The SUBMARINER Network: A facilitator for sustainable & innovative blue growth cooperation

Blaue Bioökonomie in Mecklenburg-Vorpommern

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Managing Director

SUBMARINER NETWORK

A workshop under the
INTERREG BSR Blue Platform project

Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND
Blue Platform

SUBMARINER Network members

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

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

Bio-based Industries Consortium

BIOMARINE Community

SEAWEED for EUROPE

eurocean

EU STRATEGY FOR THE BALTIC SEA REGION FLAGSHIP

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

SUBMARINER NETWORK

SUBMARINER topics

- Macroalgae harvesting , cultivation & processing
- Mussel Cultivation & Processing
- Reed Beach Cast Macro-Halophytes
- Cultural Heritage / EcoTourism
- Blue Bio-technology Microalgae
- Marine Litter
- Side Streams New Species Aquaculture
- Smart Combinations

Strategic Action Fields

- Actors & Match-Making
- Digitalisation Data & Tools
- Sub-regional solutions
- Access to Pilot sites & Large scale Demonstrations
- Training & Capacity Raising
- Technology Development & Transfer
- Finance & Funding
- Regulation & Licensing
- Awareness & Marketing

Multi-Actor and Sector Approach

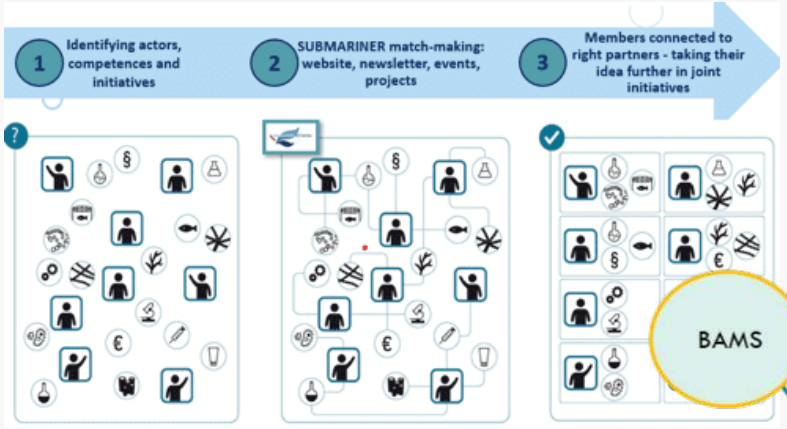
Companies, Research, Authorities, Civil Society

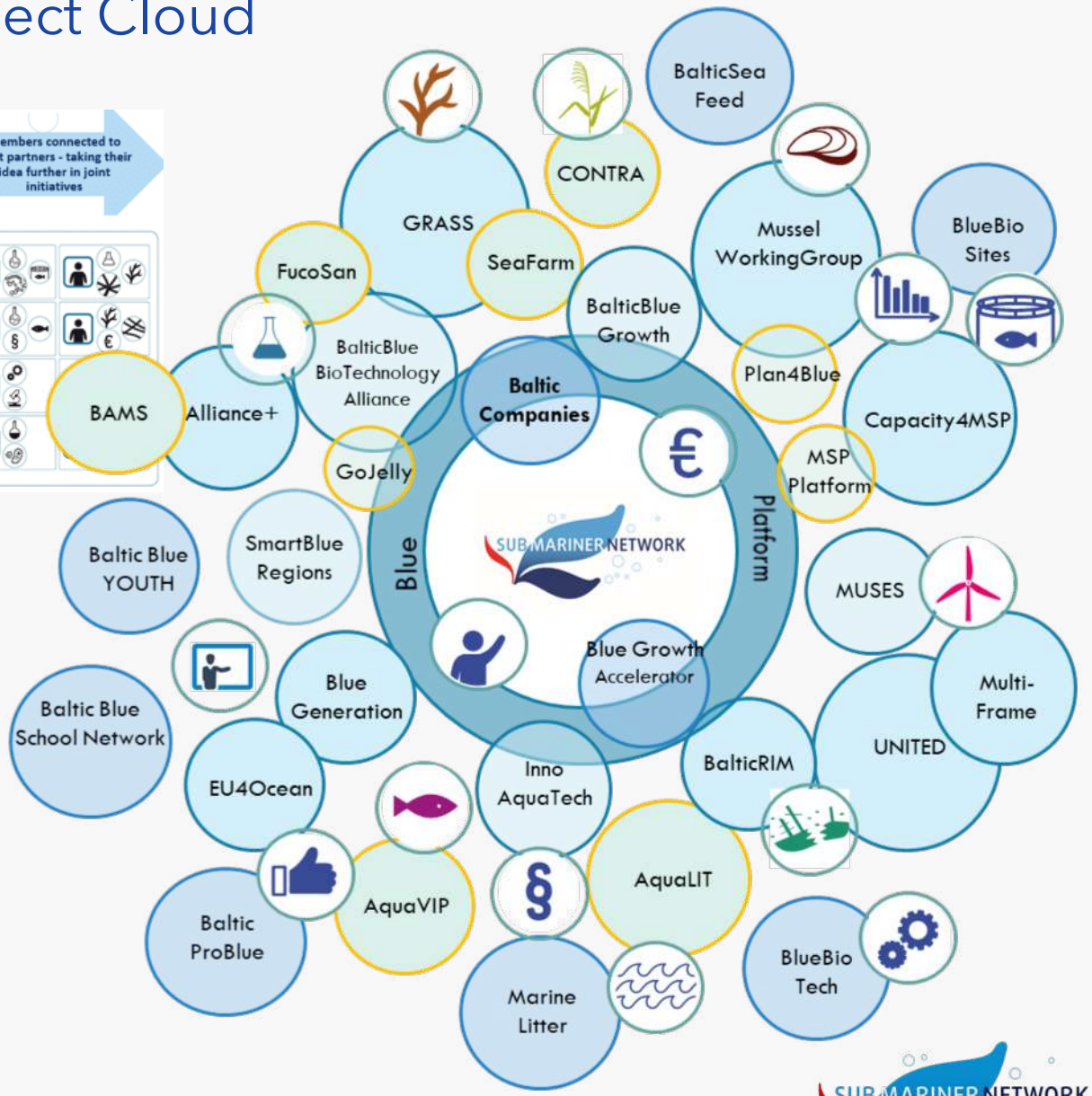
Natural and Social Science, Informatics, Creative Arts, Economics

