barriers and how do they influence the uptake of different response options?

EVIDENCE BASE

- Current trends in Ecosystem Services

- Change is happening
- Likely to further accelerate in future
- Socio-economic
- Pests & Diseases
- Climate change
- Etc.

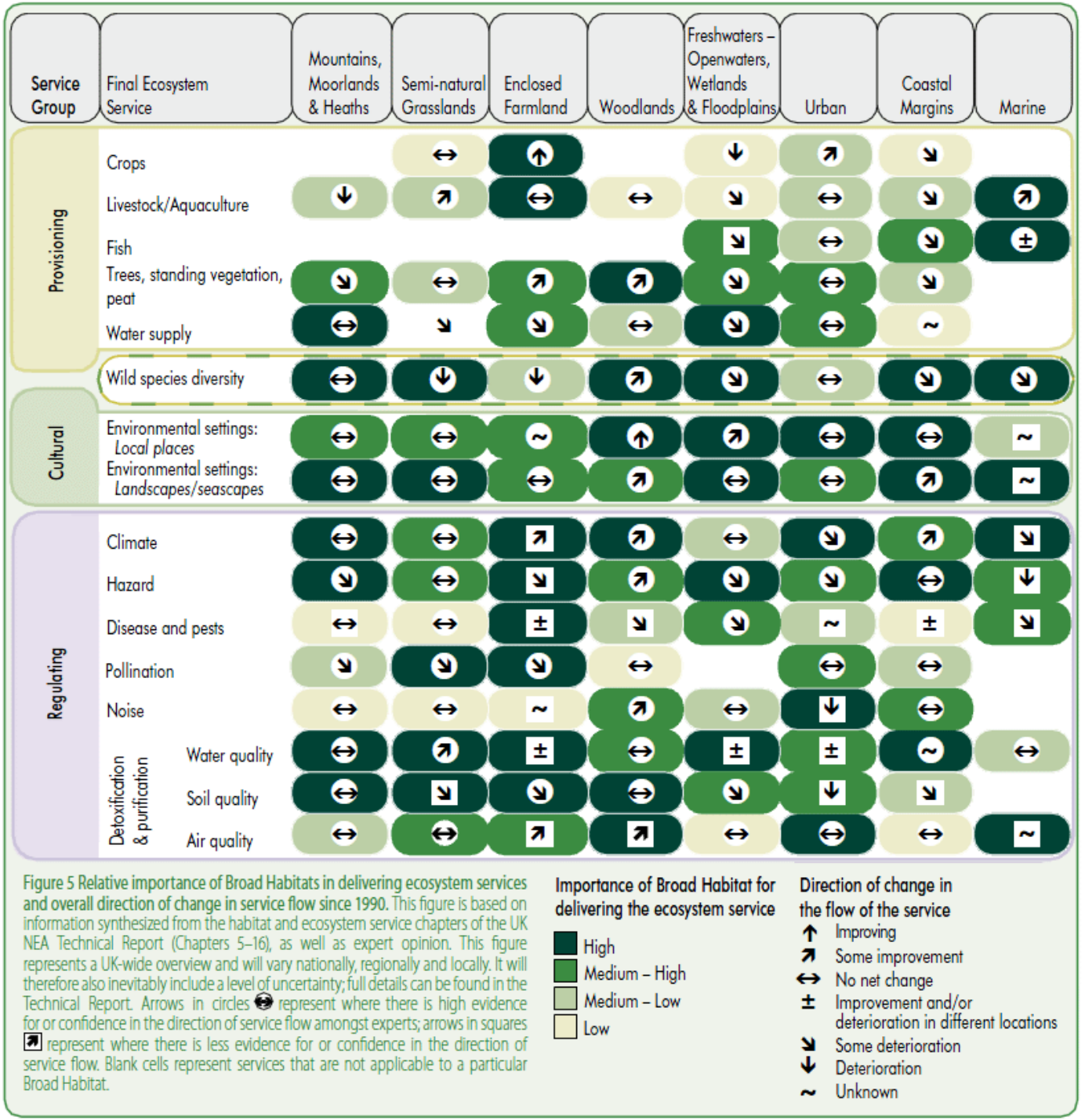


Figure 5 Relative importance of Broad Habitats in delivering ecosystem services and overall direction of change in service flow since 1990. This figure is based on information synthesized from the habitat and ecosystem service chapters of the UK NEA Technical Report (Chapters 5–16), as well as expert 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.

