NEA WP3b: Coastal and Marine Ecosystems

Lead PIs:
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Mike Elliott (HULL)

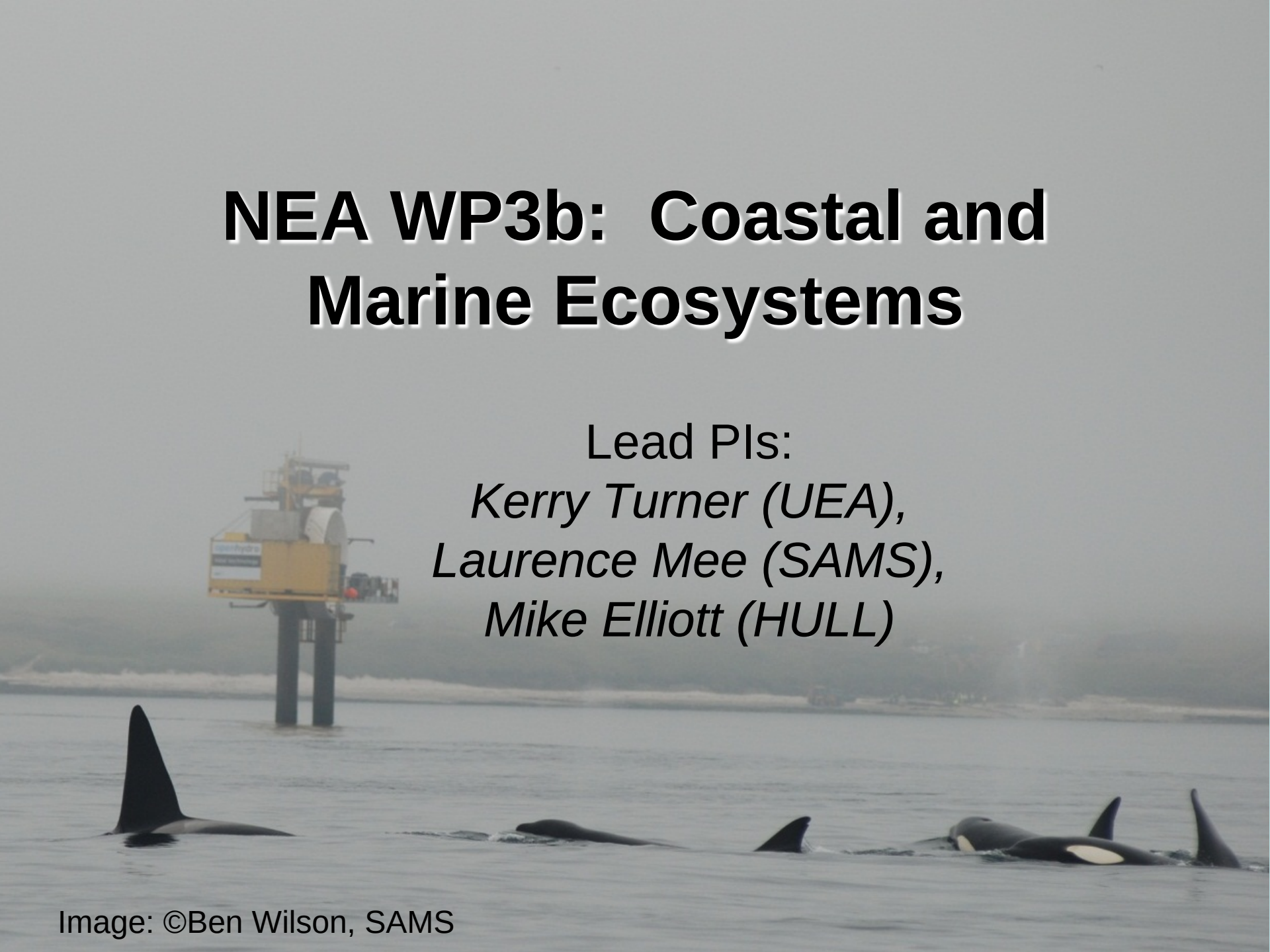
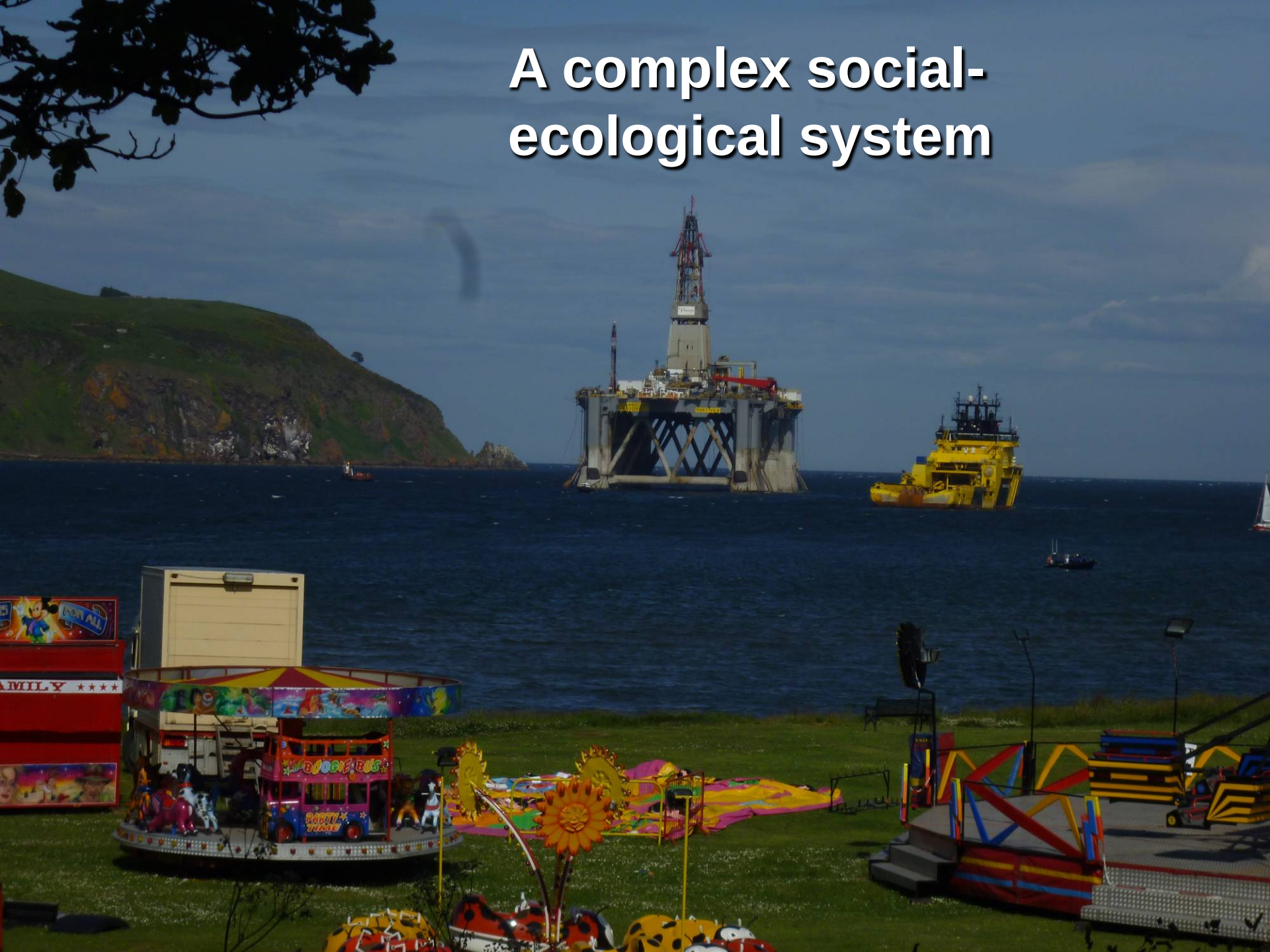
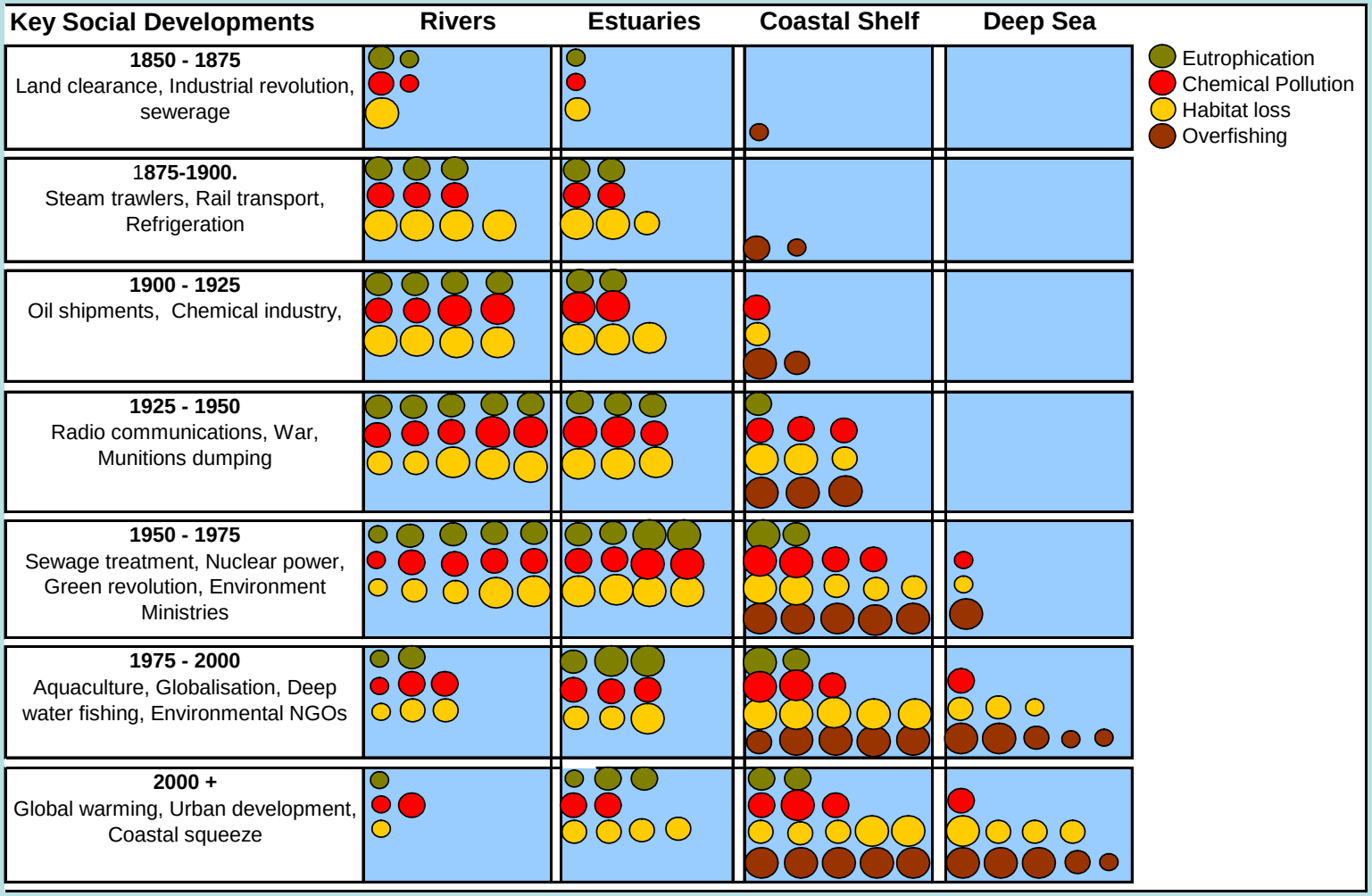


