



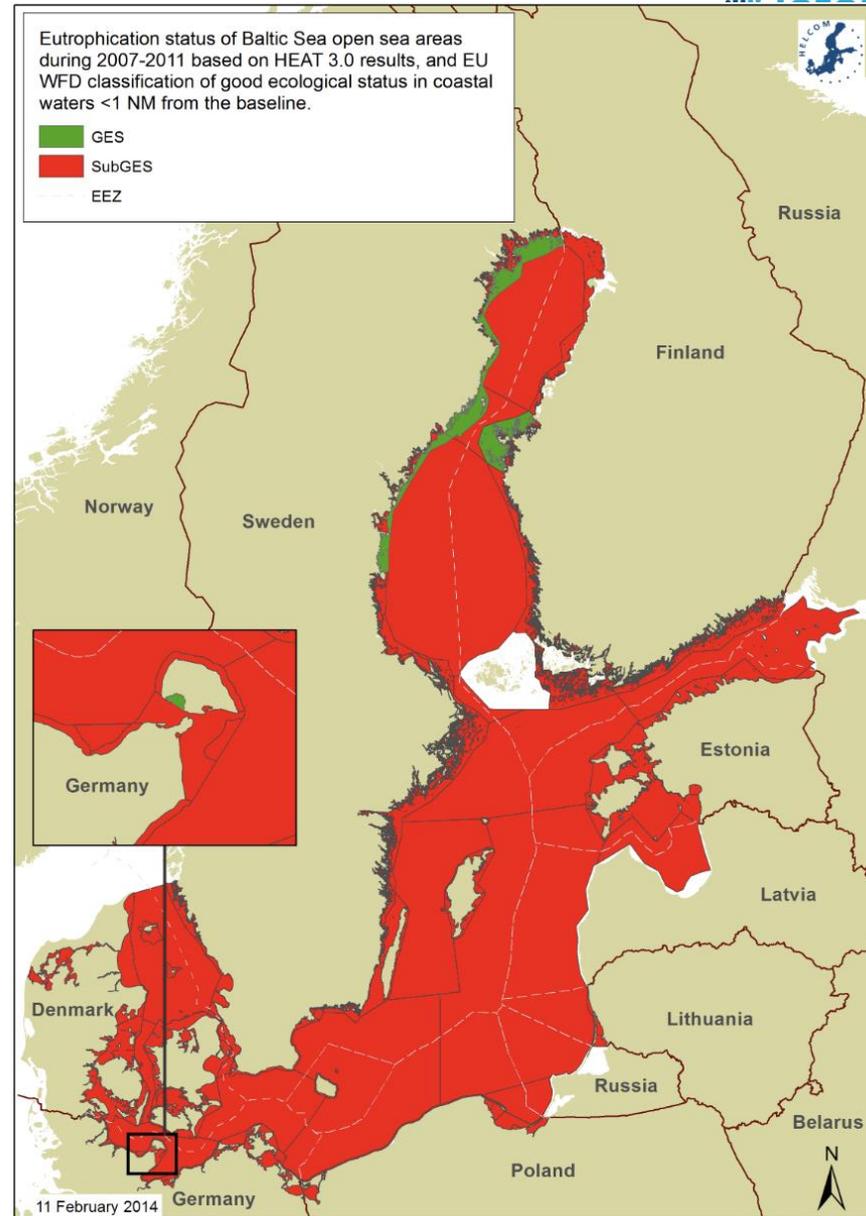
HOW TO TURN ECOSYSTEM PAYMENTS FOR BALTIC MUSSELS FARMS INTO A REALITY?

