

# Mussel farming in Polish coastal waters – A win-win measure for environment, business and society?



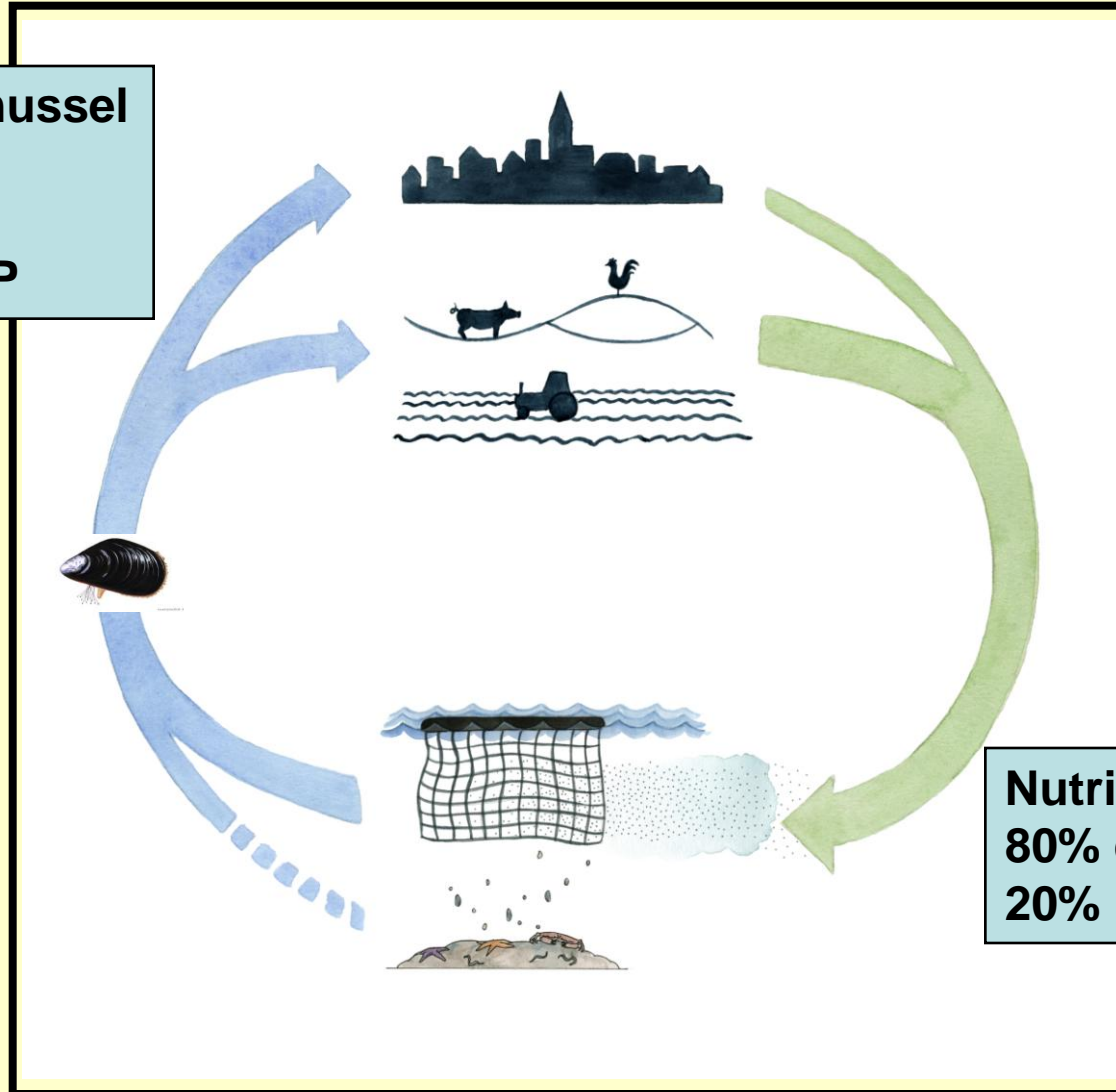
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**BALTIC SEA 2020**

