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ECCENTRIC

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ENHANCING CIRCULARITY IN THE ADRIATIC AREA SUPPORTING INNOVATION AND GROWTH OF THE BLUE-ECONOMY EMERGING SECTORS

D.1.1.1

(Version 02 – date 11/2024)

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D.1.1.1 SMES' INTERVIEWS REPORT
WP1– Activity 1.1

Document information

Project name	Enhancing circularity in the Adriatic area supporting innovation and growth of the blue-economy emerging sectors
Project ID	ITHR0200314
LP	T2I – TECHNOLOGY TRANSFER AND INNOVATION S.C.A R.L.
PP	- MARINN - Maritime innovation cluster; - mareFVG - Maritime Technology Cluster FVG S.c.ar.l.; - HAMAG BICRO - Croatian Agency for SMEs, Innovation and Investments; - UNIBO - Alma Mater Studiorum - University of Bologna; - IMAST - Italian technological district for the engineering of polymeric and composite materials and structures; - CNA ABRUZZO - National Confederation of the craft sector and small and medium enterprises Abruzzo;
Responsible LP/PP	T2I – TECHNOLOGY TRANSFER AND INNOVATION S.C.A R.L.
Length	28 pages + annex
Version	Draft version
Distribution Level	Publishable

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1 INTRODUCTION

ECCENTRIC project aims at increasing the collaboration between SMEs on marine energy, maritime&safety surveillance, infrastructure with Research and technology transfer institutions, to boost the green transition in the Adriatic Area. SMEs and researchers test an innovative methodology to establish constructive collaborations in the frame of the digital and green transition (so called "twin" transition) for new products for the markets and new services for citizens and stakeholders.

2 OBJECTIVE OF THE ACTIVITY

The objective of the activity is collect information on the current situation of industrial association, sectoral agencies, SMEs, research institutions and policy makers of the blue-economy emerging sectors about technologies, business and financial aspects, and analyze the challenges then the stakeholder need must be face to boost the green transition in the Adriatic Area.

3 METHODOLOGY ADOPTED FOR THE ACTIVITY

To achieve the objective of the activity, each partner identified and interviewed 10 relevant players from industry associations, sector agencies, SMEs, research institutions and policy makers, to collect inputs to highlight present and future challenging concerning the product&process innovations, the collaborations with the research institutions and the financial /funding challenges these SMEs need to meet.

4 STRUCTURE OF THE INTERVIEW

1.	Entity – Company – Organization - briefly description;
2.	In which of the following sectors is your company/organization currently using, developing, or supporting innovative technologies? - Marine energy - Maritime safety and surveillance - Infrastructure - Other
3.	What do you believe will be the most significant drivers of growth for emerging sectors over the next five years? (Put the following proposals in order of importance) - Increased public investments - International collaborations - Rapid technological development - Market expansion - Other
4.	What are the main challenges your company/organization is facing in terms of technological innovation? (Select all that apply) - Lack of funding - Regulatory barriers - Limited access to technology - Insufficient collaboration with research institutions - Other

5.	In which areas does your company have technological and innovation needs? (Select all that apply) - products/services/solutions - production processes - markets
6.	How do you currently evaluate the collaboration between SMEs and research institutions in your sector? - Excellent - Good - Sufficient - Poor - Non-existent
7.	According to your opinion, what are main reasons for such evaluation of cooperation between SMEs and research institutions in your sector (e.g. regulatory issues, not enoug networking organizations, lack of interest...)
8.	Which business models do you consider most promising for the success of your company/organization in the emerging sectors of the blue economy? (Select all that apply) - Innovation-based model - Public-private partnership model - Circular economy model - Service-based model - Other
9.	What are the main sources of funding that your company/organization uses to support R&D activities? (Select all that apply) - Government funds - Private investments - European funding - Crowdfunding - Other
10.	Have you previously participated in cross-border projects or international collaborations? - Yes - No (If yes, can you describe the main benefits and challenges encountered.)
11.	How do you think the development roadmaps* drafted by the ECCENTRIC project can support the growth and innovation of your company/organization? - Providing strategic guidelines - Facilitating access to funding - Promoting collaboration with research institutions - Improving technological skills - Other *A guide that outlines the path to achieving certain goals, specifying priorities, resources needed, and expected timelines. Roadmaps can be used to communicate the direction of the project to all stakeholders, align the team to the goals, and monitor progress over time.
12.	What suggestions or recommendations would you give to improve the interaction and collaboration between SMEs, research institutions, and investors in the blue economy? (Open-ended)

5 SUMMARY OF THE INTERVIEW

The stakeholders involved in the research carried out belong to different entities in the Adriatic area. They are able to provide a general overview of the current situation of the emerging sectors of the blue economy (marine energy, maritime security and surveillance and infrastructures) and of the challenges to be face to boost the sustainable development.

THE ADRIATIC AREA INCLUDES:

- ROVIGO - VENETO REGION (ITALY)
- RIJECA - PRIMORSKO-GORANSKA ŽUPANIJA REGION (CROATIA)
- MONFALCONE - FRIULI-VENEZIA GIULIA REGION (ITALY)
- ZAGREB - GRAD ZAGREB REGION (CROATIA)
- SIBENIK - GRAD ZAGREB REGION (CROATIA)
- RAVENNA - EMILIA-ROMAGNA REGION (ITALY)
- BARI - PUGLIA REGION (ITALY)
- PESCARA - ABRUZZO REGION (ITALY)

The stakeholders involved in the interviews were selected because of their long-standing experience in the blue economy sector. Their expertise and understanding of the challenges and requirements for a sustainable transition are crucial to achieving the project's objectives. For this reason, involving a broader range of target users enables the identification and addressing of a wider spectrum of issues and needs.

THE STAKEHOLDE INVOLVED ARE:

- Small and Medium Enterprises
- Management Agency and Sectoral Authority
- Educational and Research Institution
- Public authority and Organization

5.1 RELEVANT PLAYERS INVOLVED

5.1.1 ENTERPRISES

Veneto region:

- **FINCANTIERI**: Shipbuilding complex with over 230 years of history and more than 7,000 ships built. It builds cruise ships, defence ships and specialized offshore ships, sole supplier for the Italian Navy, and partner for the US Navy and numerous foreign navies. Specialized in ship repairs and conversions, in the production of systems and components for the mechanical and electrical sectors, in ship furnishing solutions, in electronic systems and software, in infrastructures and maritime works;
- **ADRIATICING**: Company that manages the regasification terminal located in the Upper Adriatic, approximately 15 kilometres from the Veneto coast;

Primorsko-Goranska Županija region:

- **SCAN PROJEKT Ltd**: one of the leading Croatian engineering companies specialized in multidisciplinary design engineering and consultancy services. SCAN is mainly present in the following industries: oil & gas production (both onshore and offshore); oil refining; oil product and LPG terminals; pipelines and various petrochemical and chemical plants.
- **MS TECH LTD**: a marine engineering company with more than 25 employees, headquartered in Adriatic Croatia. It is a part of the Metal Shark group that designs and produces specialized vessels for military, law enforcement, fire rescue, and commercial applications, thereby supporting marine energy, safety, surveillance, and infrastructure needs.
- **MARITIME CENTER OF EXCELLENCE LTD**: designs and implements innovative solutions in maritime and offshore industry. The organization enhances marine safety and surveillance in the Adriatic Sea by fostering collaboration among educational institutions, businesses, and authorities, while driving innovation and research to advance technology in the blue economy. With its growing team of experts supported by the “sister” organizations they are investing in development of new technologies and their implementation in core business of partner companies.
- **FLOWTECH LTD**: an independent ship design and engineering company. With more than 10 years of experience and involvement in more than 25 shipbuilding and offshore projects, FlowTech has collaborated with more than 10 shipyards and design offices across 8 countries worldwide, fostering advancements in technology that support the growth of marine safety and infrastructure.
- **HEXIS LTD**: a software development agency that, among other things, specializes in maritime management software, data visualisation, quantitative data collection techniques, and data analytics.
- **GITONE KVARNER LTD**: a consulting company engaged in various business sectors. Along with ACI, they are concessionaires for the Porto Baroš nautical tourism port in Rijeka for the next 30 years. The company actively participates in and manages numerous EU-funded projects with a total value exceeding 30 million euros, primarily focused on the maritime industry and sustainable development. Key projects include NAHV (North Adriatic Hydrogen Valley), a transnational initiative aimed at developing a complete renewable hydrogen value chain to enhance sustainability and reduce carbon emissions; Smart Blue Tourism – Smart Marina of the Future, which focuses on enhancing sustainability and digital transformation in nautical tourism

through innovative smart marina solutions that integrate cutting-edge technologies and environmental best practices; and ZEAS (Zero Emission Adriatic Ship), an initiative to construct a hydrogen-powered passenger ship.

Friuli-Venezia Giulia region:

- **INNOVO SRL**: engineering, construction and equipment rental company. Its purpose is to support the oil and gas, renewables and marine industries worldwide with innovative custom-designed and rental products including jack-up systems, modular pontoons and cable laying equipment. Recently, it has advanced in the field of autonomous vessels with the design of a prototype for sea patrolling.
- **TRANSPOBANK SRL**: the company has been involved in transport telematics for over 30 years, and currently operates a freight exchange platform and areal-time tracking for vehicles, vessels, construction equipment and cranes. Transpobank is actively involved in research and development activities in diversified fields including monitoring of the sea, monitoring of underwater noise and digital twin application in coastal and port areas.
- **SEABREATH SRL**: micro startup based in Parma and Padua and specialized in developing specific solutions for wave energy converters designed to generate energy by the sea.
- **AITRONIK SRL:** based in Tuscany, the company supports manufacturers of marine, land and air vehicles in the robotization of their machines, both for national and for international industrial groups. Aitronik is specialized in Machine Learning, Code development on super-computing platforms for AI, and Autonomous Vehicles. Operates on AI systems into Autonomous Vehicles for applications as autonomous forklifts to robotic lawnmowers, autonomous underwater vehicles for sea exploration to aerial drones for ships surveillance.
- **AIRWORKS SRL:** engineering consultancy for advanced systems, combining vast design skills with a thorough knowledge of manufacturing, helps organizations develop outstanding technologies for Space, Defence, Wind Power and other demanding domains.
- **WIRELESS AND MORE SRL**: based in Padua, the company operates in the wireless telecommunications sector, in harsh environments such as maritime. It designs, evaluates and implements solutions in diversified set of environments, from terrestrial radio links to underwater acoustic and optical communications. The company is a spin off of the University of Padua and benefits from the interaction with research groups in the university and knowledge centers.

Grad Zagreb region:

- **GEOLUX D.O.O.**: Manufacturer of hydrometeorological sensors with internal R&D and production in Croatia and export in 80+ countries around the world.
- **PROBOTICA D.O.O.**: is recognized in the market as: - a supplier of engineering services related to development and consulting, - a center of excellence in the fields of robotics, electronics, and construction, - a provider of design services for complex mechatronic and process plants.
- **ZADAR SUB D.O.O**.: Marine & underwater services, sales of equipment for aquaculture and professional fishermen.
- **PLATFORMA 22 D.O.O**.: company is dedicated to providing the highest quality shellfish from the Krka River estuary, with an emphasis on mussels and oysters.

- **SEA CRAS D.O.O**.: Coastal Intelligence by SeaCras leverages AI analysis of very high-resolution satellite data to evaluate marine emissions and estimate the ecological vulnerability of micro-locations, destinations, and territorial waters all together that constitute environmental security data, as a part of climate security.

Emilia-Romagna region:

- **LUCCHI R. S.R.L.:** Founded in 1949 by Riccardo Lucchi, and currently led by his son Giorgio and grandson Fabio, the company has grown by evolving in the design and production of high-performance electric motors with high energy efficiency. The different types of electric machines produced have been applied in many sectors: avionics, marine, agriculture, defense, automotive and many others.
- **FERRETTI GROUP**: world leader in the design, construction and sale of luxury yachts and pleasure vessels. The Group has a portfolio of prestigious, exclusive brands, such as Ferretti Yachts, Riva, Pershing, Itama, CRN, Custom Line and Wally.
- **CORSET & CO SRL**: Italian company founded in 2014 specialized in the processing of composite materials for the nautical sector, thanks to the expertise of a personality in the yachting world, Eng. Paolo Francia. Thanks to its quality and brand history, in a few years the company has become a milestone in the manufacturing of composite materials for the production of components for pleasure yachts for the most important national and international brands in the nautical sector (Cantieri del Pardo, Ferretti Group, San Lorenzo, Italia Yachts, Fiart, Riva ecc) 2 The company offers services such as the production of molds, components, and structures for pleasure boats in composite material, using manual processing and advanced technologies such as infusion. Today, Corset has 8 active plants in Italy that supply the leading national and international nautical brands and has an organizational structure with 95 employees. Corset leverages the experience and expertise of the best professionals in the industry to ensure the quality of its products, tailored to the needs of its clients. Furthermore, the company focuses on research and development concerning the sustainability of processes and products, always ensuring the quality, safety, and excellence of its products for the pleasure boating sector. The studies involve innovative systems for monitoring product quality and lifecycle, innovative/eco-sustainable/recyclable materials, techniques and technologies for the use of new materials, and the creation of experimental prototypes. The company aims for an even more challenging goal: pursuing a regenerative model within a circular economy framework for the nautical industry.
- **MECH SRL**: Engineering Consultant Company who mainly design and details steel structures and machineries. Our core – business is mainly in steel structures, but we design and sometime produce special equipment (by order or for internal scope).
- **VIDEOWORKS GROUP**: one of the world leaders in AV/IT, Domotics, AI applications on Leisure and Cruise ships (super and mega Yachts and Cruise ships).
- **ECOINNOVAZIONE SRL**: Research and Consultancy Company born in 2012 as spin-off of ENEA (large Italian technological research public organization) instrumental to apply knowledge, methods and tools developed in many years of international research. Ecoinnovazione provides tailored services and solutions to companies and public administrations finalized to a winning circular economy and sustainability strategy. Its services are based on the most robust and scientifically sound methods, and they are continuously updated through the participation to international research projects and networks. Working in the Green and Circular Economy field, Ecoinnovazione offers advanced services of environmental, economic and social impacts assessment of products, services, organizations with a life cycle approach. It applies Responsible

Research and Innovation principles and stakeholder engagement in the research and development process to achieve acceptability and consensus on innovative technologies, products and methods.

Puglia region:

- **ENGINSOFT SPA**: a technology SME striving to provide excellent engineering services and simulation software solutions to industrial customers in Italy and Europe. By participating in R&D projects, we increase our groundbreaking technical knowledge deepen our expertise in new areas, innovating and trialling new applications and technologies. We contribute to research by Multiphysics product and process simulation, manufacturing system simulation, performance- and quality- oriented machine and process modelling and optimization, cyber-physical systems development, simulation for robotics and automation. Currently, ES is contributing to 9 Horizon projects, and it is coordinator of LIFESAVER and GeoS-TECHIS. Moreover, it is an active member of EFFRA, EMMC, EIT Manufacturing, MADE and SMACT Italian Competence centers.
- **DE PALMA THERMOFLUID**: young and dynamic company with strong knowledge and experience in technical projects, was founded in 1999 as a development of De Palma Cristoforo's company, founded in 1964. De Palma Thermofluid with its 50 years of experience in the process fluid, acts as a natural partner alongside the establishment responsible, maintenance, plant engineers and designers that offers technological solutions and reliable components. In relation to its commitment to its associated category the De Palma Thermofluid plays a role in the area of innovation activator trying to offer its customers complete solutions, conveying their needs to other companies can solve different problems from the ones in the process and able to build any type of mechanical and electronic system. In 2005 obtained the ISO 9001 certification in order to guarantee its customers an ever work certified and traced in each procedure, is able to guarantee the quality of its products thanks to a careful choice of partners and suppliers, with whom we compare so that the proposed solutions are the result of a shared and detailed analysis obtained with inspections and spot checks ensuring technical and commercial coverage throughout the south. In recent years the presence on the territory has spread to Albania where, thanks to a collaboration agreement with a local partner, the customer base has expanded. De Palma Thermofluid believes in WWW and renews its platform thus expanding the customer base with a constant growth trend beyond national borders. De Palma Thermofluid founded, with other large and small companies, the Technical and Mechanical High School Institute "A.Cuccovillo" in order to spread to next generations their knowledge and competence. The naval division of Thermofluid is designed as a reference point for the most important cruise companies for both activities of finding supplies is for the specific design and resolution of process problems. The Marine Division of De Palma Thermofluid work to provide products and technologies that produce, detect, regulate and control all industrial fluids such as steam, hot water, chilled and osmosis, the hot and cold air, water seafood, fats, fuels, gases and all fluids food.
- **PLANETEK ITALIA**: is an Italian Benefit Company, established in 1994, which employs 130+ women and men, passionate and skilled in Geoinformatics, Space solutions and Earth science. Planetek Italia provides solutions to exploit the value of geospatial data through all phases of data life cycle from acquisition, storage, management up to analysis and sharing. Planetek Italia operates in many application areas ranging from environmental and land monitoring to open-government and smart cities, and include engineering, agriculture and food production, defence and security, as well as satellite missions and space exploration. Planetek Italia is also a diamond dealer of Hexagon Geospatial software and a reseller of satellite imagery from main global providers. Planetek Italia is active in both national and international markets through our group of four companies based in Italy and Greece. Planetek Italia organization is structured in Strategic Business Units focused on different markets: Government & Security, European Institutions, and Space Systems, Business to Business.

Abruzzo region:

- **ELICA S.R.L**.: is an example of innovation in the fishing industry. With over 30 years of experience, this company focuses on optimizing fishing practices, helping companies become more competitive and sustainable. They work with universities and research centres to develop technologies that reduce environmental impact, aiming to secure sustainability certifications for Italian fishing companies.
- **SONICATEL**: a telecom and cloud service provider whose administrator works to improve digitization. Sonicatel falls under digital infrastructure.
- **STARTUP I2T**: this technological reality is at the forefront of proposing solutions for boating and tourism, aiming to innovate in a constantly evolving sector. I2t gave birth to Ulisses, an ambitious platform that aims to revolutionise the monitoring of boats, caravans and trains. Using proprietary technologies, the company offers a service that facilitates check-in operations and efficiently manages data, making life easier for both users and institutions.

5.1.2 MANAGEMENT AGENCY AND SECTORAL AUTHORITY

Veneto region:

- **ACQUEVENETE**: Integrated water service manager for the provinces of Padua, Rovigo, Vicenza, Verona, Venice, it manages over 10,000 kilometers of pipelines between water and sewer networks. It takes care of taking water from production sources, making it drinkable and distributing it to all users, domestic and otherwise. Its work continues even after the water has been used, to make it flow into the sewer network, purify it in the appropriate plants and finally return it clean to the environment;
- **AIPO**: Interregional agency for the management of hydraulic works and inland navigation in the Po river basin;
- **ANBI VENETO**: Regional Association of "Consorzi di Bonifica del Veneto", active in the region mainly for the purposes of hydraulic safety of the territory and for irrigation in agriculture;

Primorsko-Goranska Županija region:

- **MINISTRY OF THE SEA, TRANSPORT AND INFRASTRUCTURE**: is responsible for protecting the marine environment (including islands, coastal regions, ports and inland waterways), drawing up transport development strategies, and installation and management of telecommunications facilities.

Friuli-Venezia Giulia region:

- **TRIESTE COAST GUARD AUTHORITY**: local unit of the coast guard authority part of the Italian Navy under the control of the Ministry of Infrastructure and Transport with the head office in Rome. The missions of the Italian Coast Guard include: Search and rescue, Maritime law enforcement, Protection of marine resources, Safety of navigation and Fisheries protection and regulation.
- **TRIESTE PORT AUTHORITY**: is the authority in charge for management and administration of the ports of Trieste and Monfalcone, located in the northern sites of the Adriatic and Mediterranean Seas. The ports holds an important role at international level and are a hub for commercial, industrial and logistic purposes. The authority is aligned with a moder and flexible strategy that focuses on development as green energy hub integrating updated telecommunications and research and innovation. The harbor in active in diversified segments including transport of goods and passengers.

Grad Zagreb region:

- **ŠIBENIK BOATS**: Tourist company

Emilia-Romagna region:

- **OIKOS AREA S.R.L:** is a private company supporting private and public organizations in achieving their environmental, social and economic sustainability goals, through the provision of management and technical consultancy, audits and compliance checks, training and development of human resources programs.
- **FONDAZIONE CETACEA**: is a no profit association in marine environmental conservation and manages a sea turtles rescue center.

Puglia region:

- **BOOSTING INNOVATION IN POLIBA SCARL (BINP):** is an incubator promoted by the Polytechnic University of Bari (Poliba), headquartered in Bari, Italy. This non-profit consortium focuses on supporting the local ecosystem by promoting entrepreneurial projects, startups, spin-offs, and open innovation strategies. Over two years, BINP raised more than €4 million from venture capital funds, supporting seven deep tech startups. BINP partners with major venture capital funds such as Tech 4 Planet, Golinelli, and Scientifica Venture Capital. Intesa Sanpaolo supports BINP as the main sponsor.
- **ESA BIC BRINDISI**: is the first and only startup incubator in the south of Italy part of the network of Business Incubation Centers of European Space Agency. It offers a comprehensive incubation programme to startups who have business ideas with a space connection.
- **BALAB**: contamination lab of the University of Bari “Aldo Moro”, is a creativity laboratory in which to promote and support processes of "contamination" of knowledge that impact the culture of entrepreneurship and innovation, encouraging the spread of new learning models from the perspective of open innovation. Born in 2015 as part of the Regional Project "ILO Network for Smart Puglia", with the aim of encouraging the contamination of innovative entrepreneurial ideas, and once the project was completed it was institutionalized as an "ordinary and strategic" activity of the University of Bari in order to encourage processes of business creation and development of innovative ideas in an open and attractive place, where human capital meets, gets to know, presents itself to be guided and accompanied in the meeting phase with the main actors of innovation. Nestled in the University Center of Excellence for Innovation and Creativity, in the context of Entrepreneurship Education, it welcomes the most innovative ideas to accompany them in their realization by making available: spaces, knowledge and experiences. The name itself refers to the ‘BA’ model - a Japanese management term - which indicates the space of opportunities, a place that is not necessarily physical, but a method of creative and constructive sharing, like the one created between people with the same objectives.
- **NEST - NETWORK 4 ENERGY SUSTAINABLE TRANSITION**: is the extended partnership promoted by the Ministry of University and Research (MUR), dedicated to “Energy Scenarios of the Future” - sub-theme 2.a “Green Energy of the Future,” funded by the European Union - NextGenerationEU - National Recovery and Resilience Plan (NRP) - Mission 4 Component 2, Investment 1.3. It uses a hub and spoke structure to carry out its activities. Spoke 2 (Energy Harvesting & Off-Shore Renewable) aims mainly at developing research activities in the field of marine energy.

Abruzzo region:

- **FI.R.A. S.P.A. UNIPERSONALE**: an in-house company of the Abruzzo Region. Fi.R.A. is the instrument for implementing regional economic planning and contributes to the development and socio-economic and territorial rebalancing of Abruzzo.
- **ECIPA**: an accredited training institution that promotes specialized courses in tourism and boating, with the aim of training professionals ready to respond to market needs.

5.1.3 EDUCATIONAL AND RESEARCH INSTITUTION

Veneto region:

- **ISPRA**: Higher Institute for Environmental Protection and Research. The institute deals with environmental protection, including marine, environmental emergencies and research, also the body directs and coordinates regional agencies for environmental protection and cooperates with the European Environment Agency and with national and international institutions and organizations operating in the field of environmental protection. It carries out technical and scientific functions, through monitoring, evaluation, control, inspection and management of environmental information;

Primorsko-Goranska Županija region:

- **FACULTY OF ELECTRICAL ENGINEERING, MECHANICAL ENGINEERING AND NAVAL ARCHITECTURE OF THE UNIVERSITY OF SPLIT (FESB):** is an educational and research institution that offers various activities: teaching, research, development, professional work and innovation in the areas of technical sciences, including Electrical Engineering, Electronics, Mechanical Engineering, Naval Architecture, Computer Science, Industrial Engineering and Natural Sciences. With approximately 2500 students/year, more than 12000 graduated students in 60 years of existence and more than 250 employees, FESB has grown into a recognized and highly respectable educational and research institution.
- **THE UNIVERSITY OF RIJEKA (UNIRI):** is the fundamental educational and research institution in the western part of Croatia. Founded in 1973, the University of Rijeka has matured into a modern European university and center of excellence whose impact extends beyond the region. With a total of 15 faculties, 1 academy and 13 specialized research centers, with over 160 study programs it is a research, science, and education-oriented university that supports social and economic development in its community, the City of Rijeka, and the wider region. The University of Rijeka has over 16000 students, over 1970 employees, and almost 1200 researchers. By building a state-of-the-art campus, the University of Rijeka has visibly improved its teaching methods and scientific structure, while attending to each student's and staff member's living and working needs. My role is Head of Research and Innovation.

Friuli-Venezia Giulia region:

- **UNIVERSITY OF TRIESTE – DEPARTMENT OF ENGINEERING AND ARCHITECTURE**: one of the three universities in Italy specialized in naval architecture and marine engineering. Mostly involved in maritime technologies related activities through the faculty of Architecture and Engineering (DIA Department). Among others, the department has established the IE-FLUIDS research group, focused on industrial and environmental computational fluid dynamics focusing issues related to underwater studies on diversified sea offshore applications.

- **NATIONAL RESEARCH COUNCIL – MARINE SCIENCES DEPARTMENT**: CNR it is the largest scientific and technological research center in Italy. The marine sciences department IGSMAR is based in Venice and conducts experiments on marine geology, physical, chemical and biological oceanography, climate variability, and natural risk assessment. Has been involved in diversified projects connected to marine technologies applications in terms of robotics, sensors and sea monitoring.

Grad Zagreb region:

- **UNIZG-FER**: Croatia's leading academic and research institution in the field of electrical engineering, computing, and information and communication technology.
- **RUĐER BOŠKOVIĆ INSTITUTE**: The institute is the largest Croatian scientific and research center with a multidisciplinary character.
- **FAKULTET ELEKTROTEHNIKE, STROJARSTVA I BRODOGRADNJE**: Educational institution for electrical engineering, mechanical engineering and shipbuilding.
- **FESB – SPLIT**: Educational institution.

Emilia-Romagna region:

- **BI-REX**: is one of the 8 national competence center, is a public private consortium composed of 63 affiliated entity. Our goal is to support the collaboration within industry and research center, supporting the digital transition and new technology adoption.

Puglia region:

- **THE POLYTECHNIC UNIVERSITY OF BARI (POLIBA):** is a public university, subjected to the legal supervision of the Ministry of University and Research (MUR) and its financial administration, as part of the public administration sector, is subjected to the control of the Ministry of Finance and the Court of Auditors. In Italy, following Law No. 240 of December 30th, 2010, the legislation regarding the organization of universities, academic staff and recruitment procedures has been redefined, authorizing the government to stimulate the quality of research and efficiency within the university system. This reform includes two important changes: the adoption of accrual accounting, instead of cash accounting, and the introduction of a management control system, both mandatory from the 1st January 2015. Therefore, the Polytechnic University of Bari adopts the accounting, financial reporting and management control systems of Italian public universities, in light of the new legislation (Law 240/2010 and Decree 18/2012). Over the years, POLIBA has demonstrated a particularly solid economic-financial and equity performance, with a constant improvement trend in indicators, both in absolute and percentage terms. POLIBA has a long experience in managing research projects, both from a scientific and financial and reporting point of view. In fact, POLIBA has been involved in the last decade in about 100 European (Horizon 2020, Horizon Europe) and national research projects with a budget of about 27 million euros funded by the European Commission, Italian Ministries, etc., both as a project leader and as partner. Thanks to this, POLIBA is well acquainted with the reporting procedures and requirements, such as the registration of each project in the data management portal and a separate accounting system for all transactions related to a given funded project and the document inspection rules. Furthermore, POLIBA has its own internal accounting rules established in the Administrative, Financial and Accounting Regulation. The Research group interviewed has been involved in topics related to Maritime and Environmental Hydraulics with particular attention to: wave mechanics, marine currents, localized erosion processes, buoyancy and momentum jets released into a still body of water or in the presence of wave motion or transverse current, with or without a macro-roughness of the bottom (ripples

or vegetation), flow fields in channels and typical localized phenomena, such as hydraulic jumps, nature-based solutions for the protection of the coastal area. In particular, the experimental research is conducted in channels and wave tanks available at the Coastal Engineering Laboratory (LIC). The study of wave motion, for regular and irregular waves, in particular in shoaling areas and in the surf zone, was addressed in the laboratory using cutting- edge measurement instruments and has allowed us to deepen our knowledge of hydrodynamics in the shore area, responsible for the transport, mixing and diffusion of tracers, sediments, pollutants, microplastics, therefore generating a strong impact on coastal ecosystems. At the same time, the role played by wave motion in the interaction with maritime structures (such as coastal defenses, obstacles of various kinds, vegetation) was also studied.

- **THE UNIVERSITY OF SALENTO**: is located at the University campus near Lecce, the capital of Salento area, on the heel of Italy's boot. Whoever ventures here, is received by the 'Salento way', a simple mix of culture, nature, history which seasons wild and sunny beaches, gorgeous baroque, tempting food and wine. Always at the crossroads between East and West, Salento has been a passage of people and shelter for civilizations since ancient times, when Brindisi was the last harbor of Romans' highway to the east, welcoming people from the Mediterranean Sea. This history is at the root of local culture and today social engagement, open education, inclusion and internationalization are cornerstones of the University strategy, "the University between two sea". DEfI specializes in the vision focusing on Technological Transition, Sustainability, Resilience, BioEngineering. Researchers at DEfI work for harmonizing multidisciplinary research teams both inside the Department and outside the University: this brochure shows the several different multi- perspective engineering fields DEfI researchers are involved in. Thanks to its education programs and the continuous technology transfer activities, DEfI has contributed to the industrial base of the region's economy, which has been growing incrementally for 25 years now. Alongside highly capital-intensive large-scale plants - such as steel-making, petrochemicals, aerospace, energy -, a network of small and medium-sized firms has gradually expanded. As a result, highly specialized areas have developed, able to compete on the international stage: the local sectors include food processing and vehicles; footwear, textiles, wood and furniture, engineering, rubber and information technologies in all its facades. With a state-of-the-art contribution to the development of new technologies, investment in human capital, research infrastructures and high-quality education programs, DEfI envisions the development of a pole of excellence at the service of local community needs and global challenges, cultivating talented engineers, regardless of wherever they come from and wherever they may go.
- **ITS ACADEMY MOBILITÀ SOSTENIBILE AEROSPAZIO PUGLIA**: The mission of the I.T.S. AEROSPAZIO PUGLIA Foundation is Ensure the supply of senior post-secondary technicians on a continuous basis in relation to figures that meet the demand from public and private employment in relation to the aerospace sector; support the integration between education, training and work systems, with particular reference to technical-professional polytechnics as defined in Article 13, paragraph 2, of Law n. 40/07, to spread the technical and scientific culture; support measures for innovation and technology transfer to small and medium-sized enterprises; to disseminate technical and scientific knowledge and promote the orientation of young people and their families towards technical occupations; establish solid links with inter-professional funds for the continuing training of workers.

5.1.4 PUBLIC AUTHORITY AND ORGANIZATION

Veneto region:

- **CONSORZIO DI BONIFICA:** Organization that operates in the territory carrying out reclamation and irrigation activities for the development of productive activity;
- **CONFINDUSTRIA VENETO EST:** Organization with 5,000 member companies in which manufacturing, service and construction companies participate, with the aim of supporting the local territorial system by supporting companies in growth and development, providing support in change;
- **ASSONAUTICA VENEZIA:** Association that deals with the development of recreational boating, promotes nautical tourism and all related economic, productive and social activities in the region;
- **ASSONAUTICA ACQUE INTERNE VENETO ED EMILIA**: Association that promotes and pursues the development of the economy of the sea and inland waters in all sectors/activities, direct/indirect in favor of the actors of the supply chain and the yachtsman also in defense of the usability of the nautical activity and of the social, tourist, recreational and sporting activities connected to it; promotes and favors the activities of research, development, training and environmental protection.

Primorsko-Goranska Županija region:

- **CENTER OF TECHNOLOGY TRANSFER (CTT):** is a company founded in 1996 by the University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture (UNIZAG FSB), with the support of the Ministry of Science, and in consultation with the German Fraunhofer Institute. The aim of CTT is to transfer R&D results from academia to economy and public sector and to foster Innovation. CTT is involved in scientific projects, lifelong learning, incubation of spin offs and start-ups, and transfer of knowledge and technology.

Emilia-Romagna region:

- **EMILIA – ROMAGNA REGION:** deals with a wide range of topics and among them the DG Knowledge, Research, Labour, Enterprises is the MA of both RP ERDF and ESF+. The Sustainable innovation, Enterprises, Industrial chains, Energy and Green Economy area is in charge for designing and implementing the regional industrial policies, the S3, the Regional Energy Plan and its Three year – Implementation plan. Among our mission there is the support to SMEs and companies's investment in R&D, in energy efficiency and renewable sources, promoting also high-tech start-ups. Since 2004, when the High Technology Network grouping 10 Technopoles was launched, we are also supporting the delivery of industrial research, providing innovation services to businesses, start-ups and spin-offs. Innovation and Sustainable Economy are key targets for which we have defined policy instruments and financial measures. In addition to it, E-R R is the coordinator of the Italian Regional Committee within the National Technology Cluster Blue Italian Growth, focusing on Blue Economy. Last but not least, our key working fields are green blue, circular and space economy and have also a lot of experience in the management of European and International projects. We have leaded MISTRAL project (Interreg MED) and are currently leading Blue Ecosystem project (Interreg EURO MED) both working on Blue Economy with interesting results and activities that can be synergic with ECCENTRIC. I'm a project manager of the Unit, dealing with EU funded project and managing International relations. Presently I'm project manager, with role of Leading partner, of Blue Ecosystem and HERCULES-CE (Interreg Central EUROPE main focus: RECs), and with role of Project partner of LEEWAY (Interreg EUROPE main topic RECs), CIRCOTRONIC (Interreg Central Europe main topic: circularity applied to electric and electronic devises) and Coordinator of MASBBE (S3 – CoP – Maritime Sustainable Blue BioEconomy.

