



Sustainable Blue  
Economy Partnership

# Report: Blue Economy for the Baltic Sea

Sustainable Blue Economy  
Partnership  
Partnership Regional Workshop

EU Polish Presidency,  
Blue Economy Baltic Forum  
4<sup>th</sup> Mission Arena, BlueMissionBANOS  
29<sup>th</sup> of April 2025, 9:00-16:30  
Sopot, Poland



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## 1.0 WORKSHOP OUTLINE

### SUMMARY



Figure 1: Speakers and panelists of the workshop

On 29 April 2025, the Sustainable Blue Economy Partnership held its fourth and penultimate regional workshop in Sopot, Poland, during the Blue Mission Banos Arena 4. The **'Blue Economy for the Baltic Sea'** workshop brought together partners, co-funded projects, researchers, civil society, representatives from regional organisations and the private sector to explore the specific challenges and opportunities facing the Baltic Sea basin.

With five thematic sessions corresponding to the Partnership's 2025 Intervention Areas, the day offered a structured yet open space to exchange on topical issues for the region through a mix of project presentations, strategic perspectives, and practical experiences. Speakers explored key themes such as the use of Digital Twins of the Ocean and ocean data to support decision-making, approaches to protecting and adapting maritime infrastructure, and strategies for building coastal resilience in the Baltic Sea.

## Report: Blue Economy for the Baltic Sea Workshop

Participants also learned about the role of nature-based solutions, the need for integrated data monitoring, and how spatial planning can help balance environmental pressures with growing demands from sectors like shipping and offshore energy. The potential of blue bioresources for circular economies was in focus, too, with conversations covering sustainable aquaculture, bio-based innovation, and the complexities of developing viable value chains.

A central moment in the workshop was the interactive World Café, where participants gathered in smaller groups to discuss the future of fisheries, aquaculture, and the circular bioeconomy in the Baltic Sea. These discussions revealed difficulties the region is grappling with, including environmental damage, declining fish stocks, and socioeconomic consequences, such as workers leaving traditional blue economy jobs for other sectors. At the same time, participants shared examples of innovation, such as the replacement and renovation of fleets to reduce their environmental impact.



Figure 2: Introduction to the workshop

Throughout the day, the value of international collaboration and alignment with local priorities was emphasised. Interventions from the **Council of the Baltic Sea States** (CBSS), the Polish **Presidency of the Council of the European Union** and other actors highlighted both the need and the willingness to work together. The workshop also provided an occasion to explore synergies with other European Partnerships, such as Zero Emission Waterborne Transport (ZEW) and the forthcoming Partnership on Social Transformation and Resilience.


The event served as a perfect reflection on how the Sustainable Blue Economy Partnership can support the ongoing work of regional organisations – including research centres, startups and intergovernmental platforms – and how, in turn, regional insights can shape future calls and priorities.







Figure 3: Margherita Cappelletto and Angela Schultz-Zehden

## AGENDA

8:30		ARRIVAL AND REGISTRATION	
9:00		WELCOMING	<p>High-level opening:</p> <p><i>“Priorities of the EU Polish presidency and updated Action Plan for the EU Strategy for the Baltic Sea Region (EUSBR)”</i> Cezary Błaszczyk, Deputy Director of the Department of International Cooperation at the National Centre for Research and Development</p> <p>Setting the scene:</p> <ul style="list-style-type: none"> <li>Loic Blanchard, DG RTD, European Commission</li> <li>Julie Olivier, Research Center Jülich, Germany, SBEP Brussels Office</li> </ul> <p>Key note:</p> <p><i>“International law and governance issues for the European Ocean Pact”</i>, Ronan Long (World Maritime University)</p>
09:30		SESSION 1	<p><b>Digital Twin of the Ocean, Digital Transition and ocean observing</b></p> <p>Pitch</p> <ul style="list-style-type: none"> <li>«ARCFISH, Digital Twin of the Ocean for Arctic Fisheries» (Partnership co-funded project) Dr Agnieszka Beszczyńska-Möller, IOPAN, Poland</li> </ul> <p>Panel</p> <ul style="list-style-type: none"> <li>Przemysław Pozański, Ośrodek Badawczo-Rozwojowy Centrum Techniki Morskiej JSC, Digital Baltic project, Poland</li> <li>Rivo Uiboupin, Tallinn University of Technology, Estonia</li> </ul> <p>Q&amp;A with the audience</p>
10:20		COFFEE BREAK (TOGETHER WITH THE MISSION ARENA)	
10:45		SESSION 2	<p><b>Blue Bioresources</b></p> <p>WORLD CAFE</p>

	<p>Moderator: <i>Julie Olivier (FZJ)</i>  <i>SBEP Brussels Office, ECOPs</i></p>	<p>Pitches before the interactive discussion:</p> <ul style="list-style-type: none"> <li>• Remigiusz Panicz, West Pomeranian University of Technology, BlueBoost (co-funded project), Poland</li> <li>• Freya Robinson, Submariner Network for Blue Growth, FOODIMAR (co-funded project), Germany</li> </ul> <p>Baltic experience and opportunities:</p> <ul style="list-style-type: none"> <li>• Sustainable Fisheries;</li> <li>• Sustainable Aquaculture;</li> <li>• Blue Biotechnologies.</li> </ul>
<p>12:10</p>	<p>LUNCH BREAK (TOGETHER WITH THE MISSION ARENA)</p> 	
<p>13:30</p>	<p>▶ SESSION 3</p> <p>Moderator: <i>Osman Tikansak, FORMAS, Sweden</i></p>	<p><b>Resilient coastal communities and businesses</b></p> <p>Pitch</p> <ul style="list-style-type: none"> <li>• “BEACH-SOS - how to adapt to the changing climate to ensure thriving and sustainable beach recreation and tourism in the future” (Interreg Project) David Cabana, Helmholtz-Zentrum hereon GmbH, Germany</li> </ul> <p>Panel</p> <ul style="list-style-type: none"> <li>• “Multiscale modelling of marine extremes and their socio-economic impacts”, C. Gabriel David MareExtrem Mission of the German Marine Research Alliance, Germany</li> <li>• Malwina Gebalska, Coordinator of the upcoming EU Partnership on social transformation and resilience, National Science Centre, Poland</li> </ul> <p>Q&amp;A with the audience</p>
<p>14:15</p>	<p>SESSION 4</p> <p>Moderator: <i>Viktoras Mongirdas, Research Council of Lithuania, Lithuania</i></p>	<p><b>Managing sea-uses</b></p> <p>Pitch</p> <ul style="list-style-type: none"> <li>• «<i>BluEcho - From science to policy: assessing impacts and developing solutions for ship traffic and offshore wind farms through detailed soundmaps</i>» (Partnership co-funded project), Marta Cianferra, University of Trieste, Italy</li> </ul>

		Panel	<ul style="list-style-type: none"> <li>• “Green shipping corridor to reduce CO<sub>2</sub> emissions and promoting sustainable maritime transport” David Abril Molins Waterborne Technology Platform, Belgium</li> <li>• “Building Mariparks for a sustainable blue economy” Marjoleine Nascimento da Silva-Karper, eMSP-NBSR“</li> <li>• “HELCOM-OSPAR-ICES Joint Working Group on Seabirds: Offshore environmental impact and monitoring needs” - Lena Avellan, HELCOM Secretariat, Finland</li> </ul>
		Q&A with the audience	
15:00		COFFEE BREAK (TOGETHER WITH THE MISSION ARENA)	
			
15:20	 <b>SESSION 5</b>	<b>Transition of Blue Economy Sectors</b>	
	Moderator: Margherita Cappelletto, MUR	Panel	<ul style="list-style-type: none"> <li>• “Wind power-climate-blue economy issues” Johanna Fox, WWF, Sweden</li> <li>• Agnė Lukoševičienė, Ignitis Group, Lithuania</li> <li>• “Marine carbon sinks in decarbonisation pathways” Anna-Adriana Anschütz, CDRmare mission of the German Marine Research Alliance, Germany</li> </ul>
		Q&A with the audience	
16:10	 <b>FORWARD-LOOKING CONCLUSIONS</b>		<ul style="list-style-type: none"> <li>• “The Baltic 2030 Action Plan” Ugis Zanders, Council of the Baltic Sea States (CBSS)</li> <li>• Peter Grönwoldt, BMBF, Germany</li> <li>• Margherita Cappelletto, Partnership Coordinator, Ministry of Universities and Research, Italy</li> </ul>
16:30		END	
			