# The Agro-Aqua recycling of nutrients

A harvested mussel contains ca:  
0.8 – 1.2 % N  
0.06 – 0.08 % P



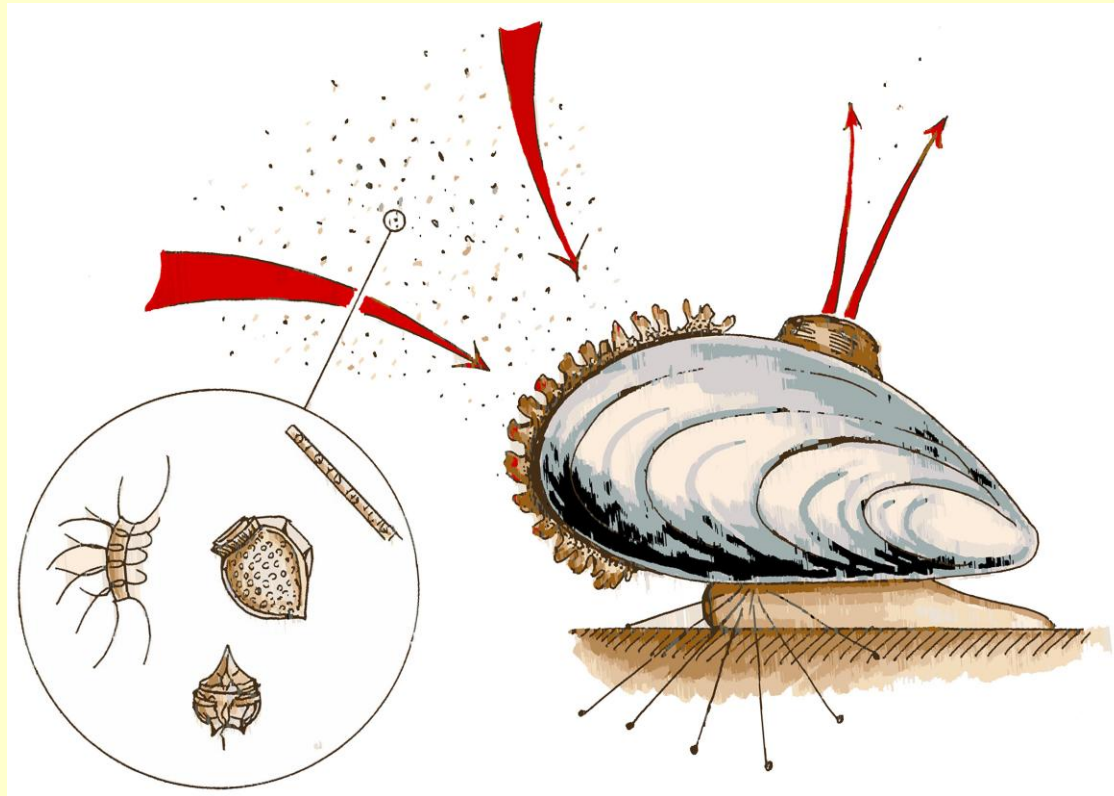
Nutrients to the sea:  
80% diffuse sources,  
20% point sources.