Puglia region:

- **PUGLIA REGION – STRATEGIC REGIONAL AGENCY FOR TERRITORIAL ECO-SUSTAINABLE DEVELOPMENT (ASSET):** the Regional Strategic Agency for the eco-sustainable development of the territory, is a public agency bound to the Apulia Region that is active in many sectors: sustainable mobility, public works, housing policies, healthcare construction, landscape protection, cultural and environmental enhancement, alternative energy production and reduction of energy consumption, prevention and safeguarding of the territory from hydrogeological and seismic risks, aquaculture, strategic planning of investments for the sustainable development of the territory, research and development projects. ASSET has a long-lasting experience in coordinating and working on EU funded projects on different topics such as: blue economy, sustainable infrastructure and mobility, hydrogeological and coastal risk, wildfire management. ASSET is particularly focused on the prevention of environmental damage and hazard, the risks mitigation and technological innovation and sustainability.
- **CONFINDUSTRIA PUGLIA:** is the Confindustria regional representation, with the aim of organizing research, debates and meetings on economic and social aspects. Confindustria Puglia supports the entrepreneurs in solving regional problems according to each business categories. He dialogues with the regional bodies and promotes actions aimed at maximizing the synergies between the academic world and the business. Confindustria Puglia's role is to connect information on different companies/SMEs.

Abruzzo region:

- **THE GAL (LOCAL ACTION GROUP):** is a consortium of public and private members dedicated to the local development of the Costa dei Trabocchi. With the help of public funds, it deals with territorial animation and the involvement of local actors.
- **FAB (REGIONAL FEDERATION BLUE SEA):** works to represent productive activities in coastal areas and participates in the management of Abruzzo's ports.
- **THE MAYOR OF CASOLI MUNICIPALITY (POLITICIAN):** who brings the voice of the local community to the table, emphasises the importance of public-private cooperation in promoting sustainable development.
- **SPECIAL AGENCY OF THE CHIETI-PESCARA CHAMBER OF COMMERCE:** which has been working for some time on the blue economy, and EBRART (Regional bilateral body), a private regional concertation body that deals with all business associations and especially the craft sector.

5.2 INTERVIEW RESULTS

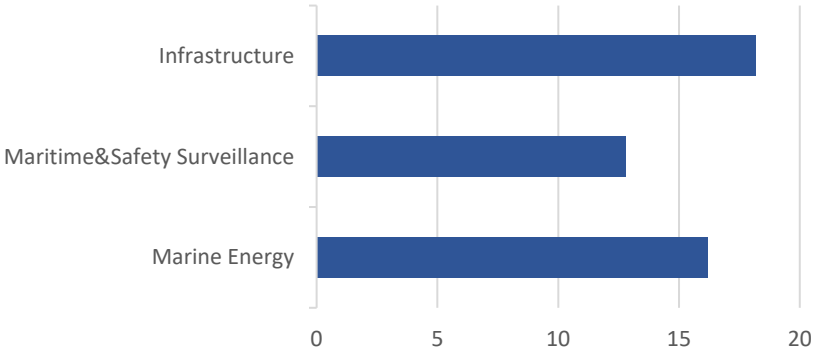
The interview process (detailed in Art. 4 of this document) involved numerous stakeholders selected by each partner, representing diverse categories in terms of both sector and governance. The interviews highlight various aspects related to the development of Emerging Sectors within the Blue Economy.

The main topics addressed in the questions include the stakeholders' respective sectors, key factors for growth, challenges to be faced, and the specific needs of those operating in this domain.

A summary of the key findings is presented below, noting that all stakeholders involved are connected to the Adriatic region and share a strong link to the Adriatic Sea. Despite this shared connection, their perspectives differ, as they include companies, institutions, organizations, and research institutes.

It is also important to note the geographical diversity of the stakeholders, as the ECCENTRIC project partners hail from various areas across Italy (ranging from Friuli Venezia Giulia to Puglia) and Croatia.

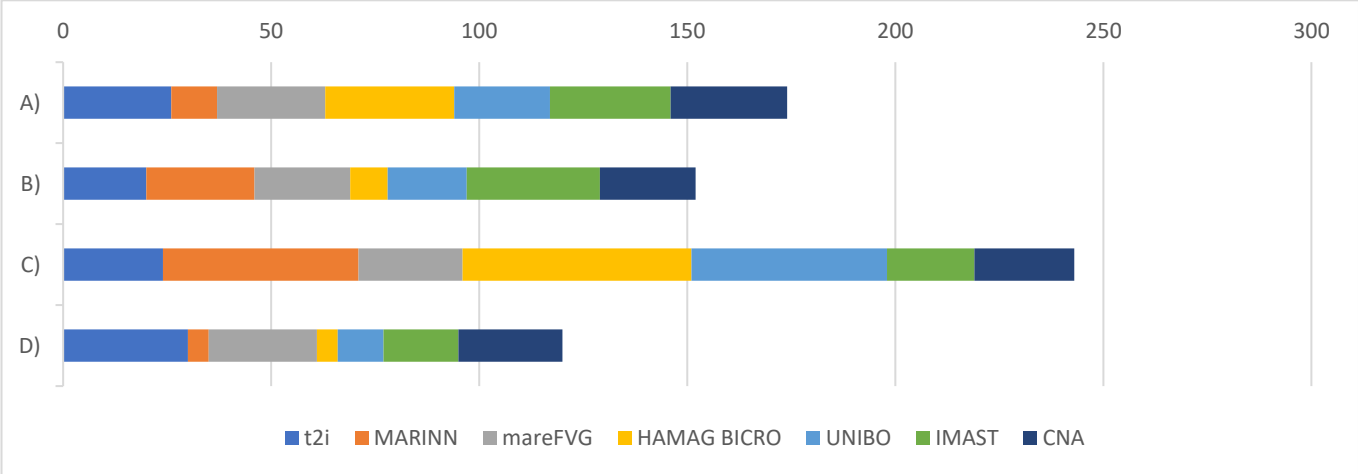
First of all, let's see which sectors are most driving technological innovation in the blue economy sector.



From the analysis conducted, it clearly emerges that the main sectors where technological development is concentrated are Infrastructure and Marine Energy. This trend is consistent across all the areas analyzed. However, many other sectors also influence technological development in the Blue Economy, for example: software development, fishing industry, naval plant engineering, irrigation, offshore wind, marine cables, cruise company, and tourism.

5.2.1 MAIN GROWTH DRIVERS IN EMERGING SECTORS IN THE NEXT FIVE YEARS

Before analyzing the results of the interviews, we would like to highlight that the stakeholders involved were asked to identify, based on their knowledge and experience, the main factors driving development and technological innovation in the emerging sectors of the blue economy,



A) Increased public investments; B) International collaboration; C) Rapid technological development; D) Market expansion.

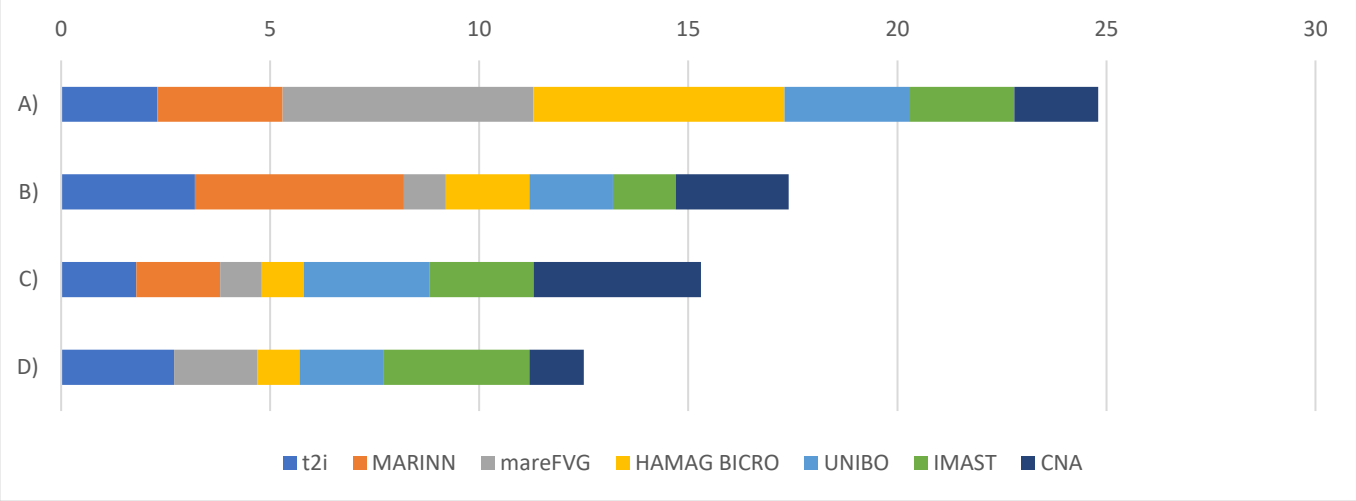
The results obtained reveal a relatively homogeneous situation across the Adriatic area. Indeed, there is a consensus that the main drivers of the emerging sectors of the blue economy are *Rapid technological development* and *Increased public investments*.

Other critical factors for development include the ability to attract investors, strengthening collaboration between researchers and policymakers, effective maritime spatial planning legislation, skills development, and ecosystem protection.

5.2.2 MAIN CHALLENGES FACED IN TERMS OF TECHNOLOGICAL INNOVATION

Another aspect raised by the target users was identifying the main challenges they face in contributing significantly to innovation in the blue economy sector. The key challenges highlighted during the interviews include lack of funding, regulatory barriers, limited access to technology and insufficient collaboration with research institutes.

Most of the respondents identified the lack of funds and financing as the main challenge they face in enabling the growth and development of the blue economy. However, as shown in the chart below, not all stakeholders share the same view. Regulatory barriers and limited access to technology also emerge as significant issues to address, while most partners do not appear to experience difficulties in collaborating with research institutes.



A) Lack of funding; B) Regulatory barriers; C) Limited access to technology; D) Insufficient collaboration with research institutes.

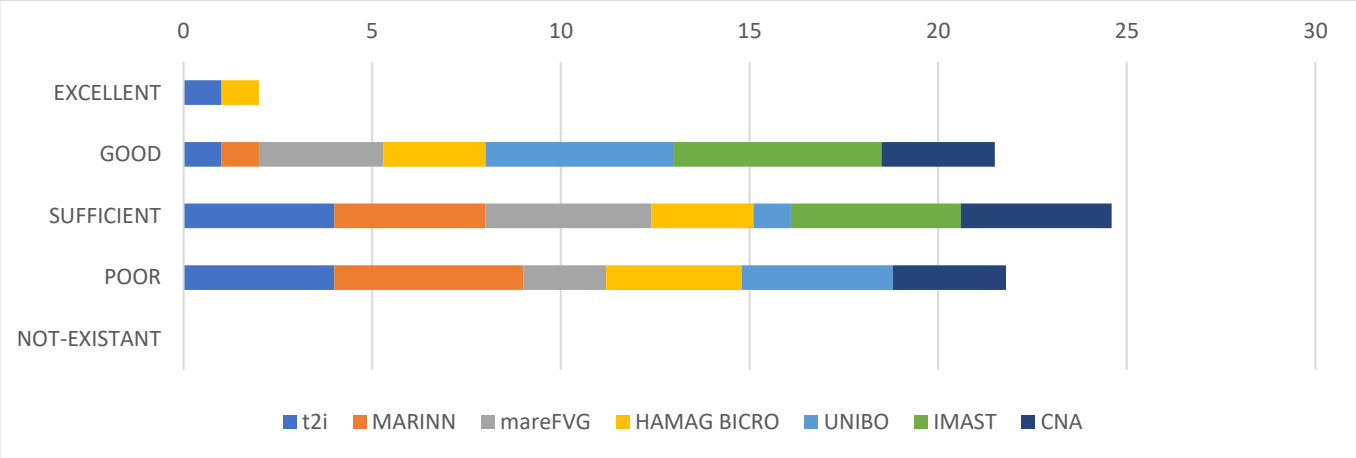
5.2.3 SECTORS WITH THE GREATEST NEED FOR TECHNOLOGY AND INNOVATION

We asked stakeholders from each partner to identify the sectors most in need of technology and innovation. All agreed that the *"Products, Services, and Solutions"* sector is among those requiring the most attention. In contrast, the "*Production Processes"* sector and "*Markets"* were not considered particularly significant.

5.2.4 ASSESSMENT OF COLLABORATION BETWEEN SMEs AND RESEARCH INSTITUTIONS IN EMERGING SECTORS

A fundamental aspect in the development of emerging sectors within the Blue Economy is the collaboration between companies and research institutions. Despite the critical importance of this topic, users from all regions involved in the ECCENTRIC project largely agreed that collaboration is generally sufficient. Only two out of approximately seventy target users rated the collaboration between SMEs and research institutions as excellent.

Fortunately, none of the interviewees considered such collaboration to be non-existent.



Main reasons for assessing cooperation between SMEs and research institutions: collaboration between SMEs and research institutions in the Blue Economy sector is critical for fostering innovation and meeting emerging challenges. However, several common barriers and opportunities for improvement have been identified by stakeholders across various regions:

Key Challenges:

- Lack of Interest and Motivation: A recurring issue is a perceived lack of interest or incentives on both sides, with SMEs and research institutions often not actively pursuing collaboration.
- Divergent Objectives: SMEs focus on tangible results, while research institutions prioritize developing new competencies, leading to misaligned goals.
- Traditional Approaches: Both industry and academia often adhere to conventional practices, which hinders the adoption of innovative collaboration methods.
- Limited Networking Opportunities: The absence of organizations or platforms dedicated to fostering SME-research collaboration reduces opportunities for partnership.
- Regulatory Barriers and Bureaucracy: Complex procedures and excessive red tape further complicate cooperation efforts.

- Knowledge Gaps: SMEs often lack awareness of existing tools and opportunities, while research institutions struggle to connect with fast-growing, innovative industries.

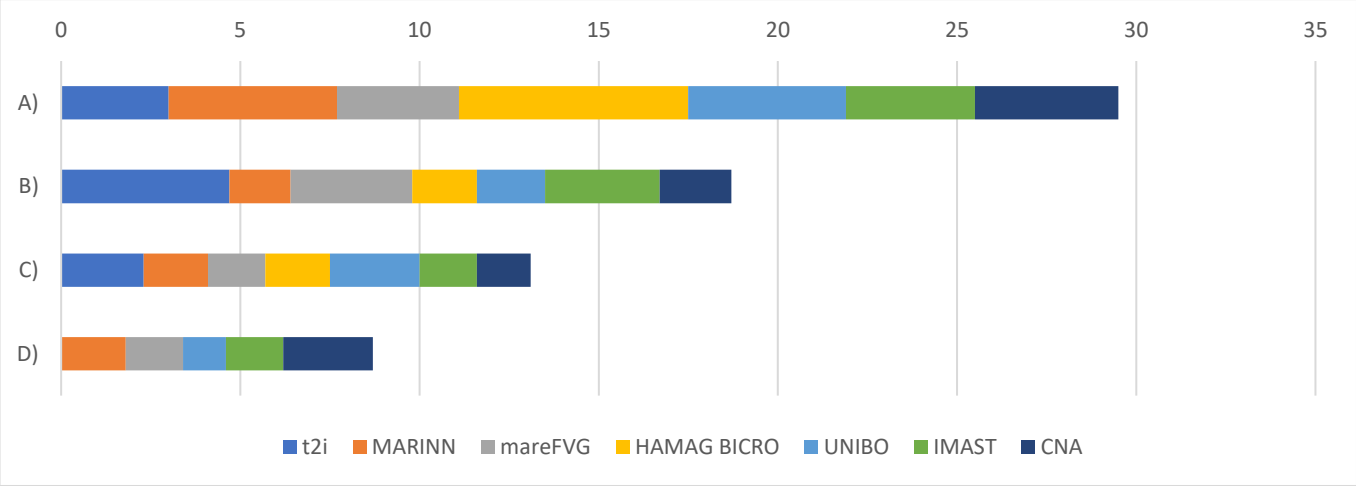
Recommendations for Improvement:

- Enhance Networking: Develop organizations or platforms dedicated to connecting SMEs with research institutions.
- Foster Mutual Understanding: Promote trust and alignment of objectives through open communication and shared goals.
- Simplify Procedures: Reduce bureaucratic hurdles to make partnerships more accessible.
- Long-Term Planning: Encourage sustained collaborations with clear, long-term visions, and Improve the understanding of the potential benefits of collaboration.

By addressing these challenges and leveraging opportunities for collaboration, stakeholders can work together more effectively to drive innovation and sustainable growth in the Blue Economy.

5.2.5 THE MOST PROMISING BUSINESS MODELS FOR SUCCESS IN EMERGING SECTORS OF THE BLUE ECONOMY

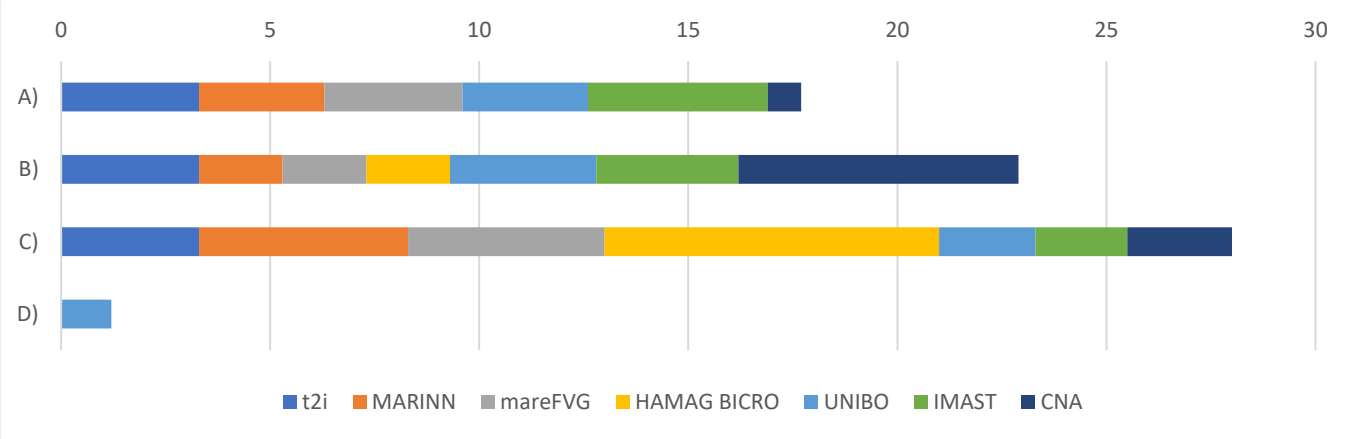
We asked the interviewees what they think is the most promising business model for the success of companies and/or organizations in the emerging sectors of the blue economy and almost all of them agree that the best is the model based on innovation. Many of the interviewed users also indicated that the model based on public-private partnership is very useful.



A) Innovation based model; B) Public-private partnership model; C) Circular economy model; D) service-based model.

5.2.6 MAIN SOURCES OF FUNDING USED TO SUPPORT R&D ACTIVITIES

For the analysis conducted, it is essential to understand how the interviewed companies and organizations support the research and development activities required to address the challenges posed by the green transition in the Adriatic area.

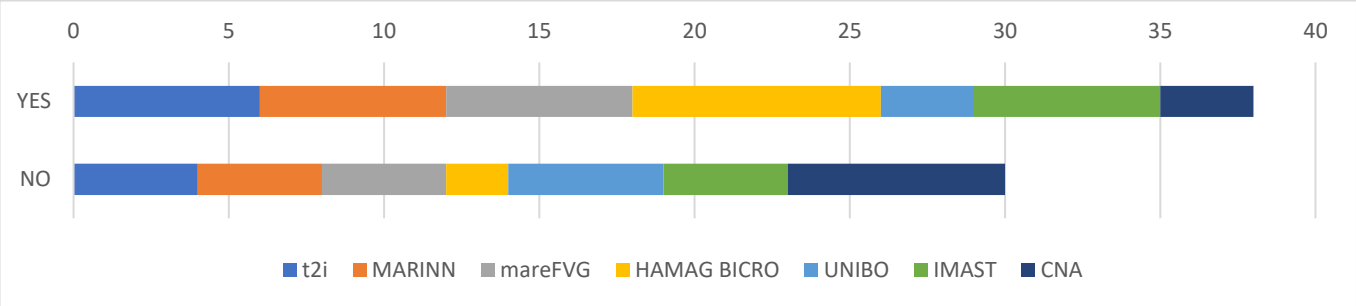


A) Government found; B) Private investment; C) European funding; D) Crowdfunding.

Among the interviewees it emerged that the main method of financing research and development activity is through European funds, while almost no one finds their financing through crowdfunding.

5.2.7 PARTICIPATION IN CROSS-BORDER PROJECTS OR INTERNATIONAL COLLABORATIONS

The results of the interview clearly indicate that the majority of study participants have already been involved in cross-border projects and/or initiated international collaborations. However, it is evident that many are either unaware of such initiatives or have never participated in them.



Therefore, it is crucial to emphasize the importance of cross-border cooperation projects in fostering the development of emerging sectors of the Blue Economy.

The main benefit identified in the cross-border and cooperation: the knowledge sharing and the creation of strong networks. They consistently highlighted the value of exchanging best practices, accessing international technology, and collaborating with experienced partners. These interactions not only enhanced their expertise but also fostered stronger stakeholder engagement, paving the way for future partnerships and increased international relevance. Furthermore the participants reconized that collaboration with international partners brought in technical, financial, and operational resources otherwise unavailable at a local level.

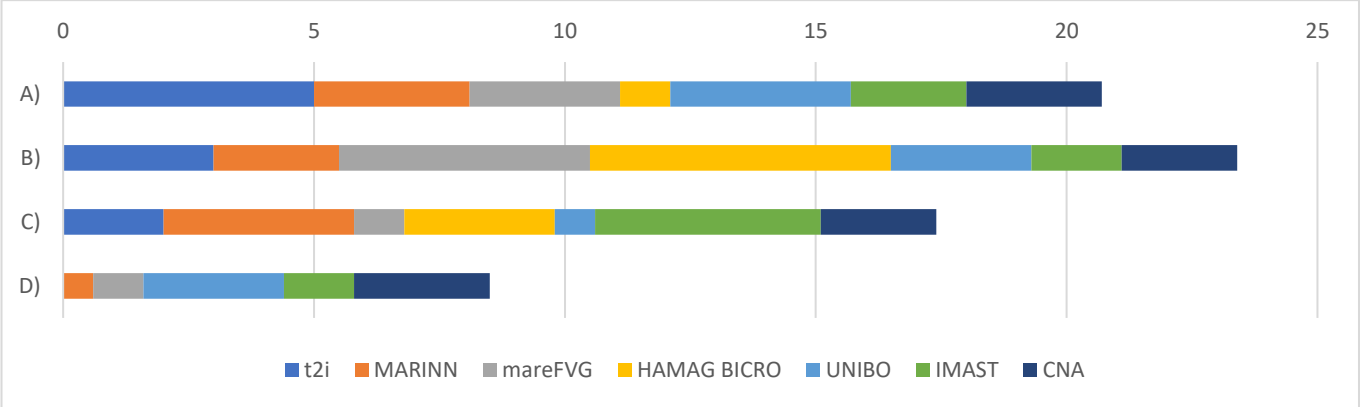
Specifics benefits and resources include:

- Knowledge sharing: Learning from best practices, gaining exposure to international cases, and accessing global expertise.
- Networking: Building relationships with stakeholders, creating partnerships, and opening pathways to new markets.
- Resource optimization: Leveraging shared resources and capabilities, leading to cost-effectiveness and innovative solutions.
- International relevance: Enhancing visibility and credibility on a global stage, tackling larger challenges collectively.
- Skills and expertise: Working with experienced international partners to strengthen technical and operational capabilities.
- Economic resources: Availability of funds for action and innovation.
- Technological resources: Gaining insights into cutting-edge technologies and international research findings.

5.2.8 USEFULNESS OF A ROADMAP DEVELOPED BY THE ECCENTRIC PROJECT

A ROADMAP is a guide that outlines the path to achieving certain goals, specifying priorities; resources needed, and expected timelines. Roadmaps can used to communicate the direction of the project to all stakeholders, align the team to the goals, and monitor progress over time.

We asked to the stakeholder how the roadmap developed by the ECCENTRIC project, can support enterprises and organization to address the challenges posed by the green transition in the Adriatic area on the emerging sector of the Blue Economy.



A) Providing strategic guideline; B) Facilitating access to funding; C) Promoting collaboration with research institutions; D) Improving technological skills.

For most stakeholders involved, the greatest support provided by the development roadmaps drafted by the ECCENTRIC project lies, first, in facilitating access to funding, and second, in offering strategic guidance to overcome the challenges posed by emerging sectors of the Blue Economy.

5.2.9 SUGGESTIONS AND RECOMMENDATIONS FOR IMPROVING INTERACTION AND COLLABORATION BETWEEN SMEs, RESEARCH INSTITUTIONS AND INVESTORS IN THE BLUE ECONOMY

For close the interview we asked to all the key users, from their knowledge and experience, to send us their suggestion and recommendation for improving the interaction and collaboration between enterprises, research institutions and investor:

- DEVELOP SHARED STRATEGIC ROADMAPS: Creating collaborative frameworks is essential to align the goals of small and medium enterprises (SMEs), research institutions, and investors. Strategic roadmaps should define clear, measurable objectives that guide joint projects and ensure all stakeholders share a mutual understanding.
- SIMPLIFY ACCESS TO FUNDING: Efficient funding mechanisms are critical to drive innovation in the blue economy. Streamlining funding application processes can reduce bureaucratic barriers, making resources more accessible.
- DIVERSIFY FINANCING SYSTEMS: Identify alternative financing methods that provide support beyond traditional loans, grants, or investments, without relying solely on cash. Examples include in-kind contributions, crowdfunding, sponsorships, revenue-based financing, and impact investments, all aimed at fostering flexibility and innovation.
- CREATE NETWORKING PLATFORMS: Establishing dedicated networking platforms will encourage dialogue, capacity building, and the sharing of best practices.

- CREATE CLUSTERS: Concentrate expertise bringing together enterprises, universities, and research centres, organizing regular thematic events, workshops, and innovation fairs can connect diverse stakeholders, fostering collaboration and knowledge sharing.
- ENTREPRENEURIAL CAPACITY BUILDING: Support activities to better disseminate the entrepreneurial culture and to better respond to the needs of the market, in particular capacity to evaluate the economic potential latent in a selected item and design the way to transform it into a product for the market.
- PROMOTE KNOWLEDGE TRANSFER: Bridging the gap between academia and industry requires robust technology transfer programs.
- FOSTER LONG-TERM PARTNERSHIPS: Sustainable growth in the blue economy depends on fostering enduring alliances between SMEs, research entities, and investors. Policies at both national and EU levels should incentivize such collaborations, particularly in blue and green technologies.
- ALIGN RESEARCH WITH INDUSTRY NEEDS: Research institutions should also have adopt a practical, industry-oriented approach to ensure their work benefits SMEs and market demands. Prioritizing business-driven outcomes—such as developing market-relevant products and services—is key.
- CULTIVATE A CULTURE OF COOPERATION: Promoting research and development (R&D) as an investment, rather than an expense, can transform attitudes among SMEs and larger firms. Building trust between stakeholders is essential for open collaboration and knowledge sharing.
- IMPROVE REGULATORY AND POLICY SUPPORT: Simplifying regulatory frameworks will lower entry barriers for collaborative initiatives, while advocating for uniform regulations at the EU level can improve efficiency and reduce bureaucracy.
- ENHANCE OUTREACH AND INCLUSION: Expanding marine protected areas and broadening outreach to collaborators can ensure all regions and stakeholders benefit from blue economy initiatives.

6 CONCLUSION

The ECCENTRIC project provides a comprehensive analysis of the challenges, opportunities, and strategies for enhancing the blue economy in the Adriatic area, emphasizing the importance of collaboration among SMEs, research institutions, and policymakers. Key insights reveal that sectors such as marine energy, infrastructure, and maritime safety are pivotal drivers of technological innovation, with rapid technological development and public investment identified as primary growth drivers.

The project's findings underline several systemic challenges, including funding shortages, regulatory barriers, and limited SME-research collaboration. Nonetheless, the project identifies actionable strategies to address these issues, such as:

- *Developing shared strategic roadmaps to align goals and ensure effective joint efforts.*
- *Simplifying funding processes to make resources more accessible.*
- *Diversifying financial systems to guarantee the technology access.*
- *Creating networking platforms to sharing the knowledge.*
- *Creating clusters to foster the collaboration.*
- *Promoting knowledge transfer and infrastructure sharing to bridge gaps between academia and industry.*
- *Support activities to better respond to the needs of the market.*
- *Fostering long-term partnerships with clear, sustainable objectives supported by enabling policies.*

Additionally, aligning research with industry needs and cultivating a culture of cooperation are emphasized as crucial steps toward effective collaboration. Simplified regulatory frameworks and enhanced outreach to underrepresented areas can further ensure inclusivity and accessibility in the blue economy.

The development roadmaps proposed by ECCENTRIC aim to provide strategic guidelines, facilitate and diversify funding, and promote SME-research collaborations, offering a clear pathway to navigating the twin transitions of green and digital development. Ultimately, by addressing these priorities, the Adriatic region can strengthen its blue economy, driving innovation, sustainability, and economic growth.

7 ANNEX

LP01 – t2i – WP1 – Activity 1.1

PP02 – MARINN – WP1 – Activity 1.1

PP03 – mareFVG – WP1 – Activity 1.1

PP04 – HAMAG-BICRO – WP1 – Activity 1.1

PP06 – UNIBO – WP1 – Activity 1.1

PP07 – IMAST – WP1 – Activity 1.1

PP08 – CNA ABRUZZO – WP1 – Activity 1.1

Interreg Co-funded by the European Union

Italy – Croatia

ECCENTRIC

ECCENTRIC

(ITHR0200314)

Enhancing circularity in the Adriatic area supporting innovation and growth of the blue-economy emerging sectors

Work package 1

Activity 1.1

t2i

Needs, expectations concerning emerging sectors

INDEX

1. Objective of Activity 1.1 – Needs, expectations concerning emerging sectors:

The objective of this activity is the analysis of the blue-growth emerging sectors (marine energy, marine safety & surveillance and infrastructure) focusing on the status of their relationships with academia, their contribution to the green transition.

Each area has identified key stakeholders to interview, focusing on product and process innovation, collaboration with research institutions, and financial challenges faced by SMEs.

Each partner has conducted interviews with 10 relevant stakeholders, including industry associations, agencies, SMEs, research institutions, and policymakers.

2. Description of the company or organizations interviewed and the sectors of interest:

The stakeholders involved in the research carried out belong to different entities in the Veneto region, including industry associations, research institutions, agencies and companies, able to provide a general overview of the current situation of the emerging sectors of the blue economy (marine energies, maritime safety&surveillance and infrastructure) and the challenges to be faced to promote sustainable development in the Adriatic area. The companies interviewed are:

ENTERPRISES

- FINCANTIERI: Shipbuilding complex with over 230 years of history and more than 7,000 ships built. It builds cruise ships, defense ships and specialized offshore ships, sole supplier for the Italian Navy, and partner for the US Navy and numerous foreign navies. Specialized in ship repairs and conversions, in the production of systems and components for the mechanical and electrical sectors, in ship furnishing solutions, in electronic systems and software, in infrastructures and maritime works;
- ADRIATICING: Company that manages the regasification terminal located in the Upper Adriatic, approximately 15 kilometers from the Veneto coast;

MANAGEMENT AGENCY

- ACQUEVENETE: Integrated water service manager for the provinces of Padua, Rovigo, Vicenza, Verona, Venice, it manages over 10,000 kilometers of pipelines between water and sewer networks. It takes care of taking water from production sources, making it drinkable and

distributing it to all users, domestic and otherwise. Its work continues even after the water has been used, to make it flow into the sewer network, purify it in the appropriate plants and finally return it clean to the environment;

- AIPO: Interregional agency for the management of hydraulic works and inland navigation in the Po river basin;
- ANBI VENETO: Regional Association of "Consorzi di Bonifica del Veneto", active in the region mainly for the purposes of hydraulic safety of the territory and for irrigation in agriculture;

RESEARCH INSTITUTION

- ISPRA: Higher Institute for Environmental Protection and Research. The institute deals with environmental protection, including marine, environmental emergencies and research, also the body directs and coordinates regional agencies for environmental protection and cooperates with the European Environment Agency and with national and international institutions and organizations operating in the field of environmental protection. It carries out technical and scientific functions, through monitoring, evaluation, control, inspection and management of environmental information;

ORGANIZATION

- CONSORZIO DI BONIFICA: Organization that operates in the territory carrying out reclamation and irrigation activities for the development of productive activity;
- CONFINDUSTRIA VENETO EST: Organization with 5,000 member companies in which manufacturing, service and construction companies participate, with the aim of supporting the local territorial system by supporting companies in growth and development, providing support in change;
- ASSONAUTICA VENEZIA: Association that deals with the development of recreational boating, promotes nautical tourism and all related economic, productive and social activities in the region;
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3. Interview results

a. main growth drivers in emerging sectors in the next five years

The stakeholders interviewed, belonging to different sector categories, have indicated those that according to their activity and their experience are the main growth drivers in the emerging sectors of the blue economy, this however also taking into consideration those that are the sectors that mostly develop and support innovative technologies.

