D3.4.1.Strategy and action plan

InnovaMare project

Blue technology - Developing innovative technologies for sustainability of Adriatic Sea

WP3 - Enhancement of framework conditions by development of innovation ecosystem

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1. A new approach to a sustainable blue economy in the EU

The Blue Economy is a concept that is booming today in view of the global evolution of society. The term is increasingly popular in modern environmental research and seeks to explore ocean-based development opportunities with environmental stewardship and protection (Lee et al., 2021). By definition, blue economy is a systematic way of utilizing sea resources by integration of short- and long-term economic activities based on principles of social inclusion, environmental sustainability and innovations on and around the sea (Smith-Godfrey, 2016; Spalding, 2016). The Blue Economy is a concept of economic growth through the sustainable utilization of ocean and sea resources with technological inputs to improve livelihoods and boost economic growth and employment (Ninawe, 2017).

Since the concept of Blue Economy has been originated from the United Nations Conference on Sustainable Development in 2012 (UNCTAD, 2014), scientists, governments, international organisations, and non-government organizations used this concept in different ways and interchangeably with ocean economy or marine economy. Specifically, the economic development based on finite resources like coal and related environmentally destructive activities is responsible for massive levels of climate change causing air pollution (greenhouse gas emissions), water pollution and loss of biodiversity. Blue Economy is a novel approach fostering the sustainability of oceans and coastal areas for economic growth (World Bank, 2017). By involving national and global governance (Wenhai et al., 2019), it has become an enabler for achieving sustainable and inclusive development (Upadhyay & Mishara, 2020).

Due to its global implications, Blue Economy is gaining recognition among different economies, including European Union (EU), where starting from 2012 it has become part of the economic development strategy. In 2007 a Communication from the European Commission proposed an Integrated Maritime Policy (EC, 2007) that set the ground for the sustainable development of marine-related activities in the European Union. As a follow-up, in 2012, a Communication from the European Commission on Blue Growth (EC, 2012) defined the opportunities for marine and maritime sustainable growth. It presented a balance of the current activities and key value chains, identified new areas where targeted action could drive sustainable growth (blue energy, aquaculture, maritime tourism, marine mineral resources, blue biotechnology), and proposed initiatives to achieve this goal. Specifically, five focus areas or sectors, that include: (1) aquaculture, (2) marine renewable energy, (3) marine mineral mining, (4) marine biotechnology, and (5) marine and coastal tourism (Sheil, 2013), were identified as having strategic importance for realising Blued Economy (European Commission, 2017). These focus areas have been the recipients of resources from the EU in the subsequent years, including research and development (R&D) funds and various forms of sectoral support European Commission, 2017). In defining the “boundaries” of the Blue Economy, the EU framed this clear regional economic paradigm within the boundaries of [an] environmental sustainability, by “[…] [reducing] negative environmental impacts of maritime [activities] such as the emissions of pollutants and the discharge of noxious substances” (European Commission, 2017:4).

Respect the Blue Economy, in 2012, the EU proposed the “Blue Growth” strategy, specifying that Blue Growth will be the core of marine policies and stating clearly key development areas and specific measures for the future. Specifically, it aims to reach a new economic development through the application of innovative decisions in the production and consumption chains, with an adequate investment that allows its

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implementation in the different world populations and ensuring sustainability in the marine environment (Wenhai et.al., 2019). The Blue Economy was identified at EU level as a driver of European growth, through the development of new competences and activities that "harness the untapped potential of Europe's oceans, seas and coasts for jobs and growth" while simultaneously striving to use the sea sustainably. Strategies and policies were defined to achieve these goals, targeting the broad variety of actors engaged in sea-related activities. Key elements in these strategies were research and innovation, aiming at the revitalisation of established sectors and the development of emerging ones; as well as at a better understanding of the marine environment and the requirements for its preservation (Amoroso et al., 2018). These strategies demonstrate the need to pay attention to the global environment, developing activities in a sustainable way, from an environmental but also economic point of view, to ensure the successful of the different productive sectors.

In particular, European Commission sets its main objectives as:

1. fight against the main sources of pollution of our seas and promotion of recycling solutions,
2. conserve and restore marine biodiversity,
3. smarter, faster and more systematic adaptation to achieve climate resilience,
4. building sustainable food systems within the blue economy,
5. develop a pan European innovation ecosystem for a sustainable blue Economy.

Table 1.1 – Main indicators EU Blue Economy 2018

Indicator	EU Blue Economy 2018
Turnover	€650 billion
Gross value added	€176 billion
Gross profit	€68 billion
Employment	4.5 million
Net investment in tangible goods	€6.4 billion
Net investment ratio	3.6%
Average annual salary	€24 020

Notes: Turnover is calculated as the sum of the turnover in each sector; it may lead to double counting along the value chain. Nominal values. Direct impact only. Net investment excludes maritime transport and coastal tourism. Net investment ratio is defined as net investment to GVA.
Source: Eurostat (SBS), DCF and Commission Services.

Source: The EU blue economy report 2021

The EU's Blue Economy encompasses all sectoral and cross-sectoral economic activities related to the oceans, seas and coasts, including those in the EU's outermost regions and landlocked countries. This includes the closest direct and indirect support activities necessary for the sustainable functioning and development of these economic sectors within the single market. It includes:

- Established sectors: Maritime transport; Coastal tourism; Marine living resources, (fisheries, aquaculture; processing and distribution); Marine extraction of minerals, oil and gas; Ports, warehousing and water projects; Shipbuilding and repair.

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- Emerging and innovative industries: Blue energy (offshore wind energy; ocean energy); Blue bio economy; Marine minerals; Desalination; Maritime defence.
- Natural capital and ecosystem services.

Table 1.2 - The Established Blue Economy sectors and their subsectors

Sector	Sub-sector
Marine living resources	Primary production
	Processing of fish products
	Distribution of fish products
Marine non-living resources	Oil and gas
	Other minerals
Marine renewable energy	Offshore wind energy
Port activities	Cargo and warehousing
	Port and water projects
Shipbuilding and repair	Shipbuilding
	Equipment and machinery
Maritime transport	Passenger transport
	Freight transport
	Services for transport
Coastal tourism	Accommodation
	Transport
	Other expenditure

Source: The EU blue economy report 2021

Table 1.3

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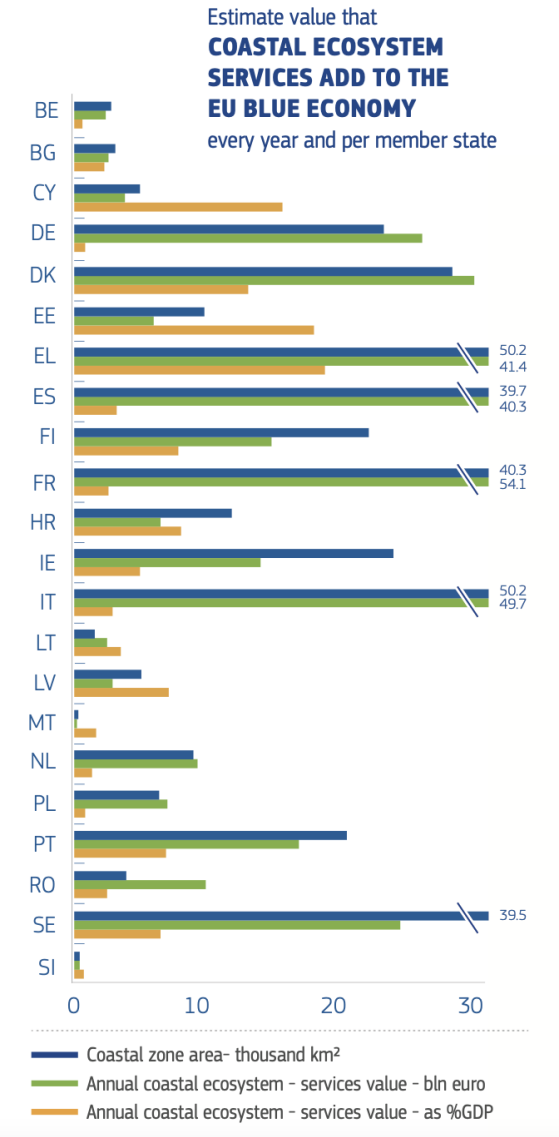

