



AQUACROSS Overview of Case Study Storylines

Sept/2017

The AQUACROSS project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642317.



- ≈ The case studies have been specifically selected to:
- test the application of EBM
 - showcase specific elements of the objectives of the EU 2020 Biodiversity Strategy relevant for the management of aquatic ecosystems;
 - understand the most relevant challenges surrounding the protection of aquatic biodiversity; and
 - maximise the lessons learnt and up-scale of results.

The EBM Principles



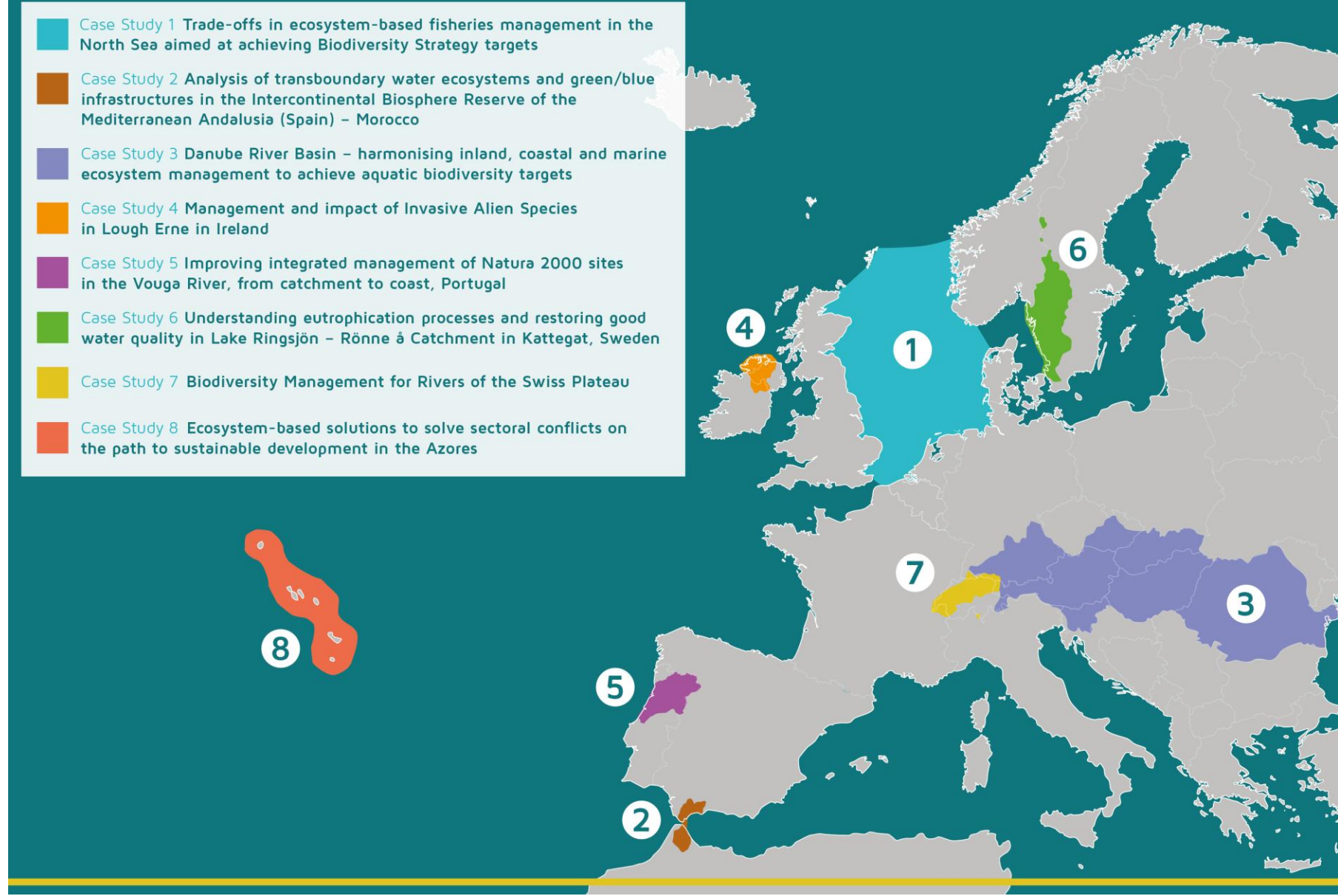
- ≈ EBM considers ecological integrity, biodiversity, resilience and ecosystem services.
- ≈ EBM is carried out appropriate scales.
- ≈ EBM develops and uses multi-disciplinary knowledge.
- ≈ EBM builds on social-ecological interactions, stakeholder participation and transparency.
- ≈ EBM supports policy coordination.
- ≈ EBM incorporates adaptive management.