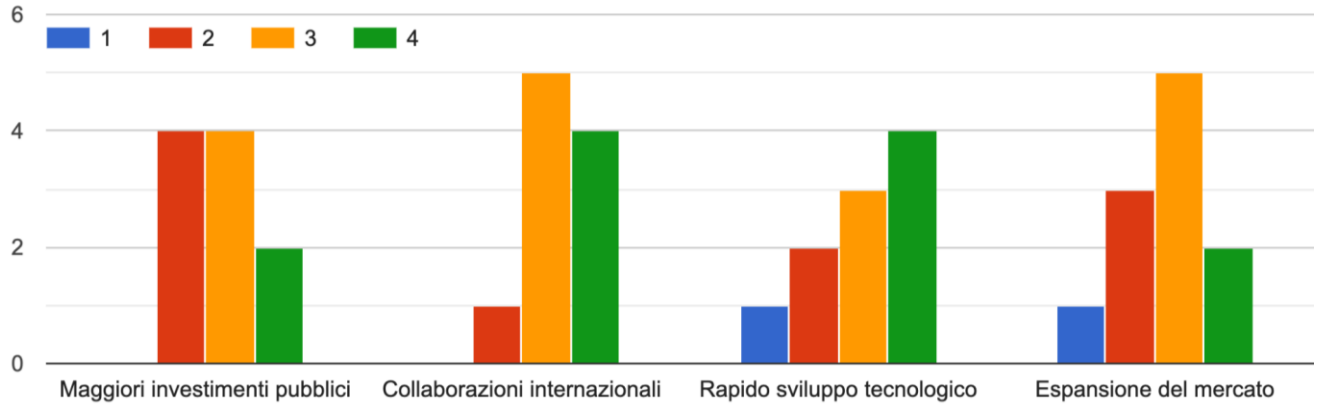


Chart 1: Sectors supporting and developing innovative technologies

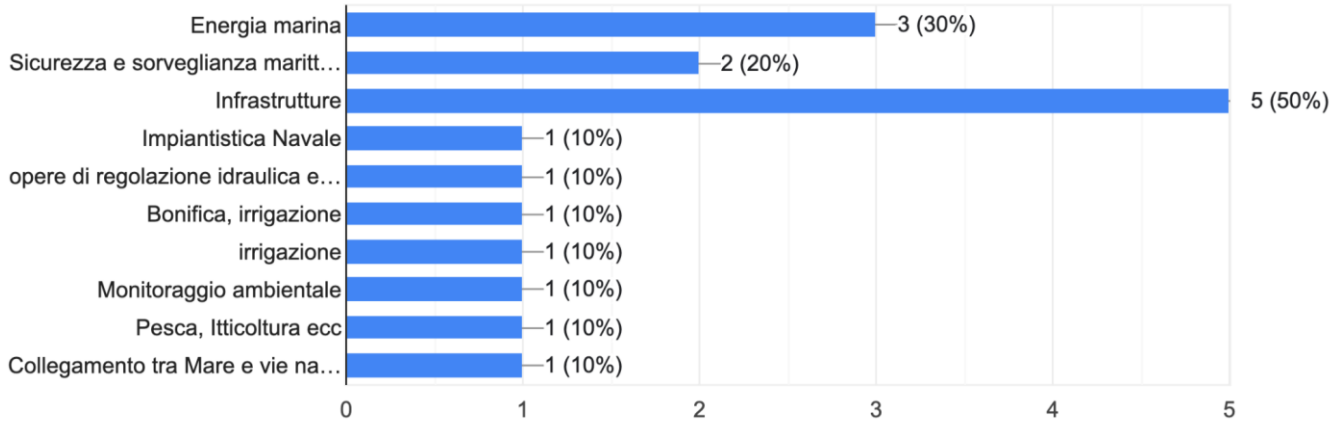


Chart 2: Main drivers of growth in emerging sectors

Other factors for the growth of emerging sectors emerged from the interviews conducted

MIND SET	ENVIRONMENTAL SUSTAINABILITY	FINANCING
TRAINING DEVELOPMENT	SKILLS DEVELOPMENT	EMISSION REDUCTION
MARINE HEALTH	WATER RESOURCE	ECOSYSTEM PROTECTION

b. main challenges faced in terms of technological innovation

The stakeholders involved have revealed a picture where the main challenges to be faced mostly concern regulatory barriers and insufficient and difficult to access collaboration with research institutes. However, the lack of funding and access to technologies is also not insignificant.

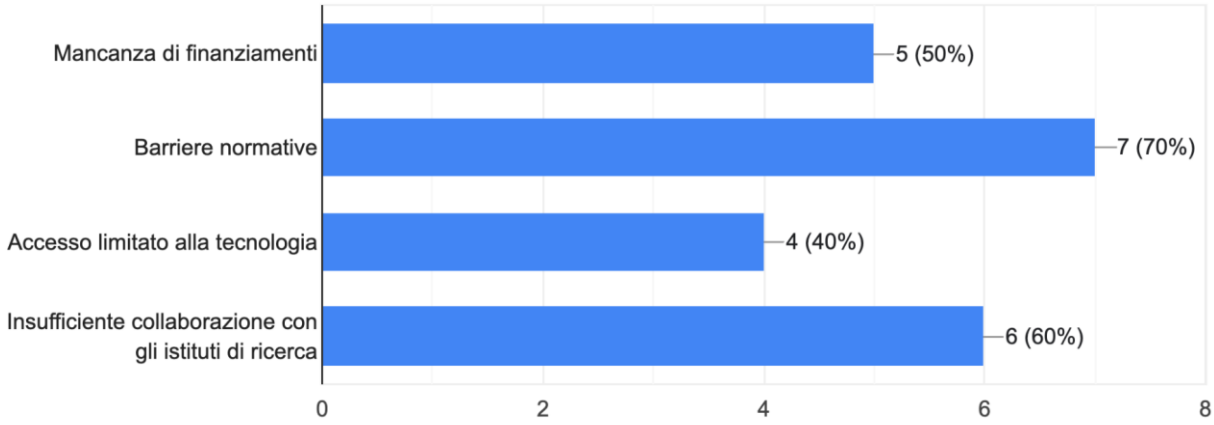


Chart 3: Main challenges to be faced in terms of technological innovation

c. sectors with the greatest need for technology and innovation

As can be seen from the results obtained, companies, in order to face the changes we want to bring to the emerging sectors of the blue economy, need technological input and innovation in terms of products, services and solutions.

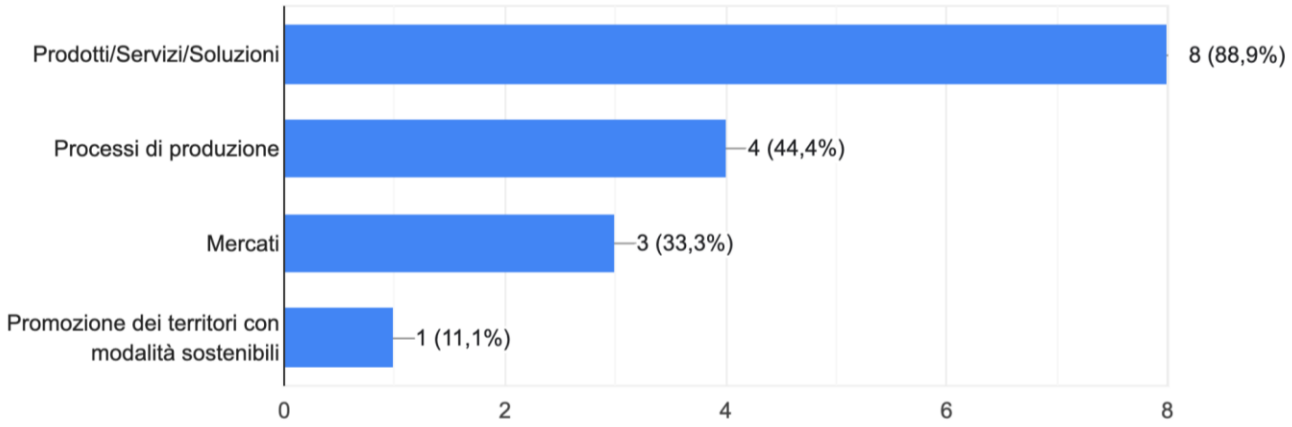


Chart 4: Areas with greater technological and innovation requirements

d. assessment of collaboration between SMEs and research institutions in emerging sectors

Looking at the previous data, the answer to this question is almost obvious, in fact most of the stakeholders consider the collaboration between companies and research institutes to be just sufficient if not poor.

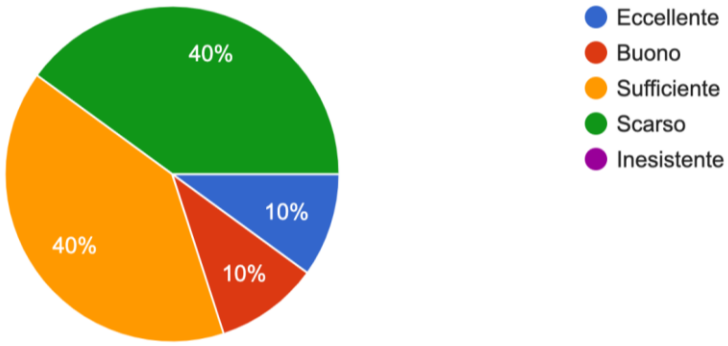


Chart 5: Collaboration between SMEs and research institutes

e. main reasons for assessing cooperation between SMEs and research institutions

For the stakeholders involved, the necessary push for cooperation between companies, research institutions and public administration, comes from a series of factors that revolve around research and development (R&D), access to new technologies and networking. So, all the actors have taken individually cannot face the challenges that the current changes present us, but if these same actors interviewed find a way to collaborate, through the exchange of know-how, skills and competence, the objectives that the emerging sectors of the blue economy place before us, are certainly easier to achieve. The issue of financing and access to credit also plays a very important role in order to develop the necessary technologies.

f. the most promising business models for success in emerging sectors of the blue economy

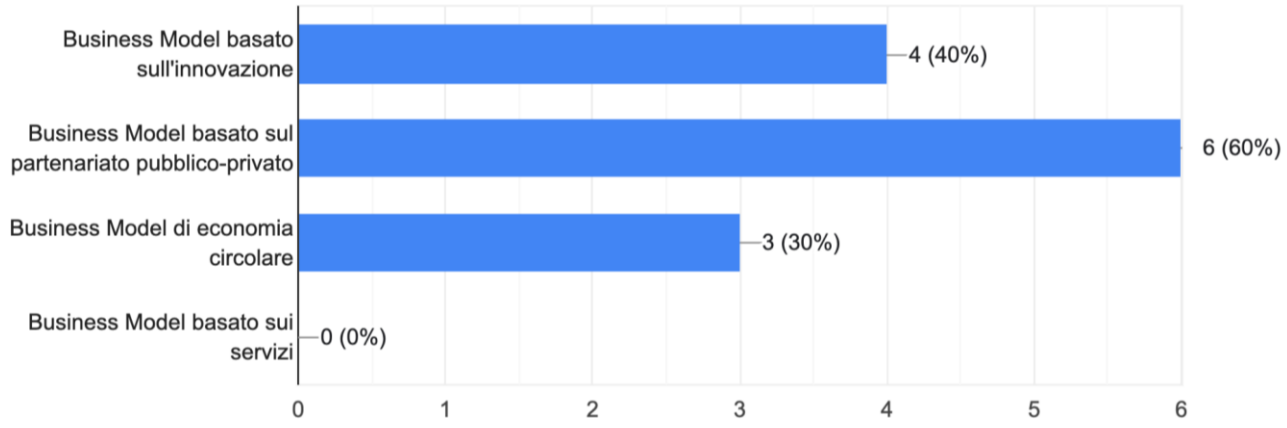


Chart 6: Most promising business models for the success of a company/organization in the emerging sectors of the blue economy

g. main sources of funding used to support R&D activities

Most of the stakeholders involved in the Research and Development (R&D) sector use funding from government funds or European funding, some even using their own funds.

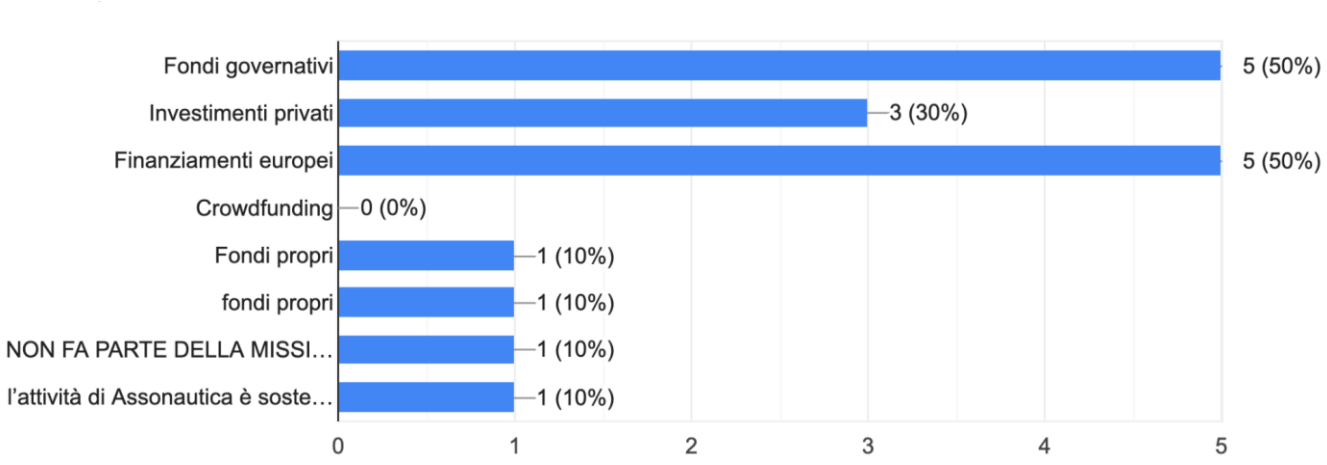


Chart 7: Main sources of funding used to support research and development activities

h. participation in cross-border projects or international collaborations

Six out of ten stakeholders interviewed have already participated in cross-border projects and/or started international collaborations. This kind of project opens access to new resources, skills and knowledge, and allows us to explore new markets otherwise difficult to reach, share risks, and develop new development strategies for the strengthening of the companies themselves. The interviewees believe that also the access to different economic resources is a good reason to take part in this type of projects.

i. usefulness of a roadmap developed by the ECCENTRIC project in the emerging sector

A ROADMAP is a guide that outlines the path to achieving certain goals, specifying priorities; resources needed, and expected timelines. Roadmaps can used to communicate the direction of the project to all stakeholders, align the team to the goals, and monitor progress over time.

For most stakeholders involved, the greatest support that the development roadmaps drafted by the ECCENTRIC project can give companies is to provide strategic guidance for overcoming the challenges that emerging sectors of the blue economy present us with.

Chart 8: How the development roadmaps developed by the ECCENTRIC project can support the growth and innovation of companies/organizations

j. suggestions and recommendations for improving interaction and collaboration between SMEs, research institutions and investors in the blue economy

Stakeholders interviewed in the ECCENTRIC project expressed their ideas on how to improve interaction and collaboration among actors in the blue economy sector.

1.	Create shared strategic roadmaps
2.	Provide funding to improve and apply collaborative experiences with R&D entities
3.	Create partnerships focused on project implementation
4.	Pay attention to the threats, due to climate change, that persist in coastal territories, where the blue economy sector value chain is most relevant
5.	Create networking platforms and sector clusters where different stakeholders can meet to share ideas, implement joint training programs, create a shared vision and establish common goals, including access to technological infrastructure and scientific expertise

4. Conclusions

The analysis of the blue-growth emerging sectors in the Veneto region highlights both the potential and the challenges facing stakeholders in the blue economy.

The sectors of marine energy, maritime safety & surveillance, and infrastructure are ripe for growth, driven by innovation, sustainability, and collaboration with research institutions. However, significant hurdles remain, particularly around regulatory barriers, insufficient technological access, and the need for stronger partnerships between SMEs, research institutions, and public administration.

From the interviews, it is clear that companies and organizations recognize the importance of environmental sustainability, technological innovation, and skills development in ensuring long-term success. However, many also face challenges in financing and accessing research and development resources. There is a consensus that improved collaboration, particularly through cross-border projects and international partnerships, can unlock new opportunities and facilitate the sharing of knowledge, risk, and resources.

The roadmap that will be developed by the ECCENTRIC project is considered a valuable tool to guide stakeholders through these challenges, providing strategic insights and helping to align efforts towards common goals. Going forward, a stronger ecosystem of partnerships, shared knowledge platforms and targeted financing initiatives will be key to overcoming the obstacles faced by emerging blue economy sectors and ensuring they contribute effectively to the green transition.

Interreg Co-funded by the European Union

Italy – Croatia

ECCENTRIC

ECCENTRIC

(ITHR0200314)

Enhancing circularity in the Adriatic area supporting innovation and growth of the blue-economy emerging sectors

Work package 1

Activity 1.1

MARINN – Maritime Innovation Cluster

Needs, expectations concerning emerging sectors

Contents

1. Objective of Activity 1.1 – Needs, expectations concerning emerging sectors:

The objective of this activity is the analysis of the blue-growth emerging sectors (marine energy, marine safety & surveillance and infrastructure) focusing on the status of their relationships with the academia, their contribution to the green transition.

Each area has identified key stakeholders to interview, focusing on product and process innovation, collaboration with research institutions, and financial challenges faced by SMEs.

Each partner has conducted interviews with 10 relevant stakeholders, including industry associations, agencies, SMEs, research institutions, and policymakers.

2. Description of the company or organizations interviewed and the sectors of interest:

As part of activity 1.1, MARINN – Maritime Innovation Cluster interviewed 10 companies and organizations, including 6 small and medium enterprises, 2 higher education institutions, 1 national public authority (ministry), and 1 business support organization.

1. Small and medium enterprises

SCAN PROJEKT Ltd. is one of the leading Croatian engineering companies specialized in multidisciplinary design engineering and consultancy services. SCAN is mainly present in the following industries: oil & gas production (both onshore and offshore); oil refining; oil product and LPG terminals; pipelines and various petrochemical and chemical plants.

MS Tech Ltd. is a marine engineering company with more than 25 employees, headquartered in Adriatic Croatia. It is a part of the Metal Shark group that designs and produces specialized vessels for military, law enforcement, fire rescue, and commercial applications, thereby supporting marine energy, safety, surveillance, and infrastructure needs.

Maritime Center of Excellence Ltd. designs and implements innovative solutions in maritime and offshore industry. The organization enhances marine safety and surveillance in the Adriatic Sea by fostering collaboration among educational institutions, businesses, and authorities, while driving innovation and research to advance technology in the blue economy. With its growing team of experts supported by the “sister” organizations they are investing in development of new technologies and their implementation in core business of partner companies.

FlowTech Ltd. is an independent ship design and engineering company. With more than 10 years of experience and involvement in more than 25 shipbuilding and offshore projects, FlowTech has collaborated with more than 10 shipyards and design offices across 8 countries worldwide, fostering advancements in technology that support the growth of marine safety and infrastructure.

Hexis Ltd. is a software development agency that, among other things, specializes in maritime management software, data visualisation, quantitative data collection techniques, and data analytics.

GITONE Kvarner Ltd. is a consulting company engaged in various business sectors. Along with ACI, they are concessionaires for the Porto Baroš nautical tourism port in Rijeka for the next 30 years. The company actively participates in and manages numerous EU-funded projects with a total value exceeding 30 million euros, primarily focused on the maritime industry and

sustainable development. Key projects include **NAHV (North Adriatic Hydrogen Valley)**, a transnational initiative aimed at developing a complete renewable hydrogen value chain to enhance sustainability and reduce carbon emissions; **Smart Blue Tourism – Smart Marina of the Future**, which focuses on enhancing sustainability and digital transformation in nautical tourism through innovative smart marina solutions that integrate cutting-edge technologies and environmental best practices; and **ZEAS (Zero Emission Adriatic Ship)**, an initiative to construct a hydrogen-powered passenger ship.

2. Higher education institutions

Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture of the University of Split (FESB) is an educational and research institution that offers various activities: teaching, research, development, professional work and innovation in the areas of technical sciences, including Electrical Engineering, Electronics, Mechanical Engineering, Naval Architecture, Computer Science, Industrial Engineering and Natural Sciences. With approximately 2500 students/year, more than 12000 graduated students in 60 years of existence and more than 250 employees, FESB has grown into a recognized and highly respectable educational and research institution.

The University of Rijeka (UNIRI) is the fundamental educational and research institution in the western part of Croatia. Founded in 1973, the University of Rijeka has matured into a modern European university and center of excellence whose impact extends beyond the region. With a total of 15 faculties, 1 academy and 13 specialized research centers, with over 160 study programs it is a research, science, and education-oriented university that supports social and economic development in its community, the City of Rijeka, and the wider region. The University of Rijeka has over 16000 students, over 1970 employees, and almost 1200 researchers. By

building a state-of-the-art campus, the University of Rijeka has visibly improved its teaching methods and scientific structure, while attending to each student's and staff member's living and working needs. My role is Head of Research and Innovation.

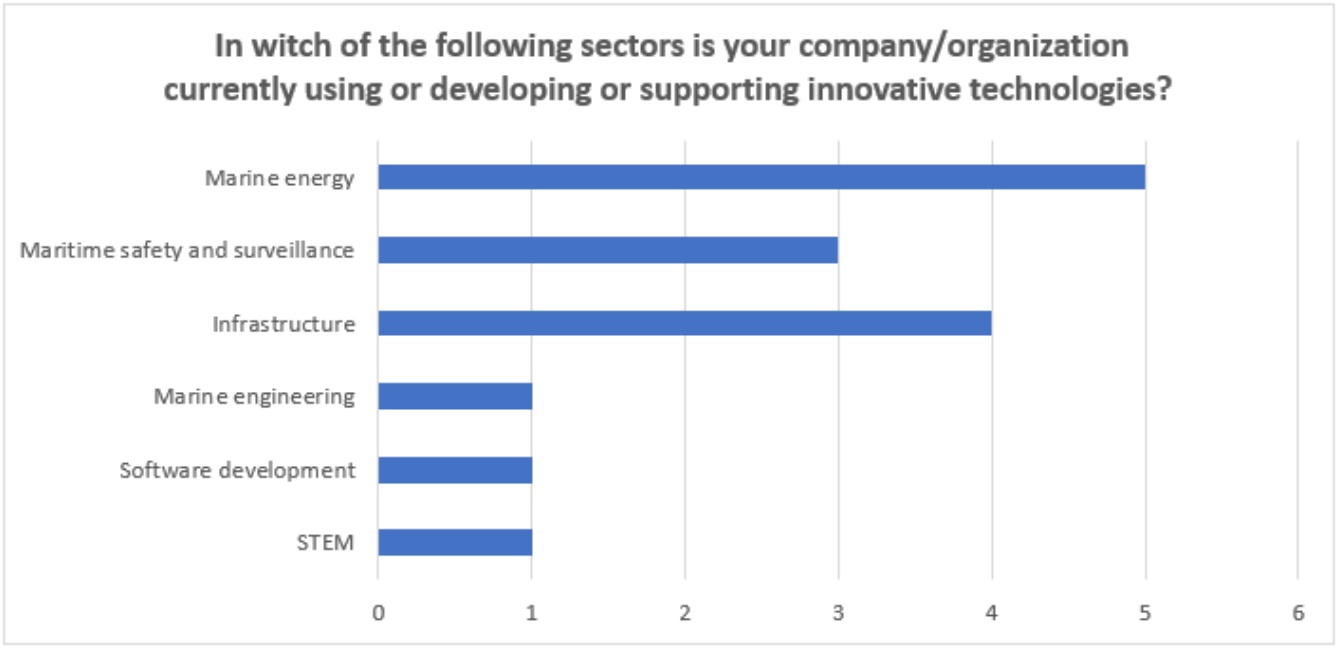
3. National public authority

Ministry of the Sea, Transport and Infrastructure is responsible for protecting the marine environment (including islands, coastal regions, ports and inland waterways), drawing up transport development strategies, and installation and management of telecommunications facilities.

4. Business support organization

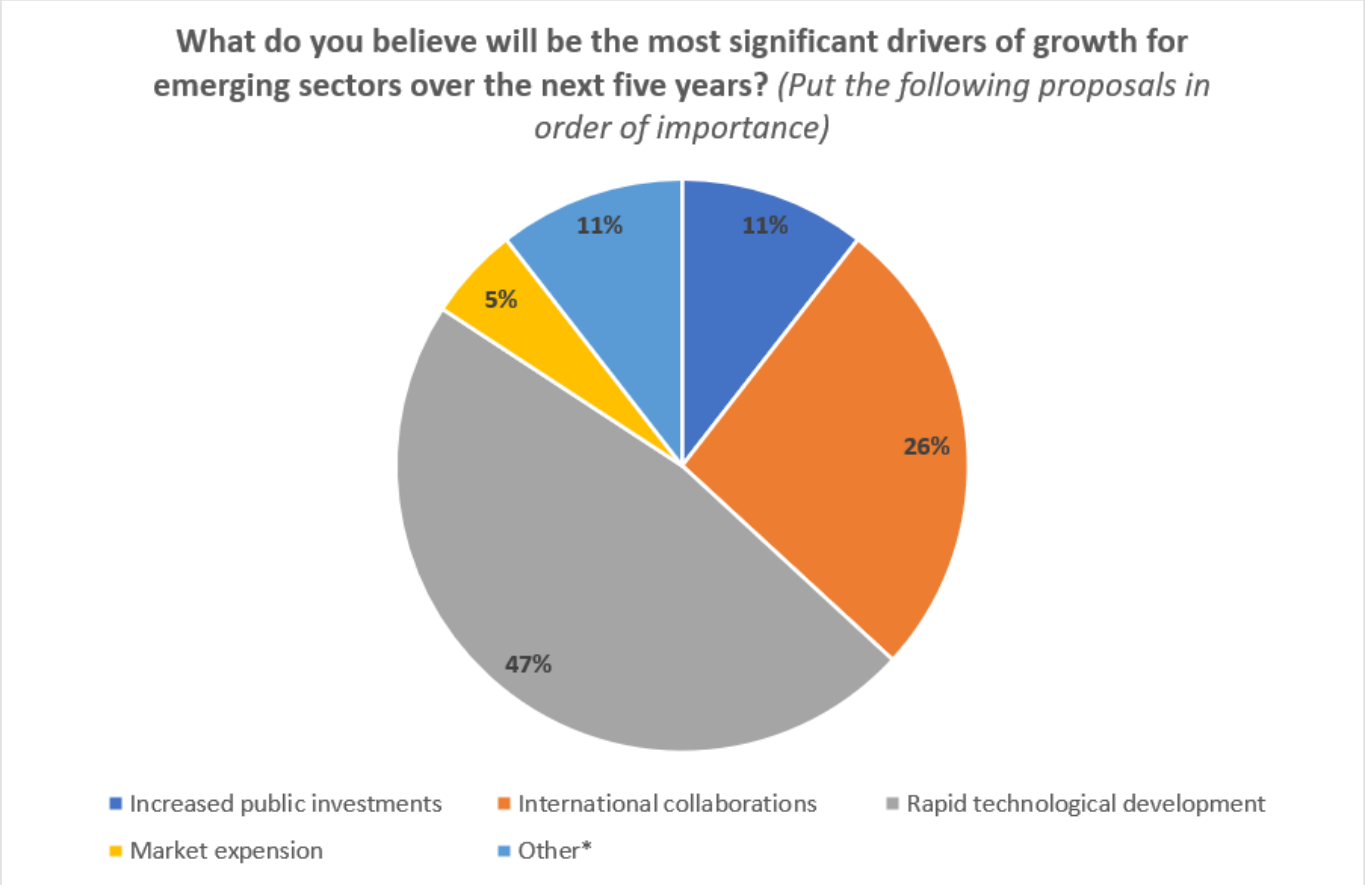
Center of Technology Transfer (CTT) is a company founded in 1996 by the University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture (UNIZAG FSB), with the support of the Ministry of Science, and in consultation with the German Fraunhofer Institute. The aim of CTT is to transfer R&D results from academia to economy and public sector and to foster Innovation. CTT is involved in scientific projects, lifelong learning, incubation of spin offs and start-ups, and transfer of knowledge and technology.

The chart below displays the results of the questionnaire, specifically indicating the number of interviewees from each sector.


In witch of the following sectors is your company/organization currently using or developing or supporting innovative technologies?
Marine energy
Maritime safety and surveillance
Infrastructure
Marine engineering
Software development
STEM
0
1
2
3
4
5
6

3. Interview results:

3.1. main growth drivers in emerging sectors in the next five years



*Developing business cases based on new technology availability; National policy and regulations, building the infrastructure for implementation of new technologies and ZEV

Respondents were asked to rank the listed drivers of growth. Based on the collected results, it can be concluded that **rapid technological development** is viewed as the most critical driver of growth, followed by **international collaborations** and **increased public investments**. **Market expansion** was selected by the fewest respondents as a significant driver.

Below is a breakdown of results:

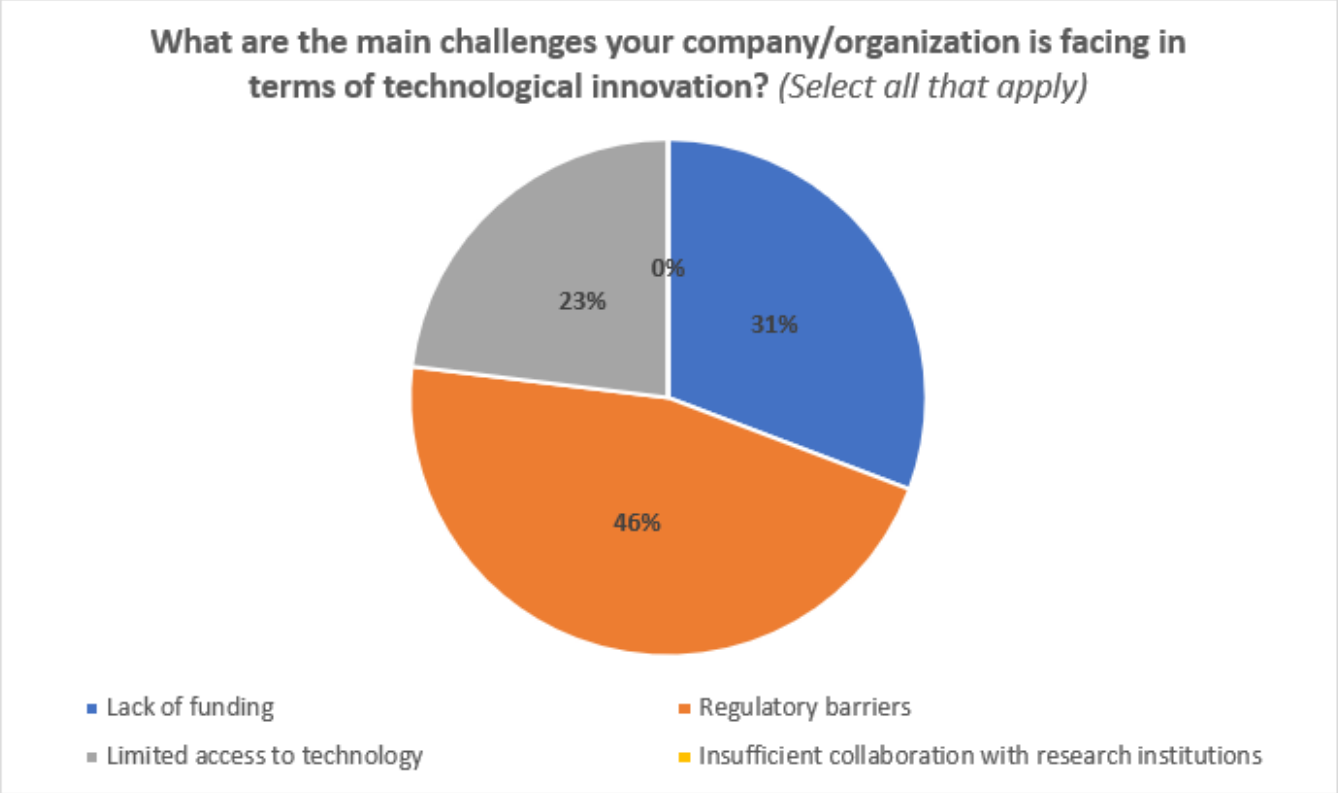
Rapid technological development: This driver dominates the responses, representing 47% of the total. It was ranked as the most critical driver, with 7 respondents selecting it as their top choice, and 2 respondents placing it in second position.

International collaborations: Making up 26% of the chart, this was mostly ranked 2nd, with 4 respondents selecting it as the second most important driver. One respondent also ranked it as the most important, though it was ranked 3rd or 4th by others.

Increased public investments: Representing 11% of the responses, this driver was chosen by 2 respondents as the 2nd most important, 3 respondents ranked it 3rd, and 2 others placed it 4th in terms of significance.

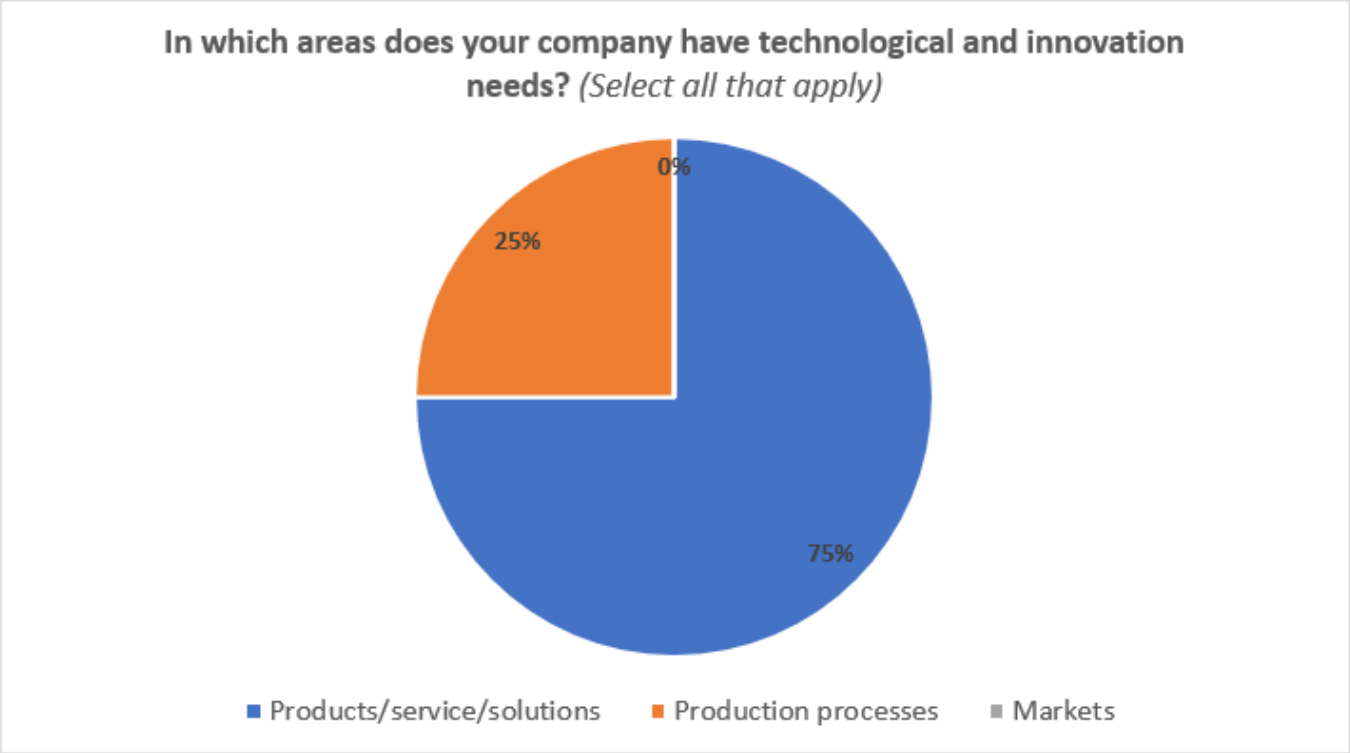
Market expansion: The least popular driver, making up just 5% of the total. It was ranked 1st by only one respondent, but more frequently placed in 3rd (3 respondents) and 4th (4 respondents).

