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European University Alliance

Matrix of the Regional Stakeholders' Needs and Transversal Challenges

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Executive summary

Task 5.3 of WP5 is dedicated to social engagement, particularly within the so-called “Quadruple Helix of innovation” framework, including civil society, public administration, business sector and the University community, focusing on student entrepreneurship.

The overall objective of Task 5.3 is to create challenge-based learning activities aligned with regional strategies. This will be achieved using an Open Discovery Process, whereby universities map regional needs in cooperation with local governments. This will allow them to identify common innovation priorities and engage regional stakeholders, facilitating a consortium-wide approach to addressing shared challenges.

As outlined in the Grant Agreement, the present deliverable aims to provide a mapping of regional needs aligned with Regional Smart Specialisation Strategies, with the aim of defining common challenges. It also seeks to present the results of scientific research elucidating the role of regional policies for social innovation and sustainable territorial development across all the areas involved in the Circle U. European Alliance. Furthermore, the contribution of higher education institutions to regional and community development, by supporting the design and implementation of regional innovation policies. The results of this action-research-based study highlight several areas of intervention where both individual universities and the Alliance as a whole can act to support social and territorial innovation.

Table of content

| | |
|--|----|
| INTRODUCTION..... | 4 |
| 1 THEORETICAL BACKGROUND | 5 |
| 1.1 The Smart Specialisation Strategy: From Innovation to Social Innovation for Sustainable Development..... | 5 |
| 1.2 The Role of Higher Education Institutions in Supporting the S3 and Social Innovation for Sustainable Development | 6 |
| 2 RESEARCH DESIGN | 9 |
| 3 RESULTS AND IMPACTS | 12 |
| 3.1 Results | 12 |
| 3.1.1 Aarhus University, Denmark | 12 |
| 3.1.2 University of Belgrade, Serbia..... | 16 |
| 3.1.3 Humboldt-Universität zu Berlin, Germany..... | 17 |
| 3.1.4 King's College London, UK | 19 |
| 3.1.5 UC Louvain, Belgium | 19 |
| 3.1.6 University of Oslo, Norway..... | 22 |
| 3.1.7 Université Paris Cité, France | 24 |
| 3.1.8 University of Pisa, Italy..... | 28 |
| 3.1.9 University of Vienna, Austria | 32 |
| 3.2 Impacts..... | 35 |
| 4 CHALLENGES AND LEARNING | 36 |
| 4.1 Challenges | 39 |
| 4.2 Learnings | 40 |
| 5 REFERENCES..... | 41 |
| 6 WEBSITES..... | 43 |
| 7 ANNEX A | 44 |
| 8 ANNEX B | 46 |
| 9 ANNEX C..... | 49 |
| 10 ANNEX D..... | 51 |

INTRODUCTION

Task 5.3 is a sub-objective of WP5 dedicated to social engagement, particularly with society and external stakeholders, focusing on student entrepreneurship.

The overall objective of Task 5.3 is to foster a sense of collaboration and unity among the Circle U. universities and their surrounding territories. This will be achieved by creating challenge-based and/or project-based learning activities aligned with regional priority strategies to support regional social innovation. To address these objectives, scientific research has been carried out to reveal the strategic priorities of the territories involved in the alliance, and the intervention needed from universities in supporting regional development. The research serves as a preliminary step to the design and implementation of future activities for universities to collaborate with the territory. The study followed an action-research approach, which combines theory and practice to generate actionable insights. The research process was structured in two distinct phases:

1. Desk research, which involved a systematic review and analysis of regional policy strategies to identify the main investment priorities set for each region involved in the Alliance, as well as the relevant scientific literature concerning the role of universities in supporting the regional innovation policies and sustainable territorial development;
2. Field research, which engaged regional/government officers from the area's partner of the Alliance to gather insights about the possible contribution of local universities and the CircleU University Alliance to the regional innovation policies and sustainable territorial development.

The present document provides an overview of the steps characterising the research and highlights the results obtained from it. To help the reader navigate this research, the report will be divided into four different sections:

1. First, the theoretical background will help navigate the reasons and purposes for the research. It includes how regional innovation policies can support social innovation and the critical role of higher education institutions in sustaining the design and implementation of strategic policies to foster regional social innovation;
2. Second, an overview of how the research design will be provided, highlighting the key elements that guided both the desk and field research;
3. Third, it will provide an overview of the results obtained from the two steps of the research. Specifically, it will discuss key elements for the work of WP5, focusing on the main areas of investment for each area involved in the alliance; the main interventions of local universities in supporting regional innovation policies; and the main future areas of intervention for the CircleU-European University Alliance in supporting local territorial development;

Lastly, it will include a final part detailing considerations on the current role of universities in supporting strategic innovation policies, as well as an overview of possible future directions that the European Alliance could pursue to support territorial development in each region. This will highlight how the findings of this research can benefit the Alliance—specifically by deepening the understanding of investment priorities at regional or national levels shared by multiple territories and by promoting the development of joint educational, research, and third-mission initiatives. Additionally, the final part will outline key challenges encountered by the research group during the planning and execution of the study, providing the Alliance with valuable insights into both the progress made so far and the potential challenges that this type of research may entail in the future.

