



**Baltic Blue Biotechnology  
Alliance project (2016–2019)**

# **Findings from the Alliance mentoring and accelerator programme**



**RECOMMENDATIONS  
ON FUTURE ACTIONS  
WITHIN BLUE BIOTECHNOLOGY  
IN THE REGION**



EUROPEAN  
REGIONAL  
DEVELOPMENT  
FUND

The Baltic Blue Biotechnology Alliance project was  
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IN THE REGION

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*with the support of the entire  
Baltic Blue Biotechnology Alliance community*

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# PREFACE

**Blue Biotechnology** is a key enabling technology for sustainable blue growth. Although considerable advances have been made in the sector in recent years, development of market-ready blue biotechnology products and services still needs viable transnational and transdisciplinary cooperation along the entire value chain, from R&D to marketing. **The aim of this report** is to show the future steps considered necessary to further support and accelerate blue biotechnology product development in the Baltic Sea Region (BSR), based on evidence provided by three years of cooperation within the Interreg BSR project Baltic Blue Biotechnology Alliance (*Alliance*). It contributes to setting the future research agenda as well as outlining the need for a permanent support structure.

With this report, we provide information and recommendations for the formulation of related future innovation policies as well as national and European funding programmes (ERA-Net, Interreg, BANOS CSA) in order to take the right steps in advancing blue biotechnology as a key enabling technology for blue bioeconomy in the BSR. We also aim to help R&D and support institutions throughout the Baltic Sea Region to strategically position themselves within the overall Baltic Sea region cooperation structure to achieve maximum complementarity and synergies. Finally, we recommend other cross-cutting solutions that enhance the region's innovation capacity, and we present our vision of the future of the *Alliance*.

In developing the set of recommendations, we analysed R&D capacities in the BSR (within the *Alliance* but also relevant capacities beyond it) as well as the current political framework. In doing so we took into account the profiles and needs of the variety of the more than 30 blue biotechnology SMEs and start-ups as well as infrastructures, which had enrolled in the *Alliance*, seeking assistance, and the ability of the current *Alliance* partners to respond to the service requests of these cases.

# EXECUTIVE SUMMARY

The Baltic Blue Biotechnology Alliance project (*Alliance*) was developed in response to the 'EU Sustainable Blue Growth Agenda for the Baltic Sea Region'. Adopted by the European Commission in May 2014, the agenda provided the blueprint for harnessing the region's strengths to boost innovation and growth in its maritime sector.

Whilst it recognised the significant potential of blue biotechnology for the region, it also showed that the sector was still immature. Actors, expertise and resources within R&D were scattered across the region, working in isolation, with hardly any tangible products on the market.

A more strategic approach for development across the Baltic Sea Region was needed.

As will be shown in this report, the *Alliance* has achieved this.

By pooling the available national capabilities, not only has it enabled start-ups, spin-offs and SMEs access to the variety of facilities, resources and expertise available throughout the region and beyond. Most importantly, the systematic transnational science-business cooperative approach has led to many new product developments. They bear witness to the enormous business potential inherent not only within the specialised field of blue biotechnology, but also the wider sphere of the blue bioeconomy. Still more, the products showcase the contribution of the sector to the sustainable development of the Baltic Sea Region.

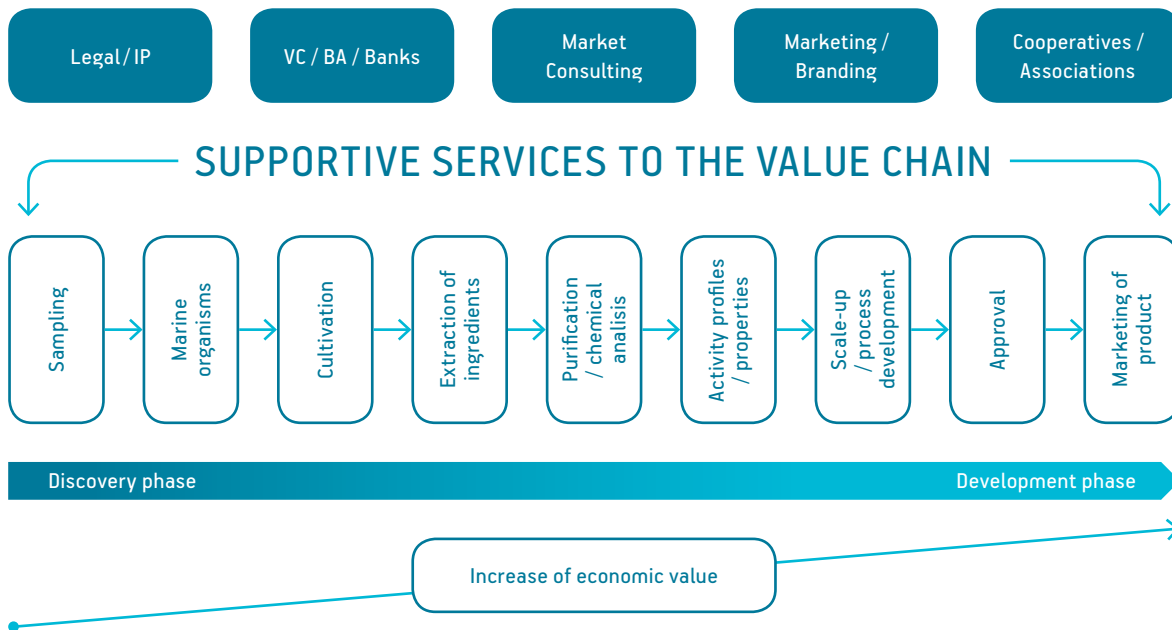


Figure 1 Blue biotechnology value chain – SUBMARINER Network.

