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The strategy for the Adriatic-Ionian Region and UE Research and Innovation strategies: actual integration and potential synergies

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"How could I not thank my traveling companions…? You were my guides, my friends, my supports along the way. And not only that: you also illuminated my heart with your friendship and your courage. I will never forget what we have shared."

J.R.R. Tolkien

Introduction

Object

This research aims to provide a first assessment of the potential synergies and effective integration between the EU macroregional strategy (MRS) for the Adriatic–Ionian region (EUSAIR) and the EU research and innovation strategies. Among these, specific attention is given to the Smart Specialisation strategy (S3), which represents the core of the EU regional innovation policies.

The EU MRS emerged over the past two decades to tackle common challenges and opportunities in order to strengthen cooperation and help achieve economic and social development among EU members and third countries (Camagni et al., 2018; Fedeli et al., 2020; Solly & Berisha, 2021).

EUSAIR is one of the four current MRS[1]. It was launched in 2014 to promote sustainable economic and social prosperity in the region through growth and job creation by improving its attractiveness, competitiveness, and connectivity, while preserving the environment and ensuring healthy and balanced marine and coastal ecosystems[2]. The strategy is founded on four thematic priorities (pillars) representing key challenges as well as key opportunities in the region: Blue Growth, Connecting the Region, Environmental Quality, and Sustainable Tourism. Innovation represents a cross-cutting aspect of all four pillars.

Underlying the MRS is the so-called "three No's" principle, i.e., that the strategy should be implemented with no new institutions, no new EU legislation, and no new EU funding. As the "three No's" play a key role in MRS, the relations between MRS and innovation policies (strategies and programmes) are particularly relevant for two reasons:

- these instruments have the same broad aims, i.e., fostering economic growth and territorial development.
- MRS do not have dedicated programmes or funds and depend on existing programmes to achieve their goals.

The European Structural and Investment Funds (ESIF) represent both one of the main instruments used to achieve macroregional goals (Liakopoulos, 2018) and the main financial support for investment in research and innovation. The EU programming period 2014–2020, saw the introduction of S3, which brought changes to the allocation of research and innovation funding.

S3 represented an innovative approach that aims to boost growth and jobs, by enabling a region to identify and develop its own competitive advantages. It was the key feature of a reformed cohesion policy (Radosevic, 2017). Indeed, in the 2014–2020 programming period, it was a necessary condition (ex-ante conditionality)[3] for the allocation of the ESIF and in particular the European Regional Development Fund (ERDF) under Thematic Objective 1 (TO1 - research and innovation). S3 has required regions and countries, inter alia, to choose specific areas (priorities) on which to focus financial resources for research and innovation[4].

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1 Currently, the following macroregional strategies have been set up: the EU Strategy for the Baltic Sea Region (EUSBSR) in 2009; EU Strategy for the Danube Region (EUSDR) in 2011; EU Strategy for the Adriatic–Ionian Region (EUSAIR) in 2014; and EU Strategy for the Alpine Region (EUSALP) in 2015.

2 COM (2014) 357 final, 17.6.2014.

3 Regulation (EU) 1301/2021.

4 Articles 179 to 190 of the Treaty on the Functioning of the European Union (TFEU) regulate the Union's research and technological development (RTD). Article 173 sets out the objective of creating optimal conditions for competitiveness.

Shaping both innovation and regional development policies of the EU, the ERDF goes well beyond national research and development (R&D) budgets and strongly influences innovation policies by determining research priorities, organisation, evaluation methods and funding models (Švarc & Dabić, 2021).
Cooperation with other regions was explicitly mentioned in the "S3 guide", the general orientation document conceived by the European Commission (EC) as a methodological guidance to draft and implement S3 at the national or regional level, as one of the elements to be considered when choosing specialisation priorities (Foray, Goddard, Beldarrain, et al., 2012).
The collaboration and knowledge sharing between regions or countries represent the "outward-looking dimension" of S3. An outward-looking approach involves identifying opportunities for international cooperation, including partnerships with other regions and countries. The goal is to use international cooperation and networks to support regional development and to recognize the importance of global connectivity.
In analysing the EUSAIR macro-region, which aims to promote sustainable economic and social prosperity, S3 becomes an interesting tool for development. The transformative approach of the S3 has significant potential to speed up the innovation system's transformation and promote economic growth. This is particularly relevant in less developed regions. Meeting the conditions for potential EU accession is also of great relevance (Radosevic & Ciampi Stancova, 2018; Radosevic & Stancova, 2015). The outward-looking dimension has been also acknowledged for the current 2021–2027 programming period, in which measures for enhancing cooperation with partners outside a given Member State represent a criterion to be fulfilled as one of the enabling conditions to support 2021–2027 regional S3 strategies (EU Commission, 2020). In this context, EUSAIR could represent a well-established framework for promoting inter-regional cooperation in research and innovation in order to "access the latest knowledge and the best talent worldwide, tackle global societal challenges more effectively, create business opportunities in new and emerging markets, and use science diplomacy as an influential instrument of external policy"[5].

Research gaps

While the concept of S3 has been widely studied, the scientific literature, except for a few exceptions (Uyarra et al., 2014, 2018; Weidenfeld et al., 2021; Woolford et al., 2021) has paid less attention to the outward dimension of S3, as well as the potential value of inter-regional collaborations and the role of the macro-regional dimension (Chilla & Streifeneder, 2018).
In the context of S3, the capacity to generate radical innovation implies then the concept of "related variety" (Frenken et al. 2007). In order to develop learning and exchange skills between different industries, it is necessary to have a degree of variety so that companies are neither too different, in which case they would not have the possibility of mutual learning due to the lack of a "common" language, nor too similar, in which case they would have almost nothing to exchange and learn from one another (Boschma, 2005; Boschma & Iammarino, 2009; D'Adda et al., 2020)
The identification of synergies between technological domains within the same region (relatedness) and potential links of chosen domains with other European regions (connectivity) play a key role in facilitating knowledge exchange and promoting regional development (Asheim et al., 2019; Balland et al., 2015; D'Adda et al., 2020; Iacobucci & Guzzini, 2016; Miguélez & Moreno, 2011)Fine modulo

[5] https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/europe-world/international-cooperation_en.

Despite the growing recognition of the outward-looking dimension, in an increasingly interconnected world, empirical evidence shows little active inter-regional cooperation in S3 (Weidenfeld et al., 2021; D'Adda et al., 2021). Furthermore, from a theoretical perspective, it is not clear what the specific objectives of interregional cooperation are and how they can be effectively implemented. The rationale for introducing interregional relationships in regional innovation policies – for instance, whether they aim to pool and mobilise resources around common themes or to acquire new knowledge or to avoid lock-ins deserves further investigation (D'Adda et al., 2019; Sebestyén & Varga, 2019; Weidenfeld et al., 2021).

This thesis aims to fill this gap by exploring the overlapping and actual integration between MRS and innovation strategies, analysing both their theoretical justifications and the empirical evidence arising from the 2014–2020 and 2021–2027 European Cohesion Policy programming periods.

The thesis also highlights two other particularly important points. From one hand, the MRS pioneered a unique kind of cooperation among EU member states and neighbouring third countries in the Adriatic and Ionian Region, based on the idea that common challenges facing neighbouring regions are best tackled together. EUSAIR differs from the other MRSs in that it aims to contribute to the pacification process in the Western Balkans and to support candidate or potential candidate countries for EU membership. On the other hand, looking at the outward dimension of S3 raises the question of whether the macro-regional size can be the suitable geographical size to develop interregional relations.

Data and Methodology

This thesis provides a review of the literature on macro-regional strategies and innovation policies in the EU specifically highlighting interregional collaboration in research and innovation.

The research was based on a variety of sources, such as academic papers, policy reports, and publications from the European Commission (EC).

The quantitative analysis about S3 refers to 35 territorial entities (including the national strategy from Greece). These include North Macedonia, which started its smart specialisation process in March 2018, as well as twelve Italian regions and two Italian autonomous provinces: Trento and Bolzano.

The empirical part of the study relies on two methodological approaches.

On the one hand, it is based on the text-analysis of policy documents at regional and national levels.

On the other hand, it uses available data based on innovation projects sustained by EU funds such Eye Ris3, ESPON, OECD.

The text-analysis is based on the S3 documents approved by the EUSAIR regions and on data on projects funded during the 2014-2020 and 2021-2027 Cohesion policy programming periods.

The overlapping between S3 and EUSAIR priorities is then analysed by considering the projects actually financed by ERDF funds. This analysis is carried out using the OpenCoesione database, which provides information on actual projects financed under ERDF-TO1. These data are available only on Italian regions[6]. Projects related to EUSAIR priorities are identified based on each individual project's title and description using content analysis techniques.

The text analysis referring to the 2021 – 2027 programming period, examines the extent to which the EUSAIR strategy is mentioned by regional documents in the context of the interregional cooperation measures of the S3. In this same perspective, reference was made to individual territorial cooperation projects (ETC), already established transnational networks, participation in other MRS.

[6] https://opencoesione.gov.it/it/

Besides S3 strategy, the empirical analysis considers two EU direct funding programmes supporting inter-regional collaboration in innovation considering the MRS dimension: namely Horizon and Interreg Adrion.
Horizon represents the Framework Programme for Research and Innovation of the European Union that "By improving conditions and access to finance for research and innovation in Europe, it can ensure that innovative ideas can be turned into products and services that create growth and jobs"[7].
Interreg is the framework programme form European Territorial cohesion between regions in and out of the European Union.
To collect the data, the information available from the programme's web pages and the CORDIS and KEEP databases were used.

Results

MRS could represent an ideal setting for promoting interregional collaborations thanks to geographical proximity and the need to address common challenges. These challenges were identified with a place-based approach involving both local stakeholders as well as regional and national authorities and with the great support of the EC, particularly in non-EU EUSAIR countries.
During 2014-2020, the European Union invested more than 125 billions of Euro to support research and innovation through two main channels: the Cohesion policy and the excellence-based Horizon 2020 programme implemented through the European Regional Development Fund (ERDF).
Taking these considerations into account, the research entailed a considerable mainstreaming first and foremost between the priorities identified by S3 and the EUSAIR pillars.
The overlap between S3 specialisation areas and EUSAIR pillars was detected in only about a quarter of the specialisation areas that regions and countries selected in their S3 documents. The matching percentage is similar for EU and non-EU countries and regions. For the Italian regions, the empirical analysis, based on OpenCoesione database, confirmed that only a few regions allocated a significant share of funds to EUSAIR topics. Specifically, several regions allocated funds to the fourth pillar, sustainable tourism, while topics related to blue growth generally were neglected, except for a few regions.
For the period 2021-2027, the research examined the S3 documents approved by the Italian regions. Contrary to what expected, most recently Regulation (EU) 2021/1058[8] suggests considering the MRS dimension in the regional S3 measures for enhancing cooperation, EUSAIR is mentioned only in six out of fourteen regions.
Also, the analysis of the overlapping of Horizon 2020-funded projects with the EUSAIR pillars is modest and related to the first and the third pillars: blue growth, and the environmental quality (2.25% and 1.99%). Interreg - Adrion covers quite the same area than EUSAIR, the overlapping has been observed on "sustainable regions" issues related to the third pillar, but the very characteristics of the programme envisaged lower budget projects compared to the Horizon.
Among the results, the thesis allowed the identification and discussion of some issues which are of more general significance than the relations between S3 and MRS.

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7 European Commission: Innovation Union. A pocket guide on a Europe 2020 initiative, Publications Office of the European Union, Luxembourg 2013, p. 8.

8 Regulation (EU) 2021/1058 of the European Parliament and of the Council of 24 June 2021 on the European Regional Development Fund and on the Cohesion Fund.

S3 was conceived as a place-based policy, but since its transposition into cohesion policy in 2014-2020 it acquired an outward-looking dimension and become one of the "enabling" criteria that national and local authorities are required to meet in the 2021-2027 programming period.
These findings suggest the need for better integration of regional innovation and macro-regional strategies to achieve macro-regional development goals. There are two main ways for a better integration between S3 and EUSAIR. The first is the ex-ante alignment of S3 to EUSAIR priorities. The second way is through the ex-post exploitation of the opportunities arising from common research and innovation priorities. This would require the active involvement of relevant stakeholders as well as regional and national authorities. As the empirical evidence about the embedding of EUSAIR pillars in the S3 documents approved by regional and national government in not very encouraging about the alignment of S3 priorities to EUSAIR pillars. This means that the integration between the two strategies must primarily rely on the ex-post activism or relevant stakeholders to exploit the many programmes and tools available.
When considering the potential integration between the two strategies, several additional issues should be considered.
First, S3 was conceived before the 2008/2009 crisis, but implemented in a completely different context. In the 2021-2027 programming period, the S3 logic seems to have encountered further obstacles in its implementation, given the post-COVID-19 context and the unstable geopolitical situation. In this respect, regional authorities probably adopted a less innovative approach in updating S3 approaches with a strong connotation to the in-ward looking dimension of each region.
Secondly, new policy priorities have emerged in the last two decades, the Agenda 2030 and the adoption of the EU Green Deal (and related missions) called regional authorities to review their S3 in the light of the EU Sustainable Development Goals. The cohesion Policy 2021-2027 added new criteria (youth unemployment, low education level, climate change, and the reception and integration of migrants) in the allocation method for the funds largely based on GDP per capita. The EC coined the "S4 - Smart Specialisation Strategies for Sustainability with a strong sensitivity to inclusiveness".
Thirdly, in the new EC guidelines, the thematic areas defined from the pillars of the next generation EU shift the focus on concept as resilience at the local level, the autonomy of supply chains rather than the circular economy, rather than energy efficiency and self-sufficiency. In this framework the outward dimension changed, i.e. looking to encourage the circular economy they need to find which other areas to collaborate to "close the circle" or identified to which kind of relation in the management of the supply chains[9].

Outlook

This thesis is organised as follows.
The Chapter 1 explores of the concept of "region" then provides an overview of the MRS And EUSAIR rationale and characteristics.
Chapter 2 introduces the S3 and then provide an analysis on the actual integration of EUSAIR and S3 in 2014-2020 programming period it also describes the methodology and used data. Then, based on S3 documents by the Italian EUSAIR regions, the mismatch is highlighted for the 2021-2027 programming period. The chapter conclude providing results about the actual integration of EUSAIR with Horizon and Interreg Adrion.

[9] van Leeuwen, E. (2012), Growth and innovation of competitive regions: The role of internal and external connections – by U. Fratesi and L. Senn. Papers in Regional Science, 91: 233-234. https://doi.org/10.1111/j.1435-5957.2011.00410.x

Chapter 3 presents an overview of the main considerations and instruments to promote the integration between S3 and EUSAIR with reference to the complex architecture of both the strategies and the funding can be used to financing EUSAIR topics. In also highlight the main considerations on the theoretical basis of the outward looking dimension on S3 on the light of the previous analysis conducted.
Chapter 4 presents some tools the EU put in place to support interregional relation in R&I and the flagship projects that have been selected within EUSAIR as best prominent interregional actions to be eventually financed.
Chapter 5 highlights the conclusion of the research summarising the main findings and implications. It includes recommendations for future research based on the results obtained. It also shows the limitations of research and some policy implications.

1. EU macro-regional strategies

The chapter is structured as follows.
The first section presents a summary of the main steps that led to the recognition of the regional dimension in the European architecture.
The second section explores the concept of the EU macro-region, highlighting its characteristics and objectives.
The third focuses on the European Strategy for the Adriatic-Ionian macro-region (EUSAIR), which represents the geographical reference framework for the entire research analysis.

1.1 The rise of Europe's regions and macro-regions

In the first phase of the EU experience, the European Communities were completely indifferent to the regional and local institutional dimension of the Member States. Communities were suffering from a kind of "blindness" towards the Regions[10] and the Sub-State bodies in general. Participation in the European Communities was part of the process of internationalisation of the state[11]. The notion of "region" was something ambiguous that swayed between the reference to territorial or non-territorial constituencies, characterised by commonality of economic, social, or geographical characteristics, and the reference to local communities not better specified. The "region" tended to be explained only in the light of the functional concept that characterised the integration process and therefore, often far from coinciding with the level of internal government of the Member State, it ended up being summarized in a socio-economic fact (D'Atena, 2013). Gradually, the UE has come to embrace a broader notion of a State, including – albeit in a limited way – sub-state entities in a so-called "multilevel governance" system. Turning points are represented by the Integrated Mediterranean programmes (IMPs)[12], and above all with the adoption of the Maastricht Treaty (1992)[13], establishing the Committee of the Regions, the principle of subsidiarity and the possibility to include territorial representatives in delegations representing the Member State in the Council of Ministers. "Regions" found a place within the institutional architecture of the European Union as an emerging "third level"[14], the so-called "Europe of the Regions" (Belloni, 2019).
The 2009 Lisbon Treaty[15] then, introduced the territorial cohesion dimension to the already existing economic and social cohesion paying particular attention on reducing disparities between the level of development of the various regions and the backwardness of the least favoured ones (i.e. rural

[10] From the German expression Landesblindheit, first used by Hans Peter Ipsen in 1966. Martinico, G. The Impact of the Cohesion Policies on the "Form of Union" (August 14, 2009). Perspectives on Federalism, Vol. 1, Single Issue, 2009.

[11] The European Community was the collective name given to the European Coal and Steel Community (CECA) , the European Economic Community (EEC) and the European Atomic Energy Community (Euratom).

[12] Council Regulation (EEC) No 2088/85

[13] The Maastricht Treaty or Treaty on the European Union (TUE), in G.U.R.I. of 29 July 1992, C 191, was signed on 7 February 1992, by the 12 member countries of the then European Community, now the European Union, and came into force on 1 November 1993.

[13] The Advisory Council of Regional and Local Communities was founded in 1984 at the urging of the European Parliament, which expressed a resolution on the role of the regions in the construction of a democratic Europe (Resolution of 23 April 1984): following the resolution, the Commission promoted the creation of the Council with the decision of 24 June 1988, n.88/487/CEE.

[14] Odone Cecilia, The participation of the regions in the ascending phase, in the ascending phase of European Union law - regional perspectives, Eurofocus nr. 13, 2009 in http://www.consiglio.regionale.piemonte.it.

[15] Treaty on the Functioning of the European Union (OJ C 306, 17.12.2007); entry into force on 1 December 2009.

areas, areas affected by industrial transition, and regions which suffer from severe and permanent natural or demographic handicaps such as the northernmost regions with very low population density and island, cross-border and mountain regions).
From that moment on the EU has the legal basis for establishing new political instruments contributing to the implementation of the European and regional cohesion policy as well as both re-interpret multilevel governance and subsidiarity (Liakopoulos, 2018) competitiveness and social and environmental objectives (Soete, 2007).
Research and innovation became at the heart of the Europe 2020 Strategy for increasing the effectiveness and efficiency of Europe's growth[16]. The EC then identified the Macro-regional strategies (MRS) as a political-territorial model that "can further deepen the EU integration and are able to reach the objectives of the Cohesion policy 2014-2020", designed to mobilise new projects and initiatives and to provide a coordinated response to issues which are better dealt with together than apart, creating a sense of shared responsibility (Panaitescu, 2016).

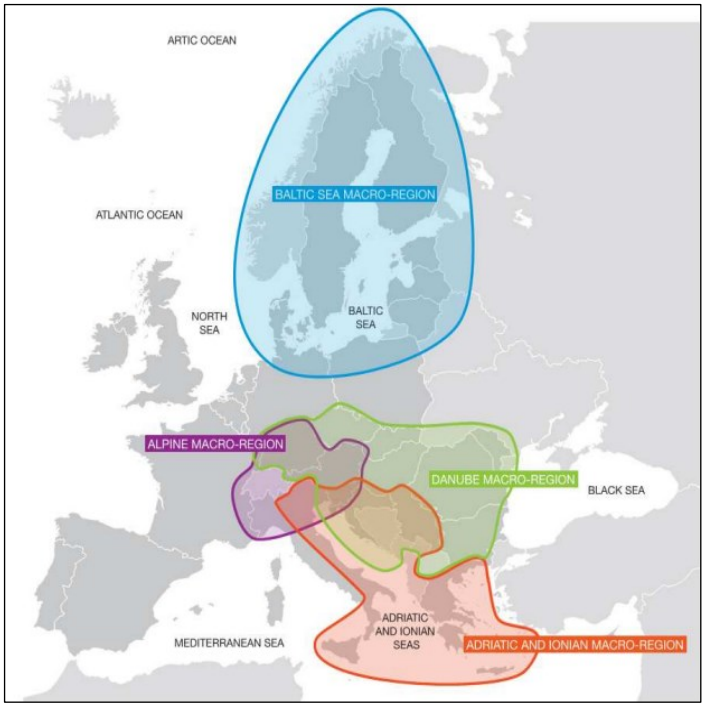
1.2 EU macro-regional strategies

The term macro-region was first defined by Pawel Samecki, the Interim EU Commissioner for Regional Policy in 2009[17]. Because of the Eastern enlargement of 2004, the macro-regional concept arose from a wish for a collective response to environmental deterioration of the Baltic Sea basin, and for a concerted action on the challenges and opportunities of that region. This attempt encouraged participants to overcome not only national borders, but also barriers to think more strategically and imaginatively about the opportunities available, to mobilise new projects and initiatives, creating a sense of shared responsibility[18]. According to the EC the overall objective was a coordinated response to issues better handled together than separately to overcome obstacles holding up development and unlock the potential of that region. Consequently the "macro-region" has been conceived as "an area including territory from a number of different countries or regions associated with one or more common features or challenges"[19]. In relation to these areas, a macro-regional strategy refers to a "policy frameworks initiated by EU and non-EU countries located in a defined geographical area to jointly address challenges and opportunities they have in common through setting shared, long-term objectives"[20].
The literature defined EU Macro-Regional Strategies (MRSs) as a sort of hybrid between territorial and functional regions (Gänzle & Kern, 2016). They are a multilevel governance instrument in the "middle" as territorial region between "defined by political and administrative territories and functional space (s)" and "defined by functional relations", "between multi-functional institutions competences and responsibilities clearly defined" and "task-specific institutions" between "governance traditional forms of regional governance and new forms of regional governance such as

16 Communication (COM (2010) 2020 final) – Europe 2020: A strategy for smart, sustainable, and inclusive growth
17 Samecki, P. (2009), "Macro-regional strategies in the European Union", A discussion paper presented in Stockholm, Brussels, September 18, 2009.
18 European Commission. (2011), Report from the Commission on the implementation of the EU Strategy for the Baltic Sea Region (EUSBSR), COM (2011) 381 Final, Brussels, 22.6.2011.
19 European Commission. (2009). European Union Strategy for the Baltic Sea Region. COM (2009) 248 Final. Brussels, 10.6.2009.
20 COM (2020) 578 final

public–private partnerships, Intermunicipal and interregional cooperation" - within and beyond national states - (Cugusi & Stocchiero, 2016; Dubois & Hedin, 2009; Sielker & Rauhut, 2018).
The approach that resulted represented an innovative type of territorial cooperation among regions, open to non-EU countries, align with the EU's goals of inclusive and sustainable development (Panaitescu, 2016; Schuh et al., 2015) as well as an important innovation within the Cohesion Policy and European Territorial Cooperation (ETC) (Gänzle, 2018).
So far, four MRSs have been designed for regions in the Baltic area (EUSBSR), along the Danube (EUSDR), around the Adriatic and Ionian Seas (EUSAIR) and in the Alpine area (EUSALP), respectively approved in 2009, 2011, 2014 and in 2015.
Following the principles of place-based approach policy in functional regions, the physical boundaries of a macro-regions may vary according to the relevance of the policy area in question.
Some of the areas involved in certain macro-regions overlap with two or more EU macro-regions. For example, some areas of Slovenia and Italy are both parts of the EUSALP as well as the EUSAIR, while Slovenia, Bosnia and Herzegovina, Montenegro, and Serbia, involved in the EUSAIR, are also part of the EUSDR. The case of Slovenia is rather emblematic in this sense since it is part of three EU macro-regions (i.e. EUSALP, EUSDR and EUSAIR).

Figure 1 – EU macroregional strategies



Source: European commission

Each objective relates to a wide range of policies and cross-cutting priorities impact on the other objectives. While these priorities are shaped according to the specific challenges and opportunities of the proper regions, all four MRS have three main, broad, interconnected priorities in common: environment and climate change; research & innovation and economic development; and connectivity (transport, energy, digital networks)[21].

[21] COM (2020) 578 final. Third Report on the implementation of EU macro-regional strategies.

At EU level, the legal basis for MRSs is recognized in the text of the regulation COM (2011) 615 Final. According to, a "Macroregional strategy" is an integrated framework endorsed by the European Council, which may be supported by the European Structural and Investment Funds among others, to address common challenges faced by a defined geographical area relating to Member States and third countries located in the same geographical area which thereby benefit from strengthened cooperation contributing to achievement of economic, social, and territorial cohesion[22].

[22] COM (2011) 615 Final. Proposal for Common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund

Table 1 – EU Macroregions

EU Macroregions	Year	Territories involved	Main objectives*
Strategy for the Baltic Sea Region (EUSBSR)	2009	8 EU Member States Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden. Neighbouring Countries: Iceland, Norway. Cooperation with Belarus and Russia suspended from March 2022	1. Saving the sea, 2. Connecting the region, 3. Increasing prosperity
Strategy for the Danube Region (EUSDR)	2011	14 countries of which: 9 EU Member States Austria, Bulgaria, Croatia, Czech Republic, parts of Germany, Hungary, Romania, Slovakia, Slovenia, 3 Accession Countries: Bosnia and Herzegovina, Montenegro, Serbia 2 Neighbouring Countries: Moldova, parts of Ukraine.	1. Connecting the region 2. Protecting the environment 3. Building prosperity 4. Strengthening the region
Strategy for the Adriatic and Ionian Region (EUSAIR)	2014	10 countries of which 4 EU Member States: Croatia, Greece, Italy, Slovenia 5 Accession Countries: Albania, Bosnia and Herzegovina, Montenegro, North Macedonia Serbia 1 Neighbouring Country San Marino	1. Blue Growth 2. Connecting the Region 3. Environmental Quality 4. Sustainable Tourism
Strategy for Alpine Region (EUSALP)	2015	7 countries of which: 5 EU member states: Austria, France, Germany, Italy, Slovenia 2 Neighbouring Countries Liechtenstein, and Switzerland.	1. Economic Growth and Innovation, 2. Mobility and Connectivity, 3. Environment and Energy

*Which represents the key challenges of each Strategy

Source: Author elaboration based on EC.

This definition indicates three crucial components characterising a European MRS:

1. an integrated framework relating to member states and third countries in the same geographical area,
2. the ability to address common challenges,
3. the possibility to benefit from strengthened cooperation for economic, social, and territorial cohesion (European Commission, 2015).

Besides, the concept also incorporates principles of:

- integration – objectives should be embedded in existing policy frameworks (EU, regional, national, local, pre-accession), programmes (EU, country-specific, territorial cooperation, sectorial), and financial instruments,
- coordination – policies, strategies and funding resources should avoid fragmentation, whether between sectorial policies, actors, or different tiers of government,

- cooperation – countries should cooperate, and sectors also, across the region, changing the "mind-set" from inward to outward-looking regional development ideas,
- multi-level governance – different levels of policymakers should work better together, without creating new tiers of decision-making,
- partnership – EU and non-EU countries can work together based on mutual interest and respect[23].

According to the above considerations, the core of all four strategies can be resumed in enhancing complementarities and synergies among regions, with a bottom-up regional policy design across the many countries involved (COWI, 2017).

The EUSBSR is the most mature MRS where participation by sub-national authorities has been formalized since 1993[24]. There are issues of cultural proximity and historical relations but also the fact that after the enlargement of the EU in 2004, the Baltic Sea has also become almost entirely part of the territory of the EU, making the Baltic Sea basin one of the main challenges and opportunities of the area. Stand in contrast to the three other EU macro-regional strategies the EUSBSR it is primarily conceived as an in-ward looking EU strategy (Gänzle & Kern, 2016). The "partner countries", such as Iceland and Norway, but also the Russian Federation, have remained loosely "associated" via the frame of the Economic Area Agreement (EEA) and the Northern Dimension (ND) (Bengtsson, 2009; Makarychev & Sergunin, 2017; Gänzle, 2018).

The "three no's" principle plays a key role for all the MRS, so they do not come with new EU funds, legislation or formal institution but rely on coordination and synergy. This means optimal use of all existing financial sources (EU, national, regional, private, etc.), better implementation of existing legislation, and better use of existing institutions at all levels[25].

1.3 EU Strategy for the Adriatic-Ionian Region (EUSAIR)

The Adriatic-Ionian macro-region is part of the European Union Strategy for the Adriatic and Ionian Region (EUSAIR). EUSAIR incorporates the Maritime Strategy for the Adriatic and Ionian Seas[26] and builds upon the Adriatic-Ionian Initiative (AII) established in 2000, in order to "strengthening regional cooperation helps to promote political and economic stability, thus creating a solid base for the process of European integration"[27].

Adopted by the EC and endorsed by the European Council in 2014 it refers to the lessons learnt and experienced from the EU Strategy for the Baltic Sea Region and the EU Strategy for the Danube Region[28].

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23 COM (2013) 0468 Final. Report from the Commission to the European Parliament, the Council, the European Economic and social Committee and the Committee and the Committee of the Regions concerning the added value of macro-regional strategies.

24 Baltic City Union and the Baltic Sea State Sub-Regional Cooperation (BSSSC)

25 COM (2014) 284 final, on the governance of macro-regional strategies.

26 A Maritime Strategy for the Adriatic and Ionian Seas. COM (2912)713, Bruxelles.

27 Ancona Declaration (2000) Adopted at the conference on development and security in the Adriatic and Ionian (Ancona, 19- 20 May 2000)

28 http://www.adriatic-ionian.eu/about

Figure 2 – EUSAIR countries and regions

Source: EC COM (2022) 44 final

Mainly defined by the Adriatic and Ionian Seas, the EUSAIR covers an area of 70 million inhabitants, nearly 14% of the EU population, from ten different countries. Of these, four countries (Croatia, Greece, Italy, and Slovenia) are members of the European Union, and the other five are candidate countries or potential candidates (Albania, Bosnia and Herzegovina, Montenegro, North Macedonia and Serbia). In 2022 San Marino joined the EUSAIR.

The participation of each country includes in its whole territory, except for Italy, which involves 12 regions and 2 provinces[29].

[29] Trentino-Alto Adige/Südtirol is an autonomous region, with most administrative powers transferred from the region to the two autonomous provinces of Trento and Bolzano.

Table 2 – Italian regions in EUSAIR

Italian Regions belong to EUSAIR	Population (2021)	Area (km²)
Abruzzo	1'281'012	10'831
Basilicata	545'130	10'073
Calabria	1'860'601	15'221
Emilia-Romagna	4'438'937	22'444
Friuli-Venezia Giulia	1'201'510	7'932
Lombardia	9'981'554	23'863
Marche	1'498'236	9'401
Molise	294'294	4'460
Puglia	3'933'777	19'540
Sicilia	4'833'705	25'832
Trento	541'098	6'000
Bolzano	531'178	7'399
Umbria	865'452	8'464
Veneto	4'869'830	18'345

Source: Istat 2021

Specifically, aiming at promoting the economic and social well-being of the area, the EUSAIR main goal will be reached through growth and job creation, improving its attractiveness, competitiveness, and connectivity, while preserving its environment and ensuring healthy and balanced marine and coastal ecosystems, accompanied by the promotion of the integration of the Balkan territories with EU policies[30].

The Strategy has been implemented with an Action Plan[31] that includes a list of priorities. It was revised and updated in 2020 (May 2020), adapting to new changing contexts.

Now, as then, the Action Plan is one of the outputs of the Strategy approach emerged after a bottom-up consultation process that involved a wide range of stakeholders from the Adriatic-Ionian Region representing national, regional, and local authorities, but also the private sector, academia, and civil society. It is conceived to be rolling so that new actions may be added as needs change over time, while existing actions are adapted as they move closer to completion.

According to the Action Plan, four priorities representing key challenges as well as key opportunities in the region, have been identified in the so-called Pillars:

- Blue growth,
- Connecting the Region,
- Environmental quality,
- Sustainable tourism.

