



Stakeholder Seminar on Blue Economy

“Towards a Common Maritime Agenda for the Black Sea”

19 March 2019 in Istanbul

Concept paper

Workshop 1

Seizing the opportunities of research and innovation for a thriving blue economy

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Concept paper

Workshop 1

Seizing the opportunities of research and innovation for a thriving blue economy

Chapter 1

Introduction

This Stakeholder Seminar stems from the 2018 Burgas Ministerial Declaration¹, where the participating countries² committed to work on the setting up of a Common Maritime Agenda for the Black Sea in 2019. The Burgas Declaration lists the possible cooperation areas to be further developed under the Common Maritime Agenda. The purpose of the seminar is to gather input from the stakeholders in the region in the shaping of the Maritime Agenda.

The seminar is being organised by the Facility for Blue Growth project in cooperation with the European Commission and with the support of the Permanent International Secretariat of the Organisation of the Black Sea Economic Cooperation (BSEC PERMIS).

Experts for the region and beyond will share their vision and experience in developing actions and projects in the Black Sea, with a focus on six blue economy thematic areas. These areas in line with the priorities listed in the Burgas Ministerial Declaration and will be discussed during six parallel workshops. The workshop sessions will be highly interactive and will be flanked by a plenary opening session and a closing discussion. Workshops topics:

- ▶ 1) Research and Innovation
- ▶ 2) Connectivity
- ▶ 3) Tourism
- ▶ 4) Sustainability
- ▶ 5) Fisheries and Aquaculture
- ▶ 6) Blue Skills and Careers

The purpose of this paper is to help guide the discussions during the seminar. The next chapter (2) will provide a brief overview of the blue economy in the Black Sea. The final chapter (3) will present the gap analysis and list of indicative questions to be discussed by the participants during the workshop sessions.

¹ https://ec.europa.eu/maritimeaffairs/.../sites/.../burgas-ministerial-declaration_en.pdf

² Bulgaria, Georgia, Republic of Moldova, Romania, Russia, Turkey, Ukraine.

Chapter 2

Background: challenges and opportunities for blue growth in the Black Sea

The blue economy includes all economic activities related to oceans, seas and coasts³. It is an essential contributor to the national economic growth and job creation. The competitiveness and sustainability of the blue economy depend on the ability of the stakeholders to embrace and support innovation. Thus, the established activities⁴ need to be adapted to the current market demands and the environmental standards. At the same time the emerging sectors, which have significant growth potential, need to be supported.

The Facility for Blue Growth in the Black Sea (Facility) has analysed the state of the blue economy in the Black Sea sea-basin through a desk review of available secondary sources⁵. This analysis⁶ has been discussed, expanded upon, and validated through a series of workshops held with stakeholders across the Black Sea coastal countries, as reported on the Facility website⁷.

The outcomes of the national workshops⁸ confirmed that there is a significant potential for more and more sustainable blue growth and jobs through in the Black Sea. For example, only in Romania and Bulgaria combined the gross added value (GVA) of the blue economy in 2016 was EUR 2 billion. This resulted in about 200,000 jobs in those countries⁹. These figures could well increase in the future if the development of the blue economy is further promoted politically and supported with adequate public and private funding and investment¹⁰.

The performance in GVA and jobs creation strongly varies across the various maritime economic activities. Striking differences emerge when comparing activities among countries with respect to the: i) current levels of GVA and job generation (activities such as tourism,

³ A recent definition by the European Commission ([The 2018 annual economic report on the EU blue economy](#)) divides the sectors in the blue economy into: i) *marine-based activities*, that are directly undertaken over or under the oceans, seas and coastal areas (e.g. capture fisheries, aquaculture, offshore oil and gas, offshore wind energy, ocean energy, desalination, shipping and marine transport, marine and coastal tourism), and ii) *marine-related activities*, that use or produce material products and services related to the oceans and seas (e.g. seafood processing, marine biotechnology, shipbuilding and repair, port activities, communication, equipment, marine insurance and marine surveillance). The blue economy also includes those parts of the public sector with direct coastal and ocean responsibilities (national defence, coast guard, marine environmental protection, etc.) as well as marine education, research and observation.