## REGISTERED PARTICIPANTS

Total number of participants onsite and online: 71, from the following nationalities:

POLAND	38
BELGIUM	7
GERMANY	6
LATVIA	5
FINLAND	3
ITALY	3
SWEDEN	3
LITHUANIA	2
NETHERLANDS	2
ESTONIA	1
NORWAY	1

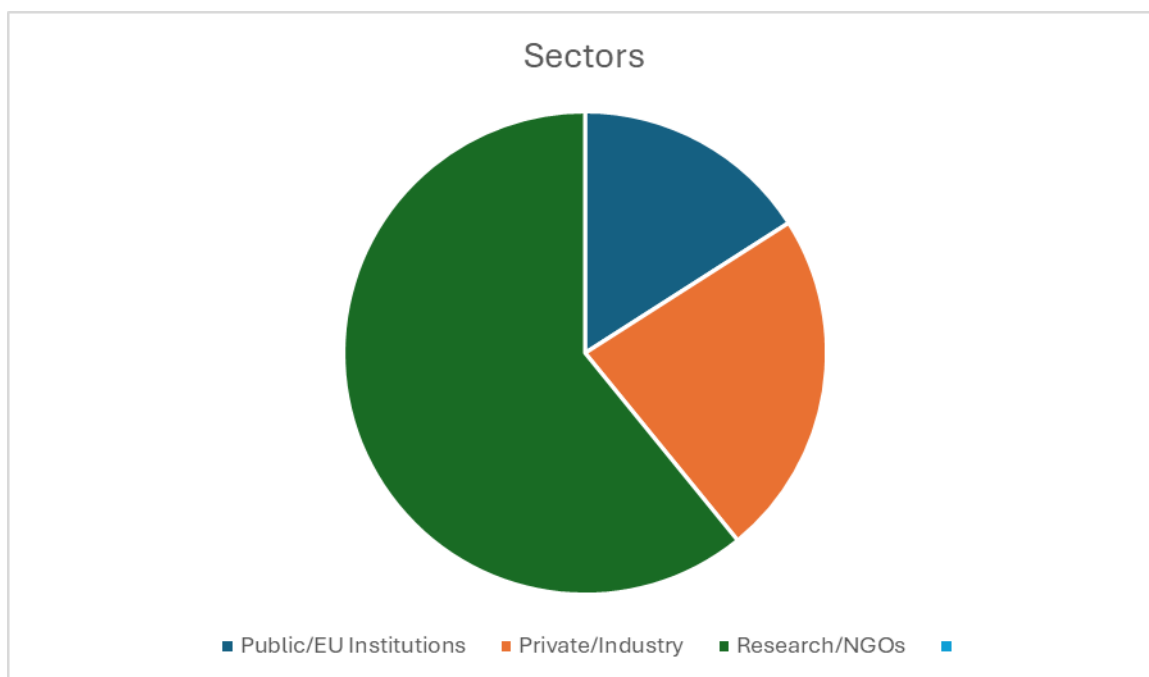


Figure 4: Representation of sectors amongst workshop participants

## 2.0 OUTCOMES

### Welcoming

**Angiolo Boncompagni** from the **Italian Ministry of Universities and Research (MUR)** and **reference contact of the Partnership Brussels' Office for regional cooperation**, opened the workshop by introducing the session, which featured contributions across the five intervention areas of the Partnership. These were tailored to address the specific needs of the Baltic Region. Notably, 11 out of the 24 projects from the last Partnership co-funded cohort include Baltic representatives in their consortia, with three of them coordinated by Baltic countries.

Angiolo then gave the floor to **Monika Włoszek, Partnership node for Poland, speaking on behalf of the National Centre for Research and Development (NCBR)**, an active partner in the Partnership.

Monika introduced **Cezary Błaszczyk, Deputy Director of the Department of International Cooperation at NCBR**, who spoke **on behalf of the Polish Presidency of the EU Council**. He began by recalling the launch of the BONUS Art. 185 initiative 15 years ago and expressed satisfaction with the progress made since, highlighting the current initiative's capacity to pool resources of up to €450 million.

**Cezary** thanked the organisers and emphasised Poland's role as a contact node. He acknowledged the Partnership's importance in fostering transnational collaboration to tackle the challenges and opportunities in the Baltic Sea Region. He noted that the **EU Strategy for the Baltic Sea Region (EUSBSR)**, a cornerstone of Poland's efforts, aligns closely with the Sustainable Blue Economy Partnership and the priorities of the Polish Presidency—particularly in areas such as environmental sustainability, energy independence, and regional security.

At the 'Blue Economy for the Baltic Sea' regional workshop—organised by the Sustainable Blue Economy Partnership (hereafter the Partnership) and hosted by the Institute of Oceanology of the Polish Academy of Sciences (IOPAN)—a representative of NCBR, also speaking for the Baltic Sea Node and the Polish EU Presidency, delivered opening remarks. They emphasised the value of transnational cooperation and the alignment between the Partnership, EUSBSR, and the EU Presidency's goals.

The speaker highlighted how initiatives like this workshop serve as vital platforms for strengthening partnerships, fostering innovation, and addressing marine challenges through joint action. The Partnership's focus on climate-neutral blue food, sustainable infrastructure, and knowledge-sharing was noted as being well-aligned with EU priorities.

The workshop was described as an excellent opportunity to exchange experiences, explore future collaborations, and advance a shared vision for a sustainable and resilient Baltic Sea Region. Key themes included promoting energy independence, sustainability, economic growth, and the development of climate-neutral, resource-efficient, and multi-purpose offshore structures—fully aligned with Polish priorities.

**Loïc Blanchard**, from the **European Commission's Directorate-General for Research & Innovation (EC-RTD)**, expressed appreciation for **Mr. Błaszczyk's** remarks, noting their alignment with EU objectives. He emphasised the Baltic Sea's importance, home to millions, yet facing challenges such as marine pollution and security threats. He expressed hope that the workshop would help advance solutions through research and innovation. Loïc reaffirmed the EU Green Deal as the guiding policy and highlighted the Baltic Sea's role in renewable energy development while maintaining biodiversity. He stressed the importance of international cooperation, with the Partnership playing a central role in addressing these challenges through its intervention areas. He also referenced the European Ocean Pact, which centres on global and EU-level cooperation, with the Partnership being fundamental to consolidating efforts and accelerating progress.

**Monika** then gave the floor to **Julie Olivier** from **Forschungszentrum Jülich (PtJ), Germany, and the Partnership's Brussels Office**. Julie introduced the Partnership and the rationale behind the joint transnational calls, from the Strategic Research and Innovation Agenda to the intervention areas. She emphasised the impact-oriented approach aimed at delivering solutions to people and markets, enabling local transformation. She also highlighted the co-design approach, which bridges sectors, stakeholders, and borders. Julie concluded by presenting the thematic core of the Partnership: the five intervention areas, including Digital Twin Ocean, transforming economic sectors (e.g., decarbonisation and multi-use offshore structures), managing sea uses, blue bioresources, and enhancing the resilience of coastal communities and businesses.

Finally, **Ronan Long** from the **World Maritime University** congratulated the Polish Presidency and the Partnership for organising the workshop. As an international lawyer, he highlighted the policy dimension of the EU Ocean Pact, which aims to harmonise legislation, policies, and strategies such as the Common Fisheries Policy (CFP), the Marine Strategy Framework Directive (MSFD), the Maritime Spatial Planning (MSP) Directive, the 2021 Blue Economy Strategy, the EU Agenda for International Ocean Governance, and the Ocean Mission. Ronan explained that the European Ocean Pact process involves defining political guidelines, with the Commissioner for Fisheries and Oceans mandated to ensure coherence. He called on the Baltic Region to contribute to shaping the Pact, which will be announced at the third UN Ocean Conference in June 2025 as a key milestone.