Image: ©Ben Wilson, SAMS

A complex social-ecological system

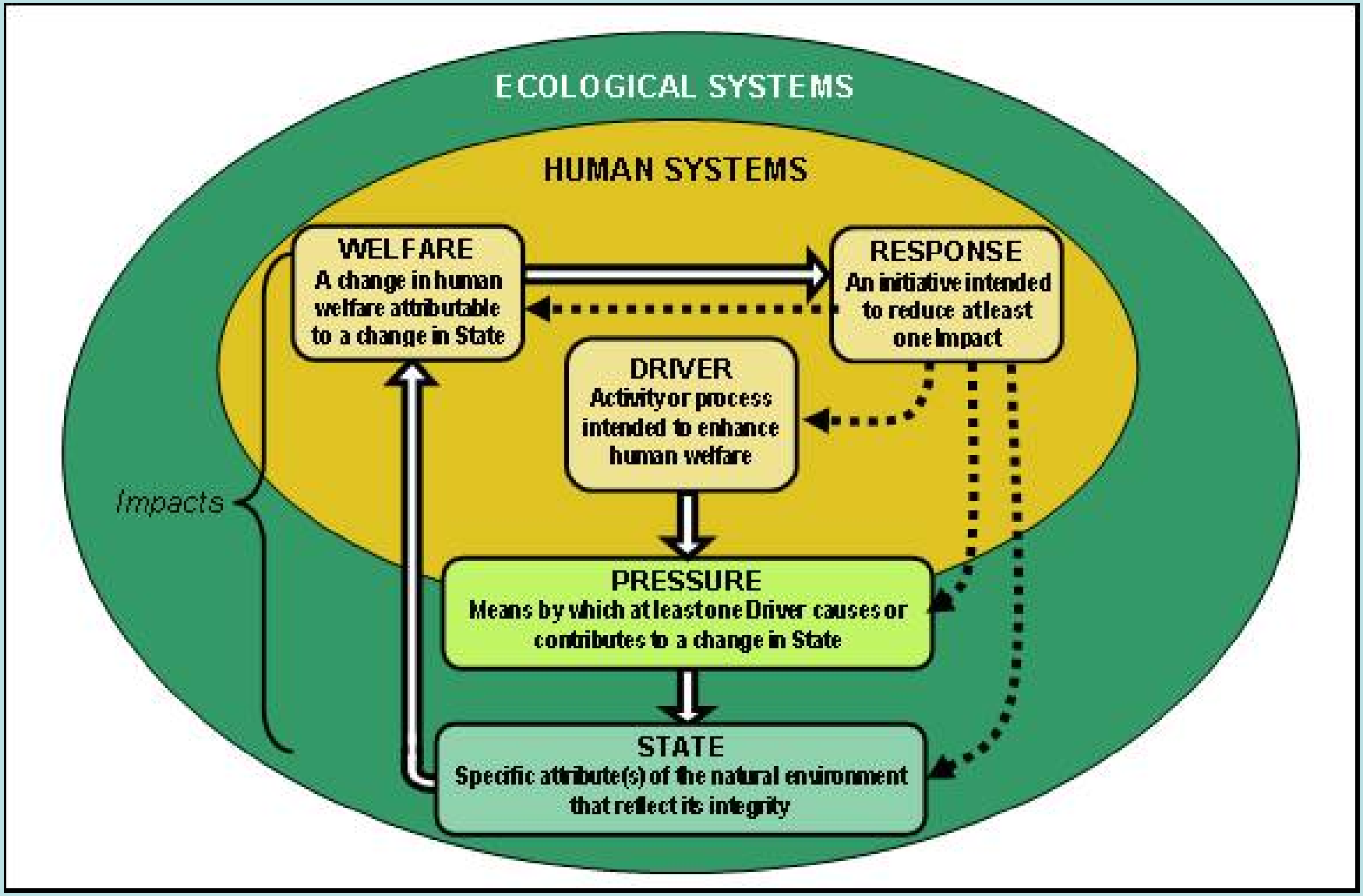


The UK's Growing Marine Footprint



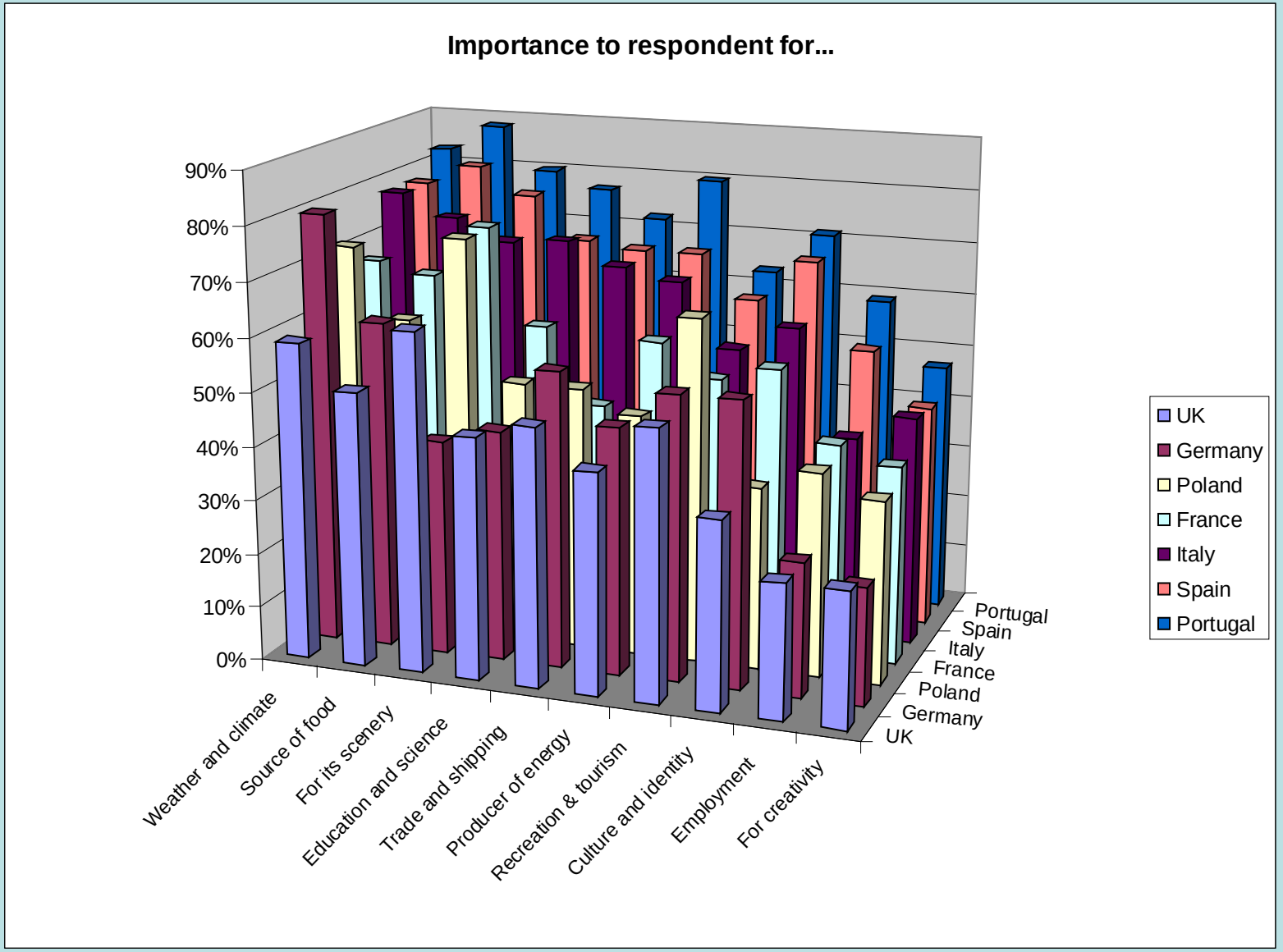
In 1858, so much sewage poured into the River Thames in London that MPs could not work in the Houses of Parliament because of the smell.