## **Nutrients – a resource to recycle:**

**Nitrogen -** because the production process is climate forcing and energy demanding.

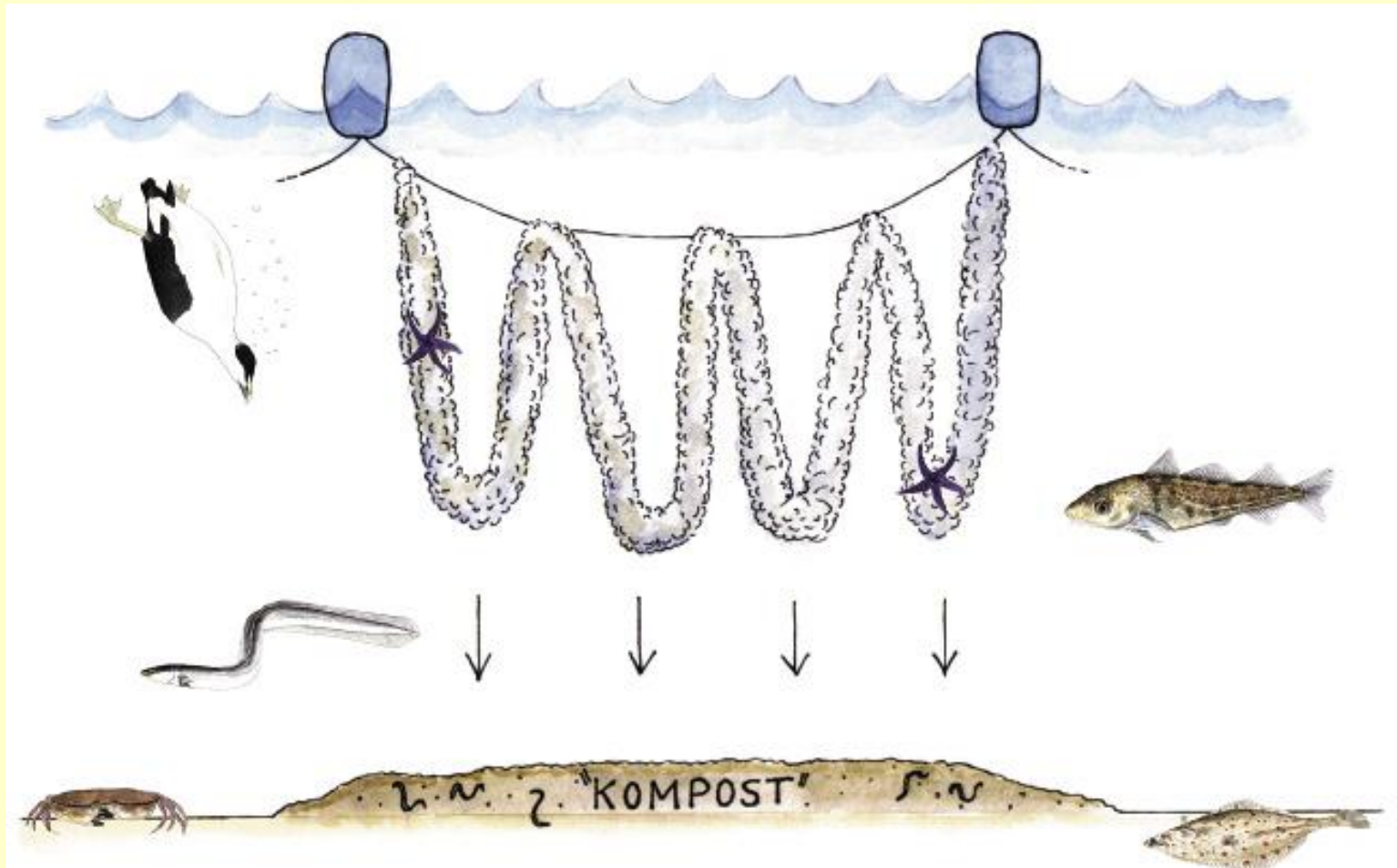
**Phosphorus -** because it is a limited resource on a global scale.

**The natural phytoplankton community acts as a catch crop for the nutrient discharge and the mussels as grazing-animals**



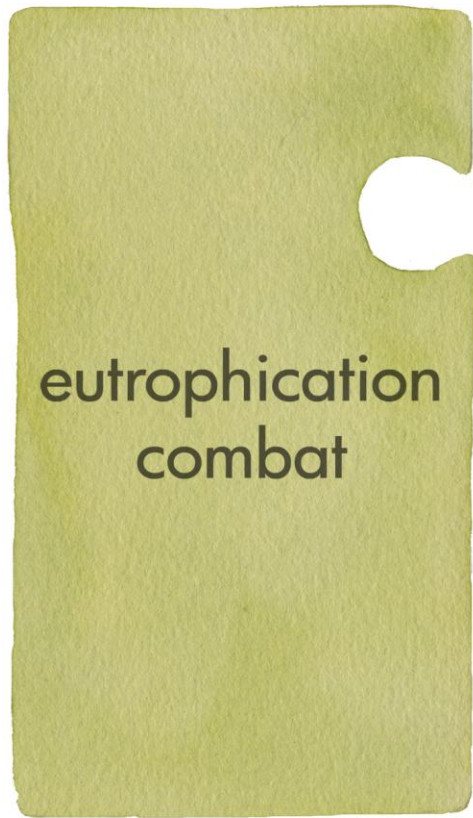
**Mussel farming – Open landscape feeding**

