

Launch of the SUBMARINER Aquaculture Working Group

Innovative & Sustainable Fish/Shrimp Aquaculture in the Baltic
Angela Schultz-Zehden



LAUNCH OF THE SUSTAINABLE AQUACULTURE WORKING GROUP – 18 MARCH 2021



SUBMARINER NETWORK MEMBERS



- SME
- University
- Research Institute
- Science & Technology Park
- Government
- Regional cluster



- Sweden
- Germany
- Denmark
- Poland
- Lithuania
- Finland
- Latvia
- Estonia
- Norway



Innovation, Bioeconomy,
Spatial Planning, Nutri, Tourism,
Culture, Energy, Ship



SUBMARINER topics

2015 - 2020

Macroalgae
harvesting and
cultivation



Mussel
Cultivation



Reed / Beach
Cast



Marine Cultural
Heritage



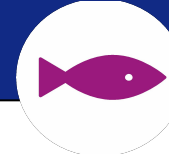
Blue
Bio-technolo
gy



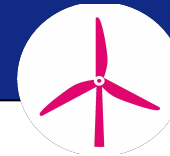
Marine
Litter



Sustainable Fish
Aquaculture



Combinations
with Offshore
Wind Parks



Strategic Action Fields

Actors &
Match-Making



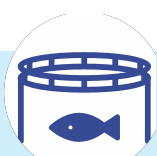
Data &
Tools



Sub-regional
activities



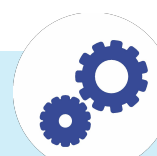
Access to
Pilot sites
& facilities



Training &
Capacity Raising



Technology
Development
& Transfer



Finance &
Funding



Regulation
& Licensing



Awareness
& Marketing



Vision 2030



A smart Baltic
Sea Region –
making use of
blue-green
combined
solutions



Maintaining
the Baltic
Sea Region's
natural
capital



Marine
resources as
part of
the BSR
sustainable
energy and
biomass
portfolio

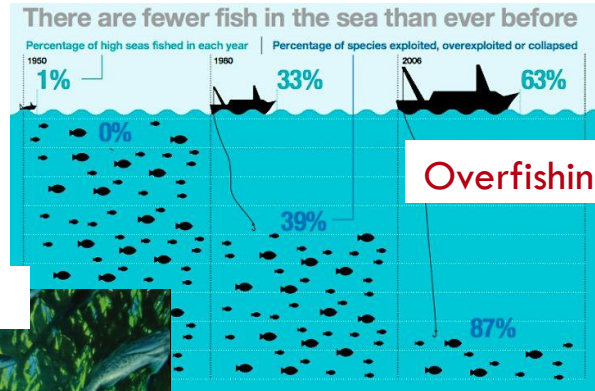


Improve
human
well-being
via new
marine
products



The Baltic Sea
Region – a
biobased
innovation
showcase

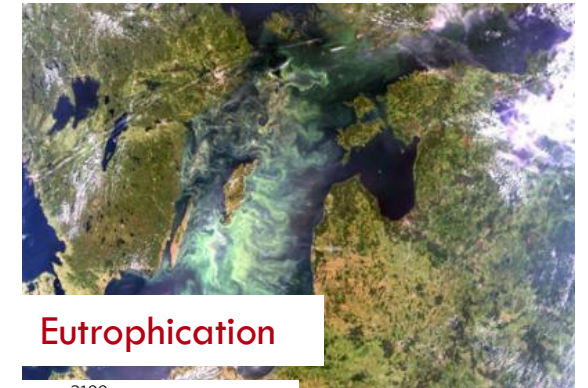
Our ambitions



Overfishing



Plastic Pollution



Eutrophication



Biodiversity Loss



Climate Change

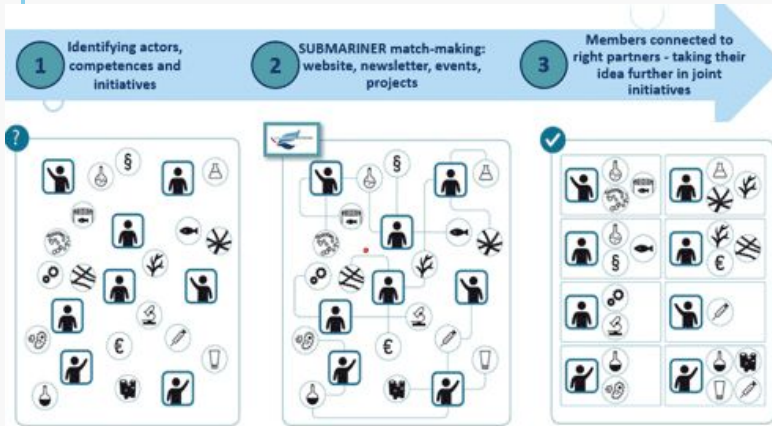


Demographic Change

CONTRIBUTIONS/BENEFITS

Topics	Climate Change	Zero Pollution	Bio-diversity	Nature Protection	Demographic Change	Regional Development	Competitiveness
Mussel Farming	+	+++	++	++	+	+	+
Macroalgae	++	+++	+++	+	+++	++	+++
Beach Wrack	++	++				+++	+
Macro & Halophytes	+	+++	+++	++	+	+++	+
Sustainable Fish & Shrimp Aquaculture		+	++	+	+++	+++	+++
Blue BioTechnology		++	+	+	+++	+++	+++
Multi-Use	++	+	+++	+++	+	+++	+++
Marine Litter		+++	+++	++	+	++	+
Cultural Heritage			+	+++	+	++	+

SUBMARINER Project Cloud



€ 300.000 membership fees
 20 transnational projects
 € 41 million total
 € 30 million Baltic
 150 partners

The Baltic Blue Bioeconomy hub ...