Source: The EU blue economy report 2021

In 2021 the European Commission has issued a Communication (COM(2021) 240 final, 17 May 2021) focused on “a new approach for a sustainable blue economy in the EU Transforming the EU's Blue Economy for a Sustainable Future”. The EU Blue Economy can support the transition towards a more sustainable economy as highlighted in the European Green New Deal well as towards a green and digital transitions as developed in the Recovery Plan for Europe. According to the EU Green New Deal EU has to transform into a modern, resource-efficient and competitive economy in which net greenhouse gas emissions are phased out

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and the EU's natural capital is protected. The Recovery Plan for Europe aims to boost green and digital transitions and make the European economy more equitable, more resilient and more sustainable for future generations. The EU's blue economy can contribute to this dual challenge through different steps:

A) Transforming the Blue Economy value chain
   a. Achieving the objectives of climate neutrality and zero pollution
   b. Investing toward the Circular economy and waste reduction
   c. Preserving biodiversity and invest in nature
   d. Adaptation activities for coastal resilience
   e. Responsible food system

B) Supporting The Development Of A Sustainable Blue Economy
   a. Investing in the creation of Ocean knowledge through digital technologies (ocean data)
   b. Supporting Research and innovation
   c. Increasing Blue skills and jobs

C) Creating The Conditions For Sustainable Governance
   a. Favouring Maritime spatial planning
   b. Enhancing citizen engagement and ocean literacy
   c. Sustaining regional cooperation (coastal regions)
   d. Promoting maritime security
   e. Promoting a sustainable blue economy outside EU

"The new Sustainable Blue Economy communication:

- ➔ calls on all maritime players to base their activities on the responsible use of natural resources, on decarbonisation and on circular economy concepts
- ➔ sets out a detailed agenda for greening the blue economy, underpinned by international ocean governance
- ➔ facilitates coexistence and synergies of economic activities in the maritime space through Maritime Spatial Planning, without damaging the environment
- ➔ proposes a series of actions to boost investment in research (e.g. Mission on Oceans and Waters), skills and innovation, and mobilizes financing opportunities under the new European Maritime, Fisheries and Aquaculture Fund, and other EU Programmes (e.g. Resilience and Recovery Facility)" (European Union, 2021)

The process of transformation into a sustainable society driven by Blue Economy requires technological advances and the use of new technologies as well as new forms of collaboration between a wide range of stakeholders (Keen et al., 2018; Lee et al., 2020). Precisely, the use of new technologies, such as Industry 4.0 technologies, may foster the achievement of sustainability purposes (Amjad et al., 2022). Instead, collaboration in a viewpoint of innovation systems need to go beyond a Triple Helix (TH) model based on collaboration between government, industry and university (Etzkowitz & Zhou, 2006) and must include a fourth helix represented by the civil/public society (Carayannis & Rathmatullin, 2014). Above all, the importance of oceans and seas in the economies is calling for new efforts to generate international and domestic partnerships. Following the definition of McKinley et al. (2019), according to whom Blue Economy

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is a platform for the participatory development and protection of the marine environment, Blue Economy in EU is analysed through the collaborative lenses of the Quadruple Helix (QH).

2. The InnovaMare ecosystem: a description of actors and resources

Research, development and innovation play key roles in Europe' strategy. In particular, the EU encourages the regions to move towards open innovation, within a human-cantered vision of partnerships between public- and private-sector actors, with universities and other knowledge institutions playing a crucial role. In this sense, an innovation ecosystem model might well explain and highlight the interdependencies between the different actors, in specific specialization, co-evolution and co-creation of value, considering positive externalities in bundled, complementary assets of heterogeneous participants' orchestration (Oh et al., 2016). Innovation ecosystems comprise the following three main elements:

1. STAKEHOLDERS - organizations, bodies and individuals that create, support and enable innovation through their activities and interactions;
2. RESOURCES - essential resources necessary for the functioning of the ecosystem (infrastructure, financial resources, human and social capital, etc.);
3. ENVIRONMENT - elements that form parts of the context for creativity, entrepreneurship, affect productivity, etc.

Developing the Blue Economy within the innovation ecosystem framework may allow to embrace those activities that present positive externalities and mutual re-enforcement patterns, also in a viewpoint of opportunities for territories in addition to the actors. Specifically, they refer to:

- Value sourcing, creation and appropriation for each participant entity, within the ecosystem: efficiency through scale and scope economics, innovation and externalities benefits and fair competition,
- Participants' symbiosis in terms of specialization, complementarities and stable co-evolution: capabilities and strategies enabling superior performance at both the firm level and the ecosystem level
- Institutional stability, ensuring the ecosystem as a cross sectoral network of businesses operating in maritime related goods and services provision will be bundled into different resources, assets and dynamic capabilities combinations, on the basis of a legitimate and transparent locus of coordination, via active ecosystem governance mechanisms.

Within this perspective, InnovaMare project aims at developing and establishing cross-border innovation ecosystem model in area of underwater robotics and sensors for purposes of monitoring and prevention of sea pollution with mission oriented on sustainability of Adriatic Sea.

The Adriatic Sea is facing great challenges and major impacts from over-fishing and pollution (see Figure 1). Solid waste, direct discharge of wastewater and oil pollution are key negative factors for the degradation of coastal and marine ecosystems. Reaching and creating a better pollution monitoring and protection system of the Adriatic Sea is, therefore, an urgent purpose. Several EU programs address regional aim at increasing collaboration across countries to improve the sustainability of Blue Economy.

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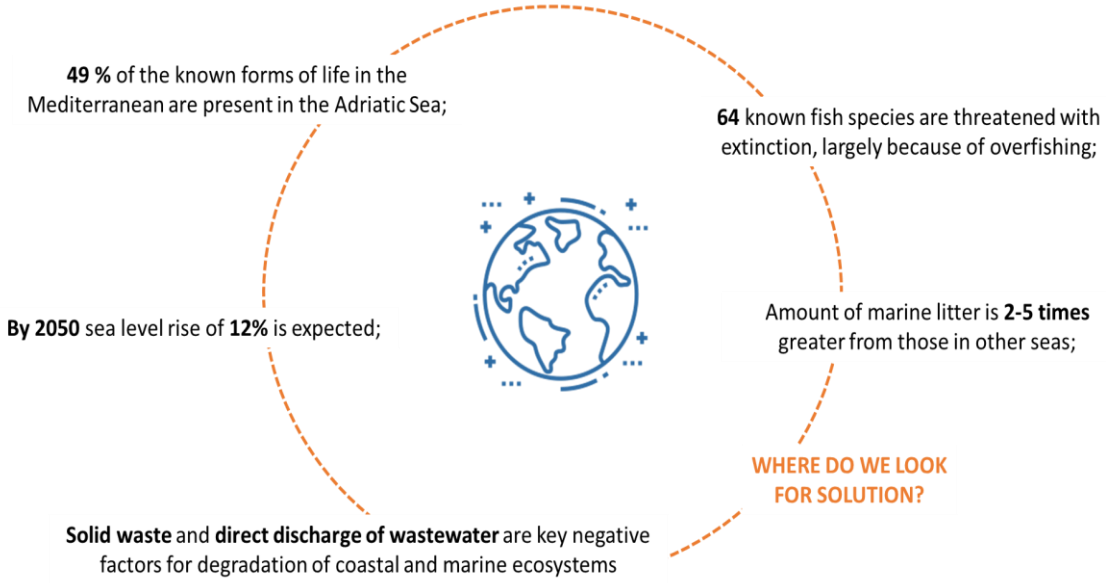
Figure 1: Challenges of the Adriatic sea