≡ The AQUACROSS Assessment Framework is put in practice in eight case studies – How?

1. Building baseline scenarios
2. Identifying objectives for policy action
3. Assessing interactions between drivers, pressures and impacts on ecosystem state
4. Analysing causalities between biodiversity, ecosystem functions and ecosystem services delivery
5. Ascertaining gaps between baseline and target status (deficits)
6. Choosing management measures to bridge the gaps (EBM)
7. Building policy scenarios
8. Evaluating them against baselines
9. Testing an optimal set of EBM measures or NBS

Location of AQUACROSS case studies

-  Case Study 1 Trade-offs in ecosystem-based fisheries management in the North Sea aimed at achieving Biodiversity Strategy targets
-  Case Study 2 Analysis of transboundary water ecosystems and green/blue infrastructures in the Intercontinental Biosphere Reserve of the Mediterranean Andalusia (Spain) – Morocco
-  Case Study 3 Danube River Basin – harmonising inland, coastal and marine ecosystem management to achieve aquatic biodiversity targets
-  Case Study 4 Management and impact of Invasive Alien Species in Lough Erne in Ireland
-  Case Study 5 Improving integrated management of Natura 2000 sites in the Vouga River, from catchment to coast, Portugal
-  Case Study 6 Understanding eutrophication processes and restoring good water quality in Lake Ringsjön – Rönne å Catchment in Kattegat, Sweden
-  Case Study 7 Biodiversity Management for Rivers of the Swiss Plateau
-  Case Study 8 Ecosystem-based solutions to solve sectoral conflicts on the path to sustainable development in the Azores



Case studies to address the Biodiversity Strategy



Biodiversity Strategy	CS 1 North Sea	CS2 Andalusia Morocco	CS3 Danu be	CS4 Loug h Erne	CS 5 Vouga River	CS6 Swed en	CS7 Swis s	CS8 Azor es
Target 1: Fully implement the Birds and Habitats Directives	X	X	X	X	X	X	X	X
Target 2: Maintain and restore ecosystems and their services	X	X	X	X	X	X	X	X
Target 3: Achieve more sustainable agriculture and forestry		X	X		X	X	X	
Target 4: Ensure the sustainable use of fisheries resources	X	X						X
Target 5: Combat invasive alien species				X	X			
Target 6: Help avert global biodiversity loss.		X						X

Spanning aquatic ecosystems

Case Study	Freshwater	Coastal	Marine
CS1: Trade-offs in ecosystem-based fisheries management in the North Sea aimed at achieving Biodiversity Strategy targets			X
CS2: Analysis of transboundary water ecosystems and green/blue infrastructures in the Intercontinental Biosphere Reserve of the Mediterranean Andalusia (Spain) – Morocco	X	X	X
CS3: Danube River Basin - harmonising inland, coastal and marine ecosystem management to achieve aquatic biodiversity targets	X	X	x
CS4: Management and impact of Invasive Alien Species (IAS) in Lough Erne in Ireland	X		
CS5: Improving integrated management of Natura 2000 sites in the Vouga River, from catchment to coast, Portugal	X	X	x
CS6: Understanding eutrophication processes and restoring good water quality in Lake Ringsjön - Rönne å Catchment in Kattegat, Sweden	X		
CS7: Biodiversity management for rivers of the Swiss Plateau	X		
CS8: Ecosystem-based solutions to solve sectoral conflicts on the path to sustainable development in the Azores			X