Angela Schultz-Zehden,
SUBMARINER Network for Blue Growth
Rostock, 19 March 2019

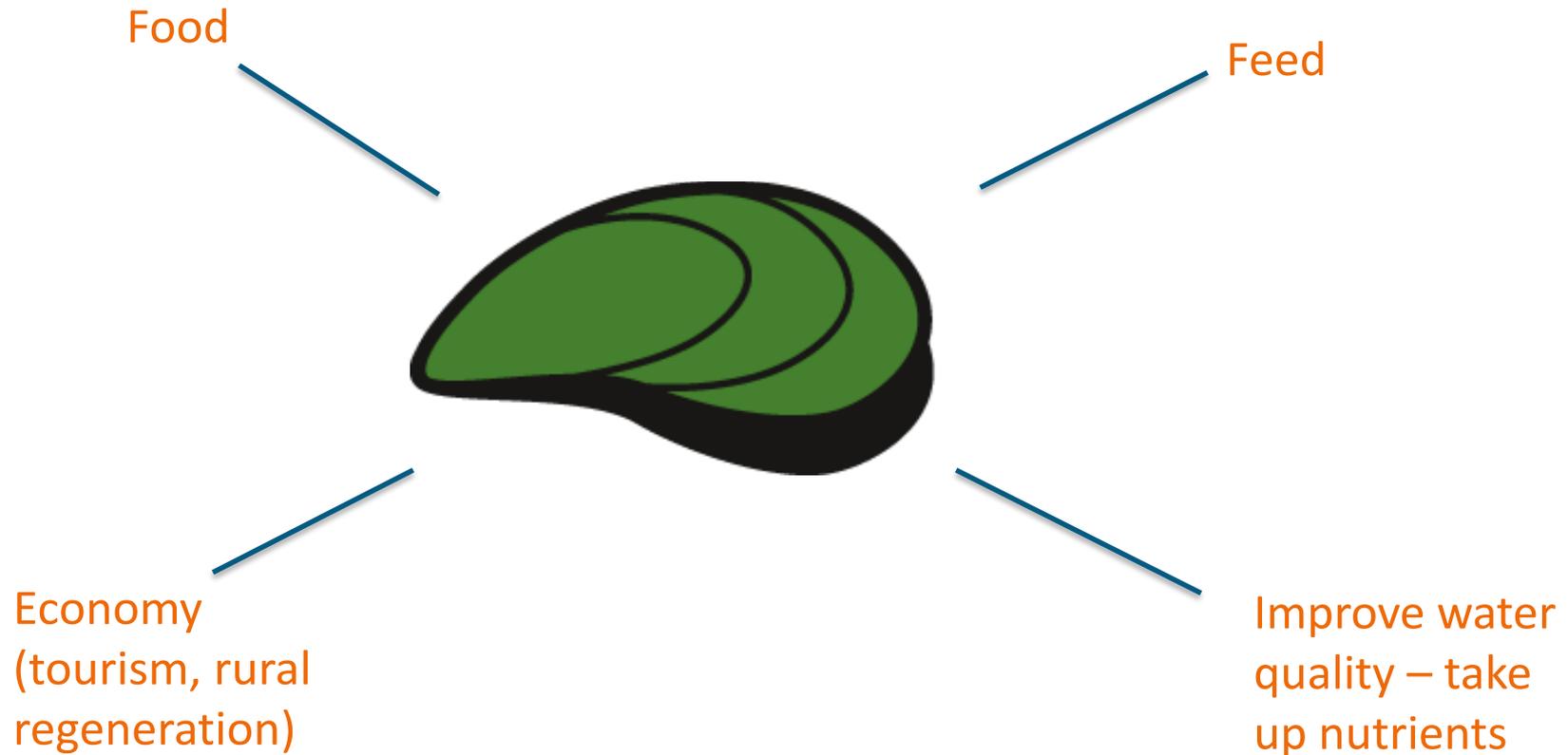
Background

Eutrophication status in 2007-2011 in all the open Baltic Sea sub-basins (HELCOM, 2014).