Source: InnovaMare

In this vein and leveraging on previous collaborations, a consortium of 14 partners from Italy and Croatia led by the Croatian Chamber of Economy joined forces in the Interreg Italy-Croatia InnovaMare project, which has the goal of enhancing cross-border collaboration between science and private sector and technology transfer by jointly developing and implementing strategical and operational level capacities that consist of mix of policy instruments and innovation players as a frame for development of innovative technologies for sustainability of the Adriatic Sea. This collaboration focuses on the area of underwater robotics and sensors for the monitoring and surveillance of Adriatic Sea to prevent pollution. The mission of the project is concentrated on the improvement of sustainability in the Adriatic Sea area, by developing and establishing an innovation ecosystem model to increase the effectiveness of the innovation activities in the relevant fields of the Blue Economy.
To enhance the transfer of knowledge between enterprises, R&D centers, higher education and the public sector, InnovaMare project includes as well as education and capacity building actions such as training schools, study visits and workshops. The project targets a wide (more than 1.000) group of stakeholders as shown in the Figure 2.

Figure 2: InnovaMare ecosystem - stakeholders

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The InnovaMare innovation ecosystem is based on two key principles:

- DEMAND DRIVEN – detecting the needs and problems of the blue economy sector and developing innovative solutions to solve them through the cooperation of scientific research and the private sector,
- MISSION ORIENTED – sustainability of the Adriatic Sea as a key resource for the blue economy sectors.

To better support the creation of an innovative ecosystems a map of excellence of stakeholders in underwater robotics and sensors at cross-border level had been developed, basing on the snowball sampling technique (Goodman, 1961). This map of excellence (*Deliverable D3.1.2. Map of excellence at cross-border level – InnovaMare project)* includes 169 stakeholders that cover the whole value chain from raw materials and manufacturing to the end users (Figure 3 and 4). The purpose is to understand what stakeholders are offering in terms of technology, services and expertise as well as what are their main needs for partner search, R&D projects development, internationalization and financing. Specifically, the following categories of information have been gathered:

- type of organization (scientific research, private sector or public sector);
- key projects;
- key individuals;
- key platforms;
- key resources;
- key partners.

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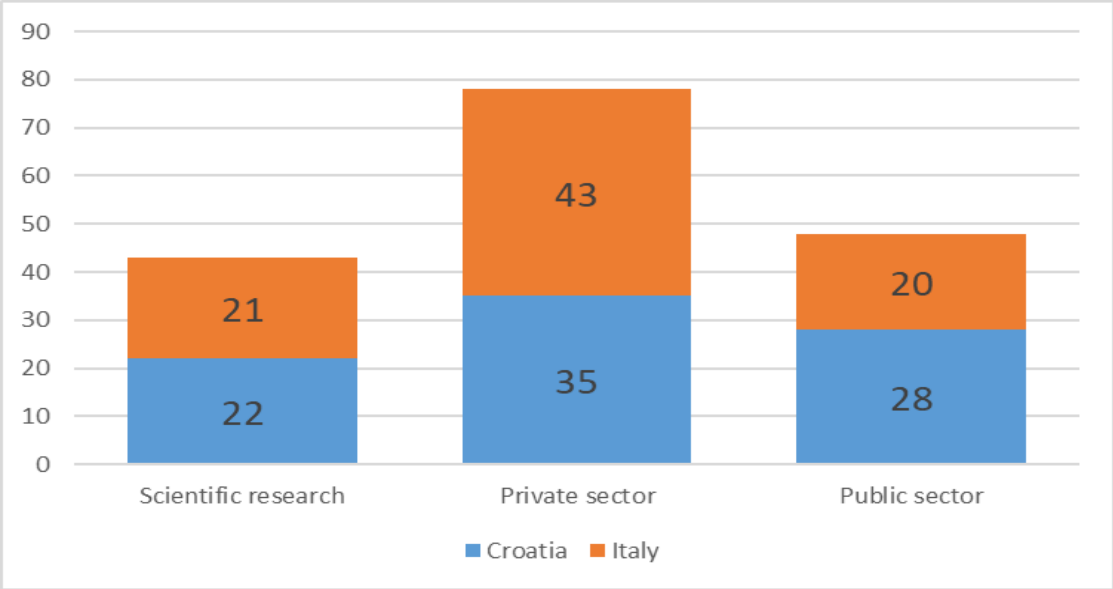
Focusing on the type of organizations, as shown in Figure 3, the sample is mainly composed by the private sector (47% of the overall data). Scientific research sector and public sector are rather evenly distributed although the public sector plays a significant role in Croatia (58%) in comparison to Italy (42%).

Figure 3: Organizations type for country



N = 169.

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Figure 4: Map of organizations

Source: InnovaMare

Moreover, in the scientific sector, universities (65%) are the main active actor both for Croatia and Italy. Instead, scientific parks are not so relevant in both countries with only one organization from each. Respecting the public sector, local government is the main active actor (33%) in both countries. Moreover,

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NGOs and also BSO have a relevant role in Croatia. Regarding the private sector, most of the companies are micro or small (62% total) and there is not a clear difference among the countries in terms of the firm' size. Moreover, as shown in the Table 2.1, "PA4 Service activities incidental to water transportation", "SR1 Building of ships and floating structures" and "OG3 Support activities for petroleum and natural gas extraction".

Table 2.1: Private sector by blue economy and country

Sector		Croatia	Italy	Total
PA4 Service activities incidental to water transportation	N	15	2	17
	%	88%	12%	44%
OG3 Support activities for petroleum and natural gas extraction	N	1	7	8
	%	12%	88%	21%
SR1 Building of ships and floating structures	N	5	2	7
	%	71%	29%	18%
LR2 Aquaculture	N	4	1	5
	%	80%	20%	13%
ES6 Environmental protection	N	1	3	4
	%	25%	75%	10%
ES4 Defence and Security	N	2	1	3
	%	67%	33%	8%
ES7 Ecosystem services	N	1	2	3
	%	33%	67%	8%
ES9 Multiuse platforms	N	2	1	3
	%	67%	33%	8%
SR2 Building of pleasure and sporting boats	N	3	0	3
	%	100%	0%	8%
PA3 Construction of water projects	N	3	0	3
	%	100%	0%	8%
SR3 Repair and maintenance of ships and boats	N	2	1	3
	%	67%	33%	8%
Others*	N	2	3	5
	%	40%	60%	13%

N = 39.