# A mussel farm is like an artificial hard bottom and a natural part of the ecosystem



# When society has no management tool

**Environmental  
economy**



**Market economy**

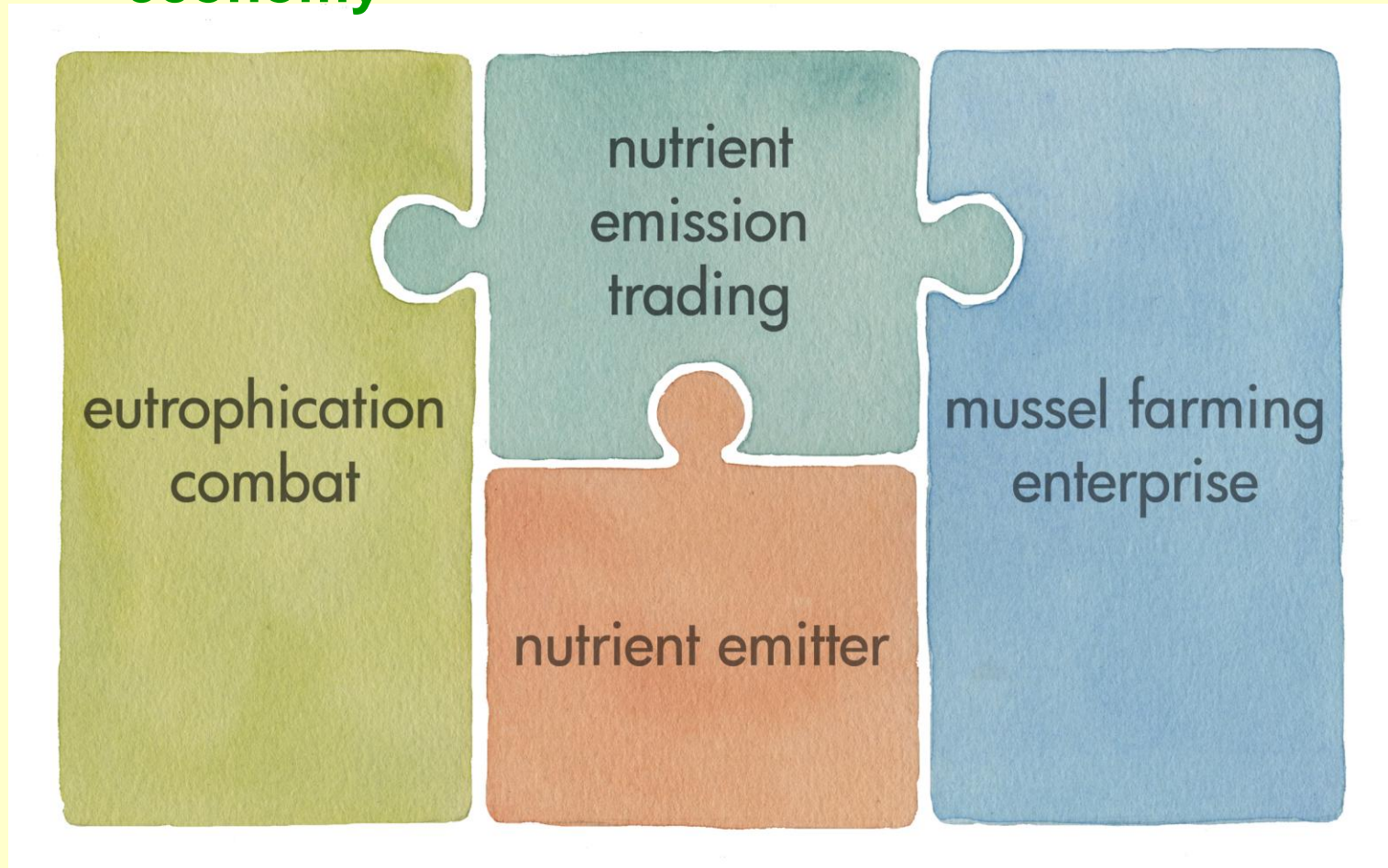


# Nutrient trading as a part of coastal zone management

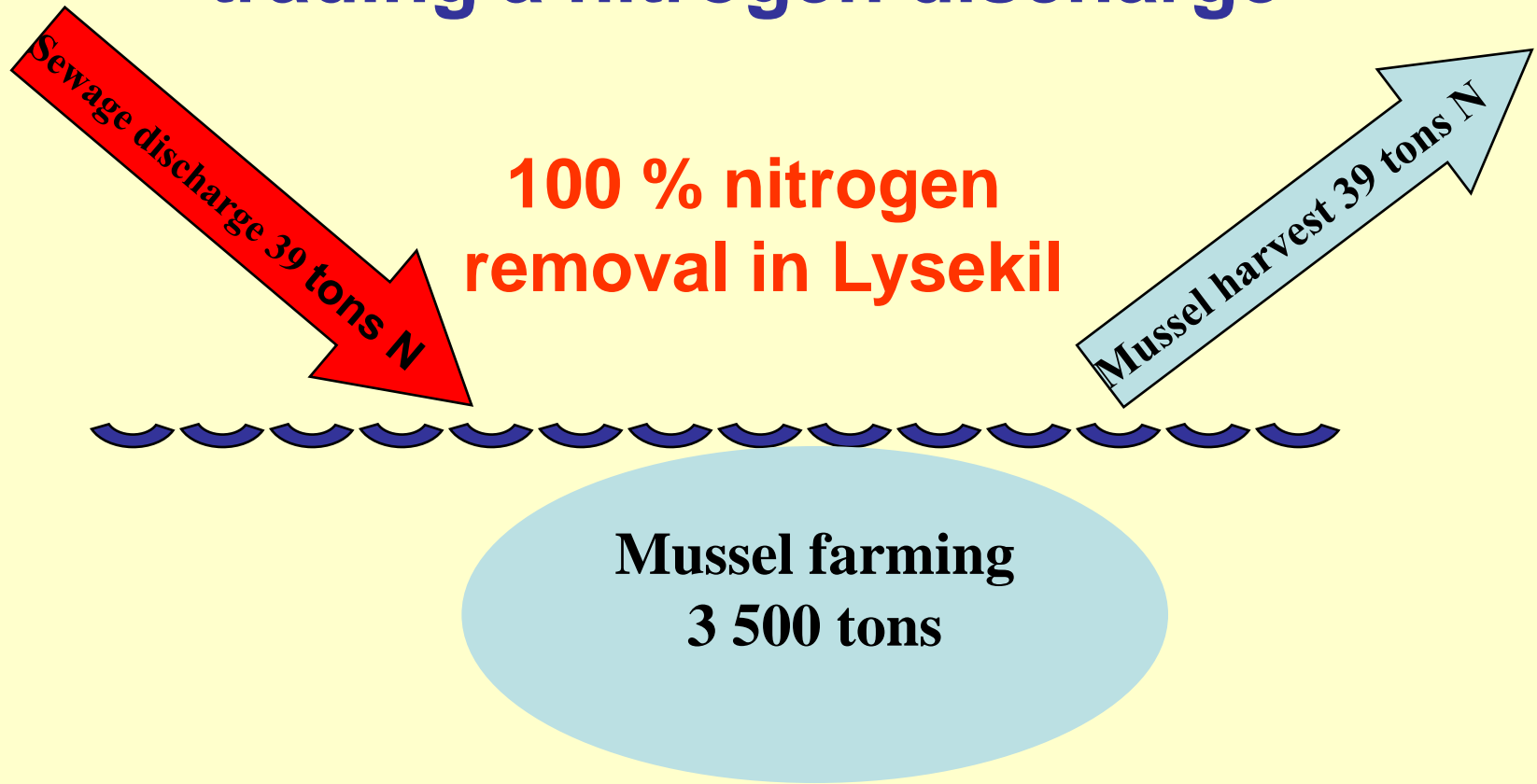
Environmental  
economy



Market economy



# Lysekil - the first case in Sweden trading a nitrogen discharge



**Annual cost:  
130 000 euro**

**Bonus: 2,7 ton phosphorus**

# Co-ordinate shellfish aquaculture with environmental agriculture operations



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# Let the agri-environmental aid program go seawards!