Services to Members:

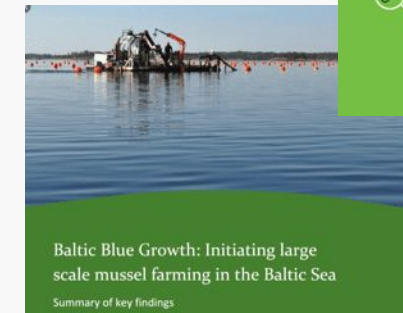
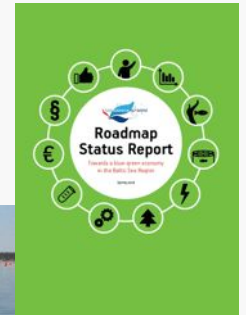
- Promotion of members' competences
- Funding Opportunities; Match-Making
- Network meetings; Project Development
- Access to searchable stakeholder database

Communication/Dissemination:

- Blue Platform Repository
- Social Media – Conferences
- Position & policy papers
- 3000 Actors mapped

Expert Advice & Coaching:

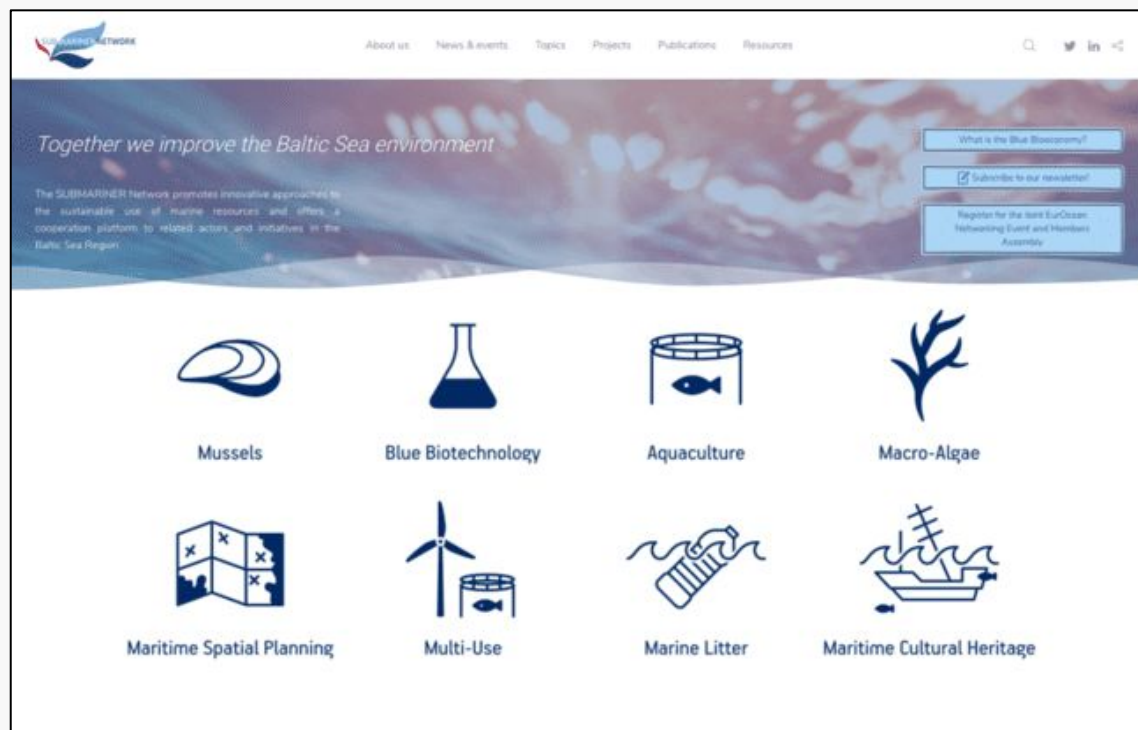
- Accelerator, Company Corner, Start-ups
- Research – Company – Policy



INFOPORTAL ON BALTIC BLUE BIOECONOMY

- Reports, data, guidelines, tools, training material, projects, links
- Events, Workshops
- Study tours
- News, opinions
- 'Who is who' – members, incl. business corner
- Match-making / cooperation requests
- Training opportunities, summer schools
- Newsletter service
- Closed section for members