⁴ for instance, fisheries, maritime transport maritime and coastal tourism

⁵ Based on a targeted analysis of Strengths, Weaknesses, Opportunities and Threats (SWOT) of the maritime sectors and marine and coastal capital at national and regional level (national administrations, regional studies in particular the scoping mission in support to [the development of Blue Economy and Integrated Maritime Policy in the Black Sea](#).

⁶ [Regional assessment of the Blue Economy](#)

⁷ <https://blackseablueeconomy.eu/publication-categories/deliverables>

⁸ <https://blackseablueeconomy.eu/our-events>

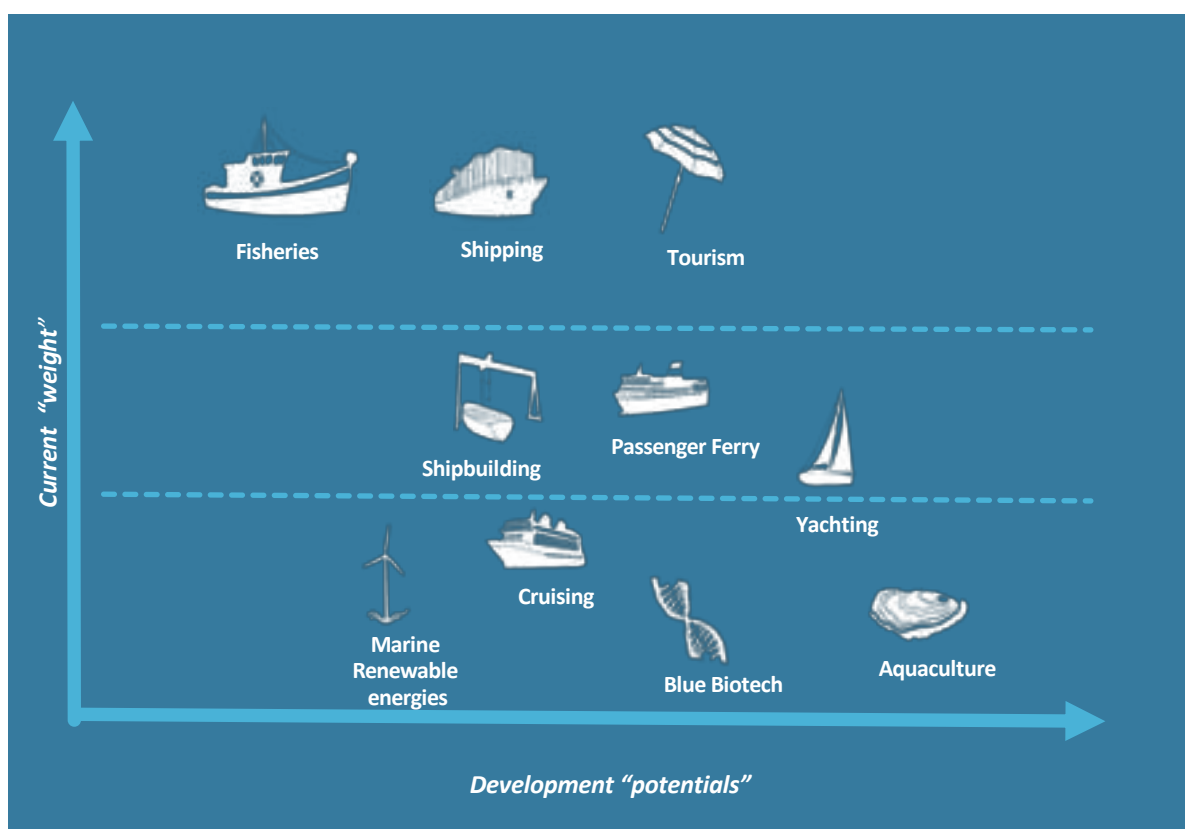
⁹ [2018 annual EU Blue economy report](#)

¹⁰ Innovation /education (for emerging sectors) or adaptation/training (for existing sectors)

fisheries, and shipping are the most relevant today), as well as ii) expected improvements of such performance in the future (tourism may still remain relevant, but other emerging activities such as yachting or aquaculture, which are expected to grow exponentially in the next years).