He outlined the five strategic pillars of the European Ocean Pact: a productive ocean, a sustainable blue economy, marine knowledge, international ocean governance, and opportunities for coastal communities and cities. The Pact will take the form of a European Commission communication, with no new legislation, and EU institutions will pursue its objectives in parallel.

He concluded by referencing the outcomes of the June 2024 G7 meeting, including the BBNJ agreement (with 27+EU ratifications expected), progress on the Plastic Treaty (towards zero plastic by 2040), the WTO agreement on fisheries subsidies, and the precautionary pause on seabed mining, supported by 32 countries.

## **SESSION I - Digital Twin of the Ocean, Digital Transition and ocean observing**

The session, moderated by **Monika Wloszek**, NCBR, Polish Node, was opened with Dr. **Agnieszka Beszczynska-Möller** from the **Institute of Oceanology of the Polish Academy of Sciences (IOPAN)**, who introduced the concept of the Digital Twin of

the Ocean (DTO) within the specific context of the Baltic Sea. She emphasised that the Baltic Sea, as a semi-enclosed and highly sensitive marine environment, presents both unique challenges and opportunities for digital innovation. The integration of advanced digital tools into ocean monitoring is becoming increasingly necessary to support informed policymaking, environmental protection, and the sustainable use of marine resources. Dr. Beszczynska-Möller highlighted that DTOs, by offering real-time simulations and predictive capabilities, can provide a dynamic representation of marine ecosystems and human interactions.

The first case presented was the **ARCFISH** initiative, a pilot project focused on developing a DTO for sustainable Arctic fisheries. Dr. Agnieszka Beszczynska-Möller outlined how the platform delivers new data products and services aimed at improving decision-making in Arctic marine resource management. Though initially designed for Arctic conditions, the initiative was positioned as a model that could be replicated in other sea basins, such as the Baltic. This presentation provoked important questions around the adaptability of local DTO applications and their scalability across different marine environments. Furthermore, it raised the issue of whether a broader portfolio of use cases is necessary to promote DTO adoption, especially in the private sector, and which industries could benefit the most from such demonstrators.

Following this, **Przemysław Pozański** from the **Ośrodek Badawczo-Rozwojowy Centrum Techniki Morskiej JSC** introduced the Digital Baltic project. This project was described as a critical element in safeguarding Europe's maritime infrastructure, particularly within the Baltic region. Using artificial intelligence, the system is designed to predict potential threats and facilitate more effective coordination of responses. The speaker highlighted the dual imperatives of ensuring data security and managing the energy demands associated with data centres. He also addressed the European Commission's Submarine Cable Security Action Plan, emphasising the collaborative efforts among Baltic countries to establish land-based surveillance and resilience structures. The discussion underlined the urgent need for targeted research, particularly in enhancing the security and sustainability of digital infrastructure critical to maritime operations.

The third intervention featured **Rivo Uiboupin** from **Tallinn University of Technology**, who presented the forthcoming **DTO4OWE** project. This initiative aims to develop sub-regional DTOs specifically tailored for assessing the environmental and spatial impacts of Offshore Wind Energy (OWE) in both the Baltic and North Seas. Uiboupin detailed how the project fits within broader European frameworks such as EDITO and Destination Earth. He argued that DTOs could become essential tools for marine spatial planning, scenario modelling, and regulatory compliance, particularly as offshore energy projects expand. The DTO4OWE project not only

seeks to address current environmental challenges but also aims to provide sector-specific tools that support decision-making in the OWE industry.

In response to moderator questions, Uiboupin stressed the value of innovation-driven clustering actions, such as hackathons, in fostering cross-basin collaboration and accelerating DTO technology adoption. He pointed out that high-quality operational data with broad spatial coverage is fundamental to achieving reliable, real-time predictions. Estonia's development of the smart buoy network 'SeaWolf' was cited as a best practice. Looking forward, he projected that DTOs would have their greatest short-term impact in marine spatial planning through long-term scenario modelling. In the medium to long term, he envisioned a shift toward real-time operational models and seasonal forecasting services. These advancements, while computationally intensive, are both technically feasible and increasingly demanded by end users.

The session concluded with a Q&A segment involving all speakers and the audience. Discussions focused on the foundational role of ocean observing systems in supporting DTOs and how these systems could be sustained and enhanced. Participants referenced strategic insights from the recent OECD Report 'The Ocean Economy to 2050', which calls for integrated and well-funded observing networks. There was a consensus that maintaining robust observation infrastructure is essential for the continued development and utility of DTOs, especially considering their growing policy relevance and economic potential.

In summary, the session demonstrated that Digital Twins of the Ocean are rapidly becoming indispensable tools for environmental management, infrastructure protection, and the sustainable development of marine industries. Presentations showcased not only technological innovations but also the importance of regional collaboration, policy alignment, and user engagement. The Baltic Sea, due to its unique characteristics and high level of transnational cooperation, appears well-positioned to serve as a leading region in the advancement of DTO applications.

## **SESSION II – Blue Bioresources (World café)**

This session aimed at engaging the Baltic Community on the three thematic key topics of the Partnership's intervention area 'Blue Bioresources' (Sustainable Fisheries and Harvesting; Aquaculture; Circular blue bioeconomy) with the following objectives:

- *Highlighting success stories, opportunities and needs at the Baltic scale;*

- *Identifying good practices and shared challenges across all Partnership' sea basins;*
- *Supporting the development of the Partnership's R&I priorities and the implementation of activities including the next Joint Transnational Call for projects proposals, and on market uptake.*

From the global perspective, seafood is a solution to sustainably feed and nourish a growing population. Aquatic food has not only a high nutritional value, but also a lower environmental impact than land-based production systems. Therefore, the UN Food and Agriculture Organisation has called for a blue transformation leveraging the potential of aquatic food. Yet, the current business-as-usual approach to blue food production fails to sufficiently address key barriers to sustainability. The UN Ocean Decade identifies several challenges, from policy incoherence to overexploitation to biosecurity (contaminants, invasive species, diseases) and consumer preferences. Moving from the global to the regional scale, Julie Olivier recalled that cod fisheries used to be highly important in the Baltic, sustaining fisheries and the economy in lots of coastal communities. But fish stocks are now so depleted that the latest scientific advice by the International Council for the Exploitation of the Sea (ICES) is zero catch for eastern cod. **The poor environmental status of the Baltic Sea, as reported by the latest HELCOM assessment, clearly affects the profitability of fisheries.** Multiple pressures range from overfishing, illegal, unreported and unregulated fishing, pollution, and of course climate change, including the impact of increased temperatures on species. In its latest review of fisheries, the OECD brings it to the point: *"unhealthy stocks are bad for the environment, global food security and fishers' incomes"*.

Introducing the key thematic area on 'sustainable fisheries', Julie Olivier highlighted key R&I activities identified by the Partnership at European level in order to promote an ecosystem-based management approach to fisheries and mentioned examples of innovative solutions supported by the Partnership with the project ARCFISH (see session 1) and a newly selected project upcycling bilge water to manufacture biodegradable fishing gears.

### **Guiding questions for the World Cafe Table 'Sustainable Fisheries and Harvesting'**

(Margherita Cappelletto, MUR / Coordinator as facilitator and Isabel Caballero, JPI Oceans as rapporteur)

- *What are challenges to achieve sustainable fisheries in the Baltic Sea? (e.g. reducing fossil fuel, pollution, management of fish stocks, traceability, climate change, habitat degradation, ...)*
- *What are opportunities for co-developing and exploring new fishing techniques, resources and technologies with industry and small-scale*

*fisheries? (e.g. more selective fishing gear, digital tools for monitoring, fulfilling EU policies, better understanding of species' role in the trophic webs, harvesting new species including macroalgae, inclusive transition, synergies with the Zero Emission Waterborne Transport Partnership, ...)*

As an introduction to the key thematic area 'sustainable fisheries', **Remigiusz Panicz, West Pomeranian University of Technology**, presented first results of the Partnership's co-funded project BlueBoost towards boosting a sustainable and climate-neutral aquaculture of blue foods and feeds in Europe. BlueBoost has developed six integrated Multitrophic Aquaculture (IMTA) systems in different environments/sea basins – oceans, using Life Cycle Assessment (LCA) and economic analysis to quantify and optimise the performance of the IMTAs. BlueBoost demonstrates the ecoinintensification potential of the IMTAs.