1 Theoretical Background

This section provides an overview of the most relevant scientific and strategic policy literature on the contribution of regional innovation policies to support social innovation and the key role of higher education institutions in sustaining the design and implementation of strategic policies to foster regional social innovation:

1. In the first case, this research considers the Smart Specialisation Strategy (S3) as the primary strategic policy framework. Being adopted by each country belonging to the European Union, the S3 serves as a joint information pool for most of the European areas under study in this research. Therefore, the information provided in this section focuses on the role of the S3 for regional innovation and emphasises its contribution to social innovation by fostering the resolution of pressing societal challenges, thus becoming a transformative tool for our societies. The overview of the S3 in this section will also emphasise the structure guiding the design and implementation of the Smart Specialisation Strategy and the challenges that might hinder the overall process;
2. In the second case, the information provided focuses on universities' role in supporting social innovation and sustainability, starting from their third and fourth mission and engagement with the surrounding territory. This section will also provide an overview of their specific contribution to the design and implementation of the Smart Specialisation Strategy policy.

1.1 The Smart Specialisation Strategy: From Innovation to Social Innovation for Sustainable Development

Being among the most prominent European policies to boost regional innovation towards sustainable and inclusive growth (European Commission, 2020), the *Smart Specialisation Strategy* (S3) gained momentum in the scientific debate about the effectiveness of regional policies on sustainable transitions (Kogut-Jaworska & Ociepa-Kicińska, 2020; Kruse, 2023; Veldhuizen, 2020): the S3 is a governance concept designed and implemented by the European Commission to accelerate regional economic growth by ensuring sufficient resource allocation to all European countries (McCann & Ortega-Argilés, 2015). As specifically defined by the European Commission's original policy documents, the S3 refers to "a set of priorities [designed] in order to build competitive [regional] advantage by [...] matching research and innovation [...] to address emerging opportunities and market development coherently, while avoiding duplication and fragmentation of efforts," (European Commission, Reg No. 1303/2013, 2013). Indeed, the specific S3's development strategy relies on the identification and enhancement of areas of economic and innovative potential through a collaborative process where local stakeholders comprising businesses, governments, research institutions, and civil society collaborate to define a shared vision for regional development, thus building place-based competitive advantages (Foray, 2019; Foray et al., 2009). However, considering the current challenges driven by climate change, inequalities, poverty, and pollution (Schot & Steinmueller, 2018), the S3's goals are increasingly directed at solving the so-called "grand challenges" (Schot & Steinmueller, 2018) by making the specific societal needs produced locally the starting point for leveraging regional development and competitiveness (Landabaso, 2014; Schot & Steinmueller, 2018). This makes innovation a concrete tool for sustainability governance (Landabaso, 2014) by converting the Smart Specialization Strategies (S3) into a Smart Specialization Strategy for Sustainable Development (S4) (Neto et al., 2018) aimed at achieving the objective of smart, sustainable, and inclusive growth (European Commission, 2010).

According to Foray (Foray, 2019, p.3), the S3 is unfolding according to three consequent steps, namely:

01. *the identification of thematic priority areas*, which is led by the so-called "*Entrepreneurial Discovery Process*" (EDP), a self-discovery approach participated by multiple "entrepreneurial stakeholders" (where the term "entrepreneurial" does not refer to the nature itself of the social actors involved, but rather to the set of regional development areas and skills) to define the regional investment priorities

in line with the specific transformative goals (Foray et al., 2009). This process—essential to defining the “directionality” of a shared vision for development—builds a “transformative hope” for change.

02. *Translating the priority areas into transformational roadmaps*, which define “the nature, scope, and meaning of the investments for transformation and transition within the considered sector(s)” (Foray, 2019, p.4). Therefore, in this phase, it is crucial to follow the direction for transformation, which will bring together projects and actors committed to changing one or more industries targeted by the identified priority.
03. *Implementing the transformational activities with an action plan focusing on implementing the transformative activities* through mobilising financial instruments and project activities. In this phase, it is essential to implement functional feedback mechanisms to provide a clear overview of the process.