It also identified two cross-cutting aspects (capacity-building and research and innovation - R&I) and two horizontal principles for all four pillars (climate change mitigation/adaptation and disaster risk

[30] Communication concerning the European Union Strategy for the Adriatic and Ionian Region - 17.06.2014 - COM (2014) 357 final.

[31] http://www.adriatic-ionian.eu/about

management)[32]. Under each pillar, several topics represent the main areas in which the macroregional strategy can contribute to improvements.

As the strategy encourages a horizontal approach, highlighting the interdependence between its four pillars, each topic must be considered with other policy fields.

Though, within the topics, a sublevel is foreseen including actions and projects. An action is the intervention which countries and stakeholders carry out to address the different topics. It can be a novel approach, an increased coordination in policy making, policy review, support to a process already engaged, a networking initiative, etc. An action may not necessarily require financing. Nevertheless, all actions should fulfil the existing EU competences and the requirements of the EU acquis communautaire[33].

The Action Plan does not list specific projects. Projects are presented by way of examples to stimulate further initiatives, as the Strategy progresses and as latest ideas emerge, and to illustrate what is needed.

[32] COM (2014) 357 final, accompanied by an Action Plan SWD (2014) 190 final.

[33] According to the Commission it refers to the cumulative body of EU laws, comprising the EU's objectives, substantive rules, policies and, in particular, the primary and secondary legislation and case law. This includes all the treaties, regulations and directives passed by the European institutions, as well as judgements laid down by the European Court of Justice. The acquis is dynamic, constantly developing as the Community evolves, and fundamental.

Table 3 – EUSAIR pillars and topics

Pillars	Topics:	Specific objectives
PILLAR 1: BLUE GROWTH Coordinators: Greece and Montenegro	1. Blue technologies 2. Fisheries and aquaculture 3. Maritime and marine governance and services	To promote research, innovation, and business opportunities in blue economy sectors, by facilitating the brain circulation between research and business communities and increasing their networking and clustering capacity. To adapt to sustainable seafood production and consumption, by developing common standards and approaches for strengthening these two sectors and providing a level playing field in the macro-region. To improve sea basin governance by enhancing administrative and institutional capacities in the area of maritime governance and services.
PILLAR 2: CONNECTING THE REGION Coordinators: Italy, North Macedonia, Serbia	1. Maritime transport 2. Intermodal connections to the hinterland 3. Energy networks	To strengthen maritime safety and security and develop a competitive regional intermodal port system. To develop reliable transport networks and intermodal connections with the hinterland, both for freight and passengers. To achieve a well-interconnected and well-functioning internal energy market supporting the three energy policy objectives of the EU – competitiveness, security of supply and sustainability.
PILLAR 3: ENVIRONMENTAL QUALITY Coordinators: Bosnia and Herzegovina, Slovenia	1. The marine environment 2. Transnational terrestrial habitats and biodiversity	To ensure a good environmental and ecological status of the marine and coastal environment by 2020 in line with the relevant EU acquis and the ecosystem approach of the Barcelona Convention. To contribute to the goal of the EU Biodiversity Strategy to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restore them in so far as feasible, by addressing threats to marine and terrestrial biodiversity. To improve waste management by reducing waste flows to the sea and to reduce nutrient flows and other pollutants to the rivers and the sea.

PILLAR 4: SUSTAINABLE TOURISM Coordinators: Albania, Croatia	Topic 1 – Diversified tourism offer (products and services) Topic 2 – Sustainable and responsible tourism management (innovation and quality)	Diversification of the macro-region's tourism products and services along with tackling seasonality of inland, coastal and maritime tourism demand. Improving the quality and innovation of tourism offer and enhancing the sustainable and responsible tourism capacities of the tourism actors across the macro-region.

Source: Author elaboration based on EC documents.

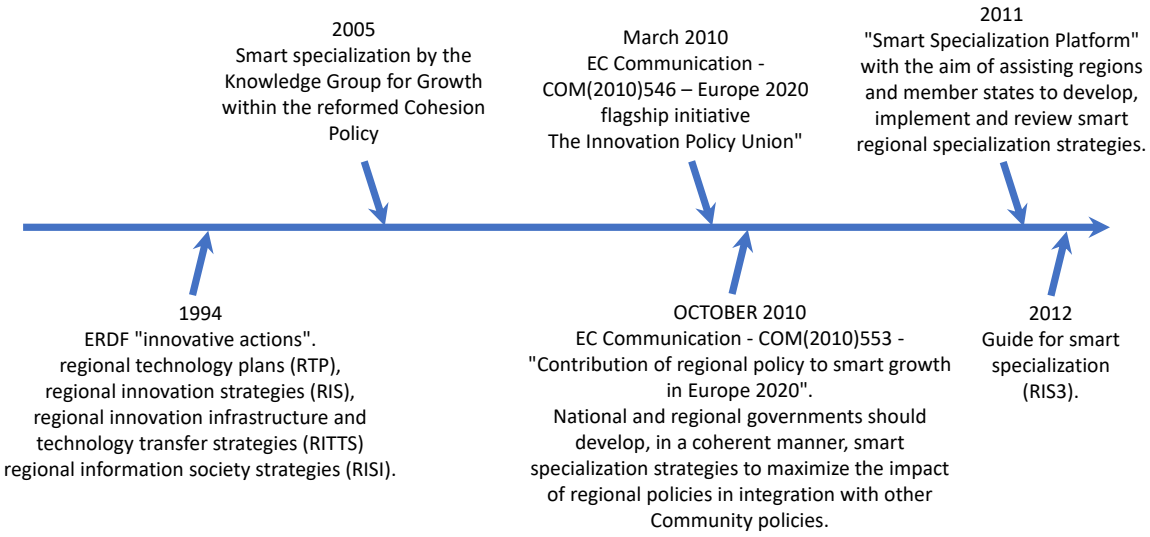
2. Innovation Strategies in EUSAIR

This chapter represents the core of the research introducing the main Research and Innovation (R&I) strategies and the analysis results of how these policies embed EUSAIR priorities.
The first paragraph describes the rationale for S3 and its adoption as a key concept in EU regional and cohesion policy.
The second section discusses the results of the analysis on complementarities and synergies with EUSAIR pillars in the 2014-2020 programming period.
The third paragraph discusses the results based on the 2021-2027 programming period.
The fourth paragraph presents the results of the analysis on the actual integration of EUSAIR and direct funds with reference to the Horizon and Interreg Adrion direct funding programmes.

2.1 The Smart Specialisation Strategy within the cohesion policy

In recent years, innovation has increasingly been considered vital for regional economic growth, and therefore the idea of designing regional strategies to stimulate innovation has increased in popularity, a trend encouraged by the EC.
The S3 is a type of innovation strategy as well as an evolving concept. Regional innovation strategies are usually defined in horizontal, i.e., structural terms, focusing on neutral policies for improvement of the general conditions for innovation. The S3 logic, on the contrary, is centred on a vertical and non-neutral logic of intervention. In a process of transformation that link the existing productive structures to new domains of potential competitive advantages, according to the so-called principle of related variety (Foray, 2014; Neffke et al., 2011).
The S3 concept comes from a strategic reflection carried out between 2006 and 2009 by a group called "Knowledge for Growth experts" (K4G) called into existence by European Commissioner J.Potočnik in March 2005. They concluded that the productivity gap between Europe and the United States (and other countries such as Japan) derived from a lower economic and technology specialisation, as well as a minor capacity to prioritize efforts and resources at the regional level (Camagni & Capello, 2013; E. G. Carayannis & Rakhmatullin, 2014; Foray et al., 2011; Jaime Del Castillo Jonatan Paton, 2011).
In November 2009, the EC published the report "Knowledge for Growth" with the task of supporting public policies in research, development, and innovation (RDI). Within the report, the group of experts proposed that national and, in particular, regional governments should encourage investment in areas that would "complement the country's other productive assets to create a future domestic capability and interregional comparative advantage" (Foray et al., 2009). This strategic proposal was indeed labelled "smart specialisation".
Figure 3 shows the main steps and previous actions that leaded to the formulation and adoption of S3 at EU level.
Since 1994, the EC focused on innovation instruments, first in the late 1990s with the Regional Technology Plans (RTP), Regional Innovation Strategies (RIS), Regional Innovation Infrastructure and Technology Transfer Strategies (RITTS) and Regional Information Society Initiative (RISI) to go further in early 2000 with RIS+ programmes (Schot & Steinmueller, 2018).

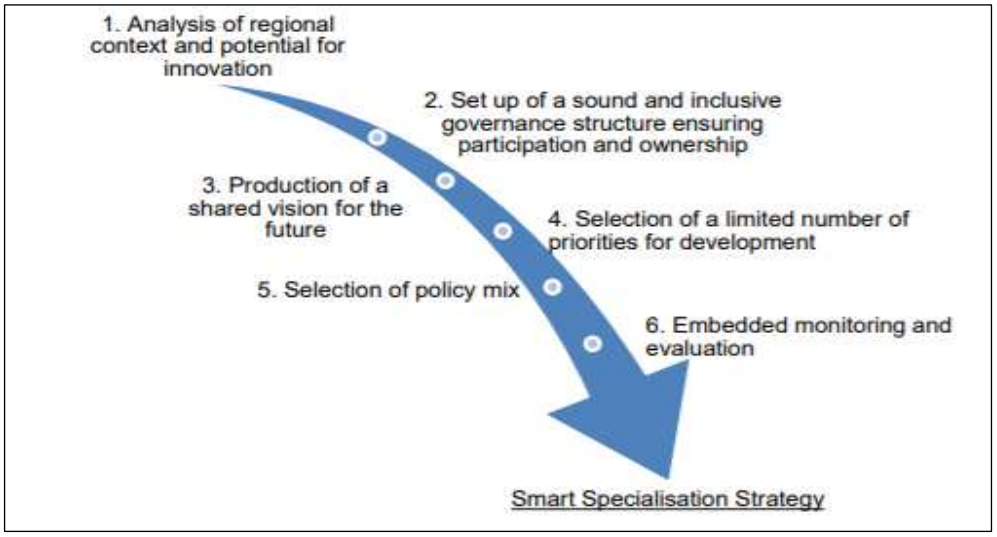
Figure 3 – Timeline of S3 elaboration and settlement



Source: Author's elaboration

In 2012, to provide methodological guidance for policymakers and implementing bodies on how to prepare for and how to design, draft and enforce the S3, the EC published the RIS3 GUIDE. The guide formulated six principal steps, which should represent the logical design structure for a Regional S3 (Foray, Goddard, Beldarrain, et al., 2012). S3 Guide was conceived with considerable details of the programmes to be implemented during the strategy period and the methodology to be used for its implementation. Hence the importance of the territory where this strategy is applied since it would make no sense to draw up a programme of activities without placing it in a coherent context. This latter suggests six steps to develop a coherent S3 as shown in Figure 4.

Figure 4 – The 6 recommended steps for S3



Source: EC 2012. Guide to Research and innovation Strategy for Smart Specialisation, p.17.

The rationale beyond these steps can be summarised as below. These concepts will then be deepened during this discussion as part of this dissertation:

1. the analysis of the regional context and potential for innovation responds to the need of understanding a region's competitive advantage according to the so-called principle one size doesn't fit all (Tödtling & Trippl, 2005),

2. the Governance is related to ensuring participation and ownership. In this context, fundamental is consider stakeholder participation since the start of an S3 design process,
3. the elaboration of an overall vision for the future of a region has a highly political character where the competent authority mobilises regional stakeholders around a joint project,
4. the identification of priorities firstly means concentration of resources in order to channel towards those investments that potentially have the highest impact on the regional economy. Priorities are built on and are related to existing capacities and potential opportunities (P. A. Balland et al., 2014). Priorities then, are not on industries but on the transformation of these industries (Foray, 2014),
5. the definition of coherent policy mix, roadmaps, and action plan constitutes a planning process involving both the incorporation of existing programmes and instruments and the inclusion of new instruments, justified by their contribution to the overall objectives of the strategy,
6. the Integration of monitoring and evaluation mechanisms. While monitoring aims to verify that activities are planned, funds are used correctly, the evaluation aims to assess the effects of the actions taken and to understand why and how the effects are achieved. S3 is "dynamic" and must be reviewed in the light of previous experiences and on-going results and developments.

For those regions that have already defined or are at an advanced stage of defining the adoption of an S3, the goal is not to restart the process in full but rather, to update the strategy based on the results already obtained and carry them forward to reinforce those components that have not been developed in satisfactory way (Foray, Goddard, Beldarrain, et al., 2012).

The S3 legal base lies in Regulation (EU) 1301/2013[34] that transposes the concept developed into the European legal corpus: "(S3) means the national or regional innovation strategies which set priorities to build competitive advantage by developing and matching research and innovation own strengths to business needs in order to address emerging opportunities and market developments in a coherent manner, while avoiding duplication and fragmentation of efforts. A smart specialisation strategy may take the form of or be included in a national or regional research and innovation (R&I) strategic policy framework".

From the theoretical site, the concept of Smart Specialisation has been developed within the wide corpus of place-based regional policies[35]. As a regional innovation policy, it becomes a process highly adapted to the regional context and aware of the dynamics of its implementation (Fratesi, 2016). Regional policy and regional innovation policy, in particular, must focus on exploiting the untapped potential of the regions, which enables cohesion and competitiveness to be pursued at the same time (Foray, Goddard, Goenaca Beldarrain, et al., 2012). Therefore, S3 is to be considered in the roots of transformative innovation policies (Barca, 2009; Barca et al., 2012; Foray, 2014; McCann & Ortega-Argilés, 2016).

In its original formulation S3 emphasized the association between research and innovation. S3 was conceived as addressing "the issue of specialisation in the R&D and innovation" (Foray et al., 2009, p. 1). In later formulations it has lost the emphasis on R&D to "…embracing a broader concept of

[34] Regulation (EU) 1301/2013 of the European Parliament and of the Council of 17 December 2013

[35] "Place-based" policies can be defined as policies that consider the dimension economic activities. For example, develop labour or innovation markets in a city or in a rural area may require a different approach. Policies that are "space-blind" may not attention to this element of differentiation; this would therefore not represent the most effective to promote growth in all types of regions. "OECD Reviews of regional innovation - Regions and Innovation, Collaborating across borders". Paris, OECD Publishing (2011)

innovation, not only investment in research or the manufacturing sector, but also building regional competitiveness through design and creative industries, social and service innovation, new business models and practice-based innovation" (Foray et al., 2012, p. 7). The S3 approach embraces a broad view of innovation including, but certainly not limited, to technology-driven approaches (Morgan, 2017; Radosevic & Stancova, 2015).

Throughout the identification and selection of few well-defined domains for intervention that can better advantage regional policies, the S3 aims "to define a virtuous process of diversification through the local concentration of resources and competencies in a certain number of new domains that represent possible paths for transforming productive structures" (Foray, 2014). "The complexity of the process resides both in discovering the right domains of future specialisation and fixing the many coordination failures that can prevent emerging trends from becoming real and solid drivers for regional economic growth" (Foray et al.,2011).

From 2014 - 2020 programming period, as an ex-ante conditionality it became a highly important policy concept in the European context[36], the concept has rapidly transformed into a dominant paradigm representing the key feature of reformed Cohesion Policy (Radosevic, 2017) within Europe's 2020 strategy for smart, sustainable, and inclusive growth.

For the first time the EU regions and countries were required to develop S3 as a precondition for accessing significant amounts of funding under Thematic Objective 1 (TO1 - research and innovation) choosing a limited set of priority domains on which to concentrate resources (Benner, 2020; Foray et al., 2021).

Governments, firms, research institutes and, also, the civil society have been called to enhance innovation and competitiveness through the so-called entrepreneurial discovery process (EDP) (Benner, 2020; Foray, 2019; Foray et al., 2009b; Foray, Goddard, Beldarrain, et al., 2012) according the 4helix approach (E. Carayannis & Grigoroudis, 2016). In this way, regions are able to concentrate their financial resources (co-financed by the European Structural and Investment Funds ESIF) strategically and collaboratively in order to formulate an appropriate research and innovation strategy (Foray, Goddard, Beldarrain, et al., 2012a; Uyarra et al., 2014).

The develop of the S3 at regional level intends to improve and maximize the impacts of ESIF (OECD, 2019) while ensure a certain synergy between the different EU policies, between national and regional, or private and public investments (Sandu, 2012). This approach consents on the one hand, to avoid fragmentation of innovation investments; on the other hand, enhancing areas of excellence by considering strategic territorial positioning and development prospects.

Not all regions where ready to accept new concepts and to implement them according to the transformative logic which is at the basis of S3 itself (Capello & Kroll, 2016). According to, since 2014, abundant literature about the emergence, the theoretical underpinnings, and the implementation problems of S3 surfaced (D'Adda et al., 2021; Deakin et al., 2018; Hassink & Gong, 2019; Radosevic, 2017).

The S3 has a highly transformative potential that fits into the context of the debate on the reconfiguration of European regional policy that has been going on for some years. The dependence on ESIF funds for the development of S3 strategies can be seen as an attempt to integrate cohesion policy objectives and approaches with European innovation policy (Muller et al., 2017). Besides, the S3 concept was developed also with an emphasis on less-advanced regions to create certain capabilities to build competitive advantages (Foray, 2014). Nevertheless, some lagging regions may

[36] http://ec.europa.eu/invest-in-research/pdf/download_en/kfg_policy_brief_no9.pdf

encounter difficulties and rarely faced the challenges of implementing (Kroll, 2019; Oughton et al., 2002) because of their weaker institutional capacities, particularly regarding S3 governance and then S3 monitoring and evaluation (Marques & Morgan, 2018; Trippl et al., 2020).

The 2021-2027 programming period represents a new phase for S3, with a revised framework for the Cohesion policy. Given its strong value-added potential, S3 is expected to continue to play a major role towards regional development and cohesion, as well to further boost innovation-led growth in the EU industrial transition regions and further integrate regional economies in EU value chains. Besides it also has a great potential to foster eco-innovation processes that respond to global environmental challenges, in line with the United Nations Sustainable Development Goals and the EU green and digital transitions provisions[37]. It is important to note here that the EU Green Deal is underpinned by the new Industrial Strategy, which marks another stage in the evolution towards a new model for the 21st century EU economy[38].

The main goal of the newly reformed cohesion policy is to increase the effectiveness of EU investments as well as to simplify the procedures. Such a policy of transformation cannot ignore the potential and dynamics of local economies in order to have a smooth implementation. This requires a policy which combines strategic objectives at EU level with the ability of local and regional economies to achieve these European objectives with regional priorities. As a result, the need for a local industrial policy, shaped by regional diversity and guided by a multi-level governance approach is even more acute (Tuffs et al., 2020).

To this purpose, the new Cohesion policy foresees the deployment of five broad policy objectives (PO) as well as the enhancement of sustainable growth and digitalisation[39]:

1. A smarter Europe (PO1)– by promoting innovative and smart economic transformation and regional ICT connectivity,
2. A greener, low-carbon Europe towards a net zero carbon economy and resilient Europe (PO2) -by promoting clean and fair energy transition, green and blue investment, the circular economy, climate change mitigation and adaptation, risk prevention and management, and sustainable urban mobility,
3. A more connected Europe (PO3)– by enhancing mobility,
4. A more social Europe (PO4)– by implementing the European Pillar of Social Rights,
5. Europe closer to citizens (PO5) – by fostering the sustainable and integrated development of all types of territories and local initiatives.

Besides, two horizontal objectives have been identified, as cross-cutting aspects of principal items:

- Administrative capacity building,
- Co-operation between regions and across borders (embeds co-operation in mainstream).

The various industrial policy interventions are brought back to the single PO1 objective for which, the ERDF specifically supports the following objectives[40]:

[37] COM (2022) 289 final Communication from the commission to the European parliament and the council

[38] COM (2019) 640 final

[39] Regulation (EU) 2021/1060 of the European Parliament and of the Council of 24 June 2021 laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, the Just Transition Fund and the European Maritime, Fisheries and Aquaculture Fund and financial rules for those and for the Asylum, Migration and Integration Fund, the Internal Security Fund and the Instrument for Financial Support for Border Management and Visa Policy. Official Journal of the European Union | L 231/159. 30.6.2021.

[40] Regulation (EU) 2021/1058.

- developing and enhancing research and innovation capacities and the uptake of advanced technologies,
- supporting the benefits of digitization for citizens, companies, research organizations and public authorities,
- enhancing sustainable growth and competitiveness of SMEs and job creation in SMEs, including by productive investments,
- developing skills for smart specialization, industrial transition, and entrepreneurship,
- enhancing digital connectivity.

Table 4 – Focus on the S3 enabling condition in the framework of the Cohesion Policy 2021-2027

Policy objective	Specific objective	Name of enabling condition	Fulfilment criteria for the enabling condition
A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity	ERDF: Developing and enhancing research and innovation capacities and the uptake of advanced technologies Developing skills for smart specialisation, industrial transition and entrepreneurship	Good governance of national or regional smart specialisation strategy	Smart specialisation strategy or strategies shall be supported by: 1. Up-to-date analysis of challenges for innovation diffusion and digitalisation. 2. Existence of competent regional or national institution or body, responsible for the management of the smart specialisation strategy. 3. Monitoring and evaluation tools to measure performance towards the objectives of the strategy. 4. Functioning of stakeholder co-operation ("entrepreneurial discovery process"). 5. Actions necessary to improve national or regional research and innovation systems, where relevant. 6. Where relevant, actions to support industrial transition. 7. Measures for enhancing cooperation with partners outside a given Member State in priority areas supported by the smart specialisation strategy.

Source: Author's elaboration based on EU documents

As shown in Table 4, PO1 "A smarter Europe by promoting innovative and intelligent economic transformation" (PO1) under the ERDF includes a specific objective for investment in "Skills development for smart specialisation, industrial transition and entrepreneurship". The latter is incorporating a new enabling condition for the "Good governance of the national or regional smart specialisation strategy"[41].

In this context, S3 has become a fundamental enabling condition which must be supported throughout the programming period by this appropriate criterion to promote the improvement and implementation of S3:

1. Up to date analysis of bottlenecks to innovation diffusion, including digitalisation. Such analysis should be undertaken to identify key bottlenecks such as:
   - Weaknesses in adoption at firm level of new technologies,
   - Failure by universities and research centres to serve the needs of firms in their ecosystem,
   - Inefficiencies of innovation agencies in facilitating knowledge flows and coordination problems with other public agencies,

[41] Regulation (EU) 2020/13716 - European Regional Development Fund and Cohesion Fund regulation COM (2020) 452 final.

- Lack of knowledge transfer from multinational companies to domestic firms.

2. Existence of competent regional/national institution or body responsible for the management of S3. There is a body which has a formal mandate and decisional powers to develop, coordinate the implementation and monitor the S3 strategy,
3. Monitoring and evaluation tools to measure performance towards objectives of the strategy. A monitoring and evaluation system should put in place (under the coordination of the competent institution) to collect information on the implementation of S3 priorities which captures information per specialisation domain,
4. Effective functioning of the entrepreneurial discovery process (EDP). There is an interactive and inclusive process in which actors from business, research, civil society, and public administration (quadruple helix) identify specialisation priorities (or remove them if evidence shows no progress). This is an ongoing process, where all stakeholders should be adequately represented,
5. Actions necessary to improve national or regional research and innovation systems. Country Specific Recommendations and the country reports should be considered to identify shortcomings and needs for improvement and define remediation actions. In case there is no such evidence, this criterion should not be applicable,
6. Actions to manage industrial transition The member state or region have to undertake analysis to identify sectors and occupations in the region or member state which are challenged by globalisation, technological change (notably linked to industry 4.0) and the shift to a low carbon economy and identified appropriate actions to facilitate transition. Where regions have experienced significant structural change, appropriate actions have been identified to address reskilling of the workforce, diversification of the economy, strengthening entrepreneurship and technological upgrading of SMEs,
7. Measures for enhancing cooperation. Opportunities for international collaboration with research and innovation actors and or private companies in similar priority areas should be identified/mapped. Measures to engage regional stakeholders in participating in and developing EU or international value chains are also promoted.

In accordance with Article 3(2) of Regulation (EU) 2021/1058 the above bullet 7 make explicit reference to the MRS as well as cooperation with partners from cross-border regions, from non-contiguous regions or from regions located in the territory covered by a European Grouping of Territorial Cooperation, or sea-basin strategy or a combination thereof[42].

Table 5 resume the major changes between the two programming periods referring to the "enabling condition" of the S3.

[42] Regulation (EU) 2021/1058.

Table 5 – Evolution of instrument for S3 as enabling condition in post 2020 cohesion policy.

2014-2020	Strengthened in 2021-2027 by good governance requirements:
Still valid: ▪ Concentrate resources on a limited set of priorities building on place-based strength & potentials ▪ SWOT or similar analysis & entrepreneurial discovery process ▪ In line with national or regional R&I strategic policy framework ▪ Measures to stimulate private R&I investments ▪ Monitoring system (budgeting plans)	+ Analysis of bottlenecks for innovation diffusion & digitalisation + Governance: ▪ Ongoing entrepreneurial discovery process ▪ A competent institution or body responsible for S3 management + Improve national or regional research and innovation systems + Impact: Industrial transition + Measure performance towards the objectives of the strategy + Measures for enhancing cooperation

Source EC

Together with the above mentioned "Co-operation between regions and across borders", the cross-cutting aspect among the core principles of 2021-2017 ESIF framework, the explicitly request to consider "Measures for enhancing cooperation with partners outside a given Member State in priority areas supported by the smart specialisation strategy" in design and implement national and regional S3 represents an important evolution in the S3 concept in itself. The latter assumes that regional policy makers identify complementarities and synergies with other regions beyond national borders to maximise the innovative capacities of their regions (Balland & Boschma, 2021a).
To promote the inclusion of relevant SRM priorities in the EU national and regional programmes for the period 2021-2027, regions and countries have now a unique opportunity.
Before continuing in the illustration of the analysis, a premise should be made about the translation into the territories of the Principles of Cohesion Policy.
This latter operates largely through financial incentives or co-finance schemes, with cohesion goals pursued through any spatially relevant policy areas (Sielker et al., 2021). The same concept of a region is that of a useful and cost-effective administrative unit aimed at characterizing the territories from the point of view of their development and allocating resources based on their own characteristics. The European administrative region is therefore the basis of cohesion policies. In many cases, this logic of division coincides relatively well with the spatial logic of innovation (Foray, 2020). To define regional boundaries and determine geographic eligibility for support from ESIF funds, an objective basis is represented by the so called "Nomenclature des Unitées Territoriale Statistiques" (NUTS) classification".

Table 6 – Countries and regions belonging to EUSAIR

NUTS ID	Name	Population	NUTS level	ESIFs 2014-2020 classification	Innovation scoreboard
EL	Ellada	10'787'500	NUTS 0	*Transition	Moderate Innovator
ITC4	Lombardia	9'967'000	NUTS 2	More developed region	Moderate innovator +
RS	Serbia	8'600'000	NUTS 0	Non-EU country	Emerging innovator
ITH3	Veneto	4'853'000	NUTS 2	More developed region	Strong innovator -
ITG1	Sicilia	4'841'000	NUTS 2	Less-developed region	Moderate innovator -
ITH5	Emilia-Romagna	4'446'000	NUTS 2	More-developed region	Moderate innovator +
HR	Croatia	4'200'000	NUTS 0	Less-developed region	Emerging innovator
ITF4	Puglia	3'927'000	NUTS 2	Less-developed region	Moderate innovator
EL30	Attiki	3'813'000	NUTS 2	More-developed region	Moderate innovator
BA	Bosnia and Herzegovina	3'400'000	NUTS 0	Non-EU country	Emerging innovator
AL	Albania	2'900'000	NUTS 0	Non-EU country	Emerging innovator
MK	North Macedonia	2'100'000	NUTS 0	Non-EU country	Emerging innovator
SI	Slovenia	2'100'000	NUTS 0	Transition region	Moderate innovator
ITF6	Calabria	1'878'000	NUTS 2	Less-developed region	Emerging innovator +
EL12	Kentriki Makedonia	1'875'000	NUTS 2	Less-developed region	Moderate innovator -
ITI3	Marche	1'502'000	NUTS 2	More-developed region	Moderate innovator +
ITF1	Abruzzo	1'286'000	NUTS 2	Transition region	Moderate innovator
ITH4	Friuli-Venezia Giulia	1'199'000	NUTS 2	More-developed region	Strong innovator -
ITI2	Umbria	866'000	NUTS 2	More-developed region	Moderate innovator +
EL14	Thessalia	730'800	NUTS 2	Less-developed region	Moderate innovator
EL23	Dytiki Ellada	680'200	NUTS 2	Less-developed region	Moderate innovator -
ME	Montenegro	628'000	NUTS 0	Non-EU country	Emerging innovator

EL43	Kriti	621’400	NUTS 2	Transition region	Moderate innovator
EL11	Anatoliki Makedonia, Thraki	606’200	NUTS 2	Less-developed region	Emerging innovator +
EL25	Peloponnisos	582’000	NUTS 2	Transition region	Emerging innovator +
ITF5	Basilicata	548’000	NUTS 2	Less-developed region	Moderate innovator -
EL24	Sterea Ellada	546’900	NUTS 2	Transition region	Emerging innovator +
ITH1	Provincia Aut. di Trento	545’000	NUTS 2	More-developed region	Strong innovator -
ITH1	Provincia Aut. di Bolzano/Bozen	534’000	NUTS 2	More-developed region	Moderate innovator +
EL21	Ipeiros	336’700	NUTS 2	Less-developed region	Moderate innovator -
EL42	Notio Aigaio	308’700	NUTS 2	Transition region	Emerging innovator
ITF2	Molise	297’000	NUTS 2	Transition region	Moderate innovator
EL13	Dytiki Makedonia	282’200	NUTS 2	transition region	Emerging innovator
EL22	Ionia Nisia	206’500	NUTS 2	Transition region	Emerging innovator +
EL41	Voreio Aigaio	197’900	NUTS 2	Transition region	Emerging innovator +

Source: Author’s elaboration based on EUSAIR platform and RIS innovation scoreboard. For comparison data referred to 2019
Not available data for San Marino

Table 6 provides a list of the 35 territorial units, plus some information about their sizes and developmental levels. It makes also reference to the Regional Innovation Scoreboard (RIS) that provides a comparative analysis of innovation performance in EU countries, and regional neighbours[43]. The table is presenting in descending order with respect to the total resident population, the data for comparison are calculated with reference to 2019.
Regional statistics are employed when allocating funds. The NUTS classification is used to define regional boundaries and determine geographic eligibility for structural and investment funds. Regions have also been defined and agreed with the candidate countries on a bilateral basis and follow the same rules as the NUTS regions in the EU, although they have no legal basis.
NUTS 2 regions were ranked and split into three groups:

- less developed regions (where GDP per inhabitant is less than 75 % of the EU average),
- transition regions (where GDP per inhabitant is between 75 % and 90 % of the EU average),
- more developed regions (where GDP per inhabitant is more than 90 % of the EU average).

Table 6 provides a list of the 35 territorial units, plus some information about their sizes and developmental levels. It makes also reference to the Regional Innovation Scoreboard (RIS) that provides a comparative analysis of innovation performance in EU countries, and regional neighbours. The table is presenting in descending order with respect to the total resident population, the data for comparison are calculated with reference to 2019.