(red colour, status less than good; sub-GES)



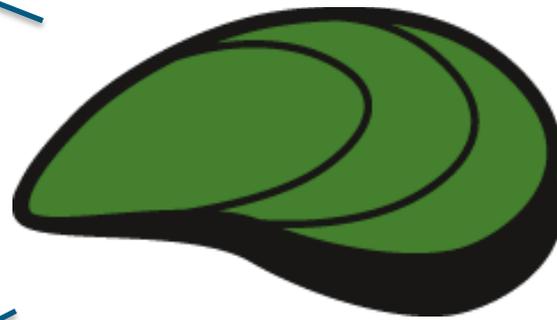
Mussel farming - an ecosystem service provider



Mussel farming – related payments

Food = €

Feed = ?



~~Economy
(tourism, rural
regeneration)~~

~~Increase water
quality – take
up nutrients~~

Aim of ES study:

Provide arguments / recommendations for policy makers & mussel farmers

- **Overview on Legislative Framework**
- **Who should/ could pay for ecosystem services (ES)?**
- **How much to pay?**
 - Cost structures
 - Price?
- **How to pay – ideas & principles**

Payment scheme design

What are requirements for a scheme to gain acceptance?

Mussel farmers

- Sufficient
- On-going / certain security
- Fair and comparable to other funding programmes
- Available as soon as possible

Environmental conservationists

- Effective nutrient removal where desired
- Without negative impacts
- Not weakening any other efforts to reach GES and other targets (e.g. nutrient inflow)

Policy-Makers

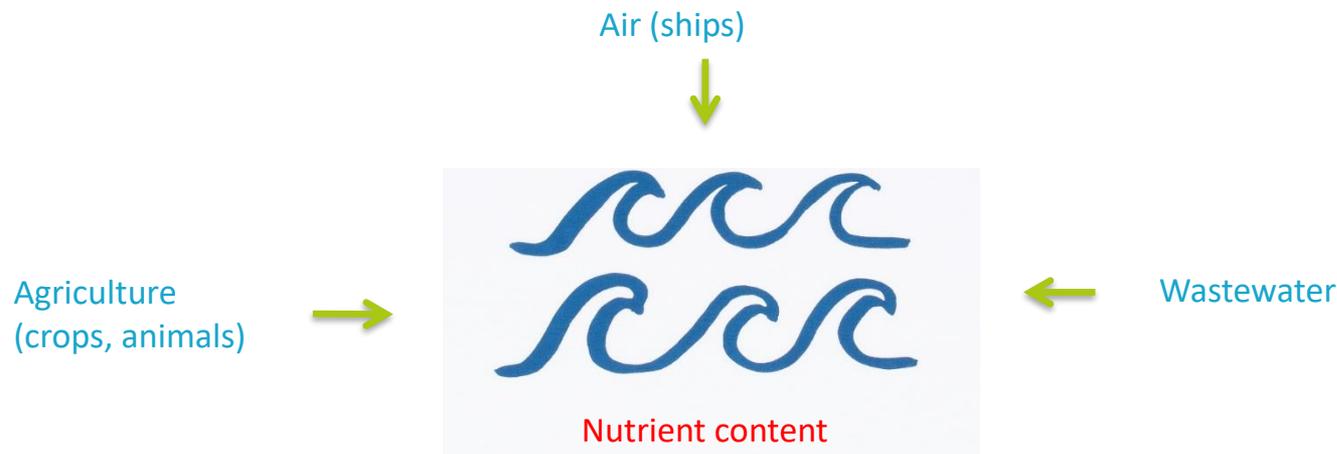
- Legal justification
- Cost-effective measure or cost-effective mix
- Feasible implementation
- Addressing uncertainties

Legislative Framework

- International Conventions:
 - UNCLOS, Convention of Biological Diversity, SDGs
 - International Convention for Prevention of Pollution from Ships (MARPOL)
- EU Legislation:
 - Water Framework Directive
 - Marine Strategy Framework Directive
 - Nitrates Directive
 - Organic aquaculture according to EU certification
- HELCOM Baltic Sea Action Plan