Although the S3 follows a linear and coherent structure, its effectiveness in addressing the societal needs derived from the *grand challenges* is still an open question. Indeed, the development of innovations to solve societal challenges and current unsustainable practices produces inevitable changes in the entire local socio-technical systems, intended as the interrelationship between the society and the technological product developed (Veldhuizen, 2020). This means that the production of technological innovations alone is insufficient but needs to be framed within a process of social transformation to ensure the viability and social usefulness of the innovation (Schot & Steinmueller, 2018). Such types of innovations – which reshape simultaneously the regional technological and social structures – are better known under the term “social innovation”, which, according to the European Commission (2013) are “new ideas (products, services, and models) [both] social in their ends and means, [meaning that they] meet social needs (more effectively than alternatives) and create new social relationships or collaborations. They are innovations that are not only good for society but also enhance society’s capacity to act” (p. 7). Consequently, measurement tools to assess the actual transformative power of S3 policy must look at the whole change process by considering aspects related to the production and implementation of technological innovation and social transformation (Schot & Steinmueller, 2018). This raises important questions about the trajectory of the “transformative hope” sparked by the identification of thematic priorities. How does this initial momentum translate into tangible change over time? Furthermore, under what conditions does the transformative process initiated by S3 lead to meaningful and lasting regional development? Exploring these aspects is essential to gaining deeper insights into the local mechanisms triggered by S3, ultimately enabling universities and other local actors to play a more effective role in supporting the process.

1.2 The Role of Higher Education Institutions in Supporting the S3 and Social Innovation for Sustainable Development

Universities are crucial in local sustainable development (Kempton et al., 2013). In the context of regional development strategies such as the S3, Higher Education Institutions (HEIs) have the critical function of guiding and supporting regional growth and social innovation through their civic engagement (Goddard & Kempton, 2016; Edwards et al., 2017; Tomasi et al., 2021). This activity is formally recognised among the different HEIs’ missions, which, alongside teaching (first mission) and researching (second mission), encourage more significant interaction with the surrounding territory (Molas-Gallart et al., 2002) and involvement in context-based challenges (Goddard & Kempton, 2016): indeed, universities can engage in a “productive transformation of knowledge” (third mission) through transferring the technology to the regional productive sectors or by creating owned spin-offs, thus giving rise – among others – to the concept of “entrepreneurial university”. In doing so, universities partner with industries and local governments (Triple Helix Model of innovation, see Leydesdorff, L., & Etzkowitz, H., 1998) to efficiently exploit the knowledge and technology generated (Leydesdorff & Meyer, 2003). However, in response to the challenges of our times, universities are called to directly intervene in identifying and responding to the specific local societal needs to define more sustainable pathways (Trencher et al., 2013; Cavicchi et al., 2013; Trencher et al., 2014 a,b; Rinaldi, 2018). This last model, referred to as “co-creation for sustainability”, is at the core of the so-called “fourth mission” (Trencher et al., 2013, 2014a, b), guided by a more holistic approach to development and a transparent engagement with societal concerns. Here, universities act as “civically engaged” (Edwards et al.,

2017) and indeed “transformative institutions” (Trencher et al., 2013). According to Goddard et al. (2016), seven are the dimensions characterising the civically engaged university (Goddard et al.; Tomasi et al., 2024):

| | |
|--|---|
| Sense of purpose | The civic university understands “not [just] what is good at, but what is good for.” It has a sense of action for solving the area's social and economic challenges, and it creates meaningful local networks that do not merely receive knowledge from universities but are involved in the true co-creation of knowledge and actions. |
| Active engagement | The civic university is actively engaged in its surrounding territory. It creates local and international collaborations to benefit the area's societal and economic challenges. |
| Holistic approach | The civic university has individuals or teams willing to engage within their territory, where the engagement itself is not seen as an addition to their “core” activities but as an opportunity to jointly develop them for their mutual benefit. |
| Sense of place | The civic university is aware of its work within a specific territory and its peculiarities. It is aware that its activities are deployed within a living laboratory, working together with other actors, and it puts its infrastructure at the community's disposal to benefit the territory. |
| Willingness to invest | The civic university is willing to invest in its territory with knowledge and by attracting funding for projects and activities, fostering the development of boundary spanners between different sectors. |
| Transparency and accountability | The civic university's mission on the ground is transparent and accountable. It makes the purposes and vision of its actions transparent to society and intervenes to encourage feedback and assessment of its work. |
| Innovative methodologies | The civic university encourages innovative methodologies for identifying social challenges, fostering understanding, and facilitating teamwork operations to solve local problems. |