2.2 The actual integration of EUSAIR and S3 in the 2014-2020 programming period

The EUSAIR Action Plan does not contain any direct reference to S3, but this can be deduced from the reference to Europe 2020 and the Territorial Cohesion Policy, which includes the Interreg Adrion programme (for 2014-2020 programming period). The latter, as a transnational cooperation programme, aims to exchange and transfer experiences and capacity-building between regions, and to this end, focusses its investments on four Priority Axes. Axis 1, Innovative and smart region, is devoted to "promoting business investment in R&I, developing links and synergies between enterprises, research and development centres and the higher education sector, encourages investment in product and service development, technology transfer, social innovation, eco-innovation, public service applications, demand stimulation, networking, clusters and open innovation through, precisely: smart specialisation".
In analysing the text of the individual pillar, we see that the Pillar 1 recalls the S3 in the contest of smart growth and how it has "strengthened blue technologies, as well as improvements in the sectors of fisheries and aquaculture, contributing to smart growth in the region. Actions in this area will have to build on the smart specialisation strategies being developed at regional and national levels.
In pillar 4 (Tourism), S3 is mentioned only about actions which are merely indicative actions, suggestions, or examples such as: "4.1. Diversified tourism offers (products and services). Action - Sustainable tourism R&D platform on new products and services", and "4.2. Sustainable and responsible tourism management (innovation and quality). Action - Network of Sustainable Tourism businesses and clusters: stimulating innovation through interaction between different tourism actors and creation of strong synergies with complementary sectors along the value chain". These actions

[43] The regional innovation scoreboard (RIS) is a regional extension of the European innovation scoreboard (EIS), assessing the innovation performance of European regions on a limited number of indicators.

focus on joining forces among university departments, research centres, innovation, and technology transfer networks, together with the business community for the development and marketing of new products and services and the development of clusters.
Moreover, it is recognized that useful lessons could be learnt from applying the S3 approach and through adapting the Entrepreneurial discovery process, by actively involving the private sector in identifying sustainable tourism activities with the most promising potential for growth and for absorbing research outputs.
Aligning S3 priorities to EUSAIR pillars is critical to achieving macroregional goals, particularly those associated with the cross-cutting aspect of promoting R&I.
Starting with these considerations, the following analysis shows the extent EUSAIR regions and countries selected S3 priorities that overlap with EUSAIR pillars during the 2014-2020 programming period, thereby strengthening potential synergies between the two strategies.
The alignment of S3 and EUSAIR priorities was assessed in two ways:

- *Ex ante*, by analysing the S3 documents from EUSAIR regions and countries to verify actual overlap with EUSAIR pillars and topics,
- *Ex post,* by analysing the projects financed within the ERDF TO1 to verify the extent of overlap between S3 investment priorities and EUSAIR pillars.

Given that EUSAIR's thematic priorities were chosen because of their relevance to all the regions and counties involved, it was expected a high level of consistency between the EUSAIR pillars, the investment priorities indicated in S3 documents and the actual allocation of funds to sustain RDI.
Regarding data and methodology, S3 implementation was conducted at different institutional levels by national and regional operation programmes.
The strategy was implemented at the country level in Albania, Bosnia and Herzegovina, Croatia, Montenegro, North Macedonia, Serbia, and Slovenia. In other cases, S3 was implemented at both national and regional levels, e.g., in Greece and Italy. For instance, Greece has a hybrid S3 with a centrally administered national strategy (overseen by the General Secretariat for Research and Technology) and 13 regional strategies (overseen by regional authorities and coordinated by the Ministry of Development). All of Greece is part of EUSAIR, while Italy comprises 12 regions and two autonomous provinces. EU countries and regions were expected to devise their S3 strategies before the beginning of the 2014-2020 programming period, but this was not the case for non-EU countries that developed their research development and innovation strategies after the beginning of the programming period. Montenegro adopted its S3 strategy in 2019, followed by Serbia in 2020[44]. Table 7 provides a synthesis of the institutional levels responsible for S3 design and implementation considered in the empirical analysis.

[44] OECD (2021), "Competition policy (Dimension 5)", in Competitiveness in Southeast Europe 2021: A Policy Outlook, OECD Publishing, Paris, https://doi.org/10.1787/b71b6823-en.

Table 7 – Institutional levels considered in the empirical analysis

	National	Regional
Albania	■	
Bosnia and Herzegovina	■	
Croatia	■	
Greece	■	■
Italy		■
Montenegro	■	
North Macedonia	■	
Serbia	■	
Slovenia	■	

Source: Author's elaborations based on S3 platform

The S3 quantitative analysis refers to 35 territorial entities (including the national strategy from Greece). These include North Macedonia, which started its smart specialisation process in March 2018, as well as twelve Italian regions and two Italian autonomous provinces: Trento and Bolzano[45]. Although, the information that can be gathered from S3 documents contains two main limitations: the first is that a common method for defining S3 specialisation areas does not exist. Regions have indicated areas of specialisation that refer to different objects: industry sectors (e.g., textiles or tourism); production chains (e.g., agri-food or aerospace); or technological domains (e.g., photonics or micro-electronics). Moreover, the definitions and classifications of such objects do not contain any homogeneity. As a result, classifying and comparing the specialisation areas proved to be quite difficult.

[45] All non-EU EUSAIR countries are registered on the Smart Specialisation (SP3). For nations such as Bosnia and Herzegovina, in which no formal S3 documents exist, national strategies for research and innovation, i.e., BiH ERAWATCH Country Report 2013 are considered.

Table 8 – EUSAIR pillars and topics

Pillars	Topics	Keywords
1. Blue Growth	1.1 Blue technologies	Shipbuilding Marine technologies Blue economy sectors
	1.2 Fisheries and Aquaculture	Fisheries Aquaculture Aquatic ecosystems Seafood production
	1.3 Maritime and marine governance and services	Marine services Marine governance Sea basin governance
2. Connecting the Region	2.1 Maritime transport	Maritime security Marine transports
	2.2 Intermodal connections to the hinterlands	Terrestrial transports Intermodal connections
	2.3 Energy networks	Gas and power networks
3. Environmental Quality	3.1 The marine environment	Aquatic ecosystems Marine environment Water pollution Waste management
	3.2 Transnational terrestrial habitats and biodiversity	Coastal environment Marine and terrestrial biodiversity
	4.1 Diversified tourism (products and services)	Demand seasonality Cultural industry
4. Sustainable Tourism	4.2 Sustainable and responsible tourism	Sustainable tourism Cultural heritage

Source: Author's elaboration

Aside from the problems arising from the identification and classification of S3 specialisation areas, comparisons between the two strategies, i.e., S3 and EUSAIR, raise the additional question of how to map EUSAIR pillars into the S3 specialisation areas. Generally, the methodology used for such analysis is content analysis based on the identification of relevant keywords to identify S3 priorities and EUSAIR topics.

Table 8 provides a list of EUSAIR pillars and topics as they were specified upon the setting of strategies and as indicated in the EUSAIR platform. Keywords were added based on the descriptions of pillars and topics and on the specifications found most often in the literature. Several data sources may be used to map the overlap between S3 specialisations and EUSAIR pillars.

The first is the information collected from the S3 documents approved by EUSAIR regions and countries at the beginning of the 2014-2020 programming period. The Joint Research Centre (JRC) has done this work systematically, and the results are available on the S3 platform[46], from which it is possible to produce maps based on keywords identifying S3 specialisation areas. On the JRC platform, specialisation areas have been associated with economic and scientific domains.

The JRC data set is of little relevance to our work because the classification level adopted is too general to identify the actual specialisation areas defined by regions and countries. For this reason,

[46] See https://s3platform.jrc.ec.europa.eu/en/map.

we followed a different methodology based on direct examination of S3 documents and identification of specialisation areas.

Most regions (and countries) used a two-level structure to specify the specialisation areas more effectively, i.e., within the same broad first level (e.g., transport), we may have different specifications (e.g., equipment transport or logistics services). Using the specialisation areas specified at the first level may not capture the actual specialisations in which regions and countries are investing resources. It is necessary to consider the most detailed descriptions of specialisation areas. These difficulties have already been highlighted and examined in several empirical studies on S3 (D'Adda et al., 2019; Gianelle, Guzzo, et al., 2020). So, it provides an association with the EUSAIR pillars based on the description of the individual S3 specialisation areas. When a specialisation area included more than one pillar, we attributed the prevalent pillar, rather than duplicate the specialisation areas.

An additional problem when using S3 documents to map S3 priorities is that the actual allocation of funds by regions and countries does not always correspond to specialisation areas indicated in S3 documents (Gianelle, Kyriakou, et al., 2020). For these reasons, as a further step in the analysis, it also considered data and information available about the projects financed using ERDF funds during the 2014-2020 programming period.

Unfortunately, within EUSAIR, this data is only available for Italian regions, thanks to the OpenCoesione database, which contains information on all the projects financed to implement the 2014-2020 cohesion policy. A large set of information is available for each project, including several classification codes related to the cohesion policy's objectives, beneficiaries, amount of financing, location, start date, etc. Considering that we are interested in the projects associated with the S3, it considered only the projects referring to the ERDF TO1: strengthening research, technological development, and innovation. The data set was built using the information available up to 2021.

Table 9 shows the number of projects and the total amount of financing for the Italian EUSAIR regions. The empirical analysis refers to slightly less than 20'000 projects totalling more than 7 billion euros.

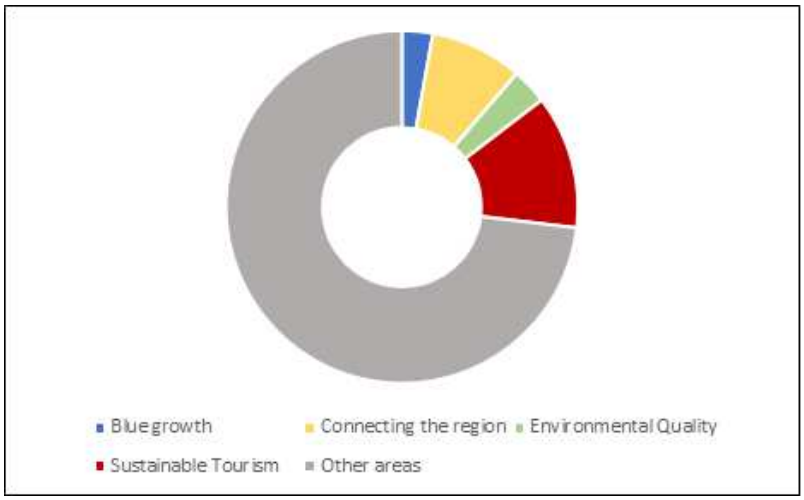
Table 9. Number and amount of financing for ERDF projects during the 2014-2020 programming period under Thematic Objective 1.

Regions	Number of projects	Total amount (thousands of euros)	Average amount (thousands of euros)
ABRUZZO	528	256'276	485
BASILICATA	715	523'347	732
CALABRIA	983	470'836	479
EMILIA-ROMAGNA	606	533'543	880
FRIULI-VENEZIA GIULIA	1'875	460'377	246
LOMBARDIA	783	141'926	181
MARCHE	889	460'853	518
MOLISE	1'946	71'361	37
PUGLIA	8'041	2'743'270	341
SICILIA	1'745	834'734	478
TRENTINO-ALTO ADIGE*	163	76'744	471
UMBRIA	408	251'046	615
VENETO	953	326'763	343
Total	**19'635**	**7'151'076**	**364**

Source: OpenCoesione database

*Data reported overall to the region, including the two Italian autonomous provinces of Trento and Bolzano. Trentino-Alto Adige/Südtirol is an autonomous region, with most administrative powers transferred from the region to the two autonomous provinces.

Figure 5 – Share of S3 specialisation areas referring to EUSAIR pillars



Source: Author elaborations based on S3 documents and national strategies for research and innovation registered on the JRC platform

To select projects associated with EUSAIR pillars, it used content analysis techniques through the keywords identified in Table 8 within the text describing the projects (title and abstract). The quality extractions were evaluated by referring to two measures: precision, i.e., the share of relevant elements on the total extracted, and recall, i.e., the share of the selected projects on the total of potentially relevant projects. Generally, a trade-off exists between the two, considering that increasing the precision of the extraction may diminish recall. Given the small number of projects

selected, precision was evaluated through a direct inspection of the selected projects. Evaluating recall was more difficult, but we tried to be inclusive in the use of keywords to maintain high value for the indicator.
Empirical results provide the first evidence of overlap between S3 specialisation areas and EUSAIR pillars. As we can see in Figure 5, a quarter of the specialisation areas indicated by regions and countries in their S3 documents are related to EUSAIR pillars.
Figure 5 also shows that the overlap mostly is observed for the pillars referring to sustainable tourism and connecting the regions (energy and transportation), while blue growth and environmental quality indicate less presence in S3 specialisation areas.

Table 10 provides detailed information about the specialisation areas chosen by regions and countries, as well as their association with EUSAIR pillars.
As above mentioned, Pillar 1 (blue growth) focusses on three topics: blue technologies, fisheries and aquaculture; maritime and marine governance and services. The blue growth theme shows little presence in the S3 priorities that the territorial authorities identified. Only a few regions in Greece and Italy indicated specialisation domains in their S3 documents, which refer to EUSAIR Pillar 1's thematic areas. This is somewhat surprising given that most EUSAIR regions and countries are characterised by coastal areas on the Adriatic or Ionian Sea basins. Furthermore, the EUSAIR action plan echoes the S3 in its Pillar 1, with reference to smart growth: "Strengthened blue technologies, as well as improvements in the sectors of fisheries and aquaculture, contribute to smart growth in the region. Actions in this area will have to build on the smart specialisation strategies being developed at regional and national levels".

Table 10 – Matching between S3 specialisation areas and EUSAIR pillars

Region/Country Name	Blue Growth	Connecting the Region	Environmental Quality	Sustainable Tourism	Other Areas	Total
Albania		**1**	**1**		**5**	**7**
Bosnia and Herzegovina					**6**	**6**
Croatia		**1**			**4**	**5**
Greece	**3**	**7**	**2**	**13**	**63**	**88**
Anatoliki Mak., Thr.				1	3	4
Attiki	1	1		1	2	5
Dytiki Ellada		1		1	11	13
Dytiki Makedonia		1		1	4	6
Greece		1	1	1	5	8
Ionia Nisia	1			1	3	5
Ipeiros				1	5	6
Kentriki Makedonia		1			10	11
Kriti			1	1	3	5
Notio Aigaio	1	1		1	1	4
Peloponnisos				1	1	2
Sterea Ellada		1		1	3	5
Thessalia				1	5	6
Voreio Aigaio				1	7	8
EUSAIR Italy	**3**	**7**	**3**	**10**	**59**	**82**
Abruzzo					5	5
Basilicata		1		1	5	7
Calabria		1	1	1	5	8
Emilia-Romagna				1	4	5
Friuli-Venezia Giulia	1			1	3	5
Lombardia		1		1	5	7
Marche					5	5
Molise				1	3	4
P.A. Bolzano/Bozen		1	1	1	3	6
P.A. Trento		1	1		2	4
Puglia	1			1	10	12
Sicilia	1	1		1	3	6
Umbria		1			3	4
Veneto				1	3	4
Montenegro		**1**		**1**	**3**	**5**
Serbia			**1**	**1**	**7**	**9**
Slovenia		**1**		**1**	**7**	**9**
North Macedonia					**1**	**1**
Total	**6**	**18**	**7**	**26**	**155**	**212**

Source: Author's elaboration based on JRC platform

Pillar 2 focusses on three topics: maritime transport; intermodal connections to the hinterlands; and energy networks. In this research, it considered the match in broad terms when referring to the transport and energy sectors. EUSAIR Pillar 2's overall objective (connecting the region) represents

the second major theme of interest in EUSAIR S3 matching. This seems to reflect in some way what is indicated in EUSAIR Action Plan 2014 itself, which highlighted connectivity challenges in transport and energy that are macroregional, and interventions make sense only through a cooperative, coordinated approach at the regional level[47].

Pillar 3 focusses on two main topics: the marine environment and transnational terrestrial habitats and biodiversity. Like Pillar 1, regional authorities also paid little attention to Pillar 3's topics, which is somewhat surprising given coastal areas and marine habitats" relevance to most of these regions. Notably, in the case of Italy, out of the three areas that included environmental issues within S3, two (the autonomous provinces of Bolzano and Trento) have no access to the sea. Some mountainous areas already had well-rooted environmental sensitivity, leading to adoption of a wide range of environmental and energy safeguard policies, as well as a prominent level of acceptance of the green economy. it included these regions among those regions in which S3 is congruent with Pillar 3, although the environmental issues are not connected directly to the marine environment.

Pillar 4 focusses on two topics: diversified tourism offers (products and services) and sustainable and responsible tourism management (innovation and quality). The Pillar 4 topics are those most often included in regional S3s, and this is particularly true for regions in Greece and Italy. In Montenegro and Albania, sustainable tourism also contributes a significant share to the service sector (32.1% and 21.2% of GDP, respectively)[48]. However, sustainable tourism is not even mentioned in documents from Albania, Bosnia/Herzegovina, Croatia and North Macedonia.

Overall, analyses of the EUSAIR regions" S3 documents indicate a weaker-than-expected degree of overlap with EUSAIR pillars, which is particularly true for the pillar referring to maritime issues, e.g., topics associated with blue growth and the marine environment. The areas in which overlap is much larger are those belonging to Pillar 4, i.e., sustainable tourism, which includes both "tourism" and "cultural heritage". Except for some Balkan countries, the other regions and countries belonging to EUSAIR designated tourism as an area of specialisation within their S3s.

As already mentioned, for the Italian regions, it is possible to analyse not only S3 documents those regional authorities approved, but also projects financed within the 2014-2020 programming period. Although available for 14 out of 35 EUSAIR territorial units, this investigation is relevant for two reasons: On one hand, it may be viewed as a further check on the validity of the previous analysis. On the other hand, it considers the actual allocation of funds, rather than initial intentions declared in S3 documents.

[47] Action plan accompanying communication concerning the European Union Strategy for the Adriatic-Ionian Region - 17.06.2014 – SWD (2014) 190 final.

[48] OECD (2021), Competitiveness in Southeast Europe 2021: A Policy Outlook, Competitiveness and Private Sector Development, OECD Publishing, Paris, https://doi.org/10.1787/dcbc2ea9-en.

Table 11 – Number of projects financed with ERDF-TO1 funds by region during the 2014-2020 programming period

	Blue Growth			Sustainable Tourism		Total
	1.1	1.2	1.3	4.1	4.2	
ABRUZZO		3		3	2	8
BASILICATA				5	2	7
CALABRIA			3	19	1	23
EMILIA-ROMAGNA	3	1			4	8
FRIULI-VENEZIA GIULIA	80	5	14	4		103
LOMBARDIA	4	1	1		1	7
MARCHE						
MOLISE		2	1	19		22
PUGLIA	5	4	11	30	10	60
SICILIA	8	4	6	29	18	65
TRENTINO-ALTO ADIGE						
UMBRIA				1		1
VENETO	5	5	1	15	2	28
Total	105	25	37	125	40	332

Source: elaboration on OpenCoesione database

Table 12 – Amount of public funds allocated to projects under ERDF TO1 during the 2014-2020 programming period (millions of euros)

	Blue Growth			Sustainable Tourism		Total
	1.1	1.2	1.3	4.1	4.2	
ABRUZZO		1			1	2
BASILICATA				22	1	22
CALABRIA				5		5
EMILIA-ROMAGNA					2	2
FRIULI-VENEZIA GIULIA	9	1	3	5		17
LOMBARDIA	5		1			6
MARCHE						0
MOLISE				2		2
PUGLIA	2		1	13	1	17
SICILIA	12	2	6	48	6	74
TRENTINO-ALTO ADIGE						0
UMBRIA						0
VENETO	6		3	3		12
Total	34	4	14	98	11	161

Source: elaboration on OpenCoesione database

The empirical analysis of projects refers to two pillars: Pillar 1 (blue growth) and Pillar 4 (sustainable tourism). We focussed on these pillars for two reasons: First, projects belonging to these pillars are

identified more effectively using a set of keywords describing the various included topics. Projects belonging to Pillars 2 and 3 – which entail energy, transport, and environmental items – are more difficult to identify given that the usable keywords are very general and cover a broader range of topics than those included in EUSAIR pillars. Furthermore, Pillars 2 and 3 represent the lowest and highest degrees of overlap between the two European strategies during the 2014-2020 period, respectively.

Table 11 and Table 12 show the number of projects and amount of funds that can be associated with Pillars 1 and 4, respectively.

The data on the projects financed during the 2014-2020 programming period under the ERDF TO1 correspond with priorities that regions indicated in their S3 documents. The regions with the highest numbers of projects and amounts of funds – i.e. Friuli-Venezia Giulia, Puglia, Sicilia, and Veneto – were also the regions that indicated one or more EUSAIR pillars in their S3 documents. The opposite occurred with other regions, e.g. Marche and Umbria, that did not indicate topics related to EUSAIR pillars in their S3 documents and did not have projects on these topics.

Table 13 synthesises the results from the analysis by examining the share of projects and funds dedicated to EUSAIR Pillars 1 and 4 out of the total financed by Italian regions under the ERDF TO1.

Table 13 – Share of projects and funds dedicated to EUEAIR Pillars 1 and 4 under ERDF TO1 during the 2014-2020 period (% total)

	Blue Growth		Sustainable Tourism		Total: Pillars 1 and 4	
	Projects	Funds	Projects	Funds	Projects	Funds
ABRUZZO	0.6	0.3	1.0	0.4	1.5	0.6
BASILICATA			1.0	9.7	1.0	9.7
CALABRIA	0.3	0.1	2.0	1.2	2.3	1.2
EMILIA-ROMAGNA	0.7	0.1	0.7	0.6	1.3	0.8
FRIULI-VENEZIA GIULIA	5.3	5.0	0.2	1.9	5.5	6.9
LOMBARDIA	0.8	1.0	0.1	0.1	0.9	1.0
MARCHE						0.0
MOLISE	0.2	0.1	1.0	2.5	1.1	2.5
PUGLIA	0.2	0.3	0.5	1.0	0.7	1.3
SICILIA	1.0	1.3	2.7	3.7	3.7	5.0
TRENTINO-ALTO ADIGE						0.0
UMBRIA			0.2	0.1	0.2	0.1
VENETO	1.2	5.6	1.8	1.8	2.9	7.4
Total	0.9	0.9	0.8	2.0	1.7	2.9

Source: elaboration on OpenCoesione database

The table confirms the results obtained so far. In the case of the blue growth pillar, only two regions, i.e., Friuli Venezia Giulia and Veneto, indicated a significant share of projects and funds dedicated to this pillar. In the case of Friuli Venezia Giulia, this corresponded with S3 priorities, while Veneto did not prioritise blue pillar topics in its S3 document explicitly. Furthermore, the other two regions that indicated blue growth topics in their S3 documents (Puglia and Sicilia) allocated a very small share of funds to these topics.

Almost all regions invested in Pillar 4 (sustainable tourism), but only some allocated a significant share of funds to these topics, namely Basilicata, Sicilia, Molise, Friuli Venezia Giulia, and Veneto. Here, too, Marche and Trentino Alto Adige cited no projects.
Overall, three regions – Friuli Venezia Giulia, Veneto, and Sicilia – indicated that they dedicated a significant share of their S3 projects to pillars 1 and 4. Basilicata and Molise indicated that a significant share was dedicated to Pillar 4. All the other regions indicated dedicating a percentage of funds around or under 1% of total funds.

2.3 The integration of S3 and EUSAIR in the programming period 2021-2027

The 2021–2027 programming period of EU Cohesion Policy dedicates the bulk of its budget to promoting a Smarter Europe through the confirmation of the S3. European regions have currently to update their S3 and to respond to the above mentioned “seven enabling conditions”, described in paragraph 2.1. To assess the integration of the S3 and EUSAIR strategies into the current programming period it is obviously not possible now to consider the projects or the allocation of funds. Besides, due to pandemic, spending on the 2014-20 ROPs was extended to half 2023, and regions generally had some delays in formulating their own S3.
Regarding data and methodology, to evaluate the integration for the current programming period, the empirical evaluation analysis is based on a textual analysis of the S3 documents approved by the Italian regions belonging to EUSAIR. In purely spatial terms, the Italian regions represent 40% of the entire area, and about 44,6% of the entire population.
The analysis focused on first-level priorities description as it represents policy development goals, and it is the only comparable element when analysing S3 priority settings.
Clearly, this analysis can verify the intentions expressed by policy makers on paper. The actual application of the Regional Operational Programmes (ROP) measures, that will be translated into projects, can be evaluated only in a subsequent analysis in the coming years. However, textual verification is particularly useful in two respects: on the one hand, for the political indications that are transposed there; secondly, it is possible to analyse if priority settings identified by the regions have been changed compared to the previous programming period.
This combination of elements allows to verify areas or sectors where regions believe they are more likely “to achieve (or maintain) a competitive advantage, and thus to focus their investment and innovation policies in those sectors” (Foray, 2014) for the period 2021-2017.
As already mentioned, with reference to Annex IV of the Common Provisions Regulation on (CPR) applicable to the funds of cohesion policy 2021-2027, S3 is the enabling condition linked to Strategic Objective 1 (OS1) "A smarter Europe by promoting intelligent and innovative economic transformation" and in particular to Specific Objectives 1.1 and 1.4, namely "Strengthening research and innovation capacities and the introduction of advanced technologies"; and "Develop skills for smart specialization, industrial transition and entrepreneurship".
In particular, for the fulfilment of the qualifying conditionality, the seven specific criteria should be set before the start of the programme and maintained for the entire cycle of the programming period, to properly spend the EU funds. As already mentioned, on each S3 regional document, the focus is on criterion 7: "Measures for enhancing cooperation with partners from other Member

States in priority areas supported by the smart specialisation strategy." Regionals S3 are expected to form part of European and national priorities and strategies.
Table 14 provides a summary of the textual search of the Italian territories that belong to EUSAIR.

Table 14 – Italian regions mentioning EUSAIR in their own S3 regional strategy

Italian Regions belong to EUSAIR	Mention EUSAIR	Mention Single project of ETC*	Mention Transnational existing networks	Overlap with at least 1 EUSAIR pillar themes	Mention of other MRSs
Abruzzo	■	■	■	■	
Basilicata **			■		
Calabria		■	■	■	
Emilia-Romagna	■		■	■	■
Friuli-Venezia Giulia	■		■	■	■
Lombardia			■	■	■
Marche	■		■	■	
Molise			■		
Puglia	■		■		
Sicilia	■		■	■	
Trento			■		
Bolzano		■	■		■
Umbria		■	■	■	
Veneto			■		

Source: Author's elaboration
*European Territorial Cooperation Programmes
**Under approval

Firstly, the research dealt with the explicit mention of the EUSAIR strategy, whether and how the strategy was considered in the context of transnational cooperation measures in the regional S3 design. In this same perspective, reference has been made to:

- individual territorial cooperation (CTE) projects,
- transnational networks already established,
- if a region takes part in more than one MRSs, the other macroregional strategy is mentioned in the text.

This latter consideration might reflect one region's interest in issues and membership of one SMR over another.

Table *15 – Matching overview of the priority settings and the EUSAIR pillars*

EUSAIR Italian Region	Blue Growth	Connecting the region	Environmental Quality	Sustainable Tourism
Abruzzo				
Basilicata				
Calabria				
Emilia-Romagna				
Friuli-Venezia Giulia				
Lombardia				
Marche				
Molise				
Puglia				
Sicilia				
Trento				
Bolzano				
Umbria				
Veneto				

Source: Author's elaboration

Empirical results as shown in Table 15, provide the first evidence of overlap between S3 specialisation areas and EUSAIR pillars. From a methodological point of view, it should be noted that if a region identifies a priority that is traceable to more than one Pillar, the same is counted several times.
Going briefly into details, we can notice that for Abruzzo the domain Sustainable Mobility and Tourism is overlaid to pillar 2 and 4. Abruzzo has a paragraph dedicated to S3 in which it also underlines the importance of the embedding process, i.e. the opportunity to converge needs, priorities and actions of Regional Operational Programs, with cooperation actions; it has become an opportunity and a need in a perspective of programming shared by multiple financial instruments. Among its areas of innovation priority settings, Calabria indicates blue economy, the environment and tourism that address, respectively the pillar 1, pillar 3 and pillar 4 of EUSAIR topics, but does not mention this strategy among the "Measures for enhancing cooperation". Emilia Romagna identifies "tourism industry" and makes explicit that a structural programming policy for European development cannot be limited to looking within regional borders as well as it would be necessary to look at wider functional areas, in line with the opening-up of the regional economic and social system. The Emilia Romagna participates in the Governing Board of EUSAIR as Managing Authority of the Interreg ADRION transnational cooperation program, functionally linked to the macro-regional strategy, as also confirmed for the period 2021-2027. For this region, the overall reference framework on which the definition of the 2021-2027 S3 priorities is based on the intersection between the strategic guidelines at the international level, represented in particular by Agenda 2030, the objectives of the new European Cohesion Policy, and the general policy objectives of the Emilia-Romagna Region identified by the so-called "Pact for work and climate". This region mentions the "Blue Growth" as a so-called "ambito tematico". Blue growth is considered in a wide spectrum, as an item which affects all areas of activity of the economy of the sea. It has a high innovative potential for the productive specializations of the regional territory and aims to direct growth towards a more sustainable model of use of our seas and coasts. However, blue growth does not appear as a first-

level priority but appears in a subsequent sublevel. Emilia-Romagna also looks with interest at the EUSALP Strategy.
Friuli-Venezia Giulia identified five specialisation areas, namely:

1. Energy transition, circular economy and environmental sustainability,
2. Smart Factory and Sustainable Development of Made in Italy supply chains,
3. Maritime technologies - Sustainable waterway mobility and its land connections,
4. Health, Quality of Life, Agribusiness and Bioeconomy,
5. Cultural heritage, design, creative industry, tourism.

Among them, the issues of blue growth, energy, environment, and tourism overlap with thematic pillar 1, pillar 2, pillar 3 and pillar 4. The S3 document devotes an entire paragraph to MRS within its S3 as the region takes part in both EUSAIR and EUSALP.
Lombardia within its S3 document, focuses on “connectivity and information ecosystem” that can be crossed with the pillar 2 of EUSAIR "connectivity: transport and energy". Lombardia also identifies the “ecosystem of sustainability” that in broad consideration, overlaps pillar 3. The Marche region instead identifies the “Economy of services and tourism” crossed with the Pillar 2 sustainable tourism. Molise doesn’t consider EUSAIR in its S3 document and there is no overlapping of the thematic areas.
Puglia represents a special case. Among its the priority settings called “Filiere di Innovazione” and the EUSAIR pillars there is no overlapping. However, Puglia identifies Blue Growth as one of the "drivers of change" for the regional system, in terms of challenges and opportunities and it represent a cross-cutting aspect. The Puglia S3 document, the remind to “transport and environment”, but it is referred to sub-levels of priority specification. As far as Sicilia is concerned, among the so-called "areas of intelligent specialisation" they identified "economy of the sea", "energy", "tourism, culture and cultural heritage", "environment, natural resources, sustainable development". All these areas overlap with all 4 EUSAIR pillars (for the second pillar overlapping is on the energy item).
As far as Trento is concerned, there is no overlapping between priorities and pillars, nor is there any reference to the EUSAIR strategy. Veneto identifies 6 priority areas, so called “ambiti prioritari di intervento”, but there is no overlapping with EUSAIR pillars. The strategy is not invoked in the S3 document. To meet criterion 7, reference is made to previous transnational collaboration networks.
To conclude, Umbria identifies the so-called "Energy and Environment Area" superimposable to both pillar 2 and pillar 3 of EUSAIR while for Molise the priority S3 "tourism industries” overlaps with pillar 4 of the EUSAIR strategy.
As a further parameter of qualitative comparison, the research focuses on a more analytical comparison of two regions taken as samples: Veneto and Friuli-Venezia Giulia. Although they are contiguous territories, the represent a total overlap and no overlap with the EUSAIR Pillars.

Table 16 – Veneto investments priorities 2021-2027

Priority areas	Nr. Development trajectories
Smart agrifood	11
Smart manufacturing	11
Smart health	6
Culture and creativity	7
Smart living & energy	12
Smart destination	5

Source: Author’s elaboration

Veneto, in its S3 regional document[49] provides an extensive description of the phases and analyses conducted that have led the region to change the previous 2014-2020 priority settings. The areas of "Smart health" and "Smart destination" have been added and the areas of Culture and Creativity (formerly called "Creative industries") and Smart Living&Energy (previously called "Sustainable living") have been redefined.

According to Table 16, they identify six investment priorities called “Traiettorie di sviluppo” (development trajectories). Beyond these first-level definitions, "52 associated development trajectories" (Traiettorie di sviluppo) have been added.

In addition, some cross-cutting themes, common to all areas of specialisation, have been identified and referred to the 4 "transversal drivers" listed below:

1. Digital Transformation (Digital Transition, interconnection between supply chains),
2. Green Transition (Circular economy, environment, society and mobility),
3. Human Capital (Training and skills, putting the person at the centre),
4. Services for innovation and new business models (Research, communication, organization, marketing, financial advice, intelligent distribution, etc.).