Main threats to biodiversity in case studies



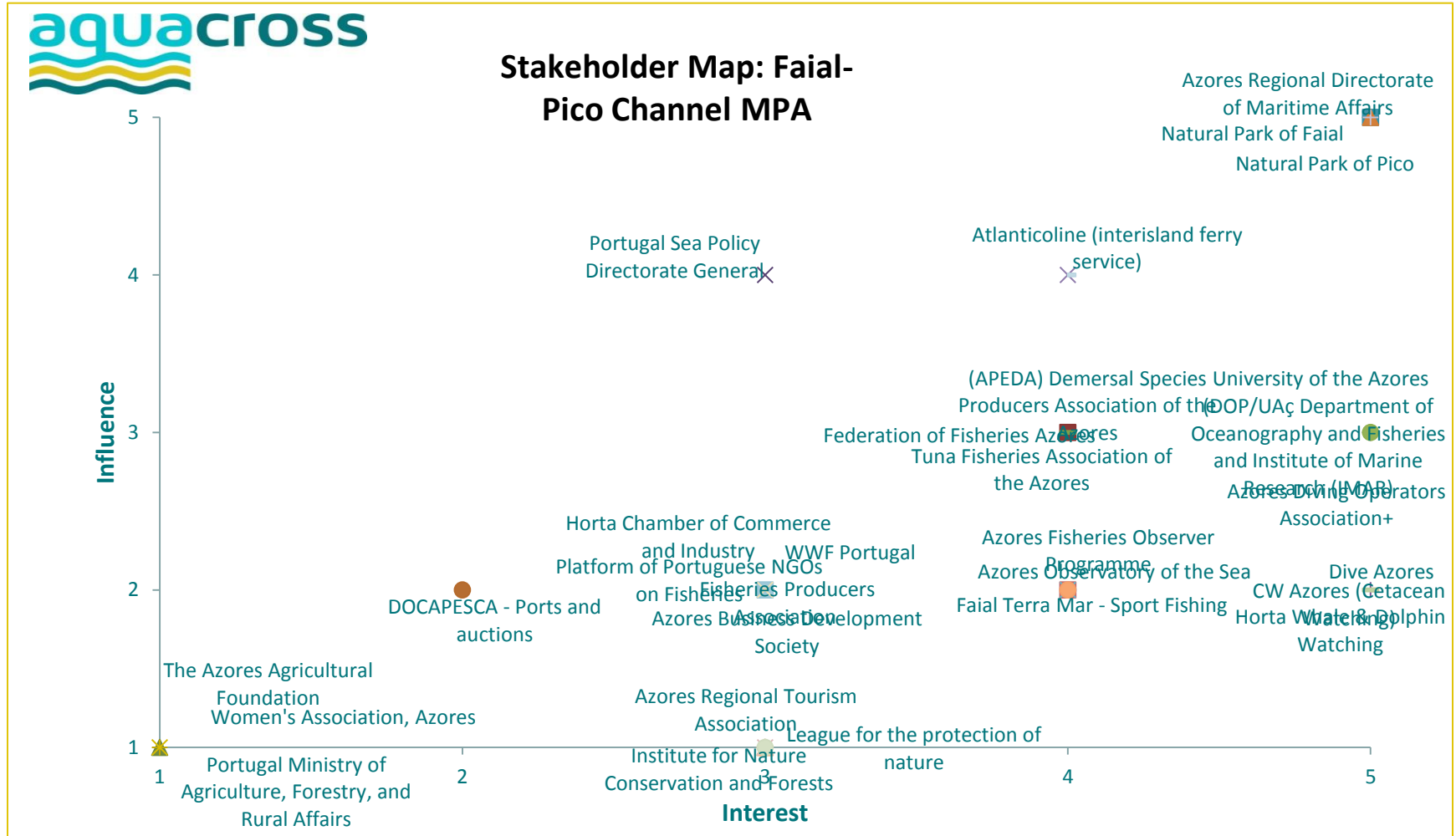
- Extraction of species (fish) (CS1 North Sea; CS2 Spain–Morocco; CS8 Azores)
- Sealing and noise (renewable wind farm) (CS1 North Sea; CS2 Spain–Morocco)
- Overexploitation of freshwater resources (CS2 Spain–Morocco)
- Nitrogen inputs (CS2 Spain–Morocco; CS3 Danube; CS6 Sweden)
- Hydro–morphological alterations (CS2 Spain–Morocco; CS3 Danube; CS5 Portugal; CS7 Switzerland)
- Invasive Alien Species (CS4 N. Ireland; CS5 Portugal)
- Waste and pollution (CS2 Spain–Morocco, CS3 Danube; CS7 Switzerland)

