



## **D.2.1 RIS3 Country Reports and Policy factsheet**






**Project title:** Mediterranean Innovation Alliance for sustainable blue economy

**Acronym:** BLUE BIO MED

Priority Axis 4: Enhancing Mediterranean Governance

4.1: To support the process of strengthening and developing multilateral coordination frameworks in the Mediterranean for joint responses to common challenges

<https://blue-bio-med.interreg-med.eu/>

<b>Deliverable 3.2.1</b>	<b>RIS3 Country Reports and Policy factsheet</b>
<b>Description</b>	The report contains a review of territorial innovation trends and priorities as described in the RIS3 strategies of MED regions and countries. For each mapped territory, a country report was developed
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## Index

List of Abbreviations.....	4
Introduction.....	5
Project mapping activity and the RIS3 policy cycle .....	10
Mapping methodology .....	11
Mapped territories .....	16
Relevance of BLUE BIO MED themes in Smart Specialisation Strategies.....	18
BLUE BIOMED themes and Smart Specialisation Strategies: focus on territories developing regional innovation strategies .....	22
Survey data analysis .....	28
Territorial innovation priorities .....	29
Implementation of RIS3 2014-2020 .....	30
Definition process of the RIS3 2021-2027.....	32
Connections with Mediterranean transnational frameworks and initiatives.....	32
Agenda 2030 and transformative innovation policy .....	35
Transformative innovation policy .....	36
RIS3 measures for international collaboration and the Mediterranean dimension .....	43
Mediterranean dimension.....	45
Role of SDGs within the innovation policies on blue bioeconomy .....	47
Conclusions.....	54



## List of Abbreviations

DWF	Distant Water Fleet
BBM	Blue Bio Med project
EDP	Entrepreneurial Discovery Process
ERDF	European Regional Development Fund
EU	European Union
IPA countries	International Police Association countries
JRC	Joint Research Centre
LSF	Large-Scale fishery
MFA	Marine Finfish Aquaculture
R&I	Research & Innovation
RIS3	Research and innovation strategy for smart specialisation
S3	Smart Specialization Strategy
SA	Shellfish Aquaculture
SDGs	Sustainable development Goals
SSF	Small Scale Fishery

## Introduction

Launched in the context of Europe 2020, Smart Specialisation<sup>1</sup> represents a key element for place-based innovation policies.

Within the e EU Cohesion Policy 2014-2020, Smart Specialisation has been proposed as an «*ex-ante conditionality*», which means that each European region/member state must develop a sound local S3 strategy before they can receive EU financial support through the Structural Funds for their planned innovation measures<sup>2</sup>.

Over the years, Smart Specialisation Strategies have been also considered a useful analytical tool to further explore some specific sectors and value chains at European scope.

With specific reference to BLUE BIO MED project, the analysis on Smart Specialisation Strategies will support the understanding of the transition towards a sustainable blue economy in the MED Programme area and the development of future blue economy-based interregional innovation partnerships.

Moreover, investigating the alignments along Smart Specialisation Strategies can reinforce neighbourhood cooperation in the framework of the MED Programme area and support the development of synergies with the European Maritime, Fisheries and Aquaculture Fund - EMFAF, the EU Strategy for the Adriatic and Ionian Region - EUSAIR, ENI CBC “Mediterranean Sea Basin Programme” and the Union for the Mediterranean - UMF.

The mapping activity of the BLUE BIO MED project explores the existing RIS3 strategies in the MED programming area by means of direct and indirect investigation methods focusing mainly on regions where blue bioeconomy sectors play a significant role for the territorial development.

Furthermore, the report summarizes at broader scope relevant policy contents referred to the blue bioeconomy sectors and their linkages with the Agenda 2030 for Sustainable Development (Figure 1). Since the blue bioeconomy encompasses many sectors and dimensions, the present report will point out linkages to all pillars of the 2030 Agenda (economic, social, environmental), not just to the specific Goal n. 14 - Life Below Water (*“Conserve and sustainably use the oceans, seas and marine resources for sustainable development”*). Moreover, it analyses the existence of linkages among the Sustainable Development Goals (SDGs).

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<sup>1</sup> Smart Specialisation Strategies (S3) can be defined as place-based innovation policy concept to support regional prioritisation in innovative sectors, fields or technologies through the Entrepreneurial Discovery Process (EDP), a bottom-up approach revealing the territorial scientific and technological endowments and excellences. ([Smart Specialisation Strategy \(S3\) - A Policy Brief from the Policy Learning Platform on Research and innovation -2020 - Smart Specialisation Strategy S3 - Policy Brief.pdf \(interregeurope.eu\)](#))

<sup>2</sup> Guide to Research and Innovation Strategies for Smart Specialisations (RIS 3) – 2012 - [https://ec.europa.eu/regional\\_policy/sources/docgener/presenta/smart\\_specialisation/smart\\_ris3\\_2012.pdf](https://ec.europa.eu/regional_policy/sources/docgener/presenta/smart_specialisation/smart_ris3_2012.pdf)

## SUSTAINABLE DEVELOPMENT GOALS



Figure 1 Sustainable Development Goals (SDGs) <https://sdgs.un.org/goals>

For the mapping purpose, three broad fields of interests were already identified in the Conceptual Framework (DT 3.1.1), including established value chains, emerging opportunities closely related with R&I, and a wider range of cross-cutting innovation trends linked to sustainable development (both from environmental and social perspective) of blue bioeconomy.

Each field was further disaggregated in sub-fields as follows:

### 1. Fishery and aquaculture

The fishing and aquaculture sector has been divided in the following four sub-sectors of interest:

- a. Pelagic and Demersal Large-Scale Fisheries (LSF) and Distant Water Fleet (DWF) include fisheries and the quite diversified range of gears used, with some significant differences among countries and regions. Among the Mediterranean countries the industrial segment operates mainly for Bluefin tuna fishing and is practiced by large tuna seiners in certain countries such as Spain and Italy. The LSF in the Mediterranean area (highly dependent on a small number of species) is mainly made up of vessels using active gears, especially demersal trawlers and purse seiners targeting sardines and anchovies.

- b. Small Scale Fisheries (SSF) targeting the local market for fresh fish, mainly sold directly to consumers, is widespread in the Mediterranean and generally operate in lagoons and the coastal area of the continental shelf, using small boats (length over all less than 12 meters) and not towed gears. If industrial fisheries are characterized by a general lack of sustainability, small scale fisheries are considered closer to blue growth principles (Pauly 2018) although evaluation need to be done in each case.
- c. Marine Finfish Aquaculture (MFA): Mediterranean fish farming focuses on the popular carnivorous finfish species with either a low production volume from capture fisheries or from over-fishing stocks; European sea bass (*Dicentrarchus labrax*) and Gilthead sea bream (*Sparus aurata*) are the main species grown
- d. Shellfish Aquaculture (SA) sector produced almost 550 ktons in 2012 at a value nearing EUR 900 million, accounting for roughly half of EU aquaculture output, one fifth of which produced in the Mediterranean with Mussels and Oyster production dominating the sector, and another important species is Manila clam.
- e. Seafood processing and trade converts the whole fish or shellfish harvested by fishermen or produced by aquaculture operations into the products that are sold at retail stores or restaurants. Primary processors generally convert whole fish into fish fillets, steaks or loins or shuck or cook raw shellfish or remove the edible meat. These edible portions are then packed in some way and distributed as fresh refrigerated products or are frozen prior to distribution to wholesalers or directly to retail stores or restaurants. Secondary processors convert fresh or frozen fish and shellfish products and other ingredients into the final products that are available in retail stores and restaurants. The final products sell can be ready to cook (mainly) but in some instances also ready to eat.

## 2. Blue Biotechnologies

Blue (marine) biotechnologies are defined as science and technology applications aimed at producing knowledge, goods and services from (marine) biological resources. Blue Biotechnology involves basic and applied research in the full value chain, from the marine habitat to biotechnology products and uses living organisms as source or outcome of biotechnology applications according to OECD definition.

Blue biotechnology has been subdivided into the following subsectors considering the application products:

- a. Healthcare and Pharmaceutical applications: biotechnology has led to the discovery and development of advanced medicines, therapies, diagnostics, and vaccines. For example, biotechnological breakthroughs have created new medicines for patients suffering from growth diseases, metabolic diseases, multiple sclerosis, rheumatoid arthritis and cancer.
- b. Agriculture, Livestock, Food processing: biotechnology has improved animal feed (food supplements to strengthen the immune systems of livestock and reduce the

consumption of antibiotics), produced vaccines for livestock, and improved diagnostics for detecting diseases such as BSE, foot and mouth disease, and salmonella. It has also enabled the use of enzymes for more efficient food processing and improved the breeding of plants to obtain desired characteristics.

- c. Industrial Processes and Manufacturing: biotechnology has led to the use of enzymes in the production of detergents, pulp and paper, textiles, and biomass. By using fermentation and enzyme bio-catalysis instead of traditional chemical synthesis, higher process efficiency can be obtained, decreasing energy and water consumption. This leads to a reduction in toxic waste.
- d. Biofuel: as using micro-algae technology a theoretical volume of 20 000-80 000 dm<sup>3</sup> of oil per hectare per year could be produced.
- e. Biomonitoring and Bioremediation: CO<sub>2</sub> bio-remediation using micro-algae cultures for the treatment of atmospheric emissions from industry.

### 3. Blue sustainable development

This sector includes cross-sectoral innovation drivers or enablers that are of interest for the project. The **blue sustainable development sector** allows to consider not only development trajectories aimed at reducing the negative impact of blue economy activities (i.e. fishery and aquaculture) but also broader trajectories addressing the negative impact of human pressure on marine living ecosystems (e.g. transportation).

- a. Monitoring and Observing systems for marine environment: the Mediterranean is characterized by an intense traffic of ships transporting hydrocarbons and chemical, toxic-harmful substances and by several offshore oil installations (platforms and pipelines) that represent a constant potential risk for the environment. In terms of prevention and identification of illegal activities that can potentially cause marine pollution, routinely oil spill detection monitoring of the sea basin has a deterrent action against those vessel owners who operate tankers' illegal washing. Monitoring and observing can also be used to track illegal fishery using extensively integrated maritime surveillance systems, databases management and information technologies tools.
- b. Marine Environmental Technologies: this broad sector includes technologies applied to aquaculture (e.g., valorization of by-products and waste), the exploitation of marine organisms and their commercial biomass applications as well as that one of enzymes. "Biomass organisms" comprise macroalgae (seaweeds), microorganisms (microalgae, bacteria and fungi) and invertebrates as sea stars, sea cucumbers, sea urchins that are used to extract enzymes and other biomolecules. An important role is also played by new technologies to build environmental-friendly vessels (reduction of sulphur and nitrogen oxide emissions and noise pollution, for example), strictly linked to MRE.

- c. Methods and tools for the preservation and management of marine ecosystem, reduction of anthropogenic pressure: economic activities can affect marine ecosystems in a wide range of ways, from fishing and its impacts on the benthos and marine populations, to oil spills, eutrophication, agriculture with nitrate pollution, marine pollution and plastics. These phenomena can be tackled with technological developments and improvements in monitoring systems, including new business models to combine economic, social and environmental values. In this context Marine spatial planning and Marine Protected Areas (MPAs) can play a growing role in the innovation ecosystem.

## Project mapping activity and the RIS3 policy cycle

The Entrepreneurial Discovery Process (EDP) is one of the core elements of the S3 concept. The EDP is a bottom-up process that involves interactions among local quadruple helix actors (private companies, public institutions and innovation enablers, academic and research centres, and civil society) to identify new regional technological domains and market opportunities to pursue, depending on contextual elements such as regional scientific and technological endowments<sup>3</sup>. In this process, the role of regional government is to provide a dedicated management and to act as a platform to enable, sustain and guide quadruple helix stakeholders' participation across the policy-making process (JRC S3 Platform -Figure 2).

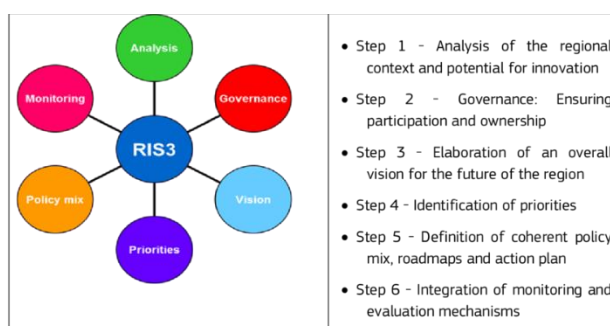


Figure 2 The six steps of a RIS3 process (Guide to Research and Innovation Strategies for Smart Specialisations (RIS 3) [RIS3 GUIDE FINAL.pdf \(europa.eu\)](#))

Unfortunately, the mapping activity conducted for this report took place in a transitional time between different programming periods. For the time being, most countries and regions are in the process of drafting their S3 for the programming period 2021-2027. Some of them have already approved and adopted the RIS3 2021-2027, other are still involved in the process to define the key topics, starting from the EDP - Entrepreneurial Discovery Process (Table 1).

Table 1 Regions which finalised the new RIS3 for the programming period 2021-2027

Territories	RIS3 2021-2027
Emilia Romagna	Finalised
Friuli Venezia Giulia	Finalised
Lombardy	Finalised

Therefore, the analysis provided in this report is mainly based on the strategies presented for the period 2014-2020, enriched by some fresh data or preview of a few recently adopted RIS3 2021-2027.

<sup>3</sup> Smart Specialisation Strategy (S3) - A Policy Brief from the Policy Learning Platform on Research and innovation -2020 - [Smart Specialisation Strategy S3 - Policy Brief.pdf \(interregeurope.eu\)](#)

## Mapping methodology

The project mapping activities aim to explore the existing RIS3 strategies in the MED programming area (Figure 3) by means of direct and indirect investigation methods focusing mainly on regions where blue bioeconomy sectors (defined in the following text as BBM sectors) could play a significant role for the territorial development.

Following the methodology conceived in the Conceptual framework (DT 3.1.1), the mapping of innovation trends has been conducted according to the following steps:

1. **Planning and performing the mapping of territorial priorities**
  - a. **RIS3 Priorities mapping**
  - b. **RIS3 priorities collection grid**
2. **Survey of R&I policy makers at regional/national level**
3. **Multilevel mapping with SDGs**

At the end of the multi-steps analyses, a complete **Country or Regional Report** was drafted for each territory describing the alignment of each RIS3 to the project blue bioeconomy sectors according to the information gathered from the mapping and survey and/or the JRC S3 platform dataset (<https://s3platform.jrc.ec.europa.eu/en/where-we-are> ).

- 1- **Planning and performing the mapping of territorial priorities**
  - a. **RIS3 Priorities mapping**

The first step was devoted to a **review of territorial innovation trends and priorities as described in the available RIS3 strategies of MED regions and countries**. When relevant the review has included also other R&I innovation strategies covering blue bioeconomy, (i.e. specific strategies at national/regional level) to integrate or further specify RIS3 priorities. The review assessed both strategic documents during the Programming Period 2014-2020 and, whenever available, Programming Period 2021-2027.

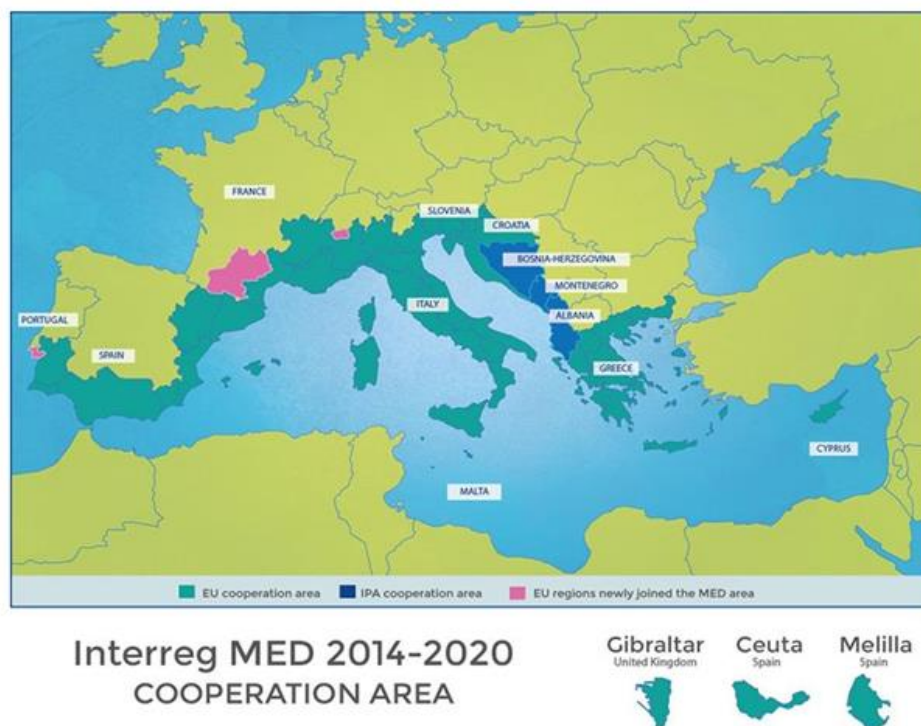


Figure 3 Map of the territories included in the Interreg MED 2014-2020 Cooperation area.