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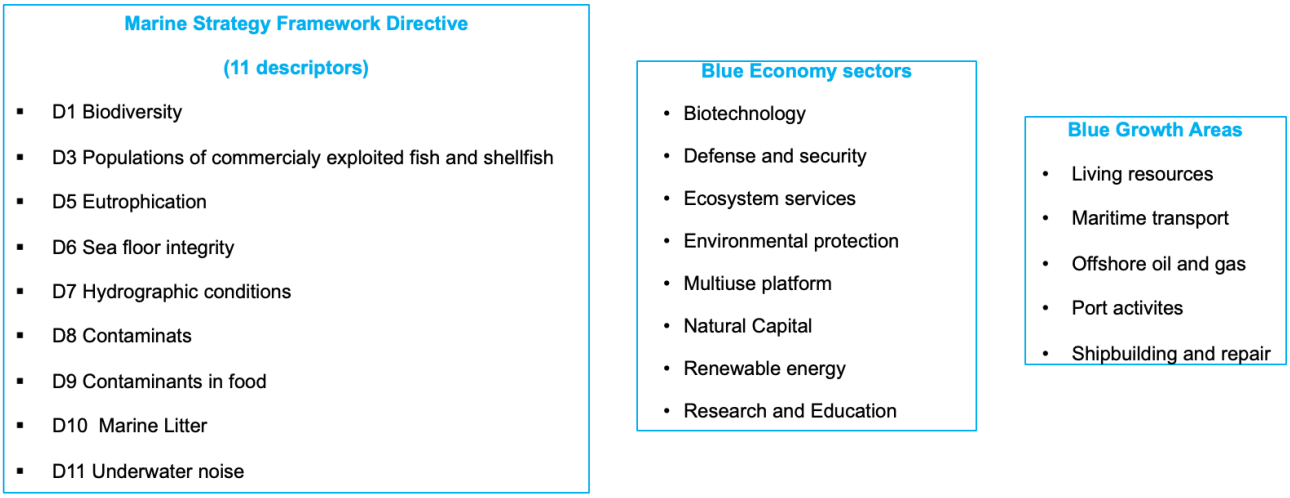
Figure 2.5 – Map of Excellence of the InnovaMare ecosystem: areas of Blue economy specialization and Blue growth areas



In terms of value chain, as reported in the Table 2.2, the Croatian firms are mainly positioned in: CC1 - Components manufacturing - SW Components; "VCP4 - Production - Peripheral services and logistics" and "VCC2 - Components manufacturing - HW Components". While the Italian firms are positioned in: "VCS1 - Sales - ROV/AUV operators & Survey Firms" and "VCP3 - Production - Integrated systems manufacturing".

Table 2.2: Private sector by value chain position and country

Value chain		Croatia	Italy	Total
VCC1 - Components manufacturing - SW Components	N	8	2	10
	%	80%	20%	28%
VCP4 - Production - Peripheral services and logistics	N	7	2	9
	%	78%	22%	25%
VCC2 - Components manufacturing - HW Components	N	7	1	8
	%	88%	12%	22%
VCS1 - Sales - ROV/AUV operators & Survey Firms	N	3	4	7
	%	43%	57%	19%
VCC3 - Components manufacturing - ROV/AUV Components & Tooling	N	5	1	6
	%	83%	17%	17%
VCP3 - Production - Integrated systems manufacturing	N	3	3	6
	%	50%	50%	17%
VCC3 - Customers or Buyers - Offshore Energy & Installations	N	5	1	6

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	%	83%	17%	17%
VCD2 - Distribution - After Sales Customer Support & Technical Training	N	2	1	3
	%	67%	33%	8%
VCS2 - Sale - Marine environment and depollution	N	0	2	2
	%	0%	100%	6%
Others*	N	2	4	6
	%	33%	67%	17%

N = 36.

Other important factors for the development of an innovate ion ecosystem for Blue Economy development are the organizations' main key resources, that refer to the resources that the company/institution would like to communicate to potential business and research partners.
As shown in the Table 2.3, they had been categorized as following:

- infrastructures (R&D labs; testing labs; Fablabs; etc.),
- technologies (laser cutter; 3D metal printer; lidar technologies; etc.),
- intellectual property rights,
- equipment,
- know-how.

Table 2.3: Key resources by category

		Croatia	Italy	Total	Examples
Infrastructure	N	8	22	30	Vehicles for monitor and studying the marine ecosystem; R&D lab
	%	27%	73%	26%	
Know how	N	0	18	18	Structural calculations; analysing satellite data; the "commercial" side of developing products
	%	0%	100%	16%	
Technology	N	25	35	60	Hardware and software; 3D Print; Submarine technology
	%	42%	58%	52%	
Equipment	N	1	2	3	Underwater equipment; equipment for diving activities
	%	33%	67%	3%	
Intellectual property rights	N	0	4	4	Patents in the sector
	%	0%	100%	3%	

The main category refers to the availability of a key technology (25 from Croatia and 35 from Italy) followed by an infrastructure (8 from Croatia and 22 from Italy) and for the Italian firms a know-how (18 from Italy).

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However, organizations in our sample does not show to be in position of an important Intellectual property rights with only four firms stating such.
Moreover, also the information related to the key persons working in the sector of underwater robotics and sensors had been collected to highlight the potentials of territory. As reported in the Table 2.4, the main specialization is University Professors (21 from Italy) followed by experts and technicians (16 from Croatia and 38 from Italy).

Table 2.4: Main specializations and expertise

		Croatia	Italy	Total	Examples of Expertise
University Professor	N	0	21	21	Expert in Integrated 3D design; Expert in fuel cell propulsion; Expert in electric systems
	%	0%	100%	20%	
Expert and Technician	N	16	38	54	GIS and drones; Marine geologist; submarine ships building; IT and Security Service; environmental sciences; Environmental monitoring
	%	30%	70%	51%	
Director and/or founder	N	5	10	15	
	%	33%	67%	14%	
Researcher	N	0	9	9	Researcher geologist, researcher physician, researcher engineer
	%	0%	100%	8%	

Finally, Table 2.5 reports the platforms (total 19) for co-development related to the sector of underwater robotics and sensors.

Table 2.5: Key platforms

Platform name	Web Address	Info +
Aster Fab	https://aster-fab.com/	Aster fab: - helps companies identify the technologies, business models and key driving forces disrupting their industry through the analysis of clusters of startups. - helps companies foster startup engagement through the identification of relevant collaboration scenarios and investment opportunities - helps companies find their pioneering path into the future and get their break-through innovation off the ground
ATENA (Ravenna)	http://www.atenanazionale.org/web	ATENA is an association that involves engineers, professors, researchers, shipowners, insurers and

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		maritime operators. ATENA focuses in the shipbuilding processes, design, management, environmental issues, safety and security.
Cluster BIG (Blue Italian Growth)	http://www.clusterbig.it/	National Italian Cluster for Blue Growth. Main Topics: - Marine and coastal environment - Blue biotechnologies - Renewable energy from the sea - Marine a-biotic resources - Marine biotic resources - Shipbuilding and marine robotics.
crodrones.network.	https://crodrones.network/	Croatian network/platform of drone operators and related services.
DESERT UNDERWATER	http://desert-underwater.dei.unipd.it/index.php/desert-underwater-team-members/	Complete set of public C++ libraries that extend the NS-MIRACLE simulator to support the design and implementation of underwater network protocols
euRobotics	https://www.eu-robotics.net/eurobotics/index.html	euRobotics aisbl (Association Internationale Sans But Lucratif) is a Brussels based international non-profit association for all stakeholders in European robotics. It was founded in September 2012 with the aim to strengthen Europe's competitiveness and to ensure industrial leadership of manufacturers, providers and end-users of robotics technology-based systems and services
EuroMarine Network	https://www.euromarinenetwork.eu/about-us/scientific-strategy-and-plan	EuroMarine is a European marine science network. It represents the merger of the scientific communities of three former European Networks of Excellence: • EUR-OCEANS • Marine Genomics Europe • MarBEF. The primary goals of EuroMarine are to support the identification and initial development of important emerging scientific topics or issues and associated methodologies in marine sciences, as well as to foster new services relevant to the marine scientific community.
Evolen-up	http://www.evolenup.com	Start-up accelerator in the Energy sector
Italian Institute of Robotics and Intelligent Machines	https://i-rim.it/en/	I-RIM, the Institute for Robotics and Intelligent Machines, aims to favor the development and practice of Robotics and Intelligent Machines technologies to improve citizens quality of life and