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**Spring cultivation**

**catch crops**

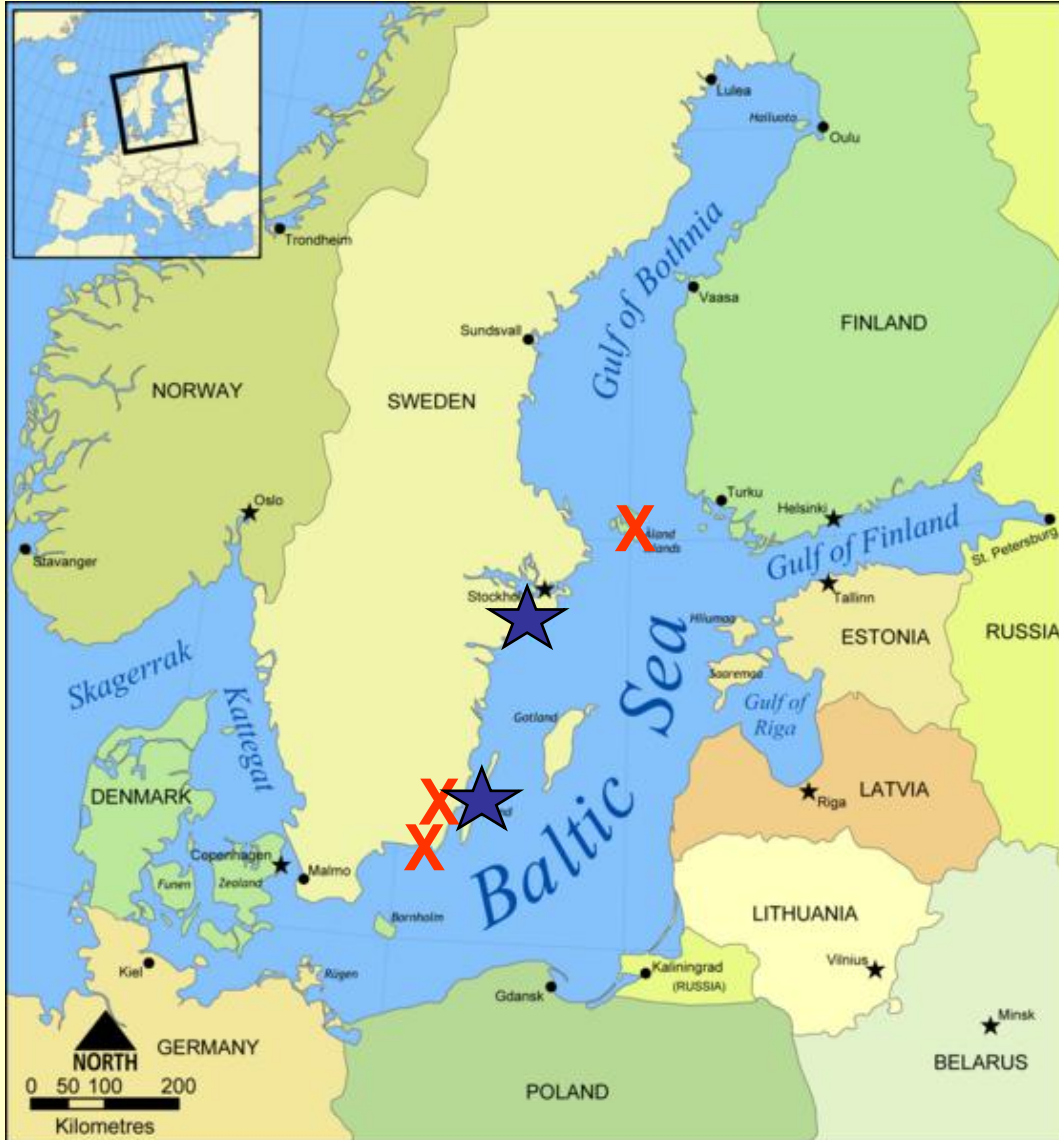
**mussel farming**

**and harvest**

Farmers are paid about 130 euro per ha for spring cultivation and catch crops. This corresponds to 10 euro per kg reduced N emission.

A payment of 10 euro per kg of N to a mussel farmer is equivalent to a subsidy of about 10 cent/kg of mussels.