This report presents the setup and the achievements of the past three years of work within the Baltic Blue Biotechnology Alliance (Interreg BSR 2016-2019) project, the associated lessons to be learned and recommended next steps.

In addition, the report comprises **recommendations for a future pan-Baltic research agenda**. These are based on the **analysis of the competences, resources and interests of the region's major blue biotechnology R&D institutions**; their **projected R&D needs and foresights** within blue biotechnology in the region as well as the **recorded innovation barriers** experienced during the *Alliance's work with real client cases*.

**The set of recommendations is intended to serve as a useful guide for the development of macro-regional innovation strategies; the respective (national and macro-regional) future R&D funding programmes such as BANOS as well as for national academies of science and individual R&D institutions considering their own strategic positioning in the region.**

## Background and motivation for initiating the Baltic Blue Biotechnology Alliance project

Overall, the Baltic Sea region is well placed in using blue biotechnology as a driver for its blue economy development:

- Blue biotechnology is part of many high-level strategies and policies, such as UN Sustainable Development Goals, the EU Blue Growth Strategy, the Marine Biotechnology Strategic Research and Innovation Roadmap, the EU Bioeconomy Strategy or the European Blue Bioeconomy Roadmap. The Nordic Bioeconomy Roadmap as well as many national strategies throughout the Baltic Sea Region build on these strategies.
- The marine biodiversity of the Baltic Sea region – with its considerable salinity gradient, shallow waters and ice-cold winters – provides great untapped potential for exploration.
- Local – and global – markets already display a demand for products based on aquatic resources in various economic areas such as food, cosmetics, and pharmaceutical products. Moreover, sustainable, climate-smart, fact-based innovation is becoming the new norm for blue biotechnology start-ups and SMEs.

- The BSR has strong R&D expertise in the fields of blue and industrial biotechnology, marine biology, chemistry, and chemical engineering and is pioneering in basic and applied science as well as technological development. Baltic Sea Region research institutions have been partners in at least 17 transnational EU research and innovation projects (Horizon2020, EASME, ERA-Net, BONUS or Interreg).
- To meet the educational demands of a changing economy, there is increased interest within BSR institutions to develop and offer advanced education programmes for future scientists and bioentrepreneurs.

However, in the highly specialised and research-driven blue biotechnology sector, individual Baltic Sea Region countries still do not have all the capacities and resources required to form the complete value chains needed in turn to realise full-scale commercial product development (Figure 1). This was first observed in the SUBMARINER Roadmap (2013). The BSR needed a networking platform to create the critical mass of actors to converge and convert science outputs into marketable products.

As a response to this need, the *Alliance* project was set up under the auspices of the SUBMARINER network. Led by GEOMAR Helmholtz Centre for Ocean Research Kiel, the consortium originally consisted of 26 project partners. These included some of the major research institutes of the region, business and technology parks, an initial group of SMEs as well as the SUBMARINER Network secretariat as the main communication and coordination hub.

Over the course of three years, these partners developed an **accelerator programme** that carries out the continuous search for “cases”; pitching and matchmaking events as well as a **mentoring programme with a flexible service offer**, which was piloted with all 26 case studies.

As a matter of fact, one of the most important elements of work in the *Alliance* was that all partners acted as “**blue detectives**”. They continuously and proactively looked for interesting potential actors with disruptive blue biotech ideas. As a result, 16 more cases applied and were admitted to the mentoring programme – **resulting in a total of 26 cases**.

Among the 26 *Alliance* cases, 17 were companies, five were affiliated with research institutions and four belonged to other organisation types such as municipalities. Cases originated from all around the Baltic Sea Region (and beyond, with one case coming from the Netherlands). This highlights the overall success of the recruitment strategy and the plethora of innovative blue biotech ideas (see Figures II, III, IV and V). Cases enrolled in the *Alliance* joined at all stages of the value chain, from bioprospecting to full commercialisation. 66% of cases used algae as a biological resource for developing their products. Products targeted a broad spectrum of market applications, from food and food supplements to healthcare and cosmetics, bioremediation, materials, and energy.

Beyond the general mentoring support, specific support was given to cases in communication and promotion (22 cases) and scientific/ technical support (20 cases). This shows the high need for scientifically sound data and proven concepts for advancing blue biotechnology product development in the BSR. This was followed by business support (17 cases) and promotion of the cases at different types of events (13 cases). The least frequently requested support category was legal advice (7 cases).

## Findings from three years of *Alliance* mentoring practice

### Without ‘blue detectives’ – no new cases:

- In contrast to the world of IT start-ups, the community of potential new blue business cases with people behind them who really want to act as entrepreneurs rather than researchers, is very small. Before being able to assist any kind of new blue business ideas, all *Alliance* members had to intensively and **pro-actively search for good potential cases**.
- The experience of the various recruitment activities showed that even in times of border-crossing interdisciplinary social networks, **individual personal contacts are indispensable to lower barriers and create mutual confidence**.