Vision 2030

- Contribute to decrease of GHG emissions
- Ecosystem Restoration Increase Biodiversity
- A smart, resilient Baltic Sea Region-local, circular economy
- Improve human well-being
- Promote bio-based innovations

SUBMARINER Project Cloud





€ 300.000 membership fees

20 transnational projects

€ 41 million total

€ 30 million Baltic

43 members (2021)

150 partners

NO strategic funding

SUBMARINER NETWORK

The Baltic Blue Bioeconomy hub …

Communication/Dissemination:

- **Blue Platform Repository & Think-tank**
- Social Media – **Conferences**
- **Position & policy papers, Roadmaps**
- 6,000 Actors mapped

Services to Members:

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

Expert Advice & Coaching:

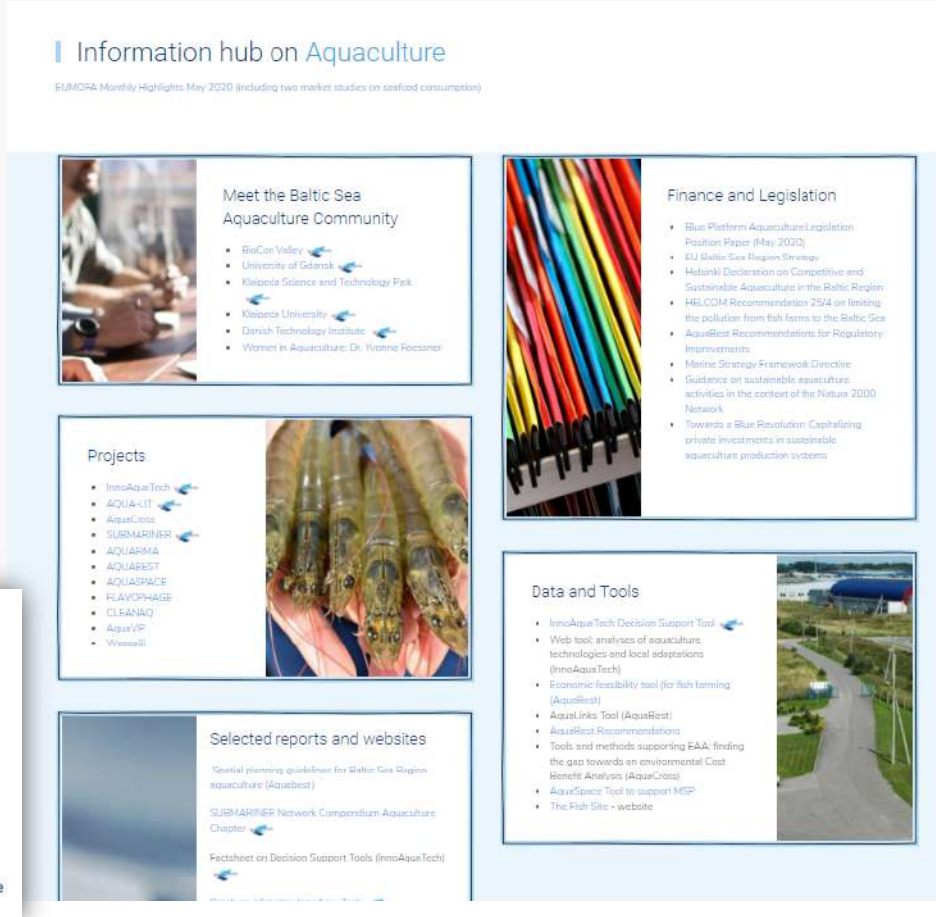
- **Accelerator**, Company Corner, Start-ups
- **Research – Company – Policy**

SUBMARINER NETWORK

Infoportal on Baltic Blue Bioeconomy

https://www.submariner-network.eu

- News, opinions
- Reports, data, guidelines, tools, training material, projects, links
- Good Practices
- Events, Workshops, Training, Study tours, Summer Schools



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Good Practice Collection

Blue Lobster App: Digital Marketplace to buy and sell low impact and fair seafood

Kerteminde: Denmark's first open-water mussel farm

Havhøst

Havhøst – Danish for "Ocean Harvest" – is the largest member organisation gathered around regenerative ocean cultivation in Denmark. Through events and activities, the organisation encourages the use of the blue areas in and around cities for