<https://www.submariner-network.eu>



Actors mapping

39 members, 260 partner organizations

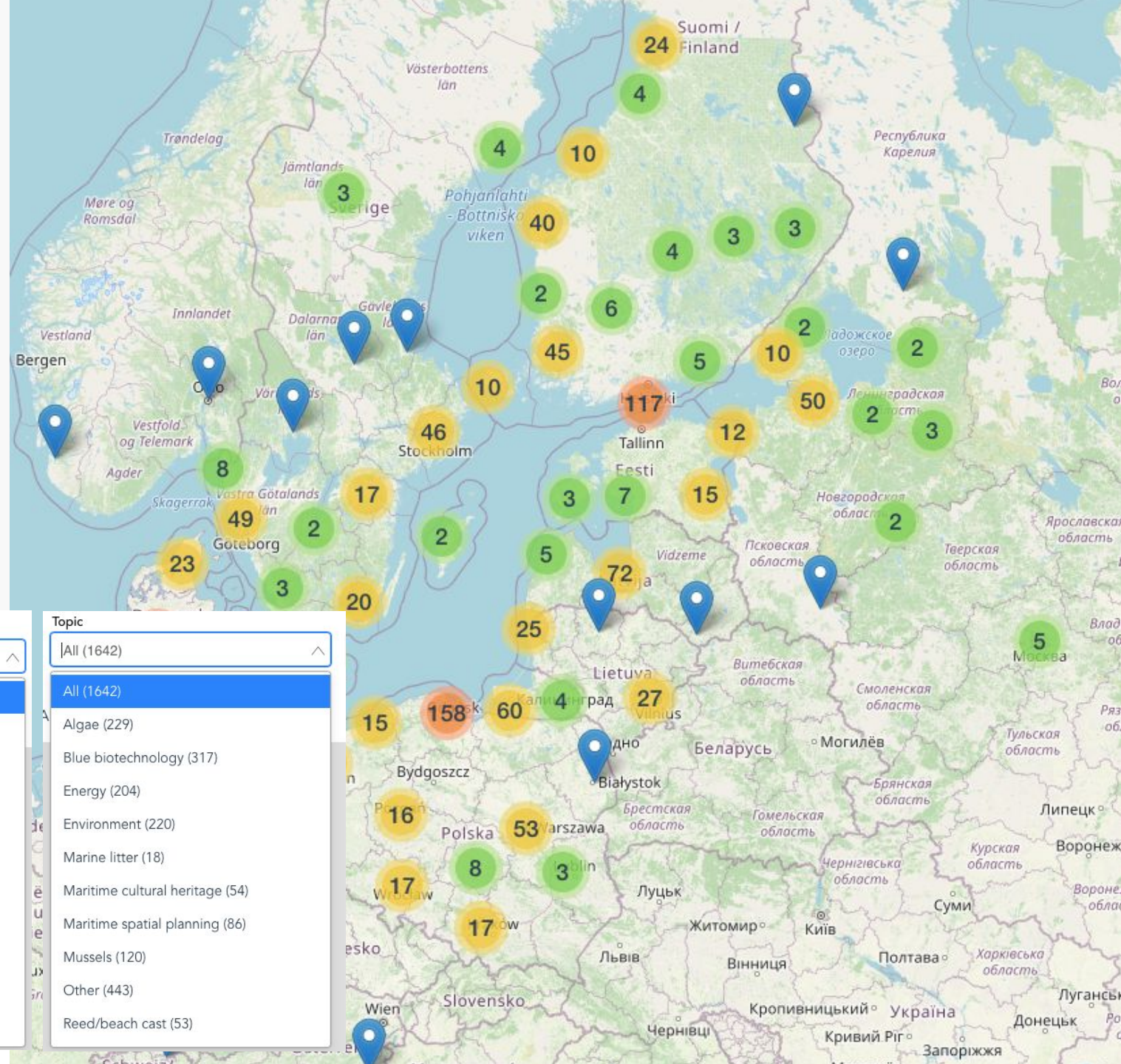
3000 actors throughout BSR, 1700 institutions

approx. 650 companies in blue bioeconomy linked via SUBMARINER

All (1642)
Austria (1)
Denmark (277)
Estonia (81)
Finland (223)
Germany (266)
Latvia (90)
Lithuania (43)
Norway (2)
Poland (347)
Russia (133)

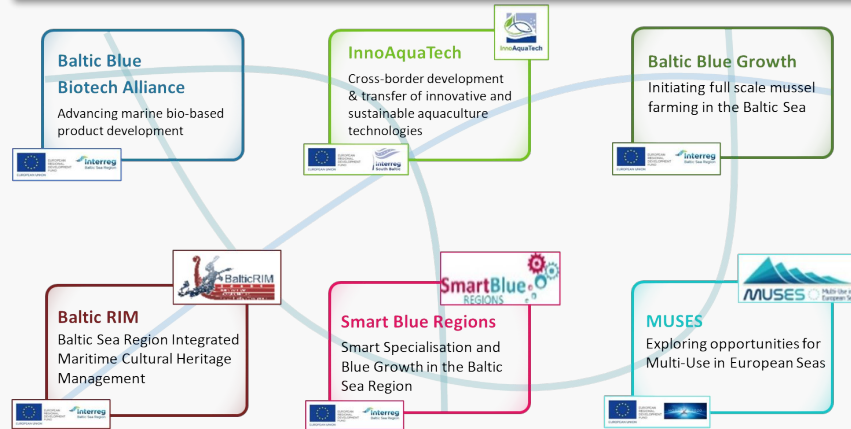
Application
All (1642)
Anti fouling systems (13)
Bioremediation (45)
Cosmetics (73)
Energy (118)
Farming harvesting (210)
Feed (81)
Fertilizer (30)
Food (307)
Health care (80)
Nutra & pharmaceuticals (76)

Topic
All (1642)
Algae (229)
Blue biotechnology (317)
Energy (204)
Environment (220)
Marine litter (18)
Maritime cultural heritage (54)
Maritime spatial planning (86)
Mussels (120)
Other (443)
Reed/beach cast (53)