# Mussel farming in the Baltic



**X** = trials 2006 - 2008

**★** = large scale trials  
2009 - 2011



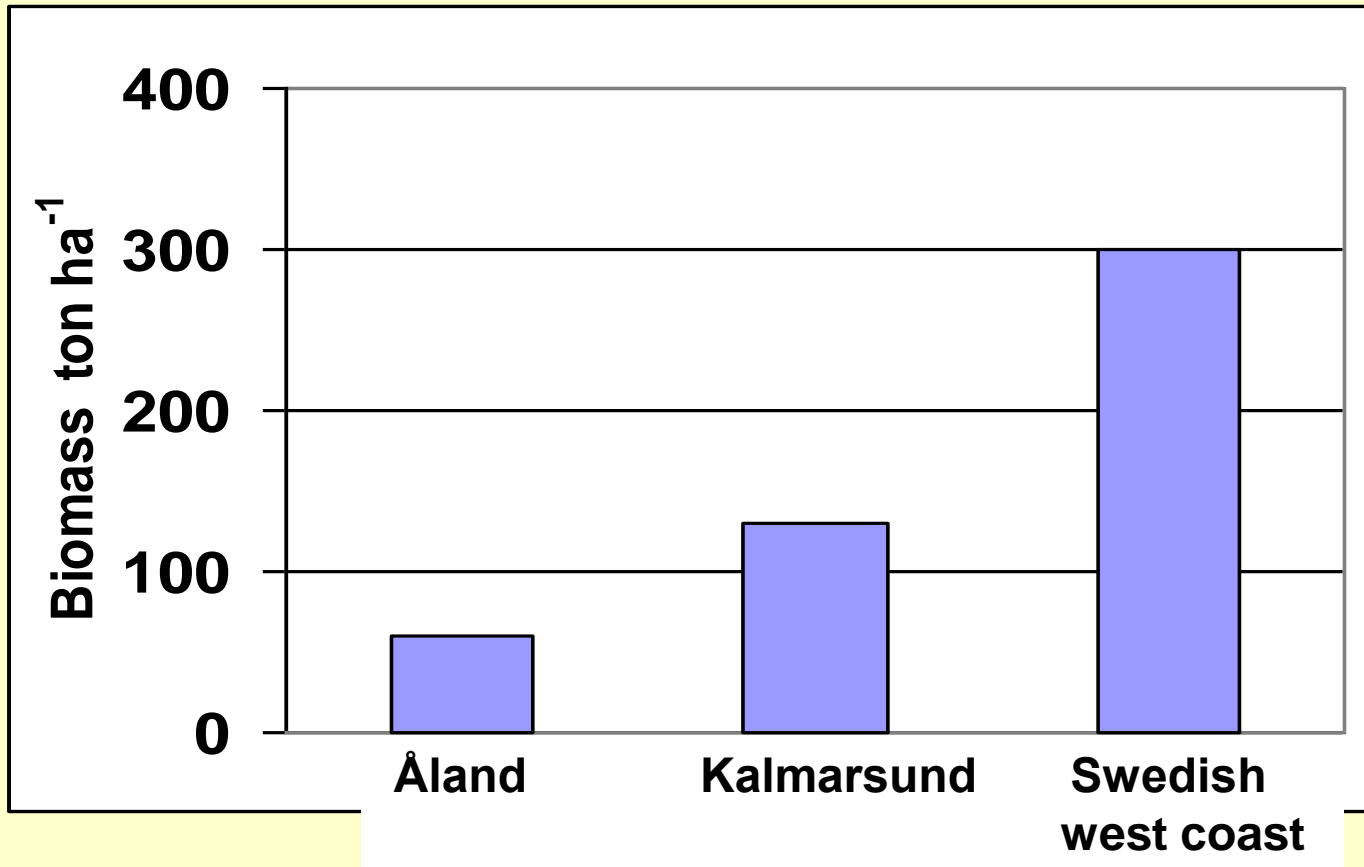
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# Kalmarsund after 14 months