Berlin Farm: Urban Farming meets Aquaponics

GÅRDSFISK

Gårdsfisk : Sustainable aquaculture joins agriculture

Interreg Baltic Sea Region
EUROPEAN REGIONAL DEVELOPMENT FUND
EUROPEAN UNION
Blue Platform

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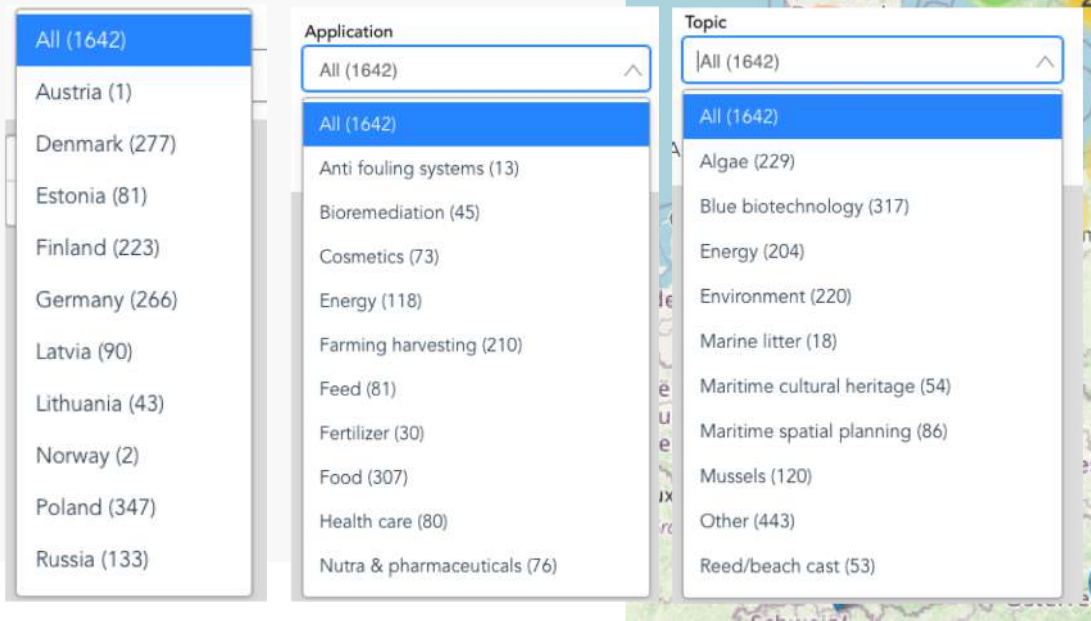
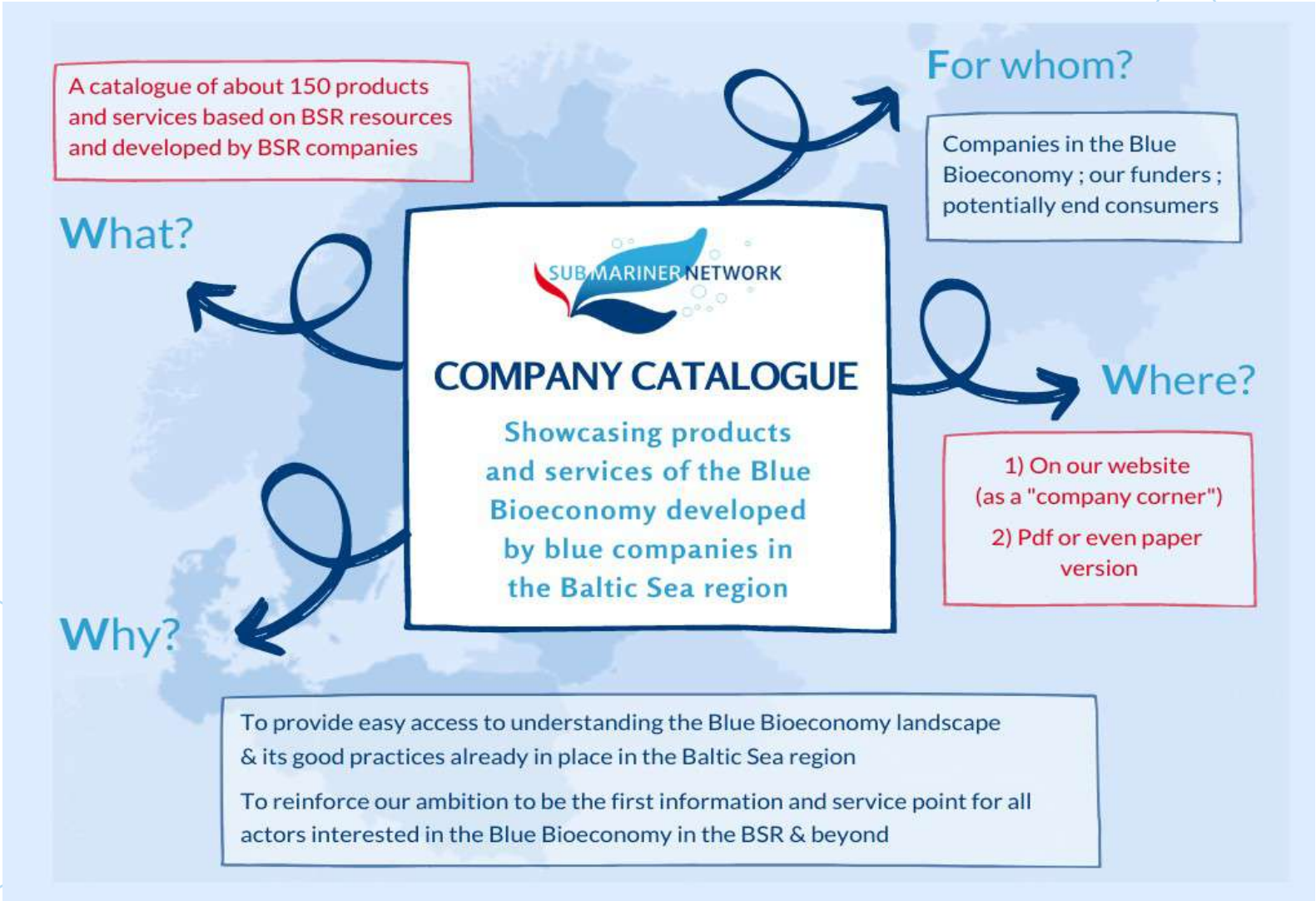
Actors mapping