In defining the Strategy as a whole, Veneto has besides decided to highlight two other specific issues for the relaunch and positioning of Veneto in the context of the National Recovery and Resilience Plan (NRRP) called “Missioni strategiche” (strategic missions) and corresponding to:

- Strategic Mission for Bioeconomy,
- Strategic Mission for the Space Economy.

Overall, therefore, the new Veneto S3, for the period 2021-2027 is a strategic plan that uses a matrix logic to integrate various elements. It intertwines vertical elements called “ambiti” (the scopes) with transversal elements (drivers) also integrating an objective dimension “missioni” (the missions) that acts as a bridge between the National Recovery and Resilience Plan (NRRP) and the S3.

The matrix structure does not refer to any of the S3 Pillars at the first level of prioritisation. Matching with EUSAIR Pillar 3 can be found in the subsequent cross cutting driver.

To notice that the number of the trajectories is passed to 52 regarding the 187 initially emerged with a reduction of 72.19%.

This aspect is empirically confirmed in Foray according to which the ambitious concept of innovation policy, precisely of S3, involves a coordination component of planning (i.e. regional administration), and a bottom-up direction (i.e. stakeholders) through EDP (Foray, 2019).

Friuli-Venezia Giulia boasts a strategic position in the Upper Adriatic that allows it to be considered as a hub of economic and socio-cultural exchanges between East-West and North-South. However, it has a reduced dimensions compared to the national context and the other regions of the North-East of Italy. In design its S3[50], the update of the "specialisation priorities" followed the instruction provided by the JRC in the Technical Report n. 14/2018 "Smart specialisation at work: Assessing investment priorities" (Gianelle C et al., 2018) and carried out in line with the indications provided at national level. The latter suggested to the Regions to consolidate the areas of specialisation defined in 2014-2020, maintaining the reference to the twelve national areas of specialisation to revise or refine development trajectories on the basis of EDP results, data implementation and up-to-date international positioning analysis. As shown in Table 17, five areas of specialisation have been identified, for a total of twenty-four “traiettorie di sviluppo” (development trajectories).

[49] Deliberazione della Giunta Regionale n. 474 del 29/04/2022

[50] Deliberazione della Giunta Regionale n. 1970 del 23/12/2021

According to the so-called “granularity of priorities” principle, the level on which thematic priorities are identified should not be too high, because otherwise S3 would become a process of sectoral prioritization as was the old industrial policy. This would bring S3 back into a horizontal policy through which all microprojects of a certain value would be financed.

Table 17 – Friuli-Venezia Giulia investments priorities 2021-2027

Priority areas	Nr. Development trajectories
Energy transition, circular economy and environmental sustainability	4
Smart Factory and Sustainable Development of the Made in Italy supply chains	5 (+ other sub level for each trajectory)
Maritime Technologies - Sustainable Waterborne Mobility and its land connections	3 (+ other sub level for each trajectory)
Health, Quality of Life, Agribusiness and Bioeconomy	7 (+ other sub level for each trajectory)
Cultural heritage, design, creativity industry, tourism	5 (+ other sub level for each trajectory)

Source: Author’s elaboration

Of course, economic activities take place at the company level, but the essence of S3 is not to favour a particular enterprise, but to support the development of collective actions and experiences aimed at exploring, experimenting, and discovering new opportunities. This principle has already been largely debated in the literature (Foray & Goenaga, 2013; Komninos et al., 2014; Landabaso, 2014; Radosevic & Ciampi Stancova, 2018) and in this search, it is only mentioned.
Although, reading the S3 documents, in fact, they note that for many regions (e.g., Lombardia and Puglia), the definition of priority settings is rather loose.
They preferably use the terms of supply or ecosystems that can imply a change in the logic of S3. So, for instance, Lombardia moved from “specialization areas” to “innovation ecosystems” and so forth.
The overlap with the EUSAIR pillar is not affected by this formulation and perhaps could even be a reason for a greater degree of embedding among the priorities i.e., Friuli Venezia Giulia and Sicilia.
However, given the territorial dimension of EUSAIR, characterised by the Adriatic-Ionian basin, the fact that only three regions (Calabria, Friuli-Venezia Giulia, Sicilia) mentioned "Blue Growth" (still broadly considered) in their S3 prioritisation, and Puglia identified this item as cross-cutting aspect, is somewhat surprising even more than it was for the previous analysis of 2014-2020 programming period and discussed in 2.2 paragraph. In this regard, Puglia widely considers the Blue Growth as one of the "drivers of change" among its the priority settings called “Filiere di Innovazione”.
Many contributions underlined that several European regions struggled to define a few narrowed priorities (di Cataldo et al., 2022) and only a partial transition from the “old” undifferentiated industrial policy that was typical of European regional policy before 2014 has been observed (D’Adda et al., 2021; Gianelle, Guzzo, et al., 2020).

As S3 is a transformative structural policy, based on an in-depth analysis of the context, no radical change was foreseen with regard to the definition of the investment priorities of the Italian regions. In the span of the six-year period, 2014-2020, the expectation was that of a substantial reconfirmation of the priorities already identified, if not with some minor adjustments. However, as new policy assets emerged in the EU context, i.e. the European Maritime, Fisheries and Aquaculture Fund aiming to deliver the EU common fisheries policy and EU policy priorities outlined in the European Green Deal (EGD), the blue growth was expected to have major consideration at least among coastline border regions. The same consideration for Pillar 3 items that are the least considered among the priorities of the S3 of the Italian regions belonging to EUSAIR. The Commission Communication on a new approach for a Sustainable Blue Economy of 2021[51], then specifically refers to the role of MRS and the embedding process of MRS into the national programming of funds. This is particularly relevant for the MRS with a strong maritime[52] dimension. This aspect was fairly neglected by the S3 of the EUSAIR regions used as samples. Besides as a general consideration, the EC recommend the MRS must be implemented considering the political context where the green and the digital transition set new strategic orientations for the European Union. As the four MRS have in common the three main general and interconnected priorities of the environment and climate change, research & innovation and economic development, connectivity (transport, energy, digital networks), all MRS are expected to deliver on these topics.

2.4 The actual integration of EUSAIR and direct funds

As EUSAIR has no own financial resources, Pillar issues can be funded also through direct EU programmes. While the ESIF Funds are part of the so-called "indirect funding" managed by national and regional authorities, interregional relations in research and innovation among EUSAIR regions and countries has been observed in relation to two of the most interesting direct programmes relevant to this research. The empirical analysis of projects refers to two programmes, namely Horizon and Interreg programme covering the 2014-2020 programming period.
Horizon is the EU's framework programme for research and innovation.
Interreg is the key EU instrument to support cross-border cooperation through project financing.

Horizon

The main purpose of Horizon is to finance research and innovation activities through calls managed directly by the EC, of different types but with purposes exclusively aimed at civil applications. In particular, the programme aims to develop research and innovation initiatives that individual Member States could not carry out as effectively, seeking to add value to national activities in this field.
For the current programming period, Horizon Europe (2021-2027) including funds allocated to the Next Generation EU. Among the strategic objectives of the programme are to strengthen the EU's scientific and technological bases and promote competitive systems, as well as to increase the EU's capacity to address global challenges starting with climate change and the UN 2030 Agenda on Sustainable Development. Any European legal entity or of third countries or international

[51] COM (2021) 240 final.
[52] COM (2022) 705 final IV report on the implementation of EU macro-regional strategies {SWD (2022) 397 final}

organizations may participate in Horizon Europe calls, subject to certain exceptions in reference to specific calls. Generally, the consortium of partners applying for a programme call must be composed of at least three legal entities, belonging to three different countries, of which at least one belongs to a Member State.
At this moment, association to Horizon Europe is governed by the Horizon Europe Regulation 2021/695[53]. Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia are countries with which association agreements have started to produce legal effects (either through provisional application or their entry into force).
Starting from the 2014-2020 programming period Horizon 2020 (H 2020) sees, for the first time, all funding for research and innovation included in a single programme with a budget of approximately 8% of that of the EU. H2020, in fact, followed seven previous framework programmes, with the aim of bringing together all research and innovation-related activities in a single programme and simplifying the structure and procedures.
The Programme was divided into three pillars:

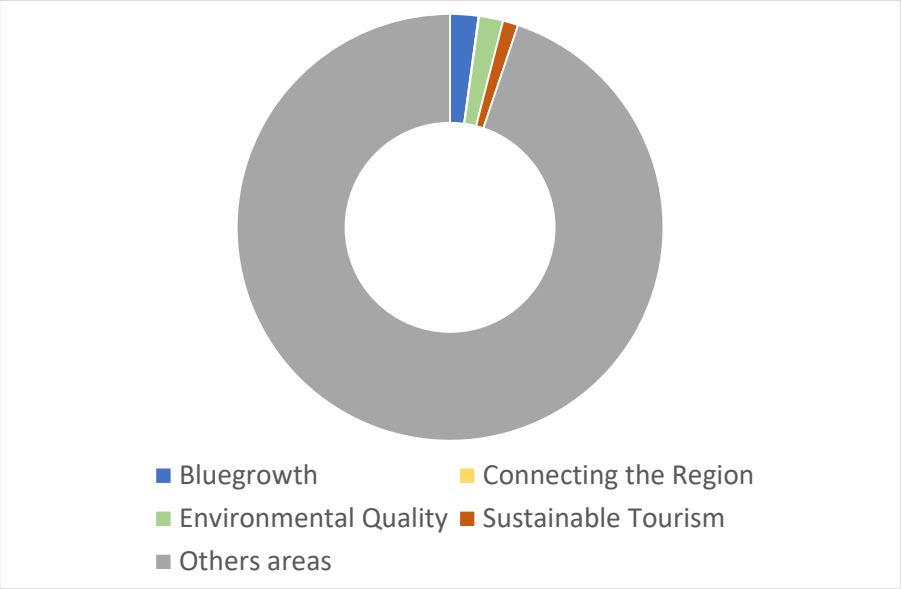
- Excellent Science (ES)
  1. ERC – European Research Council, frontier research by the best individual teams,
  2. FET – Future and Emerging Technologies, Collaborative research to open new fields of innovation,
  3. MSCA - Marie Skłodowska-Curie actions, for training and career development,
  4. RI – Research Infrastructures, including e-infrastructure,
- Industrial leadership
  1. Leadership in enabling and industrial technologies (ICT – Information and Communication Technologies; NMBP – Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing; Space),
  2. Access to risk finance - Leveraging private finance and venture capital for research and innovation,
  3. Innovation in SMEs - Fostering all forms of innovation all types of SMEs,
- Societal Challenges
  1. SC1 – Health, Demographic Change and Wellbeing,
  2. SC2 – Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy,
  3. SC3 – Secure, Clean and Efficient Energy,
  4. SC4 – Smart, Green and Integrated Transport,
  5. SC5 – Climate Action, Environment, Resource Efficiency and Raw Materials,
  1. SC6 – Europe in a changing world – Inclusive, innovative, and reflective societies,
  2. SC7 – Secure societies – Protecting freedom and security of Europe and its citizens.

Against this background, in order to verify the overlapping and potential synergies with the priorities of the EUSAIR pillars, an analysis of the projects financed within the framework of Horizon 2020 ERDF 2014-2020 and referring to the 34 NUTS2 territories that are part of EUSAIR was carried out.
To this purpose it has been possible to extract a dataset based on the CORDIS database.

[53] Regulation (EU) 2021/695 of the European Parliament and of the Council of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013 (OJ 12.5.2021 L 170/1).

The keywords used to analyse the common area on interests are the same used for the S3 analysis in paragraph 2.2, added according to the descriptions of the pillars, topics, and specifications most often found in the literature.

Figure 6 – Share of Horizon 2020 financed projects referring to EUSAIR pillars.



Source: Author's elaboration based on CORDIS

Empirical results provide the evidence of overlap between financed project in Horizon 2020 and EUSAIR pillars. The sample refers to a total of 6'376 projects funded in Horizon 2020.
As we can see in Figure 6, only a small percentage of project are related to EUSAIR pillars.
Figure 6 also shows that the overlap mostly is observed for the pillars referring to blue growth and environmental quality. The percentage is modest respectively 2,25% and 1,99% but marks a reversal in the priorities of the observed topics regarding the analysis conducted on the overlapping with S3. Sustainable tourism and connecting the regions (energy and transport), are scarcely considered representing respectively 1,22% and 0,06%. For tourism items, also consider the voice in a broader scope, (i.e. the cultural dimension) it's not surprising given the specific character of Horizon. Less obvious is the still modest of overlap with Pillar 2.
Nevertheless, one possible explanation considers that about Pillar 2, EU countries whose gross national income (GNI) per capita was less than 90 % of the EU average, were able to benefit from the Cohesion Fund. The Cohesion Fund was established in 1994 to strengthen the economic, social and territorial cohesion of the European Union and to promote sustainable development within the ESIF financial resources framework. Finding its legal basis in Article 177 (TFEU), it finances projects to support environment and trans-European network in the Member States. In the 2014-2020 programming period, it provided funding to 15 Member States, including Croatia, Greece, and Slovenia.

Starting from this consideration, it moved on to verify the number of projects referring to the different topics of H 2020 and financed for the EUSAIR territories. For Italy, reference is made to the fourteen NUTS2 participating regions.

Table 18 gives an overview of projects financed. The average amount for single project varies in the range from 600 kEuro of Italian EUSAIR regions to 76 kEuro of Bosnia and Herzegovina.

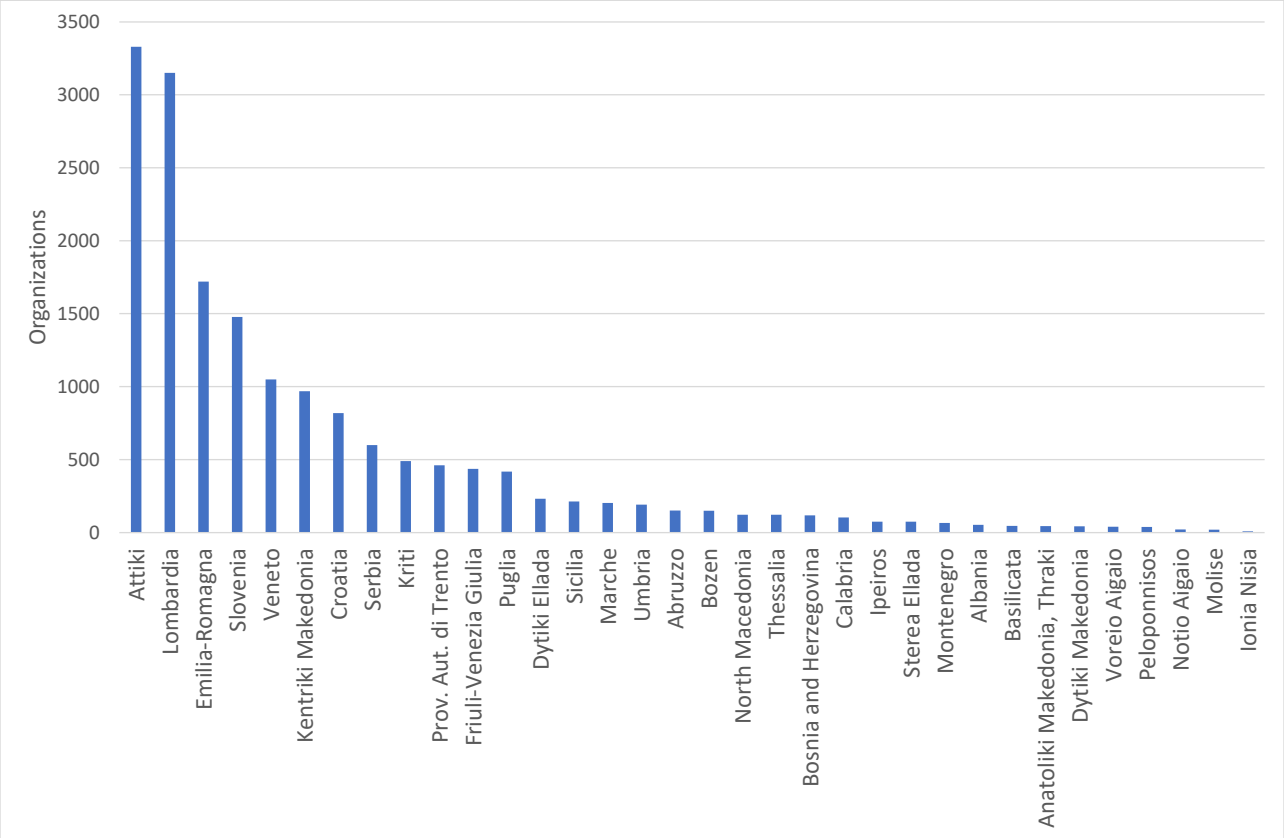
Table 18 – Number and amount of financing for projects financed by ERDF Horizon during the 2014-2020

Region/Country Names	Nr. of Projects	Average Amount (kEuro)	ERDF Contribution	TOT Amount
EUSAIR Italy	12'071	599.9	70.37%	73.21%
Greece	5'478	339.0	21.18%	18.78%
Slovenia	1'472	306.5	4.70%	4.6%
Croatia	816	193.0	1.70%	1.59%
Serbia	596	244.3	1.64%	1.47%
North Macedonia	122	146.8	0.17%	0.18%
Bosnia and Herzegovina	118	76.8	0.11%	0.09%
Montenegro	65	89.5	0.06%	0.06%
Albania	52	115.2	0.07%	0.06%
Total	20'790			

Source: Author's elaboration based on CORDIS

Figure 7 show the number of Organisation participating in 2014-2020 Horizon 2020 programme. As a methodology, a single participant can be involved in N projects and therefore being counted as N participations. Again, the sub-division refers to all EUSAIR territories.

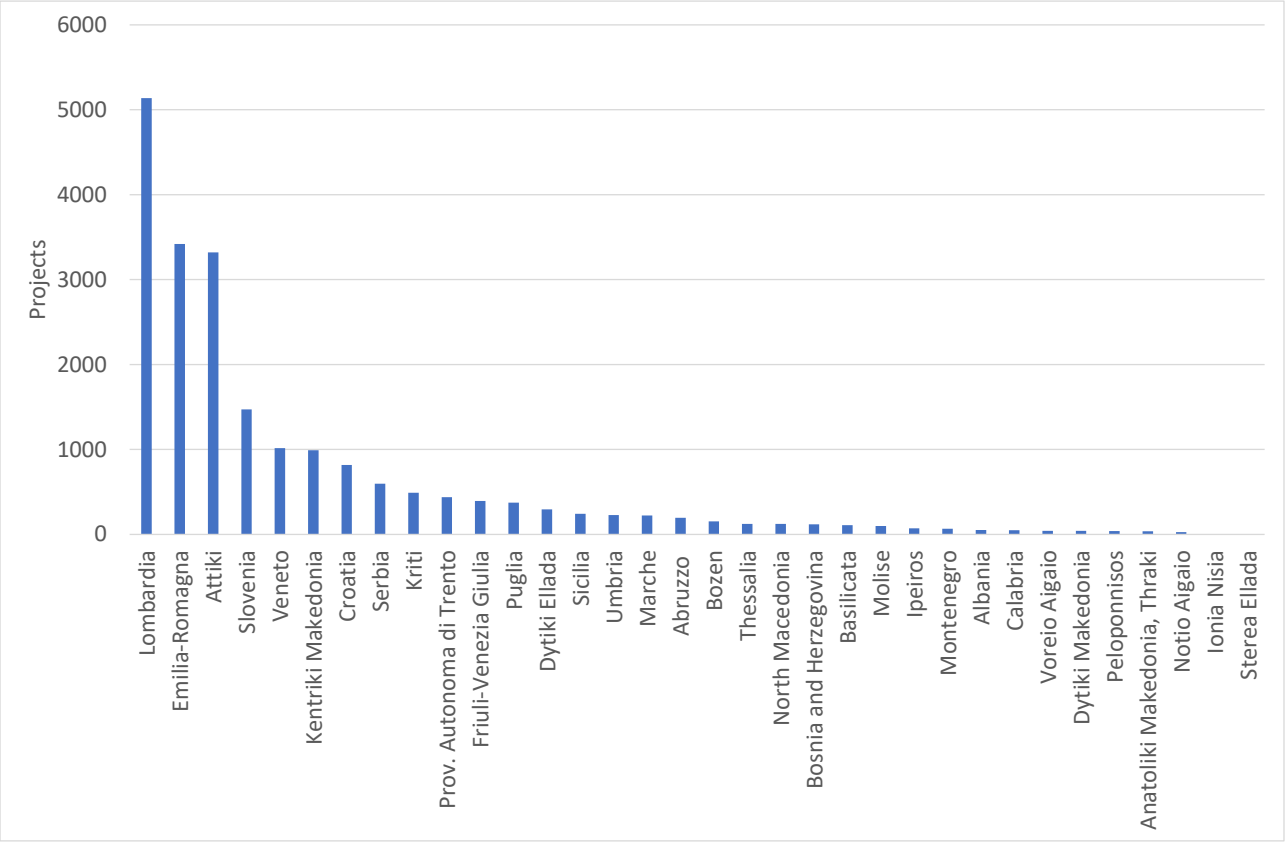
Figure 7 – Number of Organizations participating in Horizon 2020 per Region and Countries belonging to EUSAIR.



Source: Author's elaboration based on CORDIS database.

In the different regions are shown sorted with respect to the number of organizations involved in the projects, while in Figure 8 are reported sorted with respect to the number of projects.

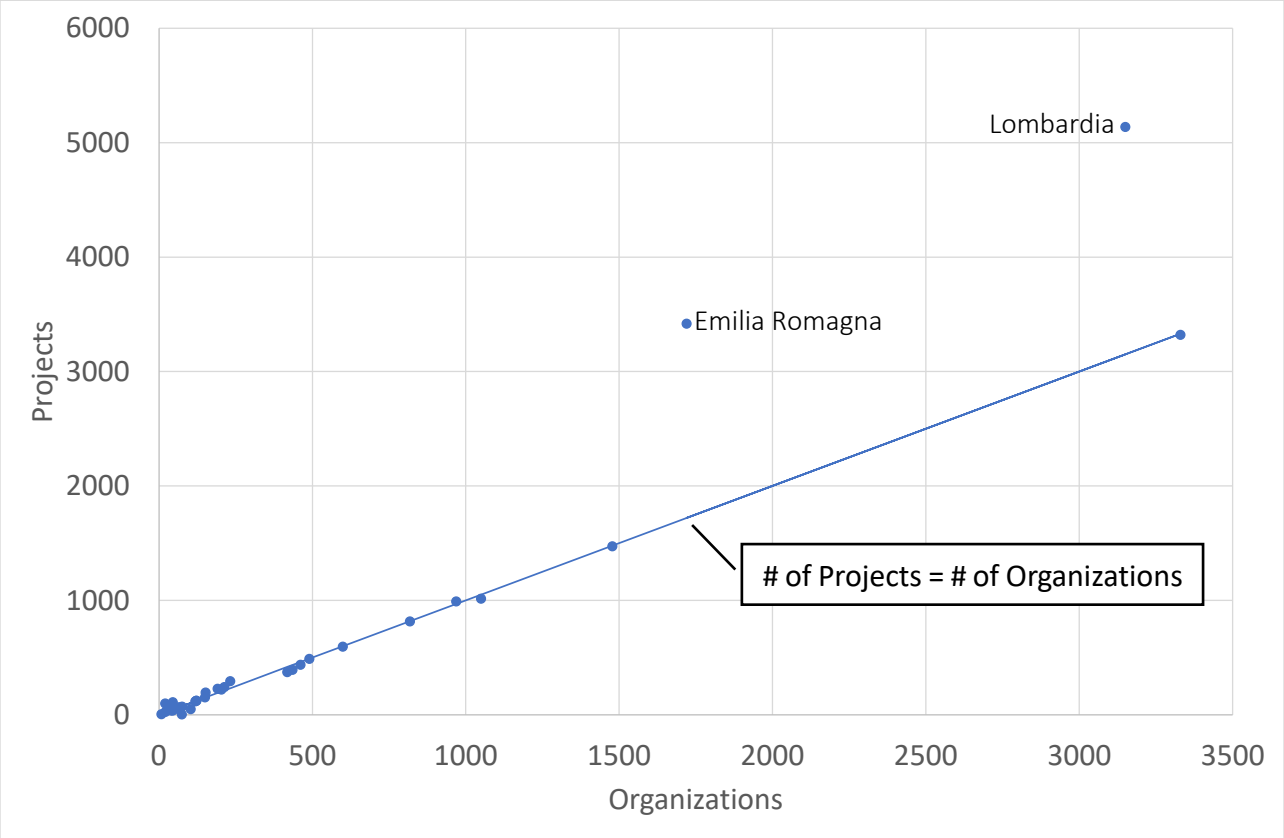
Figure 8 – Number of Projects in Horizon 2020 per Region and Countries belonging to EUSAIR.



Source: Author's elaboration based on CORDIS database.

Therefore, while it is possible to note that the total of Italian regions belonging to EUSAIR has the highest number of holdings, Attiki (EL30) is the NUTS 2 region with the highest number of participations. This fact may be indicative of the governance capacity, the availability of resources in financial terms that of the human resources/skills as well as the political will to invest in research and innovation. As well as the large number of R&I organizations eligible to participate in the programme. It is fairly evident that regions able to involve a larger number of organisations are able also to collect a larger number of projects, due to a larger critical mass, more companies and institutions insist the region.

Figure 9 – Correlation between Organizations and Projects in Horizon 2020 per Region and Countries belonging to EUSAIR



Source: Author's elaboration based on CORDIS database.

The Horizon logic is of course not that of the subdivision by NUTS 2 but this criterion is used as a uniform basis for analysis. As for the funds with indirect management, Horizon has a different allocation logic for which the funds go to those "qualified" projects without any logic of redistribution of financial resources related to a territory (Doussineau et al., 2021).

In this respect, a high degree of concentration could have been expected in the EUSAIR countries with a more performing European Innovation Scoreboard (EIS)[54], but the most interesting and most evident concentration is not by country but by region. This trend is even more evident in Figure 9, in which the correlation between the number of organisations and number project is shown.

Given an empirical report that statistically suggests a project for each organization (continuous line), this trend is confirmed by data for nearly every region. It is interesting to note larger exceptions to this rule:

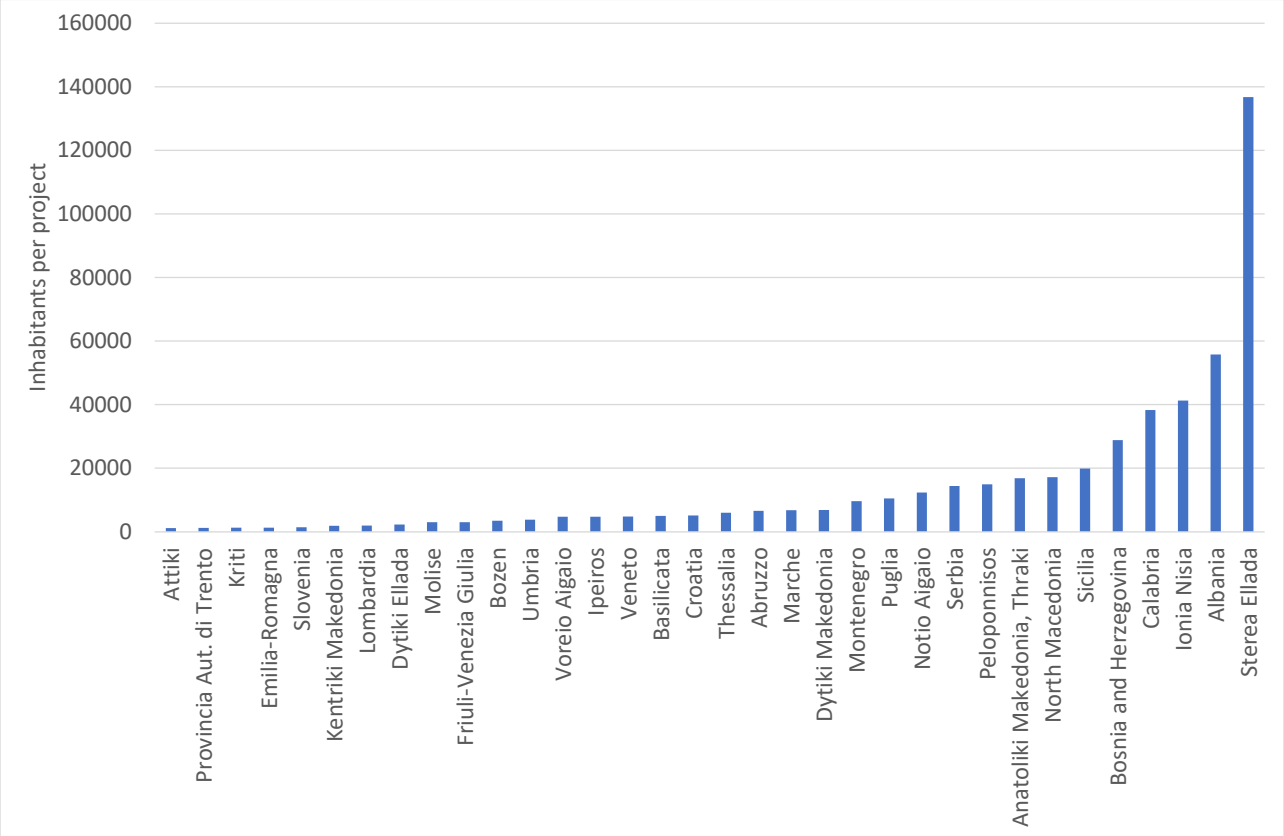
- Best scorers are Lombardia and Emilia Romagna, with several projects much larger the general trend,
- Worst scorers are Calabria and Sterea Ellada, with performance much lower than the average.

These performances are surely due to structural differences among regions and to the socio-economic situation of different areas but are significantly related to the firepower of the regions, that we can easily relate to the number of organisations.

[54] EIS provides a comparative analysis of innovation performance in EU countries, other European countries, and regional neighbours. https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard.

The best score and worst scorer are significantly almost at the extremes of the number of organizations count. On the total of the EUSAIR territories, it can be inferred that only Lombardia and Emilia-Romagna have organizations that can take part in a large number of projects, able to put themselves more than others in the networks (for capacity building, skills, funds, etc...).
Figure 10 displays the proportion between inhabitants and number of projects. Such a figure could be seen as an output of the investment in planning.

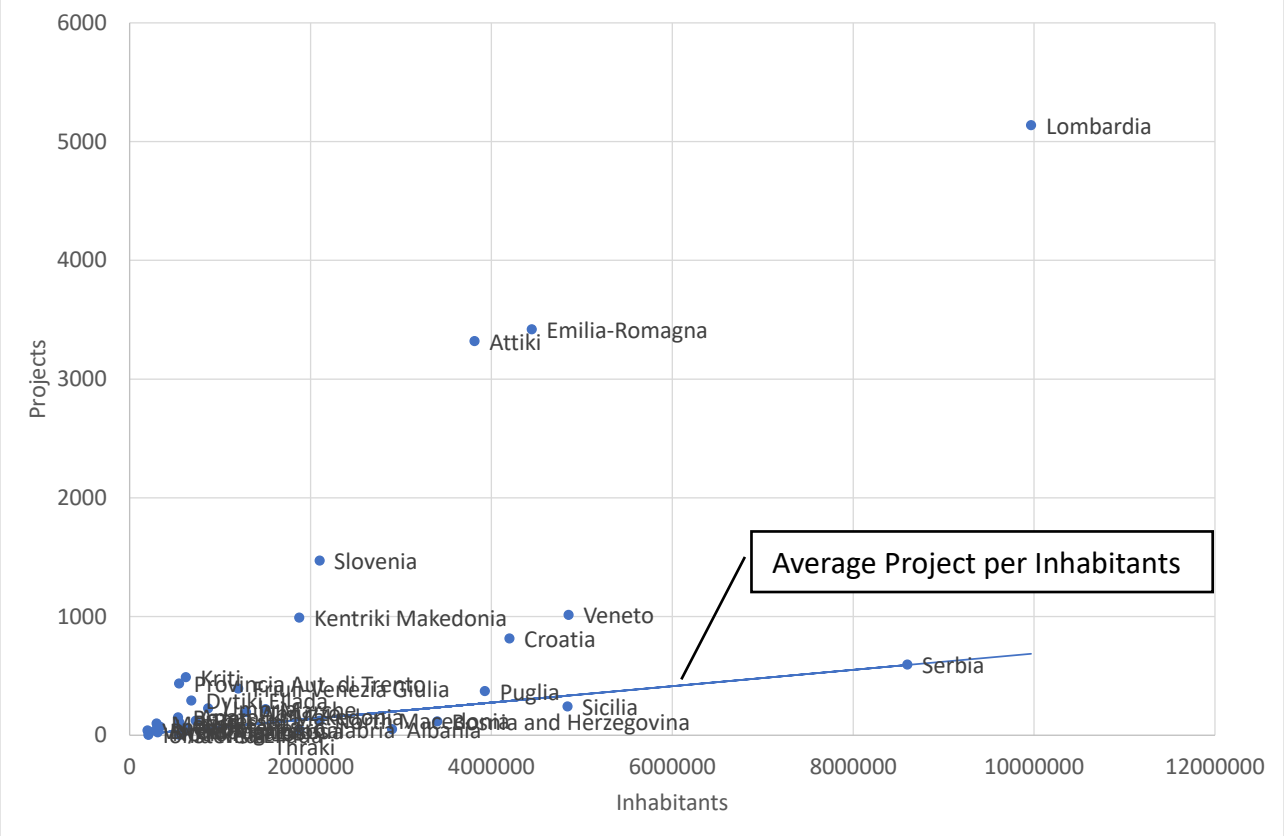
Figure 10 – Ratio between inhabitants' number and project number in Horizon 2020 per Region and Countries belonging to EUSAIR



Source: Author's elaboration based on CORDIS database.