DPSWR

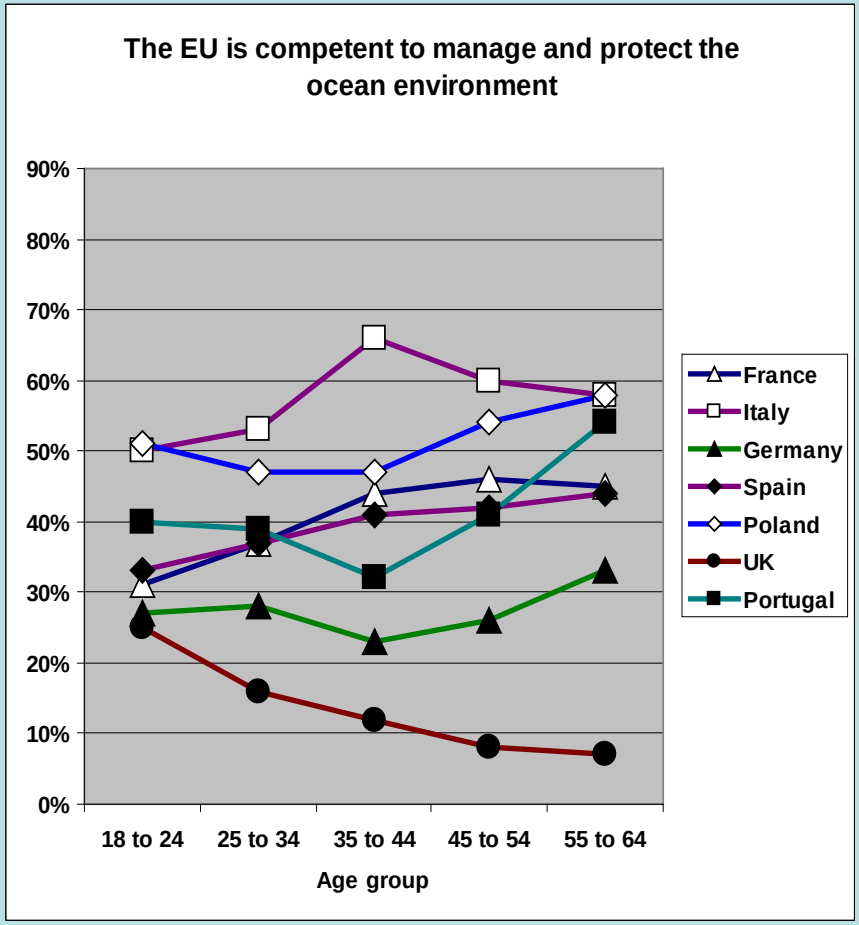

ECOLOGICAL SYSTEMS
HUMAN SYSTEMS
WELFARE
A change in human welfare attributable to a change in State
RESPONSE
An initiative intended to reduce at least one Impact
DRIVER
Activity or process intended to enhance human welfare
PRESSURE
Means by which at least one Driver causes or contributes to a change in State
STATE
Specific attribute(s) of the natural environment that reflect its integrity
Impacts