Table 1: The civic university and its engagement within the territory (Goddard et al., 2016)

Based on systematic action, the S3 policy framework leaves universities extensive room for (inter)action within their surrounding territory (Edwards et al., 2017). In particular, they become a crucial factor for innovation within the *Research and Innovation Strategies for Smart Specialisation (RIS3)*¹, where they guide an informed process for innovation within an innovation ecosystem together with businesses, governments, and civil society (according to the so-called “*Quadruple Helix model of innovation*”, see Carayannis, & Rakhmatullin, 2014). The European Commission (Edwards et al., 2017; Rinaldi et al., 2018) identified four specific roles for universities to engage in the design and implementation of the S3 according to their capacities, namely *generative, absorptive, collaborative, and leadership*:

| | |
|----------------------|---|
| Generative | <ul style="list-style-type: none"> - Research related (but not limited) to regional priorities - Multi- and cross-disciplinary - Connectivity – knowledge nodes supporting regional analysis |
| Absorptive | <ul style="list-style-type: none"> - Help build capacity to ensure local firms absorb knowledge - Stimulate demand through teaching and learning activities - Knowledge exchange and transfer through mobility of staff and students |
| Collaborative | <ul style="list-style-type: none"> - Acting as neutral regional brokers - Reach out – boundary spanners - Reach in – co-production of knowledge |
| Leadership | <ul style="list-style-type: none"> - Support regional vision and partnership |

-
- Propose joint activities
 - Place marketing
-

Table 2: different roles of universities in supporting the Smart Specialization Strategy (Edwards et al., 2017)

Some authors in the most recent scientific literature identify a specific role for universities in supporting innovation policies. Kangas and Aarrevaara (2020) and Pinto (2023) discuss a brokerage role, encompassing both the exchange of information and mediation with other local actors and outline four distinct areas of action for universities in this context.

- a. *Social dimension of networks*, which refers to the fact that universities act as hubs, fostering collaboration among diverse stakeholders, thereby enhancing the social fabric of innovation networks, boosting social capital, trust and creation of linkages;
- b. *Decision-making and control*, which refers to the fact that universities contribute expertise and research-based insights, informing policy decisions and strategic directions within the RIS3 framework. Moreover, this is about taking part in the multilevel governance of the RIS3; supporting the definition of key priorities and the evaluation and monitoring phases of the strategies' design and implementation;
- c. *Cluster building*, which refers to the fact that, by facilitating knowledge transfer and providing skilled graduates, universities support the formation and strengthening of industry clusters by also playing an active role in the EDP stakeholder engagement activities and in mobilising resources related to the RIS3 implementation;
- d. *Exchange elements*, which refers to the fact that universities serve as platforms for the exchange of ideas, technologies, resources and infrastructures. They enable international regional exposure and links with external markets and value chains. Moreover, they promote continuous learning aligned with RIS3 priorities, and knowledge-intensive business services for the regional stakeholders involved.

Through their civic engagement, HEIs can certainly contribute to socially innovative practices by playing a transformative role in fostering the coordination of activities and creating new institutions able to change social power relations (Benneworth & Cunha, 2015). However, when it comes to social innovation, there is no single socially innovative solution or model that could be easily transferable among contexts of different natures. On the contrary, social innovation requires focusing on the transformative potential of specific local resources, actors, and places (Terstriep et al., 2022). HEIs engaged in socially innovative development must consider that, despite being slow, SI brings on a continuous process based on trustworthy relationships and a collectivist rather than individualist perspective (Arocena & Sutz, 2021). Scientific literature highlights some key aspects that HEIs, in their engagement within the territory, should take into account in order to ensure a smooth process and reduce the risks of failure (Fonseca, 2019), namely:

1. *The role of individual agency*: it must be said that although the engagement for sustainable development is formally an institutional HEI's mission, the execution of related activities strictly depends on the individuals' "agency" involved in the process. Therefore, factors such as the commitment to work in the specific area, the ability to nurture local networks and trustworthy relationships, the interest in the local specialisations, as well as the permanence for the long term within the territory are among the variables to consider in order to ensure the continuity of the co-creation process in the pursuit of a shared vision for development (Fonseca, 2019).
2. *The setting up of meaningful collaboration*: Scientific literature shows that HEIs are currently highly involved in carrying out project activities in support of the RIS3 implementation. However, stakeholder involvement is mainly facilitated by the presence of personal contacts or previous collaboration, which, despite speeding the process, also limits the participation of necessary actors, allowing a transformative change (Tomasi et al., 2024).
3. *The need for innovative methodologies*: HEIs' contribution to the S3 goes far beyond their specialisations and technologies by helping to generate local-based knowledge through trans-disciplinary approaches required by the complex societal challenges (Rinaldi et al., 2018; Tomasi et al., 2021). This favours the "directionality" of the development vision and the coherence of activities to implement it. Here, HEIs can

implement innovative methodologies, often considered by partners as valuable tools for strengthening networking and social cohesion in the long run (Tomasi et al., 2024).