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		well-being and enhance society conditions, through the development of new solutions for helping people, improving working conditions, transferring applications and economic enhancement of research. I-RIM is an institute created to offer a national organizational reference for its members and stakeholders, and to interact with public institutions on the topics of Robotics and Intelligent Machines.
Mind-The-Bridge	https://mindthebridge.com/	Innovation advisory firm working at the intersection of corporates and startups
MITO technology	https://mitotech.eu/	Responsible partner for companies, universities, venture funds, start-ups and research centers to turn their intellectual property in economic success
ORCA 3D	https://orca3d.com/	3D modelling
PhotoScan Agisoft	https://www.agisoft.com/community/showcase/	Photogrammetric
Plavo Oko / Blue Eye	http://plavo.oko.hr/	Blue eye is an application designed to systematically record data on marine organisms and sea pollution with the aim of increasing knowledge of the sea and its effective protection. By delivering photos and information, a person can actively participate and assist in scientific research (Citizen Science) thus achieving a better insight in the movement of a given organism and more effective measures for the protection of the Adriatic Sea. The purpose of the application is mutual informing and education of the public, as well as the effective operation of experts and services in charge in solving possible problems related to the protection of the Adriatic Sea. Mutual information transmission creates a more complete picture of the state of biodiversity and the movements of possible dangerous species.
RHINOCEROS	https://www.rhino3d.com/it/	3D modelling
ROCA	http://www.roca-oilandgas.com	Roca (Ravenna Offshore Contractor Association) is an association of contractors and suppliers in the offshore area.
SWiG (Subsea Wireless Group)	https://subseawirelessgroup.com/	International oil and gas industry network promoting interoperability for subsea wireless communications (radio frequency, acoustic, free-space optic, inductive power, hybrid). SCOPE:

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		Definition of document standards for subsea wireless communication and power transfer technologies for the Oil&Gas.
WOSS	http://telecom.dei.unipd.it/ns/woss/	Multi-threaded C++ framework that permits the integration of any existing underwater channel simulator that expects environmental data as input and provides as output a channel realization

In addition to the map of excellence, a questionnaire for policy stakeholders was used to gather inputs on key policies and strategies from decision-makers at a local and regional level. The analysis of the questionnaires has served as input and feedback to the InnovaMare project. Among the suggested benefits perceived by policy makers related to the development of an innovation ecosystem were the networking among public and private partners, the competitiveness of the production systems and firms involved (as well as broader impacts through spillover effects at the local levels) and positive impacts on employments. However, key challenges were identified by policy makers such as the need to enhance political commitment as far as the focus on the blue growth is concerned. Specifically, some policy recommendations for the development of the innovation ecosystem, include:

- Alignment of Italian and Croatian Blue economy policies to EU priorities and to the Pillars of EUSAIR macroregional strategies, embedding blue growth also in the framework of smart specialization strategies;
- creation of a strong and coordinated network of stakeholders, comprising public authorities, academia/research centres, innovation and development agencies, chambers of economy, clusters, private companies, civil society and environmental associations;
- design of a legal framework to create the cross-border innovation ecosystem;
- mobilization of public and private investment to effectively support the start-up phase and the long-term functioning;
- granting access to funding for companies and researchers (education, R&D, up-scale).

Finally, the map of all stakeholders will be used as an input for the tool for technology offer and request. In particular, to create the innovation ecosystem and contribute to a better environmental monitoring of the Adriatic, educational and technological transfer activities are complemented by technical activities. The technical activities include the design and development of a network of multipurpose mobile/fixed, surface/underwater cooperative platforms and sensors to be applied in pilot actions. In this sense, a Living Lab methodology is being used to start a co-creation and technology transfer between R&D institutions and Small and Medium Enterprises (SMEs). The Living Lab methodology will be essential to establish the Digital Innovation Hub (DIH) aimed by the project. Two workshops regarding Living Lab took place already and the implementation of the LL is currently under development. This tool will gather offers and requests from different sectors and stakeholders. All interested stakeholders will be able to participate in a marketplace for Business to Business (B2B). The idea is that the marketplace will serve as an aggregator for offers and requests of innovative technologies, expertise, funding and partnerships.

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3. Developing the innovation ecosystem

Studies on DIH at the European level[1] provide evidence of the relevance of a specific path DIH may follow in order to have a successful development of innovation ecosystems. DIH in the blue economy can be approached as a vertical innovation ecosystem tailoring the structure and the services provided in order to address specific needs related to the challenges connected to the blue economy.
The governance of the DIH may vary and can take different forms and can be hosted according to the peculiarities of promoters as follows:

a) Regional development agency
b) Cluster organization
c) Professional association
d) Research center / University
e) Special Public body

It has been recognized also when considering the European scale of DIH that the form of governance may differ and that also it is not necessary to create a formal organization as a prerequisite for an effective functioning of the EDIH[2]. Usually, the governance of the non-profit organization is a consortium that includes as follows: research center or university, chamber of commerce, industry associations, incubators or accelerators, vocational training centers. It can become particularly relevant to rely on the European Entreprise Network (EEN) to foster the engagement especially of SMEs.
It becomes relevant to identify the characteristics of in-house competences vs. external competences the DIH has to rely on. More precisely the map of the services a DIH can provide has to be consistent with the network of partners or the internal competences with respect to technical services, training, research, IPR management, communication activities and stakeholder engagement.

The portfolio of services to be provided may depend on the level of maturity of the DIH and of the intertwined growth of the related innovation ecosystem. Figure 5 presents a valid example of how a DIH may develop over time in terms of services provided in relation to the different steps of its maturity and based on the forms of interaction with DIH's users (SMEs).

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[1] Rissola, G. and Sölvik, J., Digital Innovation Hubs in Smart Specialisation Strategies, EUR 29374 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-94828-2, doi:10.2760/475335, JRC113111 https://publications.jrc.ec.europa.eu/repository/handle/JRC113111

[2] EU (2021), European Digital Innovation Hubs in Digital Europe Programme, Draft report, https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=70324

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Figure 5 – An example of DIH service portfolio in a dynamic path

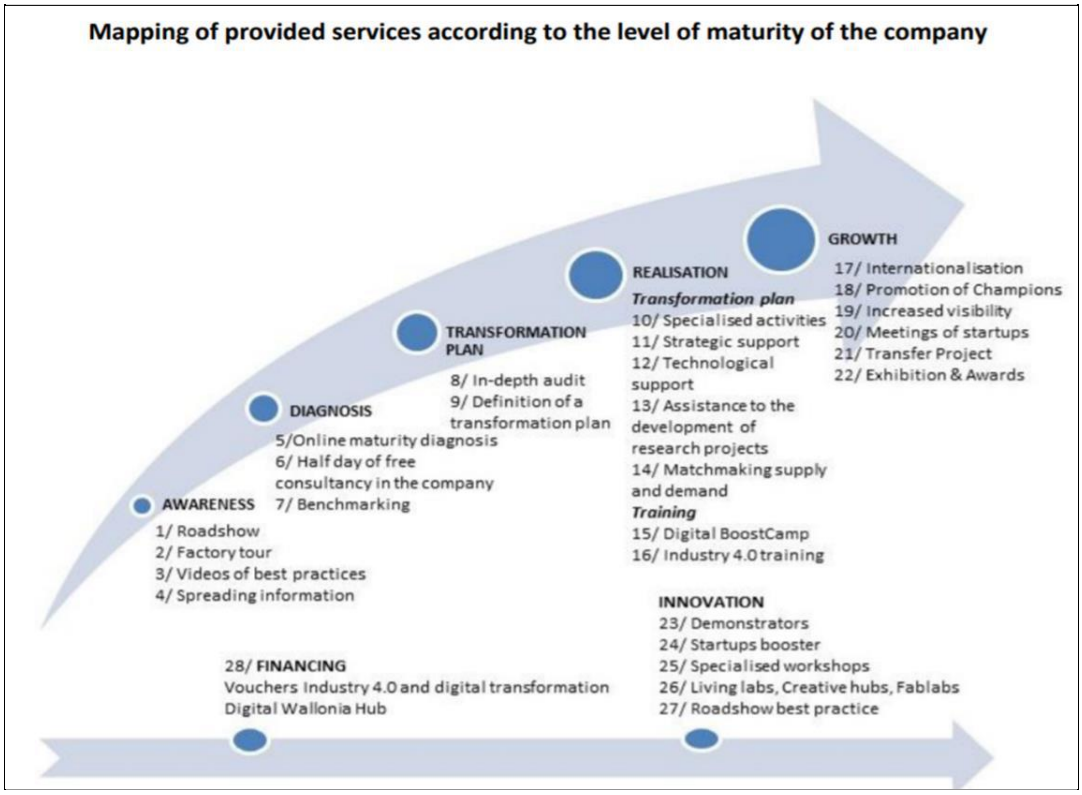

Figure 2: Services provided by DIH Wallonia (source: DIH & S3 workshop presentation)

Source: Rissola and Solvik, 2018

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The European Commission through the Joint Research Center (JRC) has proposed a guideline to promote DIH and support innovation ecosystem[3]. According to such guideline the development of a DIH goes through 7 steps (Figure 6).
Step 0 is related to the identification of needs at the regional or transnational level.