**Guiding questions for the world cafe table “Sustainable Aquaculture”** (Marta Przepiora as facilitator, Gabrielle Aubert, JPI Oceans as rapporteur)

- *What are challenges for sustainable aquaculture of established and new species of fish, seaweed and shellfish? (e.g. licensing, food safety, lack of space, invasive species, ...)*
- *What are opportunities for innovative solutions in the aquaculture sector in the Baltic Sea and beyond? (e.g. sustainable and healthy feed, fish health, offshore multiuse, onshore recirculating aquaculture systems, integrated multitrophic aquaculture, new methods for processing harvested seaweed, diversification, Smart Specialisation Strategies with the Partnership ‘Circular Smart Aquaculture’, synergies with the European Aquaculture Technology and Innovation Platform and the Partnership Animal Health and Welfare ..)*

As an introduction to the key thematic area 'circular bioeconomy', **Freya Robinson, Submariner Network for Blue Growth**, introduced the co-funded project FOODIMAR in relation to challenges and opportunities for the smart valorisation of side-streams in the seafood industry across Europe. Currently, up to 70% of aquatic resources are wasted, used primarily for low-value purposes, or disposed of, resulting in missed economic opportunities and environmental challenges. However, side-streams of aquaculture and fisheries can be important bioresources, containing valuable components that can be used in food, pharmaceuticals, cosmetics, biotechnology and nutraceuticals. Of the possible valuable components available from fisheries and aquaculture side-streams,

FOODIMAR aims to produce high-quality marine collagen, gelatin, and glycosaminoglycans (GAGs). This is because there is increasing demand for commercial sources of these compounds and while conventional sources are facing challenges related to cost, health, climate, and lifestyle Marine sources can offer an alternative that avoids similar issues while also tackling the environmental and economic challenge of seafood loss and waste.

**Guiding questions for the world cafe table 'Blue biotechnologies'** (Freya Robinson as facilitator, Angiolo Boncompagni as rapporteur)

- *What are opportunities for developing new sustainable bio-based products in the Baltic Sea? (e.g. food/ feed/ chemical/ pharmaceutical/ material, biorefinery approaches for the valorisation of waste streams, minimising waste and enhancing value chains, synergies between aquatic farming and agriculture, synergies with the CBE JU, with the Partnership FutureFoodS,...)*
- *What are challenges to achieve a circular blue bioeconomy? (e.g. regulation, consumer acceptance, valley of death for funding towards market uptake and upscale...)*

Table 1 Opportunities and challenges identified during the World Café discussion

	<b>Opportunities</b>	<b>Challenges</b>
Sustainable fisheries	<p>Opportunities for co-developing and exploring new fishing techniques, resources and technologies</p> <p>The Baltic Sea is poor in species : how to target the ones we can have and which are depleted?</p> <p>Keep funding this area more on attractive seafood options</p> <p>Fleets: selectiveness, of the nets, renovation, replacement of fleets with more environmental-friendly options (e.g. zero emissions)</p>	<p>Is the quota system in Norway transferable to the Baltic?</p> <p>Impact of renewability of fleets; link with Waterborne Partnership on emissions of fleets.</p> <p>Improve environment / prevent deterioration so "There is fish to fish". Performance of fish stocks not so good.</p> <p>Fish has gone in recent years but we don't know the drivers (pollution building along the coast, climate change, deterioration of environment).</p>

	<p>Young generations – decreased interest in the economy related jobs (aquaculture, fisheries)</p> <p>Need to make the sector more appealing; storytelling, care for biodiversity</p> <p>Focus on regenerative approaches. Tools designed with regional specificities in mind.</p> <p>=&gt;How do we define sustainable fisheries?</p>	<p>Key component: nature restoration law, information that we can give to policymakers when establishing quotas.</p> <p>Support for small-scale fisheries; people moving to other economic activities (+ consumption trade-off)</p>
<p>Sustainable aquaculture</p>	<p>Uniqueness of Baltic Sea (also as a challenge?)</p> <p>More for freshwater species than for open ocean?</p> <p>Blue food available locally + food safety</p> <p>Space available (compared to Benelux for example), no tides, calmer</p> <p>Current knowledge &gt; upscaling for aquaculture</p> <p>Using products for animal feed.</p> <p>Closed system, quite well controlled (with exceptions)</p> <p>Inland farming: some species like increasing temperatures</p> <p>Aquaculture grown in the Baltic can be used for other uses than food (feed)</p> <p>Explore uses of seaweed</p>	<p>Biology of species (not always transferable and adaptable)</p> <p>How to provide infrastructure for species reproduction?</p> <p>Sustainability: how to feed them? Environmental impact (System &gt; aquaculture)</p> <p>Market for products, access to market</p> <p>Legislation (e.g. for algae, not only in the Baltic Sea)</p> <p>Food safety aspects</p> <p>Regulatory challenges, not all countries are ready (long procedures, hinders motivation)</p> <p>Not enough pilots in the Baltic as evidence to demonstrate best practice</p> <p>Public perception: people still prefer wild fish, not seen as positive environmentally but still seen as a pressure and industrial. There is a need to change this mindset</p>

	<p>Call for aquaculture as there is less fish takes</p> <p>Use aquaculture to improve the environmental status of the Baltic sea, if possible can be explored</p> <p>If we manage to have the technology to clean up the Baltic sea, many more opportunities</p>	<p>with an , educational approach to consumers.</p> <p>Environmental: there is only a limited number of species that can be grown in the Baltic</p> <p>Consumption; less in the Baltic than in other regions (Med) - what is the demand in the region?</p> <p>Poor state of Baltic Sea, pollution and eutrophication &gt; impact on aquaculture and public perception</p> <p>Limited public/ knowledge of this poor environmental status. Is local sustainable and healthy?</p> <p>Need and technologies to clean up the sea and have healthy sea products.</p>
<p>Circular bioeconomy</p>	<p>sustainable consumption</p> <p>less /reducing waste</p> <p>education and consumer engagement</p> <p>availability of space</p> <p>diversification of products</p> <p>marketing,</p> <p>integrating different food</p> <p>funding</p> <p>SMEs training</p> <p>cultural change</p>	<p>reducing pollution</p> <p>use of technology</p> <p>integration / holistic approach to economy</p> <p>system resilience</p> <p>regulatory environment</p> <p>replicability in large scale</p> <p>market uptake and dependence</p>

The world café format enabled an interactive discussion in a dynamic and informal setting. Reflecting the democratic and co-design processes at the core of the Partnership, the world café fostered networking, exchange of ideas and good practices between participants, and acquirement of information on aspects not considered before through the involvement of various fields of

expertise. Together with all results of the workshop, the output feeds into the development of the Partnership's activities and strategic co-design.

## **SESSION III – Resilient coastal communities and businesses**

The moderator **Osman Tikansak, project manager at the Swedish Research Council for Sustainable Development (FORMAS)** introduced the session on resilient coastal communities and businesses, highlighting the importance of coastal cities for cultural heritage, economic activity, tourism and ecological diversity. The Baltic region benefits from a rich variety of traditions, local knowledge and capacity for innovation, but is also affected by rising sea levels and the degradation of its marine ecosystems, which are shaping communities, livelihoods and landscapes. He cited the upcoming European Ocean Pact which includes resilient coastal communities as one of its founding pillars. This session will explore critical areas lying at the heart of this question.

**David Cabana, from Helmholtz-Zentrum hereon GmbH, Germany,** presented the INTERREG project '**BEACH-SOS - how to adapt to the changing climate to ensure thriving and sustainable beach recreation and tourism in the future**'. Making the comment that the increase of temperatures due to climate change could boost tourism in the region, he referred to this as a double sword, as climate change will have many other impacts on coastal ecosystems and tourism. As part of the project, they ran a survey in the Baltic region asking relevant people about climate information for beach management. The results showed that 50% of respondents do not use such information at all, and 50% use it partially (those came mostly from Denmark). The sense of urgency is mainly seen as immediate by respondents, with a smaller tendency to say in ten years. This information is not used at the moment, as it is complex and comes from many different sources, and the different ways to interpret such information make it difficult to read. The project therefore aims to bridge the gap between this complex information and the citizens, businesses and municipalities with a lack of access to information and awareness, creating a space for co-creation and adaptation planning. It can for example help municipalities understand which climate information is relevant for them and how to make it useful as part of their project activities. On the importance of stakeholder engagement and co-design, he also gave the example of community action plans, which can be developed by communities at the level of a municipality to reflect their ideas and vision and how to reach these objectives. The speaker concluded by stating that he was delighted to see the Sustainable Blue Economy Partnership having an intervention area on resilient coastal communities.