As far as available RIS3 documentation, according to the data provided by the JRC Smart Specialisation Platform, there are a total of 53 different national and/or regional strategies in the MED Programme area.

Referring to the IPA countries, it is worth noticing that Montenegro has been the first non-EU country adopting a Smart Specialisation Strategy in 2019 while in the other two IPA countries included in the MED area the S3 definition process is still ongoing (Albania, Bosnia and Herzegovina).

When referring strictly to the territories involved in the **BLUE BIO MED project**, a total of **36 territories** (Figure 4) have been contacted by the partnership, ranging from national to regional administrations. It is necessary to emphasise that, for the scope of the project, the analysis addressed the Interreg Med cooperation area and therefore the territories involved in the analyses are only those based in the Northern part of the Mediterranean basin.



Figure 4 Territories involved in the BBM project

The mapping of territorial innovation priorities was performed through the review of development priorities and innovation trajectories described in the RIS3 or similar strategies/programmes and their matching against the sectors/subsectors of project interest. S3 implies looking beyond its own boundaries: *“countries and regions should identify their competitive advantages through systematic and constructive comparisons, mapping their national and the international context in search of examples to learn from and performing effective collaboration”* (Foray et al, 2012) <sup>4</sup>.

However, as confirmed by previous comparative analyses on the RIS3 policies<sup>5</sup>, the RIS3 encoding in the S3 Platform does not allow for closer investigation focused on specific fields of interest which could be nested within broader priority areas or hidden behind cross-cutting areas.

For this reason, it was decided to develop both a mapping grid and a survey aimed at investigating the Research and Innovation Strategies of the Mediterranean countries in relation to the topics pertaining the blue bioeconomy directly with the involved local policy makers.

- 1. Planning and performing the mapping of territorial priorities**
- b. RIS3 priorities collection grid**

Starting from November 2020, a grid in Excel was distributed by the project partners to most of the regions part of the MED Programme in order to review the development priorities and

<sup>4</sup> In this regard, it is noteworthy to mention Interreg Programmes as MED, ADRION, EUROPE, Italy-Slovenija, Italy-Croatia, Greece-Italy, Marittimo-I FR-Maritime; Cooperation programmes as ENI CBCMED and Macroregional strategies as EUSAIR or Policies as the European Neighbourhood and Enlargement.

<sup>5</sup> Specifically with reference to the macroregional S3 strategy developed within the ADRION OISAIR project (2018-2020) and the MED project MISTRAL.

innovation trajectories contained in their RIS3 and investigate their alignment with the 3 BBM sectors and 13 sub-fields (please see *Introduction*, page 5). In some cases, the persons in charge of coordinating the definition of the national/regional S3 were contacted by phone/videoconference as well to add further information and explain the rationale of the project.

The grid was divided in two correlated sections: “mapping” and “implementation”.

- “Mapping” requested information related to RIS3 priorities, development, technologies and innovation trajectories, updates, monitoring data and the willingness to confirm them in the period 2021-2027. From a general point of view, there was a good level of collaboration from most of the countries and regions involved and a lot of valuable data were provided.
- “Implementation”, other than requesting the basic info related to the RIS3 priorities and development trajectories, it was aimed to quantify the number of projects funded, the investments made as well as requesting for some examples of the most relevant projects in the different RIS3 priorities and trajectories. The data requested were sometimes more difficult to find (especially for those projects financed and managed by different departments/offices) and this led to some missing/incomplete information, nevertheless the collaboration provided was quite good.

## 2. Survey of R&I policy makers at regional/national level

The following step is represented by the online survey targeting R&I policy makers at regional / national level (e.g., RIS3 responsible officials). The survey aimed at getting a more in-depth information about the territorial innovation priorities of MED regions and countries with reference to the blue bioeconomy fields (Fishery and aquaculture, Blue biotechnologies and Blue sustainable development) within the current S3 and, whenever possible, providing a preview also for the RIS3 2021-27.

To obtain a deeper understanding of the different RIS3 and precisely highlight the blue efforts and commitment shown by each territory, the survey investigated the following different areas:

- Territorial innovation priorities referred to blue bioeconomy
- Connections with Mediterranean transnational initiatives
- Agenda 2030 and transformative innovation policy
- RIS3 measures for international collaboration
- Involvement in BLUE BIO MED further activities

Planned on Google Forms, the online survey has been launched in February 2021 and remained open to respondents until July 2021.

The survey questionnaire<sup>6</sup> has been structured on 42 different open and closed questions. The responses, combined with data provided by the mapping grid, have been analysed at a higher level to understand the overall presence of the project themes in the MED RIS3 and at a deeper level by defining a country report for each mapped territory. The analyses were performed by using Microsoft PowerBi Desktop tool.

### **3- Multilevel mapping with SDGs**

With reference to BBM sectors and sub-fields of interest, a matching scheme has been elaborated and integrated with data from the RIS3 review as part of Activity 3.2.3 – Technology Forecast.

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<sup>6</sup> The questionnaire full text the can be found in the Annex to this report.

## Mapped territories

The territories investigated in this report are listed in the Table 2 as well as their way of contribution to the analysis (through the mapping grid and/or survey), the organization which provided the information and the considered RIS3 programming period.

*Table 2 Territories investigated in this report*

Country	Territories	RIS3 Period of reference	Mapping grid	Survey	Main source of information
HR	RIS3 CROATIA	2014-2020	Yes	Yes	Ministry of Regional Development and EU Funds
CY	RIS3 CYPRUS	2014-2020	Yes	No	CMMI - Cyprus Marine & Maritime Institute
FR	RIS3 Corse	2014-2020	No	No	JRC S3 platform
FR	RIS3 Occitanie	2014-2020	Yes	No	CPMR Office of the Provence-Alpes-Côte d'Azur Region
FR	RIS3 SUD Provence Alpes Cote d'Azur	2014-2020	No	No	JRC S3 platform
GR	RIS3 GREECE	2014-2020	Yes	Yes	National Centre for Scientific Research « Demokritos »
IT	RIS3 Abruzzo	2014-2020	No	No	JRC S3 platform
IT	RIS3 Apulia	2014-2020	Yes	Yes	Apulia Region
IT	RIS3 Basilicata	2014-2020	Yes	No	JRC S3 platform
IT	RIS3 Calabria	2014-2020	Yes	Yes	Calabria Region (sectors: Monitoring, Information Systems, Statistics and S3 Communication High formation; Scientific Research and Technological Innovation
IT	RIS3 Campania	2014-2020	Yes	Yes	Campania Region (UDCP – Office III - Unitary Programming)
IT	RIS3 Emilia- Romagna	2021-2027	Yes	Yes	ART-ER Attractiveness, Research. Territory
IT	RIS3 Friuli Venezia Giulia	2021-2027	Yes	Yes	Friuli Venezia Giulia Autonomous Region - Central directorate for work, training, education and family
IT	RIS3 Lazio	2014-2020	Yes	Yes	Lazio Innova S.p.A.
IT	RIS3 Liguria	2014-2020	No	Yes	Liguria region - FI.L.S.E. S.p.A (Ligurian Financial Company for Economic Development)
IT	RIS3 Lombardy	2014-2020	No	Yes	Lombardy Green Chemistry Association
IT	RIS3 Marche	2014-2020	Yes	Yes	Marche Region
IT	RIS3 Molise	2014-2020	No	No	JRC S3 platform
IT	RIS3 Sardinia	2014-2020	Yes	Yes	Sardinia Region - Department of planning, budget, credit and territorial planning
IT	RIS3 Sicily	2014-2020	Yes	Yes	Sicilian Region - Regional Department of Planning
IT	RIS3 Tuscany	2014-2020	Yes	Yes	Tuscany Region - Managing Authority of the OP ERDF
IT	RIS3 Umbria	2014-2020	No	No	JRC S3 platform
IT	RIS3 Veneto	2014-2020	Yes	Yes	Veneto Innovazione S.p.A.
MT	RIS3 MALTA	2014-2020	Yes	Yes	Malta Council for Science and Technology
PT	RIS3 PORTUGAL	2014-2020	No	Yes	DGPM - General Directorate of Maritime Policy

PT	RIS3 Algarve	2014-2020	Yes	Yes	CCDV Algarve - Commission for Coordination and Development of Algarve Region
PT	RIS3 Alentejo	2014-2020	Yes	Yes	CCDR Alentejo - Alentejo Regional Coordination and Development Commission
PT	RIS3 Lisbonne	2014-2020	Yes	Yes	CCDR LVT - Lisbon and Tagus Valley Regional Coordination and Development Commission
SI	RIS3 SLOVENIA	2014-2020	Yes	Yes	Government Office for Development and EU Cohesion Policy
ES	RIS3 Andalusia	2014-2020	Yes	Yes	- Regional Government of Andalusia (Regional Agency of Innovation and Development, Regional Agency of Knowledge - IFAPA - Agricultural and Fisheries Research and Training Institute
ES	RIS3 Aragon	2014-2020	Yes	Yes	Regional Development Agency of the Government of Aragon
ES	RIS3 Catalonia	2014-2020	Yes	Yes	General Directorate of Economic Promotion, Competition and Regulation of the Government of Catalonia, Directorate-General for Maritime Policy and Sustainable Fisheries of Catalonia and CREDA - Center for Agro-Food Economics and Development)
ES	RIS3 Balearic islands	2014-2020	Yes	Yes	BIT Foundation - Regional Government of Balearic Islands
ES	RIS3 Murcia	2014-2020	Yes	Yes	Murcia Regional Development Institute (Murcia Development Agency) - Technical Secretariat of Murcia RIS3
ES	RIS3 Valencia	2014-2020	Yes	Yes	Directorate General for Innovation - Regional Ministry of Innovation, Universities, Science and Digital Society of the Valencian Government
ME	RIS3 MONTENEGRO	2014-2020	Yes	Yes	Ministry of Economic Development

A total of **31 territories** have actively contributed to the collection of the information out of **36** considered countries and regions potentially involved in the project activities (Figure 5, Figure 6).

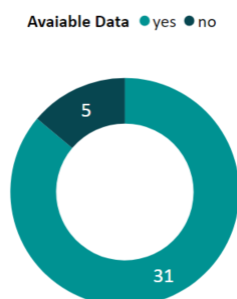


Figure 5 Pie chart of the available data.

Unfortunately, the partnership could not collect any data from Albania nor for Bosnia and Herzegovina.

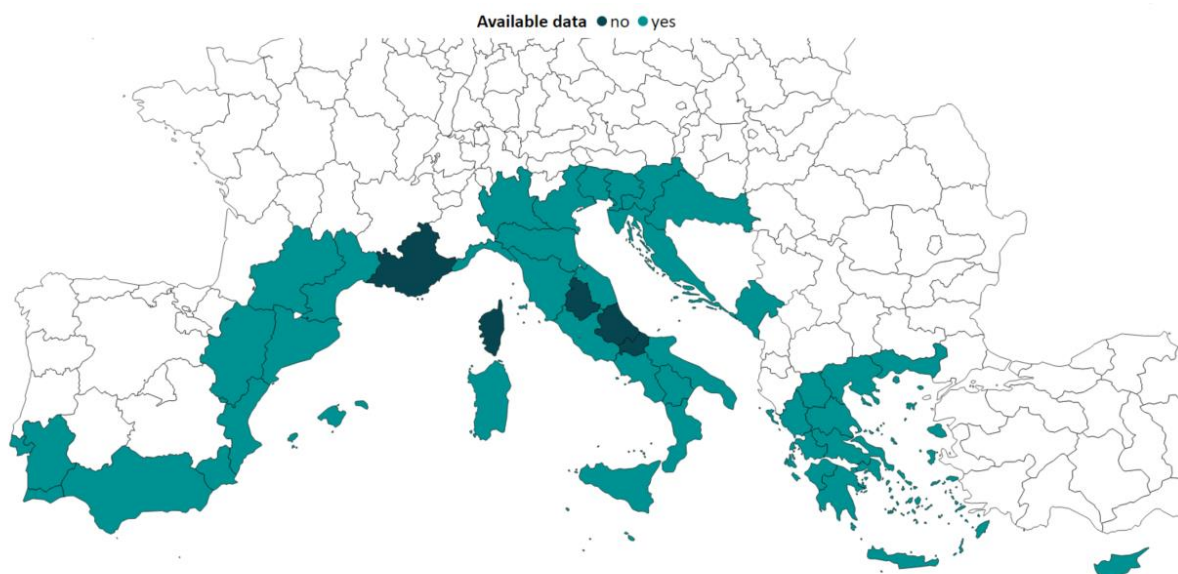


Figure 6 Map of the available data.

## Relevance of BLUE BIO MED themes in Smart Specialisation Strategies

The analysis of the RIS3 in the 36 mapped territories highlighted how blue bioeconomy sectors are considered in the regional or national Smart Specialisation Strategies of the MED area. Leaving aside the territories which do not include any BLUE BIO MED sector in their S3, in general most of the involved territories consider in their S3 more than one sectors examined by the project (Figure 7).

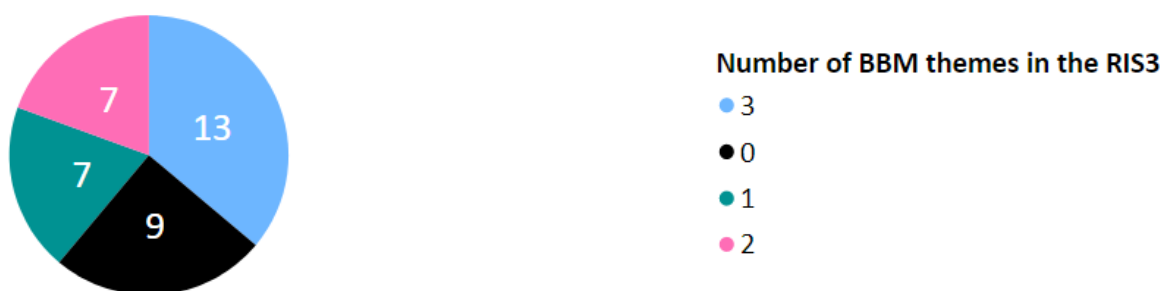


Figure 7 Number of BBM themes in the MED RIS3. All three sectors are mentioned in the RIS3 (3); Two sectors are mentioned in the RIS3 (2); Only one sector is mentioned in the RIS3 (1); Absence of priority related to the BBM themes (0).

The most represented sectors are **Fishery and Aquaculture** and **Blue Biotechnologies** with a total of 21 territories each reporting priorities and/or trajectories linked with those topics. As expected, within the RIS3 there is a significant and well distributed presence of topics referred to **Fishery and Aquaculture** across the Med territories. In particular, the marine living

resources, including both capture fishery and aquaculture, are a well-established sector that continue to be a major contributor to the EU blue economy<sup>7</sup>. Moreover, the aquaculture industry is probably the fastest growing food-producing sector which accounts for 50 percent of the world's consumed fish<sup>8</sup>.

The **Blue Biotechnologies sector** and subsectors have a considerable presence as well among the MED RIS3. The Blue Biotechnology focuses on the development of goods using non-traditionally commercially exploited groups of marine organisms such as algae, bacteria, fungi, and invertebrates. Their biomass is used for a variety of new commercial applications (i.e., food supplements, cosmetics, and fertilisers) and innovative commercial uses (i.e., biofuel and biomaterials). The strong presence of this sector among the S3 priorities and/or trajectories is encouraging because the new applications derived by this marine biomass could offer new and innovative ways to achieve a sustainable development.