Step 1 is the preparation phase where stakeholder mapping is developed to identify the most relevant ones based on the goals to be achieved and the characteristics of the ecosystem and territories involved.

Step 2 is conceptualized in terms of the vision and mission of the DIH and the main level of specialization to be selected to characterize the DIH, leveraging on the competences of the actors involved.
Step 3 is related to the services involve. DIHs can provide services in four (4) main categories: i) test before invest, ii) skills and training, iii) support to find investment, iv) innovation ecosystem and networking.

Step 4 is focused on the identification of the organizational form, that is the form of governance to be adopted to manage. According to the guidelines "There is no one-size-fits-all organisational model for a DIH. What is important is to be a non-profit organization but the organizational form can vary from a 'single' organization to a coordinated group of complementary organizations or it can be a virtual organization or a multi-sided platform."

Step 5 is the definition of the business model where the DIH identify the sources of revenues and value creation and appropriation processes and the funding sources to sustain its services overtime. It could be a hybrid form coupling public and private sources.

Step 6 is focused on the development of the ecosystem and to expand partnership beyond its initial network towards national and international partners.

Step 7 consists in monitoring the ongoing activities and result achieve and assessing the impacts generated at the different levels.

[3] Jrc Science Policy Report (2020), *Digital Innovation Hubs As Policy Instruments To Boost Digitalisation Of SMEs. A Practical Handbook & Good Practices For Regional/National Policy Makers And DIH Managers*, Https://Publications.Jrc.Ec.Europa.Eu/Repository/Handle/Jrc121604

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Figure 7 – Step-by-step approach to develop a DIH

Source: EC - JRC Science Policy Report (2020)

From a governance point of view the benchmarking analysis carried out across projects and initiatives focused on European Sea basin geographical areas[4] identify a variety of forms of governance applied and provides evidence of two best practices.
The first one is related to the European Union Strategy for the Baltic Sea Region (EUSBSR) flagship format. **Flagships** are not just projects, but they represent high-level strategic partnership involving multiple stakeholders and initiatives that characterize innovation practices at the local level (multi-level form of governance). By proposing and creating a flagship initiative, multiple projects and activities can be coordinated and involved under a unique format and can support long-term involvement of actors.
The second-best practice identified is SUBMARINER Network for Blue Growth EEIG (https://www.submariner-network.eu), which represents a flagship umbrella project of the EU Strategy for the Baltic Sea Region established in 2013. It is organized as a network with a formal, permanent secretariat based in Berlin. It represents a very flexible structure, since it has no statutory support, but gathers funds to support joint activities based on project ideas applied to different funding schemes. Until 2020, the

[4] Benchmark Report, BlueAir project, December 2021 - https://blueair.adrioninterreg.eu/wp-content/uploads/2022/01/D.T1.1.2-Benchmark-Report.pdf

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SUBMARINER secretariat has initiated 25 transnational projects (20 received funding with a total volume of more than €41 million, of which almost €30 million are dedicated to activities in the Baltic Sea Region).

The benchmarking analysis has also pointed out how to set up and manage effectively transnational cooperation in order to reinforce mutual relationships among actors involved in different regions and countries as well as to scale the impacts of the projects implemented and facilitate policy goal achievement (Figure 7).

Figure 7 – Stages of interregional collaboration

Source: JBR Handbook 2016 mentioned in Benchmark Report, BlueAir project 2021

In order to build an effective ecosystem, it has been highlighted that positive projects carried out the following activities:

1. Develop transnational **tools that support cooperation** among innovative actors
2. Propose a dynamic visual representation of **value chain analysis and mapping**
3. Create a business/actors **directory network** open and constantly updated

4. Inputs for sustainability: the policy makers' perspectives and recommendations

The long-term sustainability of InnovaMare project results is strongly connected to the creation of favourable framework conditions, at cross-border level, for the development of an innovation ecosystem, orchestrated by a Digital Innovation Hub, focused on blue economy and blue technologies, in particular underwater robotics and sensors.

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As the study trips organized by project partners have concretely and clearly shown, the initiative of policy makers is paramount to unlock the potential of an innovation ecosystem from the early stage. In fact, the process starts by acknowledging at political level that a territory:

- can leverage on a specific market segment for its economic growth and development (in this case blue innovation);
- counts on key expertise, research results, technological innovations, knowledge-based companies, research, testing and technology transfer infrastructure that needs to be put together under an overall competitive development strategy;
- can attract foreign researchers and companies;
- needs targeted investments to kick-start and feed the process leading from research to innovation and most of all to the market, creating added value, turnover and qualified jobs.

Based on the interviews carried out involving key stakeholders, Italian and Croatian policy makers have a clear understanding that in their territory there are very precise and concrete pre-conditions for the further development of an innovation ecosystem linked to blue economy and blue growth.

They are aware of the contribution of blue economy to the national / regional GDP, and they are as well responsive to the need to tackle the societal challenge represented by the pollution of the Adriatic Sea (causing loss of biodiversity and as a consequence also economic loss). Furthermore, they are called to implement the legally-binding priorities and targets defined by European strategies, contributing to a green and digital future.

On the other side, they also identify a set of variables that could affect the successful operation of such an ecosystem in the long run, such as adequate expertise / skills development of key professional figures needed, the provision of an adequate regulatory system, the involvement of financial institutions and investors, the engagement of the third sector (in a quadruple-helix approach), unexpected threats and the consequences of climate change on marine resources.

Anyway, all interactions with stakeholders developed and enhanced thanks to InnovaMare project, have highlighted the strategic role played by innovations ecosystems, bringing together a diverse and wide range of stakeholders with complementary competences, pursuing technology development and innovation, with a view at increasing competitiveness, promoting growth and solving societal challenges of our time with a mission-oriented approach.