- **43 members**, 260 partner organizations
- 6,000 actors throughout BSR, 1700 institutions
- approx. **650 companies** in blue bioeconomy linked via SUBMARINER





SUBMARINER NETWORK

SUBMARINER Accelerator for Blue Growth

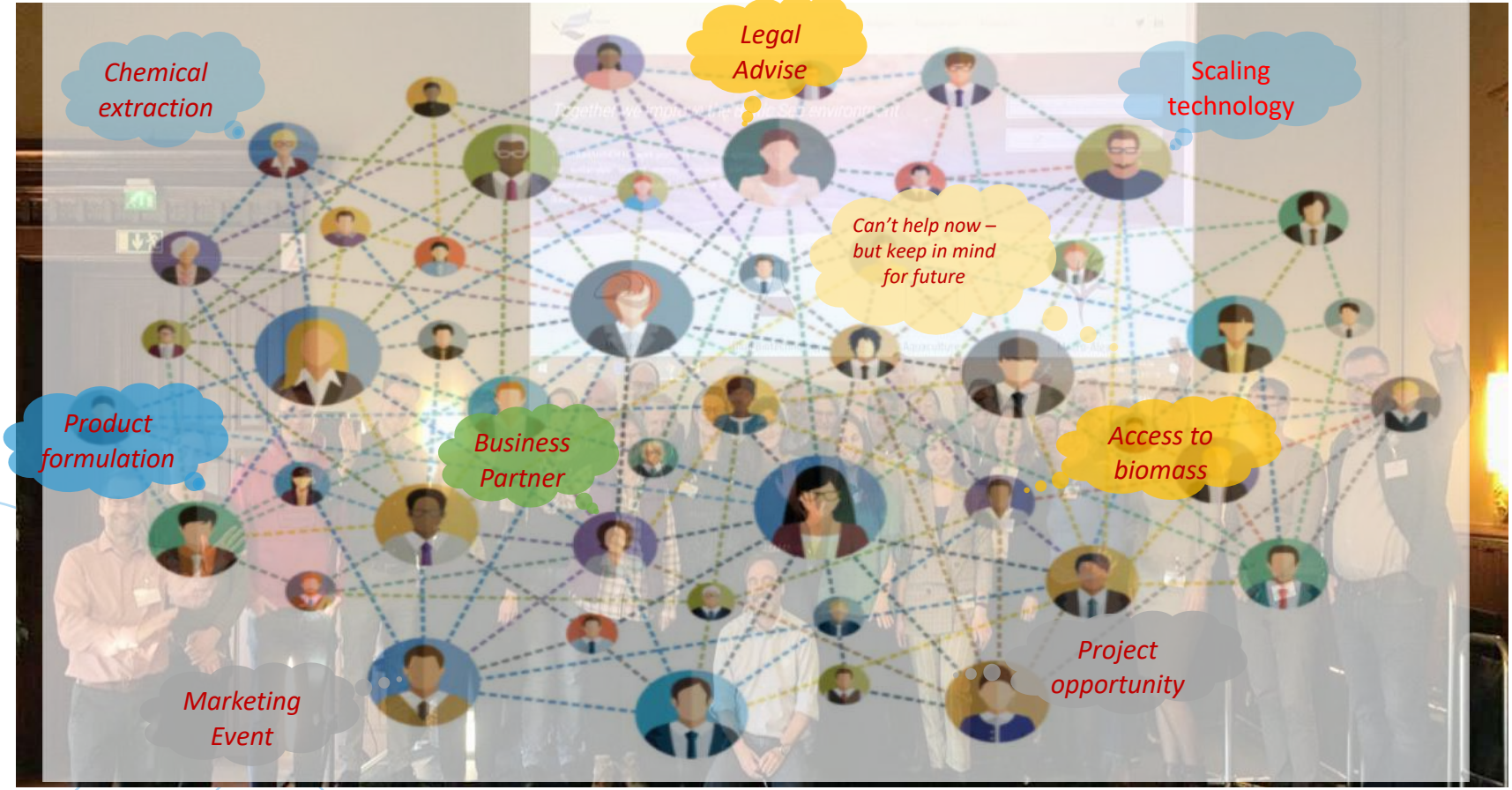
- **78+ active mentors and service providers from BSR and beyond**
- **40+ start-ups advised**
- **60% find partners, reach higher TRL, accelerate product development**
- **2 pitching / match-making events per year in BSR**
- **monthly Mentors' forum meetings, also with invited guests**
- **12 investors regulars in our events**

ECBF
European Circular Bioeconomy Fund

A personal network full of trust (and fun) .....