**Malwina Gebalska, Coordinator of the upcoming EU Partnership on social transformation and resilience** from the **National Science Centre in Poland**, then

presented the objectives of this upcoming Partnership. It will advance knowledge in four impact areas: future of work, fair transition towards climate neutrality, social protection and essential services and education and skills. It will also focus on supporting the uptake of research results and increasing impact of R&I programmes and projects, connecting researchers with stakeholders and citizens the development of evidence-based public policies and strategies. They will work with Member States and in the future with associated countries, supported by European Commission, mainly DG Employment, Social Affairs and Inclusion. The speaker mentioned that the Partnership will aim to respond to challenges and new realities, through the emergence of new skills driven by the green transition. She also highlighted the special role of researchers, and how the Partnership will support them. It will launch at least six calls for proposals, and the research funded will be monitored and support evidence-based policymaking. The Partnership will start in 2027 and will last approximately ten years. On the points for collaboration between the two Partnerships, the speaker mentioned the resilience aspect, and the uptake of research results.

Finally, **Gabriel David** from the **mareExtrem** research mission of the German Marine Research Alliance (**Deutsche Allianz Meeresforschung, DAM**). DAM is a coalition of German marine research institutes and infrastructures and a network and community among German marine research. The aim of the German Marine Research Alliance is to provide actionable knowledge to overcome scientific silos and for the research to have an impact. The third DAM research mission is dealing with marine extremes on three different aspects: biological, geophysical and physical oceanographic extreme events, the latter being storm surges or flooding. He coordinates the project METAscales where eleven marine research institutes scrutinize extreme events at different scales: spatially they consider ocean basins, coastal areas and the hinterland. In terms of timescales, METAscales considers immediate action, intermediate solutions and future strategies. But METAscales specifically combines different disciplinary scales, including the perspectives of natural science, engineering and social scales, as well as looking at connections in between. They are working through living labs, to discuss and co-create solutions with coastal communities on site with a bottom-up approach. The speaker concluded on the need to strategically change how we plan to address unprecedented extreme events such as sea level rise, as we have no experience of its impacts. Moving from a static way of predicting future events towards more flexible and pathway-based scenarios could help build more resilience.

## SESSION IV – Managing sea-uses

The session on managing sea uses was moderated by **Viktoras Mongirdas** of the Research Council of Lithuania.

At the beginning, **Marta Cianferra** (University of Trieste, Italy) presented a pitch on the Partnership co-funded project 'BluEcho - From science to policy: assessing impacts and developing solutions for ship traffic and offshore wind farms through detailed soundmaps'. The BluEcho project, launched in April 2024, builds on TG

Noise guidelines under the MSFD to assess underwater noise impacts on marine ecosystems. It uses acoustic modelling and behavioural thresholds (LOBE) to evaluate whether Good Environmental Status is achieved. The project includes noise from offshore wind farms and incorporates mitigation strategies with socioeconomic impact assessments. Project outcomes will be potential future sustainable scenarios, in terms of both environmental status and cost-benefit analysis.

A milestone was the Early-Stage Workshop held in Trieste, on October 15th-16th 2024, aimed at addressing three key aspects: maps modelling, concept of LOBE, feasible mitigation measures. The workshop brought together participants from related European projects, TG Noise experts, and local stakeholders. The event facilitated mutual knowledge exchange and highlighted several critical open questions, to be prioritised.

Given the multi-scale feature of the problem BluEcho is advancing the idea of a multi-layered analysis approach. Considering a broader scale focusing on international routes of cargo ships and similar large vessels, where specific mitigation systems can be implemented, leading to particular socioeconomic consequences. And a more localised scale, along coastline, where the sources are smaller vessels associated with local activities, managed and regulated at the local level.

Opening the following Panel, David **Abril Molins** (Waterborne Technology Platform and the Zero-Emission Waterborne Transport Partnership, ZEWT) shared reflections on how Green Shipping Corridors can serve as models for systemic decarbonisation in maritime transport and emphasised the importance of moving from pilots to scalable, integrated action. He added that Green Shipping Corridors (GSCs) should be understood not just as sustainability projects, but as models for systemic decarbonisation in the maritime sector.

A successful GSC, he noted, is a 'living laboratory for transition'—especially well-suited to the Baltic Sea context, given its short-sea traffic density, strong environmental governance, and port innovation momentum. Key features that differentiate GSCs from other initiatives include: End-to-end integration of ports, vessels, fuel infrastructure, and digital systems; a focus on governance, collaboration, and investment readiness; the need for scalability and replicability, particularly in regional ecosystems like the Baltic.

David also outlined the key roles and responsibilities of different stakeholders: ports as enablers of clean fuel infrastructure and smart logistics, shipping companies leading fleet transformation, fuel suppliers ensuring availability and compatibility of alternative fuels, governments creating supportive policy frameworks and removing regulatory barriers, international organisations ensuring standards, verification, and coordination and Research institutions driving continuous innovation, monitoring, and system-level design.

Finally, he shared how the ZEWTP Partnership contributes by supporting the creation of green shipping corridors, enabling port decarbonisation, promoting digitalisation for smarter, more efficient logistics. He concluded with a call to make Green Shipping Corridors the standard, not the exception, and to work together to turn pilots into policy and ambition into acceleration.

On her turn, **Marjoleine Nascimento da Silva-Karper** (eMSP-NBSR) highlighted that the concept of a MariPark is a product from the eMSP NBSR project, as a tangible and practical possible solution balancing nature ambitions together with the objectives for energy and food, as set under the EU Green Deal. Due to current geopolitical situations more emphasis has been placed on blue growth. Here key-words such as competitiveness and productivity to support self-reliance and self-sufficiency gained more attention. Leading to a stronger emphasis on increasing offshore energy and marine food supply. However, for both objectives a deteriorated ecosystem will negatively impact these objectives. Therefore, equal emphasis must be given to meet the objectives for nature objectives for healthy and thriving ecosystems.

Marjoleine remarked that encompassing 'new' energy and food objectives in already heavily used seas and into Maritime Spatial Planning are complex issues. To deal with these complexities, for many years, multi-use has been suggested as solution. However, so far MU has not yet managed to succeed. Hence, the eMSP NBSR project developed the concept of a MariPark as a possible tangible solution to deal with the complexities.

For the speaker, the concept of a MariPark requires a transformative, comprehensive and holistic approach, in which complex issues related to MU and MSP are dealt with. Main two key-words for MariPark are 'de-risking' and 'synergy'. De-risking refers to sharing of costs and benefits for economic activities (e.g. for supporting new innovations) such as sharing of technical infrastructure, costs for safety and insurance and more efficient governance through a more centralized management and a so called one stop shop for permits.

Marjoleine concluded that Mariparks open up new opportunities for offshore energy, aquaculture, shipping, research, and emerging blue economy sectors. By integrating AI, digital twins, and autonomous systems, they enhance efficiency and support solutions for the energy transition, food security, and biodiversity restoration. Built on an ecosystem-based and nature-inclusive approach, Mariparks align with the EU Sustainable Blue Economy and Green Deal objectives, making sustainable blue economy more collaborative, secure, and cost-effective.

As third speaker of the panel, **Lena Avellan** (HELCOM Secretariat, Finland) made a presentation on 'HELCOM-OSPAR-ICES Joint Working Group on Seabirds: Offshore environmental impact and monitoring needs'. HELCOM is the Regional Seas Convention in the Baltic Sea and through this Inter-Governmental Organisation the Contracting Parties to the Convention, i.e. the coastal state and

the EU, come together to coordinate work and develop Recommendations which are international soft law. HELCOM celebrated its 50<sup>th</sup> anniversary in 2024.