An attempt to highlight these differences is to also consider the inhabitants population.
Once again, the best performing regions show the highest score for this feature as well.
A more detailed analysis has been made referring to Figure 11, where the correlation between the inhabitants and the number of projects is plotted, in relation to the average value calculated considering all regions. The difference between top scorer and worst scorer are always there, but in this figure, can be observed the effectiveness and the efficiency also, with several regions above the average performance.

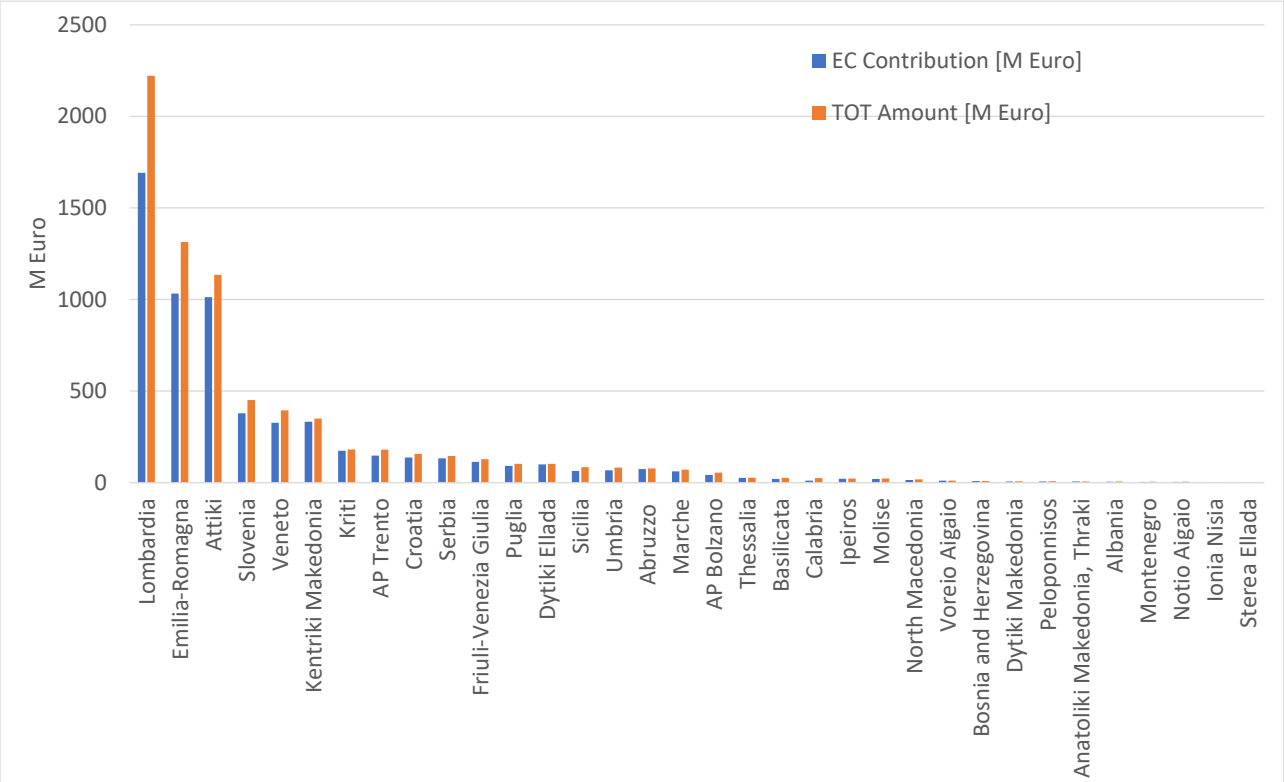
Figure 11 – Projects in Horizon 2020 per Inhabitants per Region and Countries belonging to EUSAIR



Source: Author's elaboration based on CORDIS database.

The situation does not change looking at the distribution of amounts for the various regions, as shown in Figure 12. The best performing regions are obviously the ones that collect the most projects and the most funds.

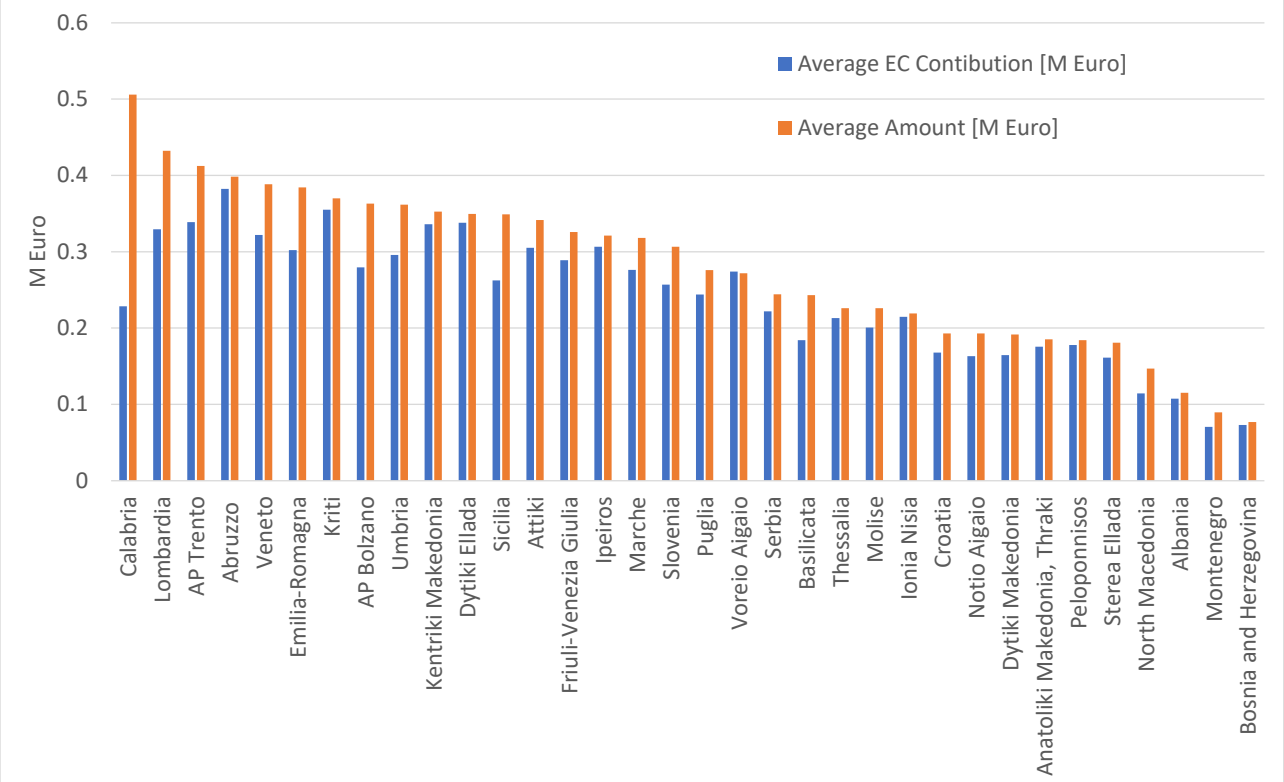
Figure 12 – Amount and EU Contribution in MEuro



Source: Author's elaboration based on CORDIS database.

Given the average amount (see Figure 13), there are both confirmations and surprises.
For example, Lombardia continues to rank highly based on this metric. This could be an indicator of the healthy industrial and social landscape of the region, which supports a large number of organisations.

Figure 13 – Average Amount and EU Contribution in MEuro per Project



Source: Author's elaboration based on CORDIS database.

On the contrary, some regions (such as Attiki and Emilia Romagna) descend into classification as evidence of a more fragmented reality.
Other regions like Calabria confirm a not particularly brilliant performance that leaves the few projects to a few organizations, with particularly high average values.

Interreg Adrion

Another step of the analysis regards the ETC or namely Interreg programme. Interreg consists in a series of programmes for the cohesion between regions, in and out of the UE, to help local, regional, and national governments across Europe to develop and deliver better policy. The transnational cooperation programmes strand, namely Interreg B cover almost all the territories involved in the four MRS. For this research, data are gathered regarding Interreg Adrion 2014-2020. Adrion covers almost the same areas than EUSAIR but not North Macedonia.
Table 19 shows the number of projects per area interesting the four MRS.

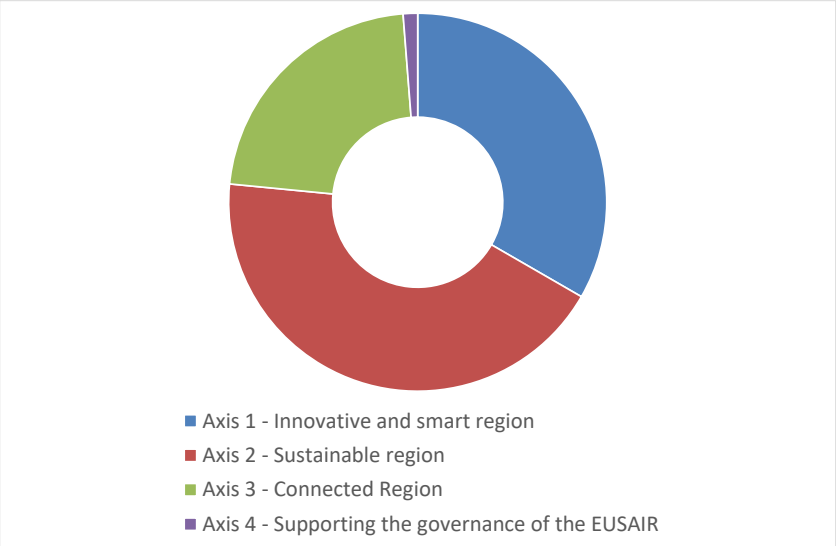
Table 19 – Number of projects per area interesting the MRS

2014 - 2020 INTERREG VB	Nr of projects
ADRION (Adriatic – Ionian)	82
Alpine Space	64
Baltic Sea	200
Danube	155

*Source: Author elaboration based on EU Keep database**
**Keep.eu has extensive data on projects, programmes and partners of Territorial Cooperation involving the European Union, since 2000.*

For the elaborations, data are gathering from Keep Database. It has extensive data on projects, programmes and partners of Territorial Cooperation involving the European Union, since 2000.
Figure 14 shows the sharing of the total number of the Adrion projects per its priority axis. The percentage is calculated on the 82 projects.

Figure 14 – Share of projects per Axis – Adrion programme 2014-2020



Source: Author's elaboration based on EU Adrion Programme database.

The Interreg project is characterised by significantly smaller size than Horizon, with average values per project of 1.372 MEuro as Total Budget, and an average ERDF Contribution of 879 kEuro. IPA Contribution amounts to only 182 kEuro.
Table 20 provides a summary of the number of projects associated with the total budget and co-financing through ERDF or IPA per Axis.

Table 20 – Sharing of budget per axis.

	Number of projects	Total Budget	ERDF Contribution	IPA Contribution
Axis 1 Innovative and smart region	33.3%	23.5%	23.1%	25.2%
Axis 2 Sustainable region	43.2%	46.2%	46.2%	45.9%
Axis 3 Connected Region	22.2%	19.5%	19.8%	18.7%
Axis 4 Supporting the governance of the EUSAIR	1.2%	10.9%	11.0%	10.2%

Source: Author's elaboration based on EU Adrion Programme data

Most of the project are funded under Axis 2 - Sustainable region. This axis has the highest number of financed projects as well as major sharing of funds, and it is strictly linked to the EU package of policy initiatives named Green Deal, which aims to set the EU on the path to a green transition, with the

goal of reaching climate neutrality by 2050 and supports the transformation of the EU with a modern and competitive economy.
Member States have a certain freedom in implementing their green and energy strategies[55] and in general, each country faces essential domestic policy needs, which can sometimes conflict with global and supranational political priorities and restrict their implementation at national level. This axis overlaps with Pillar 2 of EUSAIR at least for the Energy issue. It overlaps even more with Pillar 3 related to Environment and sustainability.
The second axis per number of projects is Axis 1 - Innovative and smart region. This latter aims at promoting business investment in R&I, developing links and synergies between enterprises, technology transfer, social innovation, eco innovation, public service applications, demand stimulation, networking, clusters, and open innovation through smart specialisation. This axis is strictly related to the previous one as the Green Deal call for an EU modern and competitive economy. It is not strictly comparable to any EUSAIR Pillar. EUSAIR In fact, is the only MRS that does not have a specific pillar dedicated to innovation. However, although there is no close correlation with the priorities setting of S3 among EUSAIR, "research and innovation" are Cross-Cutting aspects that should be present in all the other pillars project proposal. Then, it is important to note that, although Interreg Adrion has an axis devoted to innovation, it primarily focuses on supporting the exchange of experiences, the transfer of good practices, and joint initiatives between regions in such an issue.
Axis 4 is totally dedicated to financing the Facility Point Strategic Project. The main purpose of this project leaded by Slovenia, is to facilitate the coordination and implementation of the EUSAIR by enhancing the institutional capacity of public administrations and key stakeholders and by assisting the progress of implementation of joint priorities. For its operation, a total amount of 11.5 million EUR has been dedicated for the period from May 2016 to December 2022 and prolonged until 31 August 2023.
Italy (considered only the Italian regions belong to EUSAIR) is the lead partner of about 56% of the Adrion projects, followed by Greece with 23%, Croatia 11% and Slovenia 10%.
The overall result of this chapter displays both the overlapping of topics with EUSAIR and the two direct programmes Horizon and Interreg as well as the number and distribution of funded projects by EUSAIR territory. While Adrion in targeted on the EUSAIR region, there are no financial or "priority-giving" incentives for EUSAIR regions to participate in HORIZON.
In the 2021 report by the EC/Joint Research Centre aiming to support the implementation of S3 in low-growth and less developed regions in EU, it is found that whilst lagging regions have relatively strong levels of participation in collaborative programmes such as Interreg, their level of participation in Horizon 2020 tends to be lower than that of more advanced territories (Woolford et al., 2021).
H 2020, on the other hand, aims at financing low Technology Readiness Level (TRL) projects[56] the with almost 80 billion euros budget, for the seven-year period 2014 – 2020 while Adrion (as well as all the Interreg sub-programmes) tends to finance cooperation among territories with some final output such Policy Recommendations (PR) and Action Plans (AP). The Actions Plan, which derive from the project, suggests schemes for the support of the envisaged projects. It outlines the actions needed to reach project partners' common objectives and provides in detail how the lessons learnt

[55] Article 194 of the Treaty on the Functioning of the European Union

[56] TRL represent a metric for assessing the degree of technological maturity of a product or process. It is based on a scale of values from 1 to 9, where 1 is the lowest (basic search) and 9 the highest (first production).

during partners cooperation could be implemented. The budget allocated for Adrion in the period 2014-2020 was around 359 million euros.

A further considerations concerns the specificity of the HORIZON programme. Firstly, the ERDF and the overall budget of the framework programmes for research and innovation has increased in recent decades. Literature shows Horizon has been able to provide stability and growth, both in funding, as well as in terms of a political message giving high priority to science and technology and contributing to the development of largest transnational innovation system (Veugelers et al., 2015).

Secondly, from H2020 onwards, the diversity of the financing ratio vis-à-vis the ESIF, aimed at bridging the development gap of structurally and economically disadvantaged regions, is increasing. While the previous Framework Programmes had a pronounced cohesion component, HORIZON 2020 adopts the notion of "excellence". Geographically balanced participation in projects is no longer an objective in H2020. Given the heterogeneity of EU regions and countries in terms of scientific bases and innovative capabilities, this represents a strong demarcation point as regards the distributive aspects of the funding approach.

A concentration of R&I funding from both ESIF and Horizon funding schemes in the same technological or policy area could point to the creation of a synergy between EU funding as encouraged by the EC (Doussineau et al., 2021).

3. Improving the integration between the EUSAIR and S3 strategies

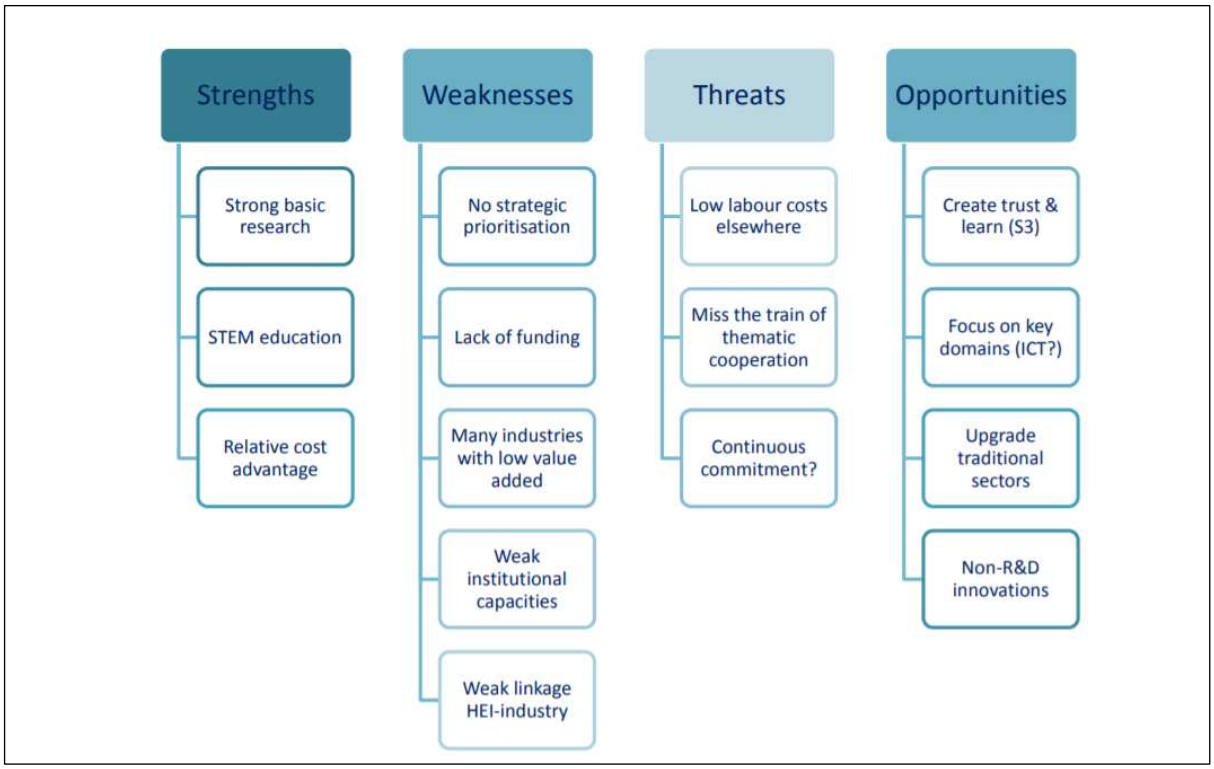
This chapter discusses the synergies between the two strategies in the field of European cohesion policy. Both the MRS and the S3 took shape in the first decade of the 2000s as part of the reform of cohesion policy.
The underlying ratio is to respond to growing challenges at the European level.
To date, paragraph 2 and 3 and review the process of this integration by focusing on the new governance models and financial instruments that characterise them.

3.1 S3 and EUSAIR

One of the main principles of EU development process, is to bring regions and countries together, to create a space for dialogue and joint alignment, to ensure stability and sustainable growth. Regions in EUSAIR are quite diverse in terms of development and this diversity goes along with a variety of governance systems and traditions (OECD, 2019).
Research and innovation policies contain new paradigms to help address key social challenges to transform the economy and society toward sustainability and resilience (Švarc & Dabić, 2021). The main purpose of S3 lies in its name: specialise regions, use their potential for faster development. Within the S3 framework, countries and regions translate a transformative approach. Herein, the key to faster development is to boost innovation. Besides, herein, the S3 approach has an important transformative aspect. Aiming at promoting economic development and growth through innovation in a cross-sectoral way, it does not focus on isolated industries, but on knowledge bases and their interrelationships and, supports diversification based on these interrelationships. (Asheim et al., 2011; McCann e Ortega-Argilés, 2015).
The EC has identified regional development, competitiveness, and S3 as key areas for joint support activities in enlargement and neighbourhood countries. The regulation outlining pre-accession funding clearly mentions S3 as a thematic priority for assistance to enlargement countries[57] and the EU Strategy for Western Balkans spells out how S3 can be implemented through technology transfer and start-up support in order to boost entrepreneurship and innovation across that area[58].
Due to variety of the regions, the innovation approach in EUSAIR is quite wide and slightly different than in other macroregional strategies due to the fact, that innovation is not considered a separate vertical pillar but a cross-cutting issue in all four pillars.
Here below, Figure 15 retrieved from the 2018 EC's policy report S3 revealed policy weaknesses and capacity issues in the innovation eco-system across the Western Balkans and EUSAIR countries.

[57] Regulation 231/2014 establishing an Instrument for Pre-accession Assistance (IPA II).
[58] COM (2018) 65 final, 2018 "A Credible Enlargement Perspective for and Enhanced EU Engagement with the Western Balkans, Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions".

Figure 15 –SWOT analysis in the EUSAIR innovation eco-system



Source EC, 2018.

Based on the processes and experiences gained so far, and at the same time on the analysis of strengths, weaknesses, opportunities and threats, S3 in the EUSAIR regions and countries indicates the processes in which new approaches and measures are needed. It represents both a crucial tool for regions to prepare strategic research and innovation activities, as well as the mobilisation of public and private innovation actors and the civil society using a participative approach. It thus comprehensively addresses a wider range of innovation-related development policies (Matusiak & Kleibrink, 2018).

As already mentioned, MRS do not belong to the ESIF common provisions framework but achieved the same objectives: firstly, strengthening economic, social, and territorial cohesion, functioning as a further policy framework in a, already complex, policy area. That is the reason why the links of the MRS/EUSAIR with the Cohesion Policy programmes are of particular relevance. MRS possess a hybrid set of features, partly rooted in EU cohesion policy (Gänzle & Kern, 2016b; McMaster & van der Zwet, 2016; Stead, 2014), which had a significant impact not only on the emergence and activities of EU macro-regions themselves, but also on various activities in the area of cross-border cooperation (Chilla & Streifeneder, 2018).

Regarding this last aspect, each region must define an operational programme (OP) to identify the interventions to be financed. In doing so, regions are required to indicate the expected contribution of the specific objective (SO) to the relevant EU macro-regional strategy and sea-Basin strategies.

Table 21 summarizes the trend of prescriptions from 2014-20 to 2021-27[59].

[59] Regulation (EU) 2021/1060 of the European Parliament and of the Council of 24 June 2021 laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, the Just Transition Fund and the European Maritime, Fisheries and Aquaculture Fund and financial rules for those and for the Asylum, Migration and Integration Fund, the Internal Security Fund and the Instrument for Financial Support for Border Management and Visa Policy. PE/47/2021/INIT.OJ L 231, 30.6.2021

Table 21 – Main provision of the ESIF between 2014-2020 and 2021-2027

2014-2020 ESIF CPR Article 96 (3)	2021- 2027 ESIF CPR Article 22 (3)
…an Operational Programme shall describe the integrated approach to territorial development (..), specifying, where appropriate, the following: ▪ (e) the contribution of the planned interventions under the programme to MRS/SBS strategies ▪ (d) the arrangements for interregional and transnational actions, within the OPs, with beneficiaries located in at least one other Member State	Each programme shall set out: ▪ a summary of the main challenges, (viii) EU macro-regional strategies (MRS)/sea-basin strategies (SBS), where they participate ▪ (d) for each specific objective: ▪ related types of action + expected contribution to those SOs, to MRS/SBS and territorial just transition plans, where appropriate ▪ (vi) the interregional, cross-border and transnational actions with beneficiaries located in at least one other Member State ("or outside the Union, where relevant")

Source: EC

In its Communication "Regional Policy contributing to smart growth in Europe 2020" the EC identify S3 as an instrument to deliver a more targeted ESIF support[60] and a "strategic and integrated approach to harness the potential for smart growth and the knowledge economy in all regions".
As the ex-ante conditionality does not apply to non-EU member states, non-EU EUSAIR countries were not required to design a S3. However, EU accession candidates are still encouraged to adopt the approach with a view to eventual EU accession (e.g., the Commission's 2020 progress report for Bosnia and Herzegovina explicitly calls on the country to "develop and adopt a smart specialisation strategy").
So that both considering the transformative approach as well as the pre-accession countries' interest in aligning their policies with the acquis communautaire, some of them designed development strategies that followed S3 requirements (Capello, 2020; Iacobucci & Ruggeri, 2023a; Matusiak & Kleibrink, 2018).The introduction of S3 in the Western Balkans, in fact, must also be seen in the context of the enlargement of the EU which offers a prospect of accession for the economies of the non-EU EUSAIR countries and provides support for several policy areas, including socio-economic development (Commission, 2018; Matusiak & Kleibrink, 2018).
Nevertheless, the translation of S3 principle encored several obstacles during the 2014-2020 programming period, considering all EUSAIR regions (Report COWI, 2018). First intuition and anecdotal evidence, instead of good evidence, seems to have been guided the choices (Iacobucci & Guzzini, 2016). Sectoral priorities chosen by regions have largely ignored key concepts such as "relatedness" and "connectivity" of technological domains as guiding principles behind their strategies. Then the lagging regions had more difficulties in identifying priority areas (Gianelle, Guzzo,

[60] 6 October 2010 ("Regional Policy contributing to smart growth in Europe 2020") http://ec.europa.eu/regional_policy/sources/docoffic/official/communic/comm_en.htm

et al., 2020b). Consequently, in several cases there is a proliferation of priority areas, “coffee for all” policy going against the very principles of smart specialisation (Gianelle et al., 2019). Weak institutional governance contributed to these problems. To support non-EU countries in the design and implementation, the S3 was introduced with EC technical assistance. Montenegro was thus the first economy in the Western Balkans to adopt a specific S3 (Benner, 2019; Matusiak & Kleibrink, 2018; Radovanovic & Benner, 2019).

In its third 2020 report on the implementation of the MRS[61], the EC recognises the role of macro-regions in promoting innovation as "MRS promotes S3 by supporting transnational innovation platforms and SME clusters”. Based on collaborative and participatory processes, S3 should facilitates demand-driven innovation and collective solutions involving quadruple-helix innovation ecosystems. In this regard, the EC also stressed it is necessary to use the momentum for more ambitious action on funding, governance, post-pandemic resilience and recovery aspects.

Strong territorial innovation ecosystems, which connect different key actors and create an enabling environment for the development, commercialisation, and exploitation of innovation, are also essential for the valorisation of macro-regional innovation potential. To this purpose, the EC also stressed the need to further integrate MRS priorities into relevant EU funding programmes 2021-2027.

This framework shows interregional cooperation based on S3 within EUSAIR has the potential to link innovation ecosystems, complementary skills, infrastructure, and markets. Moreover, the significance of identifying "smart priorities" extends beyond cohesion policy to vertical policies, i.e., innovation niches that have emerged in maritime and coastal contexts could create opportunities for blue sustainable growth. Even if not built on sectors but rather on technologies applied to relevant economic subsectors, the S3 approach can be used by all EUSAIR regions to find out the regional prominent priorities in research and innovation (Doussineau et al., 2020).

Regions and Central States developing or implementing S3, are free to choose the thematic objectives for which the largest part of the funds will be allocated. On the contrary, EUSAIR has a predetermined set of priorities, the pillars considered as challenges and opportunities common to the whole area. It is therefore expected that the EUSAIR Regions and Member States would refer to the EUSAIR priorities in their S3 documents. Once regions and countries have developed their strategies, S3 together with EUSAIR could serve as a framework for coordinating actions in common priority areas. Even though S3 and EUSAIR have many commonalities (e.g., the integrated approach and the bottom-up principle), there is much scope for reviewing these two concepts together, and notably by identifying how the principles of S3 can be used to stimulate for instance vertical policies creating more critical mass in distinctive domains of R&I.

It is no coincidence, for example, that in the Commission’s 2021 Communication on a new approach to a sustainable Blue Economy[62], expressly request the process of integrating the pillars and MRS actions into the programming of national funds. This is particularly important for the regions and countries with a strong maritime dimension[63].

Indeed, the EC stressed the importance of embedding the topics and aims of macro-regional strategies within cohesion policy: “Embedding is expected to increase programmes” impacts through better cooperation and coordination. This would provide the MRS with the means to achieve their

[61] The third biennial report of the European Commission on the implementation of the four EU MRSs [COM (2020)578]

[62] COM (2021) 240 final.

[63] COM (2022) 705 final IV report on the implementation of EU macro-regional strategies {SWD(2022) 397 final}

objectives. It will also allow beneficiaries of EU funds to achieve better results with their action while contributing to the strategic objectives of the MRS"64.
The alignment of S3 priorities to macro-regional priorities should provide benefits to both Innovation and macroregional strategies. In the case of MRS, the overlapping with S3 priorities helps to overcome the absence of specific programs and funds. The role of the S3 is increasingly strategic in the programming and use of European funds and, in the case of the MRS, the overlap with S3 priorities helps to overcome the absence of specific dedicated programmes and funds (Iacobucci & Ruggeri, 2023b). In the case of S3, the three NO's rules make explicitly MRS responsible for coordination of funds and actions and joining efforts bringing efficiency and assuring larger impact of investments and actions. MRS represents an established framework to facilitating interregional coordination of collaboration in innovation policies.

However, bridging the actual gap between the MRS's needs and funding opportunities is therefore a critical challenge for 2021-202765. The ESI funds offer significant financial resources and a wide range of tools and technical options that could help ensure synergies and complementarity. Nevertheless, at present, no dedicate resources (or framework or funds) seem to be present for promoting the integration of EUSAIR and S3 strategies.
Nevertheless, coordination between the MRS and ESIF so far has been limited and mainly concentrated on European Territorial Cooperation (Interreg) programmes that have neither the size (very limited budgets) nor the features (type of projects) to address the ambitious MRS objectives and priorities66.

3.2 Governance

The terms "cohesion policy" and "regional policy" are now used synonymously (Sielker et al., 2021) to pursue the five are key objectives for Regional Development and the New Cohesion Policy 2021–2027:

- a Smarter Europe, through innovation, digitisation, economic transformation, and support to small and medium-sized businesses,
- a Greener, carbon free Europe, implementing the Paris Agreement and investing in energy transition, renewables, and the fight against climate change,
- a more Connected Europe, with strategic transport and digital networks,
- a more Social Europe, delivering on the European Pillar of Social Rights and supporting quality employment, education, skills, social inclusion, and equal access to healthcare,
- a Europe closer to citizens, by supporting locally led development strategies and sustainable urban development across the EU (CEC, 2020c).