### Finding the right mix of mentors is crucial:

- Cases were always assigned to **two mentors: one main mentor acting as the national contact point to the**

1 Service receivers, i.e. companies, spinoff projects of universities, municipalities etc. with a new business idea.

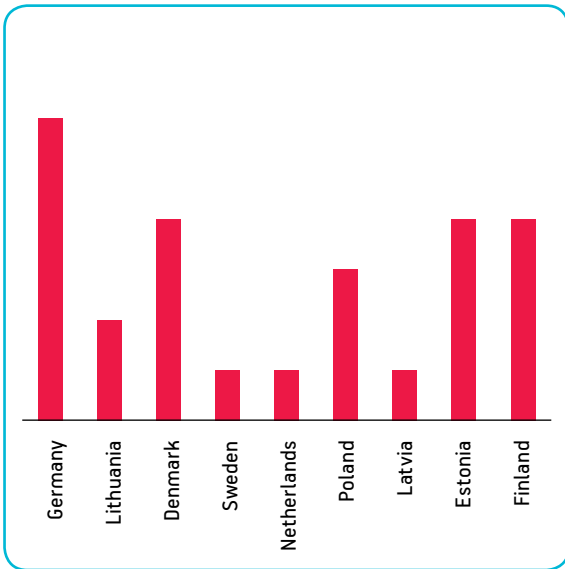


Figure II Country of origin of cases.

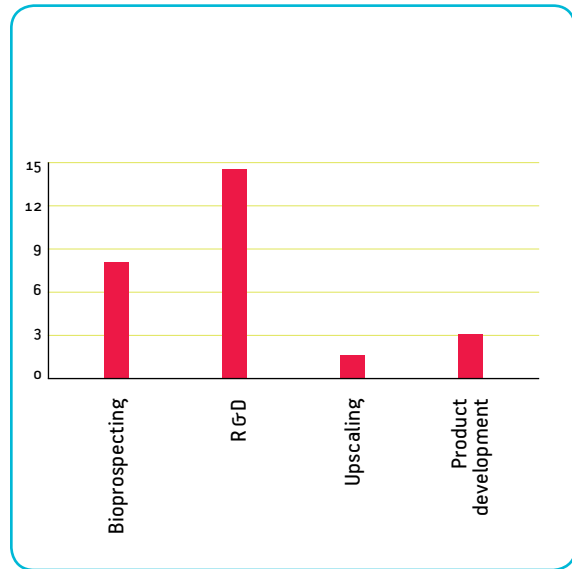


Figure III Value chain stage of the cases when entering the Alliance following the simplified value chain stages.

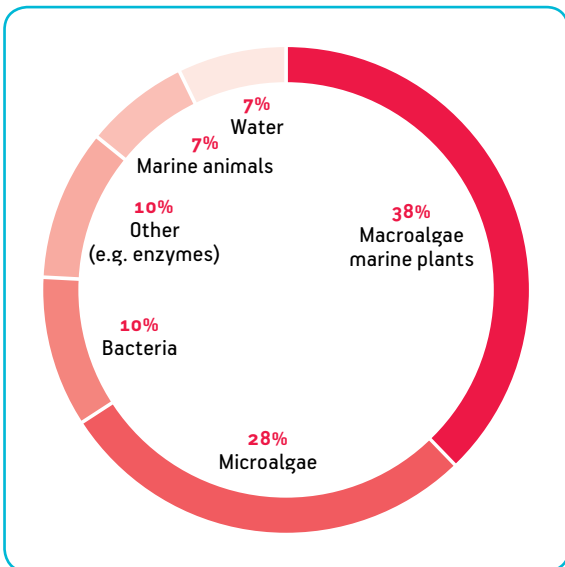


Figure IV Used biological resources for product development.

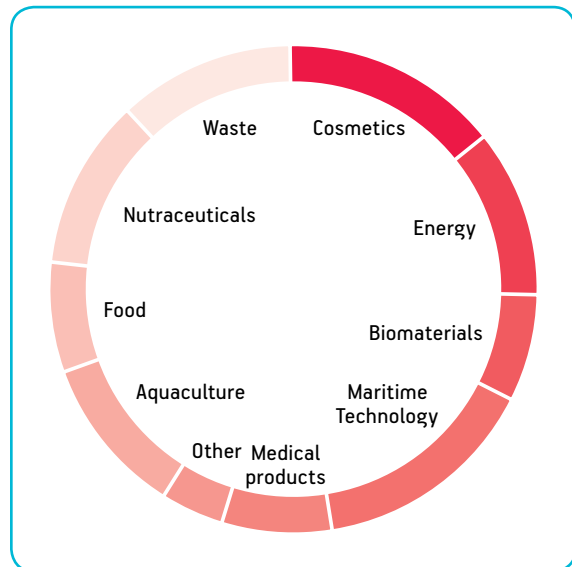


Figure V Target markets of offered products.

case and the second coming from the most relevant field of expertise for the case. One of these two mentors conducted an initial assessment of the respective scientific, technical, and business potential and the related needs of the case. Following this, the main mentor introduced the case to the various possibilities of support offered by the *Alliance* and acted as mediator between the case, the other mentors from the *Alliance* network (the mentors' forum) and the other cases.

