Should we compensate for ecosystem services? 
– The policy perspective on the SUBMARINER „New Marine Uses“

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The main policy objective is the achievement of good environmental status


WFD river basin management planning cycle

MSFD management cycle

Cost effective and technically feasible
The Baltic Sea is currently not in a good status, leading to undesired environmental effects and a reduction in ecosystem services provided
The Baltic Sea fails to achieve good eutrophication status

Eutrophication causes undesired effects that reduce ecosystem services.

Carpet of blue-green algae in July 2010 covering almost 90% of the Baltic Sea
Source: ESA

Algae mats on Baltic Sea Beach, Foto: W. Leujak

Hypoxia in Baltic Sea coastal waters
Conely et al. 2011
The German Baltic Sea fails to achieve good ecological status according to the WFD

Ecological Status of German coastal waters under the WFD (2008 assessment)

- very good: 0%
- good: 2%
- moderate: 32%
- poor: 50%
- bad: 16%
The Baltic Sea fails to achieve good status according to the MSFD Initial Assessment 2012

Source: HELCOM GEAR Report
Most of the „new marine uses“ identified by SUBMARINER have some negative environmental impacts and often intervene in complex ecological processes that are insufficiently understood.
Environmental impacts of „new marine uses“

Example: mussel farming
- Mussels play a key role in aquatic ecosystems (regulation of phytoplankton populations by filter-feeding, nutrient cycling, major component of the structural matrix)
- Excretion of faeces and pseudofaeces leads to fast nutrient recycling that promotes phytoplankton growth
- Well-oxygenated sediments are a prerequisite for positive ecosystem effects
- Any biomanipulation must be exercised with great care
Environmental impacts of „new marine uses“

Example: aquaculture within wind farms

- Depending on the cultivated species effects on water column and benthos
- Potential safety risk of increased traffic and maintenance operations
- Loss of the potential for wind farm areas to become relatively undisturbed „no-take“ zones
- Unlikely that displaced fishermen will become aquaculturists

Source: Lacroix & Pioch 2011
To achieve good status we need to use the sea less and not more, hence the SUBMARINER „new uses“ should replace traditional less-sustainable uses rather than adding to these
Reduction of uses with negative environmental impacts is required to achieve good status of the Baltic Sea according to MSFD, WFD, BSAP

- We need to reconcile the increasing utilisation demands of the „Blue Economy“ with the protection of the marine environment
- „Blue growth“ needs to be underpinned by ecological boundary conditions
- New, more environmentally friendly uses of the Baltic Sea should be viewed as an alternative to traditional uses, not as an addition to existing uses (e.g. integrated multi-trophic aquaculture instead of traditional aquaculture)
The SUBMARINER „new marine uses“ are often „end of pipe solutions“ for environmental problems that can still be remediated at source, compensating for these ecosystem services creates the wrong incentives
- Precautionary approach: If possible **combat nutrients at source** or as close to the source as possible
- Agriculture should be obliged to take measures to prevent excessive nutrient inputs
- There is still ample scope for effective measures to prevent nutrient from entering the marine environment
- However: small-scale localised solutions are sometimes required; environmental impacts need to be considered carefully (e.g. Zebra mussel cultivation to combat internal nutrient loading in the Szczecin lagoon)
Additional costs of marine uses that provide ecosystem services can be financed by a variety of instruments.
Mechanisms to promote more environmentally friendly uses over traditional uses

- Policies that require producers to internalise environmental costs (fertiliser tax, polluter pays fees etc.) would lead to higher costs for less environmentally friendly products
- In the context of necessary localised remediation approaches „new uses“ could be regarded as measures in the context of the WFD, MSFD, BSAP and could be paid for as such
- Certification of “premium” products from sustainable production (e.g. products from sustainable integrated aquaculture production)
A final comment on nutrient trading schemes

- Nutrient trading becomes an increasingly popular tool in a market-based economy since and is assumed to be more cost efficient than command and control approaches
- Operational trading schemes: US acid rain programme, EU CO₂ trading scheme
- Trading schemes for water pollutants mostly located in the US but limited success (high transaction costs)
- Nutrients not uniformly mixed- danger of pollution hotspots (trade restrictions required that restrict the size of the market and increase transaction costs)
- Mussel and macroalgae cultivation where it is cheapest and environmental conditions are favourable
- Could counteract reduction efforts at source
Conclusions

- Ecosystem services generated by SUBMARINER „new marine uses“ arise due to insufficient control of pollution at source and cannot be regarded as „real“ ecosystem services.
- They should therefore not be compensated for but should be promoted as more environmentally friendly and sustainable ways of using the marine environment.
- Negative environmental impacts of „new marine uses“ need to be carefully evaluated in their respective contexts.
- „New marine uses“ might have an important role as remediation measures for localised specific problems that cannot be combated at source.
- The potential palette of measures that can be taken at source is on a broad scale still sufficient to achieve good environmental status.
Thank you for listening