Finally, the **Blue Sustainable Development sector** is the least represented within the analysed RIS3 (Figure 8, Figure 9). However, the importance of the sustainable use of the natural capital is highlighted by 18 territories which aims at preserving the natural ecosystems and ecosystem services which are fundamental for the blue bioeconomy industries<sup>9</sup>.

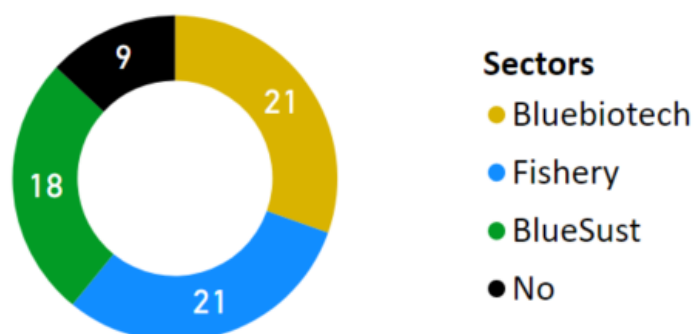


Figure 8 Pie chart of the number of RIS3 2014-2020 aligned with BBM themes. The project sectors are identified as follows:  
● Fishery and Aquaculture; ● Blue Biotechnologies; ● Blue Sustainable Development and ● Absence of priorities linked with BBM themes.

<sup>7</sup> European Commission (2021). The EU Blue Economy Report. 2021. Publications Office of the European Union. Luxembourg

<sup>8</sup> Aquaculture (2021). Food and Agriculture Organization of the United Nations.  
<http://www.fao.org/aquaculture/en/>

<sup>9</sup> European Commission (2021). The EU Blue Economy Report. 2021. Publications Office of the European Union. Luxembourg

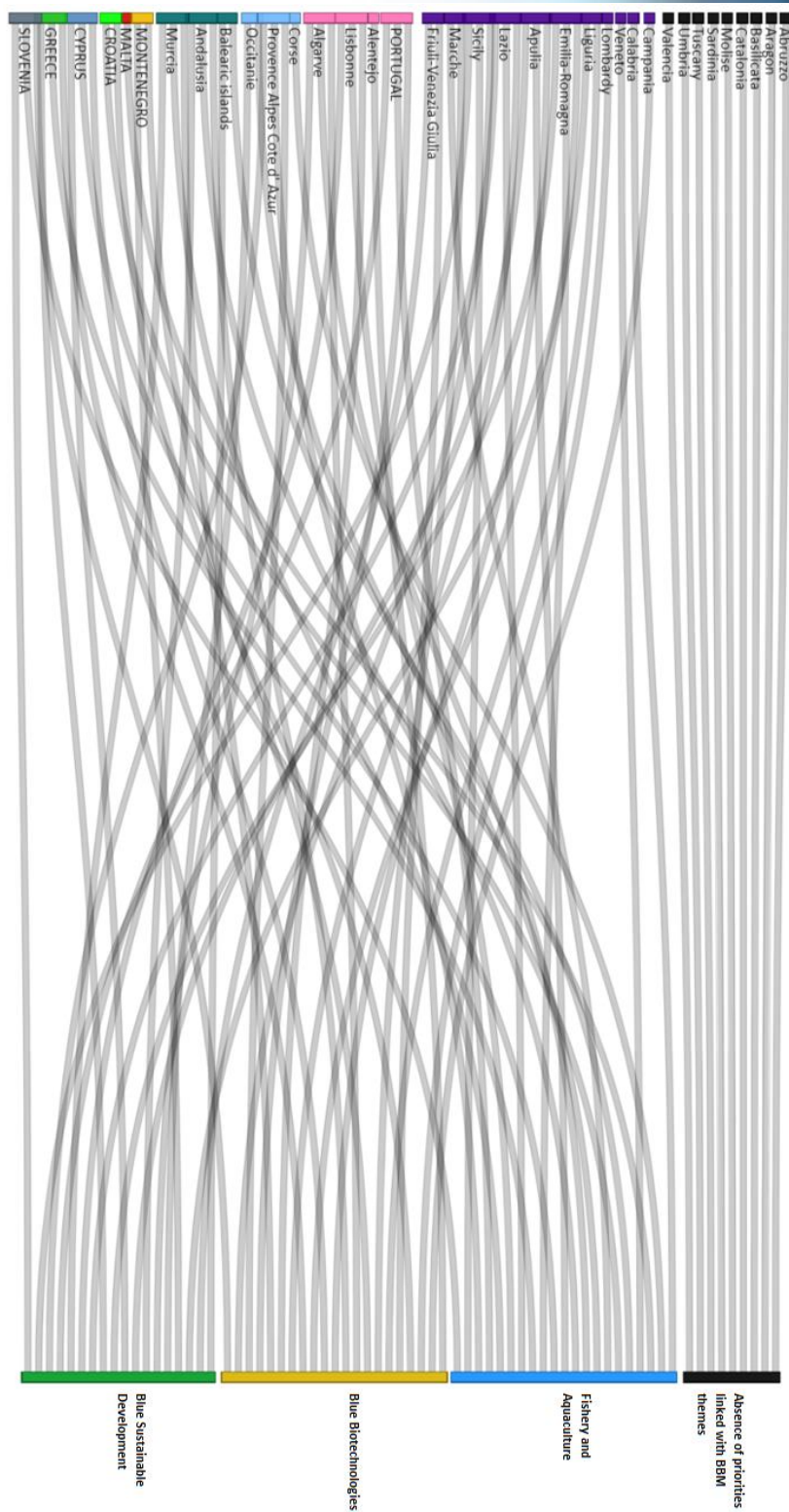


Figure 9 Sankey diagram capturing the relationship between RIS3 2014-2020 of BBM territories (sources) and BBM themes (destination).

On the contrary, although placed at the seafront, it is worth noticing that 9 territories have not even mentioned any blue bioeconomic sectors in their RIS3 (Figure 10). However, in the latter cases the lack of S3 priorities or trajectories explicitly linked with the blue bioeconomic themes do not mean that the territories do not invest in the blue bioeconomy sectors at all. Frequently, some territories promote marine-based projects through other initiatives funded by European Regional Development Fund (ERDF) or similar funds.

For instance, this is the case of the Italian regions Umbria, Tuscany, Sardinia, Molise, Basilicata, Abruzzo and Valencia and Catalonia in Spain, whose RIS3 do not mention blue innovation topics within its trajectories but where the blue development is still promoted under other priorities/ trajectories (e.g agrofood.....).

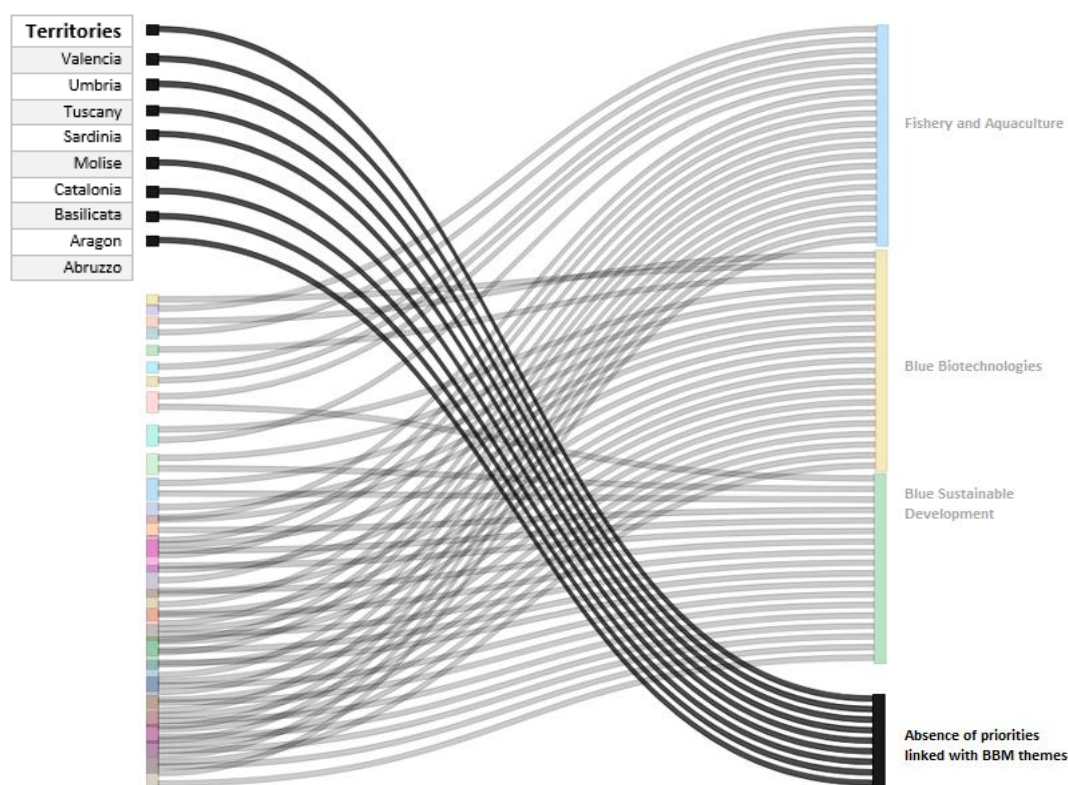


Figure 10 Sankey diagram capturing the relationship between Smart Innovation Strategies of BBM territories (sources) and BBM themes (destination). The highlighted territories reported in the table (left) do not contains priorities linked with the BLUE BIO MED theme

## BLUE BIOMED themes and Smart Specialisation Strategies: focus on territories developing regional innovation strategies

The BLUE BIO MED project entails countries with a different approach towards the development and management of Smart Specialization Strategies. Because of their dimension, some MED countries develop their S3 at national level (Cyprus, Croatia, Malta, Montenegro, Slovenia), others only at regional level (i.e., France and Spain), some of them at both levels (i.e., Italy, Portugal and Greece). In Greece the thirteen regional S3s are strongly led by the national S3 developed by GSRT, the General Secretariat of Research and Technology that coordinates all the research and innovation activities in the country. Because of their complex framework, here follows a country - based analysis referred to the territories where S3 strategies have been developed at regional level (i.e. only regionally or at both levels).

### France

The French Smart Specialisation Strategy is developed only at regional level. Among the mapped regions, the presence in the RIS3 of **Fishery and Aquaculture sector** is the most significant (Figure 11, a). Moreover, all regions considered in the mapping have included at least one priority linked with the blue themes.

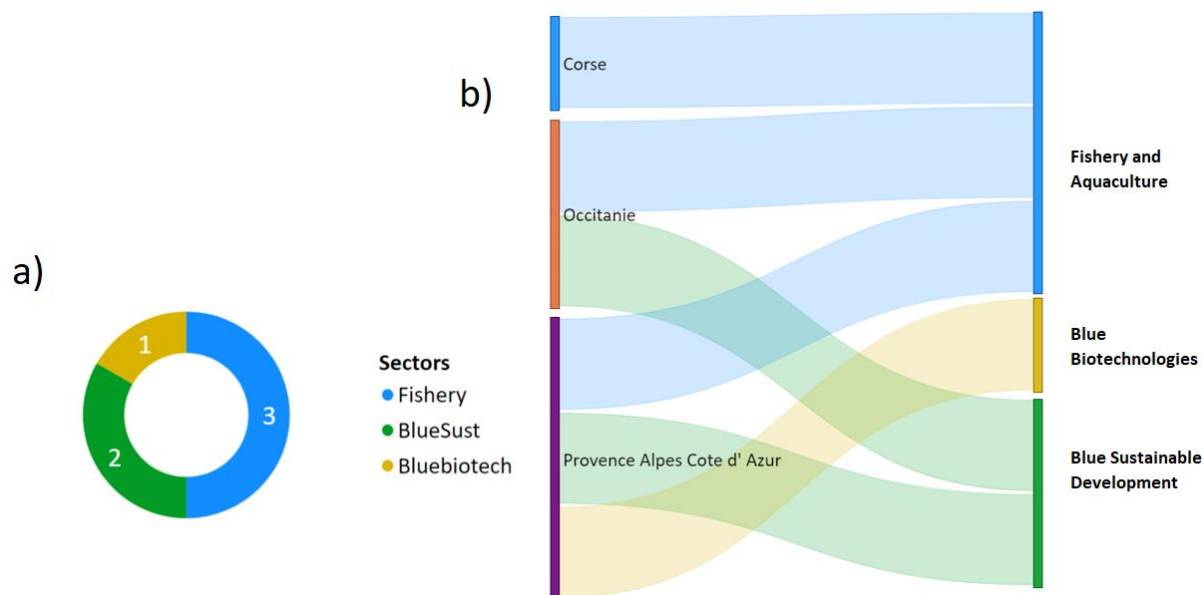


Figure 11 a) Pie chart of the number of French RIS3 2014-2020 aligned with BBM themes. The BLUE BIO MED sectors are identified as follows: ● Fishery and Aquaculture; ● Blue Biotechnologies; ● Blue Sustainable Development. b) Sankey diagram capturing the relationship between RIS3 2014-2020 of French territories involved in the BBM project (sources) and BBM themes (destination).

The exploitation of marine living resources has a strong tradition in the French regions and has also a strong potential for innovation especially focusing new and advanced methods of fish farming (Figure 12).



Figure 12 Map of the French RIS3 2014-2020 with priorities linked with the BBM themes. The sectors of BBM are identified as it follows: ● Fishery and Aquaculture; ● Blue Biotechnologies; ● Blue Sustainable Development.

## Italy

The Italian Smart Specialisation Strategies are developed at regional as well as at national level. Concerning the territories mapped for this report, a total number of 17 regional RIS3 have been analysed to highlight the presence of blue bioeconomy themes mentioned in the project (Figure 13, a).

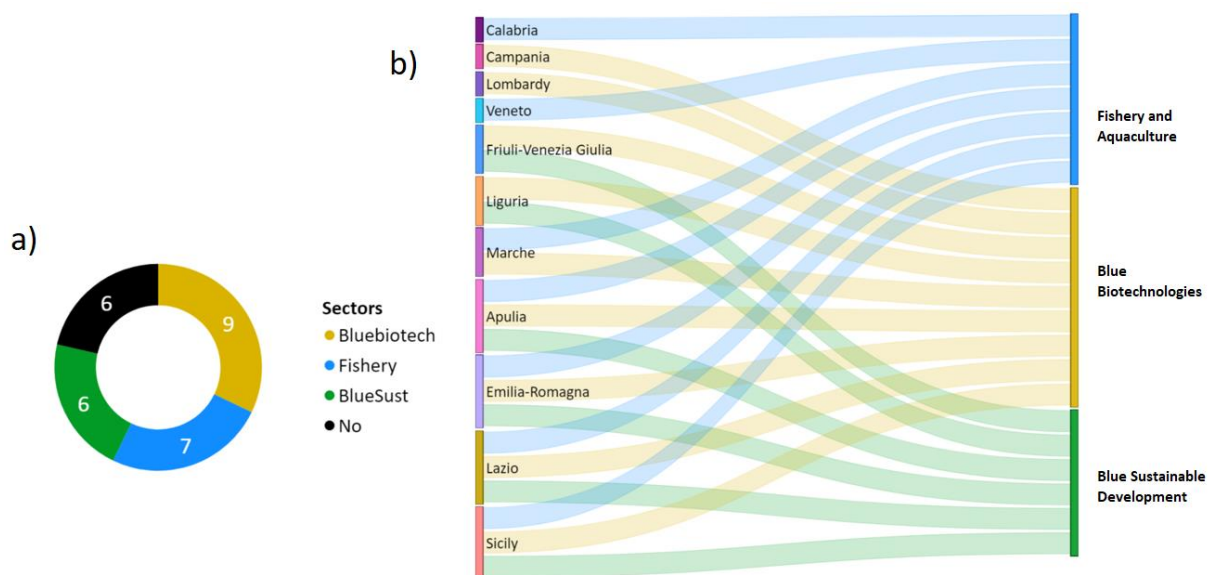


Figure 13 a) Pie chart of the number of Italian RIS3 2014-2020 aligned with BBM themes. The sectors of BBM are identified as follows: ● Fishery and Aquaculture; ● Blue Biotechnologies; ● Blue Sustainable Development and ● Absence of priorities linked with BBM themes. b) Sankey diagram capturing the relationship between RIS3 2014-2020 of Italian territories involved in the BBM project (sources) and BBM themes (destination).