- Mentoring works best when the mentor is genuinely interested in the cause of a case, leading to a win-win situation for both parties.
- Often cases can best help each other. Rather than seeing each other as competitors, cases gain from collaboration with fellow entrepreneurs throughout the region in order to jointly create the market conditions necessary for their individual success.

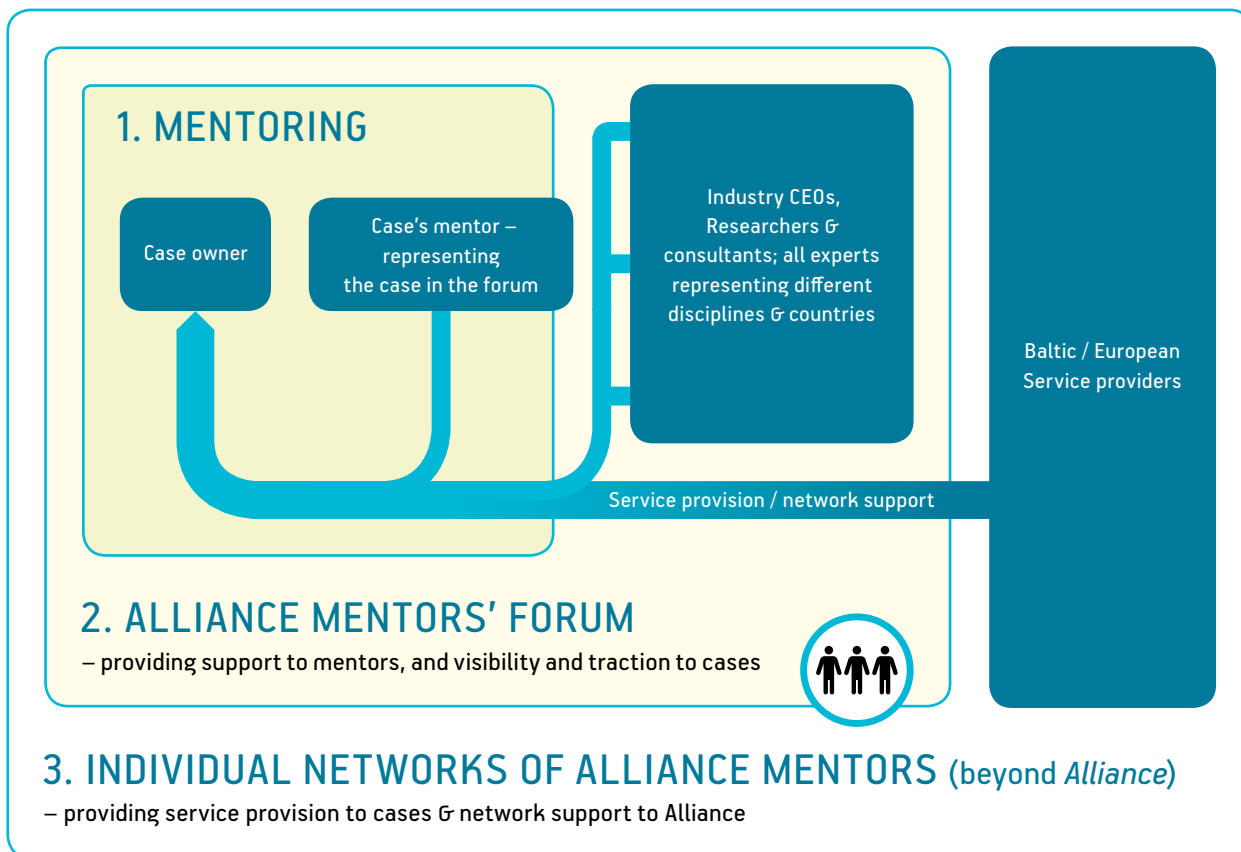


Figure VI Scheme presenting the mentors' forum of the Alliance, and relationship with a case.

- Even **the initial assessment often proved to be a crucial service** to cases, often initiating a refocus of their initial business idea and strategy – and thus saving them a lot of expensive 'learning' time.
- **One mentor on their own will often not be able to meet the demands of a case;** a genuine network of cross-disciplinary expertise is required as to guide a case through the entire product development value chain.

### Networking and matchmaking among blue specialists are in high demand by all:

- The networking of cases and mentors facilitated by the SUBMARINER Network secretariat through **regular telephone conferences (the mentors' forum)** enabled Alliance cases and mentors to efficiently present themselves, interact with peers and search for partners (Figure VI).
- Whereas initial and follow-up activities could be settled through virtual communication forms; these **cannot replace physical meetings and get together**s, which

are essential for pitching, matchmaking, valid assessments and creation of true partnerships.

- **Matchmaking led to partnerships across all elements of the value chain**, from biomass sourcing to necessary equipment to market access. Against this background, it is critical to understand the Alliance as part of the SUBMARINER Network, offering transnational networking across all bioeconomy sectors and actors. Even though scientific/ technical support often requires specialised blue biotechnology knowledge, the matching of partners covers a much greater span.