3.2. main challenges faced in terms of technological innovation



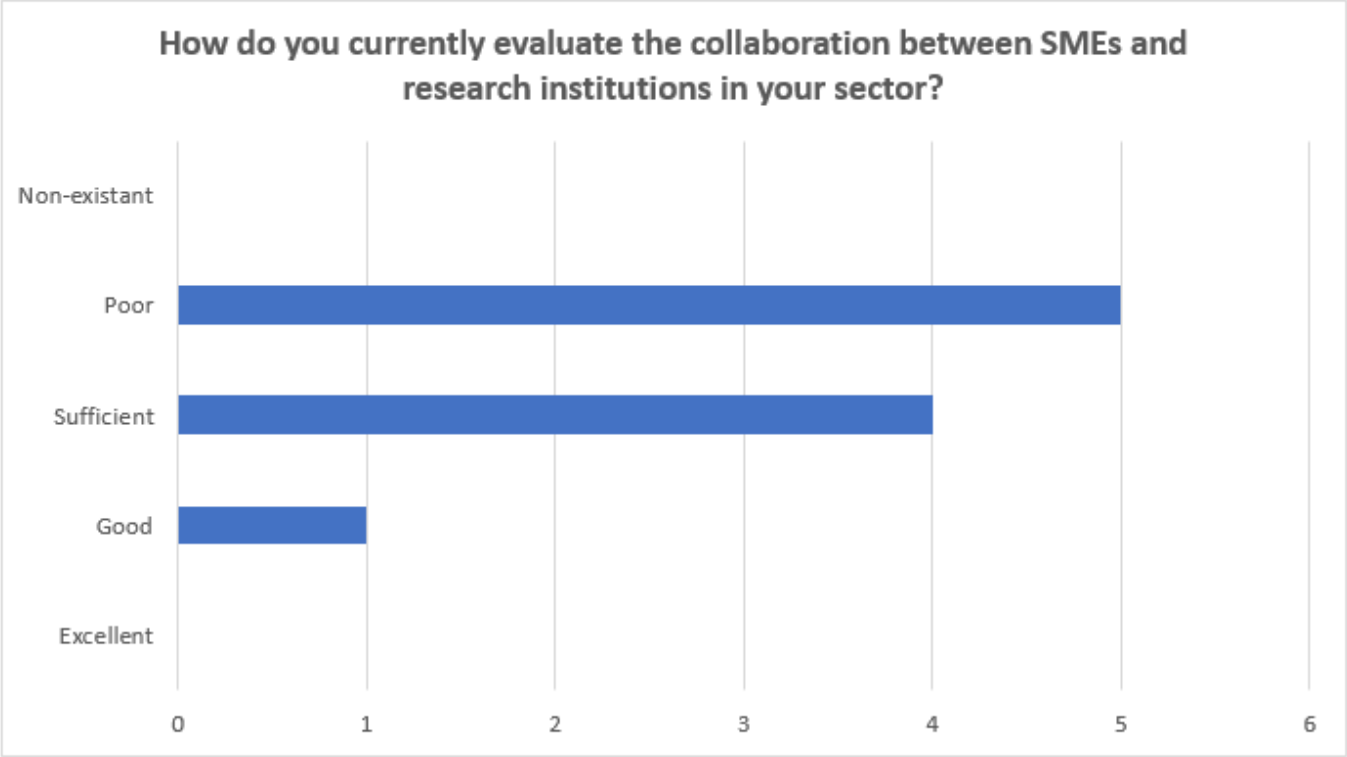
The pie chart shows that the most common challenge companies face in terms of technological innovation is **regulatory barriers** (46%), followed by **lack of funding** (31%) and **limited access to technology** (23%), while **insufficient collaboration with research institutions** was not selected by any respondents.

3.3. sectors with the greatest need for technology and innovation



The pie chart shows in which areas companies have technological and innovation needs. Most companies selected **products/service/solutions** (75%), followed by **production processes** (25%). No respondents selected **markets**.

3.4. assessment of collaboration between SMEs and research institutions in emerging sectors



The chart shows that five respondents believe the collaboration between SMEs and research institutions is **poor**, four think it is **sufficient**, and only one respondent indicates that it is **good**.

3.5. main reasons for assessing cooperation between SMEs and research institutions

Based on the interviewees' evaluations, several common themes emerged regarding the challenges in collaboration between SMEs and research institutions.

The most frequently cited issue was a **lack of interest**, mentioned four times. Both SMEs and research institutions were seen as not actively pursuing collaboration. Examples include

responses like, *"lack of interest from research institutions",* and *"lack of interest on both sides".* Another respondent pointed to a *"lack of interest, mismatch between needs/competences"*, highlighting a disconnect between the two parties.

Another barrier mentioned was the **traditionality of the industry and working methods**. One interviewee noted that the industry and research organizations often stick to their traditional ways of working, making it difficult to embrace new forms of collaboration. This sentiment was expressed as *"the traditionality of the industry and connected to this the way of working research organisations are used to."*

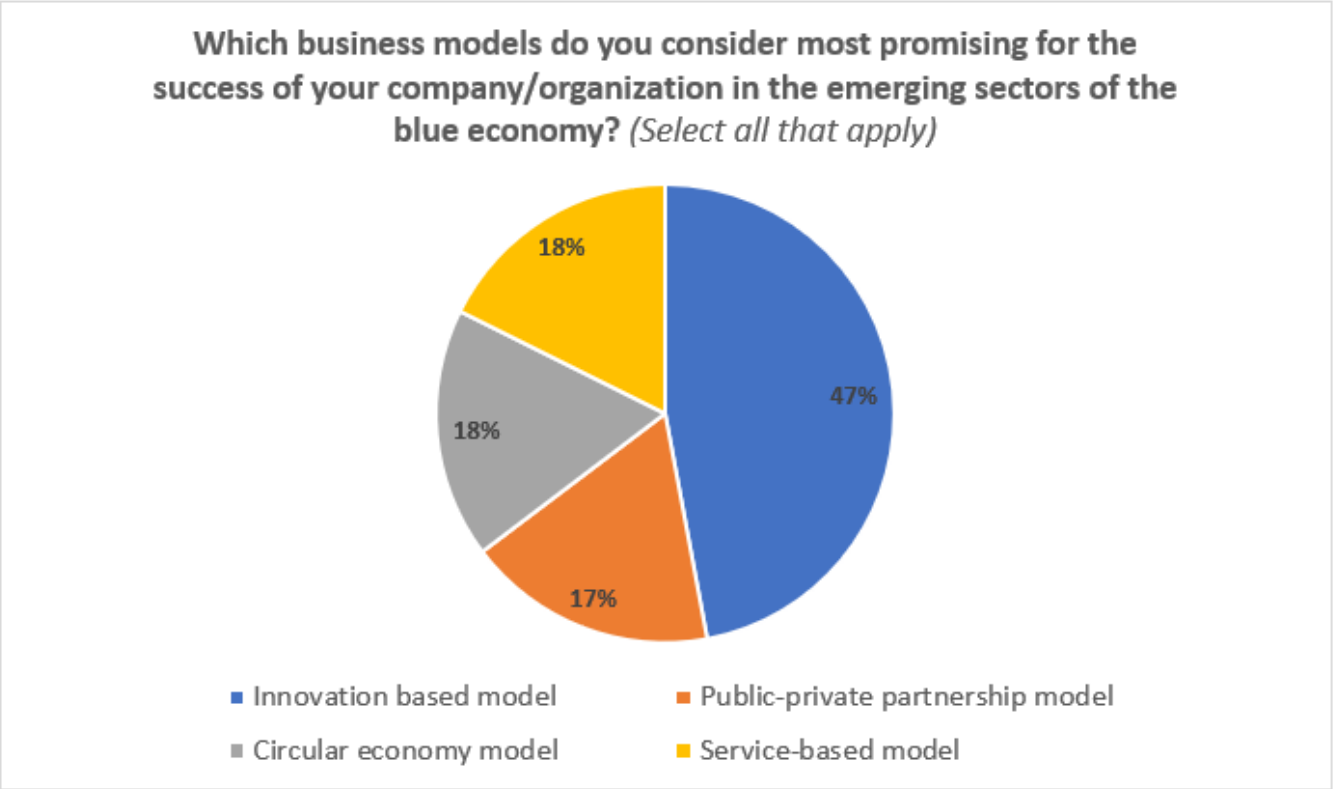
The **lack of networking opportunities** was also highlighted, with interviewees pointing out that the absence of organizations dedicated to networking between SMEs and research institutions limits collaboration. This was mentioned twice, with statements like *"not enough networking organizations."*

In addition, **different expectations** between SMEs and research institutions were seen as a challenge. One respondent observed that both sides often have divergent views on the outcomes of their cooperative research, which complicates efforts to align their goals. The response emphasized *"different views on the necessary outcomes from cooperative research."*

A related issue was the **lack of motivation within universities**. One interviewee specifically noted that the university community often lacks the incentives needed to engage with SMEs, which limits collaboration. This was reflected in the statement that *"collaboration between SMEs and research institutions is often limited or non-existent, and one key reason is the lack of motivation or incentives within the university community."*

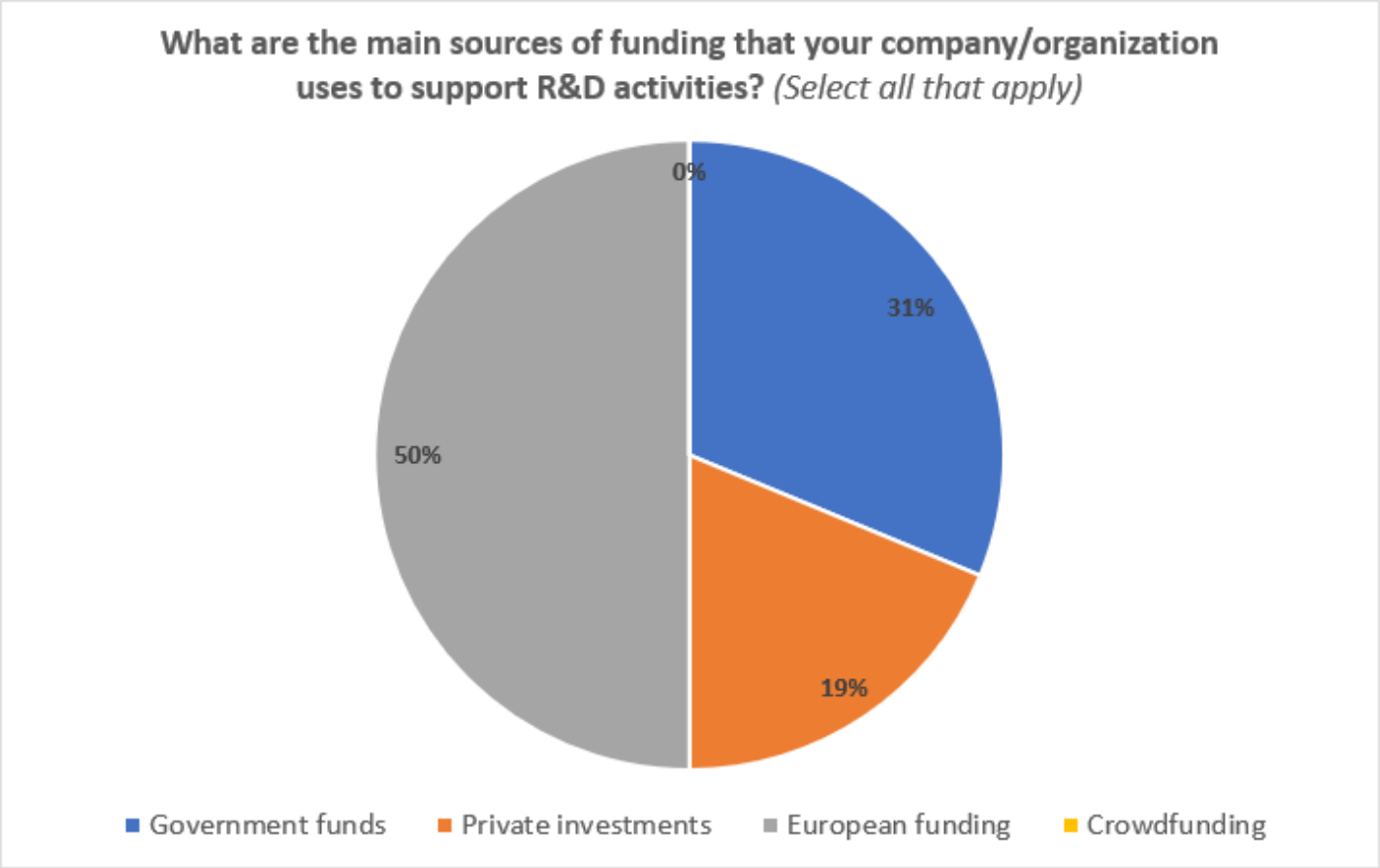
Despite these challenges, there was some **positive feedback**, with one respondent reporting successful collaboration. They remarked, *"we have very good cooperation with SMEs,"* showing that some sectors or institutions have managed to overcome these barriers.

3.6. the most promising business models for success in emerging sectors of the blue economy



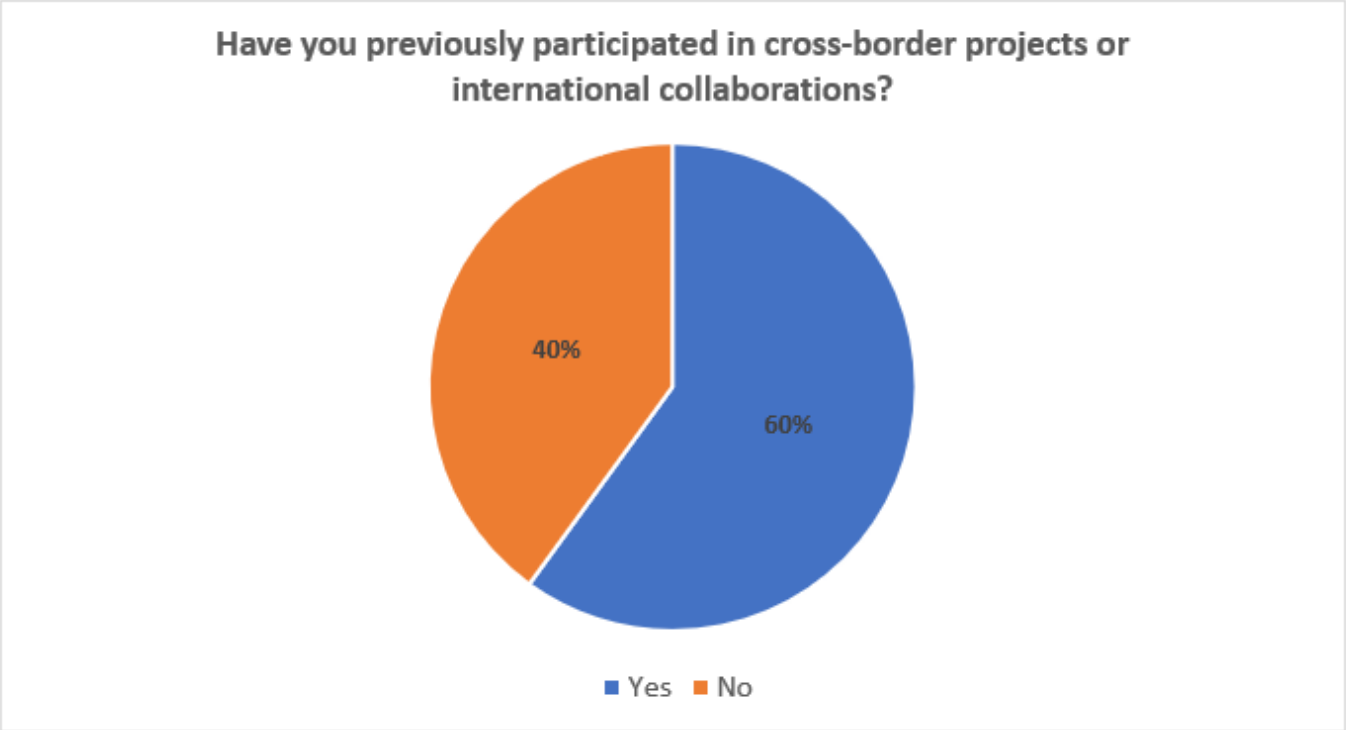
The pie chart illustrates that the most promising business model for the success of companies or organizations in the emerging sectors of the blue economy is the **innovation-based model**, receiving 47% of the votes. This is followed by the **circular economy model** and the **service-based model**, each with 18% of the votes. The **public-private partnership model** ranks last, with 17% of the votes.

3.7. main sources of funding used to support R&D activities



The pie chart illustrates the main sources of funding used by companies and organizations to support R&D activities. **European funding** is the most common, receiving 47% of the votes, followed by **government funds** with 31%. **Private investments** account for 19%, while crowdfunding was not selected by any respondents.

3.8. participation in cross-border projects or international collaborations



The interviewees who answered "yes" to participating in cross-border projects were asked to describe the main benefits and challenges they encountered. Their responses reveal a balance between positive outcomes and recurring challenges, particularly related to administrative burdens and differing partner expectations.

In terms of **benefits**, several common themes emerged. One of the most frequently mentioned advantages was **knowledge sharing and learning**. Many interviewees appreciated the opportunity to learn from best practices in their field and gain access to international technology cases. For example, one respondent noted they benefited from *"learning from the best in the*

field," while another highlighted the *"ability to access international technology cases through international research organizations."*

Another key benefit was the creation of **stronger networks and stakeholder engagement**. Cross-border collaborations helped participants build valuable relationships with relevant stakeholders, facilitating future collaborations. As one interviewee stated, *"the greatest benefit is getting to know relevant stakeholders,"* while another said such collaborations lead to *"stronger networks that open doors to future partnerships."*

Some interviewees also pointed out the advantage of **gaining international relevance** through these projects. They noted that participating in international collaborations raised their global visibility and allowed them to tackle global challenges. One respondent said the benefit was *"gaining international relevance,"* while another emphasized that these *"projects can address global challenges and reach wider audiences or markets."*

Lastly, **cooperation with experienced partners** was highlighted as a significant advantage. Working with knowledgeable partners provided access to resources and expertise that might not have been available locally. Examples of this sentiment include responses like *"cooperation with experienced partners"* and *"collaboration with experienced partners, knowledge sharing."*

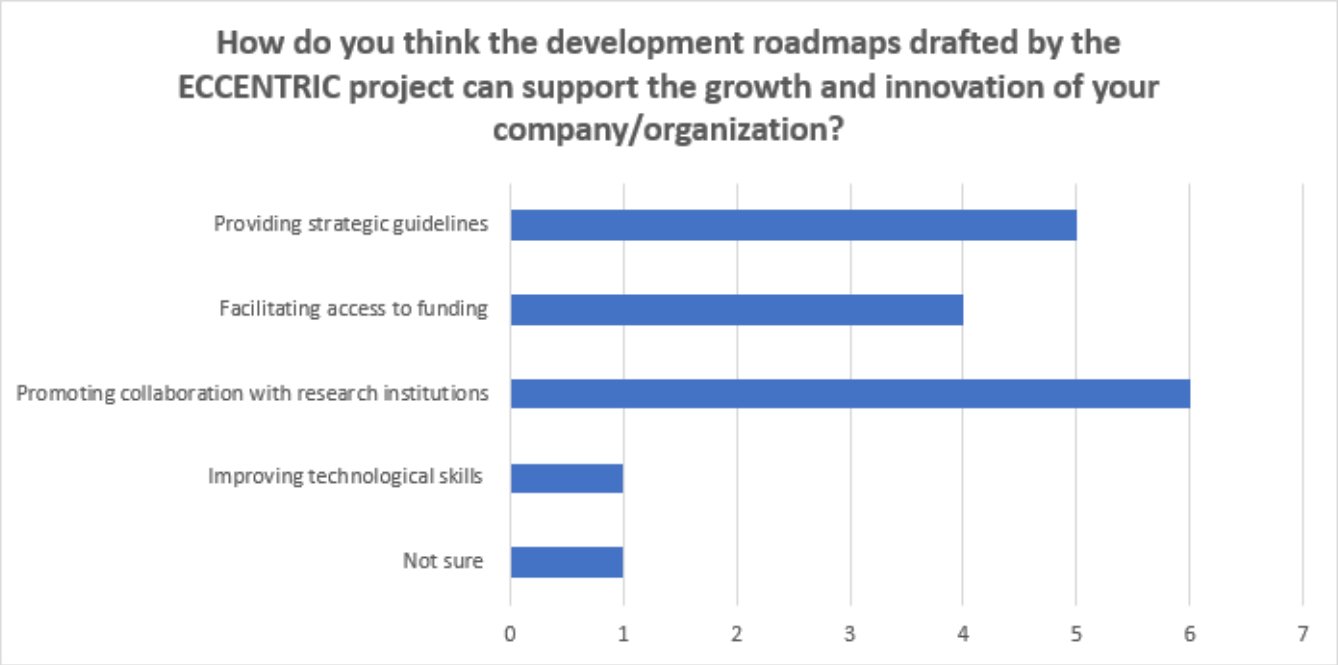
However, alongside these benefits, interviewees also identified several **challenges**. The most commonly mentioned issue was the **administrative burden** associated with cross-border projects. Interviewees expressed frustration with the excessive paperwork and project activities required by the funding program, many of which were unrelated to the project's core goals. One respondent summarized this issue by saying, *"Challenges are always the same: administrative*

burden of the additional project activities needed for the sake of the call and programme, and not always connected to the topic of the project."

Another frequent challenge was the **differing levels of knowledge and engagement** among international partners. Disparities in experience and priorities often led to difficulties in aligning project goals and ensuring balanced involvement from all participants. Examples of this include comments like *"different levels of knowledge and experience between partners"* and *"different priorities and engagement of partners."*

Finally, some interviewees pointed out a **lack of business structure for implementation**. This challenge hindered the practical application of solutions developed during collaborations, as certain partners lacked the operational framework needed to implement the strategies effectively. As one respondent noted, there was a *"lack of business structure and operational approach to implementation of proposed and developed solutions."*

3.9. usefulness of a roadmap developed by the ECCENTRIC project in the emerging sector



Six respondents believe that the development roadmaps drafted by the ECCENTRIC project can support the growth and innovation of their companies/organizations by **promoting collaboration with research institutions**. Five respondents think the roadmaps can help by **providing strategic guidelines**, while four respondents chose **facilitating access to funding**. Only one respondent believes the roadmaps can help by **improving technological skills**, and one is unsure.

3.10. suggestions and recommendations for improving interaction and collaboration between SMEs, research institutions and investors in the blue economy

To improve collaboration between SMEs, research institutions, and investors in the blue economy, our interviewees highlighted four key areas.

First, they emphasized the **need to better align research and industry needs**. Research institutions should become more industry-oriented, focusing on practical outcomes that benefit SMEs. Examples include increasing the number of research projects implemented together and focusing on business-driven results, such as developing products and services that meet market demands.

Second, a **cultural shift** is essential. SMEs and larger companies need to start viewing R&D as an investment rather than an expense. Interviewees noted that many companies apply for government and EU funds primarily to cover operational costs, missing the opportunity to innovate. Similarly, the academic community often lacks motivation to collaborate with SMEs, as such partnerships don't always align with traditional promotion criteria in research institutions.

Next, interviewees stressed the **importance of improving communication and networking**. Investing more in thematic events, such as industry-focused congresses, would allow SMEs, researchers, and investors to connect and collaborate more effectively. Strengthening technology transfer offices (TTOs) within universities was also suggested as a way to bridge the gap between academic research and commercial application.

Finally, there is a call for **policy and support structures** that foster long-term collaboration. Interviewees recommended developing national policies and support systems that encourage joint innovation in blue and green technologies, ensuring that collaboration is incentivized and that resources are in place to support it.

4. Conclusions:

The findings from the interviews conducted as part of Activity 1.1 by MARINN – Maritime Innovation Cluster present an overview of the opportunities and challenges in fostering collaboration between SMEs, research institutions, and investors in the blue economy. The interviewees identified key growth drivers, such as new technological advancements, supportive national policies, and the development of necessary infrastructure for emerging sectors. However, they also highlighted significant challenges, including a lack of innovation-driven collaboration and gaps in communication between academia and industry.

The results showed the distribution of interviewees across various sectors, with SMEs representing the largest group. Despite their potential for innovation, SMEs face difficulties in aligning with research institutions, partly due to a mismatch in priorities and the traditional approaches held by both sides. The lack of interest from both sides, as well as poor networking opportunities further limits this collaboration.

The report also emphasizes the benefits of cross-border collaborations, particularly in knowledge sharing, network building, and gaining international relevance. However, recurring challenges such as administrative burdens and differing partner expectations complicate these efforts. Interviewees also noted the absence of a structured business framework, which hinders the practical application of solutions developed through collaboration.

To address these issues, the report suggests improving alignment between research and industry, encouraging a cultural shift where R&D is viewed as an investment, and strengthening communication and networking through thematic events and technology transfer offices. Additionally, the development of policies and support structures to foster long-term

collaboration in blue and green technologies is critical for unlocking the full potential of the blue economy.

In conclusion, the interviews provide a roadmap for enhancing collaboration between SMEs, research institutions, and investors. By addressing the identified barriers and leveraging the suggested strategies, the blue economy can drive sustainable growth, innovation, and technological advancement in emerging sectors.

Interreg Co-funded by the European Union

Italy – Croatia

ECCENTRIC

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(ITHR0200314)

Enhancing circularity in the Adriatic area supporting innovation and growth of the blue-economy emerging sectors

Work package 1

Activity 1.1

Maritime Technology Cluster FVG

Needs and expectations concerning emerging sectors

INDEX

1. Objective of Activity 1.1 – Needs, expectations concerning emerging sectors:

The objective of this activity is the analysis of the blue-growth emerging sectors (marine energy, marine safety & surveillance and infrastructure) focusing on the status of their relationships with academia and their contributions to the green transition.

Each partner has identified key stakeholders to interview in their geographical area, focusing on product and process innovation, collaboration with research institutions, and financial challenges faced by SMEs. In general, mareFVG assessed reference players in respective networks at regional and national level in order to guarantee coverage of stakeholders involved in project related sectors and distribute representativeness among the target players identified for this activity.

Each partner has conducted interviews with 10 relevant stakeholders, including industry associations, agencies, SMEs, research institutions, and policymakers.

2. Description of the company or organizations interviewed and the sectors of interest:

mareFVG contacted a diversified pool of relevant blue economy stakeholders. To gather results from a variety of target users, the interviews were sent to Friuli Venezia Giulia and national entities linked to the cluster, diversified among SMEs, large companies, research centers, universities, local authorities and chamber of commerce. In particular, mareFVG gathered answers from 6 SMEs, 1 University, 1 port authority, 1 research center and 1 coast guard authority.

The identified actors were also diversified in terms of their prevalent blue economy emerging sector: 3 actors were in the process of developing innovative technologies in the **marine energy** sector, 3 actors in **safety and security**, and 3 in **marine and maritime infrastructures**. In addition, other interviewees were involved in specific sectors: 1 in the **laying of underwater cables**, 1 in **optimization of entry to and exit from ports**, 1 in **asset efficiency**, and 1 in **offshore wind power**.

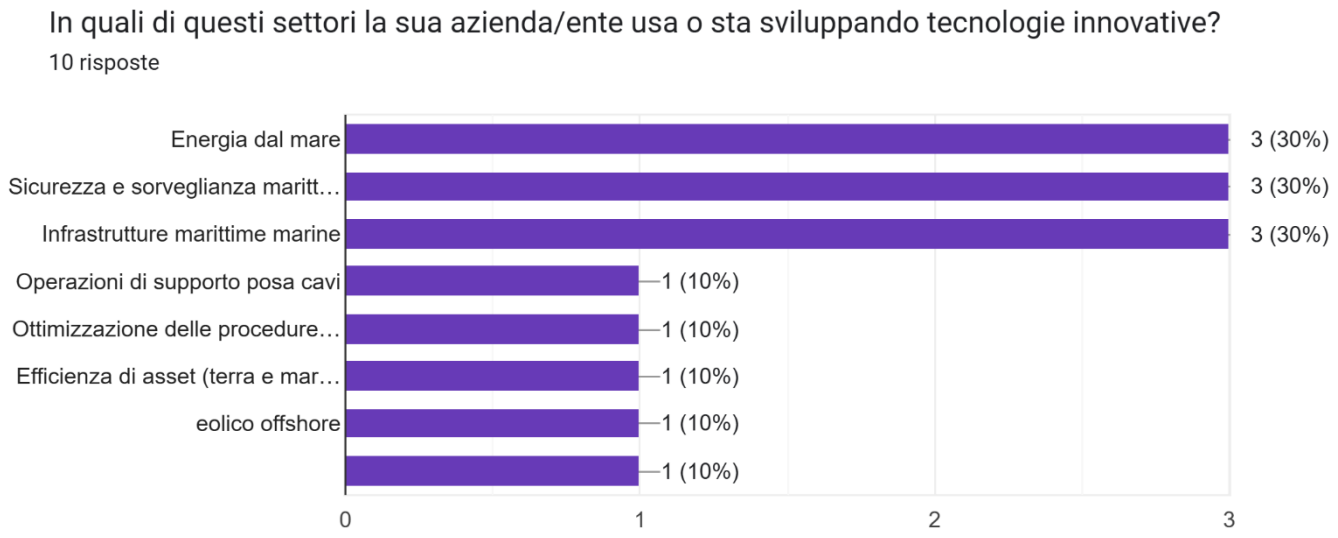

Figure 1 - Sectors of interest

Master data of contacted companies

Innovo srl: engineering, construction and equipment rental company. Its purpose is to support the oil and gas, renewables and marine industries worldwide with innovative custom-designed and rental products including jack-up systems, modular pontoons and cable laying equipment. Recently, it has advanced in the field of autonomous vessels with the design of a prototype for sea patrolling.

Transpobank srl: the company has been involved in transport telematics for over 30 years, and currently operates a freight exchange platform and areal-time tracking for vehicles, vessels, construction equipment and cranes. Transpobank is actively involved in research and development activities in diversified fields including monitoring of the sea, monitoring of underwater noise and digital twin application in coastal and port areas.

Seabreath srl: micro startup based in Parma and Padua and specialized in developing specific solutions for wave energy converters designed to generate energy by the sea.

Aitronik srl**:** based in Tuscany, the company supports manufacturers of marine, land and air vehicles in the robotization of their machines, both for national and for international industrial groups. Aitronik is specialized in Machine Learning, Code development on super-computing platforms for AI, and Autonomous Vehicles. Operates on AI systems into Autonomous Vehicles for applications as autonomous forklifts to robotic lawnmowers, autonomous underwater vehicles for sea exploration to aerial drones for ships surveillance.

Airworks srl engineering consultancy for advanced systems, combining vast design skills with a thorough knowledge of manufacturing, helps organizations develop outstanding technologies for Space, Defence, Wind Power and other demanding domains.

Wireless and More srl: based in Padua, the company operates in the wireless telecommunications sector, in harsh environments such as maritime. It designs, evaluates and implements solutions in diversified set of environments, from terrestrial radio links to underwater acoustic and optical communications. The company is a spin off of the University of Padua and benefits from the interaction with research groups in the university and knowledge centers.

University of Trieste – Department of Engineering and Architecture: one of the three universities in Italy specialized in naval architecture and marine engineering. Mostly involved in maritime technologies related activities through the faculty of Architecture and Engineering (DIA Department). Among others, the department has established the IE-FLUIDS research group, focused on industrial and environmental computational fluid dynamics focusing issues related to underwater studies on diversified sea offshore applications.

Trieste Coast Guard Authority: local unit of the coast guard authority part of the Italian Navy under the control of the Ministry of Infrastructure and Transport with the head office in Rome. The missions of the Italian Coast Guard include: Search and rescue, Maritime law enforcement, Protection of marine resources, Safety of navigation and Fisheries protection and regulation.

Trieste Port Authority: is the authority in charge for management and administration of the ports of Trieste and Monfalcone, located in the northern sites of the Adriatic and Mediterranean Seas. The ports holds an important role at international level and are a hub for commercial, industrial and logistic purposes. The authority is aligned with a moder and flexible strategy that focuses on development as green energy hub integrating updated telecommunications and research and innovation. The harbor in active in diversified segments including transport of goods and passengers.

National Research Council – Marine Sciences Department: CNR it is the largest scientific and technological research center in Italy. The marine sciences department IGSMAR is based in Venice and conducts experiments on marine geology, physical, chemical and biological oceanography, climate variability, and natural risk assessment. Has been involved in diversified projects connected to marine technologies applications in terms of robotics, sensors and sea monitoring.

3. Interview results

a. main growth drivers in emerging sectors in the next five years

The respondents identified the **increase of public investments** as the main driver for growth in the next five years. Four respondents considered it the most important driver, and four as particularly important. **Market expansion** and **rapid technological development** were identified, respectively, by three and two respondents as the most important driver, with the former having been identified as the second most important by four other interviewees, and the latter by one other. **International collaborations** was identified by just one respondent as the most important driver for change, and three respondents considered it the least important factor.

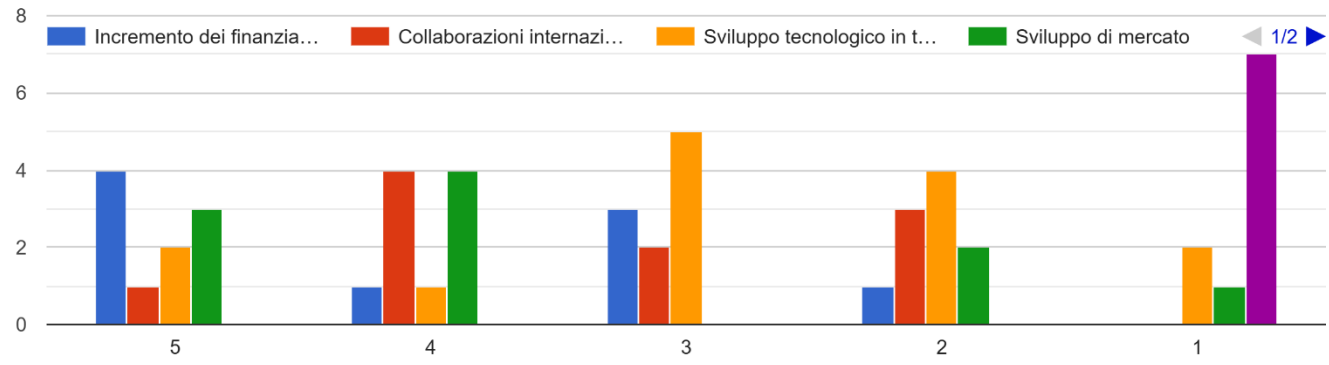

Figure 2 - Growth drivers

b. main challenges faced in terms of technological innovation

The main challenge faced in terms of technological innovation is by far the **lack of funding**, with more than half of the respondents identifying it as a barrier (six). The second most reported challenge (identified by two interviewees) was the **insufficient collaboration with research institutions**. Moreover, **regulatory barriers**, **limited access to technology**, and **difficulties in finding IT staff** were also mentioned, all by one respondent each.