SUBMARINER NETWORK

SUBMARINER not one – but several supporters



SUBMARINER NETWORK

From projects to working group & vice versa

Completed projects (2014-2019)

Baltic Blue Biotech Alliance
Advancing marine bio-based product development

InnoAquaTech
Cross-border development & transfer of innovative and sustainable aquaculture technologies

Baltic Blue Growth
Initiating full scale mussel farming in the Baltic Sea

Baltic RIM
Baltic Sea Region Integrated Maritime Cultural Heritage Management

Smart Blue Regions
Smart Specialisation and Blue Growth in the Baltic Sea Region

MUSES
Exploring opportunities for Multi-Use in European Seas

Current projects (2019-2021)

Mussel & Aquaculture working group

CONTRA

SEAFARM
Testing macroalgae cultivation in Sweden

EU4Ocean
Focal Point for Ocean Literacy Actors across the Baltic

Blue Platform
Capitalization on transnational blue bio economy project findings and capacity building

SUSCULT

GRASS
Capacity building of public authorities on supporting macroalgae production and use

Blue Generation
Inspire and engage with young people to pursue a sustainable career within Blue economy sectors

AquaVIP

FUCOSAN

GoJelly

SUBMARINER Accelerator for Blue Growth

SEA4U

Alliance+
Expanding the mentors network for Blue Bioeconomy Start-ups & SMEs

Capacity4MSP
Strengthening the capacity of MSP stakeholders and decision makers

UNITED
Demonstrating Multi-Use in Atlantic, North and Baltic Sea

Multi-Frame
Developing a tool to assess multi-use potential and benefits

BELMONT FORUM

AquaLIT

BlueBioTech - SEED
Technology development and transfer for a thriving Blue Bioeconomy in the Baltic Sea Region

BlueBioSites - SEED
Data, information and tools to identify and monitor optimal sites for the Blue Bioeconomy in the Baltic Sea Region

BalticSeaFeed - SEED
Develop sustainable feed from Baltic Marine Resources

Next GEN SUBMARINER projects (submitted)

Blue Bio Company Catalogue

& Innovation Cluster
Promote and support Blue Bio Product & Service Companies through matchmaking, marketing, innovation projects

And more to come .....

Ecosystem restoration
Restore biodiversity in coastal & marine areas

Sea2Fork
Promote uptake of healthy & sustainable blue food throughout EU

Algarithm
Map evidence supporting low-trophic aquaculture potential in Europe

Ocean Literacy
Enable citizens to act on climate change through environmental protection

HARMO-LITT
Support monitoring of marine litter under MFSD new cycle

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

Members of the WG

Mussels

Jordbruks verket

BIOTHOT

SATPOS

Nofima

EUC Coastal & Marine

ECOPELAG

Dansk Akvakultur

Roskilde University Denmark

VCO
Vattenbrukscentrum Ost

AARHUS UNIVERSITY

asc

FERMENTATIONEXPERTS

ORBICON

Leibniz-Institut für Ostseeforschung Warnemünde
IOW

DTU

Kalmar kommun

Kieler Meeresfarm

SLU

Region Östergötland

KTH VETENSKAP OCH KONST

Borgholms kommun

CRM
Coastal Research & Management

LÄNSSTYRELSEN ÖSTERGÖTLAND

TARTU ÜLIKOOL
UNIVERSITAS TARTUENSIS
1632

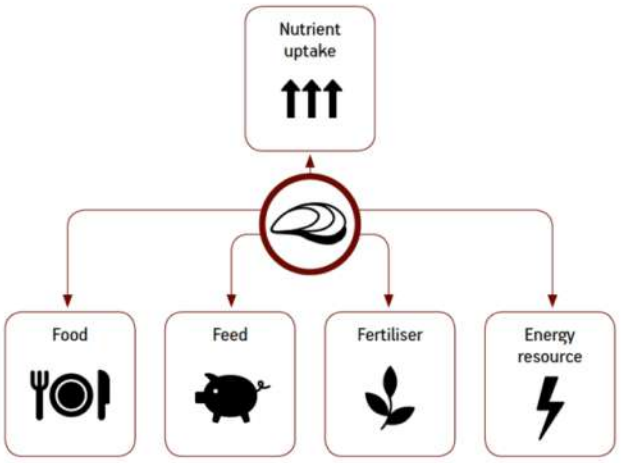
Linnæus University

ivl

SUBMARINER NETWORK

Mussel Cultivation Policy Brief

- With new technology much better results
- Muss less difference between mussels in high or low salinity areas:
  - Toal amount of mussel meat
  - **Nutrient content almost same**
- No oxygen depletion noted
- Mussel meal good raw material



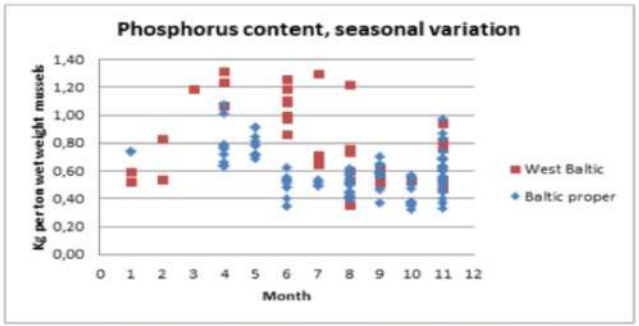


Figure 2. Phosphorus content, seasonal variation.