### Scientific/ technical support forms the heart of the transnational Alliance service:

- The most important and unique feature of the science-business partnerships, created through the match-making services, was the fact that the **scientific/ technical support was 100% tailored to the needs of a case.**
- As foreseen in the needs analysis for the initial Alliance project, provider(s) of the scientific or technical



expertise were often **experts and infrastructures from another country**.

- Whereas within the *Alliance* project duration it was possible for scientific institutions to offer such services as 'part of the project', it remains to be seen how details on service delivery or access to infrastructure and biomaterial can be negotiated between cases and the given mentor or service provider on transnational basis outside a specific project framework. Such contract negotiations often prove to take up a lot of time as they are outside the realm of responsibility of the people directly involved.
- The **biological resources** available at *Alliance* partner institutions represent a unique and unequalled resource due to the variability of organisms and the grade of specialisation on brackish and Baltic Sea organisms. As will be shown later, substantial efficiency gains can be achieved from maintaining and expanding an overview on what is available in which institution for further research.
- Those cases dealing with larger marine organisms (e.g. macroalgae or mussels) are not so much in need of such biobank samples, but **of access to large scale biomass** in view of commercial production. With the *Alliance* being part of the larger SUBMARINER Network, valuable contacts could be created between relevant biomass producers and cases in need of this biomass.

### **Business awareness raising and development services are also vital in early stages of the product development chain:**

- There are not many experts who unite blue biotechnology expertise and business know-how in one person (and are also ready and willing to act as a case mentor). To remedy this skills gap, the *Alliance* developed a quick business assessment guide and trained its mostly scientific mentors on how to apply it in their work with cases. Thus, the *Alliance* is also important in raising capacities within universities or research institutes by sensitising their staff for potentially good spin-off ideas.
- In future, it is the ambition to recruit **more business service providers** and entrepreneurs to join the *Alliance* so as to address the demand for business development expertise by cases.

- Furthermore, the *Alliance* will continue to **create, sustain and intensify collaborations with other existing accelerators**, such as the BlueBioValue accelerator of the Portuguese BlueBio *Alliance* or the various programmes under the EU Blue Invest Platform. It is important, however, that these institutions and programmes not only recognise but also contribute towards the important work undertaken by the *Alliance* in searching for and preparing cases to become 'investment ready'.

### **Templates on common legal issues – but individual expertise required on case by case basis**

- The recruitment of an expert for awareness raising on legal issues and development of a training material package comprising **templates and guidelines for contracts**, IPR protection, and mutual agreements were equally beneficial for cases and mentors.
- These templates now provide the basis for e.g. the basic **agreement between mentors and cases** in view of 'non-disclosure', which is the pre-condition for a good mentor-case relationship.
- Further legal support has, however, so far proven to **differ from case to case**.

### **The *Alliance* mentoring & service offer mix has been proven to accelerate concrete blue biotech product development**

- With the help of the *Alliance*, three cases were able to **commercialise newly developed products** (Baltic Probiotics, Furcella, and KosterAlg) and two cases had ready prototypes (CRM and Biome).
- Three more cases won prestigious **innovation awards**; enrolled in international accelerators and succeeded in **securing further investments** (Vetik, SFTec, and Hoekmine).
- More than half of the *Alliance* cases have concluded **partnership agreements with suitable partners** across their value chain, within as well as outside of the *Alliance* network.
- **All partners reached the next technology readiness level**

The *Alliance* has successfully established and piloted a new niche innovation and product development support mechanism operating across borders in the BSR.



Figure VII The size of boxes corresponds to the number of *Alliance* cases contributing to the different UN Sustainable Development Goals (SDGs).

### Supporting the Alliance cases means supporting the UN SDGs

- The *Alliance* has developed a set of criteria for taking cases on board, which puts strong emphasis on the factor that their new blue economy idea should be not only innovative, but also meet all sustainability criteria.
- As shown in graph VII, all cases truly contribute to advancements in reaching the UN Sustainable Development Goals.

### Recommendations for advancing R&D within blue biotechnology in the BSR

In addition to working with 26 cases, *the Alliance surveyed 24 participating R&D institutions in the Baltic Sea Region with a view to their competencies, activities and interests in the field of blue biotechnology.* Even though non-exhaustive, the analysis provides a good snapshot of the existing technological expertise, know-how, and

biological resources as well as R&D focus areas including applied science.

A wide spectrum of competencies, resources and interests are available within blue biotechnology, namely within chemistry, biology, ecology, and engineering. Among the most popular fields of study were production of algae (both micro- and macroalgae) and bacteria (for example marine bacteria, cyanobacteria) for a number of applications from food and feed to highly specialised markets and bioremediation.

Finally, the *Alliance* assessed the current strengths and opportunities of the Baltic blue biotechnology research, development, and innovation ecosystem according to the five thematic areas of the Marine Biotechnology Strategic Research and Innovation Roadmap.