Research challenges

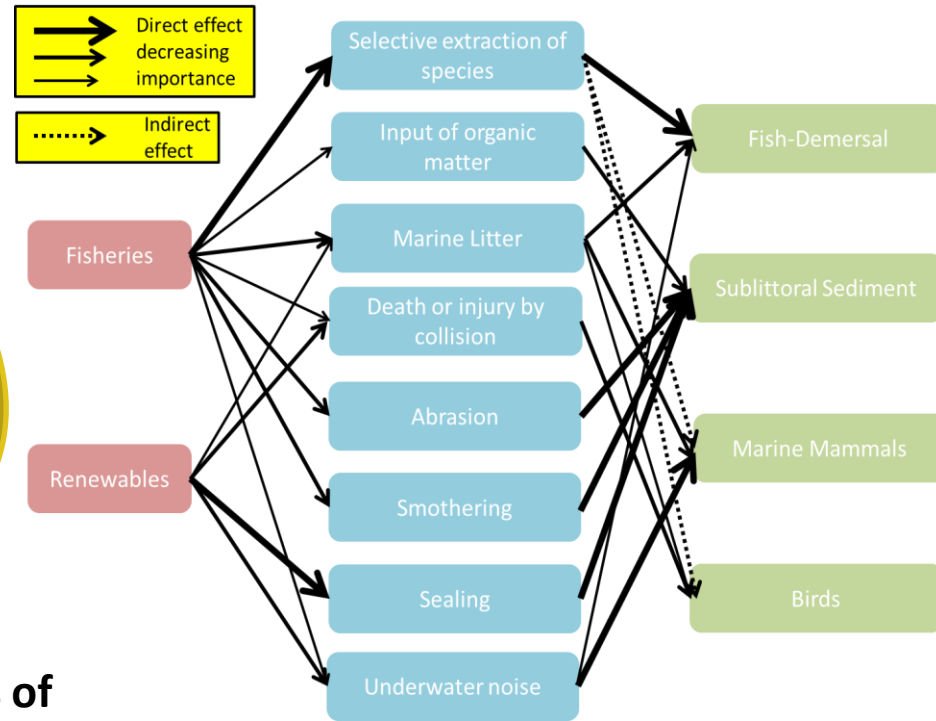
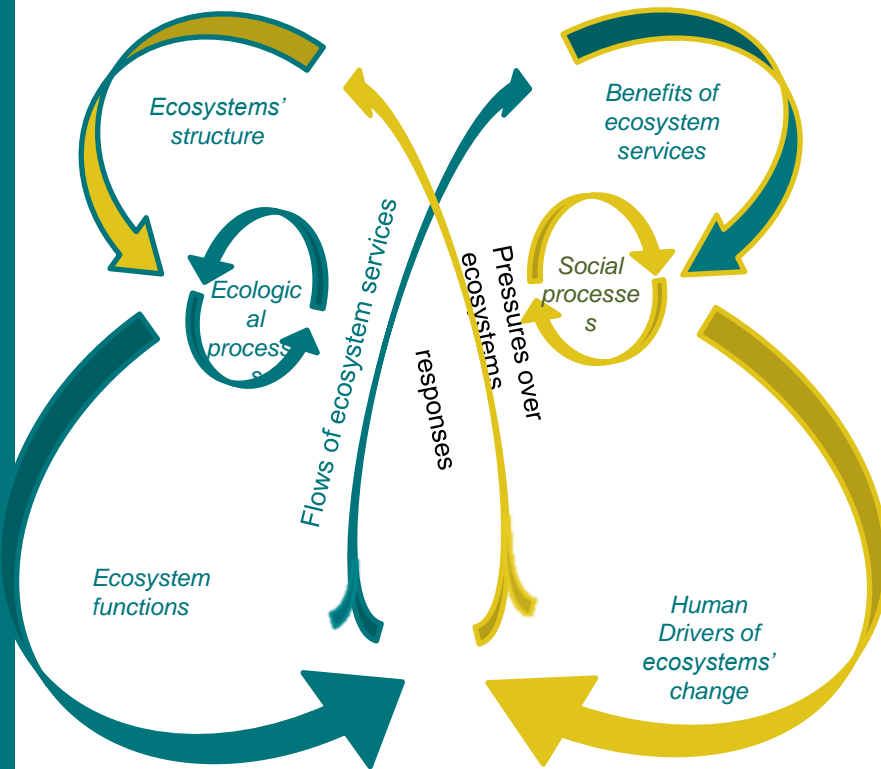