Source: NEA Phase 1

Principles of the Ecosystem Approach

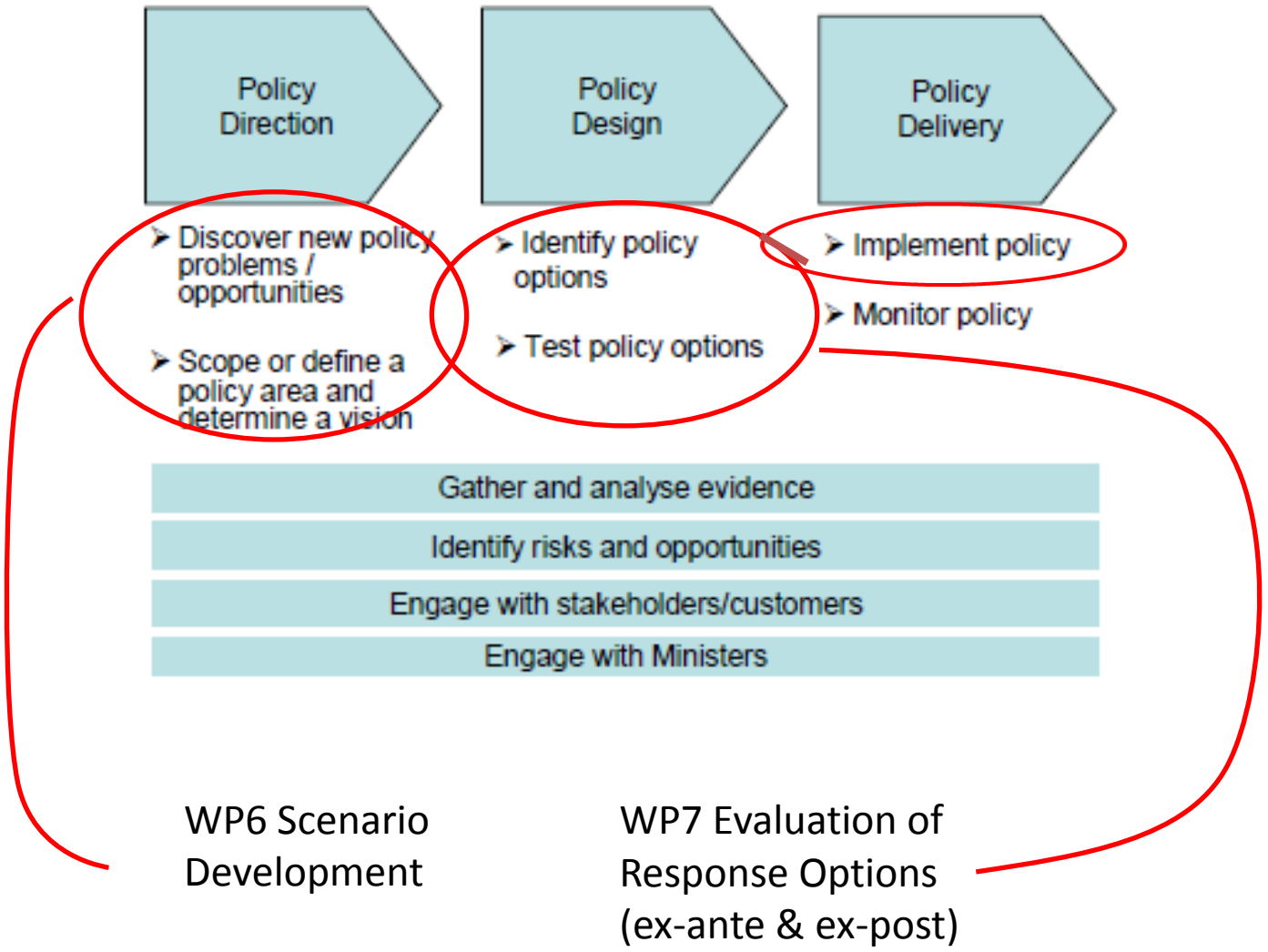
Conference of Parties to the Convention on Biological Diversity, 2004