4. *Diversity in regional development needs*: The level of participation also depends on regional development needs. Research shows that this depends on the local socio-economic conditions, thus highlighting differences not only between urban and rural settings but also among more and less developed areas (Fonseca et al., 2019; Tomasi et al., 2021).

Innovation policies' extent: some HEIs operate in a context of centralised innovation policies, where it is more challenging to integrate regional peculiarities unless national RIS3 and place-based regional characteristics are better balanced (Tomasi et al., 2024).

2 Research Design

This study adopts the action-research approach on multiple case studies (Yin, 2003) represented by the European areas where the HEIs in the Circle U. operate. Action research is a widespread methodology in social sciences used to favour societal transformative change by alternating steps of taking action within the community investigated and researching while intermediating a process of reflection upon the results obtained to inform further cyclical processes (Lewin 1946). Action research methodology has proven to be particularly suitable for allowing the knowledge produced to impact capacity building and region-HEIs partnerships (Edwards et al., 2017).

The present research consists of three main steps:

1. The first relates to a systematic review of the main S3 priorities identified in the 2021—2027 programming period by the European regions where the Circle U. universities operate. To do so, desk research was conducted by querying and screening the S3 CoP Observatory. The Observatory “is intended to provide a core and accessible set of information for S3s around the EU, as it allows users to intuitively compare the specialisation areas of EU regions and member states and provide contact points and links to the strategy. The observatory was built in collaboration with DG REGIO G1, DG REGIO country desks, and the S3CoP Secretariat. The project team identified S3 priorities directly from regions' and member states' S3 documents and deployed tools from Artificial Intelligence (AI), including Generative AI and entity extraction and disambiguation for automatic topic tagging and classification” (https://ec.europa.eu/regional_policy/sources/policy/communities-and-networks/s3-community-of-practice/S3-Observatory-Methodological-Guidelines.pdf)
2. To inform and complement this study, a questionnaire was administered online, via Google Form at the beginning of September 2024 to several regional officers involved in S3 planning and/or implementation. It received responses until December of the same year. The official version of it can be found at [this link](#), while a copy is available at Annex A. The purpose of the questionnaire was to collect information on:
 - The main priority areas of the regional innovation policy in each area;
 - The state of the art of the projects implemented in the different areas to achieve the development priorities;
 - A first perception of the universities' contribution to the design and implementation phases of the regional innovation policy.

The questionnaire collected a total of 11 responses from the following CircleU- European University Alliance member countries: Germany, Serbia, Denmark, Belgium, France, Italy, Norway, and Austria. Among the list of partners, there is no representation in the research from the United Kingdom. In particular, the responses to the questionnaire comprehend:

- 2 respondents for Germany, from the Berlin region;
- 1 respondent for Serbia;
- 1 respondent for Denmark;
- 1 respondent for Belgium, from the Wallonia region;
- 1 respondent for France, from the Paris region;

- 1 respondent for Italy, from the Tuscany region;
- 1 respondent for Norway, from the Oslo region;
- 2 respondents for Austria, from the Vienna area

All the respondents authorized the collection and processing of data according to the Italian and European regulations².

3. Following the questionnaire, an interview process was planned. The purpose of the interview was to engage the respondents to the questionnaire in an in-depth reflection about the contribution that local universities and those involved in the CircleU Alliance could have in the implementation of the RIS3 (overall question). Therefore, the interview focused on three specific discussion items (three specific research questions):

- To investigate the regional officers' perception of the role that local universities played in the S3 design and implementation phases (SRQ1: *what role did the local universities play in the S3 design and implementation?*);
- To investigate the regional officers' perception of the role that local universities should take in the RIS3 design and implementation, according to the specific local needs (SRQ2: *what should the territorial universities do further to better support the S3's design and implementation phases, according to the specific territorial needs?*);
- To investigate the regional officers' perception of the role that the international universities part of the CircleU Alliance could have in supporting the S3 of the different areas involved in the European network (*what could an Alliance of European Universities contribute to in the S3 design and implementation in the specific territories?*).

To meet this objective, the research was structured according to a theoretical framework proceeding from Kangas and Aarrevaara (2020) and Pinto (2023), highlighting the role of universities in S3 as knowledge brokers according to four specific dimensions: *the social dimension of networks, decision-making and control, cluster building, and exchange elements*.