Overall, **Blue Biotechnologies** are the most present sector among the BBM themes (Figure 13, b). In fact, Italy is among the most dynamic countries in the development of Blue biotechnology, focusing mainly on applied research rather than on basic research and on development of new added-value products<sup>10</sup>. Among them, it is worth noticing that Lombardy is the only region without a direct access to the sea containing an explicit reference to blue biotechnology in its RIS3. Specifically, the region focuses its research on the industrial uses of marine bioresources to obtain bioactive compounds. Priorities linked with **Fishery and Aquaculture** and **Blue Sustainable development** are mentioned by 7 and 6 Italian regions, respectively (Figure 14). Specifically, Apulia, Emilia-Romagn, Lazio and Sicily show in their Smart Specialisation Strategies a strong commitment towards all the Blue Bio Economy sectors, which prove their high economic interest and broad connections with the Mediterranean sea. Notably, it seems that the Campania region, which has a wide coastal stretch, does not include fishery in its RIS3 although including linkages with the blue biotechnology sector, as opposed to Veneto region which only includes fishery among the BBM themes. Finally, it is worth noticing that in the new programming period 2021-2027 the interest in blue economy has increased as emerges in the analysis of the recent adopted RIS3 2021-2027. For example, the Friuli-Venezia Giulia Region has added specific trajectories focused on Fishery and Aquaculture sectors that were not included in the previous programming period 2014-2020.

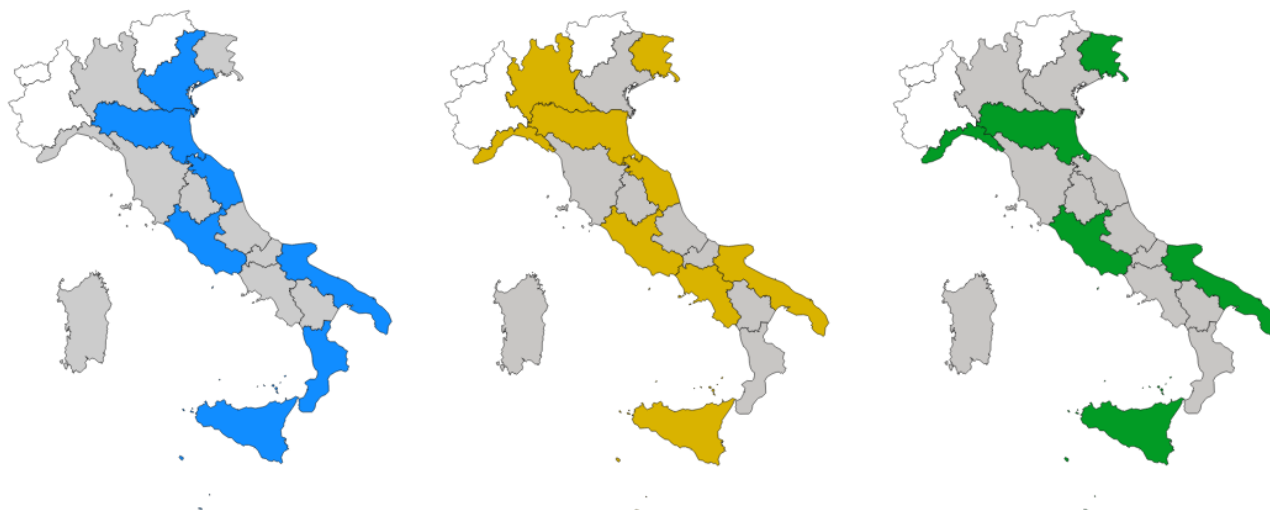


Figure 14 Map of the Italian RIS3 2014-2020 with priorities linked with the BBM themes. The sectors of BBM are identified as it follows: ● Fishery and Aquaculture; ● Blue Biotechnologies; ● Blue Sustainable Development.

<sup>10</sup> Smart Specialisation and Blue biotechnology in Europe. Mathieu Doussineau, Ales Gnamus, Javier Gomez, Silke Haarich and Frank Holstein. 2020

## Portugal

In addition to the national strategy, the country includes seven regional RIS3. In the BBM project mapping activity, the national RIS3 was analysed together with 3 regional southern strategies: it was found that all territories included at least one priority linked with the blue themes (**Errore. L'origine riferimento non è stata trovata.**).

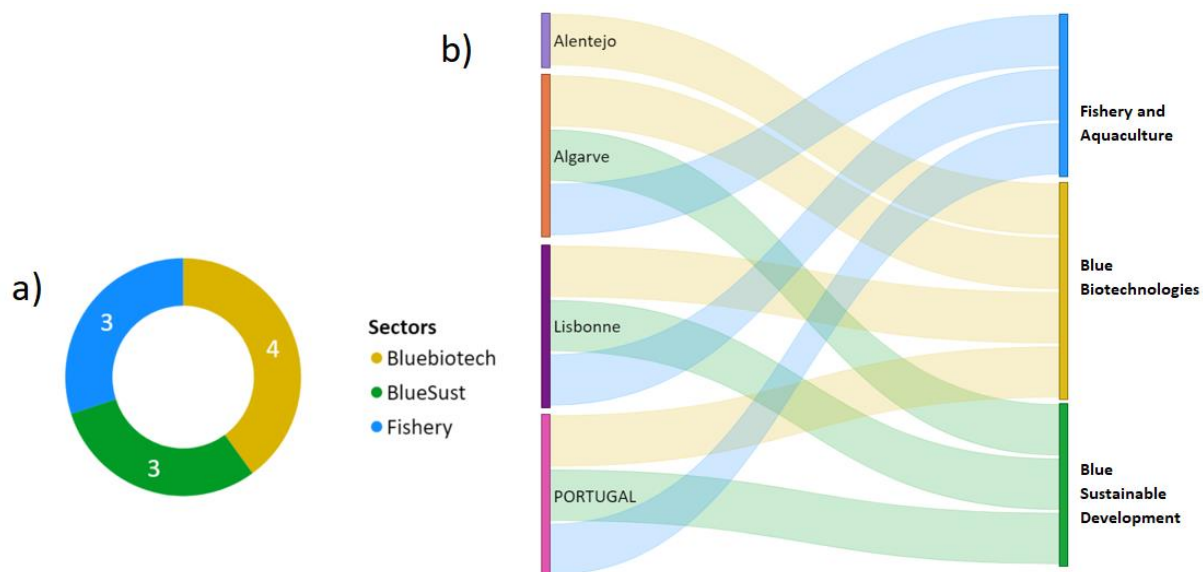


Figure 15 a) Pie chart of the number of Portuguese RIS3 2014-2020 aligned with BBM themes. The sectors of BBM are identified as it follows: ● Fishery and Aquaculture; ● Blue Biotechnologies; ● Blue Sustainable Development. b) Sankey diagram capturing the relationship between RIS3 2014-2020 of Portuguese territories involved in the BBM project (sources) and BBM themes (destination).

The **Blue Biotechnologies sector** is considered by all mapped regions as well as national level. In particular, the Portuguese regions focus their development on the sustainable exploitation of marine resources for pharmaceutical and cosmeceutical purposes. Linkages with the other two sectors are present at national and regional level as well except for the region of Alentejo (Figure 16).

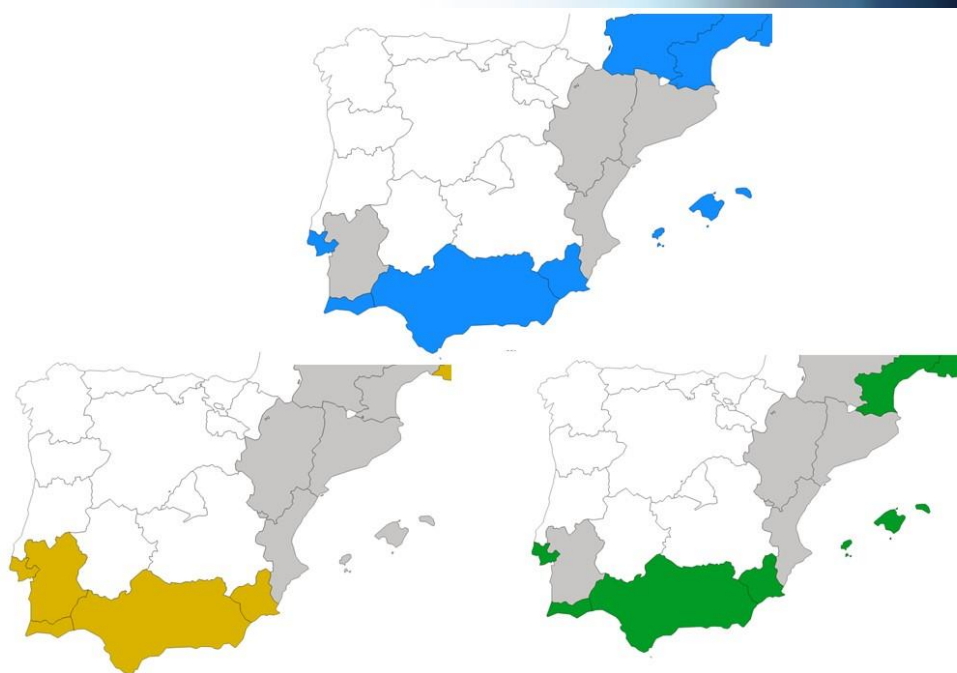


Figure 16 Map of the Spanish and Portuguese RIS3 2014-2020 with priorities linked with the BBM themes. The sectors of BBM are identified as it follows: ● Fishery and Aquaculture; ● Blue Biotechnologies; ● Blue Sustainable Development. The national Portuguese RIS3 is not reported in the map.

## Spain

The Spanish Smart Specialisation Strategies are developed at regional level only.

Concerning the BBM project, a total number of 6 regional RIS3 were analysed to highlight the presence of the BBM sectors (**Errore. L'origine riferimento non è stata trovata.**, a). Among them, 3 regions did not report the presence of blue themes in their RIS3 at all (Valencia, Catalonia and Aragon), whereas the others show strong linkages with the blue bioeconomy topics (**Errore. L'origine riferimento non è stata trovata.**, b). Differently from the previous RIS3 analysed, **Fishery and Aquaculture** and **Blue Sustainable Development** are the most significant sectors (Figure 16), highlighting the strong commitment of the Southern regions for the marine living organism's sector.

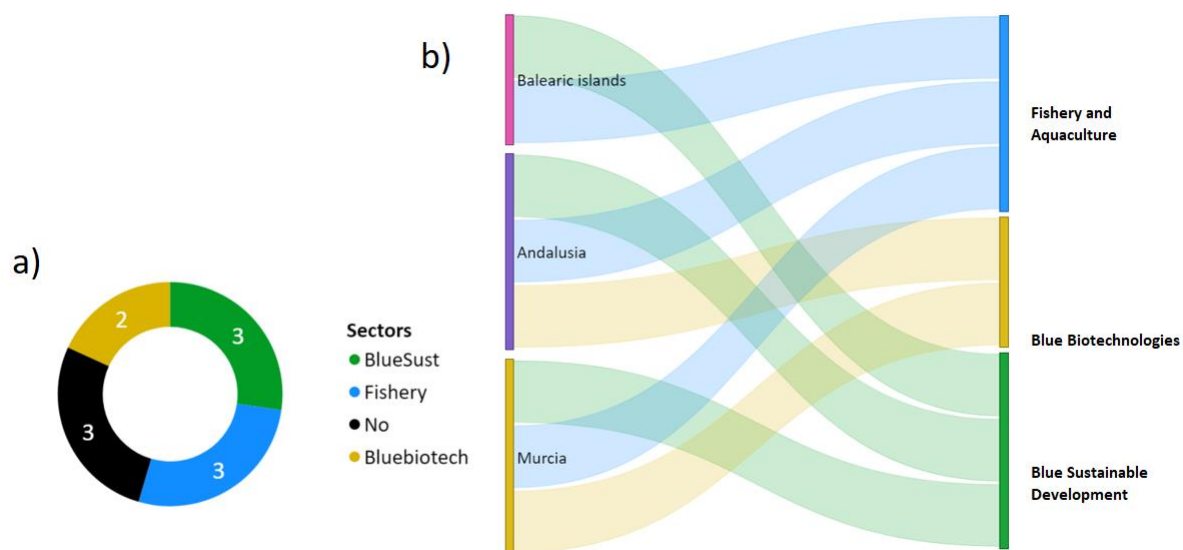


Figure 17 a) Pie chart of the number of Spanish RIS3 2014-2020 aligned with BBM themes. The sectors of BBM are identified as it follows: ● Fishery and Aquaculture; ● Blue Biotechnologies; ● Blue Sustainable Development and ● Absence of priorities linked with BBM themes. b) Sankey diagram capturing the relationship between RIS3 2014-2020 of Spanish territories involved in the BBM project (sources) and BBM themes (destination).

## Survey data analysis

The on-line survey has investigated the following different dimensions:

1. Territorial innovation priorities referred to blue bioeconomy
2. Implementation of RIS 2014-2020
3. Connections with Mediterranean transnational frameworks and initiatives
4. Agenda 2030 and transformative innovation policy
5. RIS3 measures for international collaboration and the Mediterranean dimension

The **respondents to the survey** were identified by the project partners among local innovation players with different roles such as sectoral experts, officials working on the RIS3 process, and persons in charge of coordinating the innovation policy management in general to obtain an analysis as complete as possible (Figure 18)<sup>11</sup>.

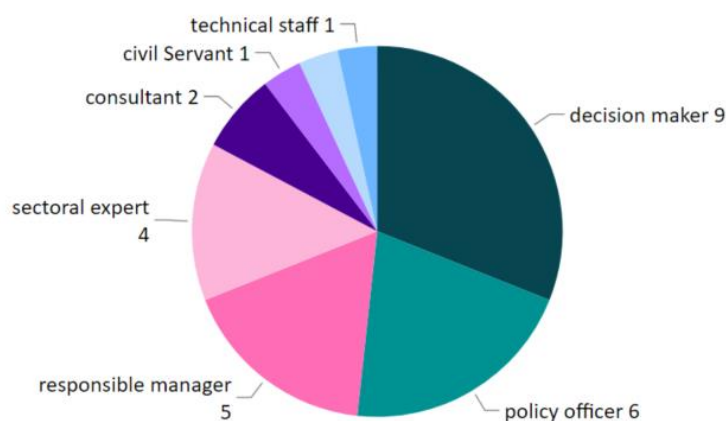


Figure 18 Graph of the role/position of the survey respondents (n: 29).

By the end of the collection, **29 innovation policy makers** took part to the survey on behalf of **28 different territories**<sup>12</sup>.

<sup>11</sup> It is worth mentioning that the respondents' different positions and backgrounds could result in some bias in the analysis. Since the experts were asked to evaluate the questions on an individual basis, the multiple background and expertise may have had different impacts on their evaluation.

<sup>12</sup> Two different responses were collected from Catalonia region (please see Table 2 column "Survey").

## Territorial innovation priorities

This part of the survey aimed to deeply understand **the importance that RIS3 policy makers attach to the blue bioeconomy innovation potential**.

As can be noticed from the pie chart below, 11 respondents state that their S3 explicitly includes some topics referred to blue bioeconomy, 12 respondents state that their S3 address these topics at general level and 6 state that their S3 do not include any reference at all<sup>13</sup>.



Figure 19 Question 9: Do your RIS3 2014-2020 priorities include (even partially) any of the BLUE BIO MED sectors/subsectors? (Total respondents: 29)

With reference to the implementation of innovation priorities defined under the programming period 2014-2020 in relation to blue bioeconomy topics (in terms of number of projects, participation of stakeholders, investments, etc.), the mapped scenario appears very heterogeneous. Many stakeholders have acknowledged that the effective implementation of blue bioeconomy measures/projects let to the emergence of new challenges or specific issues (e.g. marine litter).

Overall, 4 respondents state that the implementation of their RIS3 2014-2020 in relation with blue bioeconomy topics has been in line or above the expectations, although 3 have stated the opposite. Finally, 4 stakeholders have also stated that the relevance of topics related to blue bioeconomy increased during the 2014-2020 programming cycle.

<sup>13</sup> Given the fact that there two Catalan respondents took part to the survey, the number of territories where the S3 explicitly includes some topics referred to blue bioeconomy are 11, 12 include the BBM specific topics at general level and 5 S3 not include any reference at all.