1	The objectives of management of land, water and living resources are a matter of societal choice
2	Management should be decentralized to the lowest appropriate level
3	Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems
4	Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should: a) Reduce those market distortions that adversely affect biological diversity; b) Align incentives to promote biodiversity conservation and sustainable use; c) Internalize costs and benefits in the given ecosystem to the extent feasible.
5	Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach
6	Ecosystems must be managed within the limits of their functioning.
7	The ecosystem approach should be undertaken at the appropriate spatial and temporal scales
8	Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term
9	Management must recognize that change is inevitable
10	The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity
11	The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices
12	The ecosystem approach should involve all relevant sectors of society and scientific disciplines

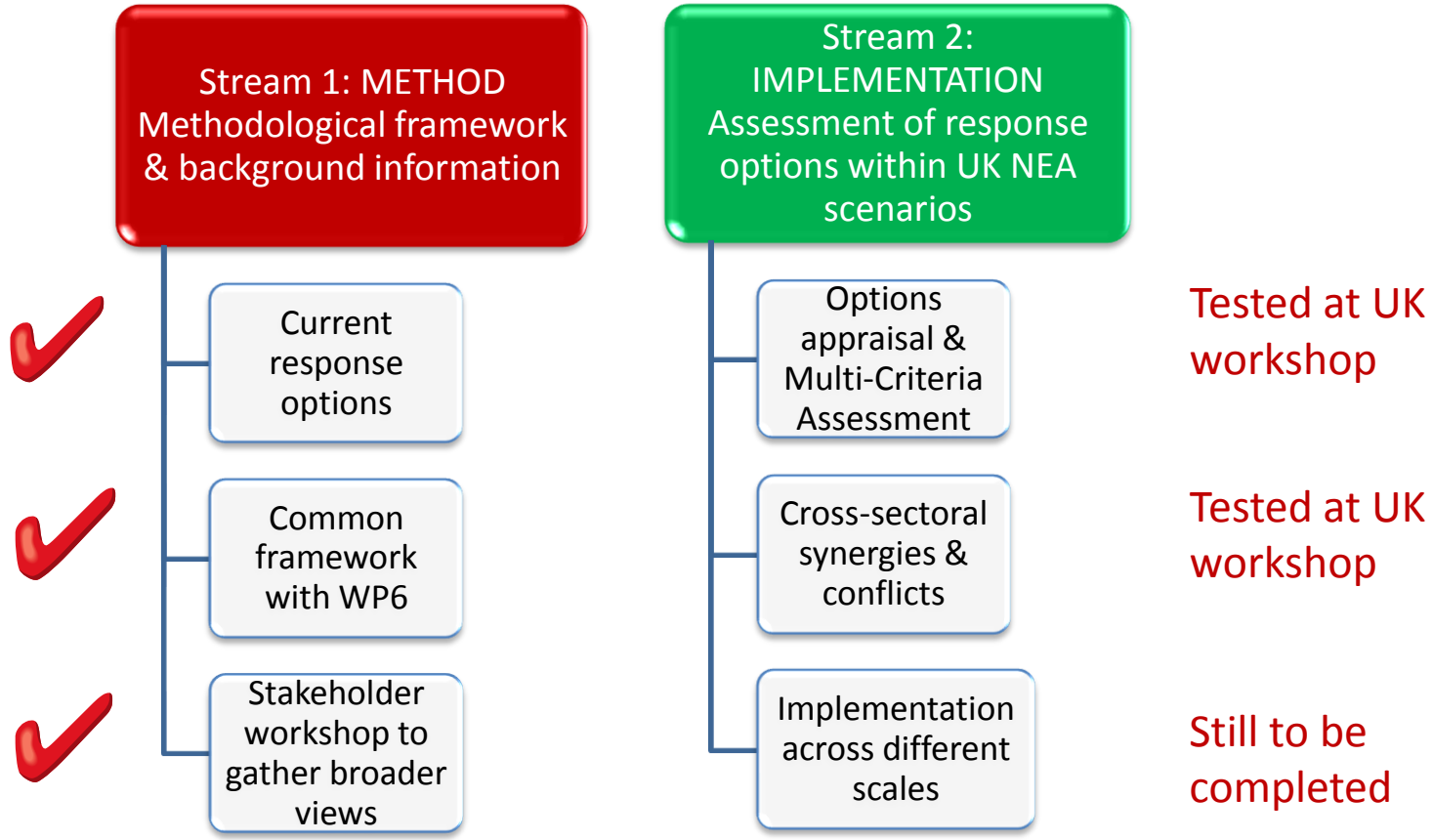
Example Policies requiring ‘Future-proofing’