Conclusion

- **No law forbids mussel farming – but no explicit support**
- Legal basis for land-based measures for **reducing nutrient inflow** are in place – weaker for non-point (e.g. agriculture) than point source (e.g. wastewater)
- Legislation and policy gap concerning sea-based measures (mussel and seaweed cultivation etc.) **reducing nutrient content**
- **Could be used as ‘measure’ under WFD and MFSD – thus also justification for funding**
- **A lot left to national and regional interpretation**



Cost for mussel farming

Costs (EUR)	St. Anna (SE)	Byxelkrok (SE)	Musholm (DK)	Kiel (DE)	Pavilosta (SE)	Västervik (SE)	Hagby (SE)	Åland (FI)
Investment & Establishment	156,873	145,638		20,000	112,000	37,037	58,536	89,817
* per 100 m farm unit	6,536	12,137	13,403	6,667	44,800	15,447	12,725	19,525
Operational costs per year	7,119			7,441		5,256	8,612	14,467
* per 100 m farm unit	297			2,480		1,143	1,872	3,145
Harvest (kg) per year	39,341		12,500	5,000		5,250	4,635	7,200
* per 100 m farm unit	1,639		3,125	1,667		2,188	1,008	1,565
Operational cost EUR per kg mussel	0,18	N/A	N/A	1,49	N/A	1,00	1,86	2,39

The data has been collected by interview of the farm responsables Mats Emilsson, Tim Staufenberger and Susanna Minnhagen and the managers of associated farms, Mikael Wennström from Åland Government and Gun Lindberg from Västervik municipality.

Comparison with land-based measures

Measure	Cost (€/kg reduced N)
Catch Crops	0,3 - 41,6
Intercrops	7,5 – 13,7
Reduced fertilization	15,7 – 27,1
Buffer zones	9,9 – 34,9
Set aside farmland	20 – 69,7
Mussels	13 - 42

Financial Sources for Ecosystem Services – Who should / could pay?

1. Public Funding Programmes
2. Polluters Pays Principle
3. Beneficiaries

Public Funding: European Maritime and Fisheries Fund (EMFF)

- 2014-2020
 - Sustainable Aquaculture Development – a main priority
 - Support aquaculture which provides special environmental services
 - Equipment, Management & advisory services, training, new farmers & converting to eco-management schemes
- => Mussel farming eligible

Public Funding: Natural Capital Financing Facility

- Who?
 - Payment of ecosystem services
 - Green infrastructure projects
 - Pro-biodiversity and pro-adaptation businesses
 - How?
 - **Direct loans** to individual, large projects
 - **Indirect loans** through financial intermediaries for smaller projects
 - Indirect investment aimed at smaller projects via **equity funds**
 - How much?
 - 125 million EUR for 12 projects in Europe (2014-2017)
- => Focus on larger projects; but
larger blue catch crop initiatives in future ?

Public Funding: European Agricultural Fund for Rural Development (EAFRD)

- Payments to farmers, who voluntarily **subscribe to environmental commitments**
- 22% of expenditure for rural development (20 billion in 2007-2013)
- Payments cover **additional costs** or **forgone income** when establishing e.g. wetlands
- Payments by **EU Member States**
- No link to Water Framework Directive

Public Funding: European Agricultural Fund for Rural Development (EAFRD)

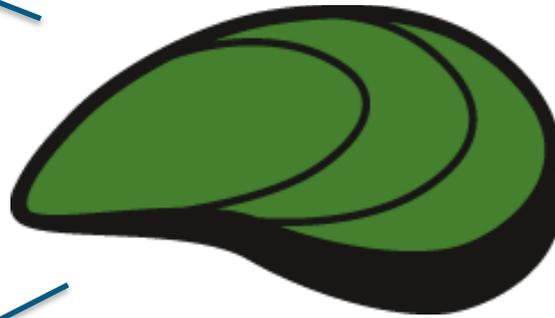
Type of measure	Payment/ support
Catch crops	110 € / hectare
Spring preparation	60 € / hectare
Cultivating / building embankments	50 € / hectare
Protection zones	300 € / hectare
Taking care of wetlands / dams	400 € / hectare

Payments here are for environmentally friendly actions –
NOT only for waiving polluting actions! => similar to payments to mussel farms

Public Funding: European Regional Development Fund (ERDF)

Food = €

Feed = ?