Lena informed that the HELCOM coordinated monitoring programme delivers long-term data sets that are used to create regionally agreed assessments. These assessments are the evidence base for policy creation in HELCOM. The environmental information that is collected is stored and shared centrally. Complementary information is also used from various sources, for example specific projects that include deliverables that interact with HELCOM.

For birds, the joint HELCOM-OSPAR-ICES Joint Working Group on Seabirds carries out regional assessments of seabird abundance and distribution. Based on the long-term monitoring data, the assessments have shown decline in many seabird populations for the past years. With the exception of some grazing seabirds like geese, the Baltic Sea populations of seabirds are in decline. Another group, the HELCOM Expert Group on Bird migration, carries out work to create regional maps of the main migration routes to be used for example to inform wind-farm planning. There are several remaining and critical knowledge gaps regarding seabird migration maps, for example in how to combine weather radar information with tracking information.

Lena concluded that data and information regarding the marine environment will always include a degree of uncertainty, even if monitoring and research is carried out at high resolution, due to the complex nature of the ecosystem. For this reason, HELCOM applies the precautionary principle in its policies, meaning that it is sufficient to demonstrate a risk of harm to the ecosystem from a human activity to warrant a management response that aims to minimise the harm.

## SESSION V: Blue Economy Sectors

This panel was moderated by **Margherita Cappelletto** (MUR). Margherita opened the discussion with an overview of the Intervention Area 'Blue Economy Sectors', placing it within the context of the Baltic Sea region. Emphasis was placed on the ongoing green and digital transformation of sea-based economic activities, highlighting the need for innovation and sustainability. She addressed the importance of promoting the multi-use of marine spaces and optimising the use of maritime resources through integrated approaches such as maritime spatial planning, while also ensuring that economic development aligns with environmental considerations, mitigating pressures on marine ecosystems.

Then the panellists were introduced. **Johanna Fox** (WWF, Sweden), the Director of the Baltic programme, leads the WWF's pan-Baltic and policy work, bringing together a core team of senior specialists, helping facilitate cooperation and joint strategising of the Baltic Programme's goals and strategies among the various offices in the network. **Agnė Lukoševičienė** (Ignitis Group, Lithuania), is the

Environment and Permitting Projects Manager at Ignitis Renewables, leading Lithuania's first offshore wind farm project, Curonian Nord. With a background in marine conservation and policy, including work on implementing the Marine Strategy Framework Directive in Lithuania's Ministry of Environment, she brings nearly a decade of experience in advancing sustainable offshore energy.

**Anna-Adriana Anschütz**, (CDRmare mission of the German Marine Research Alliance), is a marine biologist and Postdoctoral Researcher at the Leibniz Institute for Baltic Sea Research, she works on ocean alkalinity enhancement as a carbon dioxide removal strategy in the Baltic Sea. As part of the RETAKE and RETAKE II projects under the CDRmare mission, her research focuses on CO<sub>2</sub> removal modelling, biogenic calcite sinks, and environmental impact assessment.

Following the introductions, the first round of questions to panellists started.

First question was posed to Johanna Fox (WWF, Sweden).

**Q: What are opportunities for improving the coexistence of human activities at sea? What would be the priorities in terms of research needs?**

Johanna Fox presented her key insights, supported by a presentation focusing on offshore renewable energy development in the Baltic Sea.

The Baltic Sea, characterised by high human impact and pollution, poses significant challenges for expanding offshore renewable energy (ORE). Nevertheless, offshore wind energy is essential for reducing carbon emissions, ensuring energy security, and advancing the goals of a sustainable blue economy. As such, offshore wind must be developed in a way that is compatible with marine ecosystem protection and restoration. The speaker emphasised the need for nature-friendly ORE projects that minimise ecological impacts while contributing to broader environmental objectives.

Key to achieving this balance is strategic planning on an international level, treating the Baltic Sea as a single, interconnected system. This approach was explored during a recent ORE workshop, which identified 'go-to areas' for consideration in offshore wind development, including:

- Socioeconomic impacts
- Legislative coherence
- Environmental concerns
- Spatial planning
- Technical and technological requirements

The workshop highlighted several critical barriers hindering effective coexistence and ORE deployment in the Baltic Sea region:

- Environmental Impact Assessments (EIAs): Inconsistencies across countries and a lack of comparable data impede effective assessments.

- Stakeholder Engagement: Insufficient involvement of local communities and relevant actors in the planning and permitting process.
- Regulatory Frameworks: Fragmented regulations and bureaucratic procedures result in delayed permitting.
- Technological Challenges: High costs of offshore deployment and the need for environmentally sensitive technology.
- Data Gaps: Despite being one of the most studied marine regions, the Baltic Sea suffers from fragmented data access due to poor intergovernmental sharing.

Key Action Points Identified in the workshop were:

1. Integration: Strengthen regional cooperation and multi-level governance across sectors and policy areas.
2. Data Harmonisation: Promote consistent data sharing through regional guidelines and digital tools.
3. Standardisation: Align interpretations of legislation to ensure a coherent regulatory approach across borders.
4. Facilitation: Streamline permitting processes with clear governmental support and coordination.
5. Engagement: Ensure early and inclusive stakeholder involvement in ORE planning and implementation.

The presentation concluded that unlocking the full potential of offshore wind in the Baltic Sea depends on addressing these barriers through collaborative, cross-border strategies and focused research efforts that bridge technological, environmental, and policy gaps.

Next question was addressed to Agnė Lukoševičienė (Ignitis Group, Lithuania).

**Q: When developing innovative ocean-based technologies (e.g. wind farms/offshore parks), how important is it to consider the specific local environmental conditions? How might this influence the process of obtaining permits?**

In addressing the question, Agnė Lukoševičienė emphasised that while lessons can be drawn from offshore wind projects in other seas, each region presents unique environmental characteristics that must be addressed individually. In the Baltic Sea, specific local factors such as seabed conditions, native flora and fauna, and bird migration patterns must be carefully studied. These elements shape both the design and feasibility of offshore projects, influencing everything from technology choices to permitting processes. It was stressed that climate change impacts vary by region, and thus, a one-size-fits-all approach is inadequate.

Referencing the EEA report and drawing on the company's experience with its first offshore wind project in the Baltic Sea, the speaker highlighted the importance of involving a wide range of experts and stakeholders. Ignitis Renewables has actively engaged with authorities, environmental institutions, local communities,

and fishermen through public consultations and regular dialogue. This process has helped build trust and ensured that different perspectives, including concerns about visual impact, bird populations, and socio-economic implications, are integrated into project planning.

The speaker underscored that the energy transition is not solely about generating megawatts or building infrastructure, but about integrating energy systems into the broader ecological and social environment. Ensuring that offshore projects coexist with marine ecosystems is a core responsibility.

While renewable energy is critical to addressing climate change, biodiversity protection cannot be sidelined. Emissions reduction and ecosystem preservation must go together.

Agné's response ended on a key message: Collaboration is essential. The success of offshore wind as a sustainable energy solution depends on close cooperation among developers, policymakers, researchers, and local communities. Only through inclusive and adaptive approaches can ocean-based technologies contribute positively to both energy goals and marine biodiversity.

Last question of the first round was directed to Anna-Adriana Anschütz (CDRmare mission of the German Marine Research Alliance).

**Q: What are the opportunities and challenges of marine carbon dioxide removal (mCDR) and marine carbon storage (mCS) technologies as ocean-based solutions for climate change mitigation?**

In her answer Anna-Adriana Anschütz stressed that while reducing CO<sub>2</sub> emissions remains essential, it will not be sufficient on its own - we must also actively remove carbon from the atmosphere. Technologies such as marine carbon dioxide removal (mCDR) and marine carbon storage (mCS) offer promising pathways, but their implementation presents both opportunities and critical challenges.