- Improve the knowledge base for stakeholders on Ecosystem Services in order to allow a more informed decision-making (all CS)
- Identify trade-offs between ecosystem services and beneficiaries/sectors (all CS)
- Identify synergies and discord between local policy goals (all)
- Identify priority areas for action (CS2 Spain-Morocco; CS3 Danube)
- Integrated management of complex trans-boundary systems (CS1 North Sea; CS2 Spain-Morocco; CS3 Danube; CS4 N. Ireland; CS5 Portugal)
- Explore opportunities for increased cooperation of stakeholders and improving governance (CS4 N. Ireland; CS6 Sweden; CS7 Switzerland; CS8 Azores)
- Explore communication methods and tools to support decision makers and stakeholders (CS1 N. Sea; CS5 Portugal; CS7 Switzerland; CS8 Azores)

EXAMPLE: Stakeholder assessment – Azores



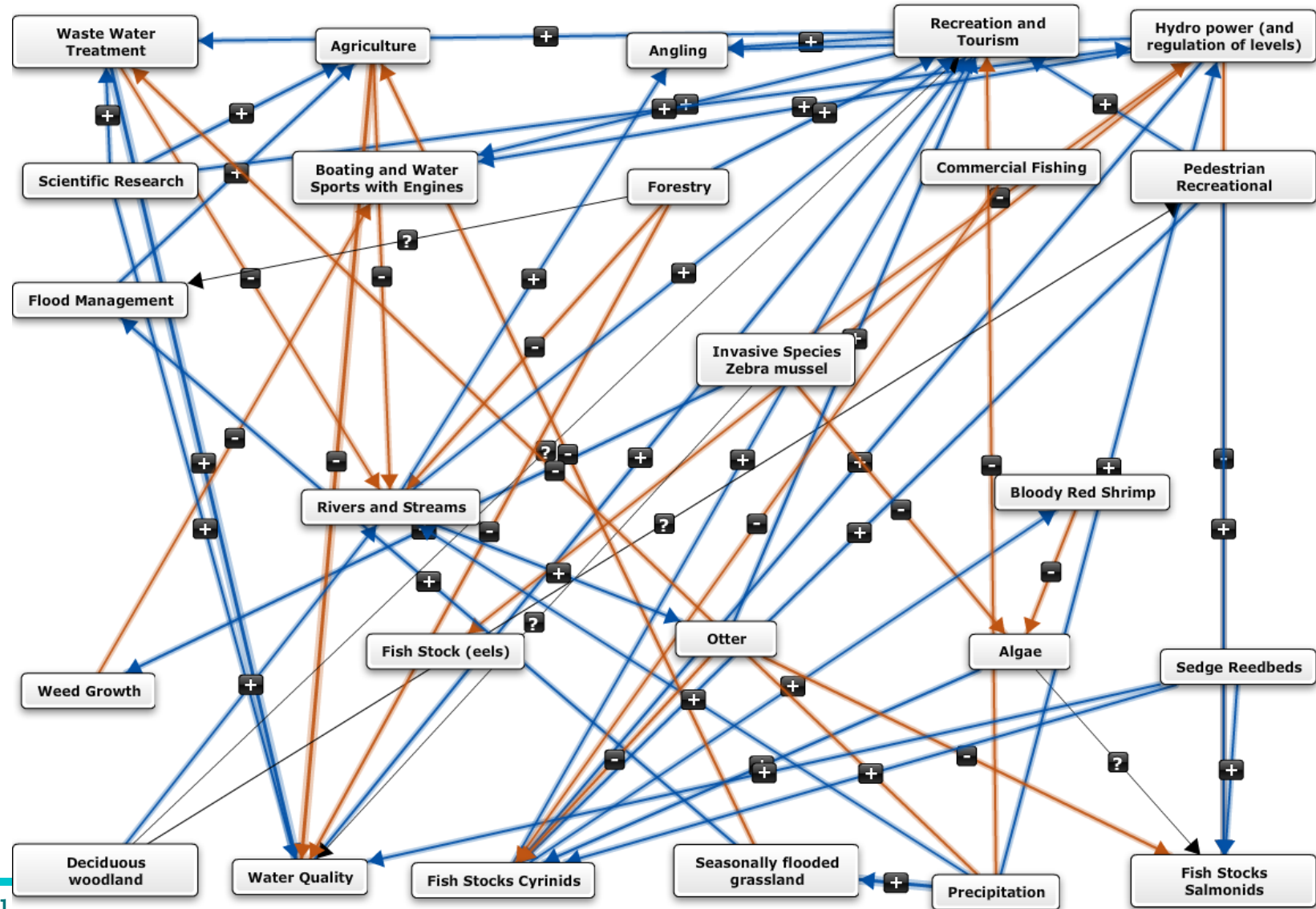
EXAMPLE: Social-ecological system – N. Sea



Linking the demand- & supply-side analysis of ecosystem services

Linkage framework describing the social-ecological system for CS1

EXAMPLE: Fuzzy Cognitive Mapping – N. Ireland



Example: Policy characterisation – N. Sea



≈ Detailed information on selected policies

Dimension	Description
Name of policy instrument	Marine Strategy for the Netherlands part of the North Sea 2012–2020
Administrative body in charge	Cabinet