The EU MRS cover almost 66% of the Union. They are not strictly an instrument of Cohesion Policy, but they share the main principles and the integrated approach[67]. Considered through the lenses of

64 COM/2020/578 final

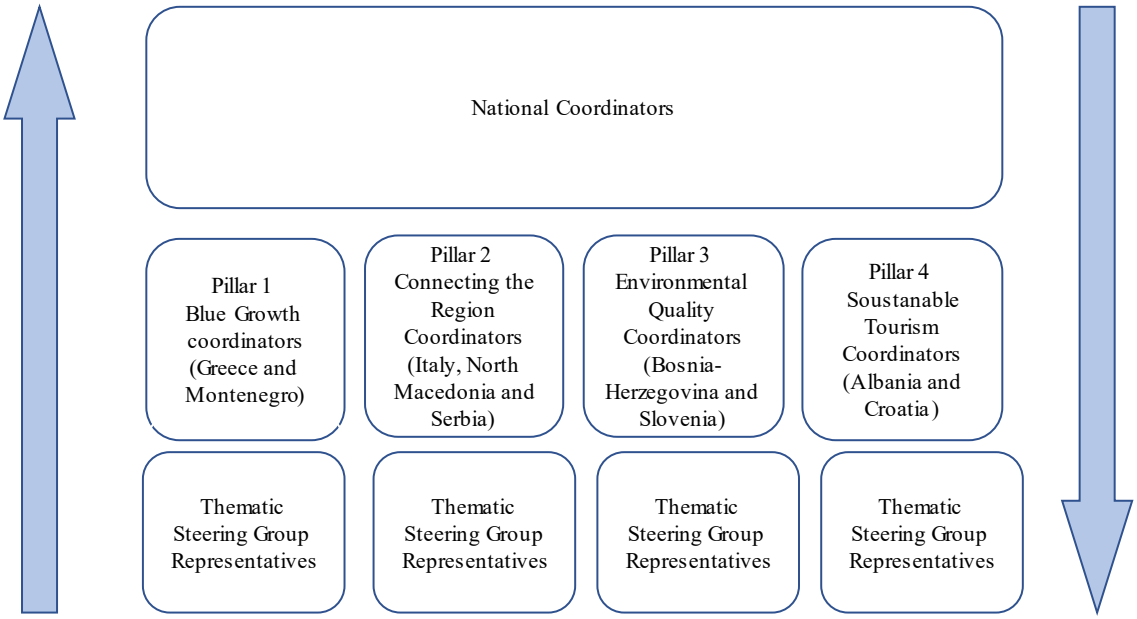
65 Third Report on the implementation of EU macro-regional strategies - COM (2020) 578 final

66 Third biennial report of the European Commission on the implementation of the four EU MRSs [COM (2020)578]

67 Bernd Schuh, M. et al., 2015. New Role of Macro-Regions in European Territorial Cooperation, EPRS: European Parliamentary Research Service. Belgium. Retrieved from https://policycommons.net/artifacts/1336696/new-role-of-macro-regions-in-european-territorial-cooperation/1944081/ on 30 Sep 2022. CID: 20.500.12592/8h8dkq.

European territorial governance they represent a new and experimental multi-level governance and seen as a first attempt to re-scaling EU Cohesion Policy (Sielker & Rauhut, 2018), as well as "soft policy spaces" (Stead, 2014) where formal and informal relational mechanisms may occur.

Figure 16 –EUSAIR National coordination structures and information flows



Source author elaboration based on EC – EUSAIR

The governance structure and the implementation of EUSAIR is complex given the broad scope of each of the four thematic areas, the absence of a legally binding framework, and the lack of a "go-to" body that can provide guidance on implementation practicalities and managing the capacity gaps among participating regions.

In addition, there are differences in the frameworks for programming, planning, funding, and reporting between EU member and non-EU member states, as well as among EU programming tools and interventions (M. V. Michalun & Nicita, 2019). Set within the boundaries of the "three no's" principle: no new EU funds, no additional EU institutions, and no new EU legislation, nevertheless, the four existing macro-regions have developed their own structures and systems of governance and management (Gänzle, 2017; Sielker & Rauhut, 2018). These latter have both a political and operational dimension regarding how and by whom a strategy is implemented, and joint actions initiated and financed as well as a coordination level (D'Orsogna, 2016; M. Michalun & Nicita, 2019). In addition to a rotating presidency, the EUSAIR architecture involves the political level represented by the "Adriatic-Ionian Council/EUSAIR ministerial meeting"[68], the coordination level represented by a Governing Board (GB)[69], and the implementation level represented by the four Thematic Steering Groups (TSGs), one for each pillar of the strategy. The Governing Board (GB) coordinates the work of the TSGs in charge of implementation. Special arrangements are being set under Pillar 2, with two sub-groups for transport and energy, respectively. The TSGs are chaired by a team of countries,

[68] Ministers of Foreign Affairs and Ministers in charge of EU Funds, with the participation of the European Commissioner. The EUSAIR political level merged with the already existing higher political level event of the Adriatic and Ionian Initiative (AII).

[69] The standing members of the GB are national coordinators, pillar coordinators, Commission services, European Parliament, Committee of the Regions, Economic and Social Committee, the Adriatic and Ionian Initiative Permanent Secretariat, ADRION Managing Authority, EUSAIR Facility Point.

consisting of one EU member state and one non-EU country, namely: Greece and Montenegro for Pillar 1, Italy, North Macedonia and Serbia for Pillar 2, Slovenia and Bosnia-Herzegovina for Pillar 3, and Croatia and Albania for Pillar 4.

The GB is composed of many standing members:

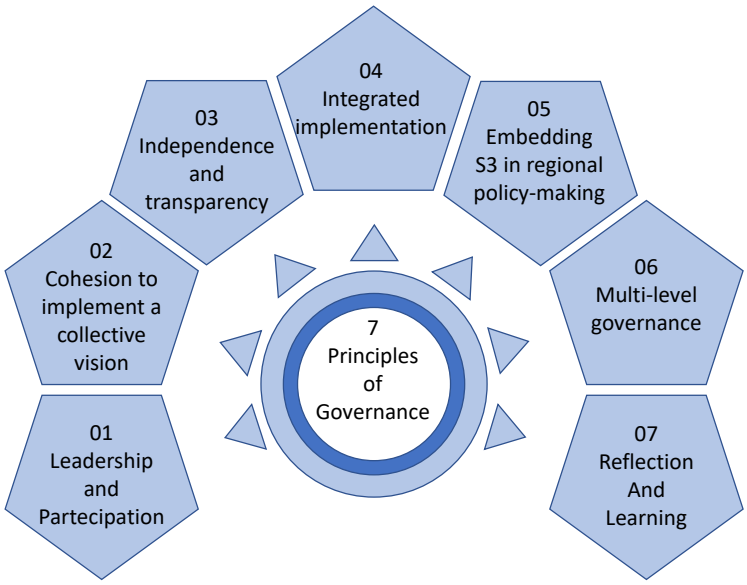
- national representatives: each participating country is represented by two formally appointed National Coordinators, i.e., one senior official from the Ministry of Foreign Affairs and one senior official from the national administration responsible for coordinating EU funds in the country,
- formally appointed Pillar Coordinators,
- commission services,
- a representative of the European Parliament,
- a representative of the Committee of the Regions accompanied by a representative of its Adriatic-Ionian Interregional Group,
- a representative of the European Economic and Social Committee,
- the Permanent Secretariat of the Adriatic-Ionian Initiative,
- representatives of the Managing Authority of the Interreg ADRION transnational cooperation programme,
- representatives of the EUSAIR Facility Point[70].

All four MRS made progress in governance and administrative capacity-related issues, according to the EC[71]. From 2018 to 2020, regarding the political level, the Commission highlights the growing role of the rotating presidency in all strategies. It considers that strengthening political commitment is essential and, at the same time, noted the need for further work to give implementing bodies clear mandates and decision-making capacity. A further consideration regards the coordination level: the multi-level coordination mechanisms in many countries provide encouraging results but the need for more staff continuity and adequate administrative support is still a need. In terms of challenges, the report stresses the need for key implementers and stakeholders to work to increase EUSAIR's impact on policies, and for a more strategic vision for implementing the strategy, noting that differences in administrative capacity and availability of human resources affect the level of involvement of actors in national EUSAIR governing structures. Differences in administrative capacity and availability of human resources influence the level of stakeholder participation in EUSAIR's regional and national governance structures.

[70] Interreg Adrion project 2014-2020

[71] Third report on Macro-regions, 2020.

Figure 17 –Seven principles of Governance



Source Joint Research Centre (JRC)

In terms of challenges, there is still a need for key implementers and stakeholders to work to increase the impact of EUSAIR on EU policies, and for a more strategic implementation of the strategy.
As for how the governance of S3 can mainstream with the complex architecture of EUSAIR, there are undoubtedly some complementarities, starting from a bottom-up approach to a multi-level and multi-actor governance model.
Retrieved from the Join Research Centre S3 Platform, the "Implementing Smart Specialisation Strategies: A Handbook"[72], identified seven principles of good governance. As shown in Figure 17 it tries to scheme a standard set of principles and methodologies as well as to report the practical implementation of the Smart Specialization experience drawing on empirical evidence.
However, as each governance approach is unique and there is no "one size fits all" governance model, the above principles must be taken as guidelines to be transposed to the specificity of each region.
According to the principles of multi-level governance, the implementation of Cohesion Policy involves the European Union, the Member States, and the Regions. The rules and in particular, the budget, are decided, by agreement, between the European Council (that is, the Member States, Heads of State or Government), and the European Parliament (whose members are directly elected by the citizens) based on a proposal from the EC. Each country, with the collaboration of local institutions and economic and social partners, set up a Partnership Agreement that is approved, after appropriate negotiations, by the EC. This is a key document, which sets out the strategic orientation for the five thematic objectives mentioned at the beginning of this paragraph, including research and innovation, as well as the competitiveness of small and medium-sized enterprises or environmental protection.
The implementation of the national and regional programmes is the responsibility of the countries and the regions which are to select and evaluate projects through the managing authorities. The EC, after committing the funds and certifying the costs of the projects carried out, makes reimbursements to each country.
The development of S3 has put considerable pressure on the EU's regions and countries, which have been forced to reflect somewhat on their governance of innovation policy. In fact, attention to

[72] https://s3platform.jrc.ec.europa.eu/s3-implementation-handbook

governance is fundamental, in the first place, to verify the most appropriate governance models for effective and efficient spending of public funds. Besides, it requires the integration of participatory elements in the policy process, as well as coordination with political actors, that were previously peripheral to innovation policy. Coordination between national and regional levels, coordination between different policy areas, integration of stakeholders in decisions, communication with the EU and synergies between cohesion funds and other national and regional funds are crucial aspects of the implementation of S3 in EUSAIR. Moreover, the ability to implement an effective feedback mechanism between the EDP process and regional governance is a critical factor for the sustainability of S3 (Foray, 2019). Such feedback influences the potential revisiting of the same S3. This is of particular interest for the EUSAIR area, given that the design and implementation of the regional S3 regions proceed asynchronously, particularly regarding the Accession Countries.

The process of S3 is, therefore, neither totally from top-down nor purely bottom up but is the combination of a planning logic and a logic of entrepreneurial discovery (Foray, 2019). “This is a process in which the principle of entrepreneurial discovery plays an essential role and yet does not minimize the importance of policy intervention” (Foray, Goddard, Beldarrain, et al., 2012 p.12). In a following paper Iacobucci suggested a two-step approach. The identification and selection of promising domains by the political authority must follow a top-down approach and be based on “objective” indicators, able to measure the effective strength of regional actors in R&D and innovation. The bottom-up approach of the EDP is considered more appropriate in the second step, when identifying the specific projects within the selected domains (Iacobucci, 2014).

Given S3’s dynamic and flexible approach, monitoring and evaluation is another crucial component and not only considering the impact of S3 strategies and projects but also pay attention to continuing learning lessons actively along the way. In this context, the importance of a dialogue between the programme authorities and key implementers of macro-regional strategies is critical to make the best use of EU funding[73]. Moreover, better coordination may require going beyond traditional administrative boundaries, and a strong will, from different levels of government, to co-operate and coordinate actions. Within this framework, EUSAIR can be considered as a channel of influence that transposes the logic and principles of the S3 and “other EU strategies and policies, as well as regulations and rules" (Solly & Berisha, 2021). Through its functional and multi-level approach, the MRS seeks to extend EU rules to its "neighbouring abroad" and, in so doing, pave the way for integration. Although the still fairly small literature on MRS showed that EUSAIR marginally influences the priorities of states and does not yet contribute significantly to the construction of full cross-border cooperation (Belloni, 2019). On the other side, as programmes and projects are implemented, both civil society and political actors in third countries will become increasingly involved in a network of personal and institutional relationships that will socialise them in European norms and procedures (Taylor et al. 2013).

[73] Report from the Commission to The European Parliament, the council, the European economic and social committee, and the committee of the regions on the implementation of EU macro-regional strategies.COM/2019/21 final

3.3 Funding instruments

Explained the "three-No's rule", saying that the second of the "no" refers to the funding, EUSAIR does not have any own funding to support its pillar priorities. Thus, the strategy's goals must be achieved by coordinating existing policies and using existing instruments and funds (Gänzle et al., 2019) as well as promoting the collaboration among territorial cooperation programmes and authorities managing ESIF and EUSAIR (Nekrasova, 2019).
This is not always easy for several reasons. As regards the specificities of EUSAIR, which include many third countries, (the same can be repeated for the other macro-regions but the EUSBSR), the differences in terms of administrative governance and funding opportunities must be taken carefully considered. The lower financial capacity of the non-EUSAIR countries means that it is a challenge to ensure the balanced implementation of EUSAIR actions and projects across the whole region. The inherent differences, with diverging structures, regulations, methodologies, timeframes and financial volume characterizing funding mechanisms for EU and non-EU member countries results in an imbalance concerning accessible funding, which in turn can create an asymmetry in generating and implementing projects.

The MRS are concretely put into practice through projects. As the MRS encourage countries to work together, they contribute to the outward looking dimension of EU Cohesion policy. The funds available to support the EUSAIR are first and foremost, ESIF with particular regard to ERDF and the so-called Instrument for Pre-accession Assistance (IPA) for non-EU countries and regions belonging to EUSAIR. ESIF are mostly nationally focused, making fairly difficult to use funds to support transnational projects (Report COWI, 2018). Programmes managed at the regional level (i.e. Structural funds' Regional Operative Programmes - ROP), not easily coordinate their calls and even more difficult share resources to implement joint calls. Although the provision of "measures for international collaboration represents a criterion to be fulfilled as one of the enabling conditions to support 2021- 2027 regional S3.
Then another challenge for EUSAIR is to combine different sources of EU funding operating according to different regulations, methodologies, timing, and structures. There is no doubt that efforts should be intensified to make these different worlds more efficient in communication and to develop greater synergies for the implementation of macro-regional actions and projects. The political commitments then are not secondary.
Besides ERDF, some EUSAIR European countries and regions In EUSAIR could benefit from the Cohesion Fund (providing support to Member States with a gross national income – GNI – per capita below 90% EU-27 average to strengthen the economic, social, and territorial cohesion), namely Croatia, Greece, and Slovenia).
Then, the main support for non-EU countries is represented by IPA by which the EU has been supporting reforms in the enlargement regions with financial and technical assistance since 2007[74]. IPA aims to support candidate and potential candidates' countries in implementing the political, institutional, legal, administrative, social, and economic reforms required to bring those countries closer to Union values and to progressively align to the acquis communautaire.

[74] Regulation (EU) 2021/1529 of the European Parliament and of the Council of 15 September 2021 establishing the Instrument for Pre-Accession assistance (IPA III)

The EU will mobilize up to 9 Euro billion of grant funding from the Instrument for IPA III for the period 2021-2027 to support economic convergence with the EU supporting four "strands":

- As Technical Support, which usually involves the engagement of experts/consultants,
- Through Twinning projects, pairing up local institutions with similar administrations in one of the EU Member States to implement projects, share knowledge and experience and aid in implementing the acquis communautaire,
- Through investment projects, mostly involving procurement of equipment, works and implementation of financial arrangements with other financial institutions,
- Through grants allocated to fund special projects involving civil society, local self-government, agencies, etc.

IPA-related strands reveal both a weakness that an opportunity. It is particularly difficult to coordinate and pool funds at a national level for projects that are also broadly European or transnational and require cross-border coordination. In addition, it requires a good level of knowledge and capacity to identify and combine diverse sources of available funding, including national funds. Unfortunately, this is a capacity that is not sufficiently mature among all EUSAIR countries. When funding sources are identified or there is agreement on what to fund, the imbalance of resource levels available between EU member and non-EU member countries adds an additional layer of difficulty and can affect outcomes.

On the other side, vertical programmes provide the allocation of direct funding, managed by the European Institutions. To "compete" for direct funding be particularly difficult since the relative Managing Authorities have little incentive (and no requirement) to link their programmes to EUSAIR and share their funds. Then, especially for lagging regions, the preparation phase for projects could be quite costly and there is a new learning curve to manage. The forecast of bullet 4 of the Interreg Adrion programme aiming at promoting and finance a dedicated "Technical Assistance" respond, at least in part to the need for creating opportunities for better management of the strategy and linking projects with the investors (M. V. Michalun & Nicita, 2019) but it does not represent a strictly financing source for projects.

Some of them are particularly relevant embedding with EUSAIR pillars. Pillars 2 objectives can be funded through the Connecting Europe Facility (CEF) which in 2014-2020 supported trans-European networks and infrastructures, digital telecommunications, and energy. The LIFE Program is consistent with the third pillar's themes, while COSME, Creative Europe and INNOVFIN are coherent with the aims of the fourth pillar, in supporting the competitiveness of enterprises and innovation. Horizon promotes the cross-cutting scope of each pillar in innovation and research. Interreg is one of the key instruments supporting cooperation across borders through project funding. The 2021-2027 I3 instrument is a new tool focusing on existing interregional partnerships that emerged around concrete smart specialisation strategies.

The specific instrument for cooperation across countries through project funding is represented by Interreg Europe 2021-2027. This latter however does not have the budget or include the types of projects needed to address the MRS ambitious objectives and priorities[75].

It consists of a series of programmes funded by the ERDF with several components:

a) Cross-border cooperation (component 1),
b) Transnational cooperation and maritime cooperation (component 2),
c) Outermost regions cooperation (component 3),

[75] COM (2020) 578

d) Interregional cooperation (component 4),
    - INTERACT
    - ESPON
e) Interregional innovation investments (component 5).

The "Interregional Innovation investment" (I3) initiative under the European Regional Development Fund (ERDF) regulation (article 13) derived from Interregional pilot actions to the Interregional Innovation. With an EU budget of 570 MEuro, its main objective can be summarised as increasing the capacities, resilience and competitiveness of EU regions and creating or reshaping competitive EU value chains[76]. Considering stronger strategic interregional cooperation and sustainable connections between regional ecosystems vital to accelerate market uptake of research results and stimulate innovation, it provides funding for mature joint innovation projects and supports stakeholders involved in S3 to develop and set up such projects in value-chain investment portfolios[77].
I3 consists of two axes:

- Financial and advisory support for investments in interregional innovation projects,
- Financial and advisory support for the development of value chains in less developed regions.

Unfortunately, the I3 does not currently include references to MRS or third countries. However, it could cover third countries in line with the arrangements foreseen under the Horizon Europe programme. Going into details, it could be a support to:

- Commercialise and scale-up interregional innovation projects that can create or reshape European value chains,
- Attract private investment for promising innovation projects,
- Explore and strengthen synergies between different EU, national and regional funding instruments.

By focusing on existing interregional partnerships that emerged around existing S3 (see i.e. partnerships on the S3 Thematic Smart specialisation Platforms) the I3 Instrument combines the S3 bottom-up approach with investment support in concrete EU strategic priorities. Building on unexploited regional innovation potential, the ambition is to mobilize synergies and complementarities with other EU funding programmes and initiatives such as:

a) Horizon Europe (in particular European Innovation Ecosystems),
b) Digital Europe Programme,
c) Single Market Programme and Interreg Europe.

The I3 instrument is currently underway. Its first call has been published between in the second end of 2021, the second call in 2022 and another one by the first half of 2023. The instrument is being developed capitalising on the lessons learned from the Thematic Partnerships of the S3P-Industrial Modernisation (former industry)[78]. However, the I3's impact and efficacy have yet to be assessed.
Synergies and complementarities with other relevant funding instruments should be further explored[79].

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[76] The I3 is implemented by the European Innovation Council and SMEs executive agency (EISMEA) based on a biannual work programme.

[77] The I3 Instrument will not support activities that do significant harm to environment objectives within the meaning of Art.17 of the EU Taxonomy regulation.

[78] https://s3platform.jrc.ec.europa.eu/s3-industrial-modernisation-partnerships

[79] COM (2016) 805 final

How to link programmes to the MRS is still under debate especially for those programmes which are only partly covering the regions involved in MRS (Abels, 2017; Dangerfield, 2016).
Besides referring to EUSAIR and how it is currently structured, there is the limited role that national funding plays in directly supporting the strategy or implementing identified projects. Some countries are more active than others in using national funding, though it may be used more often to contribute to ensuring human resource capacity, particularly with respect to participation in strategy meetings and other activities, than financing specific EUSAIR projects. It is nonetheless important for regional systems to ensure a stronger planning and impact orientation (Vet et al., 2017).
In general, up to 2021-2027 programming period, direct and indirect funding programmes were not designed to take into consideration or to favour the collaboration between public authorities belonging to a same macro-region and the embedding of macro-regional strategies within the funding programs is not straightforward. Each funding mechanism and instrument has its own legal basis, eligibility criteria and selection procedures. The participation of non-EU countries is not always eligible or does not necessarily involve any allocation of funds. As a general rule, at the moment, yet sectoral programme funding must not overlap with funding from other EU programmes. Besides, in some funding programmes managed directly by the EC (such as Horizon Europe), the choice of partners should be based on R&I excellence and there are no incentives in finding partners belonging to the same macro-region.
In the current programming period, the LIFE programme represents an exception[80]. LIFE is the financial instrument supporting environmental, nature conservation and climate action projects. Besides, the Clean Energy Transition sub-programme is a new component of the LIFE programme, which was previously included in Horizon 2020. It is consistent with the EUSAIR third pillar's themes. Although the specific regulation is limited to a recommendation, LIFE is currently the first programme that explicitly encourages to work within MRS for the implementation of transnational integrated strategic projects.

[80] Regulation (EU) 2021/783 of the European Parliament and of the council of 29 April 2021 establishing a Programme for the Environment and Climate Action (LIFE), and repealing Regulation (EU) No 1293/2013

4. Inter-regional relations fostering innovation

This chapter focuses on inter-regional relations first within the context of cohesion policy.
The first paragraph explores the historical background of the S3 thematic platforms, developed to facilitate communication and collaboration between regions.
The second paragraph investigates the role of inter-regional relations in the S3 policy.
The third paragraph explores the actual "flagship projects" approved within the EUSAIR to achieve common goals from an interregional perspective.

4.1 S3 Thematic Platforms

In the new framework of the Cohesion Policy 2021-2027 regions and Member States are encouraged to build regional coalitions to support the creation of new European value chains, in areas associated with strategic growth.
In its Communication "Strategies for resilient, inclusive and sustainable growth"[81], the EC explicitly recognizes the important role S3 increasingly plays in shaping a more effective innovation policy: "S3s have been used to drive a more effective innovation policy and push interregional cooperation in new value chains across borders. Linking research and innovation actors with industrial stakeholders helps to exploit complementarities in the development of products and process design. This will help build and reshape EU-wide value-chains by encouraging the synergy of investment between the private and public sector" (Hegyi et al., 2017).
An attempt at promoting inter-regional collaboration within S3 was made by the creation of the S3 Thematic platforms. These latter are informal joint initiatives involving European regions on a voluntary basis. They are managed and coordinated by the Joint Research Centre (JRC), with the support of several EC's Directorates-General[82] aiming to promote the interregional dimension of the S3 as well as shared interregional investment opportunities. To this purpose, they intend to encourage regions and their innovation actors to build strategic partnerships and promoting complementarity in specific S3 areas[83].
Starting in 2015, these platforms have been put in place to provide an interactive and participatory environment supporting interregional cooperation in the context of S3 areas related to Agri-food[84], Energy[85] and Industrial Modernization[86]. Then, a new partnership for Sustainable Blue Economy[87] has been launched in 2022.

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81 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Strengthening Innovation in Europe's Regions: Strategies for resilient, inclusive, and sustainable growth {SWD (2017) 264 final}, p.6.

82 Regional and Urban Policy (REGIO), Agriculture and Rural Development (AGRI); Energy (ENER); Internal Market, Industry, Entrepreneurship and SMEs (GROW), Maritime Affairs and Fisheries (MARE) and Research and Innovation (RTD).

83 https://s3platform.jrc.ec.europa.eu/s3-thematic-platforms

84 https://s3platform.jrc.ec.europa.eu/agri-food

85 https://s3platform.jrc.ec.europa.eu/geothermal-energy

86 https://s3platform.jrc.ec.europa.eu/industrial-modernisation

87 https://s3platform.jrc.ec.europa.eu/sustainable-blue-economy#fragment-89005-nodx

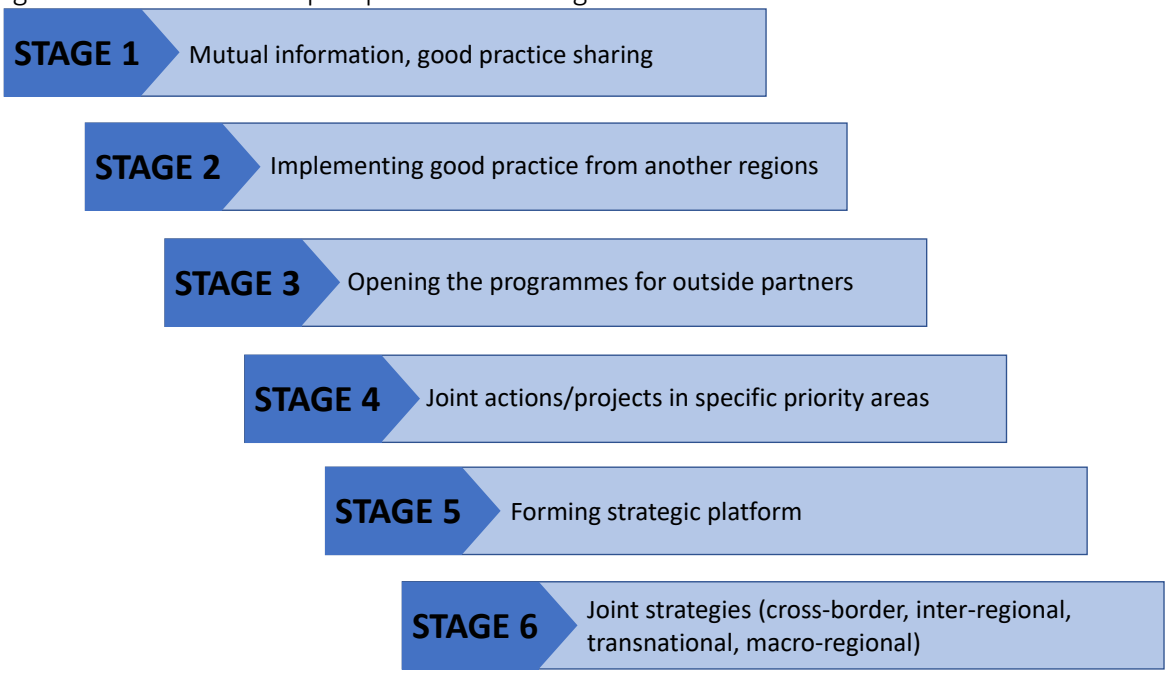
In addition, to get a wider view for cooperation, interactions with other EU initiatives (such as the Interreg Europe Policy Learning Platform[88], European Institute of Innovation & Technology (EIT)[89] and the Knowledge and Innovation Communities (KICs)[90] are also developed.
These collaborative networks have the goal of establishing European ecosystems for transnational and interregional collaboration in regions and countries with similar or complementary industry composition, research capabilities, as well as similar societal challenges.
According to the EC, "the thematic platforms offer a structure to exploit synergies across partnerships and across sectors". Together, partner regions analyse and tackle various obstacles related to the implementation of their smart specialization strategies. Thematic partnerships help regions to improve their regional knowledge base, leading to new paths of development and a better position in global value chains and to transnational joint strategies of innovation.
The 2021-27 "Interregional Innovation investment" (I3) initiative under ERDF, is being developed capitalizing on the lessons learned from the Thematic Partnerships of the S3 Platform Industrial Modernisation (former Industry)[91].

4.2 Inter-Regional relations in S3

When the concept of smart specialisation emerged thanks to the K4G, the regional or geographic dimension was not explicitly mentioned (P. McCann, R. Ortega-Argilés 2015).
Lately, when economic geography and spatial economy have been included in the discussion of S3, with the integration of different national, regional, and subregional governments with different scales of influence and different proximity to stakeholders, the translation of the concept into a regional context appeared quite complex (Estensoro & Larrea, 2016).
In order to give a guidance to promote outward looking dimension of the S3 the EC published a handbook according to two criteria, matching a top-down (S3 approach, ESIF regulations that constitute its main funding source) and a bottom-up approach (implementation challenges, funding flows).
According to, Figure 18 gives and overview of the S3 outward-looking process.

88 https://www.interregeurope.eu/policy-learning-platform
89 https://eit.europa.eu/
90 https://eit.europa.eu/our-communities/eit-innovation-communities
91 https://s3platform.jrc.ec.europa.eu/s3-industrial-modernisation-partnerships

Figure 18 – The main step to promote interregional collaboration.



Source: EU Joint Research Centre (JRC)[92]

Cooperation may start on a bottom-up basis involving data and information exchange, moving on to experiment with collaborative projects, and later evolving into strategic platforms and alignment of funding instruments allowing for a comprehensive policy approach to open joint programmes and a combination of policy tools and instruments (Hegyi et al., 2017). Based on the experience of the EUSBSR, they identified in phase 5, through the participation in the strategic platforms, to address common challenges or achieve common goals, the most marked feedback with MRS to be the developed in shared S3 policies (phase 6).

Moreover, the S3 guide also emphasised the importance of considering connections with other regions "pointing regions towards more strategic cross-border and trans-regional cooperation to achieve more critical potential and related variety" (Foray, Goddard, Beldarrain, et al., 2012).

When regions identify strategic areas for intervention where they are more likely to reach (or maintain) a competitive advantage and then focus their investments and innovation policies in those areas they are requested to consider the potential relations with other EU regions (Foray, 2014a). S3 requires regions to identify synergies and knowledge exchange between different domains within the same region (relatedness) and the potential links of those domains with other regions through knowledge exchange between different regions specializing in similar or complementary domains (connectivity) (D'Adda et al., 2019).

Interregional collaborations' importance is also capturing attention during the current 2021-2027 programming period (Woolford et al., 2021). Several documents at the EU level, e.g., the third 2020 "EC's report on the implementation of the four macro-regional strategies" [93], the 2020 "Council conclusion on the implementation of EU macro-regional strategies"[94] - stress that "Regional

[92] Smart Specialization Strategy (S3) - Interreg Europe Policy Brief, July 2020, Report number: Interreg Europe Policy Learning Platform, Arnault Morisson, Marc Pattinson

[93] Third Report on the implementation of EU macro-regional strategies - COM (2020) 578 final

[94] Council conclusion on the implementation of EU macro-regional strategies -3 December 2020 – 13424/20

innovation systems cannot be considered in isolation, and S3 should involve an identification of priorities and forms of collaboration between regions".

S3 is currently required to meet the criterion related to international collaboration, or "Measures for enhancing cooperation with partners outside a given Member State in priority areas supported by the smart specialisation strategy". It suggests indications already in its literal formulation.

Firstly, the need to "strengthen cooperation" with partners outside a particular Member State is clearly underlined.

Secondly, the phrase "in priority areas supported by the smart specialisation strategy" clearly suggests that each region must place its own priority-settings not only with reference to its own region, but also to the supranational context.

With reference to EUSAIR, the regulation 1060/2021 on "common provisions for ESIF 2021-2027" to fulfil the above-mentioned criterion suggest to into consideration the macro-regional strategies. Besides this, the Interregional Innovation Investment (I3) has been put in place as a specific funding instrument to promote inter-regional collaborations[95].

From a theoretical perspective, several extant studies have emphasised the importance of developing a better understanding of the mechanisms that enhance regions' capacity to collaborate with other regions, thereby enabling the acquisition of new knowledge or avoiding insufficient critical mass (Camagni & Capello, 2013a; Capello & Kroll, 2016; Foray, 2014e; Trippl, 2010).