Economy:
Tourism, rural
regeneration

~~Increase water
quality – take
up nutrients~~

Polluter pays principle

- Internalizing environmental externalities
environmental costs are reflected in the price and outputs of goods & services
- Polluters should take measures → measure pollution → pay taxes or charges for pollution and compensate pollution impacts
- Sweden: farmers pay environmental tax when using fertilizers

Polluter pays principle

Problems:

- Not easy to identify all sources and all polluters – not fair
 - Difficult to implement from political point of view
 - Danger of polluters NOT changing their behaviour – but instead ,buying themselves free from obligations
- ⇒ **Not in line with idea of mussel farming being an ADDITIONAL measure**
- Payment of Municipal Wastewater Treatment Plant to include mussel farming declined in Swedish court
 - Nutrient Trading also failed

Beneficiaries Paying

- Philanthropic – private foundations
 - John Nurminen Foundation, VELUX Foundation, Zennström philanthropies
 - Campaigns: ‚adopt a mussel‘ & ‚oysters for life‘
- Crowdfunding – e.g. Nutribute Platform
 - Connect nutrient abatement projects with voluntary financiers, who are interested in lowering their footprint
- Companies
 - As part of Corporate Social Responsibility
 - Partly co-related to their profile: tourism sector / feed industry

Motivation & willingness to pay

- Ecolabelling & certification schemes
 - own label for feed produced from mussel meal
 - Baltic Sea friendly hotel
- Nutrient Emission Calculator
 1. estimate your nutrient footprint
 2. reduce emissions
 3. purchase offsets for emissions you cannot avoid
 4. use this money into offset projects
- Willingness to pay
 - Studies show high willingness to pay



Ideas for Payment Schemes

- Responsibility – choosing the right policy level
 - EU/National vs. Regional/Local
- Criteria for Payments
 - Reward for providing ecosystem services
 - Based on amount of nutrients taken out of sea
- Investment vs. Operational Costs
 - Support set up of farms & equipment (e.g. EMFF)
 - Outcome based payments for mussels harvested
 - Further processing to be covered by ,users‘ of mussels

How much for (operational) costs?

- General subsidy
 - Funding agency determines maximum amount each farmer receives
- Scored Subsidy
 - Scores for various characteristics such as location or growth rates
 - Service provider with best score is offered a payment
- Reverse auction with fixed cap
 - Sellers of mussels related to ecosystem services ,bid‘ on a per unit price for e.g. nutrient removal → maximum payable amount determined by the buyer

Way Forward

- **Importance of right site for right purpose**
 - Mussel farms for nutrient reduction most meaningful when placed close to points of discharge
- **Proof that measures are working necessary**
 - Common standards, monitoring, verification, performance, certification, monitoring
- Voluntary schemes good start
 - **Schemes available: now !**
 - Nevertheless administrative / legislative framework better for continuous schemes to grow and to avoid free-riding
- EMFF / NCFE
 - **support to investment & training costs**
- EARDF
 - check additionality & influence the future

Finally, some tips for farmers

- Private foundations, crowd-funding and similar incentives should not be overlooked – can provide good start-up sum.
- Look & lobby for national/regional programmes that fund a farm
- Organise yourselves into associations / cooperatives to share costs and to share experiences on getting funding
- Organise ‚proof‘ of nutrient uptake

Members of the SUBMARINER Network

Mussel Community Network

the hub
for promoting
a sustainable
marine (bio)
economy in the
Baltic Sea Region
and beyond



Member of:



Full
members

Associate
members

Flagship of:



Baltic Sea Region Mussel Farming & Nutrient Offset Conference

24 April 2019
Malmö, Sweden

Free registrations are open!

Rostock 19/03/2019 <https://www.submariner-network.eu/> 

Thank you for your attention!

Angela Schultz-Zehden,
SUBMARINER Network