Main objectives	The ultimate aim is a situation where habitats and species are in harmony with the prevailing physiographic, geographic and climatological circumstances. These objectives fit in with the Cabinet's vision of the future focused on a North Sea ecosystem that is resilient and functions optimally. The aim is to prevent the harmful effects of noise caused underwater by human activity. As soon as more knowledge is available, it will be possible to set more detailed targets in 2018 for underwater noise and accumulation of effects on populations or the ecosystem
Key target(s)	The measures contained in the MSFD programme of measures are categorised according to the eleven descriptors, four of which have been merged due to their interconnectedness. They pertain to the topics of biodiversity, invasive nonindigenous species, (commercial) fishing stocks, food webs, integrity of the sea-floor, hydrography, contaminants and eutrophication, litter and underwater noise.
Current deficit	The underwater noise produced by shipping and other human activities has increased significantly since the mid-20th century. Due to lack of measurement data it is not known to what extent underwater noise poses a problem and what the possible cumulative effects are. Etc
Spatial scales	Dutch part of the North Sea
Key stakeholder group(s)	Cabinet; as areas for new offshore wind farms are outside of the 12-mile zone, other MS will be involved
Key management measures	<ul style="list-style-type: none"> ▶ The licensing regime for wind farms is being adapted. Where necessary, other conditions will be set for new permits for pile-driving for wind farms, such as noise abatement measures. ▶ Etc

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