Some justifications for promoting interregional collaborations when allocating EU funds are based on the similarity in terms of competences and activities and others on complementarity. The rationale for collaborating in similar activities and with similar partners may arise from two main reasons:

a) avoiding duplications in research and innovation (R&I) investments,
b) obtaining economies of scale, hence reducing the costs of innovative activities.

On the other side, in a collaboration characterised by complementarity in competences and activities, two different objectives may be at play:

c) to foster potential synergies between technology developers, promoting and leveraging knowledge recombination (horizontal complementarity),
d) promoting collaborations and exchanges between technology developers and technology adopters/users (vertical complementarity).

Moreover, networks with other regions are a way to compensate for the lack of regionally available knowledge (Grillitsch & Nilsson, 2015), stimulate knowledge recombination between technologies, and thus strengthen knowledge productivity (Boschma, 2022; de Noni et al., 2017).

The literature stressed the importance of geographical proximity as well as institutional and cultural proximity in facilitating interregional collaborations (Weidenfeld et al., 2021b). MRS could be the ideal setting to promote interregional collaborations thanks to geographical and cultural proximity and the need to address common challenges.

Considering interregional collaboration in EU-funded projects of previous framework programmes for research and development, show that geographical, economic, technological, social, and human capital distances are relevant factors affecting the intensity of collaborations, (Amoroso et al., 2018). Focusing on ICT, it has been shown, geographical distance has a negative impact on the strength of collaborations, while sharing a border and having the same language reinforce the degree of cooperation between regions. Furthermore, collaborations depend on the characteristics of the regions involved (Cecere & Corrocher, 2015). Indeed, this particularly true for EU direct funding

[95] The Interregional Innovation Investment (I3): https://ec.europa.eu/regional_policy/it/policy/themes/research-innovation/i3/

project. To access direct fundings a partnership commonly mandatory requires at least 3 different member countries.

Despite this increasing recognition of the advantages of a more outward-looking approach to regional innovation policy, its implementation so far has been limited (Iacobucci & Guzzini, 2016; Uyarra et al., 2018). The empirical evidence indicates show regional and National S3 retain a strong "inward looking". The inter-regional collaborations played a marginal role in S3 design and implementation during the 2014-2020 programming period. Only a few EU regions considered potential synergies with other regions when choosing their specialisation priority settings (Iacobucci & Guzzini, 2016; Uyarra et al., 2018).

Moreover, from a theoretical perspective, the role of international/interregional collaboration in regional innovation policy is not always well-defined (Balland & Boschma, 2021).

The Barca Report emphasised the need for a reformed territorialised economic and social agenda, with the objective of promoting experimentation by the local actors as well as the need for European development policy to be centred on the local dimension (Barca, 2009).

When opening to interregional cooperation, in principle all the considerations that this entails apply, the opportunity to address common challenges, to search of examples to learn from, or to mark a difference with. This is especially important for less developed regions which often need to acquire know-how and technology (P.A. Balland & Boschma, 2021a; Radosevic & Ciampi Stancova, 2018).

The various thematic platforms on S3 help to position a region in an interregional context, but collaboration is most evident in the early stages of the process, analysis, design, and decision-making of an S3 (Uyarra et al., 2018).

Trippl (Trippl, 2010) looked at some critical conditions for the emergence of interregional innovation systems such as the knowledge infrastructure, dimension, relational, socio-institutional, and Governance dimensions to explore conceptually whether the theoretical approach of regional innovation systems could be applied to cross-border contexts. The study conceptualised cultural, social, and institutional forms of distance as major obstacles to cross-border learning processes.

Additionally, our understanding of the social and institutional changes resulting from the creation of an integrated innovation space is still insufficient.

In 2016, the EC, JRC, and S3 Platform conducted a survey (Uyarra et al., 2018) to gain a deeper understanding of inter-regional collaboration and its various aspects such as the reasons, objectives, locations, participants, and methods of collaboration. The frame was established from the population of the regions recorded at the time of the survey in S3P (14 EU Member States and 151 EU regions, plus associated regions in Norway, Turkey, and Serbia). The overall results showed that the criteria for selecting partners were based on industry composition (similar or complementary), research capacity, as well as similar societal challenges.

In contrast, regarding the geographical location of partnering regions most often collaborated with other regions in their own country. In the case of collaboration with other countries, with the exception of the development of cross-border strategies, which, by definition, requires a common border, not much difference, between the frequency of collaboration with neighbouring and the frequency of collaboration with non-neighbouring regions has been observed.

Furthermore, collaboration within a macro-regional framework (EUSBSR and EUSDR) did not score higher than collaboration with non-neighbouring regions. The answers indicate that the cohesion policy has led some regions and EU countries to change their behaviour in collaboration in R&I policy.

Although, the collaboration pattern also seemed to be simply a consequence of the funding available: at a transnational level where EU funding supported cooperation at European level, and within countries, when funding came from national programmes.
The outward dimension was not implemented furthermore (Radosevic & Ciampi Stancova, 2018) also because of a weak strategic framework for transnational cooperation on issues of particular interest that are suitable for making better use of economic opportunities (Balland & Boschma, 2021b; Iacobucci & Guzzini, 2016; Radosevic & Ciampi Stancova, 2018; Uyarra et al., 2014a).
One reason for this is that ESIF in the cohesion policy do not facilitate or incentivise the allocation of resources to interregional projects (Uyarra et al., 2014b).
On the one hand, the Council proposed already in 2010 that up to 15% of the total ESIF amount in an Operational Programme (OP) could be allocated to interregional and cross-border activities[96]. On the other hand, this mechanism, which remained at the level of a recommendation, was in the end practically ignored.
Then, other several factors may hinder the presence of interregional collaborations in regional innovation policies, among which are the lack of political commitment, differences in multilevel institutional architecture and the lack of administrative common procedures (Asheim et al., 2019; Uyarra et al., 2018).
Regards to the present search, the EUSAIR could add to this picture, the complexity of this area, as already described in paragraph 2.3, including many non-EU countries.
The data emerging from the research conducted in this thesis also confirms the trend with regard to EUSAIR. Despite regulations at the European level that make explicit reference to it, the S3 has difficulty in effectively promoting external cooperation.
Now, for the 2014-2020 period, it must be considered that an alignment was difficult since S3 entered cohesion policy without a 'trial period'. The EUSAIR pillars and topics were defined as the same time and without mutual communication with the S3 priority settings and S3 design in Non-EU countries. EUSAIR represents an already consolidated framework with priorities that emerged in a common bottom-up approach, on mutual challenges that should find wide consideration in the cohesion policy funds. However, from the first textual analysis of the S3 documents of the 2021-2027 period, no marked overlapping is observed in the prioritizing funding areas. Obviously, it will then have to be seen how the S3 is translated into projects.

Little attention, then, has yet been focused on the nature of interregional linkages in S3. The characteristics of non-local connections in the context of S3 have not received adequate attention so far. This implies that there is a gap in our understanding of the nature and significance of linkages that cross regional boundaries. As not all supra-regional connections are relevant to a region's innovation capacity, the key is to be connected to regions that provide access to complementary capabilities (Boschma, 2022).
Within the MRS, regions are inclined to collaborate because geographical proximity should mean that they share the same problems and opportunities. In practice, some regions e.g., Lombardia, a member of EUSAIR, looked to other approaches e.g., the Vanguard Initiative, an independent alliance that gathers 39 of the most advanced industrial regions in Europe, focused on stimulating industrial innovation and building European value-chains based on the complementarities in S3s[97].

[96] Council Conclusions on Innovation Union for Europe, 3049th Competitiveness Council meeting. Brussels, 26Nov. 2010
[97] https://www.s3vanguardinitiative.eu/

The above leads one to consider the robustness of the theoretical approach referring to the outward-looking dimension in S3. Is not always clear what are the justifications for introducing inter-regional relations in regional innovation policy; whether they are aimed at pooling resources on common topics, acquiring new knowledge or promoting knowledge recombination (Sebestyén & Varga, 2019b; Weidenfeld et al., 2021).
There are still several questions that should be addressed to promote inter-regional collaboration in innovation policy and promote a better integration of macro-regional strategies within cohesion policy:

1. At a theoretical level, it is not always clear what are the justification for inter-regional collaborations in innovation policy, i.e., what is the role of the outward looking dimension in the design and implementation of S3. This role could be different according to the different innovation capabilities of regions as well as different development objectives,
2. Once the aims for inter-regional collaboration are clarified, there could be a lack of data and shared methodologies to put the theoretical concepts in practice (for example how to define and measure relatedness at macro-regional level),
3. Direct funding programs (such as the Life programme) were designed from the beginning to promote the cooperation between subjects located in different countries. On the contrary, cohesion policy is designed considering the allocation of funds to specific countries and regions. Without a change in mentality and in the way of translating the concept from theory to practice it is very difficult to implement the “outward looking” dimension in the allocation of cohesion funds.

While the promotion of interregional cooperation is also justified in EUSAIR in view of the accession of third countries, the logic of bringing interregional cooperation into S3 in order to catch up with other regions is not so self-evident. Introducing interregional relationships into regional innovation policy requires a greater understanding of the benefits and modes of interaction between regions, as well as the development of specific public policies to promote this type of collaboration. There is scope for a rethinking of the foundations and rules governing the allocation of cohesion funds.

4.3 The EUSAIR flagship projects

The "flagship projects of macro-regions" are specific projects that are chosen as representative and leader examples for a given macro-region.
The added value of the macro-region strategy primarily consists in the integrated approach, which involves collective action towards a common goal by integrating various actors, policies, and funding programmes. The added value in terms of impact also concerns the definition of "optimising" scales according to the objectives to be achieved; generally operating in "relatively small groups" but above all the realisation of concrete and tangible flagship projects. (European Commission, 2009).
In June 2020, the EUSAIR has successfully determined its "flagship" topics, and projects for funding by combing existing and available European and national sources (Gänzle, 2018). These projects intend to demonstrate how public authorities and stakeholders can work together to achieve common goals from a transnational perspective.

They represent priority actions selected to be embedded into the ESIF, for EU countries, and IPA III programming documents. These projects represent both best practices and the most prominent activities to be implemented in the whole area, intending to play a leading role in future developments. National and Pillar Coordinators presented the flagships "as solutions for the main challenges of macro-regional importance consistent with national needs as well as with the EU policy objectives for a greener, low-carbon and more connected Europe". At the same time, they express the growing need for collaboration, coordination, and development among the countries of the macro-region within the framework of specific policies, defined within sectoral thematic areas (e.g., transport, blue economy, tourism). The projects are of strategic importance to all respective macro-regions and hence, to Western Balkan countries, where IPA III will be the main funding source. For that reason, macro-regionally approved flagships are essentially agreed-on actions ready to be delivered through the existing cooperation framework.

Besides, these projects can become the basis for the elaboration of specific policy objectives and find their development within the mainstream programming through alignment work, or rather, embedding, to put in place the strategic objectives expressed by the policy documents, the regional, national, and international partnership.

Under the 2020 12th EUSAIR Governing Board, 15 flagship projects were adopted, divided into the 4 Pillars of the EUSAIR Macro-Regional Strategy[98].

Flagship projects for Pillar 1 aim to:

- Promoting the links of quadruple helix in the field of marine technologies and blue biotechnologies for the advancement of innovation, development, and adaptation of the blue bioeconomy,
- Promote sustainability, diversification and competitiveness in the fisheries and aquaculture sectors through education, research and development, administrative, technological, and marketing actions, including the promotion of marketing initiatives and healthy eating habits,
- Strengthen capacity building and effective coordination of local development planning and activities to enhance maritime and maritime governance as well as blue growth services.

Flagship projects for Pillar 2 aim at:

- Adriatic-Ionian multimodal corridors, which are divided into,
  - cycle paths
  - green/smart port hubs
- Energy networks and market for a green Adriatic-Ionian region,
- Integrated corridors and natural gas market for a green Adriatic-Ionian region,
- Development and operation of logistics for the direct use of liquefied natural gas (LNG) as a clean fuel for the Adriatic-Ionian region.

Flagship projects for Pillar 3 aim to:

- The development and implementation of the emergency plan on oil spills in the Adriatic-Ionian sub-region,
- The protection and enhancement of natural terrestrial habitats and ecosystems,
- The promotion of sustainable growth of the Ionian Adriatic region by implementing the ICZM and MSP (integrated coastal zone management and maritime space planning) also to contribute to the integrated management of the Barcelona Convention coastal areas and the monitoring and management of the marine protected area.

[98] https://www.adriatic-ionian.eu/2020/06/12/eusair-flagships-all-summed-up/#next

Flagship projects for Pillar 4 aim to:

- the development of the network of sustainable tourism enterprises and green mapping clusters for the region ai - support for development and market access for responsible and sustainable tourist destinations and for micro/SMEs in the EUSAIR regions,
- research and development to improve SMEs' performance and growth-diversification,
- training and skills in tourism (professional and entrepreneurial skills),
- extend the tourist season throughout the year,
- development of thematic and sustainable cultural routes/connect cultural routes in EUSAIR.

The flagship projects are an important achievement for EUSAIR because they give real substance to the vision of development that should respond to social needs and be rooted in the concept of territorial capital and the place-based approach. Innovation is the common characterizing element underlying such projects where the framework of a vast transnational area, open to relations within and with the outside world, should act as a catalyst.

All these flagship projects hold the potential to be feasible. Notwithstanding, they will not necessarily be funded. Finding funding contribution within Interreg will be challenging within the current programming period, and coordinating funds and strategies will be more crucial than ever before.

Desk research shows that there is a significant overlap between the flagship project to be embedded in the Cohesion Policy (and IPA programming documents) especially regarding the areas of connectivity.

5. Conclusions

Synthesis and results

The main objective of this thesis was to provide a better understanding of the integration of the EU strategy for the Adriatic-Ionian region with the EU Research and Innovation strategies. In doing so, it also raises a broader range of questions about the relevance of inter-regional cooperation in innovation strategies.

Since S3 emerged as the cornerstone of the reformed cohesion policy in 2014 – 2020 programming period, it represented the most significant transformative approach to research and innovation policies. Regions are encouraged to think strategically about their strengths and opportunities and invest in areas of competitive advantage. This is expected to lead to more effective use of resources, greater innovation and competitiveness, and economic growth and job creation.

When EUSAIR was launched in 2014, its four thematic priorities (pillars) were chosen because of their relevance for all the involved territories, representing key challenges and opportunities. R&I is not a specific topic but represents a cross-cutting aspect that needs to be considered when all other pillars are involved. As a result, a high level of consistency between the EUSAIR pillars, and the S3 investment priorities was expected. Nevertheless, during the 2014-2020 programming period, only about a quarter of the specialisation areas that regions and countries belonging to EUSAIR selected in their S3 documents are somewhat related to the four pillars.

Also, the analysis of the projects actually financed by the Italian regions from the EUSAIR confirms the data with an overall unexpected scanty overlap with Pillar 1 “Blue Growth”. This is somewhat surprising as the Adriatic-Ionian Sea basin characterises the whole area. Besides the Sustainable Blue Economy Strategy is an essential tool to achieve the European Green Deal’s objectives, it was expected topics related to blue growth to increase in S3s during the 2021 -2027 programming period.

The overall results of the research confirm so that interregional connections were not a crucial component in the design and development of S3 during the 2014-2020 programming period, even when considering the macroregional dimension. At that time, however, S3 was implemented without knowing the issues within the EUSAIR priority pillars.

In the period 2021-2027, S3 became an enabling condition consisting of seven fulfilment criteria covering the main success factors of S3 itself, from design to multi-stage assessment and evaluation. The four pillars of EUSAIR are now common knowledge. The textual analysis of the S3 documents approved by the Italian regions belonging to EUSAIR shows six out 14 regions refer to EUSAIR as a framework for transnational cooperation in their regional S3 design. Only two regions overlap with the EUSAIR pillar as a whole, while 6 out of 14 regions did not overlap at the first level of priority identification. In choosing their priorities regions seem to choose a wider spectrum of investment specialisation moving toward a “systemic approach” (e.g., “specialization areas” or “innovation ecosystems”) and so forth.

An in-depth analysis of two direct funding programme, Horizon 2020 and Interreg Adrion and of their actually financed projects, in 2024-2020, has been conducted to test how EUSAIR countries are active in innovation interregional collaboration. The most effective way which has so far been used to promote inter-regional collaborations within the EU, in fact, is through the set-up of funding programmes requiring the involvement of stakeholders belonging to different countries.

Whereas the percentage of correspondence between the EUSAIR pillar with Horizon is not so high it is mostly linked to the sustainable development of pillar 3 and to connectivity of pillar 2 (energy and transport). These pillars show a more pronounced degree of overlap with H2020 projects compared to how much they overlap with the priorities expressed in S3.
However, these instruments are characterised by several differences. Among them, in Horizon 2020, funds are awarded according to the quality of project proposals and consortia, without any geographical criteria (Doussineau et al., 2021). The H2020 programme, besides, aims to finance low Technology Readiness Level projects. For the seven-year period from 2014 to 2020 it consisted of a budget of around 80 billion euros. The average amount for a single project varies from 600 kEuro for Italian EUSAIR regions to 76 kEuro for Bosnia and Herzegovina.
Regarding the Interreg programme 2014-2020, it consists of a series of programmes to foster joint initiative (European Territorial Cooperation) between regions in and out of the European Union to help local, regional, and national governments across Europe to develop and deliver better policy.
Interreg primarily focuses on supporting the exchange of experiences and transfer of good practices between regions. The analysis evaluated Interreg Adrion, which had a budget of 359 million euros for the period of 2014-2020 and enabled the participation of almost all members of EUSAIR.
Due to the inner scope of the two programmes, the Interreg Projects have a much smaller financial allocation than H2020.
Out of 82 projects financed by Interreg Adrion, most of them are financed under Axis 2 – “Sustainable Region” followed by Axis 1 – “Innovative and Smart Region”. Italy leads the Adrion projects with 56% followed by Greece with 23%, Croatia with 11% and Slovenia with 10%.
Public authorities and stakeholders involved in a MRS are encouraged to utilise available programmes and funding to establish interregional collaborations for research and innovation. However, there are several challenges that make this task difficult to achieve.
In the case of funding programmes managed directly by the EC (such as Horizon) the choice of partners should be based on R&I excellence and there are no incentives in finding partners belonging to the same macro-region.
On the other hand, in the case of programs managed at country of regional level (such as ERDF ROPs) it is not easy to coordinate the calls and even more difficult to share resources to implement joint calls.
In general, direct, and indirect funding programmes were not designed to take into consideration or to favour the collaboration between Public Authorities belonging to the same macro-region. Incorporating MRS into these funding programs is also not a straightforward process.
Although the provision of measures for international collaboration represents a criterion to be fulfilled as one of the enabling conditions to support 2021- 2027 regional S3 strategies.
The research highlights the importance of the concept of "embedding" for reviewing the EU cohesion policy, which provides an opportunity to deepen the understanding of the S3 concept and rethink its theoretical basis. In this context, MRS can play an intermediary role between Member States and the EU. As a "soft law" tool it can promote responses to challenges extending beyond regional or national boundaries. In this regard, financial availability, governance, and political will are crucial to reinforcing the effectiveness of MRS in directing resources towards objectives. Six years after its establishment EUSAIR, approved a list of flagship projects, to be potentially funded.

Discussion

The EUSAIR area is a complex mosaic with territories of different sizes and GDPs, characterised by geopolitical changes that have taken place in recent decades, differences in the economic and industrial structures of countries, and differences in the institutions, governments, and public organizations responsible for developing innovation policies. EUSAIR has been defined as the most significant effort to bridge the gap between the EU and Western Balkans in terms of economic and infrastructural development and environmental protection (Belloni, 2019). To optimise the benefits from resource investments, the S3 approach is designed to establish a new innovation policy system that considers all critical aspects of the economy and focuses on investment priority areas. S3 explicitly requires regions to consider potential collaborations with other regions. During the 2021-2027 programming period, interregional cooperation is even more relevant for S3. National and regional authorities are being asked to update their S3s and respond to seven "enabling conditions" of good governance under the new cohesion Policy. Such condition relates to interregional collaborations based on the identification of common priorities and forms of cooperation between regions. Furthermore, at this stage, all EUSAIR pillars and thematic priorities are well known to all participating regions and countries, this should open up additional opportunities for fostering integration between EUSAIR and S3.

When considering the outward-looking dimension of S3, regions are expected to provide a better clarification of interregional collaborations' aims and roles, whether pooling resources on common projects, fostering the acquisition of knowledge in related fields or strengthening value chains between technology developers and users.

The Thematic Smart Specialisation Platforms, which aim at promoting collaborations between regions and their innovation actors are based on similarity as they put together regions with the same specific S3 areas. However, another important driver of collaborations may be the exploitation of complementarity in related technological sectors.

For the more advanced regions and countries, if moving the knowledge frontier remains one of the central targets of any policy strategy, the process of change involving the whole of society will greatly benefit from policies targeting innovation diffusion and the reduction of system's inertia.

This is especially important non-EU EUSAIR countries too, working on the design and implementation of S3 as a means of advancing their socio-economic reform programs, critical priorities for EU accession.

Although some lagging regions may face challenges in identifying priorities and implementing S3, due to limited institutional capacity and ineffective governance, monitoring, and evaluation, incorporating the two strategies is still crucial. This is because MRS don't receive funding from specific funds or programs, and crucially rely on the possibility to mobilise existing programmes and resources.

To attain this aim, the EUSAIR strategy fully must grasp the potential transformative approach of the S3 and the cross-cutting aspect of R&I. It could also represent a concrete reference in the implementation of S3 interregional cooperation, in terms of building competitiveness through innovation.

However, with reference to the original research question on the integration of two significant strategies such as the strategy for the Adriatic-Ionian Region and EU Research and Innovation strategies, the empirical analysis shows few complementarity. In many cases, innovation policies in the Adriatic Region do not have the right benchmark.

Similarly, a lack of coordination in EUSAIR's research and innovation strategies also seems apparent. For example, the ambitious goals currently existing in EUSAIR are not easily linked to the S3 that each country, at the subnational level, should develop. This inconsistency needs to be addressed urgently to make national policies reliable. A solution, or at least a partial solution, can be found in past policy experiences.

The regional/cohesion policy offer a considerable number of financial resources and technical tools that can be foster synergies and complementarity. However, thus far, coordination between the MRS and ESIF has been primarily focused on European Territorial Cooperation (Interreg programmes), that have neither the size (very limited budgets) nor the features (type of projects) to address the ambitious MRS objectives and priorities.

At the EU level, the most prominent issue remains a further revision of existing funding programmes and policy rules, aimed at helping and promoting interregional projects within cohesion policy. An interesting step towards this goal was the introduction of the Interregional Innovation Instrument (I3) for the 2021-2027 programming period, which may be useful for connecting regional S3s in a macroregional context (Woolford et al., 2020). However, the I3's impact and efficacy have yet to be assessed.

Policy implications

This research identifies key moments in the evolution of European cohesion policy. The regional dimension, which was absent at the time of the establishment of the European Communities, developed into a new intermediate level between countries and the EU, taking the form of the MRS. The Maastricht treaty and the Lisbon Strategy characterised this path. The cohesion policy shifts its focus from an integrated regional policy to an economic support system (Becker, 2018). This shift was accompanied by an increasing sectorisation of European spatial policies and supported by the place-based regional policy Barca report.

When eleven new Member States joined the EU between 2004 and 2007, the cohesion policy, requiring the EU to adopt a more diverse and interdisciplinary culture, that was reflected into politics. Another aspect concerns the dominant position of the European Council in EU decision-making processes and the related allocation of funds among Member States. Given the significant part of the EU budget devoted to regional and cohesion policy through the development of operational programmes (national and regional) the composition and decisions of the Council are of particular importance as genuine instruments of territorial governance.

The EU has also developed numerous sectoral policies, with 291 policies currently listed on the EC website (Sielker et al., 2021). These policies, such as the Maritime Spatial Planning Directive, have specific objectives that are spatially relevant but not yet integrated into the cohesion policies (Moodie et al., 2021). While the overall EU budget remains the same, new policies developed different channels for allocation, co-financing, and funding flows. This emphasises the increasing need to integrate the EU's sectoral policies with the cohesion policy.

S3, then, was conceived of before the 2008/2009 crisis but implemented in a completely different context. In the 2021–2027 programming period, the S3 logic seems even more difficult to apply given the post-COVID-19 context and unstable geopolitical situation. Implementing selective prioritizing policies, as S3 requires, can be challenging in this context, as policymakers can be heavily influenced by representatives of production sectors. These sectors may not be strategic for diversification and transformation, but policymakers focus on them due to their significant impact on income and

employment (Iacobucci, 2021). The COVID-19 crisis also occurs at transitions between two programming periods. This resulted in the overlap of two programming periods. Reporting and activity design overlapped, and it is crucial to consider how to maximise the opportunities provided by European policies. The 2021-2027 phase, then, began without a thorough an effective evaluation of the previous period (Esparza Masana & Fernández, 2019; Marrocu et al., 2023; Prota, 2021). Additionally, the focus has been shifted away from new programming due to the implementation of recovery and resilience plans.

Besides, as the 2021 Strategic Foresight Report identified, climate change and environmental degradation, digital hyperconnectivity and technological transformation, alongside pressure on democracy and values, as well as shifts in the global order and demography, became the key megatrends that will impact the EU in the coming decades[99].

The new EC guidelines, the thematic areas defined from the next generation EU shift the focus on concept as resilience at the local level, the autonomy of supply chains rather than the circular economy, rather than energy efficiency and self-sufficiency. In this framework the outward dimension changed, i.e., looking to encourage the circular economy they need to find which other areas to collaborate to "close the circle" or identified to which kind of relation in the management of the supply chains[100].

To give a hint on what can be improved in practice, to implement interregional links between EUSAIR and EU research and innovation strategies, the case of Galicia Norte is reported.

During the 2014-2020 cohesion policy period, Galicia (Spain) and Norte (Portugal) developed a Joint Investment Plan to identify strategic priorities for their cross-border Interreg Europe program. This led to the development of a joint S3 (RIS3T) that identified six areas of strategic collaboration.

The RIS3T ran into several implementation hurdles but it still represents an interesting laboratory of a joint cross-border S3 (Gianelle et al., 2016) where the outward-looking dimension of the S3 found implementation. Overall, these two regions have a long history of cooperation through formal and informal networks. However, in the transition from paper to practice, institutional asymmetries, and changes in some governmental settings affected the development of joint projects.

Lessons learnt from RIS3T provides several policy implications that can be resumed around six items:

1. Strengthening governance structures: Effective governance structures are critical for successful cross-border collaboration. It is important to establish clear roles and responsibilities for different actors, ensure effective communication and coordination, and promote stakeholder engagement and participation.
2. Enhancing funding mechanisms: While Interreg Europe funding was the primary source of financial support for the joint strategy in Galicia-Norte, it is important to explore and exploit other funding opportunities, such as Horizon and ESIF. This requires a strong understanding of the funding mechanisms available and the ability to develop competitive project proposals.
3. Promoting knowledge exchange: This is to share knowledge, expertise, and best practices, and to build networks and partnerships.
4. Developing joint projects: It is important to identify areas of common interest and develop joint projects for knowledge-based investments, focusing on comparative advantages.

[99] COM (2021) 750 final

[100] van Leeuwen, E. (2012), Growth and innovation of competitive regions: The role of internal and external connections – by U. Fratesi and L. Senn. Papers in Regional Science, 91: 233-234. https://doi.org/10.1111/j.1435-5957.2011.00410.x

5. Addressing institutional asymmetries: Different institutional structures and governance systems can create challenges for collaboration. It is important to address these institutional asymmetries through effective communication, coordination, and cooperation between different actors.

A predefined set of investment priorities, "the pillars", already exists in EUSAIR. These pillars could represent the framework under which effective policymaking develops tailor-made actions.
These priorities the, could also be adjusted/revised within the action plan and the new Cohesion policy programming period could be the ideal set. Cooperation at the macro-regional level, with appropriate policy support, can provide policymakers with an opportunity to discuss the rationale for the transnational dimension of S3, learn about available implementation tools, and explore common interests and funding sources to support collaborative projects. As the opposite of "one-size-fits-all "policy models leading to uniformity, effective policymaking requires in fact, need to be context sensitive to the specific needs and available resources.
At the moment, however, EUSAIR governance bodies appear to have little ability to influence member regions and countries' choices of priorities to provide better alignment between S3 priorities and macroregional pillars. Simultaneously, the complex and multilevel architecture of its governance helped to involve a broad array of stakeholders and raise their awareness about macroregional challenges. This is expected to help facilitate alignment of regional innovation policy, as well as cooperation between R&I institutions and stakeholders.

Limitations and further research

This research represents a first assessment of the potential synergies and effective integration between the EU macro-regional strategy for the Adriatic-Ionian region (EUSAIR) and the EU research and innovation strategies.
As this thesis focuses on one MRS, its results do not apply directly to the other Strategies.
Most regions (and countries) used a two-level (or more) structure to specify their specialisation areas more effectively. Using the specialisation areas at the first level may not always capture the actual specialisations in which regions and countries are investing resources. This is particularly evident with the 2021-2027 S3 documents which use a systemic approach. These difficulties already have been highlighted and examined in several empirical studies on S3 (D'Adda et al., 2019; Gianelle, Guzzo, et al., 2020).
The S3 approach has been widely researched, but several issues have emerged during the research. Firstly, S3 was originally designed as a non-spatial approach. Later soon It was improved within the boundaries of the cohesion policy, following the administrative division into NUTS regions, for the purpose of allocating funds.
However, at the threshold of the second six-year programming period, it appears that interregional relations have been neglected in the design of S3 regional strategies. The characteristics of interregional connections in the context of S3 have not received adequate attention so far. This implies that there is a gap in our understanding of the nature and significance of linkages that cross regional boundaries. While of flagship projects are identified, in area of common interest for the EUSAIR, further research and analysis are needed to support the interregional linkages of S3 and its potential implications for regional development.

Likewise, there is not much academic research to evaluate the MRS's contribution to EU-funded projects.

Three main themes can be identified as future developments:

- replicate the analysis in other contexts, as the EU MRS covers almost 66% of the EU,
- analyse how measures for interregional cooperation will actually be translated into Regional Operational Programs (ROPs) projects that each region will fund during the current programming period,
- analyse the gap in the theoretical basis of S3, with the outward-looking dimension not effectively implemented in practice, despite its significance emphasised in European documents.