Starting from the abovementioned literature, questions underlying the semi-structured interview process were formulated. The two articles were chosen for the completeness of information about the role that universities can play in the RIS3 design and implementation processes. A well-structured and completed framework would allow us to obtain a comprehensive overview of the action that local universities did to support the regional development since the specific RIS3, as well as to have a common framework among all territories investigated in order to provide a comparison between different European cases. The literature considered allowed for the development of a protocol of *ad hoc* questions. The entire protocol can be found in Annex B of this report.

The definition and implementation of the research protocol for the interview followed a specific, multi-step process. Table 1 below shows the different steps:

| STEP | ACTION | PARTICIPANTS |
|------|--|--|
| 1 | Start of the preparation of the questionnaire and the interview protocol | Alessio Cavicchi, Annapia Ferrara, Alessandro Fara |
| 2 | Request by the UNIPI team to professors and researchers members of the WP5 to identify a regional officer involved in the activities related to the S3, and to introduce them to the purpose of this research, thus acting as a bridge for direct contact with UNIPI | Alessio Cavicchi |
| 3 | Administration of the online questionnaire to the regional officers indicated by the professors and researchers who are partners of the WP5 | Alessio Cavicchi, Annapia Ferrara, Alessandro Fara |

| | | |
|----|--|--|
| 4 | Review of relevant literature on the role of universities in supporting the S3, and finding the theoretical framework guiding the research | Annapia Ferrara, Alessandro Fara, Sabrina Tomasi, Alessio Cavicchi |
| 5 | Theoretical framework validation; Formulation of the questions leading the interview | Annapia Ferrara, Alessandro Fara, Sabrina Tomasi, Alessio Cavicchi |
| 7 | 1 nd round interview protocol validation | Marco Masia (UNIVIE), Annapia Ferrara, Alessandro Fara, Alessio Cavicchi, Sabrina Tomasi |
| 8 | 2 nd round interview protocol validation through piloting phase. The piloting phase was conducted during the first interview. The questions turned out to be appropriately structured and produced relevant data from the investigation. However, it was noted that some questions could be proposed following a different order, in order to further encourage clarity in the dialogue with the interviewees. | Annapia Ferrara, Alessandro Fara, Sabrina Tomasi, Alessio Cavicchi |
| 9 | Final version of the interview protocol After changing the order of some questions, the final version of the interview protocol was proposed in the following interviews. | Annapia Ferrara, Alessandro Fara, Sabrina Tomasi, Alessio Cavicchi, Marco Masia (UNIVIE) |
| 10 | Interview phase | Annapia Ferrara, Alessandro Fara, Sabrina Tomasi |

Interviews were conducted for the following areas:

- For Serbia with 1 respondent in the role of assistant minister officer, but who did not experience firsthand the processes and activities related to RIS3. For this reason, it was not possible to produce results from this interview. The information reported here is retrieved from the questionnaire;
- For Norway, with 1 respondent with the role of regional officer actively involved in processes and activities related to the design and implementation of strategic development priorities;
- For Austria, with 2 respondents, one as a member of the Wien business agency and one as a municipality officer. Both respondents did not have firsthand experience of RIS3-related processes and activities, while they were directly involved in the innovation strategies designed for the City of Wien. Indeed, their interviews focused on Vienna 2030 innovation and economy strategy linked to Smart City Wien, a strategy for the digital and sustainable transition of the city;
- For Italy, with 1 respondent with a regional officer role actively involved in RIS3-related processes and activities;
- For France, with 1 respondent with the role of regional officer actively involved in RIS3-related processes and activities;
- For Belgium, with 1 respondent with the role of regional officer actively involved in RIS3-related processes and activities;
- For Denmark, with 1 respondent with the role of regional officer actively involved in RIS3-related processes and activities.
- For Germany, the regional officer did not provide any suitable date and time for running the interview.

All the people who took part in the interview process authorized the collection and processing of data according to Italian and European regulations. Specifically, two documents were administered to them at the end of the interview in the form of:

- privacy policy, containing all information about the objectives of the research, collection, storage, and data processing, as well as communication and dissemination activities of scientific research results;
- a consent form to be dated and signed as an express authorization to the items listed in the privacy policy document. For more information, please see Annexes C (privacy policy/ information notice) and D (consent form) to this document.

Below are the results that emerged from the research process. To guide the reader and ensure the legibility of information, a section will be detailed for each area involved in the European Alliance.