Considering the huge information base gathered by project partners, deriving from interviews, roundtables, study trips and other analysis performed, the main inputs coming from policy-makers can be summarized as follows, and should be integrated into the ongoing process for the capitalization of InnovaMare results:

POLITICAL AND LEGAL FRAMEWORK

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- a strong political commitment (both in Croatia and in Italy) should be ensured to promote the development of a cross-border innovation ecosystem, acknowledging the strategic importance and contribution of blue economy for the economic growth and competitiveness of the two territories (possibly signing binding documents);
- the process should be linked to EUSAIR macroregional strategy;
- blue economy / blue growth should have an adequate importance in the framework of the Smart Specialization Strategies of the cross-border regions involved in the process, thus stimulating research projects and innovation actions;
- all relevant stakeholders should be engaged in the process in a proactive way, ensuring the appropriate coverage of the whole innovation management process;
- an appropriate legal and regulatory framework should be put in place for the creation of a Digital Innovation Hub focused on underwater robotics and sensors

MEDIUM / LONG-TERM VISION AND MOBILIZATION OF INVESTMENTS

- the possibility to define at first a medium-long term research agenda should be taken into due account, envisioning the payoffs of a cross-border ecosystem in the next 3-5 years, with the objective to innovate the ecosystem and make it able to provide smart, feasible and marketable solutions to key challenges related to the sustainability of the Adriatic Sea (designing a vision and identifying actions and resources to achieve it);
- public investment should be mobilized to effectively support the start-up phase, but also private investments and investors should be possibly involved;
- dedicated public funding should be made available not only for research, but most of all to create the infrastructures and facilities that are necessary to provide testing and demonstration spaces for innovative start-ups / SMEs (making it possible for businesses to “test before invest”)

SKILLS DEVELOPMENT AND QUALIFIED SUPPORT TO SMEs

- education and skills development are a strategic asset, therefore curricula and training programmes should match the requests of the market and be able to intercept the technological foresights identified in the field of blue innovation;
- the new ecosystem should count on qualified staff with heterogeneous expertise, thus being able to support businesses from idea to project development to market deployment;
- involvement of relevant industrial players is considered as a key issue, since on one side industry can communicate the issues it is trying to overcome, or the market opportunities it is unable to effectively exploit, thus stimulating applied research and market exploitation with contractual research and license agreements;
- access and exploitation of intellectual property (IP) should be addressed at an early stage, before the implementation phase (project development), so that there is a clear understanding of IP assets, their ownership, their rights of use and exploitation. Therefore, it is very important that the

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Technology Transfer Unit is equipped with skilled professionals supporting students/researchers/start-ups/industry to define the most appropriate IPR strategy;

- new companies need targeted advisory services, mostly in field of business development, financial management and marketing, so dedicated services could be ensured;
- the innovation ecosystem must have the know-how, contacts and outreach to be able to represent and promote its academia and private actors at national and international level, also attracting foresing researchers, companies and investors, thus ensuring its sustainability in the long run.

To sum-up, the sustainability of InnovaMare project and strategy starts from:

- ❖ a strong political commitment to ensure the competitive growth of the cross-border blue growth sector, with a focus on underwater robotics and sensors, recognizing it as a strategic sector of the economy, mobilizing qualified occupation, investments and market opportunities for territorial competitiveness.
- ❖ a wide, diverse but cohesive stakeholder group, engaged with a quadruple-helix approach, ensuring the ownership of the initiative and the awareness of each involved party, perceiving clear benefits from the participation to the process;
- ❖ the mobilization of both public and private investments, based on the envisaged return on investment for the cross-border economy and society, as well as the foreseen development of added value, turnover, creation of job opportunities, attraction of foreign businesses and investors.

5. Action plan

5.1 Promoting the ecosystem in practice

The Innovamare community, which was created during the implementation of the project and continue to be developed thanks to additional interactions, is already engaged in the definition of an Action plan for the development of its specific innovation ecosystem, that comprises a wide range of actors and resources.
Our goal here is to describe the process while it is still unfolding, therefore taking into account the perspectives and the feedbacks of the stakeholders involved.

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In the previous chapters we have presented the ecosystem and explained the data gathered within the project, evidencing the key factors for success and the challenges to be faced. Here we focus on the methodology applied and the tools developed to pursue the objectives set at the beginning of the journey. Such methodology and tools are proposed to the reader as the *core of the Innovamare Action plan*.

Three main tools have been identified as crucial for the achievement of the main goal of Innovamare, that is developing and strenghtening the innovation ecosystem of underwater robotics and sensors, needed to promote sustainability in the Adriatic Sea:

- Living Labs
- Study visits
- The webplatform MAiROS, designed as an information infrastructure to support the creation, development and maintenance of the Innovamare innovation and entrepreneurial ecosystem.

Living Labs

The facilitation of Living Labs is part of a methodology that proposes new ways of managing innovation.
Most literature refers to the definition by ENoLL; "*Living Labs (LLs) are defined as user-centred, open innovation ecosystems based on systematic user co-creation approach, integrating research and innovation processes in real life communities and settings*"[5].
The underlying principle is that people's ideas, experiences, and knowledge, as well as their daily needs of support from products, services, or applications, should be the starting point in innovation.
The design of the InnovaMare Living Lab is the first step towards the Adriatic Sea Living Lab for research and development of underwater robotics and sensors for monitoring, control and prevention of submarine pollution. It has been created and animated by project's partners and open to their innovation networks.

The debate, both in literature and in research about Living Labs is open on how they can be institutionalised while still evolving dynamically and how the impact of living activities can be evaluated.
We leave these questions to the future, as we believe the InnovaMare Living Lab could give its contribution to proposing some answers as its huge potential will be released when it will evolve ***from a methodological tool to a real working environment.***

Study visits

The methodology implemented in InnovaMare includes another interesting tool to gather knowledge, to learn from new practices and to exchange information and contacts that can be put to good use in the future: the study visits. Study visits were organized in two innovation-friendly Countries: Norway and Finland[6].

[5] (https://enoll.org/about-us/August 1, 2018
[6] Detailed information on the study trips is available on the "Joint report from study trips in Norway and Finland" realised in 2022 by the Innovamare partnership.

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The concept consists of identifying and visiting existing innovation ecosystems, to get useful insights on how innovation they work in practice, that is how they manage internal relations, which are the foreseen services, what are the benefits for stakeholders, how they implement transfer of technology, how they handle innovation management, intellectual property and internationalization.
In addition, the participants to study visits had the chance to know entrepreneurial case studies from the underwater robotics and sensors world.

The main results, to be immediately used in the process of supporting the creation of the innovation ecosystem of InnovaMare, are the following:

- *a strong **political commitment paired with dedicated funding sources and a stable dialogue** between political, technical partners and industry are the key essential elements needed to initiate the process and to keep it on-track.*

It clearly emerged from the study visits that the most effective mean of creating a successful and expanding innovation ecosystem is ***to start already as a system**,* rather than as innovation producers and consumers looking for occasional use of research results, prototype design or services.

MAiROS webplatform

The main purpose of MAiROS platform is to contribute to the creation, development and maintenance of innovation and entrepreneurship ecosystem and to become the central point for the realization and organization of services within the digital innovation hub (DIH) for underwater robotics and sensors

Official MAiROS infographic

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The main functionalities are presented on the left side of the infographic:

a. Marketplace
b. Map of Excellence
c. Community
d. Funding opportunities
e. Counseling
f. Digital Innovation HUB Services

Each functionality has been planned to be serving specific needs of the Innovamare present and future Community, and benefits from the co-creation and co-design actions activated during the project.
Users can be granted three different levels of access: public, freemium or premium, to which correspond different operation options for each functionality
By accessing the *map of excellence*, the registered user gets the opportunity to search for content (projects, events, business entities, associations, institutions, organizations, suppliers and other entities defined by the initial requirement). The public user can only see general information about the excellence map.
Filtering is possible by multiple items with the results displayed on the map.
The *marketplace* provides the possibility to match offers and requests of technology, of prototype realization, commercialization for ideas and projects; different levels of operation are granted to different users.
The *community* function consent access to different tools such as a forum, a newsletter, educational material, business profiles of researchers, companies and Institutions. This function is also fundamental to manage the different roles assigned to users, that are connected with the level of operation each group of users is granted.
Funding opportunities is the virtual room where it will be possible to get information about the funds available to finance a specific idea or project.
Counseling consists of a wide range of ad-hoc services that can include providing detailed information about rulebook, laws, strategies.