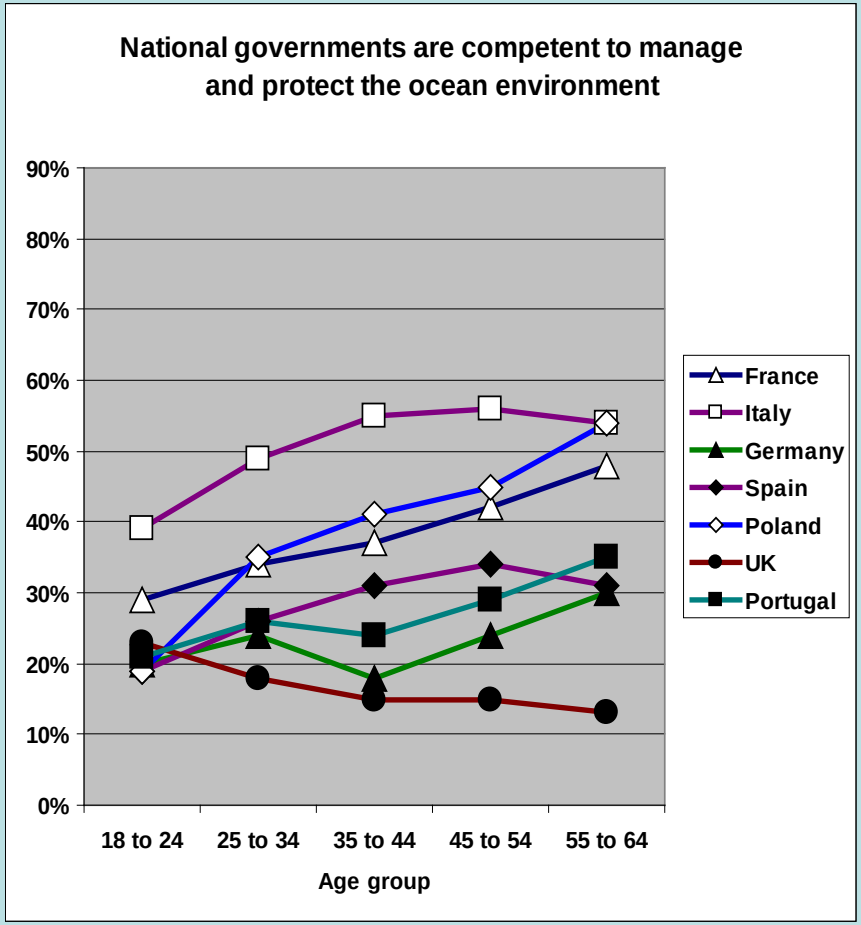
Value conflicts

Values and worldviews

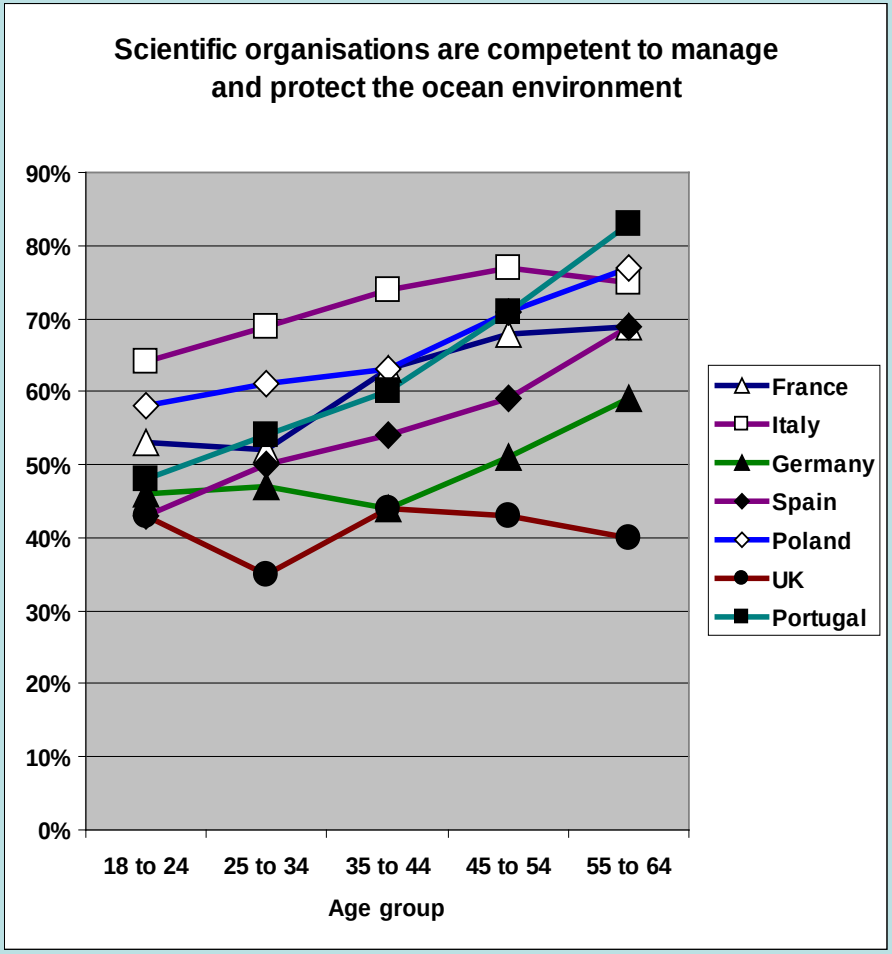