Drawing from the first phase of related research and development, the speaker noted that technical readiness is not the primary barrier. Instead, key concerns revolve around the potential environmental impacts, particularly noise pollution, and the broader societal, political, and legal frameworks needed to support deployment. A notable example cited was the stalling of a wind farm project - not due to a lack of technical capability, but because of insufficient cultural readiness and public acceptance. This underscores the importance of transparent, trustworthy procedures, early stakeholder engagement, and public dialogue in developing mCDR and mCS projects. Furthermore, the panelist emphasized the need to proactively assess and prepare for the environmental consequences of deploying such technologies, ensuring that climate mitigation does not come at the cost of marine ecosystem health.

The key takeaway was that the success of mCDR and mCS technologies depends not only on innovation but also on public trust, reliable and effective governance, and a commitment to sustainable environmental practices.

The discussion continued with a brief second round of questions.

**Q: What are science and policy needs towards an acceleration of the deployment of a nature-positive EU offshore wind energy sector?**

Johanna Fox reiterated the importance of taking a holistic, Baltic-wide approach to planning. Rather than assessing offshore wind projects in isolation, the cumulative impacts of multiple local and regional developments must be considered to ensure long-term ecological sustainability.

A key recommendation was the use of digital twin technologies—advanced, data-driven models that can integrate environmental and project-specific data from across the region. These tools enable more accurate forecasting of how offshore energy development will affect the entire Baltic Sea ecosystem, providing a scientific basis for better-informed policy decisions and cross-border coordination.

**Q: Could environmental monitoring data from private companies (e.g., IGNITIS GROUP) be shared with the broader community? If so, what challenges might arise, and what would be the most effective ways to facilitate this sharing?**

Agnė Lukoševičienė acknowledged the complexity of the issue, especially in the context of offshore wind development. She noted that while environmentalists often advocate for full transparency, this must be balanced against business realities. Projects go through various phases, especially in the early planning and permitting stages, when much of the data is still being developed and may be commercially sensitive. As a result, full data sharing is not always feasible, particularly when competitive interests are involved. From an environmental perspective, open access to data is highly beneficial for ecosystem protection, stakeholder trust, and cumulative impact assessments. However, the business perspective requires caution, especially when disclosing information that could affect market position or investment decisions. A balanced approach is needed, one that encourages greater transparency where possible, particularly for non-sensitive data, while respecting the legitimate commercial interests of private developers. Establishing clear guidelines and frameworks for data-sharing could help build trust between sectors and support a more collaborative path toward sustainable offshore development.

**Q: From your perspective, what are priorities at the interface between science, policy and business for marine carbon storage in a changing environment?**

Anna-Adriana Anschütz underscored the critical need for robust Monitoring, Reporting, and Verification (MRV) systems. Establishing common guidelines for how businesses and institutions should approach decarbonisation is essential to

ensure consistency, credibility, and accountability across sectors. The speaker noted that businesses often prioritise short-term results, while the environmental perspective demands long-term monitoring to fully understand ecological impacts. This divergence in timelines must be acknowledged and reconciled through coordinated frameworks.

Transparency was highlighted as a core principle - especially when it comes to disclosing potential side effects of marine carbon storage methods. The panellist also raised an important governance question: who holds long-term responsibility for carbon storage projects, particularly in cases where technologies cannot be easily reversed or halted once deployed?

The session ended with a question from an audience member who asked whether multi-use platforms were being considered in the planning of future Offshore Renewable Energy workshops mentioned by Johanna Fox in her presentation.

In response, Johanna Fox clarified that while multi-use platforms were not part of the initial framework, they represent an important direction for future planning. She stressed that such approaches could potentially reduce environmental impacts but must be evaluated carefully within the specific context of the Baltic Sea, which differs significantly from other regions like the North Sea. This reinforces the need for regional-scale planning that accounts for how various multi-use models might interact with the unique ecological and spatial characteristics of the Baltic.

Agnė Lukoševičienė added that the enclosed nature and limited size of the Baltic Sea present additional planning constraints, while Anna-Adriana Anschütz highlighted the importance of location-specific factors - such as whether developments are in coastal or deeper waters. They also drew attention to the extensive seagrass ecosystems in the Baltic, which play a vital role in carbon storage and must be factored into any multi-use strategy.

## FORWARD LOOKING CONCLUSIONS

The “Blue Economy for the Baltic Sea” workshop concluded with a forward-looking segment reflecting on the richness of the day’s exchanges and the future-oriented ambitions of the Sustainable Blue Economy Partnership. **Angiolo Boncompagni** (MUR, Italy) highlighted the value of the fruitful discussions held throughout the day and noted that they would be consolidated into the workshop report and inform the Partnership’s future action, translating insights to define marine and maritime policy in the Baltic Sea region.

**Uģis Zanders**, representing the Council of the Baltic Sea States (CBSS), was invited to introduce the CBSS’s Baltic 2030 Action Plan. Developed in 2015 following the adoption of the UN 2030 Agenda, this plan is a ‘common vision’ for the Baltic Sea region to become the most sustainable region in the world, structured around six

action areas. Zanders highlighted the importance of multilateral collaboration among CBSS member states through expert groups and stakeholder engagement mechanisms to address current and emerging challenges in the region.

Among recent initiatives, he mentioned CBSS efforts to promote green shipping corridors, with a particular focus on small and medium-sized ports, which often lack the resources and capacity of larger ports. Looking ahead, Zanders pointed to two relevant developments under the Estonian CBSS Presidency. First, a baseline report on Green Shipping Corridors and Digital Twins to be presented at a dedicated event on 12–13 May. Second, he introduced the recently launched ClimaResponse initiative, which kicked off on 1 April. This digital platform is designed to help local authorities access tools and guidance to create inclusive climate adaptation plans that take into account vulnerable populations, such as people with disabilities and older citizens.

In closing, Zanders expressed his intention to return to the CBSS expert groups with these insights, to work toward a more integrated and collaborative regional framework, and the wish to continue cooperating with the Sustainable Blue Economy Partnership.

In his address, **Peter Grönwoldt** (German Federal Ministry of Research, Technology and Space) echoed the importance of cross-border cooperation, particularly as Europe approaches the third UN Ocean Conference (UNOC3). He stressed that the Baltic Sea's geopolitical and ecological context requires heightened attention to the protection of critical infrastructure, such as undersea cables and pipelines. Drawing on his past experience in naval service, he reflected on past and present security risks and on the importance of research security. Valuable research data on the Baltic Sea has been collected over decades by research vessels. The work of these floating laboratories, among others from the German Leibniz Institute for Baltic Sea Research Warnemünde, has made it possible to strengthen the sustainable management of this sensitive ecosystem through international agreements, most notably HELCOM and the Baltic Sea Action Plan. However, collaboration requires freedom and trust: Freedom of access to relevant sea areas, and trust in the quality of the work and the open sharing of results. All of this is currently at stake under growing security concerns. However, it is important to view collaboration among like-minded partners as an opportunity, and thus to use the forces, including in marine research, in a coordinated manner to jointly advance research security and the security of critical infrastructures.

Both Peter Grönwoldt and **Margherita Cappelletto** (MUR, Italy, speaking as the Partnership coordinator) highlighted the importance of keeping the momentum and underscored the Partnership's efforts to embed the blue economy into the global dimension of the ocean. Margherita identified the Partnership's upcoming side event at UNOC3 in Nice, the launch of the regional portfolios, and the 2026 Symposium as key moments to promote mutual learning and showcase progress.

Margherita closed the event by thanking the speakers and participants, with a special mention to Monika Wloszek, the Sustainable Blue Economy Partnership's Polish node.

### 3.0 NEXT STEPS/ RECOMMENDATIONS IN THE LIGHT OF EVOLVING INTERVENTION AREAS

The table below showcases the next steps and recommendations as outcomes of each of the sessions of the workshop.