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

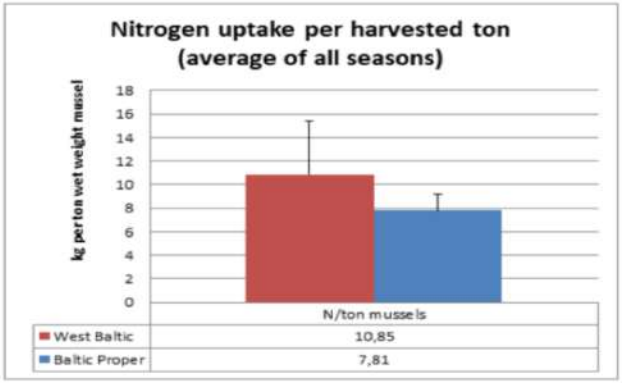


Figure 4. Nitrogen uptake per harvested ton.

Mussel Cultivation

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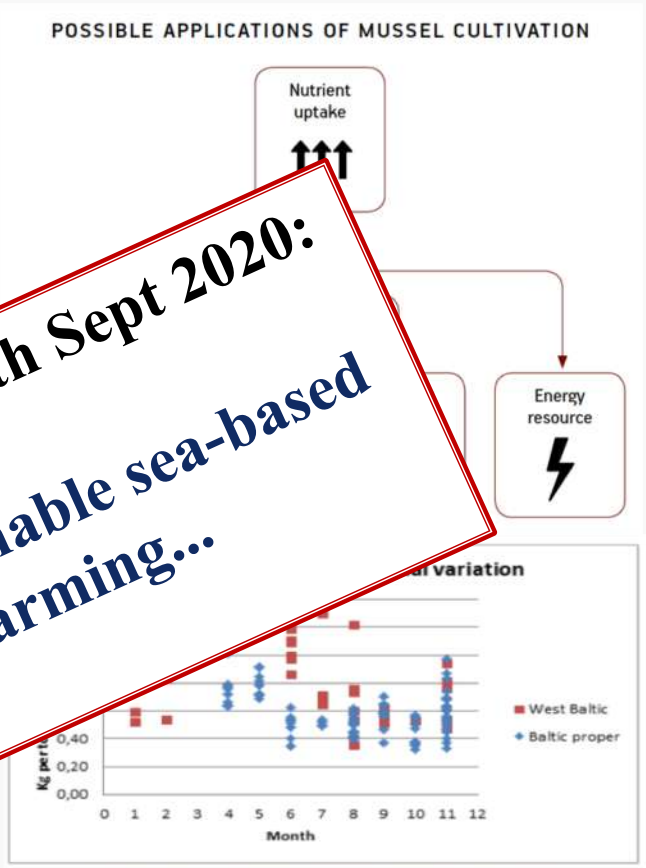
- No oxygen depleti
- Mussel me

Ministerial Declaration ‚Our Baltic' 28th Sept 2020:

We will promote ecologically sustainable sea-based measures, such as mussel farming...



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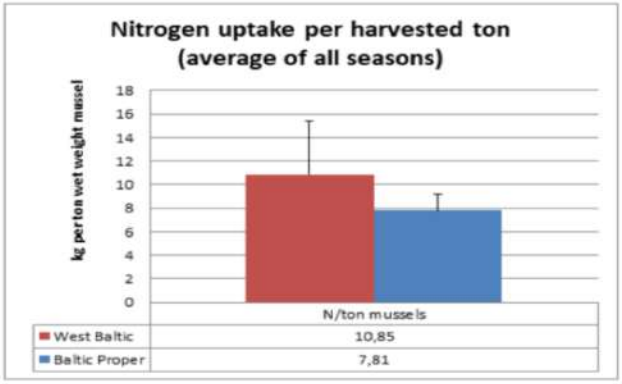

Figure 4. Nitrogen uptake per harvested ton.

SUB MARINER

Since its founding in 2014, the SUBMARINER Network family has been continuously growing. It currently has 24 network members, representing all Baltic Sea Region countries. The network includes both public and private sector organisations and reaches out to many more actors both within and beyond our project partnerships.

ROADMAP 2013

THE IDEA 2010

The project SUBMARINER (2010–2013) assessed, for the first time, the potential for innovative and sustainable uses of Baltic marine resources. It developed the idea for the network.

COMPENDIUM 2012

Combination with Offshore Wind Parks

Sustainable Fish Aquaculture

Macroalgae Harvesting and Cultivation

Mussel Cultivation

Blue Biotechnology

Reed Harvesting

Large-scale Microalgae Cultivation

EU STRATEGY FOR THE BALTIC SEA REGION FLAGSHIP

NETWORK 2014

Foundation of the SUBMARINER Network for Blue Growth EEIG

2016 ROADMAP STATUS REPORT

2017 SUBNET CONFERENCE DECLARATION

The 2nd SUBMARINER Conference 'Better off Blue', hosted in Berlin on 27th–28th September 2017, marks another milestone.