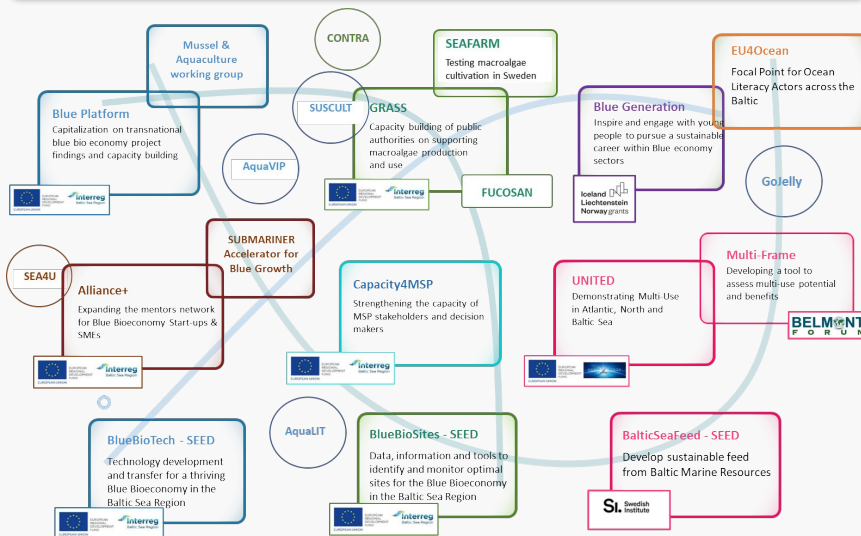


From projects to working group & vice versa

Completed projects (2014-2019)

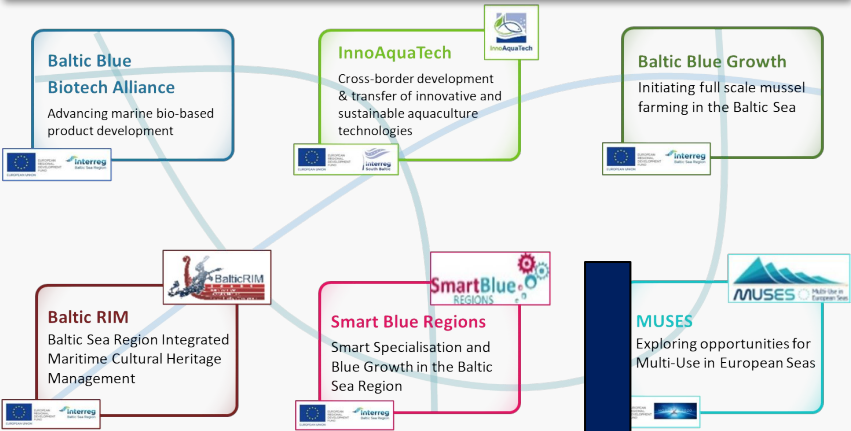


Current projects (2019-2021)

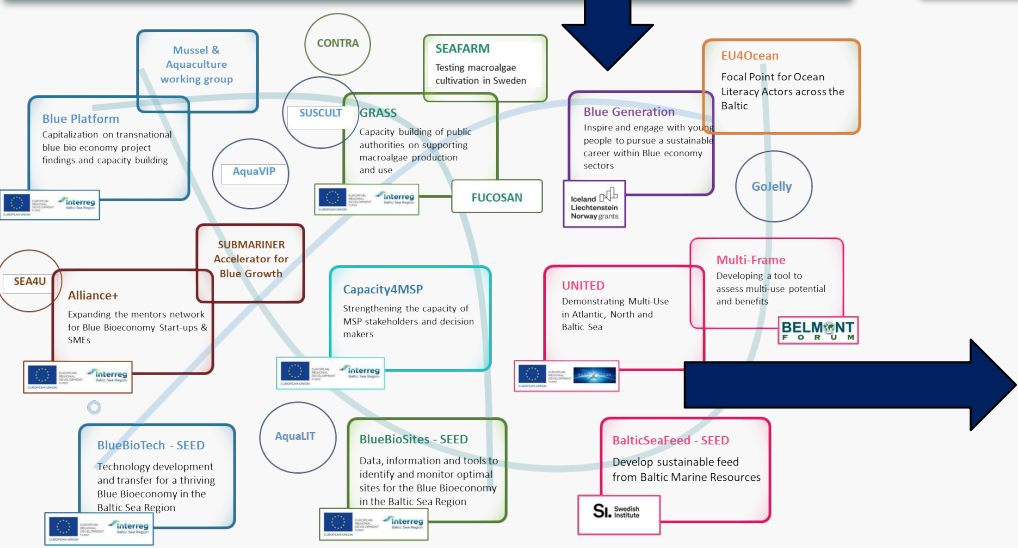


From projects to working group & vice versa

Completed projects (2014-2019)



Current projects (2019-2021)