Table 2 Recommendations and next steps per session

Session	Identification of needs....	...feeding into:
Welcoming	N/A	N/A
IA1 (Session I)	<ul style="list-style-type: none"> <li>• Need for advanced digital tools for marine monitoring</li> <li>• Adaptability and scalability of DTOs to different sea basins</li> <li>• Greater engagement from the private sector</li> <li>• Data security and energy sustainability</li> <li>• Marine spatial planning for offshore wind energy (OWE)</li> <li>• Reliable and integrated observing infrastructures</li> </ul>	<ul style="list-style-type: none"> <li>• Expand and replicate initiatives like ARCFISH in other seas (e.g., the Baltic)</li> <li>• Create a diversified portfolio of use cases to attract various industries</li> <li>• Invest in research for digital security and infrastructure resilience</li> <li>• Integrate DTOs into planning and permitting processes for OWE projects</li> <li>• Promote hackathons and technological clustering to foster innovation and cross-border collaboration</li> <li>• Strengthen observing</li> </ul>

		<p>networks (e.g., SeaWolf) with structured funding</p> <ul style="list-style-type: none"> <li>• <i>Embed DTOs in national and European policies, aligned with EU programs (e.g., Destination Earth)</i></li> </ul>
<p><b>IA2 (Session V)</b></p>	<ul style="list-style-type: none"> <li>• <i>carbon dioxide removal</i></li> <li>• offshore wind development should include:             <ul style="list-style-type: none"> <li>○ Socioeconomic impacts</li> <li>○ Legislative coherence</li> <li>○ Environmental concerns</li> <li>○ Spatial planning</li> <li>○ Technical and technological requirements</li> <li>○ Regional cooperation, multi-level governance</li> <li>○ Data Harmonisation</li> <li>○ Legislative alignment, regulatory coherence</li> <li>○ Permitting streamlining, government coordination</li> <li>○ Early involvement, stakeholder</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Feeding WP2 (especially IAs)</li> <li>• Cross-border Marine Spatial Planning: Strategic, region-wide planning is needed—treating the Baltic as a single ecosystem.</li> <li>• Standardisation of Regulation: Align legislative interpretations and permitting procedures across Baltic countries to streamline offshore development.</li> <li>• Integrated Digital Tools (e.g., Digital Twins): Use advanced simulations for better planning and ecosystem forecasting at the policy level.</li> <li>• Balanced Data Sharing Frameworks: Develop guidelines for sharing non-sensitive private-sector data to support evidence-based policymaking.</li> <li>• Policy for Nature-Positive Offshore</li> </ul>

	<p style="text-align: center;">inclusion</p>	<p>Energy: Align energy generation goals with marine biodiversity and climate objectives through coherent policies.</p> <ul style="list-style-type: none"> <li>• Support Multi-use Platforms: Though not yet central to planning, multi-use platforms offer potential and need evaluation within the Baltic context.</li> <li>• Long-Term Ecosystem Commitments: Require developers to factor in seagrass and carbon sink ecosystems in planning and permitting.</li> <li>• Collaboration Mechanisms: Facilitate dialogue and cooperation between industry, researchers, and policy bodies to align science, business, and environmental goals</li> </ul>
<p><b>IA3 (Session IV)</b></p>	<ul style="list-style-type: none"> <li>• Environmental Impact: Urgent need to assess and mitigate underwater noise, seabird decline, and ecosystem degradation due to increasing maritime activities.</li> <li>• Data &amp; Monitoring Gaps: Need for better</li> </ul>	<ul style="list-style-type: none"> <li>• Evidence-Based MSP: Use of soundmaps, seabird data, and risk assessments to guide spatial planning and reduce ecological harm.</li> <li>• New Planning Concepts: Introduction of Mariparks as multi-use, ecosystem-based</li> </ul>

	<p>integration of environmental data (e.g., noise, seabird migration) to support effective planning.</p> <ul style="list-style-type: none"> <li>• Complex Maritime Use: Growing pressure to reconcile competing demands (energy, food, biodiversity) in already busy sea areas.</li> <li>• Systemic Transition: Need to scale up decarbonisation efforts and integrate stakeholders across maritime sectors.</li> </ul>	<p>zones aligning with EU Green Deal goals.</p> <ul style="list-style-type: none"> <li>• Scalable Models: Green Shipping Corridors serve as testbeds for broader policy frameworks in decarbonisation.</li> <li>• Governance Innovation: Emphasis on collaboration, shared infrastructure, and centralised management to streamline policy implementation.</li> </ul>
<b>IA4 (Session II/World café)</b>	<p>1. Sustainable Fisheries and Harvesting</p> <ul style="list-style-type: none"> <li>• Rebuild depleted stocks (e.g. Baltic cod); need for environmental restoration.</li> <li>• Tackle overfishing, IUU fishing, and climate impacts.</li> <li>• Improve data for stock assessment and selective gear design.</li> <li>• Make the sector attractive to younger generations.</li> <li>• Clarify sustainability criteria and quota systems.</li> </ul> <p>2. Sustainable Aquaculture</p> <ul style="list-style-type: none"> <li>• Overcome licensing,</li> </ul>	<p>1. Sustainable Fisheries and Harvesting</p> <ul style="list-style-type: none"> <li>• Promote ecosystem-based fisheries management (e.g. via ARCFISH, new gear tech).</li> <li>• Integrate fisheries needs into MSP and R&amp;I priorities.</li> <li>• Link to Green Deal goals and Waterborne Partnership for low-emission fleets.</li> <li>• Use scientific advice to guide quotas and restoration plans.</li> <li>• Support small-scale fisheries through funding and governance.</li> </ul>

	<p>spatial, and biosecurity challenges.</p> <ul style="list-style-type: none"> <li>• Expand sustainable species and improve feed sources.</li> <li>• Enhance food safety and traceability.</li> <li>• Increase resilience and performance of production systems.</li> </ul> <p>3. Circular Blue Bioeconomy</p> <ul style="list-style-type: none"> <li>• Reduce waste: up to 70% of aquatic biomass currently underused.</li> <li>• Overcome market, regulatory, and funding barriers (e.g. “valley of death”).</li> <li>• Improve consumer acceptance of new bio-based products.</li> <li>• Strengthen links between seafood production and biotech sectors.</li> </ul>	<p>2. Sustainable Aquaculture:</p> <ul style="list-style-type: none"> <li>• Demonstrate innovative systems (e.g. IMTAs via BlueBoost) across sea basins.</li> <li>• Feed Life Cycle and economic assessments into regulatory updates.</li> <li>• Link aquaculture innovation to Smart Specialisation Strategies.</li> <li>• Collaborate with EU platforms (e.g. EATiP, Animal Health Partnership).</li> <li>• Integrate into MSP with multi-use zones and ecosystem-based approaches.</li> </ul> <p>3. Circular Blue Bioeconomy</p> <ul style="list-style-type: none"> <li>• Develop high-value products (e.g. collagen, GAGs via FOODIMAR).</li> <li>• Advance circularity through biorefinery approaches.</li> <li>• Align with EU initiatives (e.g. CBE JU, FutureFoodS).</li> <li>• Promote cross-sector synergies with agriculture and aquaculture.</li> <li>• Enable market uptake through R&amp;I calls and</li> </ul>
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		support schemes.
<p><b>IA 5 (Session III)</b></p>	<ul style="list-style-type: none"> <li>• Climate Data Gap: 50% of stakeholders don't use climate information; others find it too complex or fragmented.</li> <li>• Limited Access &amp; Awareness: Municipalities and local actors struggle with understanding and using climate data.</li> <li>• Need for Stakeholder Engagement: Communities lack tools and support for co-creating climate adaptation strategies.</li> <li>• Knowledge Integration: Disconnection between natural sciences, engineering, and social sciences hinders effective response to marine extremes.</li> <li>• Preparedness for Marine Extremes: Insufficient experience with long-term sea-level rise and other marine-related hazards.</li> <li>• Social Resilience Priorities: Need for</li> </ul>	<ul style="list-style-type: none"> <li>• Community Action Plans: Support local co-designed strategies for adaptation and resilience at the municipal level.</li> <li>• Living Labs Approach: Use bottom-up, place-based experiments to test solutions and gather local input.</li> <li>• New Research Partnership (2027–2037): EU Partnership on Social Transformation will inform policies through research on work, education, and social protection.</li> <li>• Partnership Synergy: Collaboration between blue economy and social transformation initiatives can enhance resilience outcomes and research uptake.</li> <li>• Interdisciplinary Research (Metascales): Integrates science, engineering, and Flexible Planning Models: Shift from fixed predictions to dynamic, pathway-based resilience</li> </ul>

	research into social transformation, climate-driven skill shifts, and fair transitions.	scenarios.
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