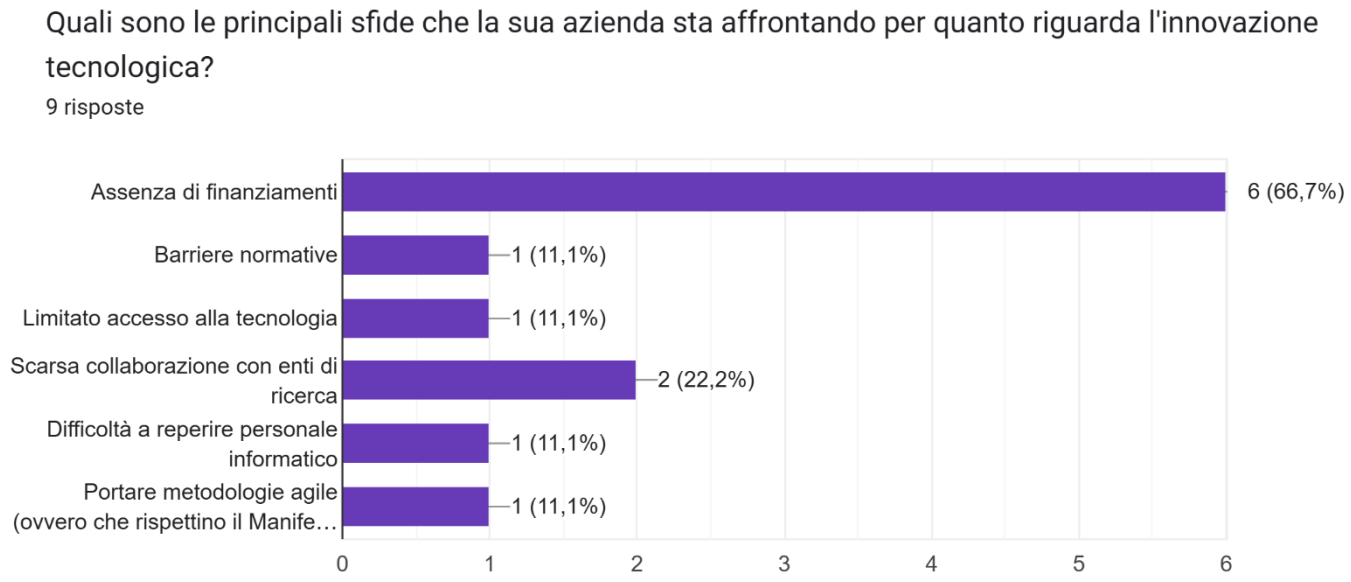

Figure 3 - Challenges of technological innovation

c. sectors with the greatest need for technology and innovation

Products, services and solutions is the area with the greatest need for technology and innovation for eight respondents. Two interviewees have identified **market development** as the most important, and only one the **production processes**.

d. assessment of collaboration between SMEs and research institutions in emerging sectors

Among the interviewees, we notice substantial balance in how the collaboration between SMEs and research institutions is perceived. Almost half of the respondents consider it **sufficient** (4), three consider it **good**, and two consider it **poor**.

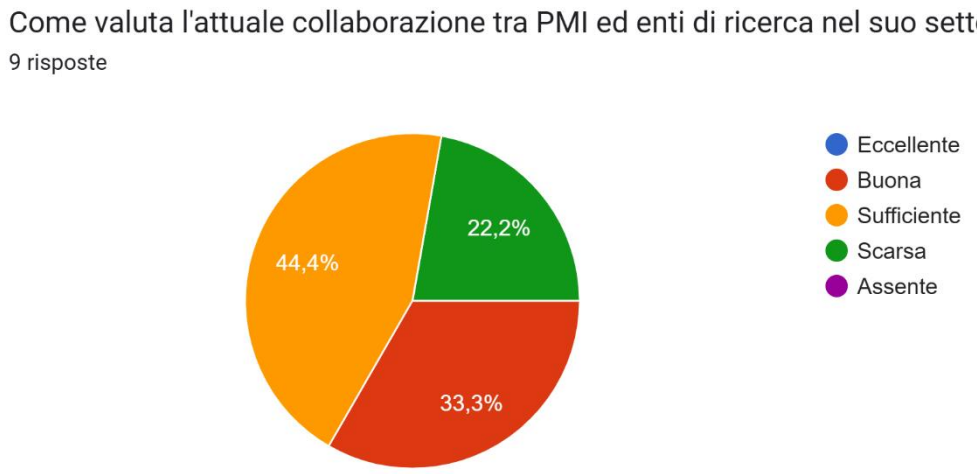

Figure 4 - Assessment of SMEs and research centers level of collaboration

e. main reasons for assessing cooperation between SMEs and research institutions

5 respondents have included the **lack of networking and collaboration** in their answers concerning the main obstacles in cooperation. Another respondent highlighted the fact that SMEs and research institutions are driven by **different objectives**: the former wants to deliver concrete results, while the latter is more focuses on developing new competences. Other answers include **excessive red tape** and a **general lack of interest**, **intellectual property rights management**, **lack of funding** for researchers, and a **different overall mentality** between SMEs and research centers.

f. the most promising business models for success in emerging sectors of the blue economy

Four respondents each consider the **public-private partnership** and the **innovation-based** as the most promising models for the emerging sectors of the blue economy. The **circular economy model** and the **service-based model** were both considered by two respondents as the most promising.

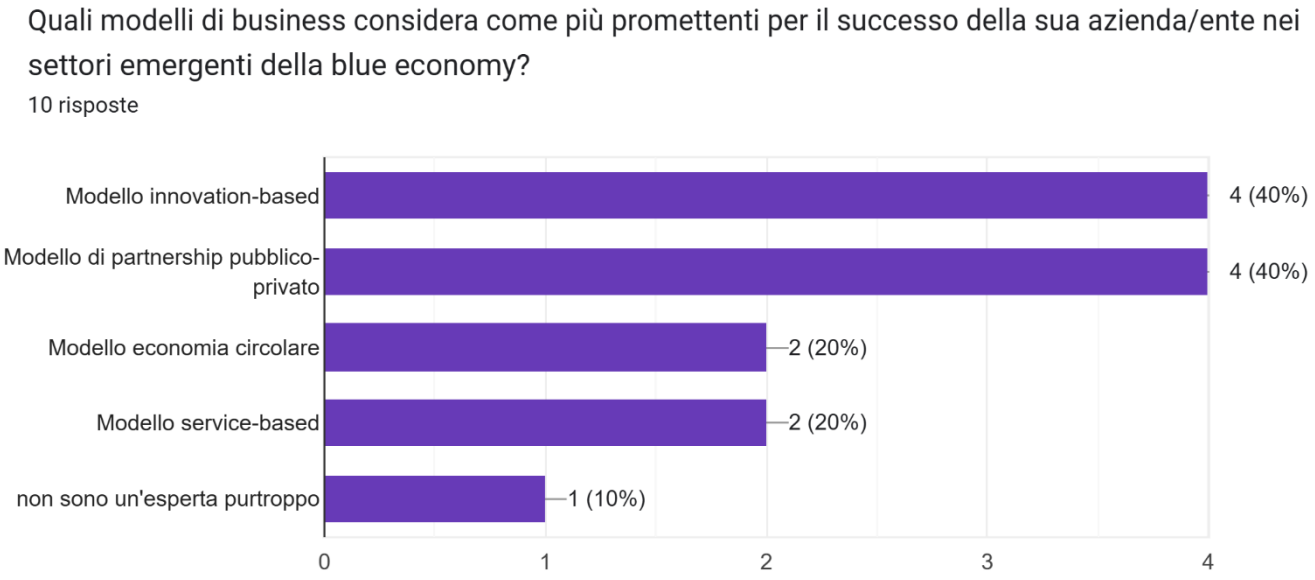

Figure 5 - Most promising business models for the blue economy

g. main sources of funding used to support R&D activities

The main source of funding for the respondents are public funding. In particular, 7 interviewees have identified **EU funds** as the main source, and 5 of them have identified **government funds**. Just 2 respondents highlight **private investment** as the biggest source of support, with 1 other attaining from **own funds**.

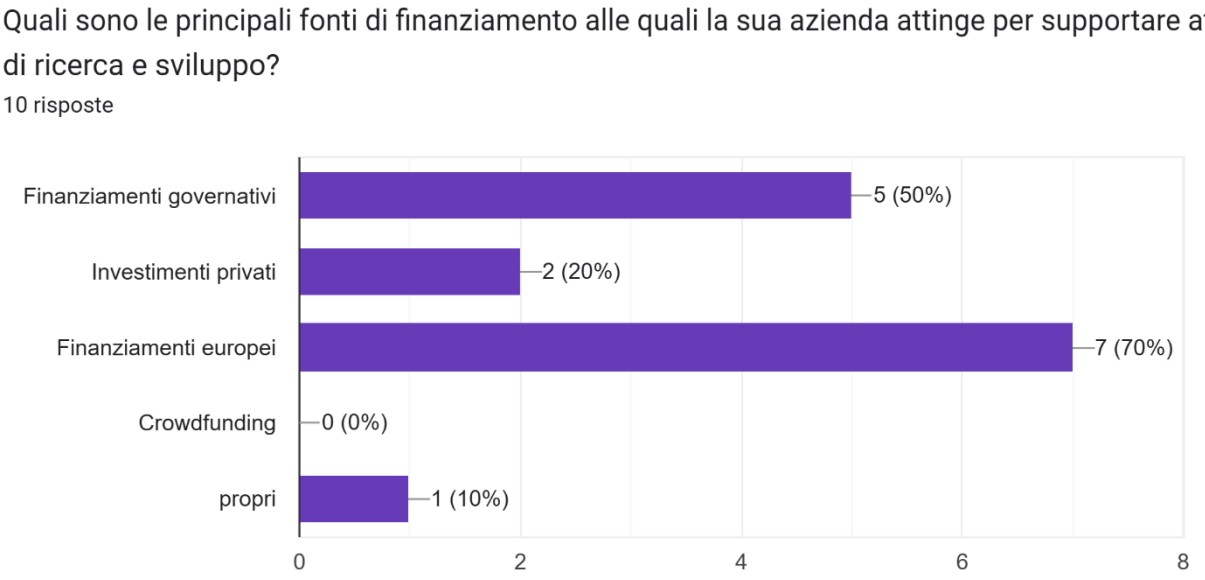

Figure 6 - R&D funding sources

h. participation in cross-border projects or international collaborations

A majority of respondents (6) had already participated in cross-border or international projects, compared to respondents who had never done so (3). Among the first group of people, the main benefits perceived by undertaking international collaborations include **optimization of resources**, an overall **sharing of results** and common problems, **networking** for future projects. We also highlight one respondent that stated that no benefits were observed after having participated in cross-border projects.

i. usefulness of a roadmap developed by the ECCENTRIC project in the emerging sector

Facilitating access to funding was the most foreseen purpose (5 respondents) of the soon-to-be-developed ECCENTRIC roadmaps. The second most popular purpose was **providing strategic guidelines** (3 respondents). Finally, 1 interviewee identified the **promotion of collaboration with research institutions** and 1 the **improvement of technological skills** as the best ways through with the roadmaps can support growth.

Figure 7 - Guideline reports

j. suggestions and recommendations for improving interaction and collaboration between SMEs, research institutions and investors in the blue economy

With regards to suggestions to improve collaboration between SMEs and research institutions, respondents highlighted the need to share know-how, organize innovation and matching events, reduce red tape, and focus resources and energies to the development of small, easy-to-implement, concrete projects.

4. Conclusions

Overall, we have noticed a general interest in innovation and growth in the emerging sectors of the blue economy. Most respondents highlight the lack of funding as a major obstacle to the development of synergies, and in general the interviewees are aware about opportunities offered by EU and national/local grants. The latter are identified as primary potential source to support innovation but there would be need support to better access them and to gather information. In general, there is an average good rate in collaboration activities even if networking and actions to bridge research and private sector are still considered a priority.

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Enhancing circularity in the Adriatic area supporting innovation and growth of the blue-economy emerging sectors

Work package 1

Activity 1.1

HAMAG-BICRO

Needs, expectations concerning emerging sectors

INDEX

1. Objective of Activity 1.1 – Needs, expectations concerning emerging sectors:

The objective of this activity is the analysis of the blue-growth emerging sectors (marine energy, marine safety & surveillance and infrastructure) focusing on the status of their relationships with the academia, their contribution to the green transition.

Each area has identified key stakeholders to interview, focusing on product and process innovation, collaboration with research institutions, and financial challenges faced by SMEs.

Each partner has conducted interviews with 10 relevant stakeholders, including industry associations, agencies, SMEs, research institutions, and policymakers.

2. Description of the company or organizations interviewed and the sectors of interest:

1. Geolux d.o.o. - Manufacturer of hydrometeorological sensors with internal R&D and production in Croatia and export in 80+ countries around the world.

2. Probotica d.o.o. is recognized in the market as: - a supplier of engineering services related to development and consulting, - a center of excellence in the fields of robotics, electronics, and construction, - a provider of design services for complex mechatronic and process plants.

3. ZADAR SUB d.o.o. - Marine & underwater services, sales of equipment for aquaculture and professional fishermen.

4. UNIZG-FER - Croatia's leading academic and research institution in the field of electrical engineering, computing, and information and communication technology.

5. Ruđer Bošković Institute - The institute is the largest Croatian scientific and research center with a multidisciplinary character

6. Platforma 22 d.o.o. - company is dedicated to providing the highest quality shellfish from the Krka River estuary, with an emphasis on mussels and oysters.

7. SEA CRAS d.o.o. - Coastal Intelligence by SeaCras leverages AI analysis of very high-resolution satellite data to evaluate marine emissions and estimate the ecological vulnerability of micro-locations, destinations, and territorial waters all together that constitute environmental security data, as a part of climate security.

8. Fakultet elektrotehnike, strojarstva i brodogradnje – Educational institution for electrical engineering, mechanical engineering and shipbuilding

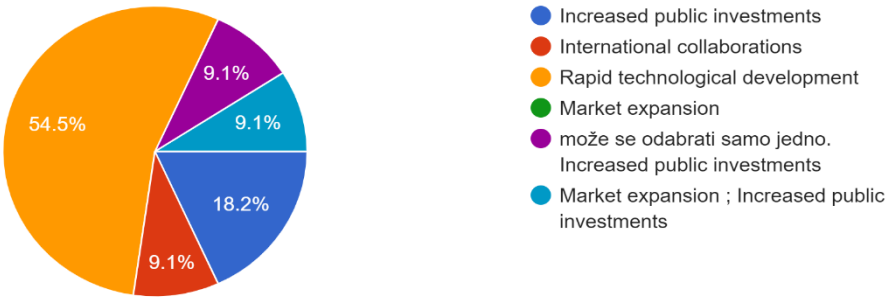
9. FESB – Split - Educational institution

10. Šibenik boats - Tourist company

3. Interview results

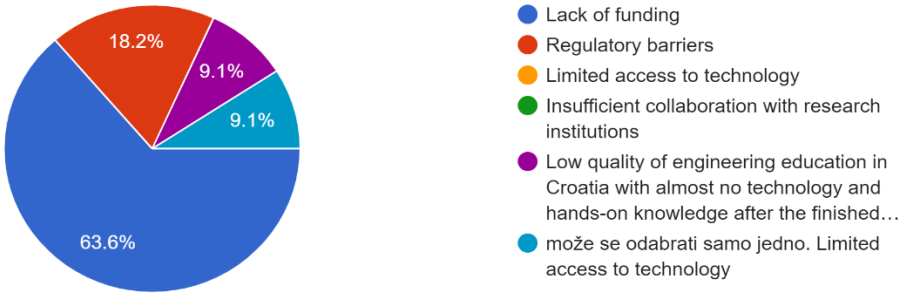
a. main growth drivers in emerging sectors in the next five years

What do you believe are the main growth opportunities for the emerging sectors in the next 5 years? (Select all that apply)
11 responses



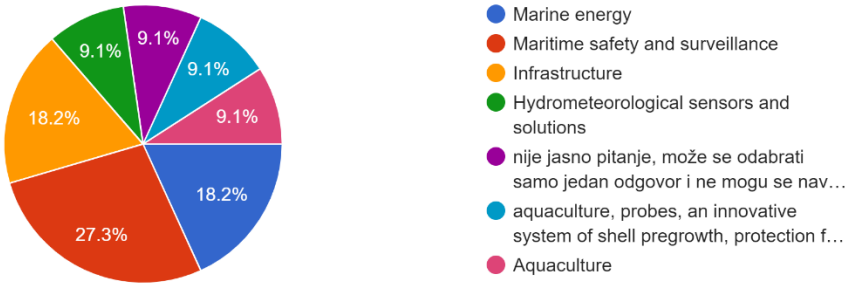
b. main challenges faced in terms of technological innovation

What are the main challenges your company/organization is facing in terms of technological innovation? (Select all that apply)
11 responses



c. sectors with the greatest need for technology and innovation

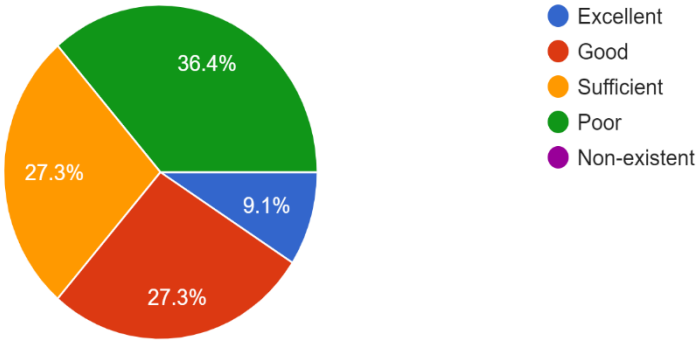
What innovative technologies is your company/organization currently using or developing in the following sectors?
11 responses



d. assessment of collaboration between SMEs and research institutions in emerging sectors

How do you currently evaluate the collaboration between SMEs and research institutions in your sector?

11 responses

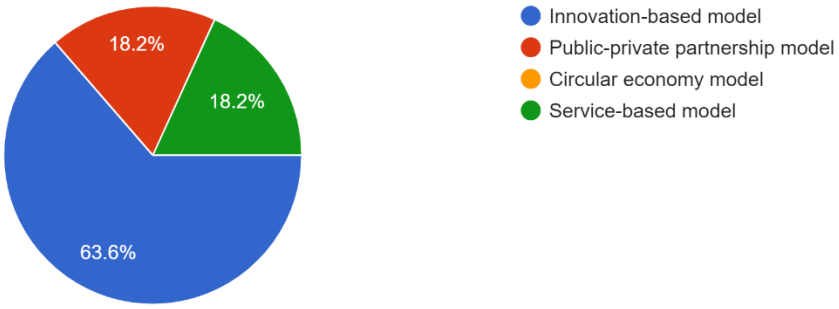


e. main reasons for assessing cooperation between SMEs and research institutions

no answer

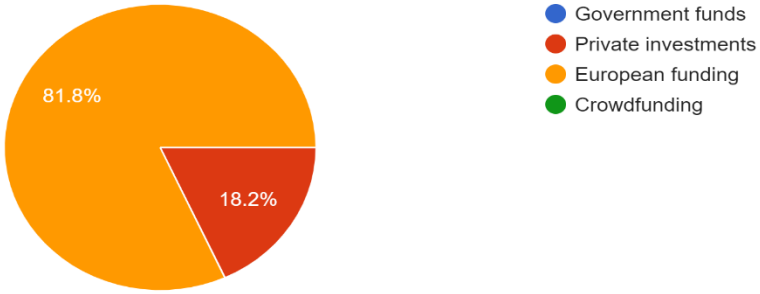
f. the most promising business models for success in emerging sectors of the blue economy

Which business models do you consider most promising for the success of your company/organization in the emerging sectors of the blue economy? (Select all that apply)
11 responses



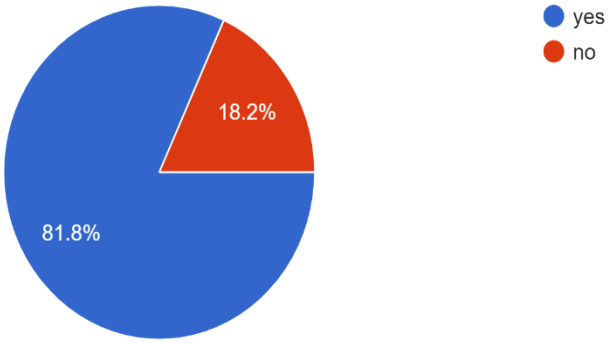
g. main sources of funding used to support R&D activities

What are the main sources of funding that your company/organization uses to support R&D activities? (Select all that apply)
11 responses



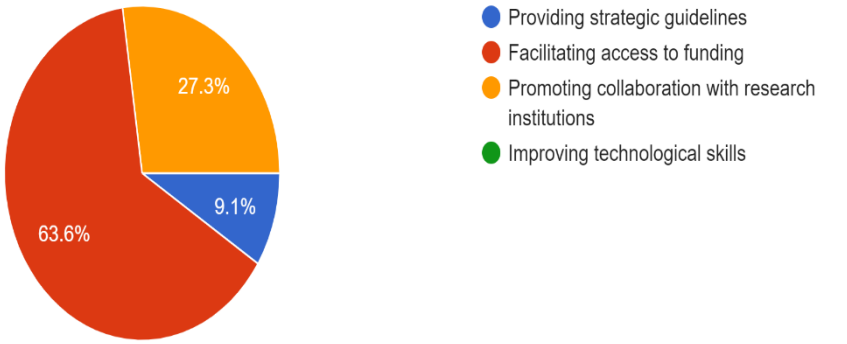
h. participation in cross-border projects or international collaborations

Have you previously participated in cross-border projects or international collaborations?
11 responses



i. usefulness of a roadmap developed by the ECCENTRIC project in the emerging sector

How do you think the development roadmaps drafted by the ECCENTRIC project can support the growth and innovation of your company/organization?
11 responses



j. suggestions and recommendations for improving interaction and collaboration between SMEs, research institutions and investors in the blue economy

1. Adopt more market-oriented approach and for clusters/partnership to solve the problems from the market, and not to convince market that something you are doing is the perfect for them as it is very often in projects in Croatia.

2. Simplify access to funding by streamlining application processes, creating targeted investment funds for blue economy innovations, and enabling innovative firms to directly present their innovations and projects to investors.

3. Participants should be more connected and should know who is doing what and how. There are too many individual moments, and in this way, only a few have the opportunity to access information and projects.

4. No response.

5. One million dollars questions - both side have to believe more each other

6. Open access to innovation financing. Enable the financing of innovations permanently without waiting for the opening of individual tenders.

7. Research institutions need more pressure and guidance from funding agencies to better understand the dynamics of the industry and market.

8. More projects like Hamag-Bicro project encouraging SME to apply for project and to search for partners in research institutions like universities

9. Much more marketing and investment in this sector is needed.

10. Don't know

11. Organize more study trips and hands on experiences with solution provider and more experienced regions.

4. Conclusions

More than 50 % believe that main growth opportunities will be rapid technological development and more than 60% finds lack of funding the main challenge in future development. Main challenge is to make better connection between SMEs and research institution but positive side more than 80 % have been involved in cross-border projects and international collaborations. One of the recommendation from SMEs were simplify access to funding by streamlining processes and open access to innovation financing

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Enhancing circularity in the Adriatic area supporting innovation and growth of the blue-economy emerging sectors

Work package 1

Activity 1.1

UNIBO – CIRI MAM

Needs, expectations concerning emerging sectors

Contents

1. Objective of Activity 1.1 – Needs, expectations concerning emerging sectors:

The aim of this activity is to identify key stakeholders and interview them for collecting and analyzing their needs and expectations in the emerging blue-growth sectors—marine energy, marine safety and surveillance, infrastructure— and for examining their role in the green transition. Each partner has interviewed 10 relevant stakeholders, including industry associations, agencies, SMEs, research institutions, sectoral agencies and policymakers.

2. Description of the company or organizations interviewed and the sectors of interest:

UNIBO-CIRI MAM – ALMA MATER STUDIORUM University of Bologna interviewed 10 companies and organizations, including 6 small and medium enterprises, 1 research institution, 1 national public authority 1 sectoral agency and 1 onlus organization.

They are briefly described as follows, the same way they answered to the interview.

1. Small and medium enterprises

   Lucchi R. S.r.l. - Founded in 1949 by Riccardo Lucchi, and currently led by his son Giorgio and grandson Fabio, the company has grown by evolving in the design and production of high-performance electric motors with high energy efficiency. The different types of electric machines produced have been applied in many sectors: avionics, marine, agriculture, defense, automotive and many others.

   Ferretti Group - Ferretti Group is a world leader in the design, construction and sale of luxury yachts and pleasure vessels. The Group has a portfolio of prestigious, exclusive brands, such as Ferretti Yachts, Riva, Pershing, Itama, CRN, Custom Line and Wally.

Corset & Co srl - Corset & Co is an Italian company founded in 2014 specialized in the processing of composite materials for the nautical sector, thanks to the expertise of a personality in the yachting world, Eng. Paolo Francia. Thanks to its quality and brand history, in a few years the company has become a milestone in the manufacturing of composite materials for the production of components for pleasure yachts for the most important national and international brands in the nautical sector (Cantieri del Pardo, Ferretti Group, San Lorenzo, Italia Yachts, Fiart, Riva ecc) 2 The company offers services such as the production of molds, components, and structures for pleasure boats in composite material, using manual processing and advanced technologies such as infusion. Today, Corset has 8 active plants in Italy that supply the leading national and international nautical brands and has an organizational structure with 95 employees. Corset leverages the experience and expertise of the best professionals in the industry to ensure the quality of its products, tailored to the needs of its clients. Furthermore, the company focuses on research and development concerning the sustainability of processes and products, always ensuring the quality, safety, and excellence of its products for the pleasure boating sector. The studies involve innovative systems for monitoring product quality and lifecycle, innovative/eco-sustainable/recyclable materials, techniques and technologies for the use of new materials, and the creation of experimental prototypes. The company aims for an even more challenging goal: pursuing a regenerative model within a circular economy framework for the nautical industry.

Mech SRL - Mech SRL is an Engineering Consultant Company who mainly design and details steel structures and machineries. Our core – business is mainly in steel structures, but we design and sometime produce special equipment (by order or for internal scope).

Videoworks Group - Videoworks Group is one of the world leaders in AV/IT, Domotics, AI applications on Leisure and Cruise ships (super and mega Yachts and Cruise ships).

ECOINNOVAZIONE srl - Ecoinnovazione Srl is a research and consultancy company born in 2012 as spin-off of ENEA (large Italian technological research public organization) instrumental to apply knowledge, methods and tools developed in many years of international research. Ecoinnovazione provides tailored services and solutions to companies and public administrations finalized to a winning circular economy and sustainability strategy. Its services are based on the most robust and scientifically sound methods, and they are continuously updated through the participation to international research projects and networks. Working in the Green and Circular Economy field, Ecoinnovazione offers advanced services of environmental, economic and social impacts assessment of products, services, organizations with a life cycle approach. It applies Responsible Research and Innovation principles and stakeholder engagement in the research and development process to achieve acceptability and consensus on innovative technologies, products and methods.

Oikos Area -

2. Research institutions

   BI-REX - BI-REX is one of the 8 national competence center, is a public private consortium composed of 63 affiliated entity. Our goal is to support the collaboration within industry and research center, supporting the digital transition and new technology adoption.

3. National public authority

   Emilia – Romagna Region - The E-R R deals with a wide range of topics and among them the DG Knowledge, Research, Labour, Enterprises is the MA of both RP ERDF and ESF+. The Sustainable innovation, Enterprises, Industrial chains, Energy and Green Economy area is in charge for designing and implementing the regional industrial policies, the S3, the Regional Energy Plan and its Three year – Implementation plan. Among our mission there is the support to SMEs and companies's investment in R&D, in energy efficiency

and renewable sources, promoting also high-tech start-ups. Since 2004, when the High Technology Network grouping 10 Technopoles was launched, we are also supporting the delivery of industrial research, providing innovation services to businesses, start-ups and spin-offs. Innovation and Sustainable Economy are key targets for which we have defined policy instruments and financial measures. In addition to it, E-R R is the coordinator of the Italian Regional Committee within the National Technology Cluster Blue Italian Growth, focusing on Blue Economy. Last but not least, our key working fields are green blue, circular and space economy and have also a lot of experience in the management of European and International projects. We have leaded MISTRAL project (Interreg MED) and are currently leading Blue Ecosystem project (Interreg EURO MED) both working on Blue Economy with interesting results and activities that can be synergic with ECCENTRIC. I'm a project manager of the Unit, dealing with EU funded project and managing International relations. Presently I'm project manager, with role of Leading partner, of Blue Ecosystem and HERCULES-CE (Interreg Central EUROPE main focus: RECs), and with role of Project partner of LEEWAY (Interreg EUROPE main topic RECs), CIRCOTRONIC (Interreg Central Europe main topic: circularity applied to electric and electronic devises) and Coordinator of MASBBE (S3 – CoP – Maritime Sustainable Blue BioEconomy.

4. Sectoral agency

   OIKOS Area S.r.l - OIKOS Area is a private company supporting private and public organizations in achieving their environmental, social and economic sustainability goals, through the provision of management and technical consultancy, audits and compliance checks, training and development of human resources programs.

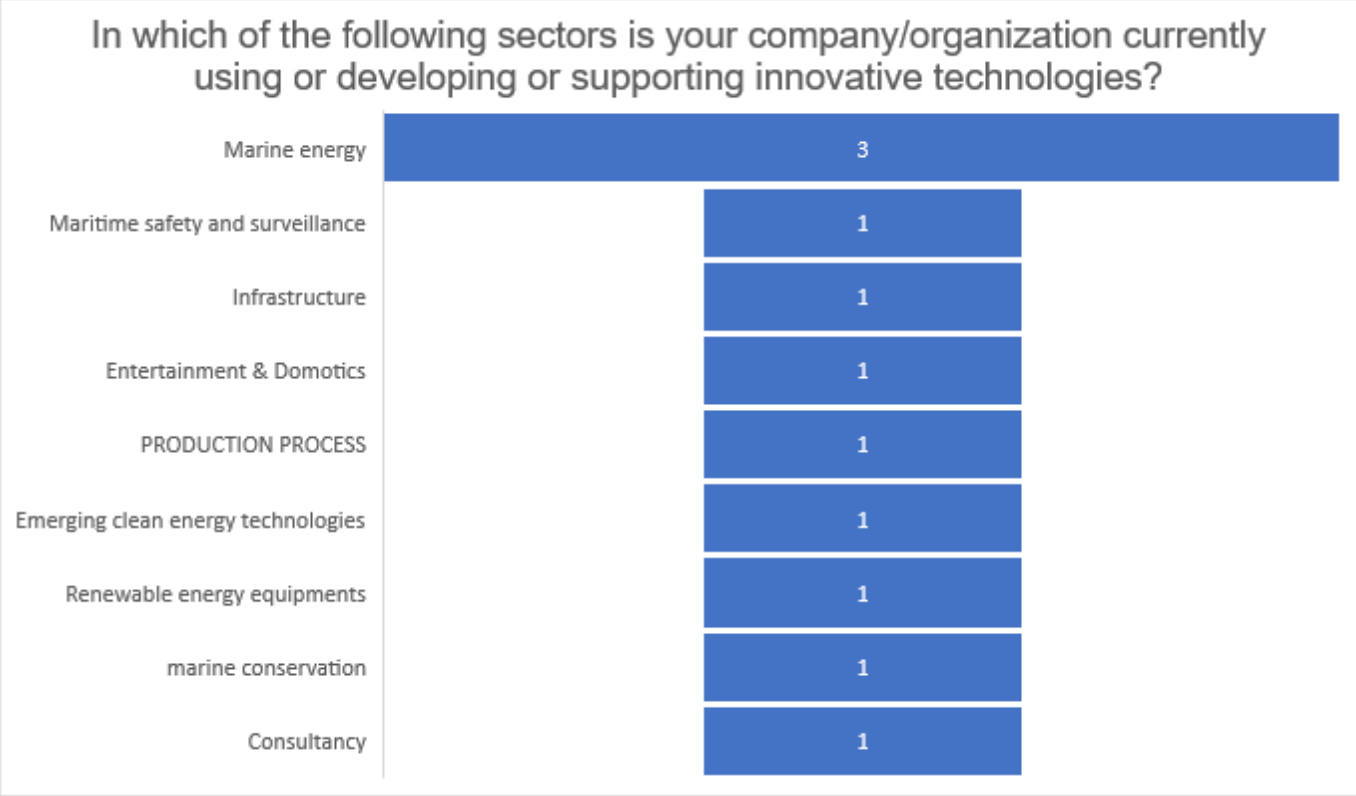
5. Onlus organization

   Fondazione Cetacea - Fondazione Cetacea is a no profit association in marine environmental conservation and manages a sea turtles rescue center.