- Planting new or replacement woodland consistent with the principles of ‘the right trees in the right place’ (Woodland Expansion Strategy)
- Planning new infrastructure, including new sites for renewable energy (National Planning Framework; Renewables Routemap)
- Water resources – identifying key risks to meeting water quality objectives (Water Framework Directive SWMI horizon-scanning etc.)
- Water resources – balancing changing supply and demand to maintain a healthy resource base (Water Framework Directive)
- Developing appropriate measures to protect against pests, diseases and invasive species (Wildlife & Natural Environment Act)
- Flood defence – designing schemes to deliver minimum standards of service (Flood Management Act)
- Planning ecological networks (Biodiversity Strategy)
- Developing and delivering realistic conservation objectives for priority species and habitats (Biodiversity Strategy)
- Identifying the best transition pathways to deliver greenhouse gas emissions reductions and a low carbon economy (Climate Change Act)

Future-proofing: Link with the Policy Process



WP7 - Current Progress



- UK Workshop and other discussions have provided lots of feedback
- Preliminary results
- Need to tweak methodology - Then apply in detail for Key Issues & Priority Responses

Identifying Response Options

- Long list of Sectoral Responses (100+)
  - *Biodiversity, Agriculture, Forestry, Water, Urban(incl. energy/transport), Marine*
  - *Implementation Status, Scale (spatial/temporal), Governance etc.*
- Short list of Priority Responses – circulated to wider group
  - *Some established, some at early stages*
  - *Some fixed, some adaptive etc.*
- Generic Typology

Generic Types of Response Option

Protected / Restricted Areas (eg Natura, setaside, no-take zones)

Regulation / Quality standards (eg water quality, food certification labelling)

Voluntary standards/ assurance (eg. LEAF, FSC)

Management practices (eg intercropping, multifunctionality)

Spatial planning (eg. green/blue networks, land zoning)

Economic Incentives (directed payments)

Market-based schemes (eg offsetting, carbon trading)

Technological innovation (eg. precision farming)

Social & cultural-based schemes / networks (eg community-based)

Scientific Research

All have requirements (eg. funding), key actors, spatial & temporal dimensions, attitudes to risk