3 Results and Impacts

3.1. Results

The present section provides an overview of the results emerging from both the desk and field research composing this study. In particular, it will provide:

1. A description of the S3 priorities of the regions (or nations because the S3 can be developed at the regional and/or national level), where it insists on the work of the universities involved in the Circle U. program. The S3 priorities listed below result from systematic desk research on different areas. The information has been retrieved from the S3 Platform at the following link: https://ec.europa.eu/regional_policy/assets/s3-observatory/index_en.html. The regional priorities are presented in tabular form and classified according to the NACE and NABS systems,³ where applicable; the main results emerging from the questionnaire and interviews with regional government officers related to the role that local universities have played in supporting the design and implementation of S3, as well as the main contribution they can provide in the future at the local level and as part of the University Alliance.

3.1.1 Aarhus University, Denmark

3.1.1.1 Desk Research

The Danish system of science, technology, and innovation is overseen at the national level by the Ministry of Higher Education and Science. This ministry oversees university education, research, and funding programs for research and innovation. The S3 strategy is implemented both at national and regional levels, combining decentralised business development with sector-specific focus areas. The strategy is prepared and managed by the Danish Business Authority, which manages the EU Structural Funds in Denmark. Another pertinent entity in business development is the cluster initiative, which encompasses 14 sectors and is delineated in the Danish Strategy for Decentralized Business Promotion. The strategy covers Denmark's national, regional, and sectorial business development, including the ESF+ and ERDF programs (Danish Business Authority, 2020). Aarhus University is a constituent member of the inter-municipal Chamber of Commerce Midtjylland, whose members are appointed by KKR Midtjylland and Region Central Jutland.

Table 2.1 illustrates the thirteen national priorities. Aarhus University is mainly associated with priority number three: "In the area of food, there is close cooperation between the raw material producers, the largest food

³ NACE (nomenclature statistique des activités économiques dans la Communauté européenne) is the acronym used to designate the various statistical classifications of economic activities developed since 1970 in the EU, which is mandatory within the European Statistical System. For more information: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=NACE_background.

The nomenclature for the analysis and comparison of scientific programmes and budgets (NABS) is a functional classification used by the European Union for the analysis of public financing of research and development (R&D) based on socio-economic objectives pursued by central governments. For more information: <https://data.europa.eu/data/datasets/nabs2007?locale=en>

companies, the network of smaller companies, the equipment industry and the research and development functions at central Jutland's knowledge and research institutions, such as Aarhus University” (Denmark's Business Promotion Board, 2020, p.66). Furthermore, Aarhus University is regarded as a strategic initiative to enhance the STEAM competencies of the younger workforce in Central Jutland.

| S3 PRIORITY | ECONOMIC CLASSIFICATION (NACE SECTION & DIVISION) | SCIENTIFIC CLASSIFICATION (NABS DIGIT 1 & 2) |
|---|---|---|
| <p>1 Environmental technology Environmental technology, water, air, and soil purification, waste management, circular economy, climate adaptation, resource efficiency, and process optimisation.</p> | <p>J - Information and communication technologies J.62 - Computer programming, consultancy and related activities</p> | <p>6 - Industrial production and technology 06.62 - Manufacture of furniture</p> |
| <p>2 Energy technology Energy production technologies, energy-efficient solutions, energy infrastructure, energy storage, energy transportation, energy conversion, energy planning, electrification, sector coupling, and system integration.</p> | <p>D - Electricity, gas, steam and air conditioning supply D.35 - Electricity, gas, steam and air conditioning supply</p> | <p>5 - Energy 05.32 - Energy efficiency - consumption</p> |
| <p>3 Food and bio-resources Agroecology, biorefining, sustainable fishing, life cycle analysis, food ingredients, feed enzymes, food enzymes, environmental technology, waste management.</p> | <p>A - Agriculture, forestry and fishing A.01 - Crop and animal production, hunting and related service activities</p> | <p>8 - Agriculture 08.76 - Food productivity and technology</p> |
| <p>4 Maritime industries and logistics Sustainable and green solutions for maritime industries, renewable energy sources, and greenhouse gas emissions reduction.</p> | <p>H - Transportation and storage H.50 - Water transport</p> | <p>1 - Exploration and exploitation of the earth 01.07 - Sea and oceans</p> |
| <p>5 Life science and welfare technology Somatics, bioscience, biotechnology, medical devices, pharmaceuticals.</p> | <p>Q - Human health and social work activities Q.86 - Human health activities Q.87 - Residential care activities Q.88 - Social work activities without accommodation</p> | <p>7 - Health 07.65 - Health promotion 07.69 - Public health legislation and regulations 07.70 - Public health management 07.71 - Public health services</p> |
| <p>6 Building and construction CO2 reduction, resource conservation.</p> | <p>F - Construction F.41 - Construction of buildings F.42 - Civil engineering F.43 - Specialised construction activities</p> | <p>4 - Transport, telecommunication and other infrastructures 04.23 - Civil engineering 04.24 - Construction and planning of building</p> |
| <p>7 Design, fashion and furniture Graphic design, visual design, product design, furniture, interior, textiles, fashion items, bags, footwear, watches, and jewellery production.</p> | <p>C - Manufacturing C.13 - Textiles C.31 - Furniture</p> | <p>6 - Industrial production and technology 06.62 - Manufacture of furniture</p> |