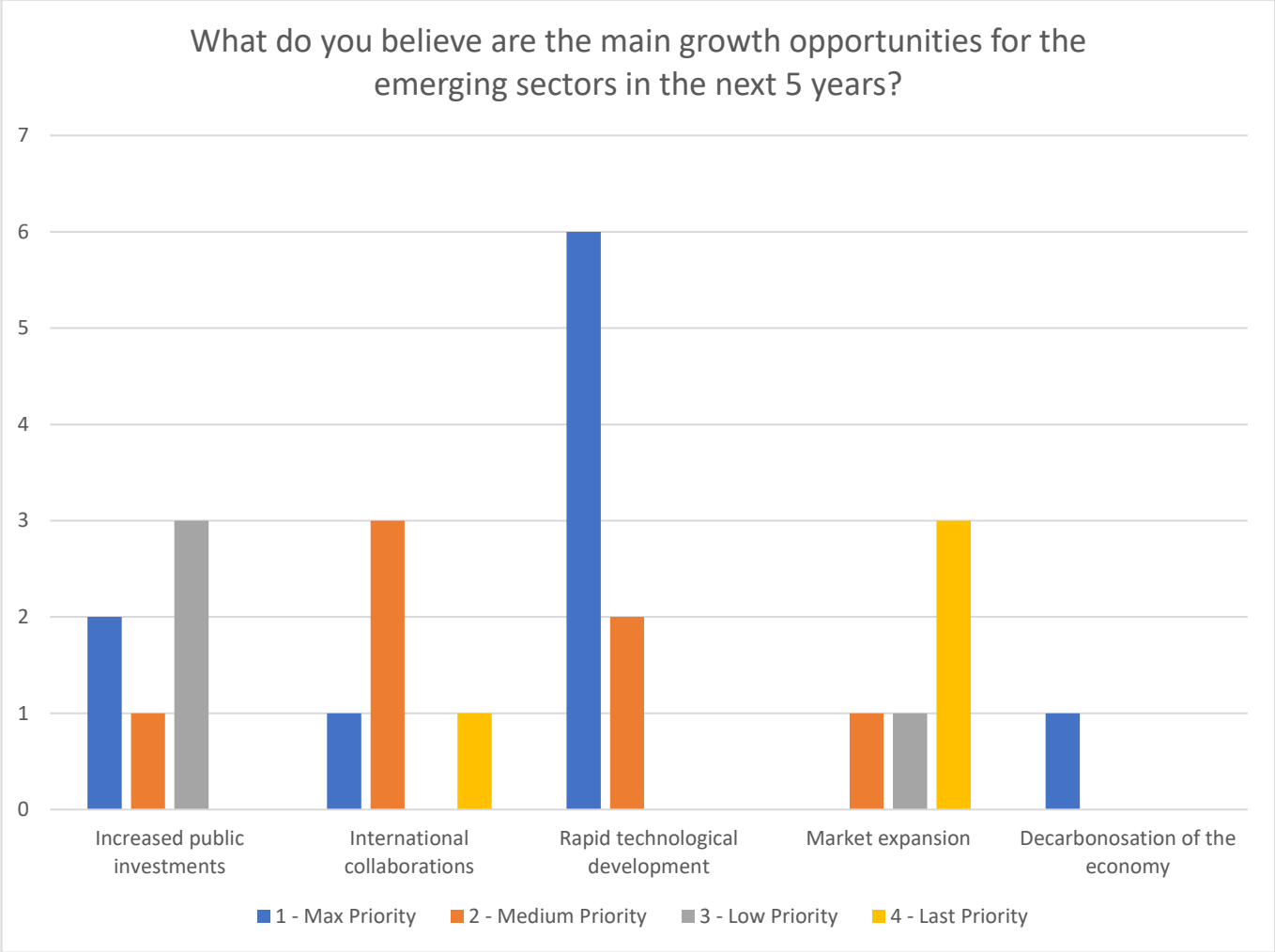
3. Interview results:

3.1. In which of the following sectors is your company/organization currently using or developing or supporting innovative technologies?

The following diagram shows the answers to the sectors of interest of each actor interviewed. This was extrapolated from answers to question n.8.

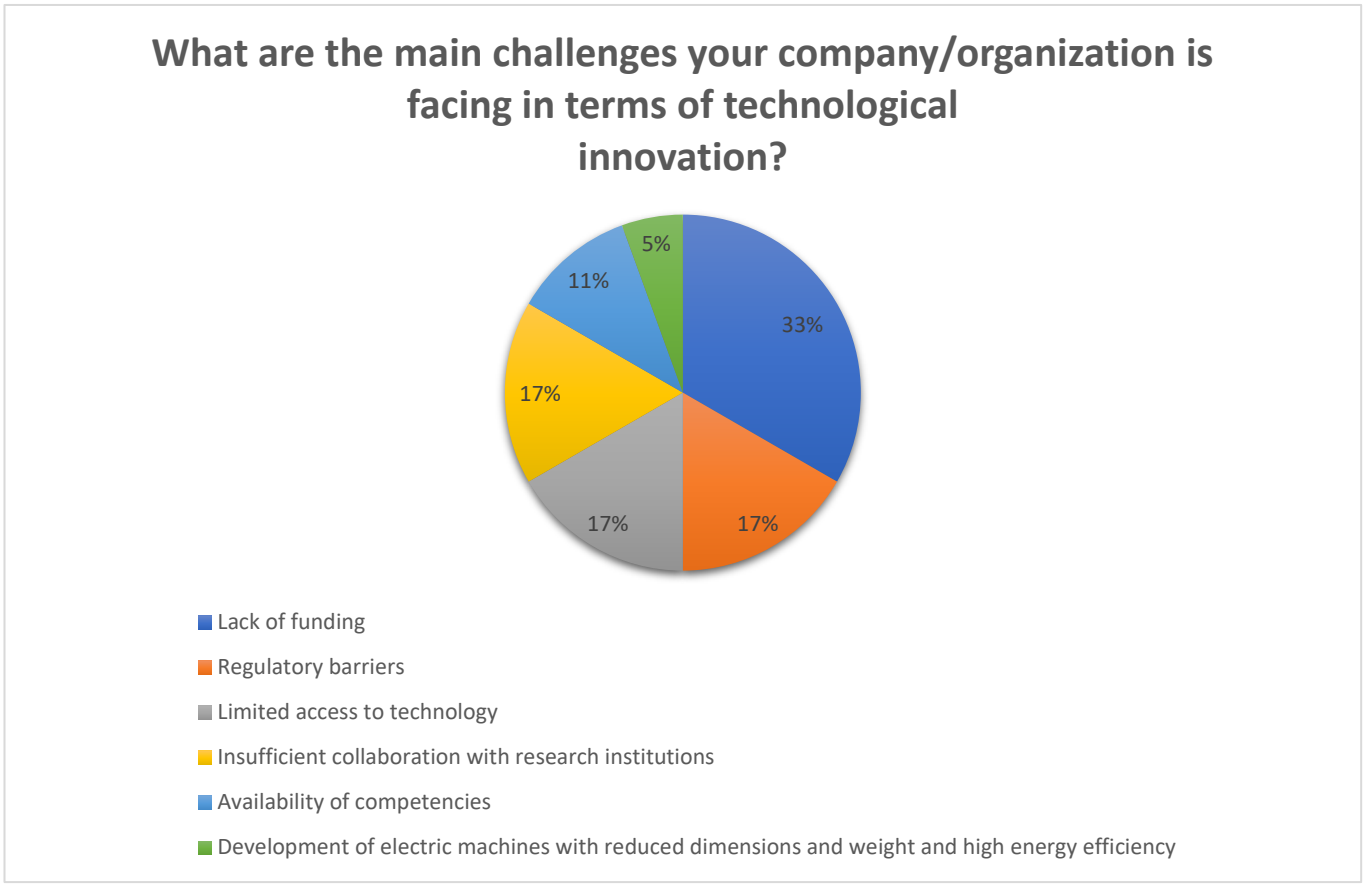


3.2. What do you believe will be the most significant drivers of growth for emerging sectors over the next five years?



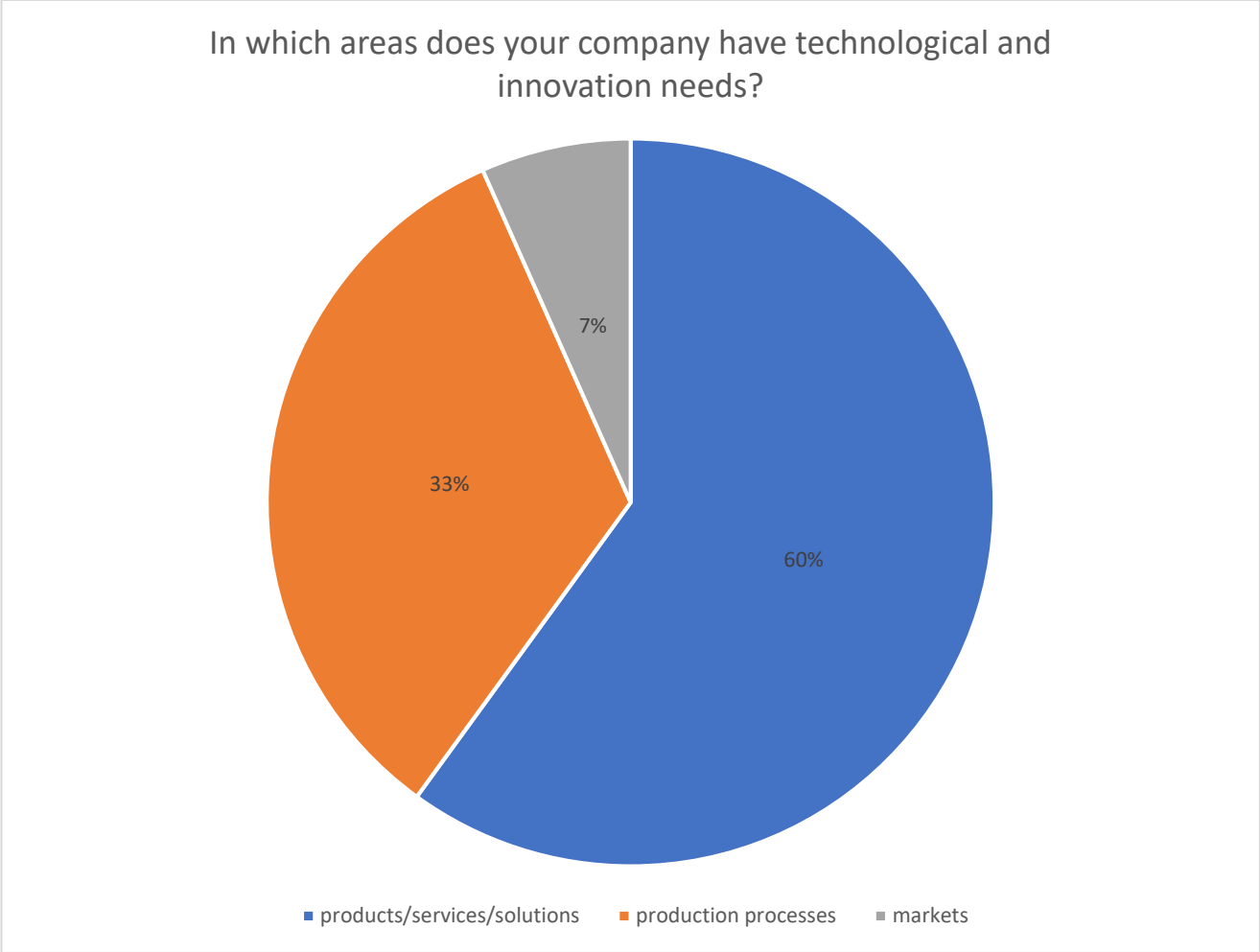
The interviewees were asked to rank the listed drivers of growth. Among them, the *rapid technological development* is viewed as the most critical driver of growth, followed by *increased public investments. International collaborations* are considered of medium priority, *market expansion* is seen as the last one. One more driver was proposed from a company as *decarbonization of the economy*.

3.3. What are the main challenges your company/organization is facing in terms of technological innovation?



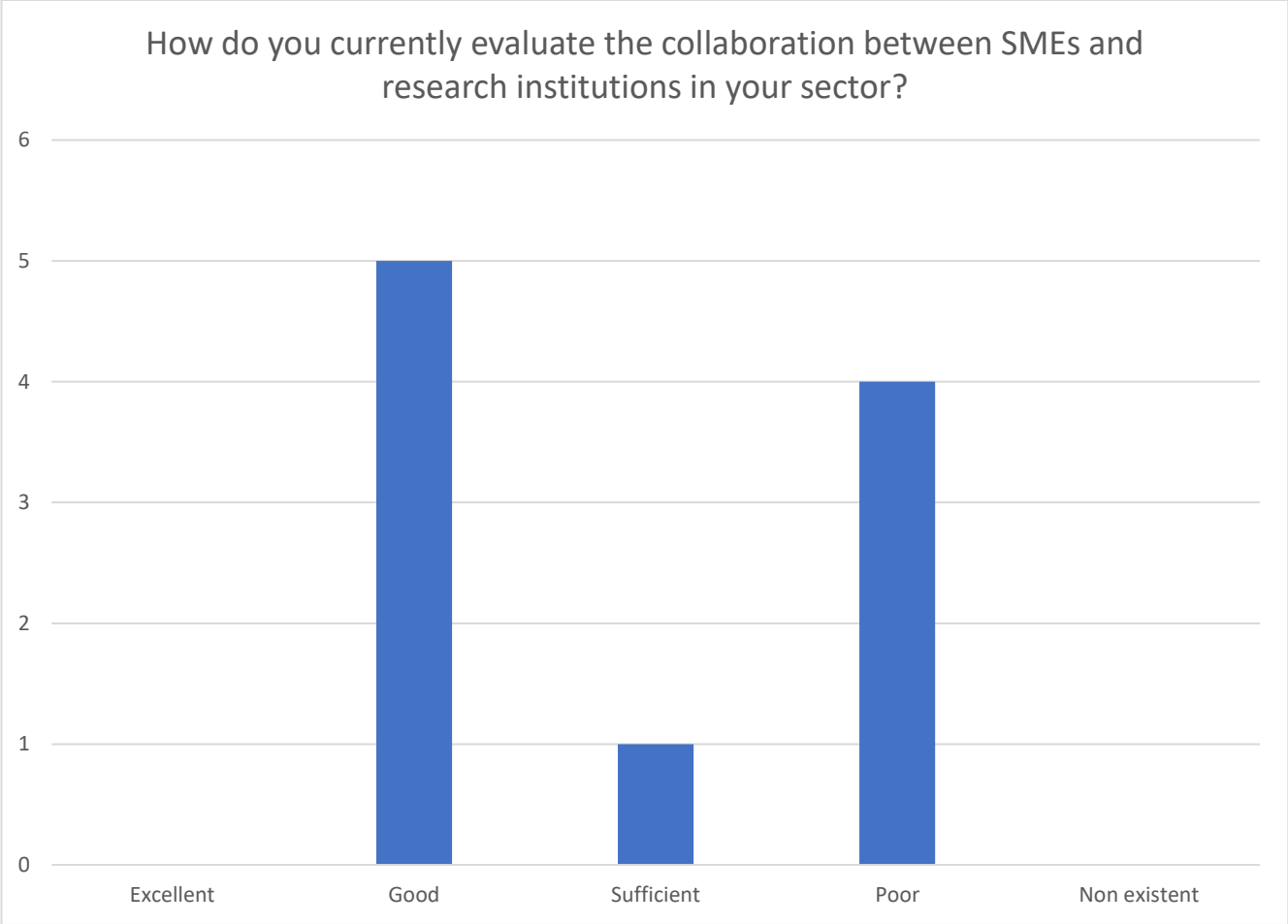
The pie chart shows that the most common challenge companies face in terms of technological innovation is *lack of funding* (33%) followed peer to peer by *regulatory barriers* (17%), *insufficient collaboration with research institutions* (17%) and *limited access to technology* (17%). Two more challenges were identified by the stakeholders: one is the *availability of competence* (11%) and the last is the *development of electric machines with reduced dimensions and weight and high energy efficiency* (5%).

3.4. In which areas does your company have technological and innovation needs?



The pie chart shows in which areas companies have technological and innovation needs. Most stakeholders selected *products/service/solutions* (60%), followed by *production processes* (33%), few selected *markets (*7%).

3.5. How do you currently evaluate the collaboration between SMEs and research institutions in your sector?



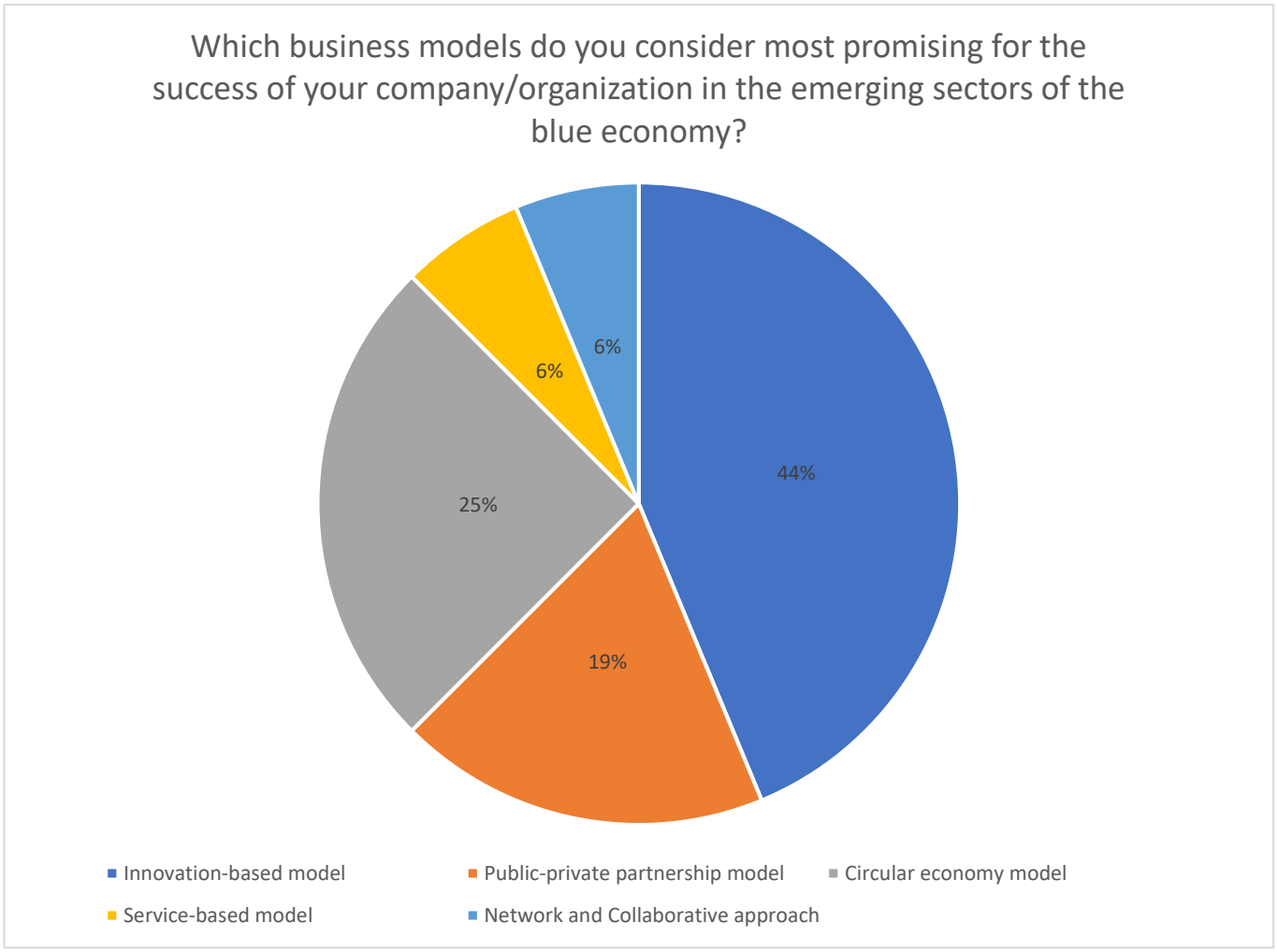
The chart shows that the collaboration between SMEs and research institutions is seen mostly as *good* (5 answers) slightly less as *poor* (4), only in 1 case is seen as *sufficient*.

3.6. According to your opinion, what are the main reasons for such an evaluation of cooperation between SMEs and research institutions in your sector?

Among interviewees many aspects arose from this question. They are all different and resumed as follows:

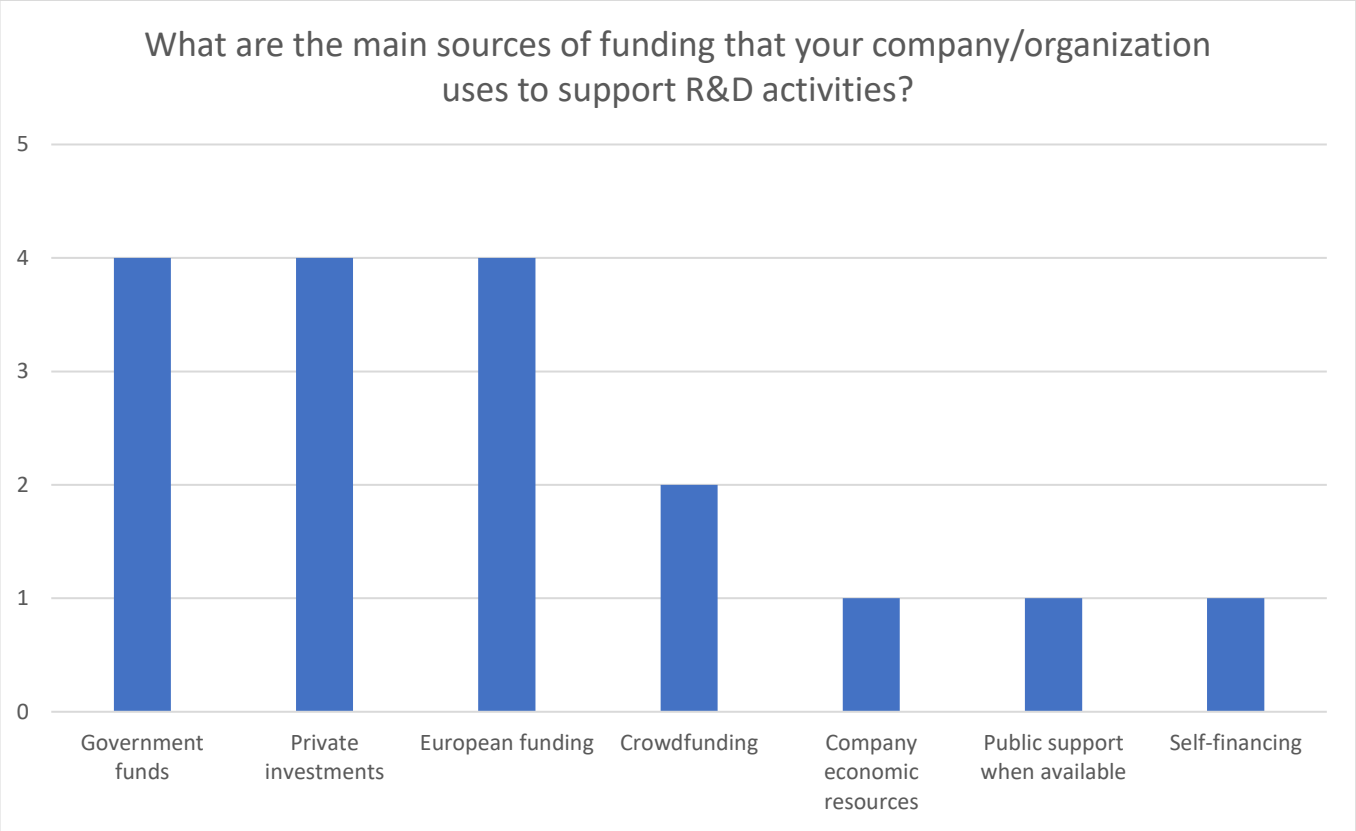
- Not enough trust between SME and research institutions, divergent objective, lack of long term vision
- Tutoring activities for degree theses were often carried out but then the collaboration ended without any future development
- Limited knowledge on existing instruments from SMEs, Complexity of procedures, Limited knowledge of Industry champions in fast growing innovative markets by the research institutions
- There is good collaboration due to the increasing market demand for innovation and strengthening sustainability
- Difficulties in co-ordination between the company and research institutes in view of the time required for project development
- Regulatory issues sometimes, not enough networking due to lack of time above all and also interest somehow
- Networking organization
- Institutions are distant from the reality of SMEs while they interact more easily with large companies

3.7. Which business models do you consider most promising for the success of your company/organization in the emerging sectors of the blue economy?



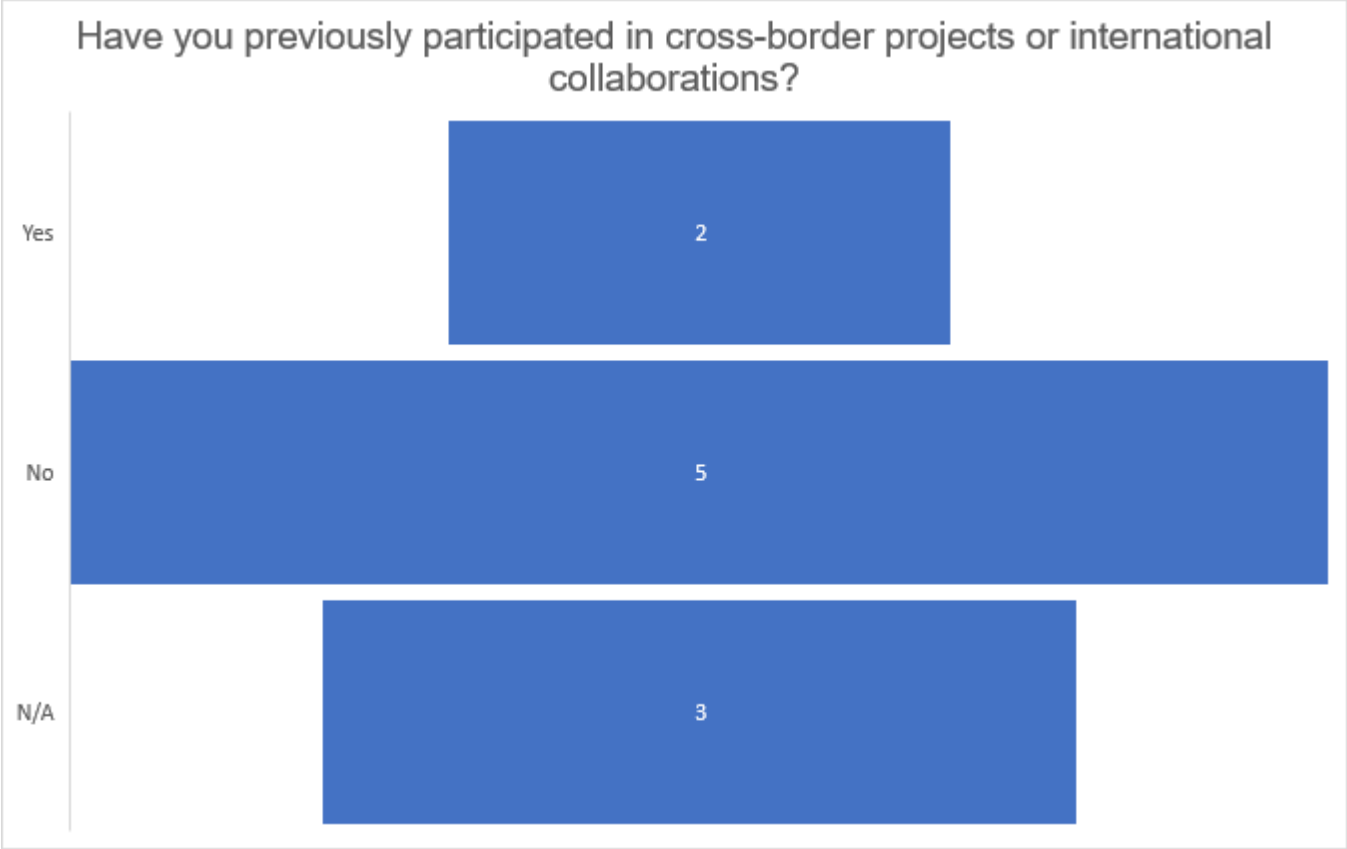
The pie chart illustrates that the most promising business model for the success of companies or organizations in the emerging sectors of the blue economy is the *innovation-based model* (44%), followed by the *circular economy model* (25%) and then by the *service-based model* (19%). The *public-private partnership model* and a new business model proposed by a company as n*etwork and collaborative approach* demonstrated the same success (6%).

3.8. What are the main sources of funding that your company/organization uses to support R&D activities?



The chart shows that the main sources of funding used by companies and organizations to support R&D activities are peer to peer *European funding*, *government funds* and *private investments*, while *crowdfunding* was of minor entity. Other funding sources were identified by stakeholders such as *company economic resources, public support when available, self-financing.*

3.9. Have you previously participated in cross-border projects or international collaborations?



Most part of the stakeholders didn't have previously participations in cross-border projects or international collaborations. The interviewees who answered "yes" were asked to describe the main benefits and challenges they encountered. Their responses reveal a slightly more tendence to find positive outcomes then challenges, particularly related to experiences shared and networking possibilities.

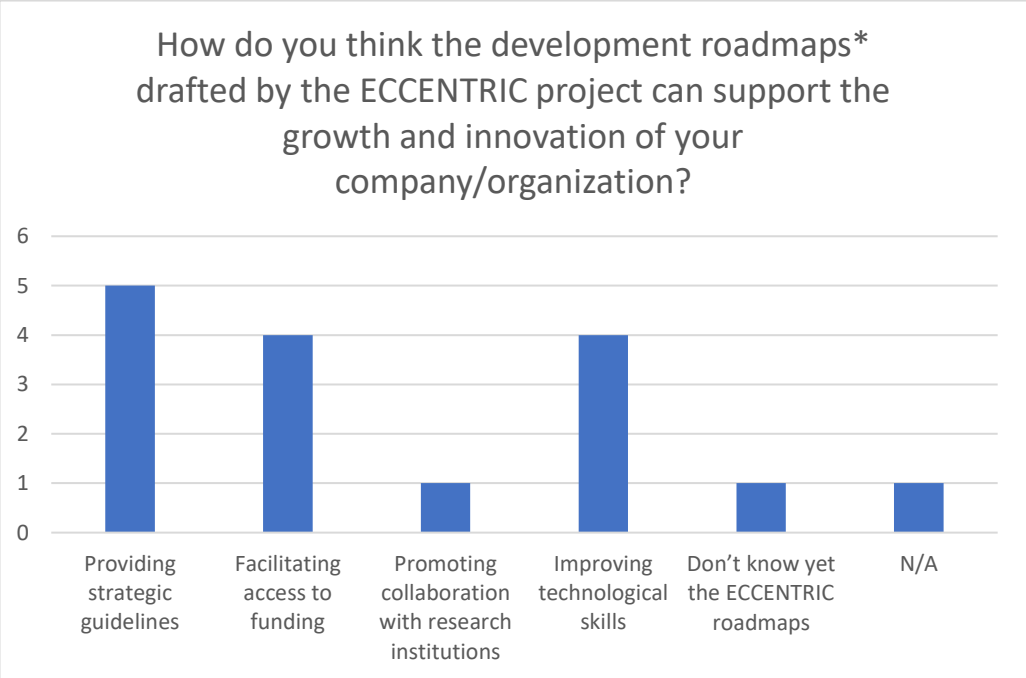
Among *benefits*, the following emerged:

- collaboration and contamination with other international SME and research centre, achievement of strong technical results
- knowledge development; network with other entities
- the possibility of having funds to implement the capacity for action
- knowledge and experiences shared, coming from concrete application

Among *challenges*, the following emerged:

- multipartner coordination
- keep the commitment during the project
- development of a common "language"

3.10. How do you think the development roadmaps drafted by the ECCENTRIC project can support the growth and innovation of your company/organization?



The chart shows that the roadmaps can be seen useful by *providing strategic guidelines at first (5 answers)*, then by *facilitating access to funding* and *improving technological skills (4 answers)*. Only 1 believes they can help by *promoting collaboration with research institutions*, and 1 that *don't know yet the ECCENTRIC roadmaps*.

3.11. What suggestions or recommendations would you give to improve the interaction and collaboration between SMEs, research institutions, and investors in the blue economy?

Many suggestions to improve collaboration between SMEs, research institutions, and investors in the blue economy arose from the questionary and they are listed as follows:

- Support the development of innovative project by creating a fertile environment for startup development collaborating with other market and field, in order to foster new idea and re-use technology from other sector (e.g. space, industry)
- Create clusters of SMEs that operate in the same industrial sector considering also the so-called niche-markets - Organize open tables where SMEs can present their needs and research institutions can understand them…not vice versa (avoid the typical academic approach: "who has a question for my answer")
- Active participation in thematic working groups
- Promote networking and exchange of experience; meeting place between research demand (problems to be solved) and offer (solutions available)
- It is a challenging topic and involve SMEs is always difficult but if there is the ability to show them "supportive" measures or tools useful for their business ion a very effective-time way…their involvement could be improved
- Increase marine protected areas and Increase outreach to collaborators

4. Conclusions:

The survey of stakeholders in the blue economy sectors reveals several key insights about the current status, drivers, and challenges related to technological innovation, collaboration, and growth in these emerging sectors. Rapid technological advancements, international collaborations, and increased public investment emerged as the primary growth drivers. However, stakeholders face major challenges, particularly a lack of funding, regulatory constraints, and limited collaboration with research institutions. Technological needs are focused mainly on product and service innovations, while collaboration between SMEs and research bodies shows mixed results, hindered by issues such as trust, procedural complexities, and alignment of goals.

Promising business models include innovation-based and circular economy approaches, with European funding, government funds and private investments being a primary source of R&D investment. Cross-border collaborations were common, delivering substantial technical gains and networking opportunities but also presenting administrative and coordination challenges. The ECCENTRIC project's development roadmaps are seen as a beneficial tool, especially in providing strategic guidance and enhancing technological capabilities.

To improve collaboration between SMEs, research institutions, and investors, stakeholders recommend establishing sectoral clusters, facilitating open dialogue between SMEs and research institutions, promoting active thematic working groups, and increasing networking initiatives. These measures are expected to foster a more collaborative and supportive environment for innovation in the blue economy.

ECCENTRIC

(ITHR0200314)

Enhancing circularity in the Adriatic area supporting innovation and growth of the blue-economy emerging sectors

Work package 1

Activity 1.1

PP07 - IMAST

Needs, expectations concerning emerging sectors

INDEX

1. Objective of Activity 1.1 – Needs, expectations concerning emerging sectors:

The objective of this activity is the analysis of the blue-growth emerging sectors (marine energy, marine safety & surveillance and infrastructure) focusing on the status of their relationships with the academia, their contribution to the green transition.

Each area has identified key stakeholders to interview, focusing on product and process innovation, collaboration with research institutions, and financial challenges faced by SMEs.

Each partner has conducted interviews with minimum 10 relevant stakeholders, including industry associations, agencies, SMEs, research institutions, and policymakers.

2. Description of the company or organizations interviewed and the sectors of interest:

Regarding the identification of the target user profiles to be interviewed in Apulia region for collecting inputs highlighting present and future challenges on product & process innovations, on the collaborations with the research institutions, as well as on the financial/funding challenges, IMAST applied the quadruple helix approach, which divides stakeholders into four main categories:

- Representatives of government bodies/institutions
- Representatives of the world of academia and research
- Representatives of businesses (industries and SMEs)
- Representatives of civil society

The illustration of the overall quadruple helix system is reported in Figure 1.