Figure 20 Question 10 : How would you describe the actual implementation of innovation priorities dealing with blue bioeconomy? (Respondents: 23). NA values were excluded from the analysis.

## Implementation of RIS3 2014-2020

The questionnaire included also a targeted section referred specifically to the implementation of projects and initiatives for each of the blue themes (“Fishery and aquaculture”, “Blue biotechnologies”, “Blue sustainable development”).

The RIS3 is a strategy, not a programme or initiative with its own endowment of funds and it is implemented mainly through the European Regional Development Fund (ERDF), Interreg Programme (cross-border, transnational and interregional), national ministries, EU-backed Programme as the European Maritime, Fisheries and Aquaculture Fund - EMFAF.

A tentative analysis of the answers to the questionnaire (some data were missing or only partially provided) gives some information/ hints about implemented blue bio investments/projects for each sector:

**Fishery and aquaculture:** among the Italian regions Apulia, Marche and Sicily seem to allocate more funds on this sector, as Andalusia and Catalonia for Spain and Algarve for Portugal. Croatia and Malta have promoted some projects, while there are no information concerning Albania, Bosnia, Cyprus, France, Montenegro, Slovenia.

Greece has allocated around 615 million of euro to fund a total of 993 projects focused on fishery and aquatic environment across its regions and at least 17.87 M euro to fund 26 projects focused on innovative technologies. However, it was impossible to further investigate at regional scope because all data are available only at national level (data collected by GSRT, the General Secretariat of Research and Technology).

**Blue biotechnologies:** this sector shows some similarities with the previous one even if the funds spent are considerably less. The Sicilian Region allocates more funds in Italy (a good performance of Liguria has to be pointed out), Andalusia and Catalonia are leaders in Spain while in Portugal Lisboa e Vale do Tejo performs quite well alongside Algarve. Montenegro

and Croatia are involved in some projects too. No data from Albania, Bosnia, Cyprus, France, Slovenia have been provided.

**Blue sustainable development:** in this sector the funds allocated are not very relevant, too. In Italy, the Sicilian Region and Liguria invest more, in Portugal Lisboa e Vale do Tejo perform better than Algarve and Andalusia seem to be leader in Spain. Montenegro has funded some small projects. No data from other the countries have bene provided.

When considering the relevance for each territory of the different blue bioeconomy themes regardless of the contents of their current RIS3 2014-2020, **Small Scale Fisheries and Seafood processing and trade** are considered by the survey respondents the most relevant subsectors within the «Fishery and Aquaculture» sector, **Blue biotechnologies for Healthcare and Pharmaceuticals and Agriculture, livestock and food processing** are considered the most relevant subsectors and all subsectors referred to the "Blue Biotechnologies" sector. Referring to the sector «Blue sustainable development», all topics are considered at the same level of importance.

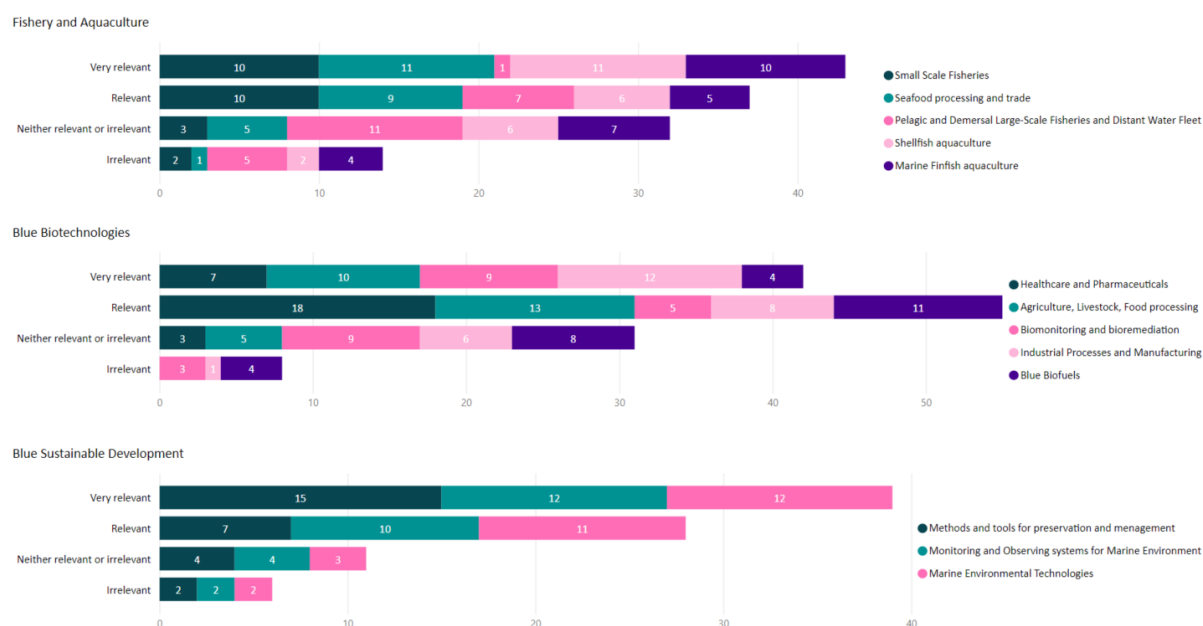


Figure 21 Question 17: Regardless the contents of your RIS3 2014-2020, how relevant do you consider the following blue bioeconomy themes for your territory? (Single choice question, total respondents: 29). NA values were excluded from the analysis.

## Definition process of the RIS3 2021-2027

Launched in February and closed in July 2021, the survey took place in a transitional time between different programming periods. For this reason, respondents have been asked to describe the state of advancement of the definition process of the RIS3 2021-2027 in their country/region.

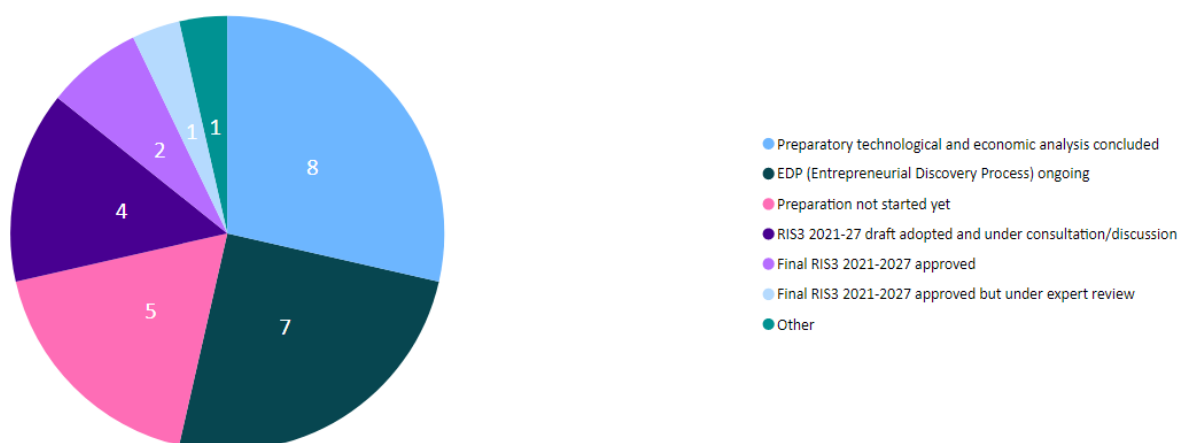


Figure 22 Question 18: With reference to the definition of RIS3 2021-2027, which is the current state of advancement in your country/region? (Respondents: 28). NA values were excluded from the analysis.

At that time, most countries and regions are in the process of drafting their S3 for the programming period 2021-2027 (EDP - Entrepreneurial Discovery Process in progress, preliminary technological and/or economy analysis concluded, draft document under discussion), 2 territories had already approved the RIS3 2021-2027, and on the contrary, 5 territories did not even start the preparatory phase.

## Connections with Mediterranean transnational frameworks and initiatives

This section was aimed at exploring the degree of awareness and the approach of innovation policy makers towards the Mediterranean transnational framework and initiatives linked to blue bioeconomy development.

Specifically, the survey asked the respondents about their degree of awareness of some specific governance frameworks and initiatives (such as Union for the Mediterranean - Ministerial on blue economy, BLUEMED Initiative, UNEP-MAP United nations Environmental Programme – Mediterranean Action Plan, EUSAIR Pillar 1 “Blue Growth”, WESTMED) and/or the level of involvement of their organization in these initiatives.

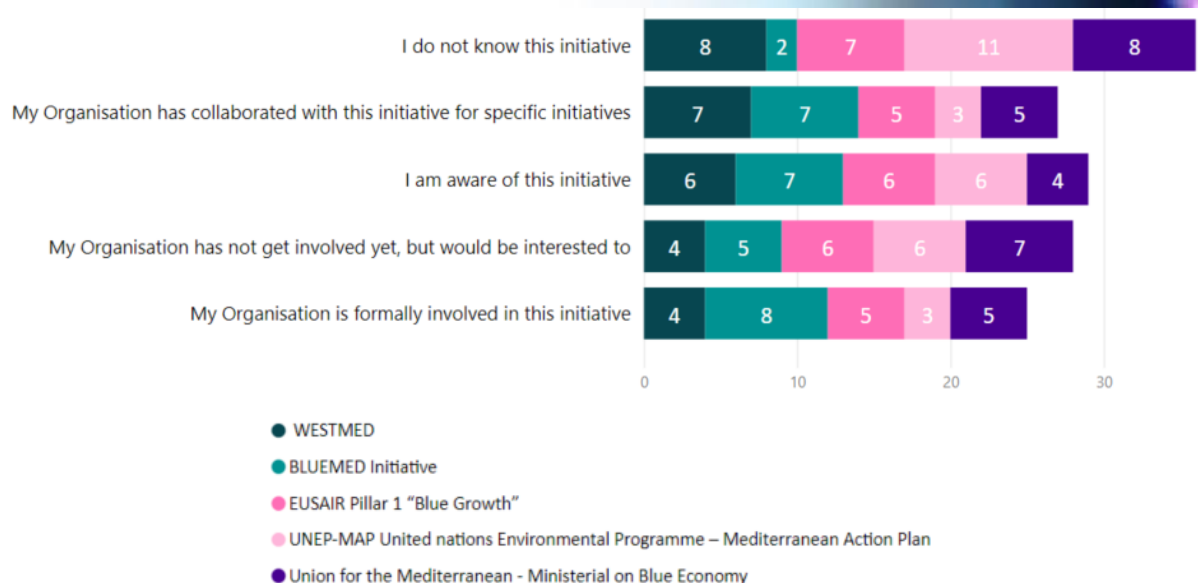


Figure 23 Question 21 : We kindly ask you to outline your degree of awareness of the following governance frameworks and initiatives and the level of involvement of your Organisation (Respondents :29)

When exploring the involvement of each administration in such initiatives, it can be noticed that several territories are formally involved in these initiatives. In particular, 8 territories are already formally involved in the Bluemed initiative, and 5 in the Union for the Mediterranean and in the Eusair Pilar 1. Any clear indication can be found from this data also because of the fact that many respondents declare to ignore the existence of such initiatives. However, some specific collaborations have been established by the mapped territories above all with the BLUEMED and Westmed initiatives.

The respondents have also listed some other initiatives excluded from the previous list, in which their organization is involved in. Among the many, the most quoted are the JRC Thematic Smart Specialization Platforms, CRPM - Conference of Peripheral Maritime Regions, Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans), the VANGUARD Initiative, Climate KIC, EIT Food, the Blue Economy ERA-NET CO-FUND, the Atlantic Strategy Committee.

Establishing future collaboration with these initiatives is positively considered (very beneficial and beneficial) to support the territorial innovation for the sustainable development of blue bioeconomy by almost all respondents (27 out of 29 respondents).



Figure 24 Question 23: Do you think that these initiatives can be beneficial to the future action of your Organisation to support innovation for the sustainable development of blue bioeconomy? (Respondents: 29)

By further investigating the most favorite kind of collaboration to be established in the future with any Mediterranean transnational initiatives on blue bioeconomy, the survey respondents appear to look favorable upon almost all the listed activities except for the involvement in “consultancy desk” and “staff mobility actions”. Specifically, respondents show to prefer most of all the involvement in “cooperation projects”, in “specific trainings on the alignment of RIS3 with transnational ones” and in “thematic workshops”.

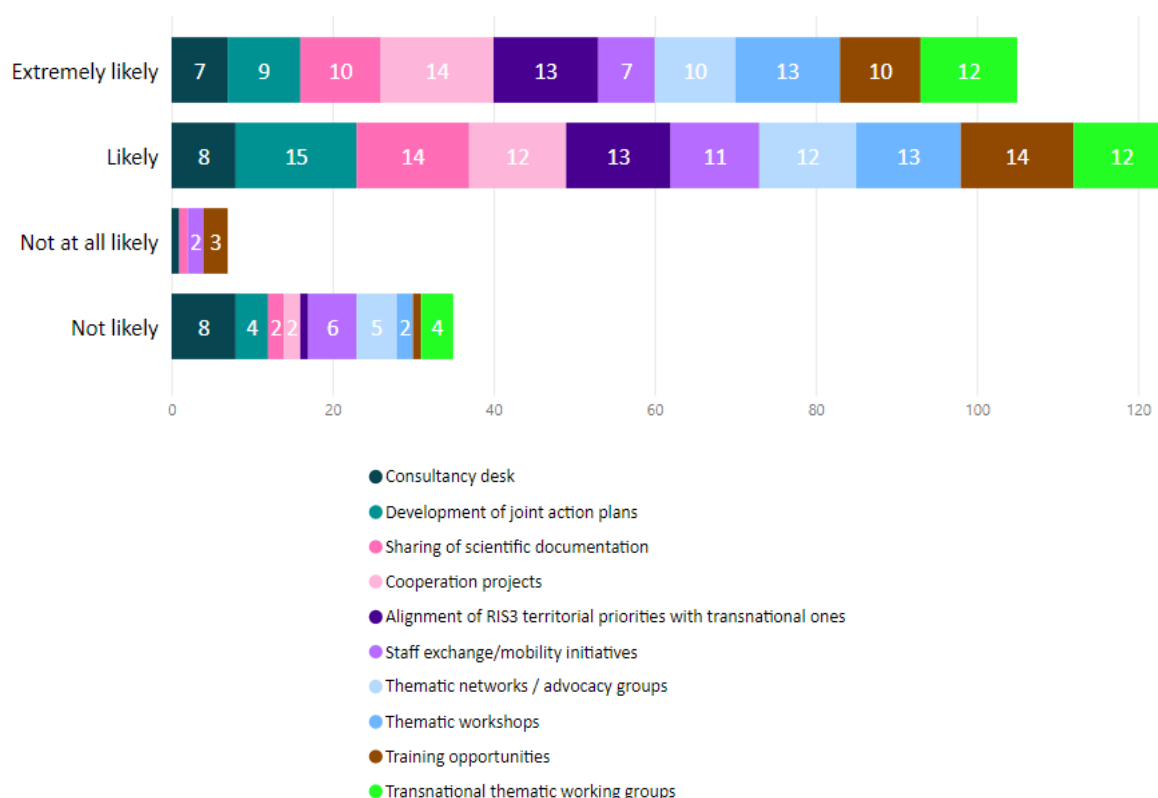


Figure 25 Question 24: How likely would you get involved in the future in activities organized by any Mediterranean transnational initiative on blue bioeconomy to improve the quality of your innovation policies and measures? (Respondent: 29) NA values were excluded from the analysis.

The respondents have also suggested some additional transnational activities that they deem important to improve the quality of the blue bioeconomy innovation policies. Among the many, the most quoted are the establishment of sector specific scientific cooperation, the organization of joint events, the development of networks with other clusters active on blue growth, the support of knowledge transfer activities.

## Agenda 2030 and transformative innovation policy

This section explored the connections between the RIS3 and the Agenda 2030 Sustainable Development Goals (SDGs). During the programming period 2014-2020, there were already a few RIS3 adopting the SDGs as reference to monitor the strategy implementation and impact (e.g. Catalonia smart specialization strategy). At the present time, there are some territories engaged in the definition of their new RIS3 with an eye to sustainable development goals/challenges/missions.

Out of 27 respondents, 14 already state that their territories are including some linkages and alignments with the Agenda 2030 SGD's in their new RIS3 2021-27, which are included mainly in the overall vision/objectives. In addition, some respondents state that the SDGs will impact on the selection of projects to be funded directly by the administration.