An overview of such heterogeneity regarding the weight of the sectors (GVA and jobs) and their potential of development is presented on figure 1. This will be the basis for discussion during the workshop aimed at identifying tailored support actions.

Figure 1. Overview of the state of play of the maritime economic activities in the Black Sea



Source: BGBS Facility (based on secondary sources and inputs shared during national workshops held in 2018)

Furthermore, discussions held during the workshops organised by the Facility pointed to a number of challenges. These challenges need to be addressed in order to ensure an economically, socially and environmentally sustainable blue growth in the Black Sea:

- ***Established activities in relatively ‘established’ and large economic sectors are not fully sustainable. Innovation should be fostered to maximise their positive impact for local communities and ecosystems.*** Relatively established maritime economic activities such as tourism, fisheries, shipbuilding, shipping, ferries require strong adaptation and innovation within existing business models and services offered in accordance with international standards (e.g. Ports services) or to meet customers demand regarding sustainability (e.g. ecotourism) to fulfil their economic potential and become more resilient. This would allow for the maximisation of their potential to boost local economic returns and provide for more stable and high-quality jobs (e.g. in tourism, in shipping).
- ***Emerging activities, currently representing a limited share of the overall GVA and jobs for the blue economy in the region. Those activities require greater support to fulfil their development potential.*** There are specific and valuable niche markets with large potential in the Black Sea - small-scale yachting, cruising and aquaculture - which could be instrumental in the diversification of above-mentioned ‘traditional’ sectors based on the re-use of the skills between their value chain (fisheries and aquaculture or fisheries and yachting (pescatourism)).
- ***Underdeveloped economic activities have still uncertain potential, due to the lack of availability of essential and applied marine research data. Hence further basic research is required to boost their growth in a sustainable manner.*** Such sectors include renewable marine energy (e.g. offshore wind) and biotechnologies, for which further research would allow for assessment of their actual potential and prospective pre-commercial opportunities.

Building on this analysis, the regional seminar aims to provide the stakeholders from various maritime and marine sectors a forum to discuss the main challenges and opportunities for blue growth in the Black Sea. The participants will be asked to identify strategic joint actions to address the bottlenecks. To do so, structured exchanges will be held through a series of “thematic workshops”.

Chapter 3

1. Objectives to be achieved in the Black Sea

How to foster marine and maritime research and innovation in the Black Sea?

Objective 1: Enhance the generation of ‘basic knowledge’ essential for blue growth in the Black Sea

Better scientific knowledge is essential to keep the marine and coastal environment healthy and assess the full potential of emerging blue sectors, for example marine biotechnologies, so

as to foster investments and future economic returns in those activities across the Black Sea. More urgently, the availability of scientific knowledge is also required to assess and mitigate the impacts of global climate change and the multiple natural and human-induced stressors (e.g. eutrophication, emerging pollutants, and litter) in the Black Sea. **Fully-fledged coordination amongst the research-performing organizations active in the Black Sea is vital to strengthen and provide scientific evidence, foster value-generation and ensure the preservation of a unique marine ecosystem.** Such cooperation, also reflected in the Strategic Research and Innovation Agenda (SRIA) and the Burgas Vision Paper¹¹, is essential to set-up indicators and approaches structures towards a common assessment of the performance of the blue economy in the Black Sea.

Objective 2: Upgrade the research infrastructures needed to support blue economy activities

In the Ministerial Declaration of Burgas in May 2018, Black Sea Coastal Countries and the Republic of Moldova recognised marine research and innovation as a core area of cooperation and a priority for boosting blue growth in the sea basin. Building and upscaling of critical support tools and research infrastructures, along with the uptake of technological development across more traditional (maritime transport, tourism, etc.) and emerging (renewable energy, aquaculture, etc.) blue economy sectors is essential in order to favour sustainable growth and harness Industry 4.0 potential in the Black Sea. For this purpose, **an effective cooperation amongst research centres, academia, and enterprises in the Black Sea is pivotal in order to tailor technological development to the specific needs of stakeholders in the blue economy.** The Burgas Vision Paper¹² and the resulting Strategic Research and Innovation Agenda (SRIA) for the Black Sea will set the framework for cooperation amongst researchers, academia, funding agencies, industry, and policy makers across the Black Sea towards more inclusive science-technology coupling and upgraded and fit for purpose research infrastructures.