Digital Innovation HUB Services is the key access point for the services that will be offered by the DIH:

- test before invest;
- skills and trainings;
- support to find investment;
- innovation ecosystem and networking;
- additional services on-demand, from project management to business model development;

The main challenge for the MAiRoS platform, as outlined by the participants to the two stakeholders focus group meetings specifically dedicated to this item, is to be able to promote a ***call to action*** in users and potential users, to activate processes that encourage the InnovaMare community made of professors,

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managers, researchers and entrepreneurs to use the platform ***to convey messages able to engage other people and to create a sense of belonging.***
It is demonstrated by the success stories of other innovation webplatforms[7] that the key factor is a solid and active front-end team or identified players, responsible for posting content and starting the discussion on different issues, channelling ideas and solutions to the correct recipients, thus generating web traffic and attracting new potential users.

5.2 Potential scenarios

Background and settings
InnovaMare Community is forming around the concepts of Blue Growth and of Sustainable Blue Economy, which is described in the "Communication on a new approach for a sustainable blue economy in the EU Transforming the EU's Blue Economy for a Sustainable Future" [European Commission (2021). COM/2021/240 final].

Being highly connected with a resource that contributes and sustains human life, the ***sea***, the whole Blue Economy sector faces a a strong need for innovation and sustainability – driven ***governance*** able to get together many different layers of the society and of the economy, taking care at the same time of natural, historical and territorial resources.

The scenarios we are trying to describe here are part of a setting which has strong links with specific high level governance instruments: Sea basin strategies and maritime EU Macro-Regional Strategies.
In this context, the interesting research "Benchmarking Report on Blue Growth Innovation Policies" conducted by Blueair Innovation Community – BLUEAIR project, co -financed by Adrion Interreg Programme, consent to visualize the broad picture.
The research benchmarked Blue economy innovation policy of the Adriatic-Ionian macro-region against other European sea basins, using a self-assessment tool, adjusted then after a validation workshop organized by the project consortium.

The sea basins other than the Adriatic-Ionian macro-region analised in the Report are:

[7] (for more references see for example the Mondelēz International and Mondelēz International's SnackFutures webinar "Leveraging an Open Innovation Portal to Build an Innovation Ecosystem" available here: https://www.gotostage.com/channel/034afd1d4d584929b96e7a6b6815ac4e/recording/317feb4537444e9dbe132f5533fad8ab/watch)

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- The Atlantic Ocean
- The Baltic Sea
- The Black Sea
- The Mediterranean
- The West Mediterranean sub-basin
- The North Sea

To provide information useful to draw guidelines for the implementation of the Innovation ecosystem in the Adriatic Sea basin, the InnovaMare ecosystem, it is interesting to have a look at the main findings of the above-mentioned Report on the *best practices* from other European Sea Basins.
The Baltic Sea Region cooperation format of **flagships** is widely recognized as good practice, mainly because by enacting the multi-level governance principle, flagships gather all possible stakeholders in a long-term process of co-creation of both policy and action. Each flagship has a flagship leader and can be structured as platform or membership-based network. Flagships produce results of much higher value-added than separate projects, as they produce effects on policy and action at the same time.
Submariner Network for Blue Growth **European Economic Interest Group** (EEIG), in the Baltic Sea Region is a different form of best practice. Since its foundation in 2013 it has developed into the leading transnational hub in the Baltics for promoting sustainable and innovative uses of marine resources.
The **BlueMed Initiative** in the Mediterranean Basin is another best practice, that took the form of Research and innovation initiative for blue jobs and growth in the Mediterranean area and it was further developed with the creation of four BlueMed Platforms on Knowledge, Economy, Technology, and Policy. The Initiative started in 2014 among Cyprus, Croatia, France, Greece, Italy, Malta, Portugal, Slovenia, and Spain and with the support of the European Commission. Three years after it was endorsed by all the European Union Countries and then adopted by all the member countries of the Union for the Mediterranean (UfM). It is seen as one the most successful initiative in this field, as it received strong political commitment both at EU and National level by EU member States and it proved to be the start-up incubator for more than 900 innovation projects on blue economy in the Mediterranean.
It is interesting to notice that the leaders in terms of effectiveness of their actions are those Basins or Macro-regions where there is strong capacity of linking the Macro-regional and Sea basin activities with other ESIF operational programmes, thus coordinating the policies in order to facilitate macro-regional cooperation.
Bearing this in mind, when coming to the implementation of the InnovaMare Ecosystem and DIH, it is not so important which scenario to choose, it is more relevant how many layers of governance and policy instruments it can rely upon.

Scenario 1: Set-up of one Digital Innovation Hub (DIH) in Sibenik, Croatia, providing solutions and services for the whole community.
In this scenario, the InnovaMare Community will promote and formally set up the DIH by delegating one single actor, that is the Chamber of Economy of Croatia, to legally form the entity that will manage the Hub, to hire the people that will work in it providing services, to rent the offices where to receive prospective clients and partners. Such an organization will bear the costs of the operation of the DIH and will decide

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autonomously, according to its internal organizational structure, how to manage activities and services, including the webplatform MAiRoS.
According to this hypothesis, one DIH will provide services to the whole area involved in InnovaMare and beyond, as it could expand its geographical influence to other Countries insisting on the same Sea basin, the Adriatic.

Scenario 2:
Set-up of two Digital Innovation Hubs (DIHs), one in Italy and one in Croatia, serving the two areas in a common and coordinated manner.
This scenario encompasses the implementation, by two Institutions, of a DIH in Italy and another in Croatia, two different and autonomous legal entities that can stipulate agreements in order to perform common actions and services. This scheme has an infinite serie of possible combinations for its management structure, depending on the level of collaboration and co-creation of services it is expected, especially in the operation of the webplatform MAiRoS.
Both scenarios were discussed during the "*Design Thinking Workshop*" dedicated to this topic and held in Sibenik on 25-29 October 2021, as the issue is still open, we hope to have provided some suggestions useful to take a decision.

5.3 Action plan in detail

Besides the choice of one of the above-mentioned scenarios, the core decision to be taken relates to the level of political, technical and operational investment that is going to be made in assisting and supporting the start-up and development of the InnovaMare Innovation Ecosystem. Those steps are based also on the guidelines for promoting a DIH at the EU level.

Based on the benchmarking analysis and guidelines reported, we can draw an Action Plan consisting of 5 phases, from zero to four, being implemented in a timeframe of 18 months from the start with an investment of about 450.000€

Following the start-up phase, the Ecosystem shall be fully operational, and its Governance should be able to set-up self-financing schemes via the subscription of fees by members and via the participation to EU projects and Macro regional Strategies.
The management of the DIH infrastructure connected to the ecosystem has to be defined following the choices related to the appropriate scenario and on the form of governance selected.

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Table 5.1 – Action plan

Phases	Strategic goals	Actions	Actors involved	Timing	Resources
0	Institutional engagement / cooperation	Policy makers dialogues via different means: Technical and political meetings Virtual World Cafè Workshops within EUSAIR Connection with flagship initiatives	EU Commission Ministries Regional and Local administrators Research administrations Main Innovamare members Experts in engagement and policy design initiatives	6/8 months	100.000€
1	Awareness / Launch of the ecosystem	Communication initiatives (online, itinerant events) Brand development and Identity building	Experts in communication Main Innovamare members	four to six months	70.000€

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			Entrepreneurs Business support Organisations Universities Potential beneficiaries such as managers of public and private institutions operating in the sector		
	Innovation Technology development	Promotion of joint projects R&D development – joint research	Main Innovamare members Entrepreneurs Business support Organisations Universities	four to six months	50.000€
2	Competence enhancement	Training	Experts in technical and financial instruments	six months	80.000€

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			Main Innovamare members Entrepreneurs Business support Organisations Universities MAiRoS managers		
3	Economic development	Matchmaking initiatives (Mairos)	Main Innovamare members Entrepreneurs Business support Organisations Universities Potential beneficiaries such as managers of public and private	Six to eight months	100.000€

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			institutions operating in the sector		
4	MAiRoS Community Management	Engagement/content delivery/daily management of the Community	MAiRoS managers IT experts	six months for the start-up phase	50.000€

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