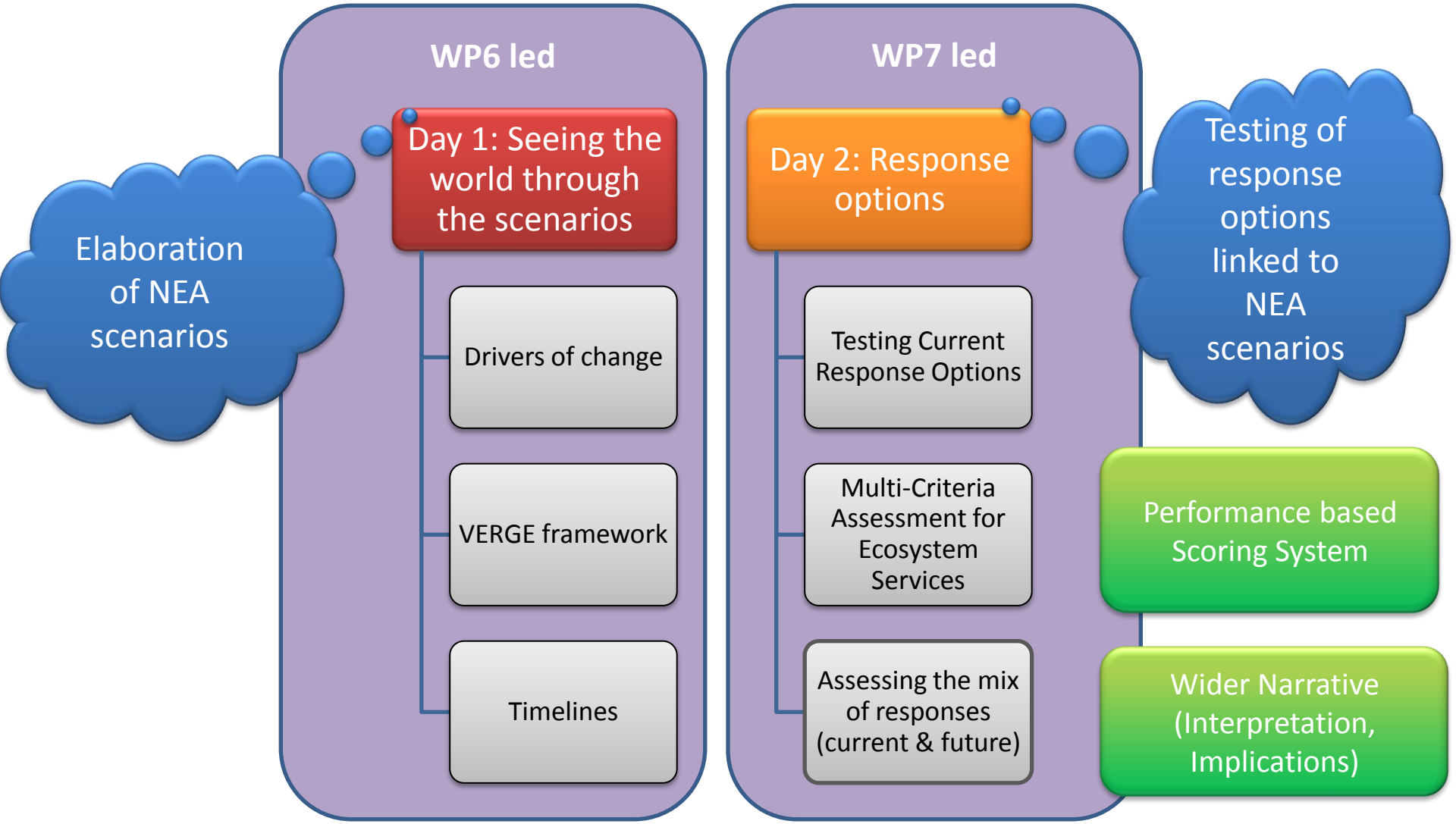
‘Bundles’ of Response Options

- Each sector has a mix of responses (statutory, voluntary etc.) depending on past & present objectives

- We test the robustness of this mix: now and into the future.