Figure 26 Question 26 : With reference to the RIS3 2021-27 in your territory, are there any linkages with the Agenda 2030 SGD's? (Respondent :27) NA values were excluded from the analysis.

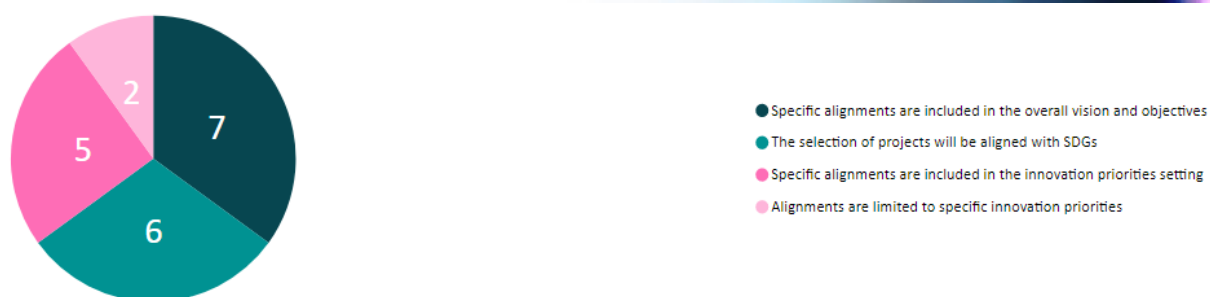


Figure 27 Question 27 : Where can we find in your RIS3 the linkages with Agenda 2030? (Multiple answers were allowed)/ (Only respondents who answered YES to the previous question were asked: 14 respondent). NA values were excluded from the analysis.

By investigating how these linkages and alignments with the Agenda 2030 SDGs are included and supported within the new RIS3 2021-2027, 7 respondents stated that specific alignments are included in the overall vision and objectives, 5 stated that specific alignments are included in the innovation priority setting and 2 within specific innovation priorities. For some territories, the alignment with SDGs will be an important criterion to be used in the selection process of funding projects.

## Transformative innovation policy

The **transformative innovation policy approach** boosts the role of innovation to address sustainable development challenges as encapsulated in the United Nations' SDGs. The approach is guided by principles such as: **co-creation** with all stakeholders; **diffusion** to share knowledge across society and territories; **uptake** to turn research into social and economic value; **transformation** to change the way we consume and produce; **directionality** to orient, coordinate, align and synchronize R&I towards priority challenges.

By investigating the use of a challenge-based approach for the definition of the innovation priorities of the new RIS3 2021-2027, most of the territories reply affirmatively.



Figure 28 Question 28: With reference to the RIS3 2021-27 in your territory, are you using a challenge-based approach for the definition of the innovation priorities? (Respondent: 21). NA values were excluded from the analysis.

The survey respondents have been also asked their degree of familiarity with the transformative innovation approach. From the pie chart below, it can be noticed that this

approach is already adopted in most of the territories (20), some territories state that they do not adopt the transformative innovation approach (6) and only a few respondents declare a limited awareness about this approach (2).



Figure 29 Question 29: How familiar are you with the transformative innovation approach? (Respondent: 28). NA values were excluded from the analysis.

According to their experience, the survey respondents have been asked about their agreement with some statements/positions.

With reference to the identification of the **most effective level for implementing the transformative innovation policy approach**, both regional and international levels are considered most fitting than the national one.

International scale is best fitting for transformative innovation policy

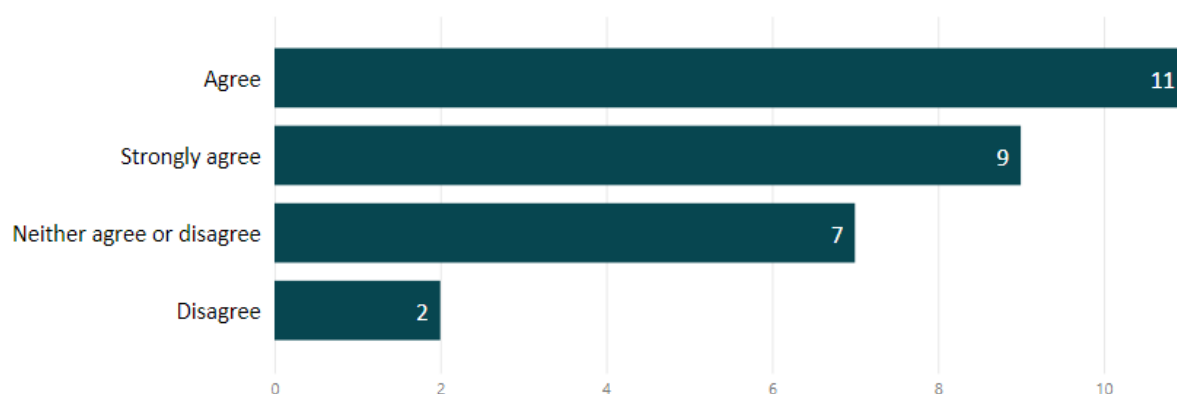


Figure 30 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

### National scale is well fitting for a transformative innovation policy

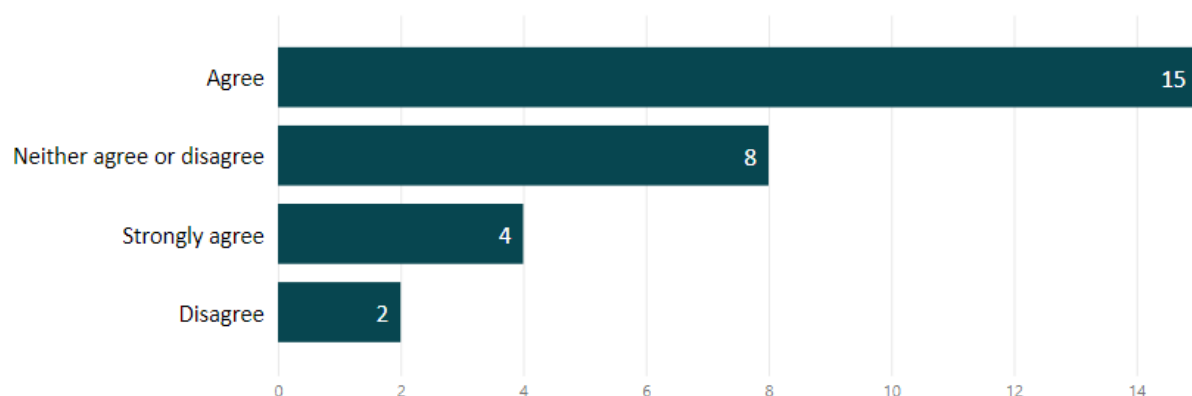


Figure 31 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

### Regional scale is well fitting for a transformative innovation policy

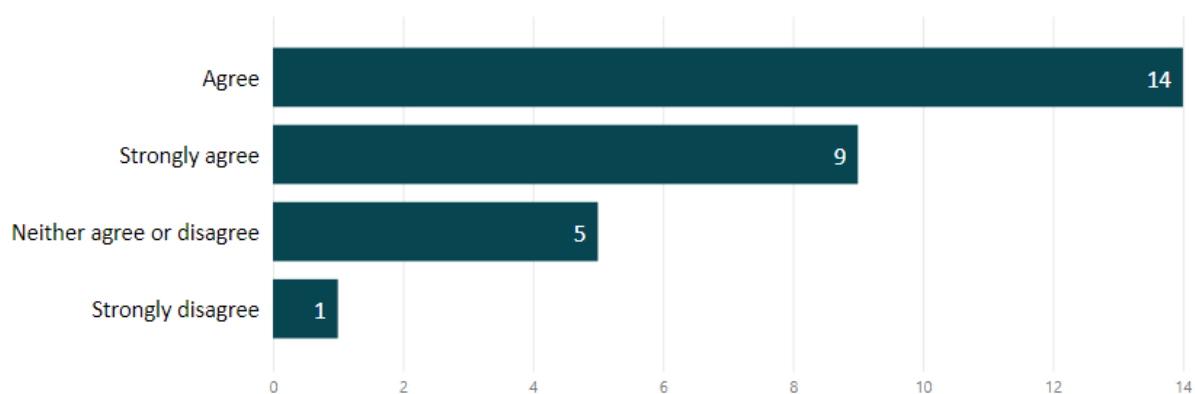


Figure 32 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

The vast majority of the respondents (21) strongly agree with the fact that **innovation can play a bigger role in promoting systemic transformation to meet grand challenges**; besides, there are 8 respondents expressing a positive opinion (agree).

Innovation can play a bigger role in promoting transformation & meet challenges

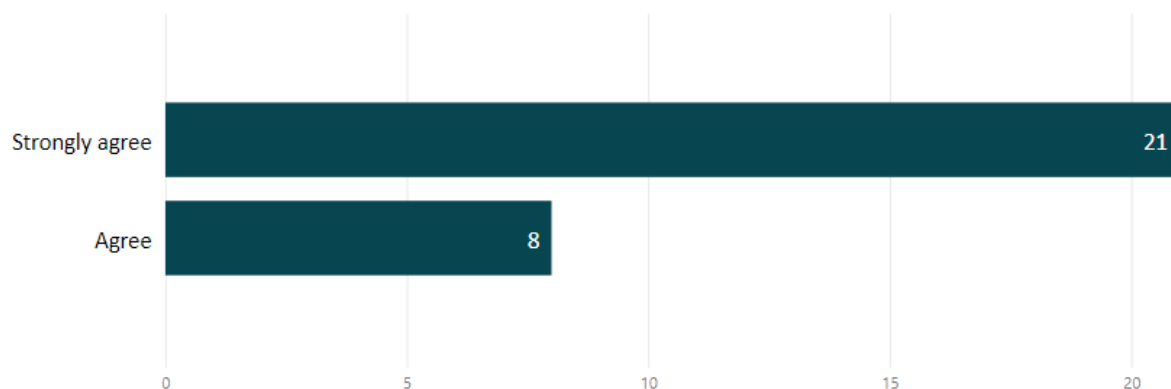


Figure 33 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

Many respondents strongly agree with the fact that more **multilevel cooperation is needed to increase the transformative impact of innovation policies** (18 respondents out of 28) and that **Mediterranean cooperation should focus more on promoting transformative innovation policies** to meet the Green Deal goals (14 respondents out of 28).

More multilevel cooperation is needed

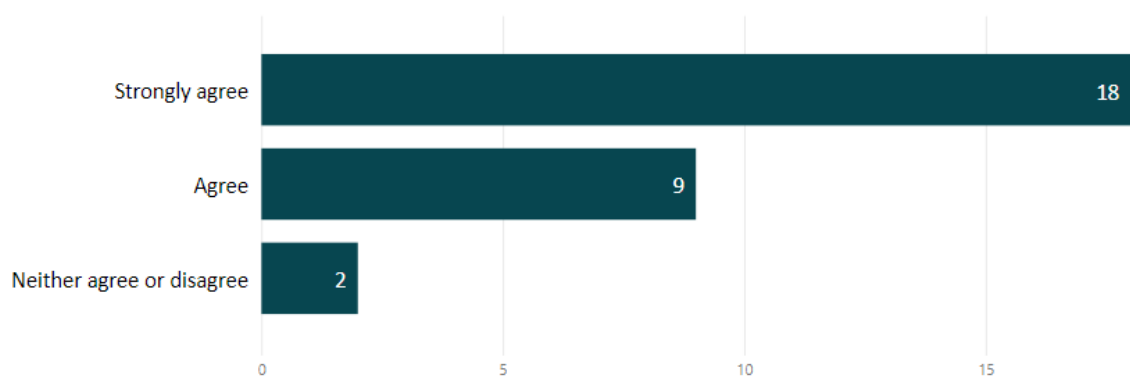


Figure 34 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

Mediterranean cooperation should focus more on transformative innovation policies

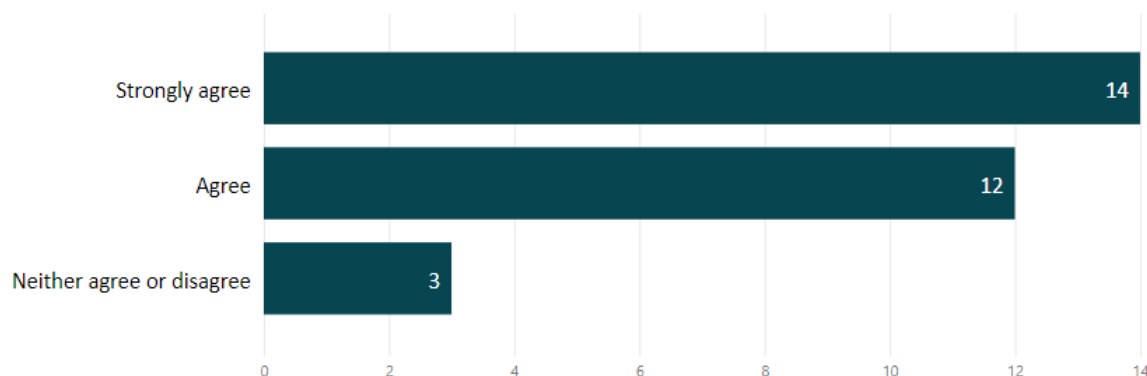


Figure 35 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

With reference to the role of SDGs, 16 respondents strongly agree with the fact that **linkages between RIS3 and SDGs should be reinforced**; besides, there are additional 10 respondents expressing a positive opinion (agree).

Linkages between RIS3 and SDGs should be reinforced

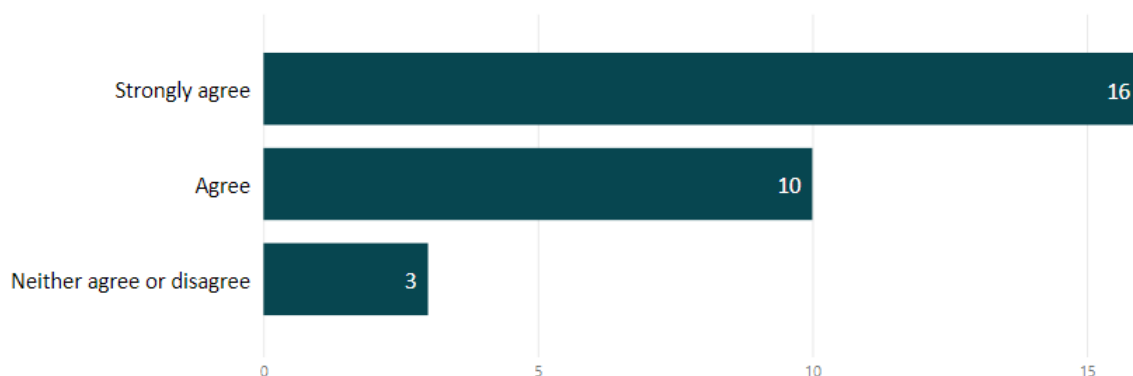


Figure 36 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

Referring to the blue bioeconomy sustainable development, 12 respondents strongly agree with the fact that **transformative innovation would be relevant for this sector**; additional 15 respondents express a positive opinion (agree).

## Transformative innovation is relevant for sustainable development

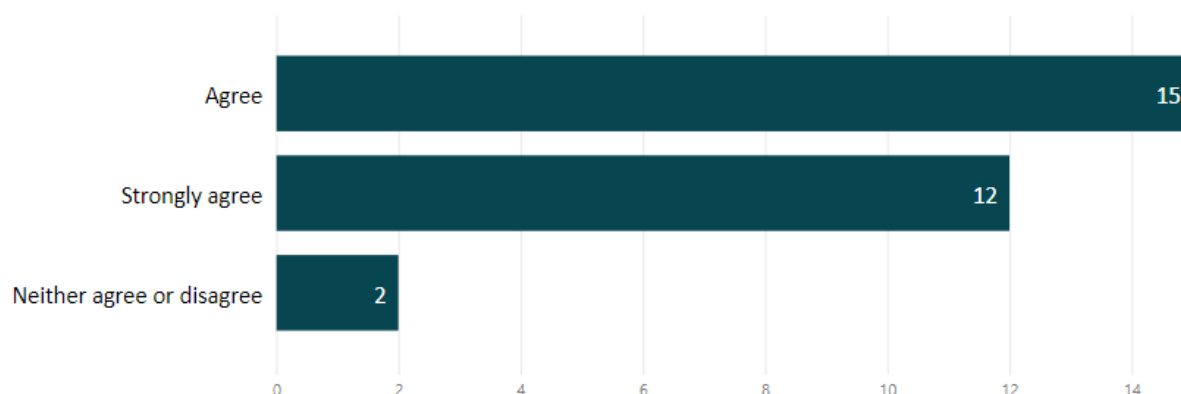


Figure 37 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

In this respect, most of the survey respondents state that they would need greater learning and guidance to translate a transformative innovation policy approach into practice for their territories.