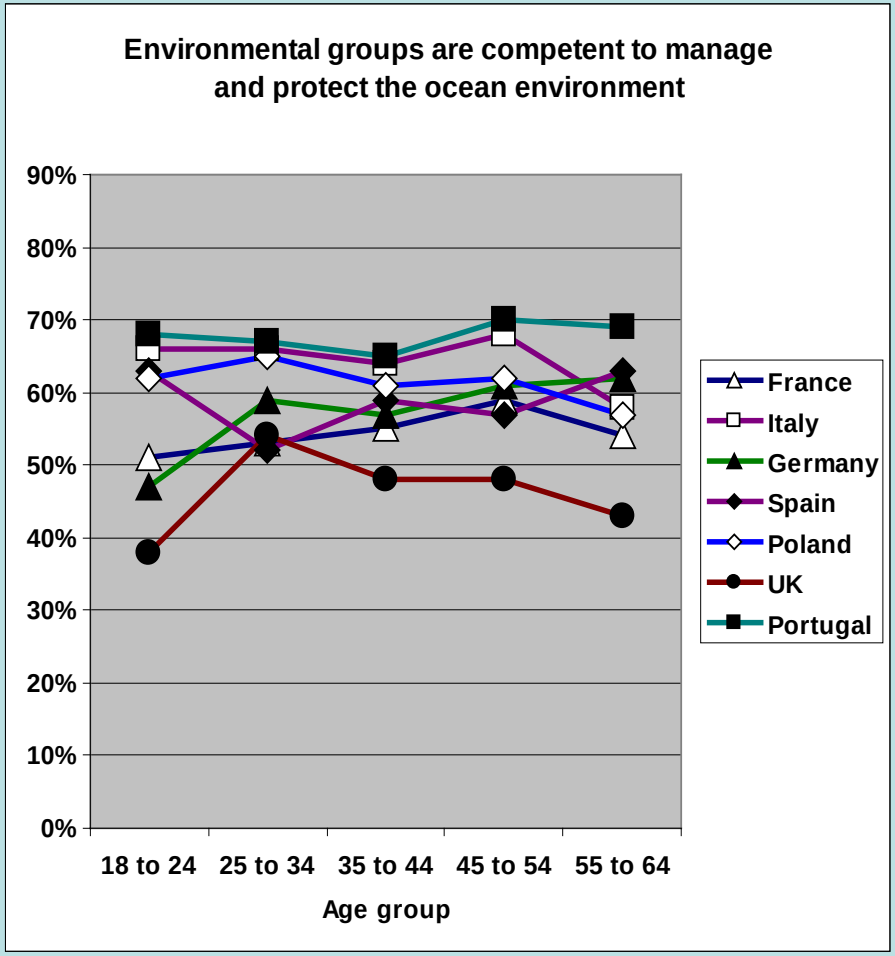
1. Building trust in institutions (1)



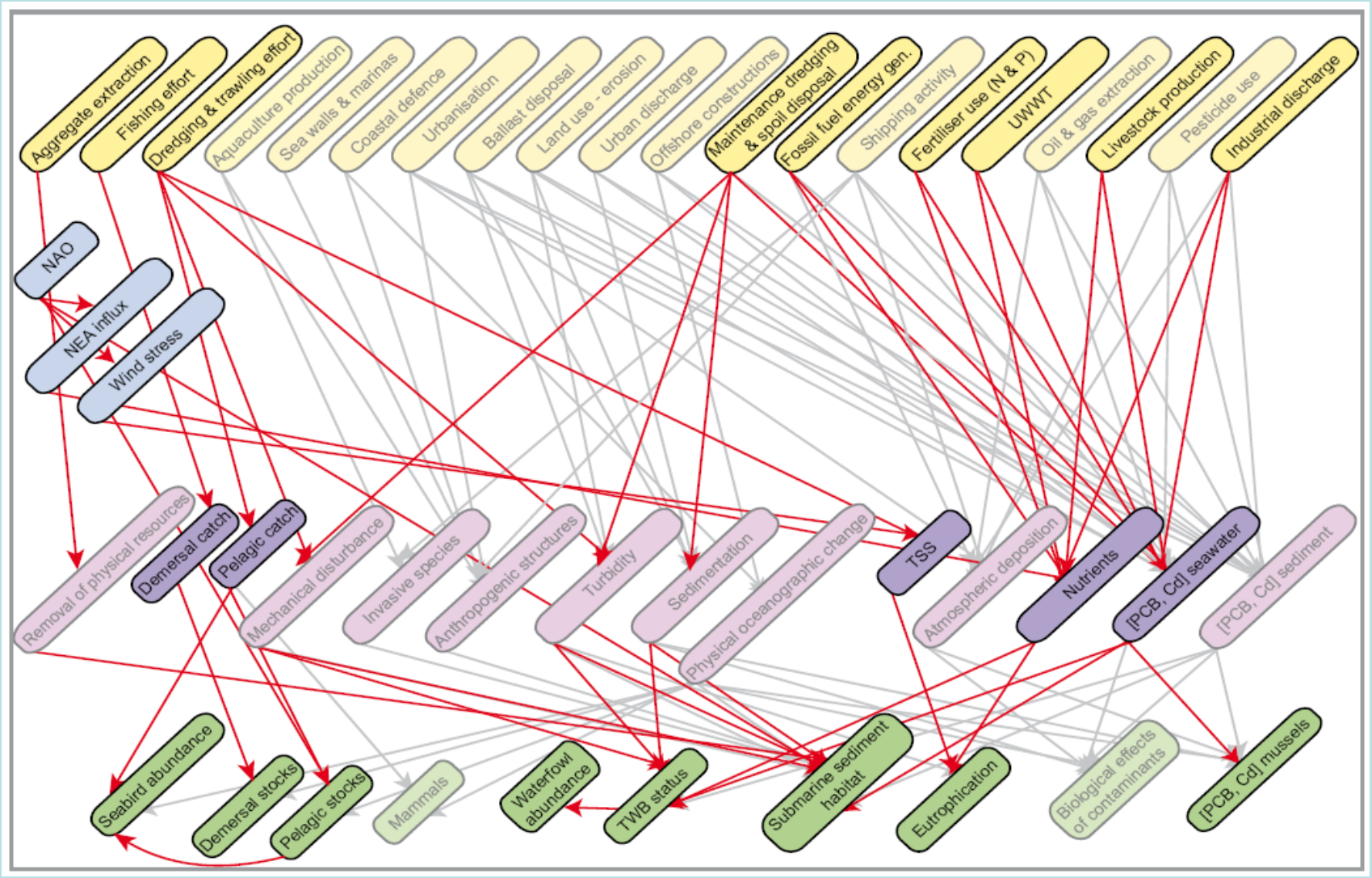


Building trust in institutions (2)