Permanent Working Groups

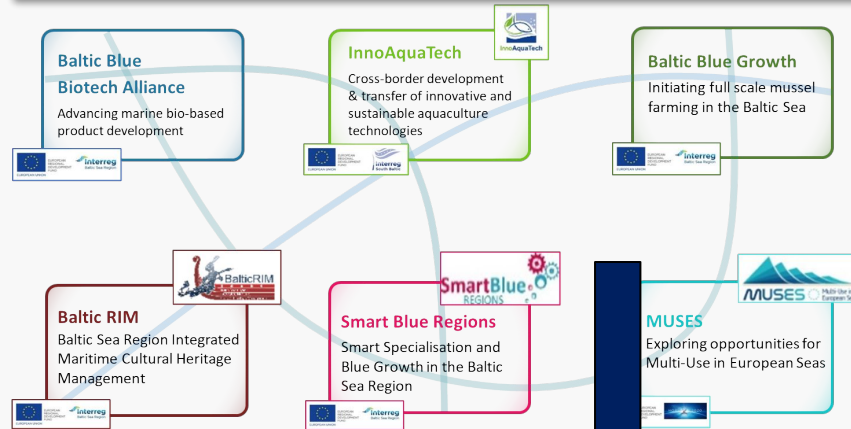
Low Tropic: Mussel and Algae

Blue Growth Accelerator

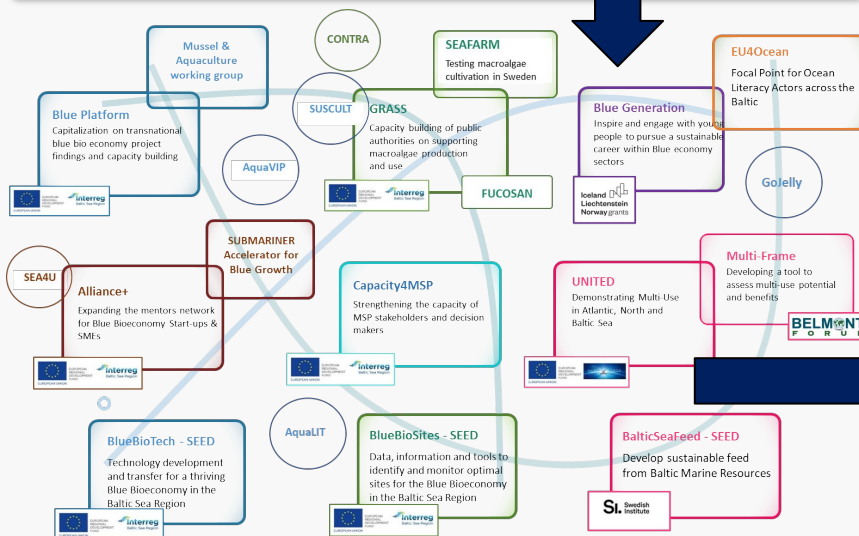
EU4 Ocean Literacy Platform

From projects to working group & vice versa

Completed projects (2014-2019)



Current projects (2019-2021)