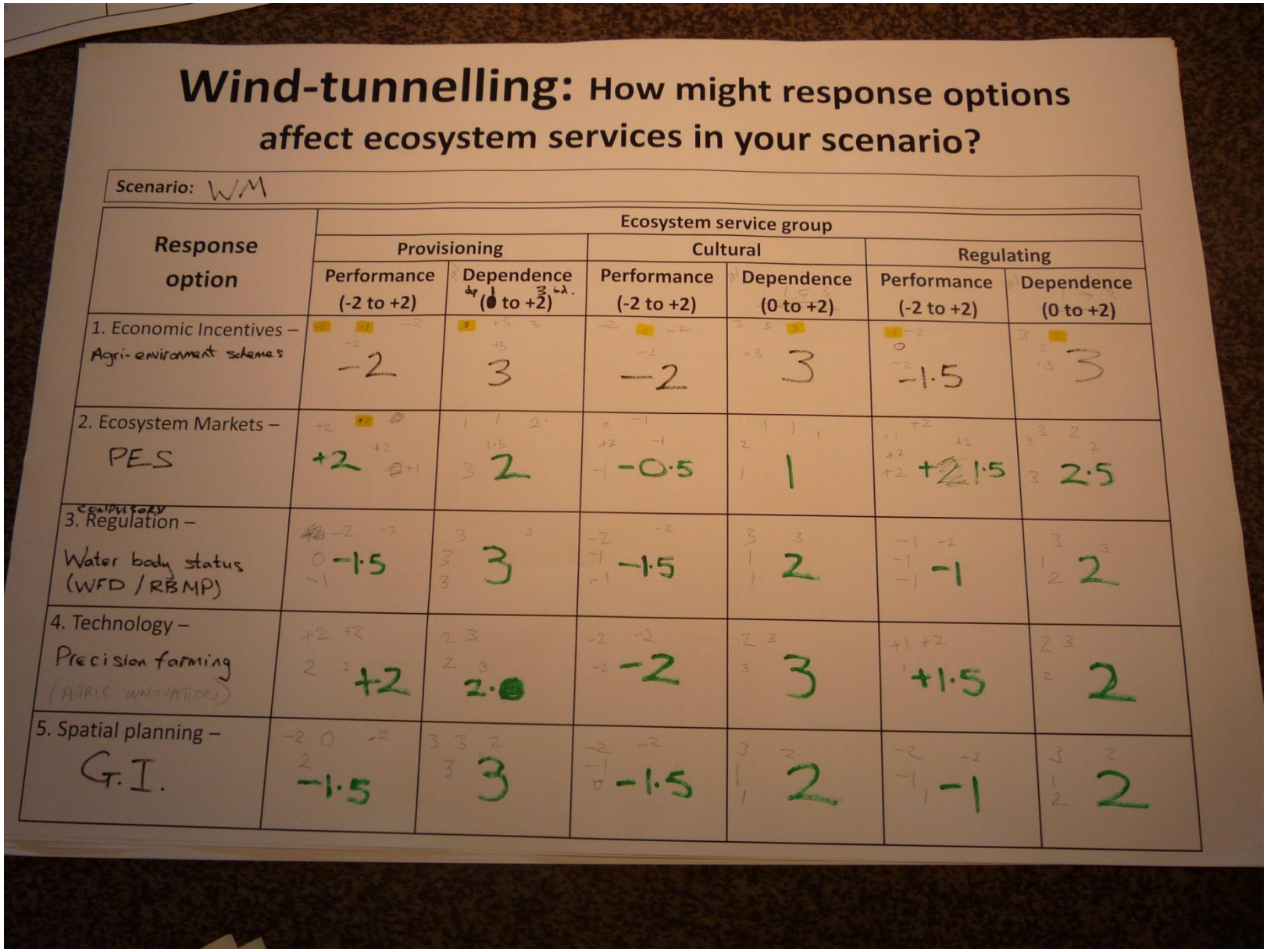
National Workshop (WP6 & WP7)

- Held 31Jan & 1Feb 2013



Workshop

WP6 & 7 Workshop, 31 Jan – 1 Feb



Wind-tunnelling: How might response options affect ecosystem services in your scenario?