Objective 3: Set-up and develop marine and maritime innovation cluster initiatives to boost business innovation in the blue economy

A full **development of innovation cluster initiatives, bringing together research enterprises, small companies, industry as well as citizens, is essential for the support of innovative business and start-ups in the Black Sea.** Clusters have in fact proven to be effective across all sea-basins in supporting the uptake of technological innovation and/or new business models, inter alia by providing essential connections with global investors, funding mechanisms and innovation networks. As such, they can be instrumental to the development of a sustainable

¹¹ Ibid.

¹² https://ec.europa.eu/maritimeaffairs/maritimeday/sites/mare-emd/files/burgas-vision-paper_en.pdf

(circular) blue economy in the Black Sea. The inclusion of social innovation through the involvement of citizens and relevant NGOs can be a key aspect of the future Black Sea clusters.

2. Challenges

What are the specific challenges and gaps to be addressed to achieve such objectives?

Challenge 1: Insufficient new knowledge to mitigate the impacts of global climate change and the multiple environmental and anthropogenic stressors in the Black Sea from land-sea interface to the deep basin.

The sources of natural and anthropogenic inputs including the catchment, rivers, atmosphere, maritime activities across different Black Sea interfaces are poorly known. These pollution (including nutrients and litter) should be better analysed, observed and assessed. Research on Integrated Coastal and Marine Management including the interaction between land-based and sea-based activities and their impacts on coastal zones should be stepped up building on existing efforts. Research on coastal hazards erosion, submarine landslides, sea level rise, extreme events, flooding, and connections with climate change are a priority for the Black Sea basin. The interactions between multiple stressors, biodiversity and marine ecosystem functioning by developing novel evolutionary modelling and data analyses tools and demonstrate how adaptation and evolution may change ecosystem response to changing stressors should be revealed.

Challenge 2: Initiatives aimed at observing, monitoring and data-sharing in the Black Sea are often fragmented and inadequate to fully respond to a range of scientific, technological, and societal needs

Although a range of relevant monitoring initiatives exist, and should be further supported, availability of dedicated smart, fit for purpose observing, monitoring and data-sharing systems is still limited in the Black Sea, and inadequate to fully respond to a range of scientific, technologic and societal needs.

There are major gaps that prevents the community from understanding the Black Sea ecosystem dynamics, biogeographic patterns, biodiversity, and ecosystem functions (including fishing resources) and potential impacts of aquaculture. New efforts should build on innovative observation and data sharing research, integrated data sharing/observing systems methodologies, (combining ecology and social data) using/building on existing networks, and also by fully integrating existing and relevant infrastructures.

It is essential to increase ecosystem resilience knowledge, via an improved understanding of specific features of Black Sea oceanography¹³, including the quantification of inputs (nutrient loads, pollutants, litter) from the rivers and the atmosphere and their eventual fate in the Black Sea deep-basin. Joint research expeditions, observatories and monitoring processes are an essential element to boost sustainable growth for the region, and yet developments so far are still ineffective – largely due to a persisting fragmentation amongst the existing initiatives within and across countries.

Development and enhancement of a network of dedicated Marine Research Infrastructures at the Black Sea that would build on existing European and international initiatives should support this process. Compatible high-quality data sets combined with the FAIR principles and open data access - should be adopted. While doing so, key technologies and innovations required for the Black Sea monitoring and research should be identified and promoted through integrated efforts of research-performing organizations, industry, citizens and public sector.

Challenge 3: Limited coordination amongst academia, enterprises and authorities prevents innovation and uptake of advanced technologies in both traditional and emerging activities

Activities historically at the forefront of the Blue Economy in the Black Sea are at risk of decline, both in terms of productivity and job generation. The cruise sector, for example, has been declining for the past decade, as a result of a mix of growing global competition and limited profitability for large global players. Coastal tourism, on the contrary, has been constantly increasing its economic performance through the past ten years, but is on a path using business models which are increasingly threatening the quality and diversity of local ecosystems. This, in turn, may affect the potential for tourism businesses to capitalise on global growing niches of visitors interested in natural and authentic local experiences or to promote synergies between coastal tourism and other activities (e.g. pesca-tourism, culture and underwater heritage, aquaculture, yachting). The Black Sea can certainly profit from a more sustainable exploitation of the ecosystem richness which characterises the region. Fisheries, are still providing valuable jobs at local level, but impact of fisheries on fish-stocks keeps the stocks below their optimum sustainable levels for most fish. To be fully competitive and sustainable through time, **traditional economic activities therefore require more integrated research, deployment of new technologies and diversification to remain competitive through time, and ensure high levels of qualified employment.**