Permanent Working Groups

Low Tropic: Mussel and Algae

Fish & Shrimp Aquaculture

Blue Growth Accelerator

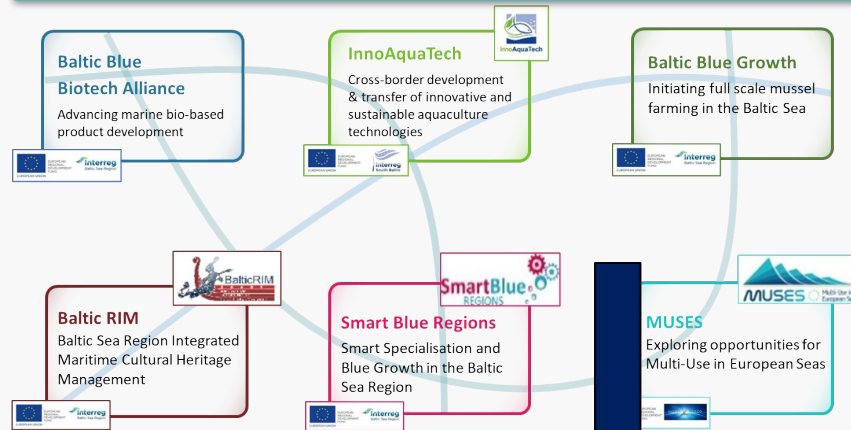
Beach Wrack / Halophytes

EU4 Ocean Literacy Platform

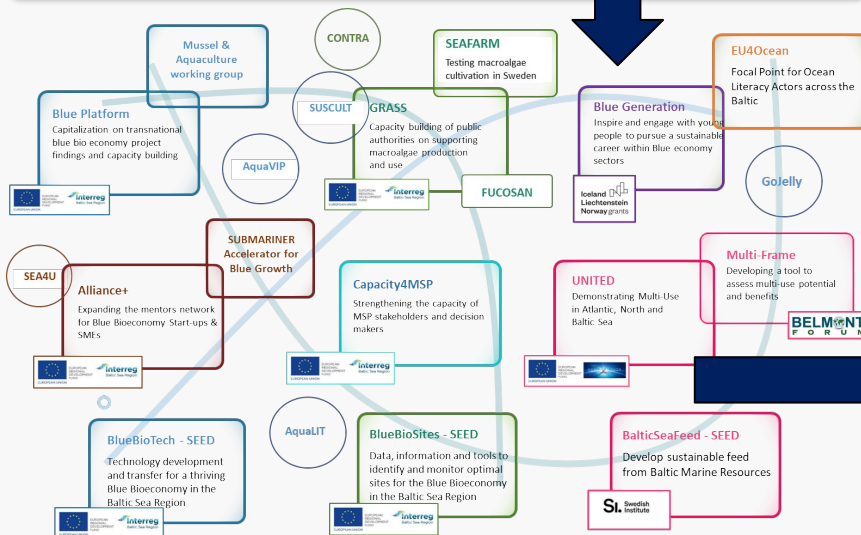
Marine Litter

From projects to working group & vice versa

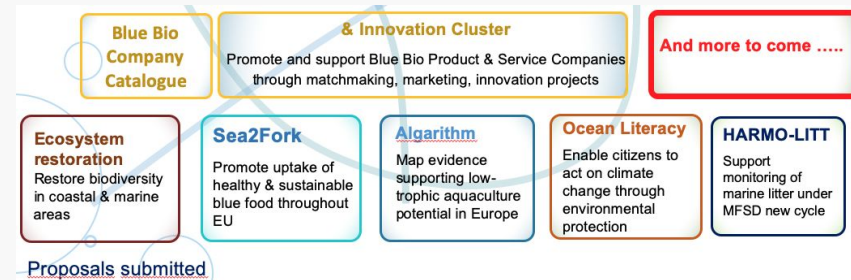
Completed projects (2014-2019)



Current projects (2019-2021)



Next GEN SUBMARINER projects (submitted)



Proposals submitted

Permanent Working Groups

Low Tropic: Mussel and Algae

Fish & Shrimp Aquaculture

Blue Growth Accelerator

Beach Wrack / Halophytes

EU4 Ocean Literacy Platform

Marine Litter

A PERSONAL NETWORK FULL OF TRUST (AND FUN)



Regular pitching & matchmaking events
Side by side with research & policy initiatives
Long standing & growing network
Blue & diverse – regional & global – mutual interest
Bottom up with dedicated secretariat

SUBMARINER Accelerator

55+ active mentors and service providers from BSR and beyond

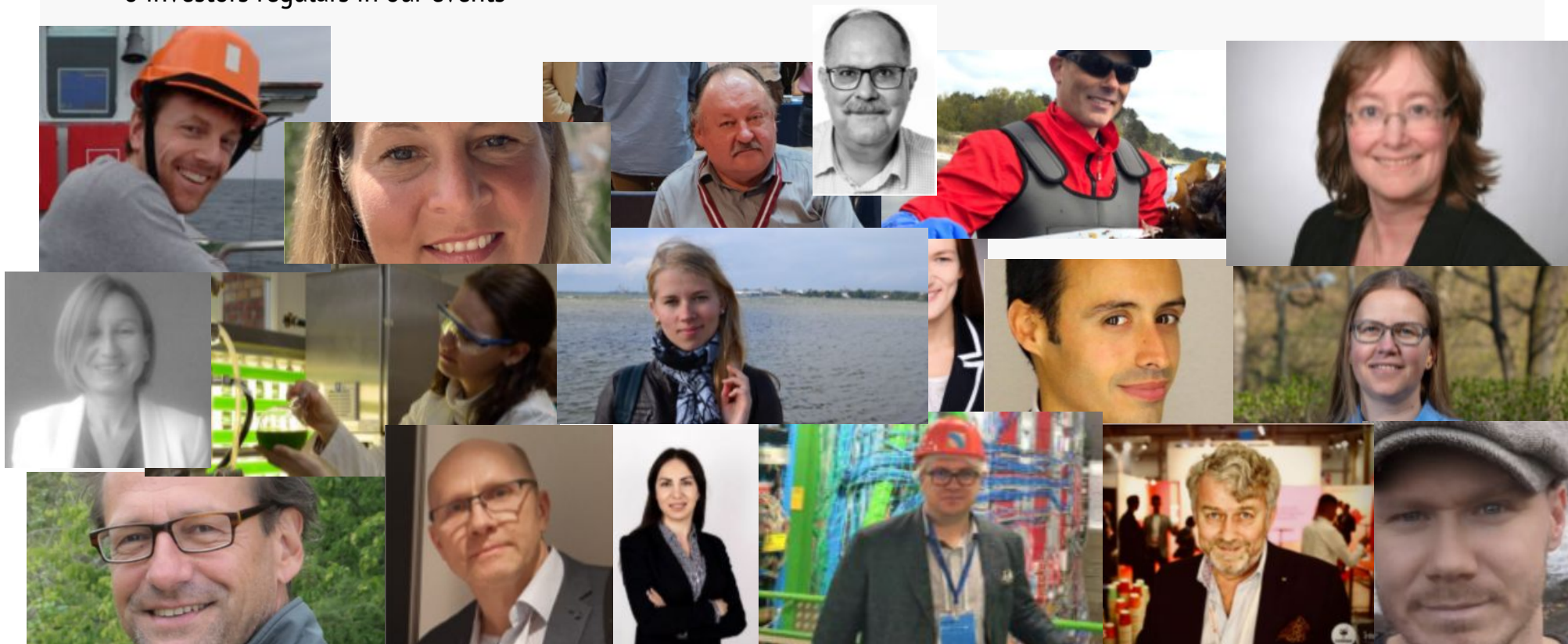
30 alumni cases, 1 returning, 9 active cases