## Need of guidance to translate a transformative innovation policy in practice

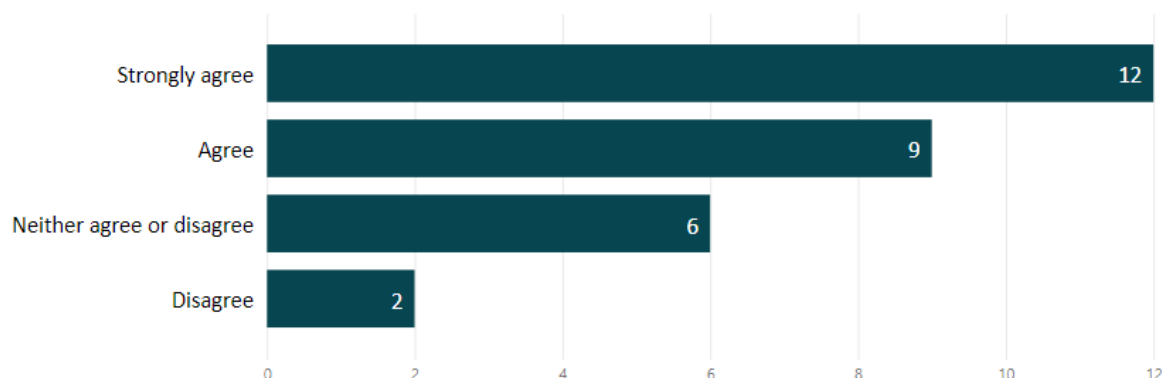


Figure 38 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

**Citizen involvement and cocreation is a crucial component in the innovation process** for 12 survey respondents (strongly agree); additional 14 respondents agree with this position too (agree).

Citizen's involvement and co-creation is a crucial

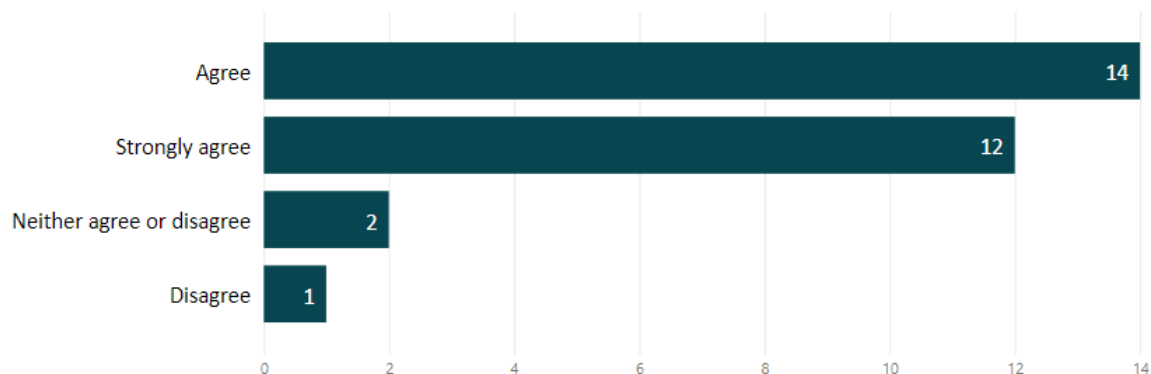


Figure 39 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

Finally, many stakeholders agree on the fact that **innovation policy should focus mainly on promoting businesses competitiveness and sustainability** (12 strongly agree); additional 9 respondents agree with this position too (agree).

Innovation should focus on promoting business competitiveness and sustainability

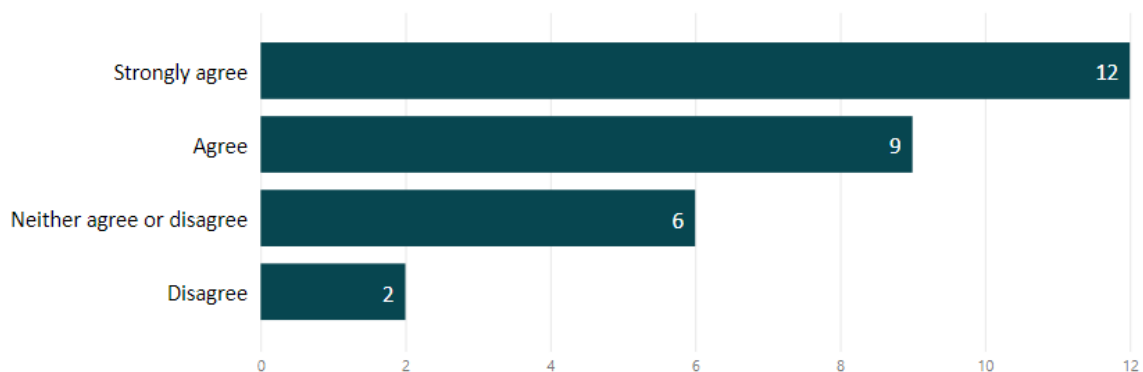


Figure 40 Question 30 : With reference to your experience, please indicate to what extent do you agree with the following statements (Respondents:29)

All survey respondents show a high interest in the transformative innovation policy: in fact, all respondents would be interested in participating in training and capacity building activities on this approach.

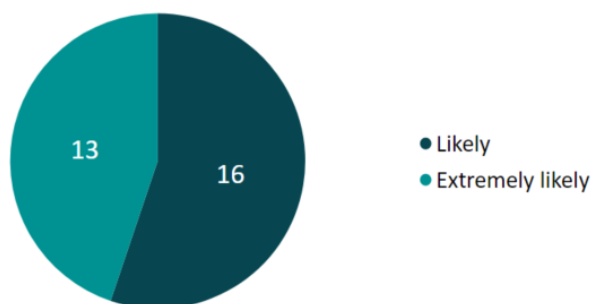


Figure 41 Question 31: How likely would you participate in training and capacity building activities on transformative innovation policy? (Respondent: 29)

## RIS3 measures for international collaboration and the Mediterranean dimension

The European regulations for the Programming Period 2021-2027 encourage all member states and regional administration to enhance cooperation with partners across the borders. The establishment of cooperation measures is one of the criteria to fulfill the enabling condition concerning “Good governance of national or regional smart specialization strategy”.

With reference to the transnational cooperation, the survey has investigated how this dimension was tackled in their RIS3 2014-2020. According to the replies, the majority of the RIS3 address the transnational cooperation in their RIS3 but in different ways: 11 territories are mentioning the transnational cooperation in general terms but without identifying specific implementation measures, 6 territories address it explicitly by identifying the measures/tools for the implementation and the specific priorities/trajectories referred to these actions. It's worth mentioning that 6 territories did not make any reference to the transnational approach in their RIS3 although promoting the participation to international projects and initiatives in other ways.



Figure 42 Question 32 : With reference to your RIS3 2014-2020, how has the transnational cooperation dimension been tackled? (Respondents :29)

Different initiatives and funding programmes have been used to promote international collaboration in synergy with the RIS3:

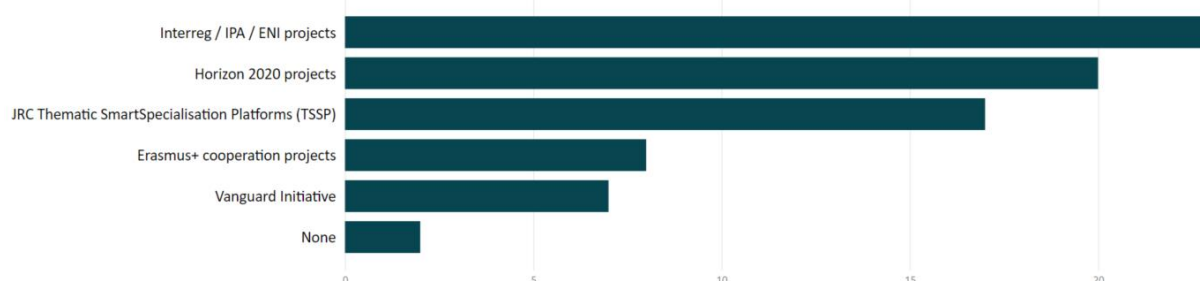


Figure 43 Question 33 : Have you/your Organisation used any of the following initiatives to promote international collaboration linked to the RIS3 2014-2020? (Multiple answers were allowed; respondent: 29)

The respondents have also listed some other initiatives used by their organization and excluded from the previous list. Among the many, the most quoted are ERA-NET Co-fund Collaborations with JRC & S3 Platform, Climate KIC, EIT Raw materials, EIT FOOD, blue bioeconomy, Joint Programming Initiatives for Healthy Seas and Oceans (JPI Oceans), Thematic Alliances and cluster initiatives such as the European Cluster Collaboration Platform.

When investigating only transnational cooperation initiatives linked to blue bioeconomy, 15 respondents state that their organization hasn't participated nor promoted any specific initiative linked to this sector.



Figure 44 Question 35: Focusing only on blue bioeconomy, have you/your Organisation promoted or participated in any specific transnational cooperation initiative/project linked with the RIS3? (Respondent:28). NA values were excluded from the analysis.

On the contrary, 12 organizations have been involved in some transnational cooperation initiatives related to blue bioeconomy, such as many Interreg programme projects (MISTRAL, BEST MED, FOCOMAR, ATLAZUL, BLUE MED, BLUE BIO MED, INNOVAMARE, B-BLUE, SMART ADRIA, BLUE BOOST, TRITON, GREENLAND...), some projects funded by the programme Horizon 2020, (ICT-BioChain for algal biomass project...) and the participation to specific initiatives organized by the Eusair Strategy.

Referring to the definition of the RIS3 2021-2027, 8 respondents already state that their organizations are planning to adopt a transnational approach to enhance the collaboration with partners across the borders.



Figure 45 Question 37: Referring now to the RIS3 2021-2027, does your Organisation plan to adopt any approach to enhance cooperation with partners across the borders? (Filtered question; Respondents: 14). NA values were excluded from the analysis.

## Mediterranean dimension

The survey aimed also to investigate the relevance of the Northern Mediterranean dimension within each RIS3 .

The Mediterranean basin plays a relevant role for all these territories :6 respondents state that the Mediterranean basin is one of the priority areas of their S3, 3 state that the Mediterranean basin is the main priority to enhance cooperation across the borders, and 1 state that their RIS3 international approach is focused on the Mediterranean sub basin dimension. On the contrary there are still 5 territories where the Mediterranean dimension is not among the priority areas for interregional cooperation (Lisboa e Vale do Tejo, . Valencia, Balearic Islands, Alentejo, Lombardy).

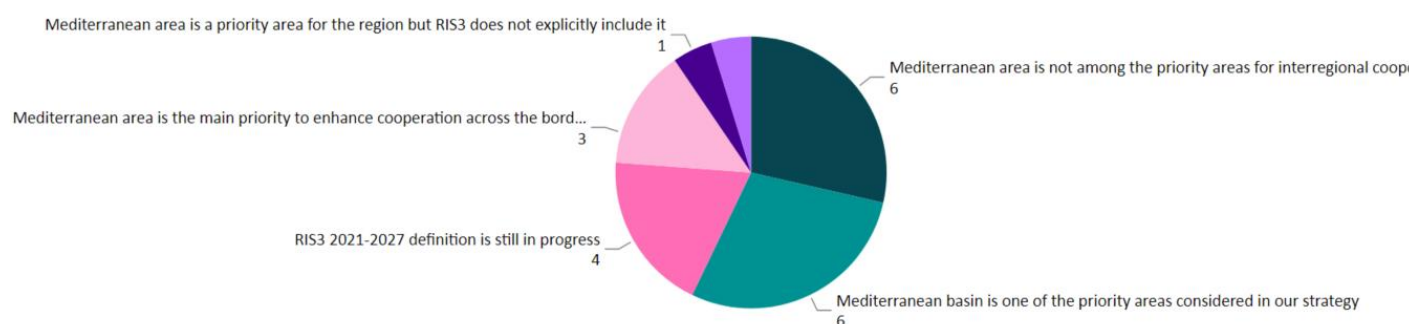


Figure 46 Question 38: If any, which is the role of the Mediterranean functional area within your RIS3 2021-2027 international collaboration approach? (Respondents: 23). NA values were excluded from the analysis.

Successful transnational collaborations start with the connection with solid partners and alliances. The main international stakeholders of the Mediterranean area that the respondents would like to address are above all Horizon Europe future partnership and missions, Bluemed initiative and collaborations with the JRC S3 thematic platforms.

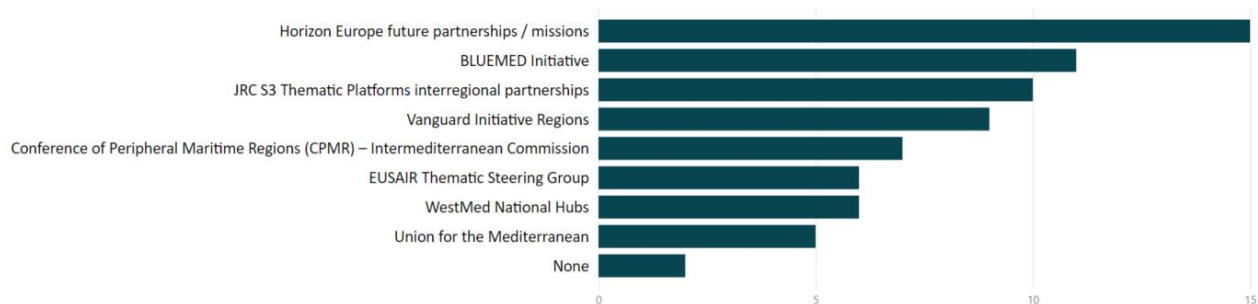


Figure 47 Question 39: Which are the main international stakeholders/players in the Mediterranean area that you would like to enhance cooperation with? (Multiple answers are allowed) (Respondents:19) (Filtered question)

## Role of SDGs within the innovation policies on blue bioeconomy

A recent report from JRC<sup>14</sup> highlights that the regional policy focus must be on transformative changes. Innovation must not blindly follow competitiveness logic but must respond to broader regional societal challenges and be an 'intermediate step towards the longer-term goals of fostering sustainability and inclusiveness.

The European Green Deal sets out the direction for the EU to become climate-neutral in 2050 and it is deeply linked to the **UN Sustainable Development Goals of the Agenda 2030**, which was adopted by all Member states in 2015. The Agenda provides a shared blueprint for peace and prosperity for people and the planet through the identification of 17 Sustainable Development Goals (SDGs) and 169 targets. The SDGs represents an urgent call for action by all countries in a global partnership to contribute to end poverty, improve health and education, reduce inequality and spur economic growth all while tackling climate change and preserving the oceans and the forests.

During the preparatory process that led to the Agenda 2030, the concept of the blue economy emerged as the proper application of the green economy to the oceans, seas and coastal countries. According to the Agenda 2030 approach, the blue economy should pursue the improvement of human well-being and social equality while significantly reducing environmental risks and ecological scarcities through the reduction of carbon emissions, improvement of resource efficiency and social inclusion. For this reason, the interconnectivity of social-economic development and environmental protection at the core of blue economy is perfectly aligned with the aims of the 2030 Agenda.

Taking into account its sustainability -oriented vision, the sectors and subsectors identified by the BLUE BIO MED project consistently align with several SDGs and targets as it is shown in the following table (Table 3). As expected, linkages between SDGs and BBM sectors cover all the three pillars identified in the Agenda (economic, social and environmental) and highlighting the multidimensional impact of blue economy.

Table 3 Linkages between SDGs and BBM sectors<sup>15</sup>.

Sectors	Goals
Fishery and Aquaculture	Goal 14 "Life Below Water"
	Goal 12 "Responsible Consumption and Production"
	Goal 9 "Industry, Innovation and Infrastructure",
	Goal 8 "Decent Work and Economic Growth"
	Goal 2 "Zero Hunger"

<sup>14</sup> McCann, P. and Soete, L., 2020, "Place-based innovation for sustainability", European Commission - Joint Research Centre. This report is the outcome of the expert group 'linking smart specialisation and mission-oriented policy for sustainable development'.