Similarly, greater access to innovation is needed to boost activities with strong development potential that have emerged in the recent past in the Black Sea, these include climate services, blue biotechnology, marine renewable energy technologies, sea infrastructures, smart underwater robotics. Importantly though, they require greater support to take up innovation

¹³ Mesoscale dynamics (fronts, eddies, vertical upwelling), suboxic zone anoxic layer, deep part (including the sea bottom)

(technology, business models, etc.) and gain an adequate critical mass across the region. **Tailored R&D and adaptation of available new technologies are required to fulfil the needs** of Small and Medium Enterprises (SMEs) and new enterprises for attracting regional and global investments and deploy their full potential for blue jobs and blue growth. For instance, innovation is needed to boost aquaculture, through innovative circular economy approaches and innovative technological developments (e.g. through multi-platform usages), environmentally-friendly applications (such as oil remediation and marine micro-plastics biodegradation) and developments towards areas of added-value (including biotech, pharmaceuticals, cosmetics, etc.).

Challenge 4: Clusters must be more blue economy oriented and more effective in bringing together stakeholders in joint projects but also accelerating such innovation

Clusters can be effective in bringing together stakeholders in joint projects, but also accelerating such innovation for each sector by developing synergies between sectors. However, at the current stage this practice remains limited in the Black Sea. There are some notable exceptions, for example the Marine Cluster¹⁴ in Bulgaria or the Black Sea maritime cluster in Romania, but the economic activities covered remain limited and often refer to core “traditional” ones (maritime transport, shipbuilding), rather than new or emerging ones (aquaculture, renewable energy). Clusters also exist in areas which can be complementary and synergetic to the blue economy, for example the Balkans and Black Sea ICT Cluster¹⁵, the Black Sea Energy Cluster¹⁶ or even the AgroFood Cluster¹⁷, but so far they are disconnected from the blue economy sector and as a result cooperation and innovation potential remains limited. More innovation in business processes and technology is required to boost the value-chains which characterise the blue economy in the Black Sea and to address its challenges (sustainability, pollution reduction including marine litter). **Clusters can be effective in bringing together stakeholders in joint projects but also accelerating such innovation for each sector and also developing synergies between sectors, but at the current stage this practice remains limited in the Black Sea.** Some actions were led by the [BlueNET Project](#) to enhance the maritime clusters’ capacity to develop networking among SMEs in the Mediterranean and the Black Sea in order to diffuse innovation enhance intensive networking among the stakeholders

¹⁴ <https://www.marinecluster.com/en/>

¹⁵ <https://www.clustercollaboration.eu/cluster-networks/bbs-clusnet-balkan-and-black-sea-cluster-network>

¹⁶ <http://www.bsecluster.org/en/>

¹⁷ <https://blacksea-horizon.eu/object/organisation/390>

3. Discussions and intervention input

The discussions in this panel will centre on how to develop research and innovation potential for sustainable blue growth in the Black Sea, by fostering integration and clustering of economic activities while promoting innovation in strategic areas and sectors for the blue economy across the sea-basin.

A set of questions is now proposed, as a basis for discussion during the panel:

- Considering the **research and innovation challenges** given in the SRIA, what actions or joint initiatives are required to address these challenges?
- Who should according to you be the actors for Black Sea research and innovation and how **can their joint innovation and clustering activities be best supported?**
- What are **current successful practices in research, innovation and clustering** and how could those be further expanded, and connected? What are the main barriers to foster this?
- What are **the strategic investments required** (e.g. with respect to the SRIA priorities but not exclusively) to support marine and maritime research and innovation?
- What kind of start-ups and scientific spin-offs could be promoted in the Black Sea and how should they be supported (i.e. STARTUP Europe Initiative)?

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