The resulting recommendations focus mainly on the initial R&D stages of product development chains, but some innovation opportunities are also included:

**1 Access to aquatic biological resources:** Baltic marine and freshwater ecosystems host a thriving biological diversity of organisms, including fungi, micro- and macroalgae, bacteria, sponges, and mussels. Access to existing biological culture collections (e.g. microbial biobanks, microalgae collections), different types of biological resources in nature (e.g. macroalgae) or as yet undiscovered bioresources can open possibilities for collaboration and further advancement across the value chain.

The *Alliance* has created a catalogue that lists the biological resources and culture collections of the *Alliance* partner R&D institutions in the BSR as well as the respective contacts at the partner institution.

**Recommendation:** Further integration of culture collections for creation of a master BSR-wide catalogue as well as the connection of the *Alliance* with other EU blue biobanks is highly important to avoid generating parallel structures. Moreover, further training and well-trained personnel are necessary to accomplish the implementation of the Nagoya Protocol, regulating transnational access and the benefit-sharing of biological resources.

**2 Sustainable integrated biomass production systems relevant for the Baltic Sea Region:** Aquaculture and blue biotechnology are two distinct but highly intertwined sectors. Aquaculture can supply blue biotechnology with primary (e.g. macroalgae, fish, molluscs) and secondary resources (e.g. industrial processing biogenic residues and side-streams) – whereas blue biotechnology is crucial in all steps from growing biological resources (including fermentation, ecology engineering) to recovering biomaterials from process side-streams. Therefore, the *Alliance* covers both sectors.

**Recommendations:** Further R&D needs have been identified in sustaining and further developing knowledge in:

- Production and processing of aquatic biological resources into added-value products, technology

upscaling, as well as biorefinery technologies to minimise waste.

- Recirculating Aquaculture Systems (RAS) for land-based fish production combined with microalgae culture, vermiculture, insect production, or aquaponics have been suggested for recycling nutrients and minimising water exchange.
- Integrated Multi-Trophic Aquaculture (IMTA) systems combining fish farming with mussels and/or seaweed are currently under development in many countries, but there are still numerous open questions about how to best to realise such combinations.
- Improved understanding of the environmental and socio-economic benefits, risks, and opportunities associated with integrated aquaculture technologies, also at a larger scale.

Furthermore, there is a need to foster inter-disciplinary and inter-technological collaborations both in applied science but also for developing auxiliary technologies for scaling up the aquaculture sector. In particular, suitable production systems should be identified as well as biomass harvesting, processing and biorefining technologies in cold, shallow, brackish BSR waters, also at scale.

**3 Design new materials supporting the circular economy:** On a global scale, we are facing a shortage or an increase in the cost of many raw materials. In addition, materials are produced that withstand degradation over long time scales and may harm the environment.

**Recommendations:** Recycling and circular economy concepts (along with more responsible consumption) need to be facilitated, and traditional industries should adapt to these challenges. When carefully planned and used, redirected side-streams can be a resource for biotechnological use. For example, nutrient-rich wastewater can be used to cultivate algae or shellfish for energy or other added-value products and simultaneously clean the water. The excess biomass could be used as a fertiliser in agriculture. Bioremediation technologies that can contribute to cleaning water or scavenge for nutrients and carbon should be studied in more detail. The political framework for providing

ecosystem services, for example in bioremediation, should also be improved.

4

**Align blue biotechnology R&D with product market trends, challenges and opportunities:** Linking R&D with innovation pathways and market applications at an early stage, for example at the bioprospecting stage, can accelerate product development. It also increases the cost efficiency of R&D by reducing costs and minimising risk of failure. Support structures like the *Alliance* are able to bridge the gap between technological innovation and R&D on a transnational level. The *Alliance* also accepts companies that are at the pre-seed stage and still need to develop a minimum viable product (MVP). This stage already needs considerable financing for R&D, e.g. to develop and test a prototype.

**Recommendation:** Since the sector is so small, it is very important that clusters organise matchmaking events, thus bridging the gap between universities, research institutes, large industry, SMEs, and start-ups. Although hackathons and short-term matchmaking facilities serve their purpose in boosting innovation, these have to be embedded within more long-term continuous mechanisms which follow a structured development pathway and provide a safety net that fosters ideation and risk-taking by start-ups and SMEs.

The *Alliance* accelerator programme, supported by the interdisciplinary mentors' forum, fills this gap with its fully customised mentoring programme for blue biotechnology start-ups and SMEs. Although this mechanism is ready and operational, funds are needed for the *Alliance* to continue provision of quality support and further enhancement of innovation capacities in the BSR.

5

**Mapping capacities and resources to boost blue biotechnology R&D and innovation in the BSR:** Blue biotechnology is an emerging field with great potential. However, it is still in a pre-development stage. A long road is still ahead to develop the sector further and scale up production and markets. The *Alliance* developed a database for cataloguing multi-purpose research infrastructure available to *Alliance* R&D institutes and companies. The analysis showed that the BSR lacks multi-use, open access, pilot-scale facil-

ities relevant to (blue) biotechnology, which makes it difficult to test, validate and de-risk innovation at scale. Some large-scale facilities exist, such as the Kalundborg Forsyning photobioreactors, but they are often not accessible and others are not modular.

**Recommendation:** The *Alliance* database of relevant blue biotech experts, institutions and their infrastructures is a critical resource for creating product development chains. The mapping of multi-use, open-access, pilot-scale facilities should be expanded, and visibility of and accessibility to facilities be enhanced. Furthermore, the database should be connected with other similar database tools in Europe to increase visibility and access to end users and boost returns of capital investment into infrastructure.