ROADMAP 2021-2027

The Baltic Sea Region – a bio-based innovation showcase

Initial conclusions from 6 years work ...

No longer only research

=> more and more companies
=> 650 companies earmarked
=> more and more products on the market

Proof of Concepts

=> mussels, algae can be cultivated
=> better knowledge on floating structures, beach wrack, biogas
=> cost-effective nutrient removal, where needed
=> negative environmental impacts limited
=> RAS, aquaponics, IMTA

Successful services

=> Baltic info and data hub
=> effective blue science-company interlinkage created

SUBMARINER NETWORK

Initial conclusions from 6 years work

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- **Proof of Concepts**
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  => RAS, aquaponics, IMTA

- **Successful services**
  => Baltic info and data hub
  => effective blue science-company interlinkage created

BUT

- **Little biomass production** => Demonstrators slow moving
- **Legal Barriers**
  => lagging behind actual positive developments
  => aquaculture behind agriculture
- **Ongoing support needed** => little transnational innovation funding
  => Platform and project funding

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Next Steps / Actions

Action 1. Get pilots to the next level

- **Establish large scale demonstration farms / plants**
- Encourage and coordinate new cooperative structures
- Identification & monitoring of sites based on common parameters
- Change / facilitate legislation
- Develop comprehensive regional plans

Action 2. Increase company involvment

- Baltic Blue Bio-economy Product & Company Catalogue
- **Address the need for a networking platform (cluster)**
- Continue and expand company specific services:
  - Accelerator / match-making
  - Co-creation & ideation
  - Technology development & transfer

Action 3. Consolidate new focus areas

- **Create Market Push and Pull: Citizen and Consumer Awareness**
- Education & Skills Development
- The ‘Blue on Land’: Regional Development, Marine Litter
- Cross-cutting assessments and plans: Biodiversity, Ecosystem, Climate Impact