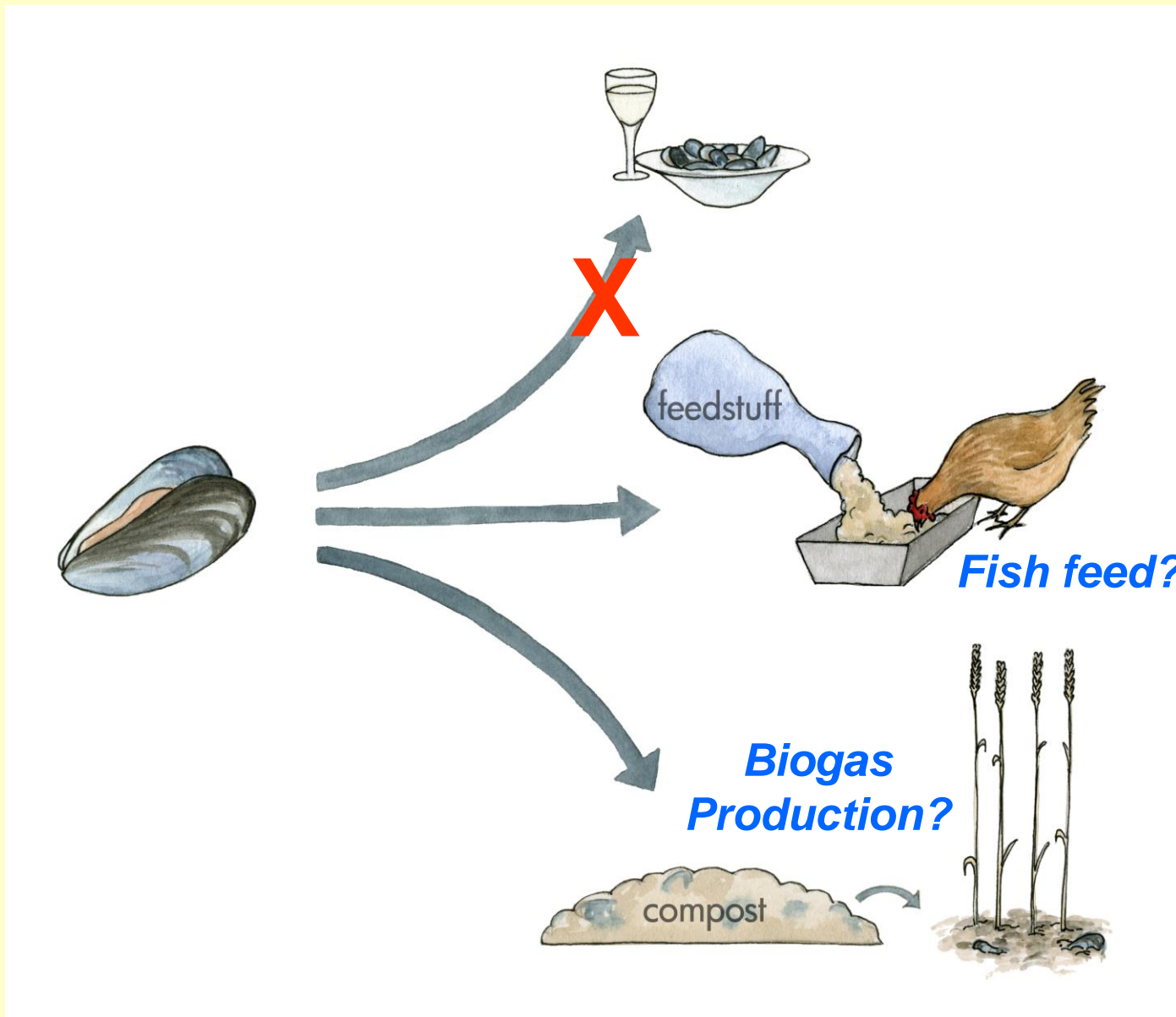


**Biomass just over one year  
was  $4 \text{ kg m}^{-1}$  mussel-band,  
or  $16 \text{ kg m}^{-1}$  longline.**

# Harvest per hectar sea surface



# Environmental mussels require many markets

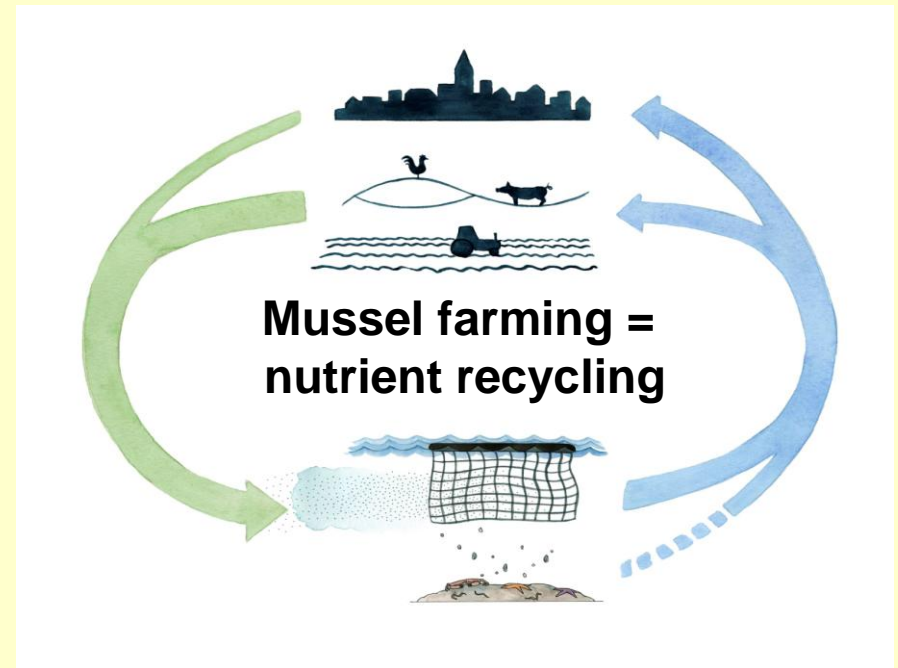


# Cost-effective systems for maximum biomass



**Seafood mussels in Sweden are paid 1 – 2 euro per kg.**

**Feed mussels can be produced at around 30 cent/kg.**



**Mussel farming in  
Polish waters – an  
option to explore?**

**Thank you for your attention**