<sup>15</sup> For more information please see deliverable "Technology forecast and importance of SDGs in Blue Bioeconomy"

Blue Biotechnology	Goal 14 "Life Below Water"
	Goal 6 "Clean Water and Sanitation"
	Goal 3 "Good Health and Well-Being"
	Goal 9 "Industry, Innovation and Infrastructure"
Blue Sustainable Development	Goal 14 "Life Below Water"
	Goal 13 "Climate Action"
	Goal 15 "Life on land"
	Goal 3 "Good Health and Well-Being"
	Goal 9 "Industry, Innovation and Infrastructure"

## Smart Specialization Strategies and Sustainability

The deliverable has investigated the connection between smart specialisation strategies of the countries involved in the project and the SDGs. Overall, the European Union was deeply involved in shaping the Agenda 2030 and fully committed itself to its implementation through its internal and external policy. Specifically, the European Commission addresses sustainability both by integrating sustainable development in the European policy frameworks and Commission priorities and by making the SDGs the focus of territorial priorities<sup>16</sup>. In particular, Smart specialisation strategies could improve and support the identification of strategic priorities that based on sustainable development of the territory<sup>17</sup>. Due to their nature, RIS3 deeply linked with the aims of the SDGs which area "blueprint to achieve a better and more sustainable future for all"<sup>18</sup>. Up to date, over 120 smart specialisation strategies are being implemented across the EU and a growing number of regions are planning to develop their own S3 in the next future. Among them about 80% of the priorities included in the European RIS3 aligns with one or more SDGs, mainly on SDG 3 (Good health and well-being), SDGs 7 (Affordable and clean energy) and SDG 13 (Climate action). Looking at the blue dimension, the Goal 14 (Life below water) is not well represented among the European RIS3. However, as anticipated, the interconnectivity of the Goals is fundamental and, for this reason, the achievement of one goal has a strong positively influence on the others (Figure 48)<sup>15</sup>.

<sup>16</sup> Barbero Vignola, G., Acs, S., & Borchardt, S. (2020). Modelling for Sustainable Development Goals (SDGs): Overview of JRC models.

<sup>17</sup> Rakhmatullin, R., & Hegyi, F. B. (2021). *Exploring the potential of thematic Smart Specialisation Partnerships to contribute to SDGs* (No. JRC125210). Joint Research Centre (Seville site).

<sup>18</sup> [Take Action for the Sustainable Development Goals – United Nations Sustainable Development](#)

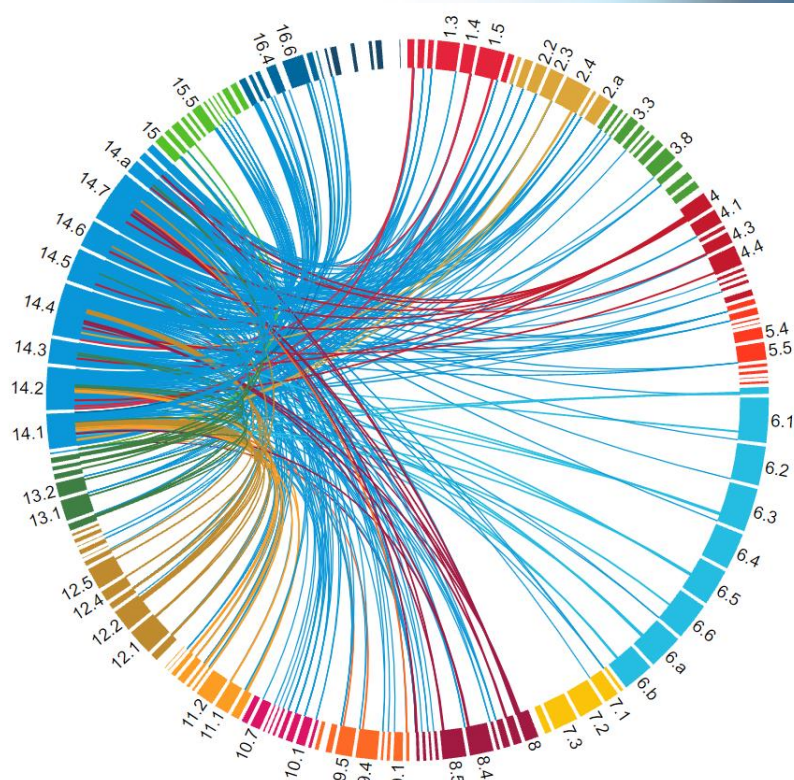


Figure 48 Interlinkages between SDG 14 “Life below waters” and all the other SDGs <sup>19</sup>.

### Programming period 2014-2020

When focusing on the territories involved in the project, all of them are somehow committed with SDG goals, although some of them include specific alignments with the Agenda 2030 in their RIS3 2014-2020.

Starting with the **regional dimension**, **Abruzzo**, **Apulia** and **Catalonia** have strongly aligned their RIS3 with the sustainable development vision of the Agenda.

In 2016, the **Abruzzo**<sup>20</sup> Regional Council published the “Pescara Charter”, an agreement signed between the Council and enterprises to boost sustainable industry practice encompassing environment, economy, and society. The Charter offers several advantages such as simplified procedures, reduction of administrative and local taxes and supporting legislation. Overall, it provides a concrete tool to drive the change towards achievement of SDGs 8 (Decent Work and Economic Growth) and 9 (Industry, Innovation and Infrastructure) starting with the Abruzzo’s RIS3.

The **Apulian**<sup>21</sup> S3 focuses on the social and environmental dimensions of sustainability. Since 2018, the region developed several activities for sustainability awareness in regional law and policies aligned with the SDGs such as support awareness of the Agenda 2030’s topics and

<sup>19</sup> <https://knowsdgs.jrc.ec.europa.eu/interlinkages-visualization>

<sup>20</sup> [S3 for SDGs in Abruzzo - Smart Specialisation Platform \(europa.eu\)](#)

<sup>21</sup> [S3 for SDGs in Puglia - Smart Specialisation Platform \(europa.eu\)](#)

new policy for the adoption of virtuous behaviour also at national level<sup>22</sup>. The main goals supported by the region are:

- SDG 2 (Zero hunger),
- SDG 3 (Good Health and Well-being),
- SDG 5 (Gender equality),
- SDG 7 (Affordable and clean energy),
- SDG 8 (Decent Work and Economic Growth),
- SDG 9 (Industry, Innovation and Infrastructure)
- SDG 11 (Sustainable cities and communities).

**Catalonia's**<sup>23</sup> RIS3CAT was based on 3 vectors that should enable Catalonia to tackle the current social and economic challenges. These are industrial tradition, quality of life and green economy or circular economy, which have been considered the baseline for a sustainable development. For this reason, the RIS3CAT shows strongly connection with the Agenda 2030 by joining traditional and technological research with current societal and regional challenges and focusing particularly on the following SDGs:

- SDG 3 (Good Health and Well-being)
- SDG 6 (Clean water and sanitation)
- SDG 7 (Affordable and clean energy)
- SDG 8 (Decent Work and Economic Growth)
- SDG 9 (Industry, Innovation and Infrastructure)
- SDG 11 (Sustainable cities and communities)
- SDG 12 (Responsible consumption and production)
- SDG 13 (Climate action)
- SDG 14 (Life below water)

Moving to the **country** level, **Croatia**, **Cyprus** and **Malta** reported strong connection with the Agenda 2030 in their RIS3 2014-2020 as well. By focusing mainly on the achievement of SDG 9, **Croatian**<sup>24</sup> S3 targets economic development through innovation, research development, innovation infrastructure and collaboration between business and research institution. To reach this purpose, the Croatian government adopted a transformation policy approach that boosts sustainable development in several sectors such as green transport, sustainable production, health and quality of life and security.

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<sup>22</sup> In October 2018, the Puglia Region presented to the Ministry of the Environment its expression of interest in the public notice concerning the implementation of the National Strategy for Sustainable Development, with particular reference to the processes of elaboration of the Regional Strategies for Sustainable Development, assisting the Italian Regions in the regional implementation of the objectives of Agenda 2030. On 21 December 2018, the Ministry and the Region signed the cooperation agreement. In the meanwhile, different sections of regional administrations and legislative bodies are developing seminal activities for sustainability awareness in regional laws and policies.

<sup>23</sup> [S3 for SDGs in Catalonia - Smart Specialisation Platform \(europa.eu\)](https://europa.eu)

<sup>24</sup> [S3 for SDGs in Croatia - Smart Specialisation Platform \(europa.eu\)](https://europa.eu)

The **Cypriot**<sup>25</sup> Smart Specialisation Strategy (S3CY) targets both directly and indirectly several SDGs:

- SDG 3. Good Health and Well-being
- SDG 4. Quality Education
- SDG 5. Gender equality
- SDG 7. Affordable and clean energy
- SDG 8. Decent Work and Economic Growth
- SDG 9. Industry, Innovation and Infrastructure
- SDG 11. Sustainable cities and communities
- SDG 12. Responsible consumption and production
- SDG 13. Climate action
- SDG 14. Life below water
- SDG 15. Life on land
- SDG 17. Partnerships for the goals areas.

The S3CY is implemented using an Action Plan that focuses on the sustainable development in different sphere, from social to environmental, using a long-term economic strategy that will guide the country toward the achievement of sustainable economic growth, enhancing resilience and competitiveness as well as the establishment of a socially and environmentally sustainable pattern for future growth.

Finally, **Malta**<sup>26</sup> shaped its Smart Specialisation Strategy based on the identification of economic niches where the country could have a competitive edge through investment in innovation. Specifically, the principle of sustainable development was considered cross-cutting and implicit throughout the process. The Smart Specialisation Strategy of Malta focuses on four main SDGs:

- SDG 3. Good Health and Well-being
- SDG 8. Decent Work and Economic Growth
- SDG 9. Industry, Innovation and Infrastructure
- SDG 11. Sustainable cities and communities
- SDG 11. Sustainable cities and communities

### ***Programming period 2021-2027***

The mission-oriented approach adopted by the European Green Deal and Horizon Europe, the COVID-19 crisis and the policy alignment with the United Nations (UN) Sustainable Development Goals (SDGs) imply a new directionality towards sustainability and inclusiveness in European innovation policies and in the planning of the RIS3 for the next programming period.

<sup>25</sup> [S3 for SDGs in Cyprus - Smart Specialisation Platform \(europa.eu\)](https://europa.eu)

<sup>26</sup> [S3 for SDGs in Malta - Smart Specialisation Platform \(europa.eu\)](https://europa.eu)

The evolution of the innovation policy approach from S3 to S4 implies a policy shift in the way regions may consider setting policy priorities to push technological innovation and their responses to regional societal challenges.

The chart below shows the shift from S3 to S4:

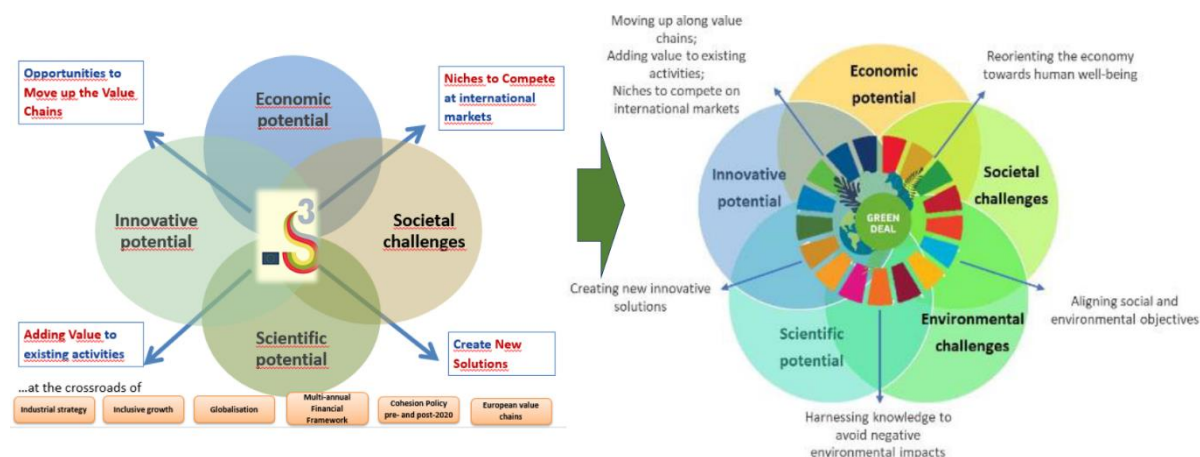


Figure 49 Presentation of Dr. Ales Gnamus at the 6th Adrion Forum, Izola, 11-12 May, 2021<sup>27</sup>.

The design and implementation of the S4 policy concept requires enhanced coordination from a multi-level governance perspective combining top-down directionalities with European initiatives such as the Green Deal, EU Industrial Strategy, and S3, and bottom-up processes with the Entrepreneurial Discovery Process (EDP).

It must be pointed out that S4 is a voluntary choice; it repositions Smart Specialisation in the new EU policy agenda (Next generation EU, Green Deal...) to use the unprecedented EU investment for local green jobs creation in the post-Covid recovery.

When looking at the Smart Specialisation Strategies for the programming period 2021-2027, 14 territories involved in the project reported several linkages with the upcoming RIS3 and the Agenda 2030 (Figure 26). They highlighted how specific alignments are both included in the overall vision and objectives and that the selection of the future projects will be aligned with SDGs (Figure 27). The survey answers suggest that the interest in a sustainable based policy is increasing in the MED territory and that a growing number of territories are focusing on the achievement of the SDGs.

Up to date, only few RIS3 2021-2027 are finalised but most of them include specific reference to the Agenda 2030 as highlighted in the survey. For example, the **Friuli-Venezia Giulia** (Italy) new RIS3 specifically included the Agenda 2030 within its vision aligning their 5 specialisation area with several SDGs focusing on a synergic approach for the achievement of a sustainable

<sup>27</sup> Gnamus, A., 2021, "Sustainable Smart Specialisation Strategies (S4) as the Enablers of Co-Creation of Innovative Green Circular Solutions", intervention at the 6th Forum of the EU Strategy for the Adriatic and Ionian Region.

development in line with the European Green Deal (for more information please see the Regional report of Friuli-Venezia Giulia, Annex).

Another example comes from the **Andalusia** region (Spain), the Governing Council of the Junta de Andalucía has approved the formulation of the Smart Specialisation Strategy for the sustainability of Andalusia, S4Andalucía 2021-2027 (for more information please see the Regional report of Andalusia, Annex).



## Conclusions

Developed on the basis of the latest available RIS3, this report has contributed to understand to what extent blue bioeconomy sectors are considered in the innovation policies of the countries placed in the northern shore of the Mediterranean Sea.

Quite surprisingly, data revealed that some territories do not consider any sector pertaining blue bioeconomy in the priorities of their RIS3, which concretely means that these territories are not openly committed to boost nor fund any R&D&I activities within the blue bioeconomy topics analysed by the project. On the contrary, the majority of the other mapped territories include more than one sector in their S3, most of all referred to blue biotechnologies and fishery and aquaculture.

Under the new Programming Period 2021-2027, sustainability is becoming a key issue in the upcoming Smart Specialisation Strategies, so much that a new specific definition was found to describe this commitment: “S4 - Sustainable Smart Specialisation Strategy”.

However, policy declarations of good intentions or the adoption of Sustainable Smart Specialisation Strategy for the new Programming Period are not a guarantee of real and effective commitment of each administration towards sustainability.

Adding the “sustainability” dimension to each RIS3 means considering innovation no longer as a mean to foster economic growth on selected priorities/trajectories but also to achieve competitive sustainability, which means also harnessing the potential of technological innovation to contribute to sustainability.

Following this approach, achieving a sustainable dimension for fishery and aquaculture, blue biotechnologies and blue sustainable development means promoting and funding only R&D&I activities referred to innovative green technologies, solutions, processes and services that ensure social and environmental sustainability, as stated in the SDG 14 (*Life below water*).

Being the definition of most of the new S3 still underway, the present time is the most proper one to stress the strategic importance of blue bioeconomy for the Mediterranean territories and to request for public funding schemes strongly oriented towards maximising the potential of science and technology to meet the most pressing sustainable development challenges pertaining the blue bioeconomy sectors.