60% find partners, reach higher TRL, accelerate product development

2 pitching / match-making events per year in BSR

monthly Mentors' forum meetings, also with invited guests

8 investors regulars in our events



Mussel Cultivation Policy Brief

With new technology much better results

Much less difference between mussels in high or low salinity areas:

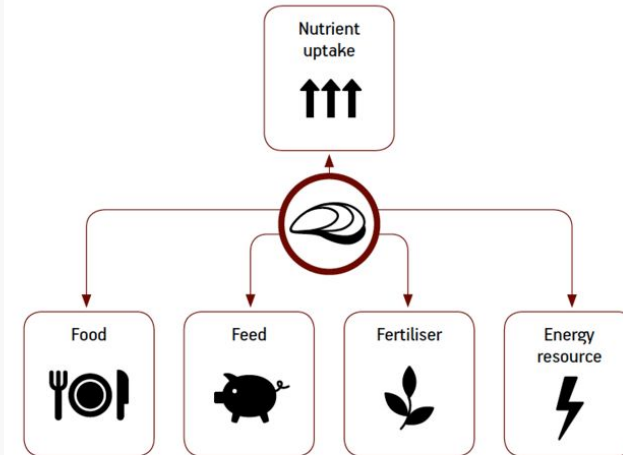
- Total amount of mussel meat
- Nutrient content almost same

No oxygen depletion noted

Mussel meal good raw material

Area	Salinity	Meat dry matter %	% Soft tissue	Soft tissue fat %	N (% soft tissue dry weight)	P (% soft tissue dry weight)
Western Baltic	High	15.1 a	58 a	9.5 a	9.5 a	1.41 a
Central Baltic	Moderate	14.2 a	52 b	10.3 a	10.3 a	1.48 a
Eastern Baltic	Low	13.7 a	41 c	9.7 a	9.7 a	1.33 a

POSSIBLE APPLICATIONS OF MUSSEL CULTIVATION



Phosphorus content, seasonal variation

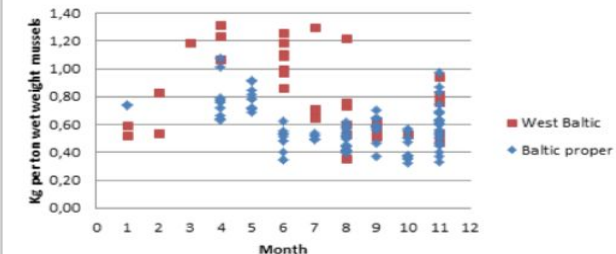


Figure 2. Phosphorus content, seasonal variation.

Nitrogen uptake per harvested ton (average of all seasons)

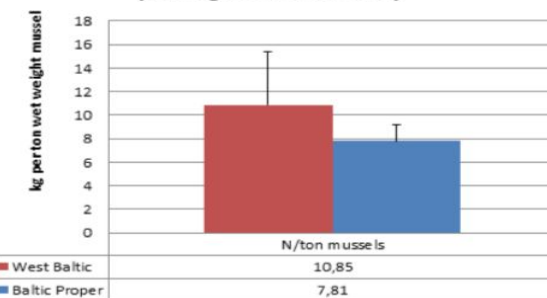


Figure 4. Nitrogen uptake per harvested ton.

Mussel Cultivation Policy Brief

With new technology much better results

Much less difference between mussels in high or low salinity areas:

- Total amount of mussel meat
- Nutrient content almost same

No oxygen depletion noted

Mussel meal goes well

Ministerial Declaration, Our Baltic' 28th Sept 2020:
We will promote ecologically sustainable sea-based measures, such as mussel farming...

Area	Salinity	Area	Area	Soft tissue fat %	N (% soft tissue dry weight)	P (% soft tissue dry weight)
Western Baltic	High	14.2 a	58 a	9.5 a	9.5 a	1.41 a
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POSSIBLE APPLICATIONS OF MUSSEL CULTIVATION

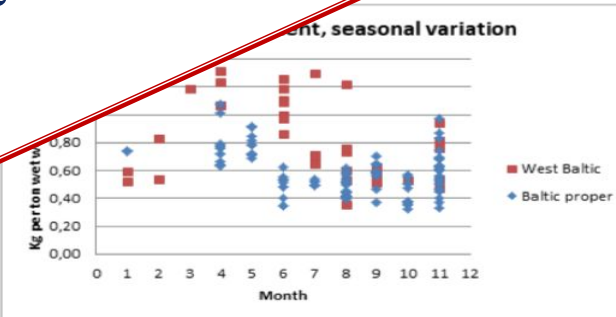
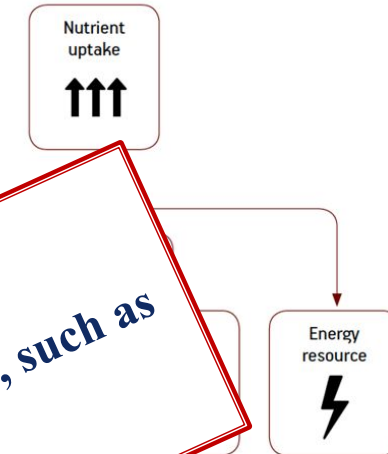


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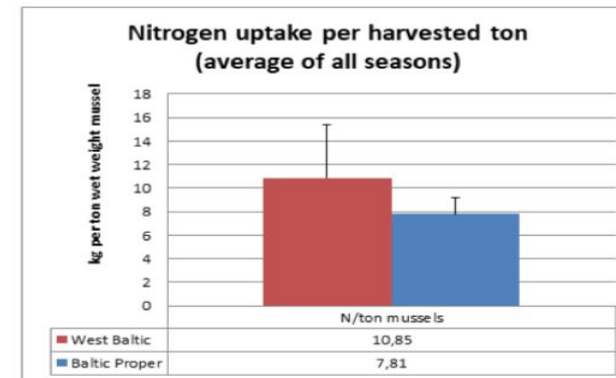


Figure 4. Nitrogen uptake per harvested ton.