## Eight cross-cutting recommendations for the continuation and expansion of the *Alliance* (Vision for the *Alliance*)

A critical mass of blue biotechnology actors and activities is necessary for sustainable development and support of blue biotechnology innovation in the BSR. To tackle innovation challenges, intensive clustering is needed. Even though national blue bioeconomy clusters are slowly evolving also at sub-regional or national level<sup>2</sup>, there is also the concrete need for tight and unimpeded transnational collaboration between these actors and activities in order to enable cross-fertilisation of ideas and support of this highly specialised sector. Transnational network hubs play a key role in connecting partners and creating complete value chains, transferring the technologies, creating innovation banks, and fostering cross-cutting innovation.

The *Alliance* network's functionality is a result of good tools but also the hard work and expertise of the blue detectives and mentors to reach out, expand, and invite their networks into the *Alliance*. This was only possible because blue detectives and mentors had a personal interest, availability, capacity, and support for reaching out.

2 Examples are in Germany the "BaMS" association (a 5-year long innovation project on "Bioeconomy at Marine Sites" financed by the Federal Ministry of Education and Research) and in Sweden the 'National Blue Economy cluster at the Marine Station Kristineberg'.

## 1 Enlarge and broaden the *Alliance* network

As noted above, it is important to continuously broaden the scope of the *Alliance* partnership to intensify collaboration and incorporate:

- The additional set of 15-20 R&D institutions active throughout the Baltic Sea Region in fields relevant to blue biotechnology,
- The relevant business support institutions including incubators and technology parks,
- The general 'spin-off' and 'start-up' assistance offices, often being part of the universities or chambers of commerce, so as to raise their awareness that they can send any relevant 'blue clients' to the *Alliance* accelerator,
- Companies, who are the potential end-users and/ or clients for the start-ups and SMEs in view of blue biotechnology products and services developed,
- Business angels, funding agencies as well as investors to provide the necessary finance to the start-ups and SMEs.

## 2 Continue to integrate outputs and results from specific research projects

It is vitally important to jointly capitalise on knowledge generated in the *Alliance* and other projects, especially topic-specific knowledge, by integrating tools and findings into the knowledge base of the *Alliance's* 50+ partners. The SUBMARINER Network, acting as an umbrella "blue cluster" coordinating the *Alliance* actors, leverages generated data and knowledge for triggering future action, empowering key actors to make knowledge-based decisions. Supported through the Blue Platform project (2018–2021, Interreg BSR) and coordinated by the SUBMARINER secretariat, members currently analyse and combine findings of several thematic BSR-related "blue bioeconomy" projects, including the *Alliance*, to increase visibility of project achievements as well as providing recommendations for alignment of future funding and legislation.

## 3 Continue to remove communication barriers among actors across the value chain

As already pointed out by the ERA-MBT project, lack of communication among actors across the value chains can be a major innovation barrier. As part of the ERA-MBT, a tool was also developed called "Preferred mechanism for bringing ideas to market" with the aim of addressing the communication challenges among the actors in the value chain<sup>3</sup> and improving communication, thereby increasing the success rate of cases. The tool is currently integrated into the 'training package for mentors' under the currently ongoing follow-up project Alliance+.

Indeed, mentors have an important function as mediators and translators between the various actors across the product development chain, as match-making can only work out if the various actors involved properly understand each other's needs and expectations.

Experience shows that communication barriers do not only exist among actors from different countries or between researchers and entrepreneurs; but also between different science disciplines. Even though the *Alliance* has already managed to improve this communication and thus accelerate innovation development, more work still needs to go into streamlining expectations, communication and language between the actors.

## 4 From project to a continuous transnational blue assistance programme

The SUBMARINER Network plays an important role in coordinating efforts towards knowledge integration on a more systematic and long-term basis.

On the political level, the current update of the EU Strategy for the BSR (EUSBSR) and HELCOM Baltic Sea Action Plan, which in turn will influence the future ERA-Net, Interreg, and BANOS funding programmes – are creating an important foundation to enable the long-term continuous support ecosystem. With that in mind, we highly support any move that would allow more extended durations of support projects from currently three-year periods to longer durations (e.g.

within Interreg). Such longer projects would enable a continuous absorption of benefits across all relevant actors in the Baltic Sea Region.

The business plan scenarios developed under the *Alliance* project show that it may be financially possible to continue providing basic network and matchmaking services on a small scale and on a self-sustained basis through contributions from the network members. The sustained operation of the accelerator services will, however, require strategic public or private funding.

Many of the funding possibilities are regional, which may prevent the use of transnational value chains. An inter-regional funding pool could solve this problem. For example, a transnational fund based on common challenges and animating RIS3 priorities could be made available for flagships. SUBMARINER Network as a flagship already has the mandate to help the EUSBSR reach its targets, but is not receiving strategic support and operates through collecting membership fees and participating in public-funded projects (Interreg, Horizon); a common fund could support operations of the flagship.