Figure 1: Quadruple Helix of Apulia region

Such model is particularly suitable for the aims of the ECCENTRIC project, since it gives an overview on the actors of the knowledge economy, belonging to the sectors of research, industry, public institutions and civil society.

Starting from such high level perspective, many organizations for each category, operative in the blue economy in Apulia region, have been identified, for instance:

❖ **INNOVATION - RESEARCH ENVIRONMENT**

- **Research centres:** CNR, ENEA, COISPA, CETMA.
- **International Organisations with officies in the region**: CIHEAM, CMCC.
- **Universities**: Politecnico di Bari, Università del Salento, Università degli Studi di Bari, Università di Foggia.
- **Business incubators**: BINP, ESA BIC.
- **Technological Clusters**: IMAST, DITNE, DHITECH, MEDIS DIH.
- **Innovation hubs**: Contamination Lab.
- **Public-Private Partnerships**: NEST.

❖ **ENTERPRISES**

- **Traditional economic operators**
- **Business and Industrial associations:** Confindustria, Camere di Commercio, Unioncamere, Coldiretti.
- **Consulting companies**
- **Innovative Start-up and Spin-off**

❖ **CIVIL SOCIETY**

- **Fishing associations**: Assopesca, ANAPI, Federpesca, Federcoopesca, Legapesca Puglia, Unci Pesca, Cooperativa pescatori dello Jonio, Sailors, Federazione della pesca sportiva, etc.
- **Environmental associations:** Legambiente Puglia, WWF.

❖ **P.A.**

- **Regional and national agencies:** ARPA Puglia, ARTI, ASSET, Puglia Promozione.
- **Sectorial Autorities:** Autorità di Sistema Portuali, uffici portuali, Guardia Costiera, uffici circondariali marittimi, Adb, Istituto Zooprofilattico della Puglia e Basilicata.
- **Local Institutions:** Comuni Costieri, Regione Puglia.

According to such overall system of organizations acting in the blue economy sectors, a further deepening has been carried out by IMAST and nr. 12 operators have been selected and interviewed. More in detail, with reference to the quadruple helix (Figure 1), in this first phase of the activity, representatives of the innovation-research environment, P.A. and enterprises have been involved. As representative of the civil society Legambiente Puglia has been contacted, but the reply to the survey is not available yet. The full list of the interviewed is reported in Table 1.

Name	Category

Polytechnic of Bari - Coastal Engineering Laboratory (LIC)	University
University of Salento - Dept. of Engineering for Innovation (DEfI)	University
Boosting Innovation in Poliba Scarl (BINP)	Incubator
ESA Business Incubation Centres (ESA BIC)	Incubator
BaLAB	Contaminatin Lab
ITS Academy Mobilità Sostenibile Aerospazio Puglia	High Education
Puglia Region - Strategic Regional Agency for Territorial Eco-sustainable Development (ASSET)	Institution
Enginsoft S.r.l.	Industry
De Palma Themofluid S.r.l.	Industry
PLANETEK Italia S.r.l.	Industry
Confindustria Puglia	Industrial association
Network for Energy Sustainable Transition (NEST) Foundation - Spoke 2 (Energy Harvesting & Off-shore Renewable)	Public-Private Partnerships
Legambiente Puglia*	Civil Society

*Contacted but the survey is still pending.

Table 1: Target user interviewed

For each entity/organization involved, a brief description is hereafter:

1) Polytechnic of Bari – Coastal Engineering Laboratory (LIC) - *UNIVERSITY*

The Polytechnic University of Bari (POLIBA) is a public university, subjected to the legal supervision of the Ministry of University and Research (MUR) and its financial administration, as part of the public administration sector, is subjected to the control of the Ministry of Finance and the Court of Auditors. In Italy, following Law No. 240 of December 30th, 2010, the legislation regarding the organization of universities, academic staff and recruitment procedures has been redefined, authorizing the government to stimulate the quality of research and efficiency within the university system. This reform includes two important changes: the adoption of accrual accounting, instead of cash accounting, and the introduction of a management control system, both mandatory from the 1st January 2015. Therefore, the Polytechnic University of Bari adopts the accounting, financial reporting and management control systems of Italian public universities, in light of the new legislation (Law 240/2010 and Decree 18/2012). Over the years, POLIBA has demonstrated a particularly solid economic-financial and equity performance, with a constant

improvement trend in indicators, both in absolute and percentage terms. POLIBA has a long experience in managing research projects, both from a scientific and financial and reporting point of view. In fact, POLIBA has been involved in the last decade in about 100 European (Horizon 2020, Horizon Europe) and national research projects with a budget of about 27 million euros funded by the European Commission, Italian Ministries, etc., both as a project leader and as partner. Thanks to this, POLIBA is well acquainted with the reporting procedures and requirements, such as the registration of each project in the data management portal and a separate accounting system for all transactions related to a given funded project and the document inspection rules. Furthermore, POLIBA has its own internal accounting rules established in the Administrative, Financial and Accounting Regulation[1].

The Research group interviewed has been involved in topics related to Maritime and Environmental Hydraulics with particular attention to: wave mechanics, marine currents, localized erosion processes, buoyancy and momentum jets released into a still body of water or in the presence of wave motion or transverse current, with or without a macro-roughness of the bottom (ripples or vegetation), flow fields in channels and typical localized phenomena, such as hydraulic jumps, nature-based solutions for the protection of the coastal area. In particular, the experimental research is conducted in channels and wave tanks available at the Coastal Engineering Laboratory (LIC). The study of wave motion, for regular and irregular waves, in particular in shoaling areas and in the surf zone, was addressed in the laboratory using cutting-edge measurement instruments and has allowed us to deepen our knowledge of hydrodynamics in the shore area, responsible for the transport, mixing and diffusion of tracers, sediments, pollutants, microplastics, therefore generating a strong impact on coastal ecosystems. At the same time, the role played by wave motion in the interaction with maritime structures (such as coastal defenses, obstacles of various kinds, vegetation) was also studied.

2) University of Salento – Dept. of Engineering for Innovatin (DEfI) - *UNIVERSITY*

The University of Salento is located at the University campus near Lecce, the capital of Salento area, on the heel of Italy's boot. Whoever ventures here, is received by the 'Salento way', a simple mix of culture, nature, history which seasons wild and sunny beaches, gorgeous baroque, tempting food and wine. Always at the crossroads between East and West, Salento has been a passage of people and shelter for civilizations since ancient times, when Brindisi was the last harbor of Romans' highway to the east, welcoming people from the Mediterranean sea.

[1] http://www.poliba.it/sites/default/files/dr_di_emanazione_del_rafc_con_modifica_art.41_-signed.pdf

This history is at the root of local culture and today social engagement, open education, inclusion and internationalization are cornerstones of the University strategy, ‘ the University between two seas’.

DEfI specializes in the vision focusing on Technological Transition, Sustainability, Resilience, BioEngineering. Researchers at DEfI work for harmonizing multidisciplinary research teams both inside the Department and outside the University: this brochure shows the several different multi-perspective engineering fields DEfI researchers are involved in.

With this background, routed on open and reliant international cooperation, DEfI offers education and exchange opportunities for study, traineeship and research, both in virtual and blended modes:

- Bachelor Degree Programs (Information, Industrial, Civil and Bio-Medical Engineering - in Italian)
- 7 Master Programs, 5 of them are in English: Aerospace Engineering, Communication Engineering & Electronic Technologies, Computer Engineering, Management Engineering and Materials Engineering & Nanotechnology. Masters in Civil and Mechanical Engineering complete the current offer.
- 2 Phd Schools in Engineering of Complex Systems and Material, Structure and Nanotechnology Engineering, open to international students.

Thanks to its education programs and the continuous technology transfer activities, DEfI has contributed to the industrial base of the region's economy, which has been growing incrementally for 25 years now. Alongside highly capital-intensive large-scale plants - such as steel-making, petrochemicals, aerospace, energy -, a network of small and medium-sized firms has gradually expanded. As a result, highly specialized areas have developed, able to compete on the international stage: the local sectors include food processing and vehicles; footwear, textiles, wood and furniture, engineering, rubber and information technologies in all its facades.

With a state-of-the-art contribution to the development of new technologies, investment in human capital, research infrastructures and high-quality education programs, DEfI envisions the development of a pole of excellence at the service of local community needs and global challenges, cultivating talented engineers, regardless of wherever they come from and wherever they may go.

3) Boosting Innovation in Poliba Scarl (BINP) – *INCUBATOR*

Boosting Innovation in Poliba Scarl (BINP) is an incubator promoted by the Polytechnic University of Bari (Poliba), headquartered in Bari, Italy. This non-profit consortium focuses on supporting the local ecosystem by promoting entrepreneurial projects, startups, spin-offs, and open innovation

strategies. Over two years, BINP raised more than €4 million from venture capital funds, supporting seven deep tech startups. BINP partners with major venture capital funds such as Tech 4 Planet, Golinelli, and Scientifica Venture Capital. Intesa Sanpaolo supports BINP as the main sponsor.

4) ESA Business Incubation Centres (ESA BIC) - *INCUBATOR*

ESA BIC Brindisi is the first and only startup incubator in the south of Italy part of the network of Business Incubation Centers of European Space Agency. It offers a comprehensive incubation programme to startups who have business ideas with a space connection.

5) BaLAB - *CONTAMINATION LAB*

BaLab, contamination lab of the University of Bari “Aldo Moro”, is a creativity laboratory in which to promote and support processes of "contamination" of knowledge that impact the culture of entrepreneurship and innovation, encouraging the spread of new learning models from the perspective of open innovation. Born in 2015 as part of the Regional Project "ILO Network for Smart Puglia", with the aim of encouraging the contamination of innovative entrepreneurial ideas, and once the project was completed it was institutionalized as an "ordinary and strategic" activity of the University of Bari in order to encourage processes of business creation and development of innovative ideas in an open and attractive place, where human capital meets, gets to know, presents itself to be guided and accompanied in the meeting phase with the main actors of innovation. Nestled in the University Center of Excellence for Innovation and Creativity, in the context of Entrepreneurship Education, it welcomes the most innovative ideas to accompany them in their realization by making available: spaces, knowledge and experiences. The name itself refers to the ‘BA’ model - a Japanese management term - which indicates the space of opportunities, a place that is not necessarily physical, but a method of creative and constructive sharing, like the one created between people with the same objectives.

6) ITS Academy Mobilità Sostenibile Aerospazio Puglia - *HIGH EDUCATION*

The mission of the I.T.S. AEROSPAZIO PUGLIA Foundation is:

- Ensure the supply of senior post-secondary technicians on a continuous basis in relation to figures that meet the demand from public and private employment in relation to the aerospace sector;
- support the integration between education, training and work systems, with particular reference to technical-professional polytechnics as defined in Article 13, paragraph 2, of Law n. 40/07, to spread the technical and scientific culture;
- support measures for innovation and technology transfer to small and medium-sized enterprises;
- to disseminate technical and scientific knowledge and promote the orientation of young people and their families towards technical occupations;
- establish solid links with inter-professional funds for the continuing training of workers.

7) Puglia Region – Strategic Regional Agency for Territorial Eco-sustainable Development (ASSET) - *INSTITUTION*

ASSET, the Regional Strategic Agency for the eco-sustainable development of the territory, is a public agency bound to the Apulia Region that is active in many sectors: sustainable mobility, public works, housing policies, healthcare construction, landscape protection, cultural and environmental enhancement, alternative energy production and reduction of energy consumption, prevention and safeguarding of the territory from hydrogeological and seismic risks, aquaculture, strategic planning of investments for the sustainable development of the territory, research and development projects. ASSET has a long-lasting experience in coordinating and working on EU funded projects on different topics such as: blue economy, sustainable infrastructure and mobility, hydrogeological and coastal risk, wildfire management. ASSET is particularly focused on the prevention of environmental damage and hazard, the risks mitigation and technological innovation and sustainability.

8) Enginsoft S.r.l. - *INDUSTRY*

EnginSoft SpA (ES) is a technology SME striving to provide excellent engineering services and simulation software solutions to industrial customers in Italy and Europe. By participating in R&D projects, we increase our groundbreaking technical knowledge deepen our expertise in new areas,

innovating and trialling new applications and technologies. We contribute to research by Multiphysics product and process simulation, manufacturing system simulation, performance- and quality- oriented machine and process modelling and optimization, cyber-physical systems development, simulation for robotics and automation. Currently, ES is contributing to 9 Horizon projects, and it is coordinator of LIFESAVER and GeoS-TECHIS. Moreover, it is an active member of EFFRA, EMMC, EIT Manufacturing, MADE and SMACT Italian Competence centres.

9) De Palma Thermofluid S.r.l. - *INDUSTRY*

De Palma Thermofluid, young and dynamic company with strong knowledge and experience in technical projects, was founded in 1999 as a development of De Palma Cristoforo's company, founded in 1964. De Palma Thermofluid with its 50 years of experience in the process fluid, acts as a natural partner alongside the establishment responsible, maintenance, plant engineers and designers that offers technological solutions and reliable components. In relation to its commitment to its associated category the De Palma Thermofluid plays a role in the area of innovation activator trying to offer its customers complete solutions, conveying their needs to other companies can solve different problems from the ones in the process and able to build any type of mechanical and electronic system. In 2005 obtained the ISO 9001 certification in order to guarantee its customers an ever work certified and traced in each procedure, is able to guarantee the quality of its products thanks to a careful choice of partners and suppliers, with whom we compare so that the proposed solutions are the result of a shared and detailed analysis obtained with inspections and spot checks ensuring technical and commercial coverage throughout the south. In recent years the presence on the territory has spread to Albania where, thanks to a collaboration agreement with a local partner, the customer base has expanded. De Palma Thermofluid believes in WWW and renews its platform thus expanding the customer base with a constant growth trend beyond national borders. De Palma Thermofluid founded, with other large and small companies, the Technical and Mechanical High School Institute "A.Cuccovillo" in order to spread to next generations their knowledge and competence. The naval division of Thermofluid is designed as a reference point for the most important cruise companies for both activities of finding supplies is for the specific design and resolution of process problems. The Marine Division of De Palma Thermofluid work to provide products and technologies that produce, detect, regulate and control all industrial fluids such as steam, hot water, chilled and osmosis, the hot and cold air, water seafood, fats, fuels, gases and all fluids food.

10) PLANETEK Italia S.r.l. - *INDUSTRY*

Planetek Italia is an Italian Benefit Company, established in 1994, which employs 130+ women and men, passionate and skilled in Geoinformatics, Space solutions and Earth science.
Planetek Italia provides solutions to exploit the value of geospatial data through all phases of data life cycle from acquisition, storage, management up to analysis and sharing.
Planetek Italia operates in many application areas ranging from environmental and land monitoring to open-government and smart cities, and include engineering, agriculture and food production, defence and security, as well as satellite missions and space exploration.
The main activity areas are:

- Satellite, aerial and drone data processing for cartography and geoinformation production;
- Provision of satellite-based monitoring services for decision-making and operational activities spanning from infrastructure, work site, ground surface stability to urban dynamics or marine coastal areas;
- Design and development of Spatial Data Infrastructures for geospatial data archive, management and sharing;
- Design and development of real-time geo-location based solutions, through positioning systems such as GPS/Galileo/GNSS and indoor location systems;
- Development of software for the satellite on-board data and image processing for ground segment infrastructures.

Planetek Italia is also a diamond dealer of Hexagon Geospatial software and a reseller of satellite imagery from main global providers.
Planetek Italia is active in both national and international markets through our group of four companies based in Italy and Greece.
Planetek Italia organization is structured in Strategic Business Units focused on different markets: Government & Security, European Institutions, Space Systems, Business to Business.

11) Confindustria Puglia - *INDUSTRIAL ASSOCIATION*

Confindustria Puglia is the Confindustria regional representation, with the aim of organizing research, debates and meetings on economic and social aspects. Confindustria Puglia supports the entrepreneurs in solving regional problems according to each business categories. He dialogues with the regional bodies and promotes actions aimed at maximizing the synergies between the

academic world and the business. Confindustria Puglia's role is to connect information on different companies/SMEs.

12) Network for Energy Sustainable Transition (NEST) – Spoke 2 (Energy Harvesting & Off-Shore Renewable) - *PUBLIC-PRIVATE PARTNERSHIPS*

NEST - Network 4 Energy Sustainable Transition (Who we are - NEST (fondazionenest.it) is the extended partnership promoted by the Ministry of University and Research (MUR), dedicated to "Energy Scenarios of the Future" - sub-theme 2.a "Green Energy of the Future," funded by the European Union - NextGenerationEU - National Recovery and Resilience Plan (NRP) - Mission 4 Component 2, Investment 1.3.

It uses a hub and spoke structure to carry out its activities. Spoke 2 (Energy Harvesting & Off-Shore Renewable) aims mainly at developing research activities in the field of marine energy, focusing on

- Offshore wind energy, with research into competitive technologies (platforms, turbines and moorings) for application in the Mediterranean;
- the integration of floating photovoltaic systems and wave energy converters;
- Digital tools to identify areas in the Mediterranean suitable for the development of marine renewable energy sources, taking into account licensing constraints, technologies and maintainability.

3. Interview results

The main innovative technology sectors operated by the organizations interviewed in Apulia region are highlighted in Figure 2, where the list of the sectors indicated by the interviewed and related percentages of presence is shown.

It can be stated that marine energy and infrastructures are covered be the 45% of the interviewed, while the marine safety and surveillance areas are covered by the 14% of the organizations. Furthermore, many other operative fields have been identified as part of the overall emerging blue economy landscape.

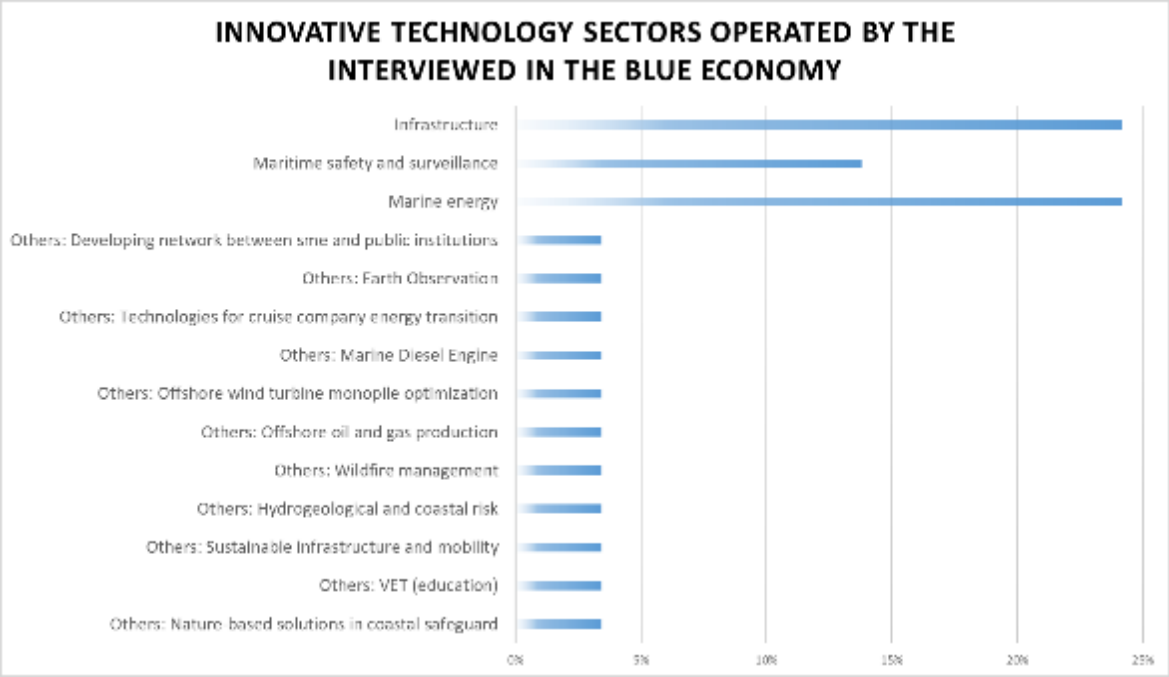


Figure 2: Target Users - Operating sectors

a. main growth drivers in emerging sectors in the next five years

The four options provided by the survey are perceived by the majority of the organizations as the main ones, indeed they cover almost the 90% of the preferences in the following order:

1. increased public investments, the first for importance;
2. international collaborations;
3. rapid technological development;
4. market expansion.

Other 3 growth drivers have been identified with overall 10% of votes, as: ability to attract investors; strengthening the collaboration between research and policy makers; maritime spatial planning legislation.

The overview of the results with the percentage is reported in Figure 3.

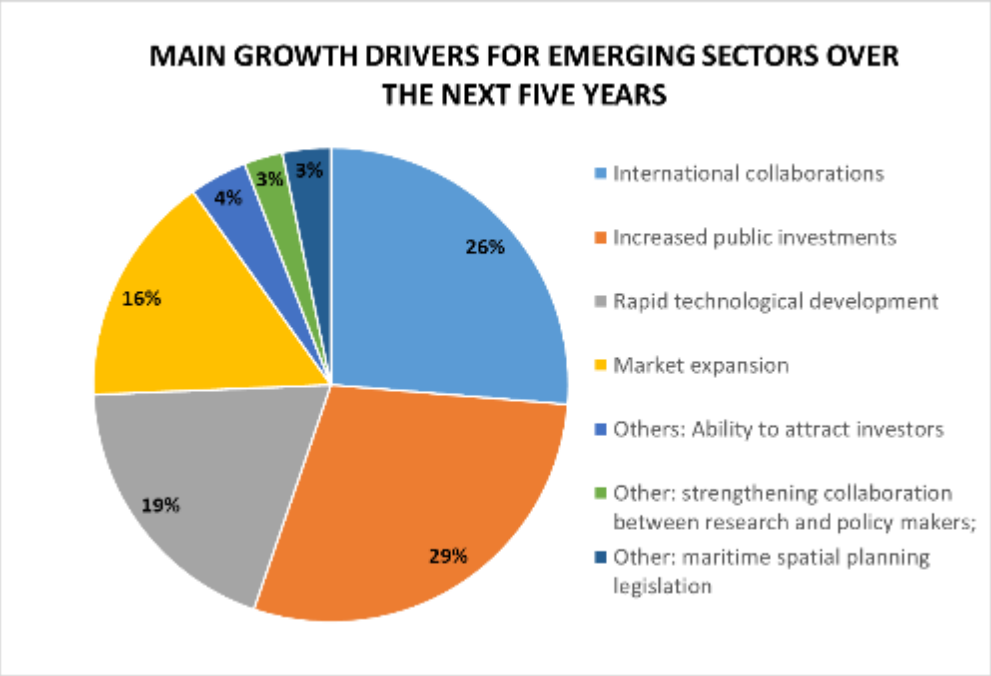


Figure 3: Main Growth drivers for emerging sectors over the next 5 years

b. main challenges faced in terms of technological innovation

More than half of the interviewed identifies the “Insufficient collaboration with research institutions” and “Lack of funding” as the main challenges faced by the organizations interviewed when dealing with novel technologies in the field of blue economy emerging sectors (Figure 4). The interviewed also perceived both the “Limited access to technology” and “Regulatory barriers” as important challenges to deal with. Moreover some of them identified , with 5% of preferences each, the “Lack of entrepreneurial culture” and “match of technological innovation (e.g. AI) with most profitable applications”.

The percentage of answers is shown below.

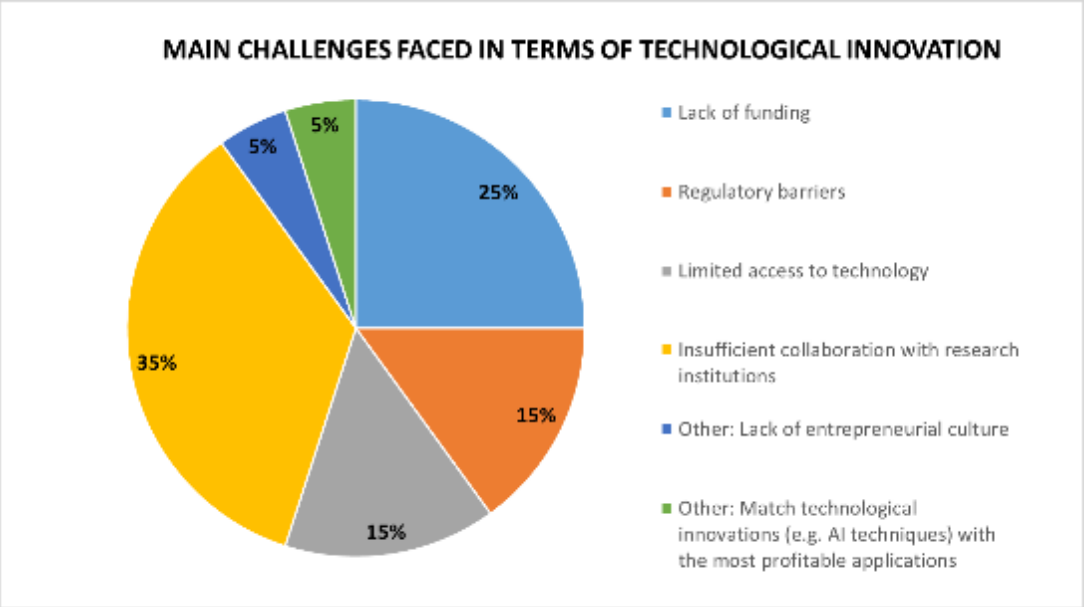


Figure 4: Main challenges faced in terms of technological innovation

c. areas with the greatest need for technology and innovation

The 65% of the interviewed declares that products/service and solutions need to be adequately addressed to grow in the emerging blue economy sectors, while respectively 24% and 12% identified respectively the need to innovate in markets and production processes.

The percentage of preferences is shown below.

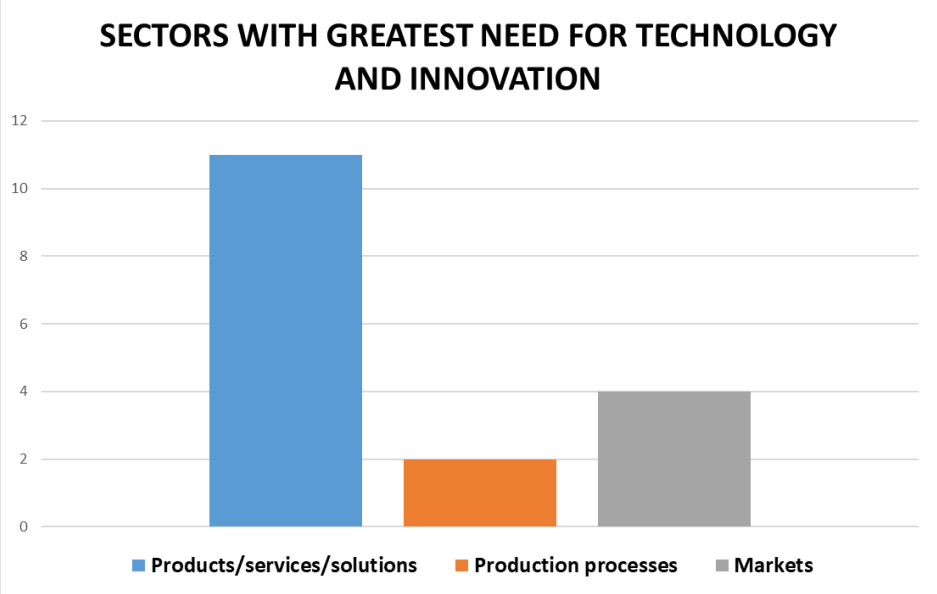


Figure 5: Sectors with greatest need for technology and innovation

d. assessment of collaboration between SMEs and research institutions in emerging sectors

Despite of the 5 options proposed by survey, the preferences of the interviewed were concentrated on “Sufficient” and “Good”. Percentage of the preferences is reported in Figure 6.

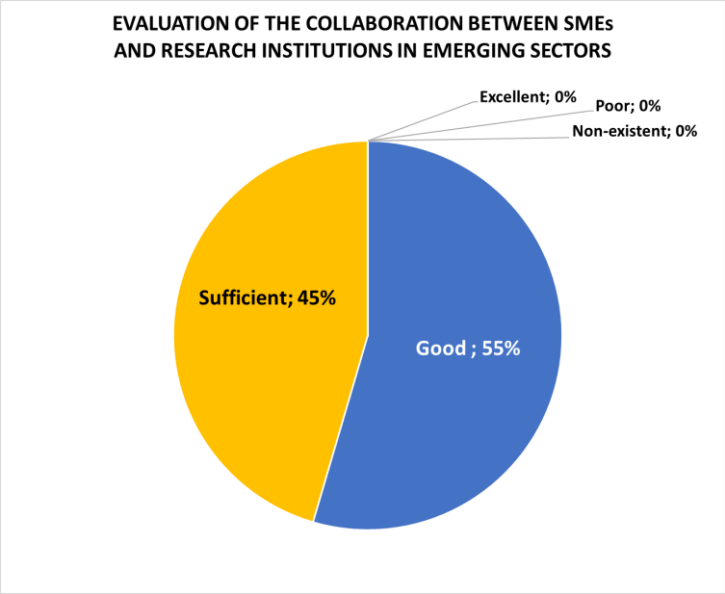


Figure 6: Assessment of the collaboration between SMEs and Research institutions in emerging sectors

e. main reasons for assessing cooperation between SMEs and research institutions

Following the reply to the previous question, the reasons given by the interviewed that evaluated as **"Good"** the collaboration between SMEs and research institutions are identified in two main needs that are:

- bring market-oriented mindset to research institutions;
- networking organizations (interpersonal relationships should be overcome).

In parallel the interviewed that assessed as **"Sufficient"** the level of cooperation between SMEs and research institutions, provided the following main motivations:

- There is a need for networking organizations (mainly for SMEs);
- Access to credit supporting such cooperation is restricted.

f. the most promising business models for success in emerging sectors of the blue economy

The main models selected by the interviewed are the "Innovation-based model" and "Public-Private Partnership model" with about the 68% of the preferences in total. Then, the Circular economy model and Service-based model received both about the half of the preferences of the first two. The percentage of answers is shown in Figure 7.

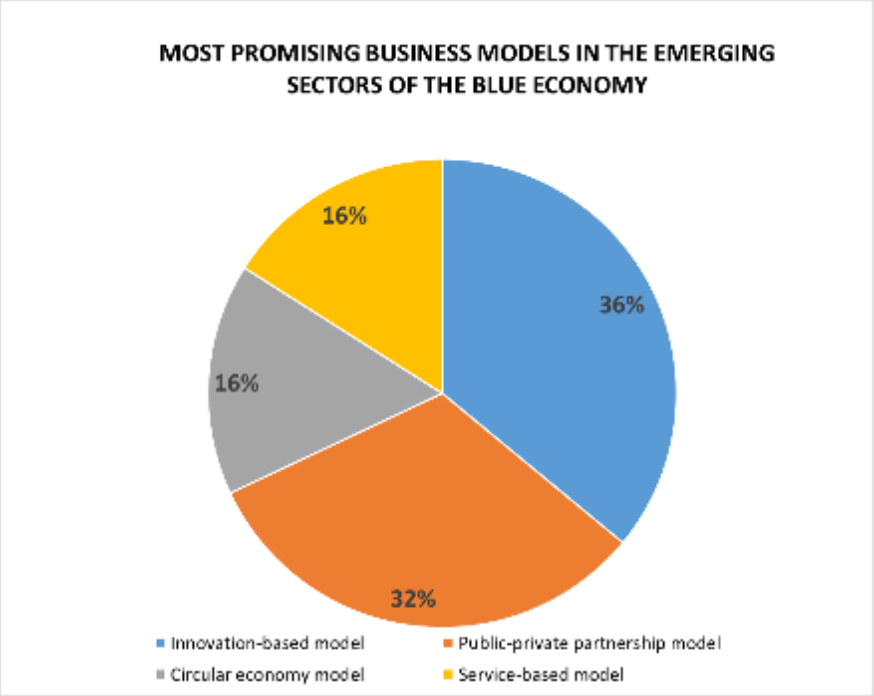


Figure 7: Most promising business models in the emerging sectors of the blue economy

g. main sources of funding used to support R&D activities

Results shown that only about the 34% (sum of private investment and internal funds) of the interviewed do not use resources coming from public fundings, which are given by the sum of government funds and European funding, covering the 65% of the total funding used to support R&D activities.

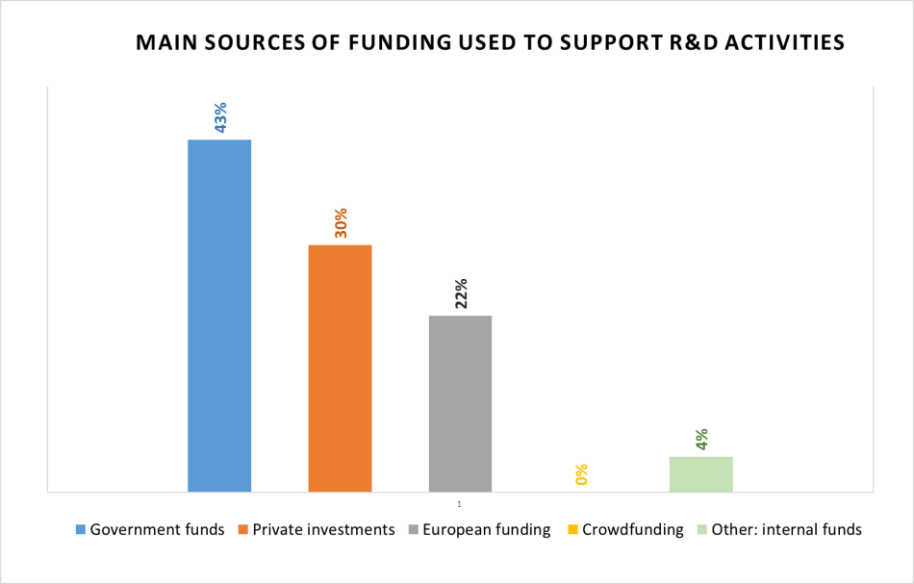


Figure 8: Main sources of funding used to support R&D activities

h. participation in cross-border projects or international collaborations

The 42% of the interviewed did not participate in previous cross-border projects or international collaborations.

i. usefulness of a roadmap developed by the ECCENTRIC project in the emerging sector

Almost the half of the interviewed perceives from the ECCENTRIC project as a support for "promoting collaboration with research institutions", while about 1/4 of votes expects to receive "strategic guidelines" as outcome of the roadmaps that will be developed. Furthermore, about 1/3 of the preferences expected a "facilitation in access to funding" or an "improvement in terms of technological challenges".