Scenario: WM

Response option	Ecosystem service group					
	Provisioning		Cultural		Regulating	
	Performance (-2 to +2)	Dependence (0 to +2)	Performance (-2 to +2)	Dependence (0 to +2)	Performance (-2 to +2)	Dependence (0 to +2)
1. Economic Incentives – Agri-environment schemes	-2	3	-2	3	-1.5	3
2. Ecosystem Markets – PES	+2	2	-0.5	1	+1.5	2.5
3. Regulation – Water body status (WFD / RBMP)	-1.5	3	-1.5	2	-1	2
4. Technology – Precision farming (AGRIC INNOVATION)	+2	2.5	-2	3	+1.5	2
5. Spatial planning – G.I.	-1.5	3	-1.5	2	-1	2

Options Appraisal via Multi-criteria analysis

- Performance scoring of response options for ESS delivery

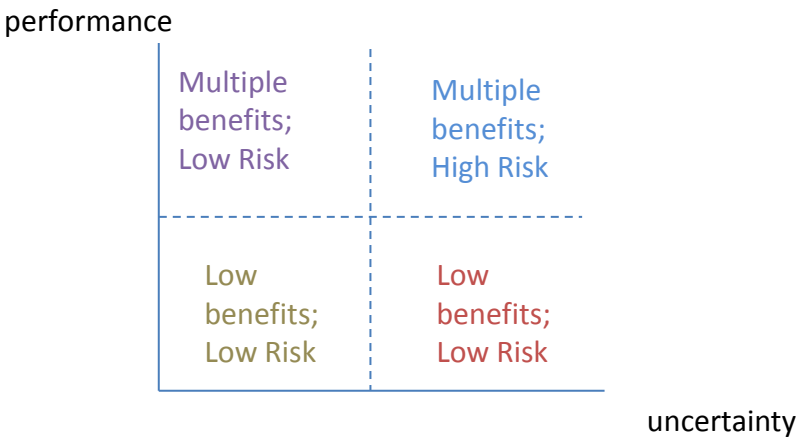
Overall attractiveness scores by scenario

Response option	Scenario N@W	LS	WM	NS
Agri-env	14	2	-16.5	9
PES	12	11	7.25	1.5
Water body	12	4.5	-9.5	15
Precision	18	6.25	2.5	15
GI	18	7.5	-9.5	5
Designated	6	1.25	-12	0
Green/blue	15	13	5.25	7.5
FSC	6	8	-2.5	2
Comm For	16	10	1.25	7.5
Sci Res CCA	18	4.25	5	15

Rank order of overall attractiveness

Response option	Scenario N@W	LS	WM	NS
Agri-env	6	9	10	4
PES	7	2	1	9
Water body	7	7	7	1
Precision	1	6	4	1
GI	1	5	7	7
Designated	9	10	9	10
Green/blue	5	1	2	5
FSC	9	4	6	8
Comm For	4	3	5	5
Sci Res CCA	1	8	3	1

- Next step Refinement



Also to include:

- Cost-effectiveness
- Social acceptability

Future Policy Design

How can the mix of responses be made more robust to change?

- **Topics developed for workshop:**

  CAP Reform

  Water (WFD & Flooding etc)

  Green Infrastructure

  Low Carbon Economy

- **These will be further developed for Policy Briefs**
  - **E.g. to highlight no-regret/low-regret options**

Next Steps: WP7

- More specific workshop(s) / interviews:
  - Strategic Policy Issues
  - Region/Local scale: *Nature Improvement Area (provisionally N Devon; Birmingham Black Country)*

- Develop/Refine methodology
- Detailed Application for 'sectors' & strategic cross-sectoral issues
- Explicate key *synergies / barriers* for responses in and across sectors

Outputs

- *Core methodology (phased & flexible: adapt to different applications)*
- *Results – case studies (national & local)*

- *Final report (responses, barriers etc)*
- *Policy Briefs*

- *Integration into NEAFO Toolkit*

LINKAGES – through to development of a practical toolkit