Furthermore, a trans-national innovation voucher system would benefit blue biotechnology start-ups and SMEs in the BSR and beyond, as it would allow financing the *Alliance* acceleration services. The innovation voucher system could be financed by European Regional Development Funds from the Baltic and Nordic regions and states. A new mechanism has been examined by the EU since 2018 and is fully aligned with Research and Innovation Smart Specialisation Strategies (RIS3). It is called #Component5 and is a promising opportunity that would enable the long-term existence of the *Alliance* and its innovation support ecosystem, currently not covered by any transnational funding scheme.

## 5 Funding the *Alliance*, its mentors and cases, is an investment into the sustainable development of the BSR

The *Alliance* has shown that the support services developed really do accelerate blue economy business development throughout the region. They have also proven to be of high value to the research itself – in view of providing a continuous feedback on what is

required by the market and society. Moreover, as shown above, all cases contribute to the achievement of the UN SDGs within the region.

Financing the *Alliance* is therefore an investment of the Baltic Sea Region countries into their future.

## 6 Increase and improve coordination and cooperation with other blue accelerators

In parallel to the SUBMARINER Network and the *Alliance*, numerous new niche networks and specialty accelerator programmes exist or have emerged since 2016. Instead of creating yet another network infrastructure, intensification of collaboration between existing accelerators appears to be the most pragmatic way forward. The *Alliance* has already teamed up with other spear-heading networks, such as the EMBRC-ERIC, BioMarine, and the BlueBio *Alliance* of Portugal. The *Alliance* plans to intensify these existing collaborations in the near future and is open to new ventures.

## 7 Strengthen education and training in blue biotechnology and blue entrepreneurship

Currently, few training possibilities exist for scientific fields within blue biotechnology – mainly there are options for separate courses or specialisation options as part of biotechnology programmes.

- More high-profile educational programmes are needed to teach the relevant methods and techniques and encourage the young generation to engage in blue biotechnology. The inspiring success stories of the BBMBC<sup>4</sup> or ACES<sup>5</sup> programmes should have a beacon function and may lead to similar future initiatives in the BSR.
- Additionally, more bio-entrepreneurship education opportunities are recommended for future managers and business developers. This is especially relevant for important biotechnology city-clusters, for

4 The “Blue Biotechnology Master Course for a Blue Career” (BBMBC) was an EMFF funded project (2017-2018), which developed a Master’s degree in La Rochelle University addressing skills gaps in the Blue Biotechnology sector in Europe

5 ACES was an Erasmus Mundus two-year Master’s Degree in Aquaculture, Environment and Society.

example in Kiel, Tartu, or Helsinki, thus copying the success of Copenhagen Business School.

- Finally, we identified there is a lack of basic knowledge, especially connected to the harvesting, purification, and extraction of biomass among non-research professionals / workers.

## 8 Prepare a 'blue economy' funding guide

Actors along the (blue) biotechnology value chain are dependent on different types of financing. Financing depends on the specific needs (e.g. R&D, prototype development, upscaling, etc.) and funding sources can have geographical restrictions. Therefore, a **funding guide** within blue biotechnology would be of great value to assist the actors in finding appropriate funding solutions for their specific needs.

## The Alliance from Project to Service Offer: SUBMARINER Network

The *Alliance* is a unique structure within the BSR as it **serves both as a platform network for blue biotechnology researchers, as an innovation platform for blue biotechnology actors**, including start-ups, SMEs, business support organisations and R&D, and as a business accelerator programme for product development. The *Alliance* comprises more than 50+ actors who are experts in blue biotechnology providing services.

For the upcoming 18 months until January 2021, a selected number of core partners from the original *Alliance* will recruit relevant blue bioeconomy actors to join the *Alliance* to offer as well as receive services, and make *Alliance* financially sustainable by receiving funding for its services offered from sources other than Interreg.

Capitalising on the achievements and progress of the past years, we therefore continue to search for new *Alliance* members as well as cases. Through a whole series of pitching and matchmaking events and joint conferences throughout 2019 and 2020, we will provide numerous opportunities for new cases as well as *Alliance* members to present themselves and to familiarise themselves with the existing *Alliance* network.

## Applications are welcome by institutions as well as individual experts:

- Business parks as well as other accelerator and innovation programmes
- Specialists in business development and financing support, marketing and communication companies and experts as well as legal advisors, all interested in blue bioeconomy
- R&D institutions as well as potential spin-offs with suitable technical facilities, biological resources, scientific expertise
- Mentors, business coaches with experience and ability in biotechnology, impact of innovation, and sustainable development
- Start-ups and SMEs with a business idea within blue bioeconomy, seeking product development support in the Baltic Sea Region

**Strategic partners** are sought to support our *Alliance* platform and "accelerator" services:

- Blue clusters and regions attracted by blue bioeconomy and blue growth that can support our activities with expertise and resources
- Regional and national authorities, private foundations as well as public funding programmes interested in driving sustainable blue growth innovations

The *Alliance* seeks sponsors and supporters to fund excellent and **fully customised mentoring and service provision** to cases. Also, the *Alliance* seeks out strategic **funding** to enable background operations, such as the very successful and influential *Alliance mentors' forum* and the *Alliance blue detectives* that provide visibility for the *Alliance* services and scout "around the clock" for new *Alliance* cases.



To learn more visit:

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

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