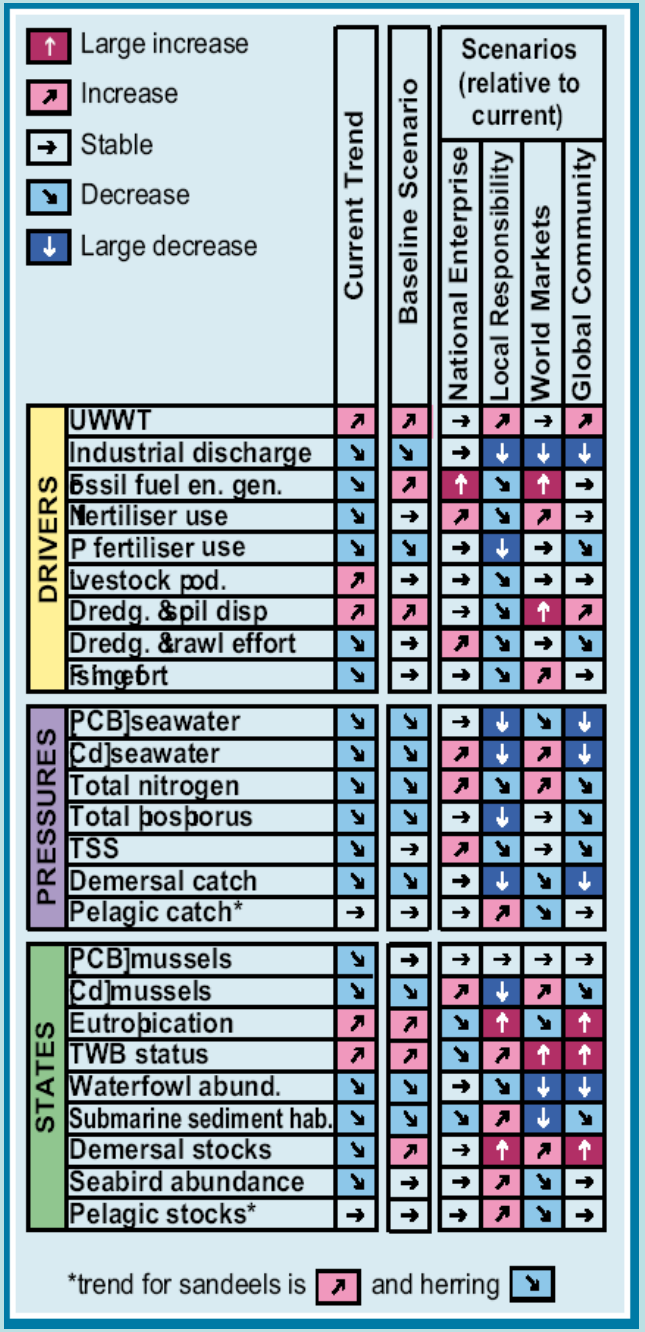




North Sea conceptual model



North Sea simulations



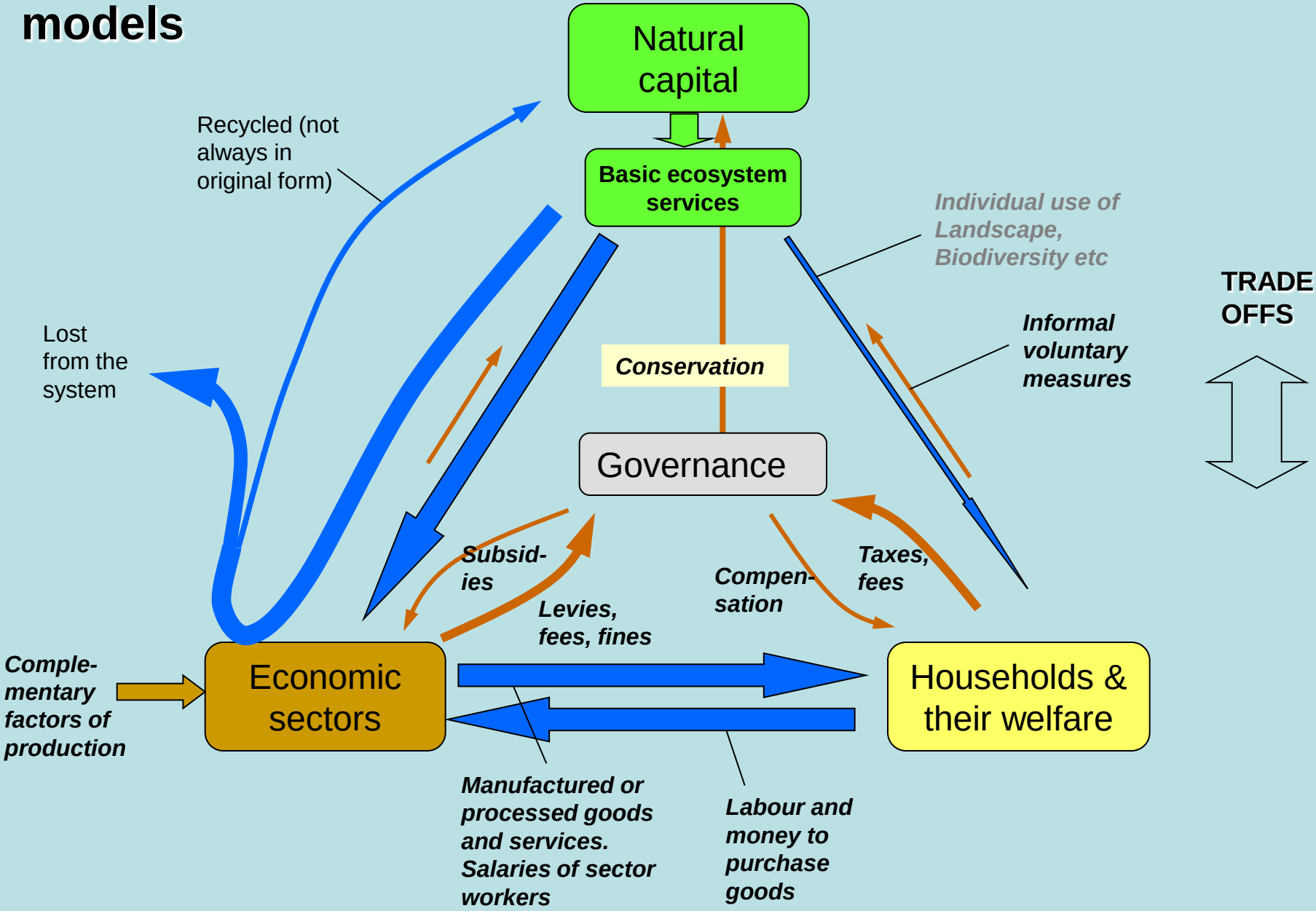
North Sea Winners and Losers

Winners

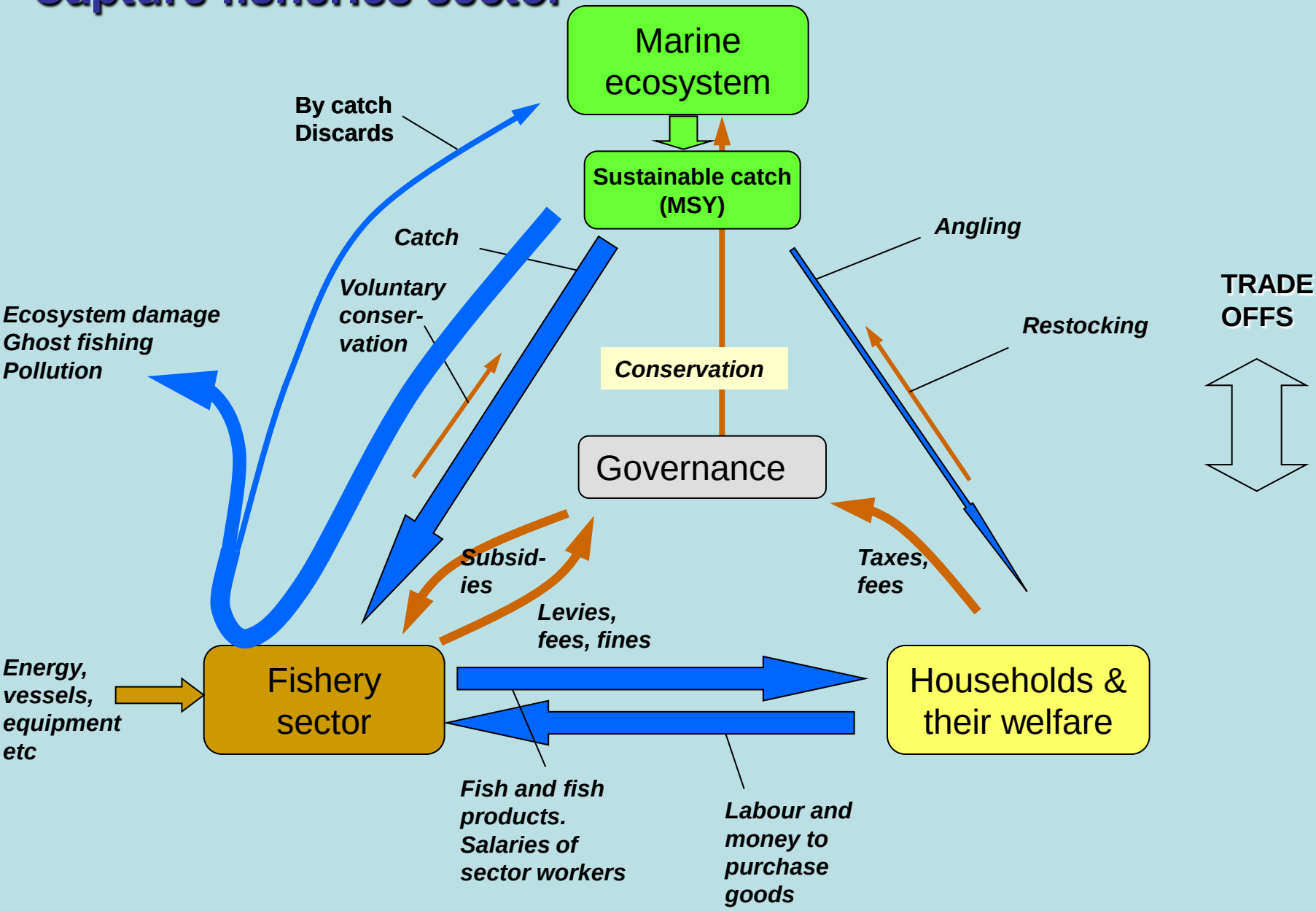
- **Winners include phytoplankton and trophic dead-end species such as jellyfish**
- **Winners also include transitional waters (estuaries)**
- **Losers comprise seabirds that depend on sand eels and small pelagic fish.**
- **Bottom water (demersal) fish species such as plaice, cod and haddock are losers as are the other animals and plants that form sea-bed habitats**