Strategic Development of new Project Generation

° Calls	N°	Destination	Call N°	Opens	Deadline	1/2 stage	Title	Blue / Green	Internal Responsible	SUBMARINER members	Possible Other Baltic Partners	Lead?
1	1	1. Biodiversity and Ecosystem Services	2021-BIODIV-01-03	15-Apr-21	01-Sep-21	1 stage	Understanding and valuing coastal and marine biodiversity and ecosystems services	BLUE	SAL	SDU, UGOT, KU MRI, GMU, GEOMAR, Utartu, CAU	ABO (FI), AWI (Bernadette Pogoda), CRM, Kalmar Municipality, WWF Germany and or Sweden	UGOT ?
2	2	1. Biodiversity and Ecosystem Services	2021-BIODIV-01-04	15-Apr-21	01-Sep-21	1 stage	Assess and predict integrated impacts of cumulative direct and indirect stressors on coastal and marine biodiversity, ecosystems and their services	BLUE	SAL	SDU, KU MRI, UTartu		SDU ?
3	3	1. Biodiversity and Ecosystem Services	2021-BIODIV-01-05	15-Apr-21	01-Sep-21	1 stage	The economics of nature-based solutions: cost-benefit analysis, market development and funding	GREEN	EA / ASZ	CAU, KU MRI, BBG Partners, Innovatum, IVL, GMU	Aarhus, RISE, John Nurminen	
4	5	1. Biodiversity and Ecosystem Services	2021-BIODIV-01-07	15-Apr-21	01-Sep-21	1 stage	Ecosystems and their services for an evidence-based policy and decision-making:	GREEN	ASZ (Transfer)	CAU, Uppsala, KU MRI, GMU, GEOMAR, UTartu	Aarhus, BEF	
5	6	1. Biodiversity and Ecosystem Services	2021-BIODIV-01-10	15-Apr-21	01-Sep-21	1 stage	Demonstration of measures and management for coastal and marine ecosystems restoration and resilience in simplified socio-ecological systems	BLUE	SAL	RESTORES (incl. SDU, UGOT, IVL), CAU, KU MRI, GMU, GEOMAR, UTartu	AWI (Bernadette Pogoda), Kalmar Municipality, WWF Germany	Lead should b outside Baltic
6	7	1. Biodiversity and Ecosystem Services	2021-BIODIV-01-12	15-Apr-21	01-Sep-21	1 stage	Improved science based maritime spatial planning and identification of marine protected areas	BLUE	Ivana	SDU, GMU, SYKE, UTartu, CORPI		sPro
7	13	2. Farm2Fork	2021-Farm2Fork							...U, LUKE, UGOT, SBA; ...ueResearch		
8	14	2. Farm2Fork	2021-Farm2Fork							...a2Fork: UGOT, SYKE, NMFRI, ...U, CAU	RISE, Havhoest	SUBMARINER
9	15	2. Farm2Fork	2021-Farm2Fork							...EOMAR, CAU		
10	20	3. Circular Economy and Bioeconomy Sectors	2021-CircBio-01							...el, Skane, UGOT, GMU, Riga ...anning (LAIE), KSTP; South ...nland	CPMR-Baltic; UBC	
11	21	3. Circular Economy and Bioeconomy Sectors	2021-CircBio-01							...EOMAR (Jutta Wiese / Deniz ...sdemir); CAU, KTH (J-B. ...omas and Linus)	DE Round Table; Fraunhofer Umsicht (Jürgen Bertling)	Fraunhofer Ums ???
12	22	3. Circular Economy and Bioeconomy Sectors	2021-CircBio-01							...EOMAR, CAU		
13	23	3. Circular Economy and Bioeconomy Sectors	2021-CircBio-01							...ueBioTech Partners, CAU		SUBMARINER
14	24	3. Circular Economy and Bioeconomy Sectors	2021-CircBio-01							...llected GRASS Partners ...osterAlg?, UGOT, UTartu), ...EOMAR, CAU	some Sea2Fork (Algenladen, IKEA)	Uni Almeira
15	27	4. Clean Environment and ZeroPollution	2021-ZEROPOLL							...U		
16	28	4. Clean Environment and ZeroPollution	2021-ZEROPOLL							...U		
17	29	4. Clean Environment and ZeroPollution	2021-ZEROPOLL							...U, SDU, GMU, GEOMAR (Juta ...iese), UGOT (Lerna Gipperth), ...H (J.B. Thomas and Linus)	Fraunhofer Umsicht	
18	30	4. Clean Environment and ZeroPollution	2021-ZEROPOLL							...MU		
19	31	4. Clean Environment and ZeroPollution	2021-ZEROPOLL							...EOMAR, CAU		
20	32	5. Land, oceans and water for climate action	2021-CLIMATE-(							...U		
21	34	6. Resilitent communities	2021-COMMUNITY-01-04	15-Apr-21	01-Sep-21	1 stage	Socio-economic empowerment of the users of the sea	BLUE	ASZ/SAL	...MU, SYKE (?), UTartu ...epending on focus) - could be ...any other SUB: LAIE, Uppsala, Kalmar, Idu-Vira, etc.	BEF?	
22	41	7. Innovative Governance	2021-GOV-01-06	15-Apr-21	01-Sep-21	1 stage	Environmental and social cross-compliance of marine policies	BLUE	SAL	GMU, SYKE*, UGOT	IASS	
23	42	7. Innovative Governance	2021-GOV-01-07	15-Apr-21	01-Sep-21	1 stage	Regional governance models in the bioeconomy	GREEN		GMU, GEOMAR, CAU		
24	45	7. Innovative Governance	2021-GOV-01-11	15-Apr-21	01-Sep-21	1 stage	Education on the bioeconomy including bio-based sectors for young people in primary and secondary education in Europe	GREEN	SAL	CAU interested, SYKE/UGOT not expressed interest	AWI (Gesche Krause), IOPAN, BEF?	Acteon ?
	1	1. Biodiversity and Ecosystem Services	2022-BIODIV-01-01	28. Oct 21	15-Feb-22	1 stage	Observing and mapping biodiversity and ecosystems, with particular focus on coastal and marine ecosystems	BLUE	LSDG	SDU, KU MRI, UTartu		
	16	2. Farm2Fork	2022-Farm2Fork-01-06	28. Oct 21	15-Feb-22	1 stage	Integrated and sustainable freshwater bioeconomy: Combining aquaculture, biodiversity preservation, biotechnology and other uses	BLUE	EA/FB	NMFRI, KSTP, UG, CAU, KU MRI, GEOMAR	Fraunhofer Lübeck, GMA Büsum	
	17	2. Farm2Fork	2022-Farm2Fork-01-07	28. Oct 21	15-Feb-22	1 stage	Biosecurity, hygiene, disease prevention and animal welfare in aquaculture	BLUE	ASZ (transfer)	Leibniz FBN, CAU, LUKE, GEOMAR		
	18	2. Farm2Fork	2022-Farm2Fork-02-08	28. Oct 21	15-Feb-22	2 stage	Innovative food from marine and freshwater ecosystems	BLUE	EA	Sea2Fork!, KU MRI, (GMU?), SDU (Jamileh), GEOMAR, Utartu, CAU		
	25	3. Circular Economy and Bioeconomy Sectors	2022-CircBio-01-01	28. Oct 21	15-Feb-22	1 stage	Circular Cities and Regions Initiative's Project Development Assistance (CCRI-PDA)	GREEN				
	26	3. Circular Economy and Bioeconomy Sectors	2022-CircBio-01-07	28. Oct 21	15-Feb-22	1 stage	Marine microbiome for healthy oceans and a sustainable blue bioeconomy	BLUE	Efthalia	SYMBIOTECH partners: GEOMAR, SDU		GEOMAR???
	33	5. Land, oceans and water for climate action	2022-CLIMATE-01-02	28. Oct 21	15-Feb-22	1 stage	Understanding the oceanic carbon cycle	BLUE	EA, SAL			
	36	6. Resilitent communities	2022-COMMUNITY-01-03	28. Oct 21	15-Feb-22	1 stage	Boosting women-led innovation in farming and rural areas	GREEN				
	37	6. Resilitent communities	2022-COMMUNITY-01-03	28. Oct 21	15-Feb-22	1 stage	Integration of marine ecosystem service valuation, conservation and restoration in socio-economic models	BLUE	SAL	GMU, GEOMAR, SYKE*, CAU	AquaLIT, Fraunhofer Umsicht	
	46	7. Innovative Governance	2022-GOV-01-01	28. Oct 21	15-Feb-22	1 stage	Mobilization of society to transform food systems for co-benefits	GREEN				

- Horizon Europe
- BSR INTERREG
- BANOS
- Bio Based Industry Consortium
- Blue Bio Co Fund
- EUREKA
- .....

Join the SUBMARINER family

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