Supporting marine management from the bottom up

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PP is an Intermediate or Supporting Ecosystem Service (ES) supporting further ecosystem functions and...

- global carbon cycle - sequestering CO₂ from atmosphere (ES climate regulation)
- atmospheric O₂ (ES clean -breathable- air)
- base of marine food web (ES fish and food) (cultural ES, e.g. bird and whale-watching)
- Harmful Algal Blooms (HABs) (Oceans and human health)
- indicators of climate change (policy driver)
- indicators of eutrophication (e.g. for GES)
The importance of scale and variability in space

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Integrating consideration of phytoplankton into marine management

Mean (2003-2010) total annual gross PP
Interannual variability is ~10% of mean

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Bottom up marine management

Management / Policy

- Department for Environment Food & Rural Affairs
- marine scotland
- Department of Agriculture, Environment and Rural Affairs

Research

- Marine Management Organisation
- OSPAR Commission
- ICES CIEM
- NASA

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The “CORPORATES” Knowledge Exchange Project

CORPORATES: Cooperative participatory assessment of the impact of renewable technology on ecosystem services

Introduce Ecosystem Services and design with Stakeholders a decision-support framework which addresses potential ecological trade-offs such as climate change, renewable developments, and MPAs.

- Involved
  - Natural scientists
  - Social scientists
  - Law & policy experts
  - Regulatory/Advisory partners
  - Stakeholders (Renewables, Fishing, Conservation, Recreation/Tourism)

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CORPORATES: Process

Participatory Mapping

Identifying benefits, and commonalities and differences

Ecosystem ‘interlude’

Linking benefits and ecosystem services

Conceptual systems model building

Policy ‘interlude’

Exploring trade-offs and policy options

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CORPORATES: Feedback from stakeholders

Feedback on whether there was knowledge gained

- Contributed knowledge
- CSM (Activity 2)
- Linking benefits & ES (Activity 1)
- Trade-offs between different activities in the Firth of Forth & Tay Region
- Fisheries
- Decision making process (Activity 4)
- Exploring trade-offs & policy options (Activity 3)
- MPAs
- Climate change

Feedback for Workshop 2

- Overall Useful
- Workshop Materials
- Workshop Delivery
- Discussion Quality

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### How do marine planning practitioners see it?

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<th>Exercises</th>
<th>Outputs</th>
<th>Advantages</th>
<th>Application examples</th>
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<tr>
<td>Mapping of marine activities</td>
<td>Spatial data</td>
<td>Baseline characterisation in regional scales</td>
<td>Participatory GIS data collection exercises</td>
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<tr>
<td>Benefits identification</td>
<td>List of benefits</td>
<td>Understanding of stakeholder views - across sectors</td>
<td>Link benefits to policies and track stakeholder input</td>
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<tr>
<td>Linking benefits to ecosystem services</td>
<td>Relevant Ecosystem Services</td>
<td>Implement the ecosystem-based management approach</td>
<td>Ecological and Economic evaluations</td>
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<tr>
<td>Conceptual mapping</td>
<td>Conceptual System map</td>
<td>Explore the impact of external policy drivers; explore trade-offs</td>
<td>Identify evidence gaps; Areas for policy development</td>
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Bottom up marine management

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