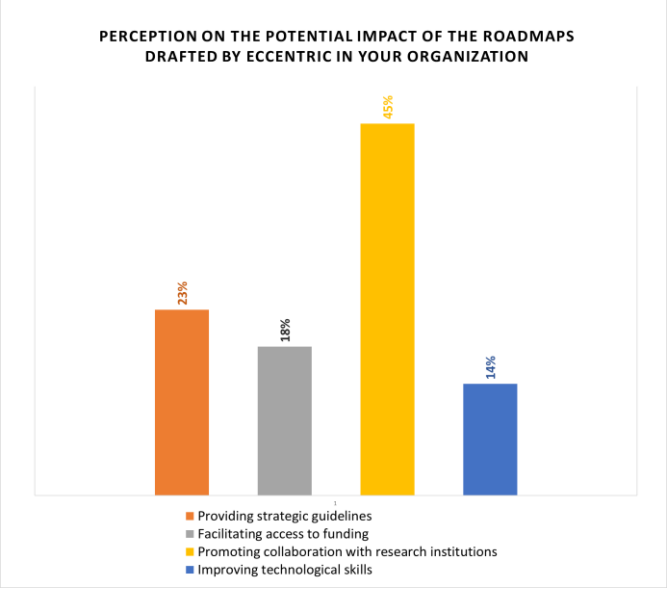


Figure 9: Perception on the potential impact of the roadmaps drafted by ECCENTRIC

j. suggestions and recommendations for improving interaction and collaboration between SMEs, research institutions and investors in the blue economy

The main inputs received by the interviewed have been collected and reported in short below:

1. Enhancing Networking Platforms: Establish dedicated networking platforms that bring together SMEs, research institutions, and investors regularly. These platforms could host events, workshops, and virtual meetings to foster direct communication and collaboration opportunities.
2. Tailored Funding Mechanisms: Develop funding mechanisms specifically designed for projects in the blue economy, with a focus on facilitating access to capital for SMEs and promoting joint ventures with research institutions.
3. Strengthening Knowledge Transfer: Implement programs that facilitate the transfer of knowledge and technology from research institutions to SMEs. This could include secondments, collaborative research projects, and the establishment of innovation hubs focused on the blue economy.
4. Simplifying Regulatory Processes: Work towards simplifying the regulatory processes involved in blue economy projects to reduce barriers to entry and encourage more SMEs to engage in collaborative initiatives with research institutions and investors.
5. Fostering Long-term Partnerships: Encourage the formation of long-term partnerships, supported by policy makers, through public-private initiatives that align the interests of SMEs, research institutions, and investors. These partnerships should be built on shared goals, transparency, and mutual benefit, which envisages the involvement also of large enterprises. As example, the creation of public-private laboratories where researchers from academia and industry can collaborate in an open innovation approach could allow companies to leverage external ideas, technologies, and resources alongside their internal capabilities to drive innovation.
6. Entrepreneurial capacity building: Support activities to better disseminate the entrepreneurial culture and to better respond to the needs of the market, in particular capacity to evaluate the economic potential latent in a selected item and design the way to transform it into a product for the market.

4. Discussion on the results

Based on the results of the interviews illustrated in section 3 and with aim to support the overall conclusions of the Deliverable document 1.1.1, which will result by the integration of the contributions coming from all the project partners, an analysis on the replies for some of the questions of main interest of the project is hereafter reported:

- Question 9 (Parag. 3.a) - Main growth drivers in emerging sectors in the next five years
  Likely, "international collaborations" and "increased public investments" are indicated by the interviewed at the first places for importance, since the development of new technologies is often accompanied by a certain level of uncertainty and it is a common belief that international collaborations, through which best practices, technological solutions or specialized skills can be imported, as well as the support of public investments, can represent key factors to reduce their risks and achieve the expected result more efficiently.

- Question 10 (Parag. 3.b) - Main challenges faced in terms of technological innovation
  The interviewed likely perceives "insufficient collaboration with research institutions" as one of the main challenges to overcome because of the lack of in-house adequate skills to face complex and multidisciplinary engineering problems, hence an effort shall be done in this direction in the frame of ECCENTRIC project to work for improving cooperation conditions. For what concerns the "regulatory barriers", it is emerged that existing regulations can exacerbate costs and limit access, necessitating innovative business models and regulatory frameworks. The perception on the "limited access to technology" in emerging sectors of the blue economy, which is one of the topics of major interest for ECCENTRIC project, could be due to the barriers that prevent equitable participation in technological advancements and digital resources. This concept encompasses both physical access to technology and the socio-economic factors that influence its utilization. While addressing limited access is crucial for fostering inclusivity in the blue economy, it is equally important to recognize that merely improving physical access may be not sufficient. Comprehensive strategies that could be included in the roadmap drafted by ECCENTRIC project shall also consider socio-economic conditions to ensure equitable technology utilization.

- Question 11 (Parag. 3.c) - Areas with the greatest need for technology and innovation
  Almost the two thirds of the interviewed identified products/services/solutions as main need for technology and innovation, since they are SMEs or organizations oriented to support SMEs.

- Question 12 (Parag. 3.d) - Assessment of collaboration between SMEs and research institutions in emerging sectors

  Results to the question represents an important feedback for ECCENTRIC project, since the cooperation between SMEs and research institutions is crucial for enhancing innovation performance and fostering sustainable business ecosystems. In theory, this collaboration not only bridges the gap between research and commercialization but also it could also strengthen the overall economic and social outputs of SMEs. Obviously, challenges such as resource constraints and limited capabilities often hinder effective collaboration. Addressing these issues through informal and direct interaction interactions, together with supportive policies, which include as instance the involvement of intermediate organizations with technological skills which facilitating the cooperation could represent a key factor for ECCENTRIC project to enhance the innovation capacity of SMEs.

- Question 13 (Parag. 3.e) - Main reasons for assessing cooperation between SMEs and research institutions

  Even if several interactions are in place among public and private actors, it seems that a common language, able to satisfy the needs of both parties, is still missing. In general, research institutions are part of the innovation system by providing new knowledge that can enhance the development of new technologies for societal or economic purposes, but they are not committed to provide solutions almost ready for the market. Following such consideration, it emerges the need for intermediate organizations, such as technological clusters, technology transfer offices and innovation hubs, which could play a crucial role in fostering cooperation. More in detail such organizations could bridge the gap between academia and industry, aiding in knowledge transfer and helping SMEs adopt cutting-edge technologies and practices. Definitely, intermediate organizations can stimulate networking and collaborative projects that could result in new products, services, or processes, contributing to competitive advantages for SMEs. Such organizations could help align the research capabilities of institutions with the market needs of SMEs.

- Question 14 (Parag. 3.f) - Most promising business models for success in emerging sectors of the blue economy

  In general, an innovation-based model refers to strategies and frameworks that prioritize the development and application of new technologies, products, services, or processes to drive growth, competitiveness, and societal benefits. This model focuses on fostering creativity, research and development, and the deployment of innovative solutions. Such model foresees: significant investment in R&D; collaboration among stakeholders; encouragement of startups and entrepreneurial ventures that can bring new ideas to market; high adaptability to changing

market conditions and emerging technologies; transfer knowledge from research bodies to industry. In parallel the Public-Private Partnerships (PPPs) model is a cooperative arrangement between public sector entities and private sector companies to finance, build, and operate projects, usually in the realm of public infrastructure or services. PPPs are usually employed to leverage private sector efficiencies and innovation in delivering public services or infrastructure. Such model is featured by: both parties share the risks associated with project development; typically it involves long-term agreements; it is based on a multi-disciplinary collaboration across various sectors; usually it leverages private sector capital for public projects, freeing up public funds for other priorities. Below a comparison of their approaches is reported, which in any case encourages the innovation, but from different perspectives:

- *Purpose: The innovation-based model is primarily focused on technological advancement and competitive edge, while PPPs usually focus on infrastructure and service delivery.*
- *Stakeholder Involvement: Innovation models engage research institutions and entrepreneurial ventures, while PPPs involve substantial collaboration between government entities and private firms.*
- *Funding Sources: Public funding is a significant aspect of PPPs, whereas innovation models might source financing from venture capital, private investments, or grants.*

In practice, these models can also intersect and that's could be the reason why they have been identified by the 68% of the interviewed as the most promising ones. For instance, an innovation initiative may leverage a PPP framework to implement cutting-edge technologies in public infrastructure projects, creating a synergy that maximizes both innovation and community benefits.

- <u>Question 15 (Parag. 3.g) - Main sources of funding used to support R&D activities</u>
  It is emerged a low risk attitude on the part of the stakeholders interviewed and a need for public support, especially in the case of large investments which is the case of emerging sectors of the blue economy. Such replies could be also associated to the lack of knowhow on the actual technological needs of the emerging sectors. Therefore, in order to help the entrepreneurs to better understand economic and social impact related to the development of new technologies, which for ECCENTRIC are related to the emerging sectors of the blue economy, the implementation of an adequate communication/promotion campaign and dissemination strategies will be a "must have" when the strategic roadmaps will be drafted.

- Question 16 (Parag. 3.h) - Participation in cross-border projects or international collaborations
  From the replies received by the Interviewed that participated in previous projects the general belief is that the main benefits of such kind of actions lie in leveraging and sharing the different know-how and be able to implement best practices that are present in other ecosystems. At the same time, the main challenge is represented by the adaptation of the best practices to the boundary conditions and needs of the region, which can be different and specific. This is another useful input for the next steps of the ECCENTRIC project.

5. Conclusions

This document reports the results and analysis of the interviews carried out by IMAST in the frame of the Activity 1.1. Needs, expectations concerning emerging sectors - Deliverable 1.1.1 " Reports on SMES' interviews to collect information on the present and future challenges of the blue-economy emerging sectors about technologies, business, financial aspects, etc."
Nr. 12 organizations, which are part of the categories of the quadruple helix (Figure 1), acting in Apulia region in the emerging sectors of the blue economy, have been identified and interviewed. Based on the results of the surveys, the key findings are reported below:

- The cooperation among SMEs and research institutes should be improved by working for instance on the creation of the conditions for long-term partnerships, supported by policy makers, through public-private initiatives that align the interests of SMEs, research institutions, and investors.

- Even if SMEs complain a lack of hard skills (in-house) for replying to complex and multidisciplinary challenges, as well as limited access to credit, the potential economic impact that can be achieved by working in emerging sectors of the blue economy is well perceive from them; at this aim it is emerged a need for Innovative business models and regulatory frameworks, as well as strategies creating conditions to ensure equitable technology access and utilization.

- Innovation-based model and Public-Private Partnerships model have been identified as the most promising ones for emerging sectors of the blue economy.

- When facing new technologies, a low risk attitude with respect to the investments has emerged by the replies, hence it will be important to consider in the roadmaps of the project adequate deepening on strategies on how to identify competences needed for specific developments, as well as for facilitating access to capital for SMEs and on the promotion of joint ventures with research institutions.

At last, but not the least, in many replies to different questions coming from organizations part of different categories revealed that intermediate organizations are perceived as instrumental in creating synergies between SMEs and research institutions, fostering an environment that drives innovation, enhances competitiveness, and addresses the needs of both sectors effectively.

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Enhancing circularity in the Adriatic area supporting innovation and growth of the blue-economy emerging sectors

Work package 1

Activity 1.1

CNA Abruzzo

Needs, expectations concerning emerging sectors

INDEX

1. Objective of Activity 1.1 – Needs, expectations concerning emerging sectors:

The objective of this activity is the analysis of the blue-growth emerging sectors (marine energy, marine safety & surveillance and infrastructure) focusing on the status of their relationships with the academia, their contribution to the green transition.

Each area has identified key stakeholders to interview, focusing on product and process innovation, collaboration with research institutions, and financial challenges faced by SMEs.

Each partner has conducted interviews with 10 relevant stakeholders, including industry associations, agencies, SMEs, research institutions, and policymakers.

2. Description of the company or organizations interviewed and the sectors of interest:

The questionnaire collected the opinions of different actors involved in sustainable development and innovation in the Blue Economy:

- **The GAL (Local Action Group)** is a consortium of public and private members dedicated to the local development of the Costa dei Trabocchi. With the help of public funds, it deals with territorial animation and the involvement of local actors.

- On the other hand, there is **Fi.R.A. S.p.A. Unipersonale**, an in-house company of the Abruzzo Region. Fi.R.A. is the instrument for implementing regional economic planning and contributes to the development and socio-economic and territorial rebalancing of Abruzzo.

- **Elica S.r.l.** is an example of innovation in the fishing industry. With over 30 years of experience, this company focuses on optimizing fishing practices, helping companies become more competitive and sustainable. They work with universities and research centres to develop technologies that reduce environmental impact, aiming to secure sustainability certifications for Italian fishing companies.

- Another participant is **Sonicatel** a telecom and cloud service provider whose administrator works to improve digitization. Sonicatel falls under digital infrastructure.

- **FAB (Regional Federation Blue Sea)**, works to represent productive activities in coastal areas and participates in the management of Abruzzo's ports.

- Also, **ECIPA**, an accredited training institution that promotes specialized courses in tourism and boating, with the aim of training professionals ready to respond to market needs.

- We cannot forget the innovative **startup I2T**, this technological reality is at the forefront of proposing solutions for boating and tourism, aiming to innovate in a constantly evolving sector. I2t gave birth to Ulisses, an ambitious platform that aims to revolutionise the monitoring of boats, caravans and trains. Using proprietary technologies, the company offers a service that facilitates check-in operations and efficiently manages data, making life easier for both users and institutions.

- **The Mayor of Casoli municipality (politician)**, who brings the voice of the local community to the table, emphasises the importance of public-private cooperation in promoting sustainable development.

- Finally, the **Special Agency of the Chieti-Pescara Chamber of Commerce**, which has been working for some time on the blue economy, and **EBRART** (Regional bilateral body), a private regional concertation body that deals with all business associations and especially the craft sector.

3. Interview results

a. Main growth drivers in emerging sectors in the next five years

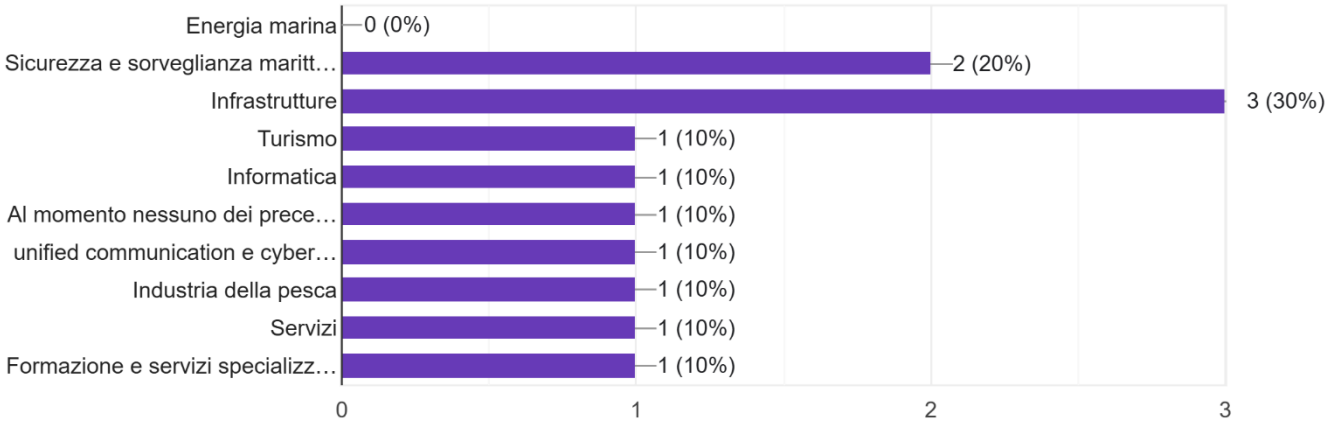

Fig 1[1]

As can be seen from the graph, 30% of respondents work in the infrastructure sector, 20% select the surveillance and security sector, 0% select the marine energy sector, and the remaining respondents indicated other Blue Economy sectors (such as Fishing industry or Tourism) or sectors associated with the Blue Economy model.

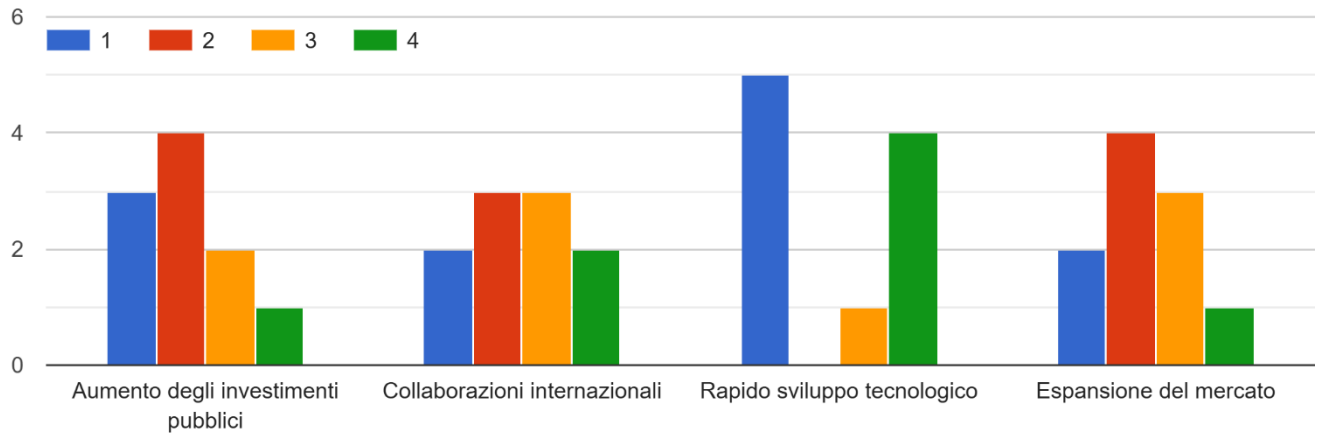

Fig. 2[2]

According to respondents, “rapid technological development” appears to be the most important driver of growth for emerging sectors. This is followed by “market expansion” and “increased public investment”, and finally “international cooperation”.

[1] Energia Marina: Marine Energy, Sicurezza e sorveglianza marittima: Maritime security and surveillance, Infrastrutture: Infrastructure, Unified communication e cyber security, Industria della Pesca: Fishing Industry, Informatica: IT, Turismo – Tourism, Servizi – Services, Nessuno dei precedenti: None of the above, Formazione e servizi specializzati: Training and specialised services.

[2] Aumento degli investimenti pubblici: Increased public investment, Collaborazioni internazionali: International collaborations, Rapido sviluppo tecnologico: Rapid technological development, Espansione del mercato: Market expansion.

b. Main challenges faced in terms of technological innovation

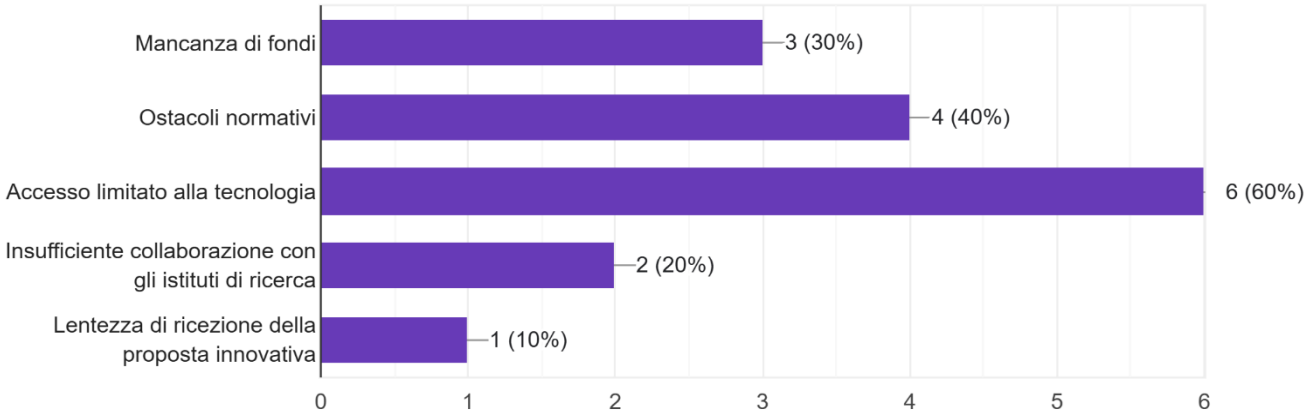

Fig. 3[3]

In terms of challenges to technological innovation, 60% of respondents cited “limited access to technology”, 40% indicated “regulatory barriers”, 30% mentioned “lack of funding”, 20% cited “insufficient collaboration with research institutions” and one respondent raised another issue, “slowness in receiving innovative proposals”.

[3] Mancanza di Fondi: Lack of Funds, Ostacoli normativi: , Regulatory Obstacles, Accesso limitato alla tecnologia: Limited Access to Technology, Insufficiente collaborazione con gli istituti di ricerca: Insufficient Collaboration with Research Institutes, Lentezza di ricezione della proposta innovativa: Slow Reception of Innovative Proposals

c. Sectors with the greatest need for technology and innovation

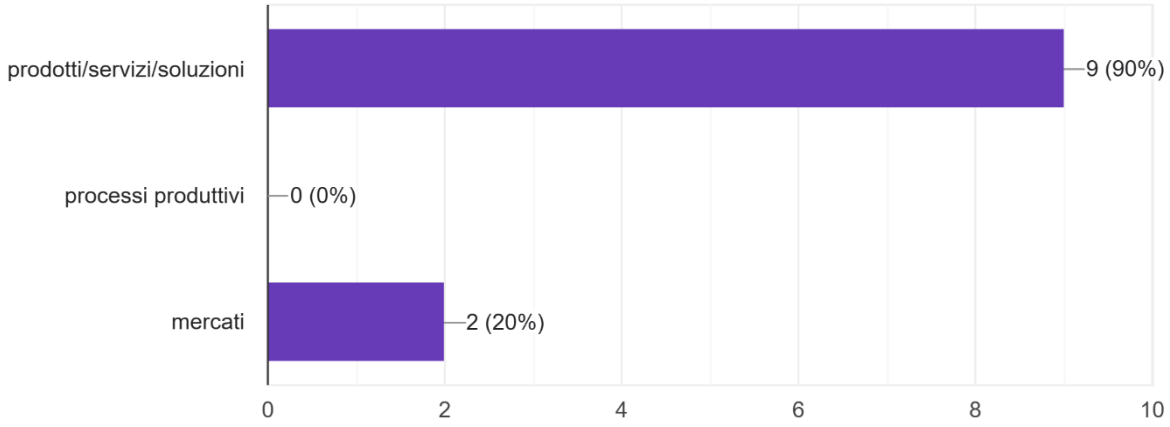

Fig. 4

Ninety percent of the 10 respondents to the survey stated that their organisation has to innovate, especially in terms of the products, services, and solutions it offers.
This demonstrates that the organisation views updating and upgrading its offerings as essential to meeting client wants and staying competitive.

Conversely, not a single responder brought up the topic of technological investment in production processes. This could mean that businesses believe they have established procedures in place already or that they do not currently see much room for innovation in this field.

Lastly, 20% of participants mentioned markets as a domain where they believed technology needed to advance. This percentage shows interest in exploring new markets or better adjusting to the dynamics of existing ones, even though it is lower than that for products/services.

d. Assessment of collaboration between SMEs and research institutions in emerging sectors

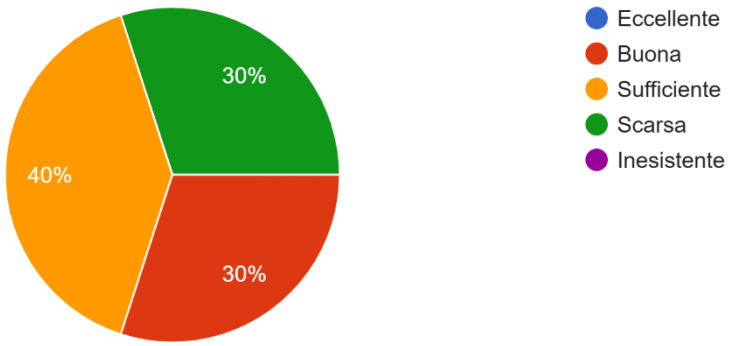

Fig. 5[4]

The graph shows that opinions on cooperation between SMEs and research organisations are divided. 40% of respondents rate it as "sufficient", indicating basic but limited cooperation. Another 30% rate it as "poor", highlighting significant challenges, while 30% rate it as "good",

[4] (Excellent (blue), Good (red), Sufficient (orange), Poor (green), Non-existent (violet)

recognising positive aspects but with room for improvement. No one rated it as "excellent" or "non-existent", suggesting that cooperation is present but not fully effective.

e. Main reasons for assessing cooperation between SMEs and research institutions

The limited cooperation between SMEs and research institutions is mainly due to a lack of interest and willingness to collaborate, short-term projects without long-term planning and an insufficient number of networking organisations. In addition, regulatory barriers and a lack of awareness of the potential benefits of collaboration hamper these partnerships. Sectoral and market factors also contribute to this disconnect. Addressing these issues could lead to stronger and more effective collaborations.

f. The most promising business models for success in emerging sectors of the blue economy

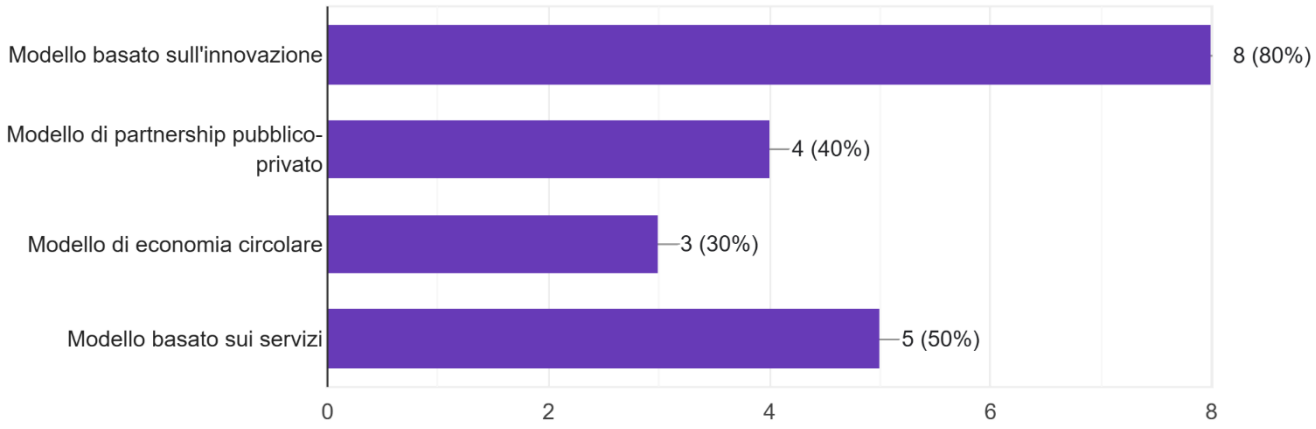

Fig. 6[5]

Eighty percent of respondents selected the innovation-based model, which is the most popular option. Subsequently, half of the participants endorse a service-oriented approach, underscoring the significance of customised services to fulfil client requirements.

In addition, 40% of respondents see value in public-private partnerships, suggesting that collaboration can enhance project success, although it's not prioritised by the majority. Finally, the circular economy model was selected by 30% of respondents, reflecting an awareness of sustainability, but indicating that it's a lower priority compared to innovation and service-based approaches. Overall, there is a clear focus on innovation and services, with recognition of the potential benefits of partnerships and sustainability.

[5]Modello basato sull'innovazione: Innovation-based model, Modello di partnership pubblico privato: Public-private partnership model, Modello di economia circolare: Circular economy model, Modello basato sui servizi: Service-based model.

g. Main sources of funding used to support R&D activities

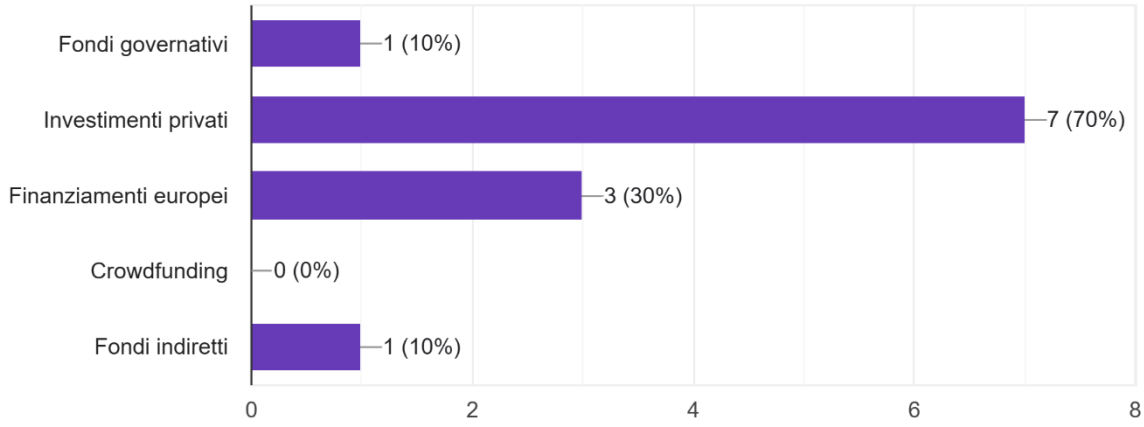

Fig. 7[6]

Regarding the main sources of funding used to support R&D activities, the majority of respondents indicated “private investment' as the 'most popular”, followed by “European funding” and finally “public funding”. Interestingly, when it comes to supporting R&D activities, none of the respondents named "crowdfunding" as their primary source.

h. Participation in cross-border projects or international collaborations

7 out of 10 respondents stated that they had never participated in cross-border cooperation, only 3 of them answered the opposite without giving details.

[6] Fondi governativi: Government funds, Investimenti privati: Private investment, Finanziamenti europei: European funding, Crowdfunding, Fondi indiretti: Indirect funds.

i. Usefulness of a roadmap developed by the ECCENTRIC project in the emerging sector

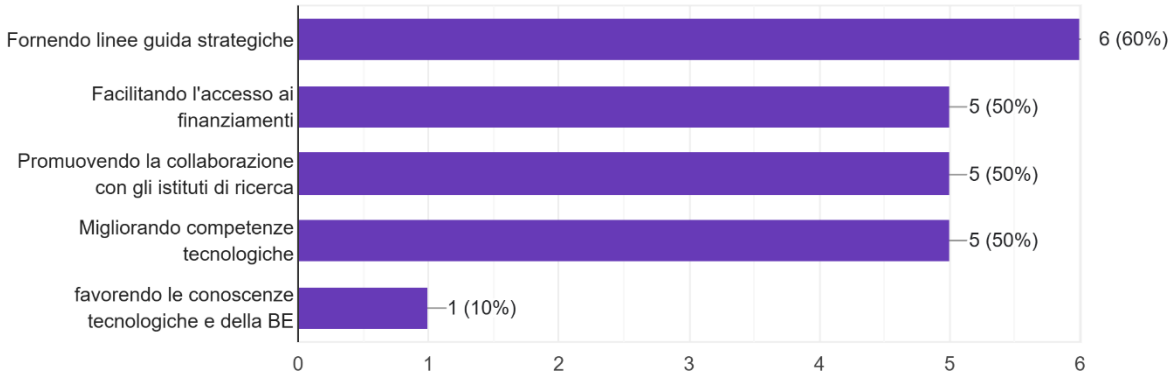

Fig. 8[7]

According to the majority of respondents, the option “providing strategic guidance” is the best way for the ECCENTRIC project roadmaps to support growth and innovation.

The graph shows that “facilitating access to finance”, “promoting collaboration with research institutions” and “improving technological skills” were equally important points.

One of the respondents identified "facilitating access to technological and blue economy knowledge" as the best approach.

[7] Fornendo linee guida strategiche: Providing strategic guidelines, Facilitando l’accesso ai finanziamenti: Facilitating access to funding, Promuovendo la collaborazione con gli istituti di ricerca: Promoting collaboration with research institutions, Migliorando le competenze tecnologiche: Improving technological skills, Favorendo le conoscenze tecnologiche e della BE: Promoting technological and BE knowledge.

j. Suggestions and recommendations for improving interaction and collaboration between SMEs, research institutions and investors in the blue economy

According to the results of the survey, an integrated and strategic approach is essential to improve interaction and cooperation between SMEs, research institutes and investors in the blue economy.

Some of the respondents believe that the creation of collaborative networks would facilitate dialogue and exchange of experiences between the different actors of the blue economy. The organisation of specific events and workshops could help to bring together SMEs, researchers and investors and promote the dissemination of best practices.

Secondly, the definition of common objectives could be crucial for the creation of poles of excellence where the different actors can work together on specific projects.

The importance of promoting the exchange of knowledge through thematic meetings between experts from different fields to stimulate innovation was underlined.

In addition, to reassure investors, projects should have long-term objectives and involve all stakeholders in the supply chain. It would be necessary to work with public authorities to ensure that funding is directed to concrete and sustainable initiatives. It would also be important to promote uniform regulations at European level to reduce bureaucracy and improve efficiency in blue economy sectors.

Finally, an effective communication campaign could raise awareness of the opportunities offered by the sector, including in areas that have received little attention. Instilling a culture of cooperation and strengthening local resources are seen by respondents as key steps to motivate all stakeholders and build a thriving blue economy ecosystem.

4. Conclusions

In conclusion, the ECCENTRIC survey has provided important insights into the expectations of emerging Blue Economy sectors in terms of innovation and development.

The survey makes clear that expanding markets, quicker technological innovation, and increased government investment are the main forces behind the blue economy's expansion.
Nevertheless, in addition to financial opportunities and legal barriers, many responders still struggle to obtain access to modern technology.

The data regarding the development factors for the emerging sectors is highly intriguing, since it reveals a wide range of viewpoints among the respondents—none of whom are associated with the developing marine energy sector. Relevant data also applies to the technology needed for production processes.

The main source of funding for R&D is private capital, while governmental and European funding also contributes. Notably, crowdfunding is not present. It would be intriguing to know why crowdfunding isn't included in the preference selections; this may have to do with access to crowdsourcing or simply unfamiliarity with the system.

In order to encourage best practices, respondents recommend setting up cooperative networks, planning conferences, and harmonizing laws throughout Europe. Improved communication and long-term project objectives could support cross-sector cooperation.