Parallel Session E: Valuation and Compensation of Ecosystem Services

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Ecosystem Services

**Definition:** functions and processes through which ecosystems, and the species that they support, sustain and fulfil human life.

**Benefits:** dependent on well-functioning ecosystems and ecosystem services.

**Final services:** direct benefits to human societies

**Intermediate services:** vital importance for the final services and human benefit

<table>
<thead>
<tr>
<th>Intermediate services</th>
<th>Final services</th>
<th>Goods/benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrient cycling</td>
<td>Fish/shellfish</td>
<td>Energy</td>
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<tr>
<td>Primary production</td>
<td>Water quality</td>
<td>Food</td>
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<td>Water cycling</td>
<td>Wild species diversity</td>
<td>Recreation</td>
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<tr>
<td>Habitat maintenance</td>
<td>Raw materials</td>
<td>Tourism</td>
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<td>Biodiversity maintenance</td>
<td>Climate regulation</td>
<td>Education</td>
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Adapted from MTT Agrifood Finland

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• **Socio-economic assessments:**
  - Need to distinguish between ecosystem services and benefits.
  - Ecosystem services can be seen as the link between ecosystems and things that humans benefit from.
  - Ecosystem services are not the benefits themselves.
  - Ecosystem processes and functions only become services if there are humans that (directly or indirectly) benefit from them.
  - Understand synergies between ecosystem services, i.e.
    
    *Falkenberg et al., 2013. Disrupting the effects of synergies between stressors: improved water quality dampens the effects of future CO2 on a marine habitat. J. Applied Ecology*
Main SUBMARINER Findings

Valuation and Compensation of Ecosystem Services: recurring cross-cutting issue for reed, mussels, micro- and macroalgae applications and (to a lesser extent) for sustainable fish aquaculture.

Issues

- Clean beaches, tourism,
- Mussel, macroalgae and reed harvesting and cultivation may offer local solutions to combat eutrophication through nutrient harvesting and closing nutrient cycle within fish aquaculture;
- Mussel and algae cultivations enhance local biodiversity and coastal protection;
- Mussel meal may become an environmentally sustainable alternative source of feed stuff for aquaculture, replacing fish meal;
- Mussels and algae as resource for organic fertilisers;
Main SUBMARINER Findings

But …

- Essential gaps in knowledge on environmental impacts;
- Socio-economic benefits difficult to valuate, no agreed / standard approach for valuation and compensation of ecosystem services;

Opportunities …

- Growing political will in EU and BSR to combat eutrophication and also consider non-point sources nutrient removal measures;
- Growing recognition at EU, BSR and National levels for need to establish a common framework for valuation of ecosystem services;
  - Common International Classification of Ecosystem Services, CICES Initiative, EEA
  - Mapping and Assessment of Ecosystems and their Services, MAES DG Environment
  - Nordic Council of Ministers, HELCOM, UNEP Workshop on Economic Valuation
PART 1: Policy Objectives & Instruments

- Wera Leujak, German Federal Environment Agency
  - Should we compensate for ecosystem services? The policy perspective on SUBMARINER “New Marine Uses”
- Ing-Marie Gren, Swedish University of Agricultural Sciences
  - Policies for ecosystem services in the Baltic Sea

DISCUSSION

PART 2: Case Studies

- Matilda Gradin, Trelleborg Municipality, Sweden
  - A municipal approach on counteracting Baltic sea eutrophication and producing clean energy – Wetlands, Algae and Biogas case study in Trelleborg
- Nardine Stybel, EUCC-D, Coastal Union of Germany
  - Mussel cultivation as a nutrient reduction measure and linkages to water quality and socio-economic aspects

DISCUSSION

Session wrap up, summary of key feedback from session
Valuation and Compensation of Ecosystem Services

- **Objective**: to develop an accepted approach to valuation of ecosystem services, propose appropriate compensation mechanisms for the provision of ecosystem services by new marine uses in BSR

- **Network Coordinators**: Swedish Agency for Marine and Water Management (SWAM), Maritime Institute in Gdansk (MIG) and Swedish Agricultural Board

**Important actions**: 
- Assess the applicability of new marine uses on ecosystem services for different sub-regions of the BSR;
- Proactively liaise and inform EU, HELCOM and relevant BSR Priority Areas of SUBMARINER initiatives;
- Develop a practical BSR-wide methodology for valuation of ecosystem services as the basis for ecosystem services compensation schemes;
- Develop recommendations and proposals for establishment of ecosystem service compensation schemes;
- Generate life cycle assessments and techno-economic models ... to critically examine costs and benefits
Actors and Opportunities

- **Actors:**
  - Public / private environmental & economic research institutions
  - Relevant intermediary bodies

- **Other Relevant Strategic Actions:**
  - Data sets of Baltic Sea resources
  - Environmental impacts on water quality and habitats
  - Pilots sites for empirical research
  - Create better legal and regulatory conditions