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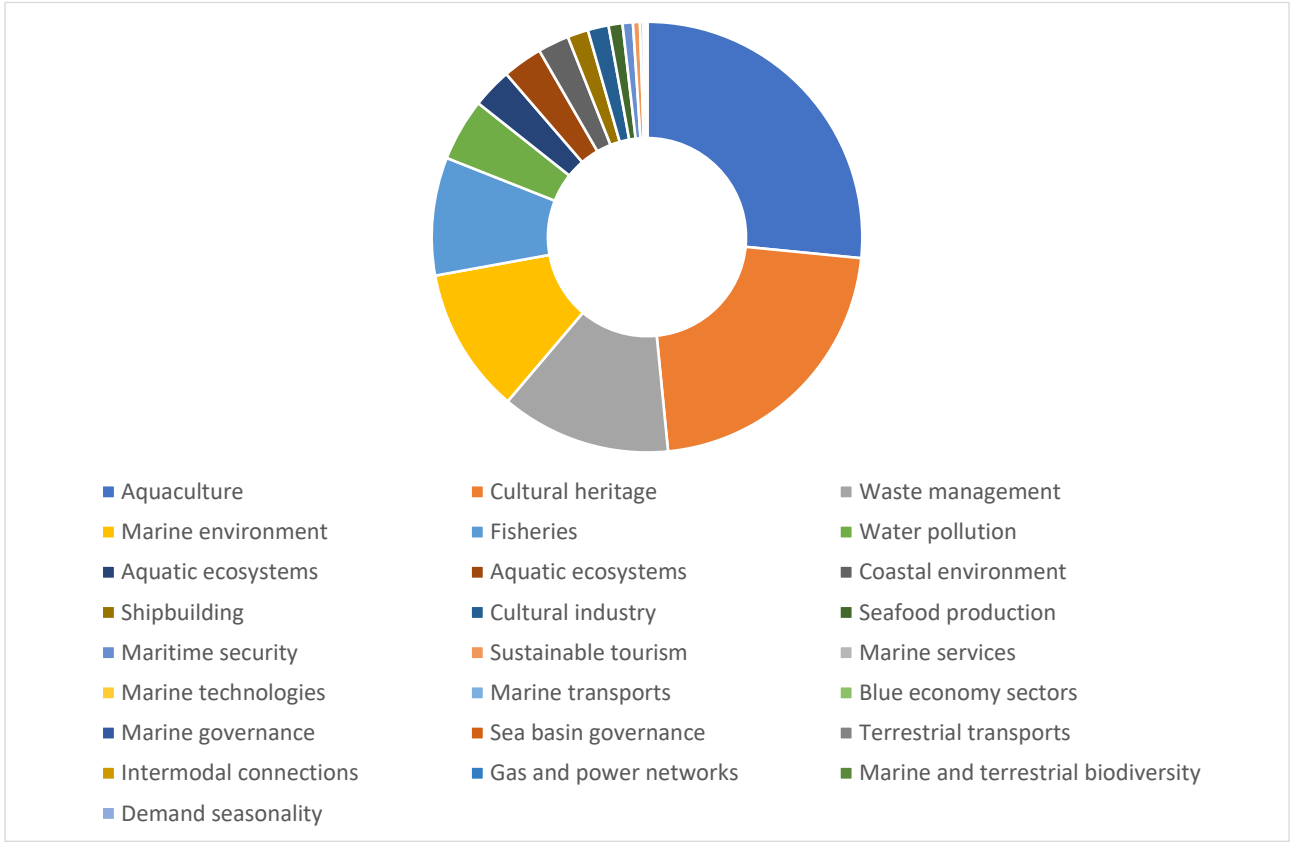
Annex

- Table Horizon
- EUSAIR Flagship projects

Annex 1. - Number of organisations and projects per EUSAIR NUTS 2

Region/Country Name	Nr of Organisations	Nr of Projects
Albania	**53**	**52**
Bosnia and Herzegovina	**118**	**118**
Croatia	**818**	**816**
Greece	**5490**	**5478**
Anatoliki Makedonia, Thraki	44	36
Attiki	3330	3320
Dytiki Ellada	232	293
Dytiki Makedonia	42	41
Ionia Nisia	8	5
Ipeiros	75	71
Kentriki Makedonia	969	991
Kriti	490	489
Notio Aigaio	21	25
Peloponnisos	38	39
Sterea Ellada	74	14
Thessalia	122	122
Voreio Aigaio	40	42
EUSAIR Italy	**8310**	
Abruzzo	152	195
Basilicata	45	109
Calabria	103	49
Emilia-Romagna	1720	3419
Friuli-Venezia Giulia	435	394
Lombardia	3150	5138
Marche	203	221
Molise	20	99
Prov. Autonoma di Bolzano/Bozen	150	152
Prov. Autonoma di Trento	461	437
Puglia	418	373
Sicilia	213	243
Umbria	191	227
Veneto	1050	1015
Montenegro	**65**	**65**
Serbia	**599**	**596**
Slovenia	**1478**	**1472**
North Macedonia	**122**	**122**

Source: Own elaboration based on CORDIS database.


Aquaculture
Cultural heritage
Waste management
Marine environment
Fisheries
Water pollution
Aquatic ecosystems
Aquatic ecosystems
Coastal environment
Shipbuilding
Cultural industry
Seafood production
Maritime security
Sustainable tourism
Marine services
Marine technologies
Marine transports
Blue economy sectors
Marine governance
Sea basin governance
Terrestrial transports
Intermodal connections
Gas and power networks
Marine and terrestrial biodiversity
Demand seasonality

EUSAIR FLAGSHIPS 2021-2027, adopted on 12th Extraordinary EUSAIR Governing Board meeting on 10 June 2020

PILLAR 1: BLUE GROWTH			
TITLE OF THE FLAGSHIP	MACROREGIONAL CHALLENGE / NEED / STATEGIC IMPORTANCE	OVERALL GOAL / EXPECTED IMPACT	REMARKS ON PROPOSED ACTIONS/PROJECTS
FOSTERING QUADRUPLE HELIX TIES IN THE FIELDS OF MARINE TECHNOLOGIES AND BLUE BIO- TECHNOLOGIES FOR ADVANCING INNOVATION, BUSINESS DEVELOPMENT AND BUSINESS ADAPTATION IN BLUE BIO-ECONOMY	Maximizing sustainable economic growth and employment as well as business creation based on blue technologies, "brain circulation", networking capacity and access to seed and venture capital. Strategic goals served: - Development of skilled human capital on Blue Technologies - Creation of new jobs in the field of Blue Growth - Know how transfer between EU and IPA countries - Cooperation between research and public and private sectors, as well as users, to develop innovative products and services and technology transfer - Compliance/adaptation of non-EU countries with EU Acquis - Remove barriers to trade and investments	Strengthening quadruple helix ties in the field of blue technologies in the region through: - Stronger RDI and cooperation among SMEs and between SMEs, large enterprises and research centres operating in the Adriatic-Ionian Macroregion - Increased networking between researchers, SMEs and clusters - Increased joint research papers and number of researchers exchanged within the macro-region - Internationalization of SMEs in the region - Easier access to finance and promotion of the creation of start-ups	Indicative types of actions to be eligible for funding under MFF 2021-2027: - Encouragement & creation of clustering, especially of quadruple helix. - Research on blue technologies & prioritisation of its adoption by SMEs in the Macroregion - Promotion of blue skills - Reinforcement of networking, knowledge sharing & creation of databanks - Enhancement of competitiveness and sustainability of relevant local and European industry sectors through utilization of marine bio-discoveries - Allowing development of novel eco-friendly end products that serve circular economy - Development of solutions to decarbonize fishing fleets - One-stop-shops' operation for SMEs support
PROMOTING SUSTAINABILITY, DIVERSIFICATION AND COMPETITIVENESS IN THE FISHERIES AND AQUACULTURE SECTORS THROUGH EDUCATION, RESEARCH & DEVELOPMENT, ADMINISTRATIVE, TECHNOLOGICAL AND MARKETING ACTIONS, INCLUDING THE PROMOTION OF INITIATIVES ON MARKETING STANDARDS AND HEALTHY NUTRITIONAL HABITS	Better cooperation across the Adriatic-Ionian sea basin should trigger a virtuous process of increasing the competitiveness of the coastal communities. Strategic goals served: - Creation of new jobs, the harmonization of standards as well as the compliance of non-EU countries with EU Acquis are of strategic importance. - Combining fisheries with tourism activities (Pillar 4) should be exploited and further developed.	Strengthening fisheries in the region through: - Better management and sustainable exploitation of fish stocks. Improvement of data collection and fish stock assessment. Harmonization with EU regulations & international organizations. - Compliance & implementation of measures to combat illegal, unreported, unregulated fisheries and elimination of destructive fishing practices. - Utilization of Unwanted and Unavoidable catches and discards. - Plans to improve professional skills of fishermen. Strengthening aquaculture in the region through: - Increase of aquaculture production. Improvement of productivity, quality, environmental sustainability and diversification in aquaculture. Introduction of new species, use of alternative raw materials for feed production, new farming technologies, use of advanced processing technologies and innovative actions on traceability. - Improvement of the image and competitiveness of farmed products including the promotion of initiatives on marketing standards and healthy nutritional habits - Acquisition and improvement of professional skills.	Type of actions to be eligible for funding under MFF 2021-2027 for Fisheries: - Development of a strategy for small scale fisheries. - Scientific cooperation on fisheries management - EU compliance and common standards and practices. - Developing skills. - Creation of a network for monitoring and predicting the distribution of alien species in the Adriatic-Ionian region and potential ways of exploitation. - Restoration actions to enhance habitat features (e.g. artificial reefs) in areas that have been degraded or replaced by maritime infrastructures and in-situ monitoring of their efficiency. Three main axes around which common actions for Aquaculture can be developed: - Administration: includes legal framework, licensing procedures and monitoring of the activity. Data is available from previous projects together with monitoring tools that are under development (e.g. TAPAS project) - Technology: Methodological and technical issues related to farming. Nutrition, ichthyopathology and treatment are of high priority and exchange of information is vital. - Marketing (including Trade): refers to quality of the final product, promotion of the industry, market research etc, including the promotion of initiatives on marketing standards and healthy nutritional habits. Trade: refers to facilitation of trade of fisheries and aquaculture products including seafood processing products, traceability, certification, harmonization of legislation.
BOLSTERING CAPACITY BUILDING AND EFFICIENT COORDINATION OF PLANNING AND LOCAL DEVELOPMENT ACTIVITIES FOR IMPROVING MARINE AND MARITIME GOVERNANCE AND BLUE GROWTH SERVICES	Competition for maritime space – for renewable energy equipment, aquaculture and other uses – has highlighted the need to manage our waters more coherently. The Strategic goals served are: - Improved maritime and marine governance and services, - Creation of new jobs, - Harmonization of standards, - Overcome of barriers and obstacles, - Compliance/adaptation of non-EU countries with EU Acquis.	The Adriatic and Ionian Region needs to make better use of the skills that are available, equip people with new skills (including soft skills) that are needed: - Enabling the growth of a sustainable blue economy and fostering prosperous coastal communities. - Improved Governance of maritime space. - Improved Skills and career development in blue economy and strengthening of networks of academics, training organisations and professional organisations of maritime sectors in the macroregion.	Indicative Actions / Projects to be eligible for financing under proposed regulatory framework 2021-2027: **Research platforms and Trans-regional cooperation between community-led local development (CLLD) strategies for actions:** - to combat marine litter pollution, - development of fishtourism and ichthyotourism, - Creation of start-ups and local employment and promotion of partnership working **Governance of maritime space for a sustainable and transparent use of maritime and marine resources. This will include:** - supporting the implementation of the new Directive on Maritime Spatial Planning - adopting clearer legal frameworks for development of Allocated Zones for Aquaculture (AZAs), marine protected areas (MPAs), exploiting deep-sea water and marine mineral resources. **Maritime professional skills:** - improve the levels of skills and expertise for the working manpower in maritime sector.

PILLAR 2: CONNECTING THE REGION – SUBGROUP TRANSPORT			
TITLE OF THE FLAGSHIP	MACROREGIONAL CHALLENGE / NEED / STATEGIC IMPORTANCE	OVERALL GOAL / EXPECTED IMPACT	REMARKS ON PROPOSED ACTIONS/PROJECTS
THE ADRIATIC-IONIAN MULTI-MODAL CORRIDORS	The development of an interconnected and integrated transportation system in the Adriatic-Ionian Region is a challenge of macro-regional relevance, consistent with national priorities and with EU objectives of more connected, greener and low-carbon Europe (i.e. Policy Objectives 3 and 2), aiming at strengthening North-South and East-West relations by means of the identification of multimodal corridors alongside the TEN-T network including, in particular, maritime connections between the coasts of the Adriatic and Ionian Seas and intermodal connections between the seaports and the hinterland of the Region.	A system of multimodal corridors in the Adriatic-Ionian Region, alongside the TEN-T network, aims at reducing infrastructural, technological and legislative gaps and improving accessibility, in order to facilitate cross-border demand flows and transport operations, and strengthen North-South and East-West (physical and digital) interconnections between the logistics and urban nodes of the Region. The overall goal is contributing to create a seamless, harmonised and competitive transport system with a twofold scale of outcomes: on the one hand, to exploit the strategic geographical position of the AI Region, as "junction" between the Mediterranean Sea and Central Europe, intercepting the routes from and to the Far East in the context of global trades; on the other hand, to facilitate regional and local connections and, in so doing, contributing to developing a cohesive and inclusive region. The concept of multi-modal Corridor crossing and connecting several States, has a macro-regional relevance by definition. In the Adriatic-Ionian Region it can include several type of actions and projects ranging from infrastructural development and upgrading according to common functional, quality and safety standards (e.g. those foreseen by Reg. (EU) 1315,establishing the TEN-T network) to soft measures including the development of ICT and other innovative solutions to promote environmental-friendly transports (e.g. green ports, cycling routes developments, ...), common safety and security standards and to facilitate cross-border crossings.	Proposed actions: The ADRIATIC-IONIAN CYCLE ROUTE consists of a cycling route running along the coast of the entire Adriatic and Ionian basin from Italy (all the involved Regions) to Greece crossing the EUSAIR concerned Countries (coastal network) and including its main cycle connections to the hinterland areas of the nine EUSAIR countries (inland network). The following specific objectives will be pursued: • completing the coastal cycle route and the main cycle connections to the inland areas according to shared quality standards; • development of intermodal services (mainly boat and train) to support the cyclists' journeys and sustainable tourism development; • enhancement of physical and non-physical infrastructures (e.g dedicated parking lots, equipping intermodal exchange nodes, cycling information points as well as refreshment points or smart app); • set up the conditions for launching the procedure to insert the entire ADRIATIC-IONIAN Cycle Route in the EuroVelo network (only the north-eastern part is insert in EuroVelo). The ADRIATIC-IONIAN GREEN/SMART PORT HUBS CONCEPT consists of a port network of the entire Adriatic and Ionian basin from Greece to Italy crossing along all EUSAIR countries including all the ports belonging to the core and comprehensive network of the TEN-T Corridors involved. In line with the goals and objectives of the European Green Deal, seaports in the A-I Region, should be seen as a key priority in pursuing resilience to climate change. On shore power supply (OPS) is already seen as a significant part of the transition to the new 'zero emission' era and as such it should be further incentivised. Moreover, digitisation of the supply chain, via the exchange or real-time information among all involved stakeholders in conjunction with the development of ICT systems to improve and facilitate data collection in ports, will result in a more efficient and transparent supply chain ports. The following specific objectives will be pursued: - Technology testing in ports to identify the technical and operational challenges; - Mapping of local and macro regional needs and development of network of ports to be transformed in accordance with the developments of the Macroregional Transport Masterplan - Development of the required infrastructure to support zero emission actions as well as promotion of interoperability among the ports of the Region through the digitisation of the provided services and the development of innovative ICT solutions to support the supply chain. Enhance connectivity to islands from mainland and between islands, boosting short sea shipping green solutions. - Development of circular economy projects in ports finding solutions in turning waste to products due to their ideal background (proximity to large cities, industries as well as by operating as hosts of ships' waste). In many EUSAIR States the regulatory framework for the electrification of ports is either already enacted or is about to be. In fact, the proposed flagship is in line with the Alternative Fuels Infrastructure Directive (Directive 2014/94/EU) to prioritise Onshore Power Supply in TEN-T ports by the end of 2025. In addition many projects have already been completed in the Region and others are on-going, preparing the ground for the introduction of cold ironing, electric bunkering and hybrid ships across the Eastern Mediterranean Sea corridor and to exchange good practices regarding soft and hard environment-friendly solutions for a greener, safer and more efficient transport system, practices from which the proposed action could build upon.

PILLAR 2: CONNECTING THE REGION - SUBGROUP ENERGY NETWORKS			
TITLE OF THE FLAGSHIP	MACROREGIONAL CHALLENGE / NEED / STATEGIC IMPORTANCE	OVERALL GOAL / EXPECTED IMPACT	REMARKS ON PROPOSED ACTIONS/PROJECTS
POWER NETWORKS AND MARKET FOR A GREEN ADRIATIC-IONIAN REGION	The development of an integrated power system and electricity market in the Adriatic-Ionian Region is a challenge of macro-regional importance consistent with national needs as well as with EU Policy Objectives no. 2 and no. 3 for a greener, low-carbon and more connected Europe. The goal is at expanding and interconnecting national power systems, creating power market coupling while exploring opportunities for large-scale deployment of low-carbon energy sources and grid digitalisation	Electricity will have an increasing role and share in all the national energy systems through the Adriatic-Ionian Region as one of the drivers in the energy transition towards a low-carbon economy. Electricity will be produced by a variety of sources and facilities while renewable energies will become a key component. It is in the interest of all EUSAIR Member States to interconnect their power grids, as a means to optimise the deployment of low-carbon power generation, to maintain grid stability and security while expanding a the use of intermittent and diversified power sources. Electricity storage, digitalisation of the power grid and smart grids will offer further opportunities for reducing costs and improving the service. Electricity market integration, market coupling would become possible should investments in new power infrastructure become a reality.	Proposed actions: **Transbalkan Electricity Corridor.** The Electricity Corridor is a cluster of projects consisting in new power transmission lines, their reinforcements to allow electricity trade, improve grid stability and the large-scale deployment of source. EUSAIR Countries interested: Bosnia and Herzegovina, Croatia, Montenegro, Serbia. **Power market coupling and integration.** Creation of a wholesale power market for the Adriatic-Ionian Region according to a number of steps including harmonisation of electricity transmission tariffs, progressive market coupling, power purchase agreements and use of blockchain to facilitate electricity trading. EUSAIR Countries interested: all of them. **Digitalisation of the power system, smart grids, deployment of renewable energy sources.** According to the Clean Energy for All Europeans package and the several National Energy and Climate Plans priority should be given to the clean energy transition. In this context new collaborative projects are envisioned. EUSAIR promoting Country: Italy
INTEGRATED NATURAL GAS CORRIDORS AND MARKET FOR A GREEN ADRIATIC-IONIAN REGION	The development of an integrated natural gas system and market in the Adriatic-Ionian Region is a challenge of macro-regional importance consistent with national needs as well as with the EU Policy Objectives no. 2 and no. 3 for a greener, low-carbon and more connected Europe. The goal is at expanding and interconnecting national gas systems promoting security of gas supplies while exploiting opportunities for gas storage and counterflows towards an efficient gas trading hub.	Given its low-carbon content natural gas would be the fuel of choice in the energy transition. It appears essential for EUSAIR Member States to invest to ensure ample and secure gas supply during the next years. Gas supplies should be diversified with natural gas entering the market through several routes. New gas pipelines, gas storage, LNG regasification terminals can contribute. Interconnections would help the construction of a macro-regional market as well as counterflows towards a macro-regional trading hub. Investments in new infrastructure should be timely and part of the transition towards a low-carbon economy.	***Transbalkan Gas Ring.** The Gas Ring is a cluster of projects consisting in new gas pipelines, gas storage facilities and counter flows including the Serbia – Bulgaria Interconnector, gas interconnector Serbia- Croatia, Bosnia and Herzegovina – Croatia Interconnectors, Croatia – Slovenia Interconnector. EUSAIR Countries interested: Bosnia and Herzegovina, Croatia, Serbia, Slovenia. * **Ionian-Adriatic Gas Pipeline (IAP).** The IAP is a strategic gas supply infrastructure linking. Albania, Montenegro, Bosnia and Herzegovina and Croatia to take advantage from and synergise which the Transbalkan Gas Ring and the Transadriatic Gas Pipeline. The IAP project is based on the idea to connect the existing Croatian gas transmission system, via Montenegro and Albania with the TAP system (Trans Adriatic Pipeline) or a similar project. The pipeline will cross the territory along the Adriatic coast from Fieri in Albania via Montenegro to Split in Croatia and will be linked to the existing Croatian gas transmission system). An exit to Bosnia and Herzegovina is planned via the Southern interconnection Croatia-Bosnia and Herzegovina. The implementation of the entire Ionian Adriatic Pipeline project enables opening of the new energy corridor for the SEE region within the Southern Gas Corridor, with the aim to establish a new natural gas supply direction from the Middle East and Caspian region. The IAP will have a bidirectional gas flow possibility i.e., it will be able to provide natural gas supply of SEE from other sources, one of them is KrK LNG. From Croatia the gas could be transported to Hungary and further and via Slovenia to Austria and Italy. The main benefits of IAP are: gasification of Albania, Montenegro, southern part of Croatia and BiH; security and diversification of supply, market integration.* **Eastern Mediterranean Gas Pipeline (East Med).** Gas pipeline from the South East Mediterranean through Crete and continental Greece ot exploit discoveries of off-shore gas resources. The pipeline which should connect Greece with Italy. EastMed Pipeline is a project of an offshore/onshore natural gas pipeline that will link the recently discovered off-shore gas reserves in the Levantine Basin with the Greek National gas system and with the IGI-Poseidon Pipeline to Italy. The project enables the supply of South East European markets, thereby strengthening security of supply through the diversification of sources and routes. The pre-FEED phase studies, which were completed in the period 2015-2018, confirmed that the project is technically feasible, financially sustainable, competitive and complementary with alternative export proposals in the region. In June 2018, the EastMed pipeline project received 34.5 million Euros additional funding from CEF. In 2019 EastMed-Poseidon was confirmed as a Project of Common Interest (PCI). In January 2020 the Intergovernmental Agreement (IGA) for the construction of the pipeline was signed between Cyprus, Greece and Israel. IGI Poseidon will assign within 2020 all those studies agreed with the European Commission (technical, financial, and regulatory studies), which are required for the maturation of the project to the level of Final Investment Decision (FID) by the end of 2021-beginning 2022. The beginning of construction is expe4cted in 2022. The project is estimated to be completed in 2025. * **North Macedonia gas interconnectors**. Three gas interconnectors are envisioned by this project: interconnection of North Macedonia natural gas system with Albania, Greece and Serbia toward a fully integrated gas network.* **Natural gas trading hub for the Balkan Region.** The trading hub would allow to exchange contracts, enhance competition when feasible, while promoting security of gas supply. EUSAIR Countries interested: all of them
DEVELOPMENT AND OPERATION OF LOGISTICS FOR DIRECT LNG USE AS A CLEAN FUEL FOR THE ADRIATIC-IONIAN REGION	The development of small-scale direct LNG use is contributing to a more secure, competitive and sustainable energy system through the Adriatic-Ionian Region. The deployment of small-scale LNG in the transport and other sectors will cope with two challenges consisting of cleaner environment and climate change with a view at the EU Policy Objectives no. 2 and no. 3. The need for a shared logistic infrastructure and harmonised regulatory standards should be addressed according an integrated approach. Closer according an integrated approach. Closer cooperation between EUSAIR Member Governments, LNG suppliers and users association at macro-regional level would boost competitiveness and investment.	Direct use of LNG as a fuel for transport would akkow diversification and reduction of greenhouse gas emissions as compared with the oil-derived hydrocarbon fuels. Direct use can be proposed for both maritime and land transport. Small-scale LNG deployment is considered a viable option by the European Commission and several Member States. Development of LNG infrastructure would contribute to LNG use in the maritime transport to comply with the strict emission limits proposed by the European Union and International Maritime Organisation. On the other hand, LNG use for heavy road transport is being promoted along special corridors through the European Union and could be extended to the Balkan Region. The TSG2 Sub-Group on Energy Networks and Sub-Group on Transport will work together on the shared aspects of the project.	**Harbour infrastructure.** Design, construction and management of an LNG infrastructure in key harbours of the Adriatic-Ionian Sea including co-ordination of main port authorities. EUSAIR Countries interested: Albania, Croatia, Greece, Italy, Slovenia **Road transport.** Design, construction and management of a network of LNG refuelling stations for road transport to deliver LNG as a viable option. EUSAIR Countries interested: all of them **Engine conversion.** Pilot project to promote marine and road truck engine conversion to the LNG use as a fuel. EUSAIR Countries interested: all of them

PILLAR 3: ENVIRONMENTAL QUALITY			
TITLE OF THE FLAGSHIP	MACROREGIONAL CHALLENGE / NEED / STATEGIC IMPORTANCE	OVERALL GOAL / EXPECTED IMPACT	REMARKS ON PROPOSED ACTIONS/PROJECTS
DEVELOPMENT AND IMPLEMENTATION OF ADRIATIC-IONIAN SUB/REGIONAL OIL SPILL CONTINGENCY PLAN	The flagship address needs of examination and extension of the Contingency plan for Northern Adriatic to other A-I countries, possible risks and future events or circumstances that could damage the Adriatic-Ionian macro-region environment can be prevented whether damage can be minimized.	The overall goal of the preparation of a A-I Sub-regional Oil Spill Contingency Plan is to establish, within the framework of the OPRC Convention and of the Prevention and Emergency Protocol to the Barcelona Convention, a mechanism for mutual assistance, under which the competent national Authorities of Adriatic and Ionian Countries will co-operate in order to co- ordinate and integrate their activities related to prevention and response to marine pollution incidents affecting or likely to affect the territorial sea, coasts and related interests of one or more of these countries, or to incidents surpassing the available response capacity of each of these countries alone taking also into account the provisions of the Offshore Protocol of the Barcelona Convention and of the EU Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations. The added value is the high impact on macro-regional level.	EUSAIR countries (except BiH who is phase of acceptation of Contingency plan) has national Contingency plan that need to be upgraded to a joint contingency plan to improve the capability of reaction at possible accidents and better prevention of risks for possible accidents and also raise awareness on pollution prevention. Cross-cutting aspects: Capacity building in EUSAIR area, including communication to interested stake holders and decision makers. Concrete actions in the template
PROTECTION AND ENHANCEMENT OF NATURAL TERRESTRIAL HABITATS AND ECOSYSTEMS	The flagship will try to establish protection and enhancement of natural terrestrial habitats and ecosystems, with particular attention to the ecological connectivity of blue and green corridors/infrastructure. Connecting all EUSAIR countries protected areas including Natura 2000 areas and other networks with tourism will have strong impact on the AI region with their joint managements and research.	The flagship overall objective is to improve the resilience of large carnivores populations s at transnational level in the face of environmental threats and risks. The activities to be undertaken are primarily related to conservation and restoration of large carnivore populations, public awareness activities to bring these unique species to the public's attention and restoration of ecosystems in which they play a key role. protect the delicate habitats.	The flagship aims to implement activities for establishing and developing Green corridors, which are essential in the AI region for: - improving quality of life, - protecting natural terrestrial habitats and ecosystems which represent harmonised coexistence of humans in AI ecosystems is of high importance to Concrete actions in the template
PROMOTION OF SUSTAINABLE GROWTH OF THE AI REGION BY IMPLEMENTING ICZM AND MSP ALSO TO CONTRIBUTE CRF ON ICZM OF BARCELONA CONVENTION AND THE MONITORING AND MANAGEMENT OF MARINE PROTECTED AREA	The extension of MSP/ICZM to all A-I region will help strengthen and develop sustainable growth (economic and touristic), decrease pollution, protect unique biodiversity and increase quality life.	Flagship overall goals that will have strong impact on macro-regional level: - promote sustainable development and facilitate adoption of coastal and maritime spatial plans (MSP Directive, ICZM Protocol) by defining gaps in marine and coastal knowledge, - identify conflicts and propose sustainable options for action, - help the management of natural, social, economic and spatial assets in A-I region, - serve as indicators of the Good Environmental Status of marine waters of the Adriatic and Ionian Seas.	Complementary with aspects like climate change adaptation, risks prevention, public participation, open decision-making process of territorial planning, risk management, protection of sensitive biodiversity in the A-I region, improving water quality, decreasing marine pollution (marine litter, micro plastic). This is also of national level relevance since not all EUSAIR countries have MSP and ICZM neither an approach of monitoring and management of protected areas. Concrete actions in the template

PILLAR 4: SUSTAINABLE TOURISM			
TITLE OF THE FLAGSHIP	MACROREGIONAL CHALLENGE / NEED / STATEGIC IMPORTANCE	OVERALL GOAL / EXPECTED IMPACT	REMARKS
DEVELOPMENT OF THE NETWORK OF SUSTAINABLE TOURISM BUSINESSES AND CLUSTERS GREEN MAPPING FOR THE AI REGION - SUPPORTING DEVELOPMENT AND MARKET ACCESS FOR RESPONSIBLE AND SUSTAINABLE TOURISM DESTINATIONS AND MICRO/SME OPERATIONS IN THE EUSAIR REGION	**The flagship addresses the needs for** macro-regional coherence in the field of single sustainable & responsible tourism measuring, mapping, managing, marketing and monitoring system, that should be implemented for all 8 countries through the unique ICT system defining its deepest level of impact. Thus the whole region will be able to act coherently in key areas of common interest. Supporting: networks of creative industries, networks promoting and sharing best practices in environmental quality management and tourism clusters for the implementation/adoption of the EU Eco-Management and Audit Scheme (EMAS), ETIS and other Green (sustainable) Certification Schemes.	Support to the development and promotion of quality-assessed Micro & SME tourism operations and destinations in the EUSAIR – to measure, map and improve their sustainability and competitiveness, give them visibility and market uptake	Support to the development and promotion of quality-assessed Micro & SME tourism operations and destinations in the EUSAIR - to improve their sustainability and competitiveness, give them visibility and market uptake
RESEARCH & DEVELOPMENT FOR IMPROVEMENT OF SME'S PERFORMANCE AND GROWTH-DIVERSIFICATION CULTOURAIR	**Flagship addresses** the need for structured and harmonized data on cultural tourism demand in Adriatic-Ionian Region and need for the establishment of a unified and harmonized methodological framework to monitor cultural tourism demand characteristics. The challenge is to enable joint regional and transnational entrepreneurial projects and researches, that could adequately track the so called "cultural" tourists, their size and impact on the local communities and economy leading to new business opportunities, increased number of total tourist arrivals and overnights, increase of tourism income.	Harmonized methodological framework for the survey on cultural tourism demand in Adriatic-Ionian Region that would enable Adriatic-Ionian Region countries to monitor cultural tourism demand characteristics and the impacts from tourist activities to cultural resources, local economy and society, establishing new cultural tourism products and possibly new national and transnational clusters and SMEs in the field of cultural tourism.	Survey on cultural tourism demand in Adriatic-Ionian Region to establish a unified and harmonized methodological framework that would enable AIR countries to monitor cultural tourism demand characteristics and the impacts from tourist activity to cultural resources, local economy and society, establishing new cultural tourism products
TRAINING AND SKILLS IN THE FIELD OF TOURISM BUSINESSES (VOCATIONAL AND ENTREPRENEURIAL SKILLS) DES_AIR	Flagships addresses the need for harmonized training and educational programmes for responsible integrated tourism management, establishing a Master program on tourism management, hospitality and services, sharing the same methodologies and approaches, within EUSAIR countries as well as establishing new programmes for training and new projects in the field of education; the aim: provide in-service trainings for education professionals, flexible and continuous education of SME employees and to raise the knowledge and competence of unemployed; target: increased number of highly educated employees and entrepreneurs in the field of tourism	Responsible tourism destination management - implementing new training and skills for all stakeholders in destinations as well as for tourism businesses to strengthened competitiveness of the EUSAIR countries by increasing the quality of integrated sustainable destination management through development of LLL training programs and Masters' programmes	Increasing the quality of integrated sustainable destination management through development of LLL training programs and Masters' programmes: implementation of new knowledge, trainings and skills in the field of tourism (for businesses) to strengthened competitiveness of the EUSAIR countries
EXPANDING THE TOURIST SEASON TO ALL-YEAR ROUND CRUISAIR	Flagships addresses the need for better management of cruise destinations, both seaside and continental ones (rivers, lakes), diversification of tourism product, promotion and support to the development of special interest tourism connected with cruising, and other niche tourism forms (MICE, rural, alternative tourism, etc.;), exchange of good practices; targeting increased number of tourist arrivals and overnights; increased number of events, performances, entrepreneurships and SMEs in connection with cruise tourism	The preparation of Destination Management Plans that are equivalent to strategic and action plans for sustainable tourism in Cruise destinations of the AIR(seaside, river, lakes)	The preparation of Destination Management Plans that are equivalent to strategic and action plans for sustainable tourism in Cruise destinations of the AIR
DEVELOPMENT OF SUSTAINABLE AND THEMATIC CULTURAL ROUTES/CONNECTING CULTURAL ROUTES IN EUSAIR AIR CULTURAL ROUTES	Flagships addresses the need for harmonized distribution of tourism flows through macro-regional territories using Cultural Routes as tool for the creation of innovative diversified tourism products; supporting the development of cycling, walking/hiking and sailing routes that would better connect all EUSAIR Cultural routes. The challenge is to address regional connectivity of locally micro-managed routes.	Diversification of products; supporting: development of creative and cultural industry and SMEs, synergies between creative and cultural industries and the hospitality sector and sustainable tourism valorization of coastal and underwater cultural heritage	Harmonized distribution of tourism flows through macro-regional territories using Cultural Routes as tool for the creation of innovative diversified tourism products. The challenge is to address regional connectivity of locally micro-managed routes.