Goals

- Define:
 - Scope
 - Focus
 - Structure
 - Members



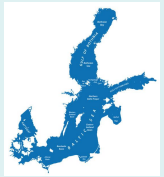
Focus Areas

- RAS
- Sustainable feed
- Offshore cages / combinations
- IMTA
- Aquaponics



Background

Finfish & Crustaceans; Marine + Freshwater; FAO 2018



5% of EU volume
3.7% of EU value

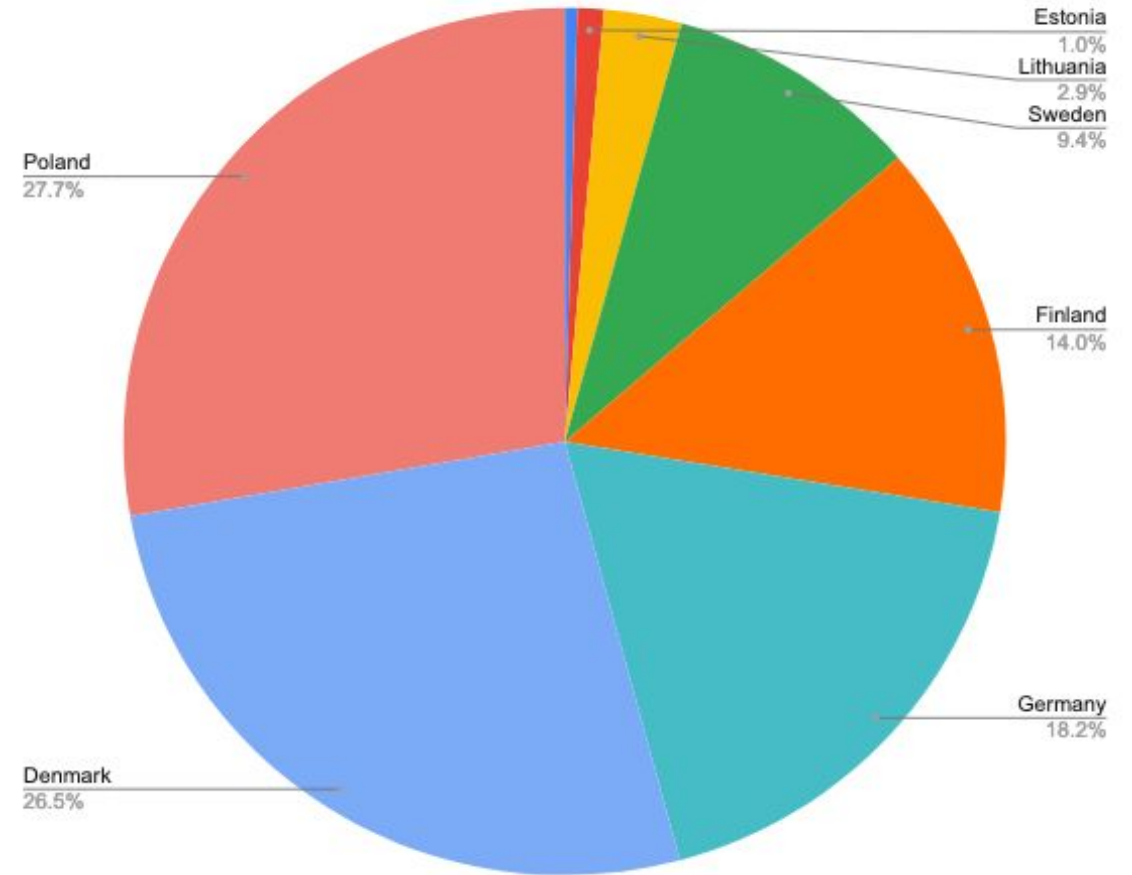


0.2% of global volume
0.25% of global value



ca. €430m

Baltic Aquaculture Value by Country 2018 (FAO)



Baltic Projects



LAUNCH OF THE SUSTAINABLE AQUACULTURE WORKING GROUP – 18 MARCH 2021

State of Play

Increasing number of RAS, aquaponic & IMTA farms at commercial level

Kieler
Meeresfarm


hjarnøhavbrug
...fish farming since 1952


JURASSIC
SALMON


ECF
FARMSYSTEMS


LOCAL
OCEAN
VANDENYNO GÉRYBÉS


SUPERIOR
CRUSTA
NOVA
SEAFOOD


PURE
Salmon
Harvest the finest

Incentives

- International **collaboration** & **knowledge transfer**
- **Unified** voice & **definitions** of aquaculture
- Identify **synergies** and **circular economies**
- Baltic **representation** on international scale



Next Steps

- Define **focus** based on slido
- Define meeting **formats**
- Define Working Group **members**
- Share **results** & **invite** members to next meeting



Thank you

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