Losers

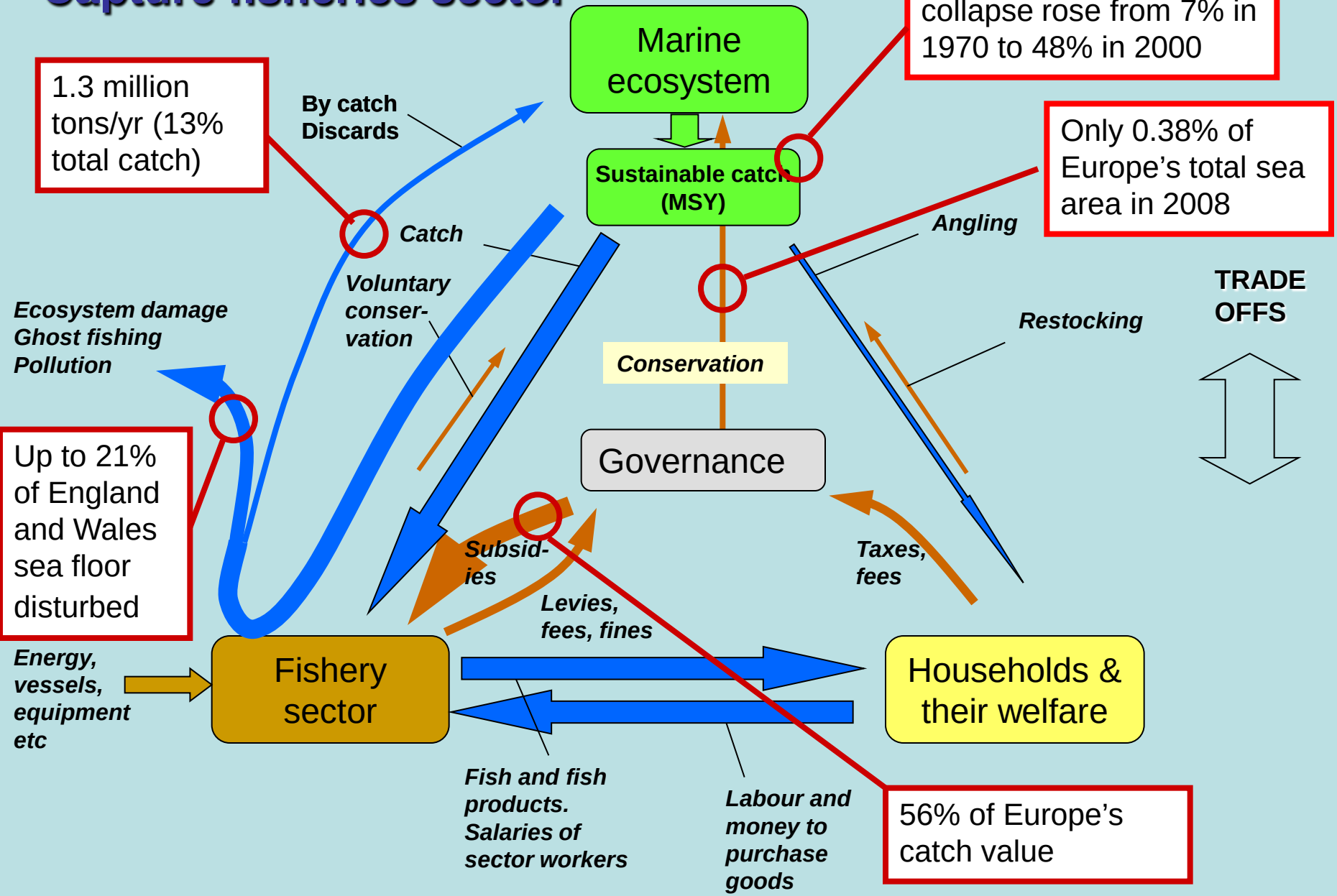
Stock and flow models



Capture fisheries sector



Capture fisheries sector



Objectives

- Review of coastal/marine ecosystem services and values, organised in a conceptual framework adapted to the spatial and other factors relevant to coastal/marine environments.
- An appropriate marine futures scenarios framework (collaboration with WP6);
- Feasibility of ‘coupled’ modelling of environmental change and impacts on ecosystem services across the coastal continuum.

Component 1 - UEA

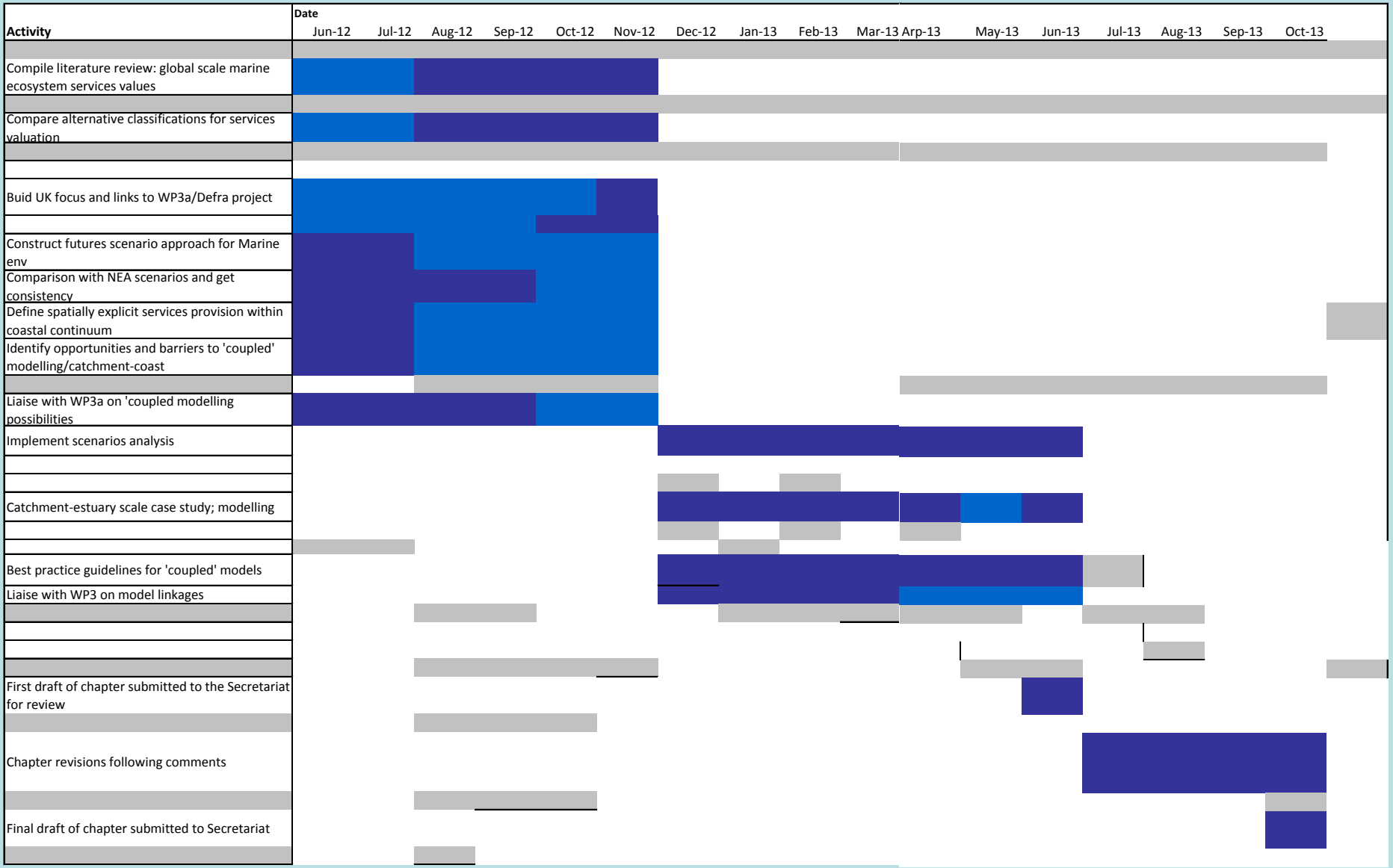
- Literature review- covering coastal/marine ecosystem services provision, health status and valuation, up to the global scale but with a particular focus on the UK (to complement WP2a).
- Analysis to identify spatially explicit provision of ecosystem services within the catchment-coastal continuum.
- Comparative analysis of the alternative ecosystem services valuation classification systems and approaches.

Component 2 - SAMS

- Futures scenarios framework formulation- global scale worldviews with a more detailed focus on a regional sea scale.
- Implementation of futures scenarios exercise

Component 3 – U of Hull

- Review of the available models and approaches necessary to provide a ‘coupled’ modelling assessment of environmental change (land use change modelling) in catchments and the ecosystem services impacts through estuaries and into coastal waters. This work will involve joint discussions with WP2a.
- Detailed exploration of catchment/estuary/coastal waters ecosystem services provision under environmental change conditions.


Activity
Date
Jun-12
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Arp-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Compile literature review: global scale marine ecosystem services values
Compare alternative classifications for services valuation
Buid UK focus and links to WP3a/Defra project
Construct futures scenario approach for Marine env
Comparison with NEA scenarios and get consistency
Define spatially explicit services provision within coastal continuum
Identify opportunities and barriers to 'coupled' modelling/catchment-coast
Liaise with WP3a on 'coupled modelling possibilities
Implement scenarios analysis
Catchment-estuary scale case study; modelling
Best practice guidelines for 'coupled' models
Liaise with WP3 on model linkages
First draft of chapter submitted to the Secretariat for review
Chapter revisions following comments
Final draft of chapter submitted to Secretariat

Deliverables

- From SAMS : Scenario analysis report (draft and final); report contribution to the case study modelling exercise.
- From Hull : Report on ecosystem services within the coastal continuum (draft and final); report contribution to the case study modelling exercise.
- From UEA : Literature review for marine /coastal ecosystem services and values; case study report; draft and final chapter report.