| | | |
|--|--|--|
| <p>8 Advanced productions High-tech industrial products, high-quality industrial products, innovation and development, competitiveness.</p> | <p>C - Manufacturing C.25 - Fabricated metal products, except machinery and equipment C.26 - Computer, electronic and optical products C.27 - Electrical equipment C.28 - Machinery and equipment n.e.c.</p> | <p>6 - Industrial production and technology 06.38 - Increasing economic efficiency and competitiveness 06.39 - Improving industrial production and technology</p> |
| <p>9 Digital technologies Artificial intelligence, robotics.</p> | <p>J - Information and communication technologies J.62 - Computer programming, consultancy and related activities</p> | <p>4 - Transport, telecommunication and other infrastructures 04.27 - Telecommunication systems</p> |
| <p>10 Finance and fintech Big data, biometrics, artificial intelligence, identity control.</p> | <p>K - Financial and insurance activities K.64 - Financial service activities, except insurance and pension funding K.65 - Insurance, reinsurance and pension funding, except compulsory social security K.66 - Activities auxiliary to financial services and insurance activities</p> | <p>11 - Political and social systems, structures and processes 11.92 - Public administration and economic policy</p> |
| <p>11 Tourism Tourism infrastructure, accommodation capacity, and upgrading of the tourism product.</p> | <p>R - Arts, entertainment and recreation R.91 - Libraries, archives, museums and other cultural activities</p> | <p>10 - Culture, recreation, religion and mass media 10.85 - Cultural services</p> |
| <p>12 Robotics and drone technology Robot industry, automation industry, computer science research, robotics, and control systems.</p> | <p>C - Manufacturing C.28 - Machinery and equipment n.e.c.</p> | <p>6 - Industrial production and technology 06.59 - Manufacture of machinery and equipment n.e.c.</p> |
| <p>13 Animation, games and film Animation, games, film industry.</p> | <p>J - Information and communication technologies J.59 - Motion picture, video and television programme production, sound recording and music publishing activities recording and music publishing activities</p> | <p>10 - Culture, recreation, religion and mass media 10.84 - Broadcasting and publishing services</p> |

Table 2.1 S3 Priorities of Denmark (Denmark's Business Promotion Board, 2020)

3.1.1.2 Field Research

Role of the respondent for Denmark: Team Manager

Geographical extent of the RIS3: RIS3 investment priorities in the Danish areas are set up at a national level, not regional. The link to the strategy is the following:

<https://erhvervsfremmebestyrelsen.dk/virksomhedsudvikling-i-hele-danmark-2024-2027>

List of activities and projects funded to support regional priorities:

The National Cluster Programme was launched in 2020. The new RIS3 focuses on the 14 priority areas selected in 2020. Projects are listed at the following link:

<https://erhvervsfremmebestyrelsen.dk/stoettede-projekter?startIndex=1&Indsatsomraade=Innovation> Main projects are labelled INNOVATIONSKRAFT, ØKOSYSTEM or KLYNGEPROGRAM.

Planned call for funding to support regional priorities:

A call was launched this year. Due to political decisions concerning funding opportunities, a new call is expected to be launched in December.

About the role of universities

Overall perception of the universities' involvement in the RIS3's design phase:

All Danish universities were, to some degree, involved in the design of the priorities.

Overall perception of the universities' involvement in the RIS3's implementation phase:

Danish universities are generally involved in implementing activities. 30-40% of the funding budget is destined to knowledge institutions.

RIS3 in Denmark refers to the national, rather than the regional, plan. It originates from the same authority that prepares ERDF and ESF funds related to just transition and national enterprise funds. The current strategy is based on decisions that were made in 2018. In fact, Denmark has five very small regions, so it is managed at the national level. However, coordination tasks and responsibilities for the implementation of the strategy are also distributed at the local level (municipal mainly).

The process came into being exactly in 2019 when the strategies related to the regional level were later conferred to a national level. This was possible because of the proximity of the strategic themes of each region. Subsequently, an analysis of regional strengths was conducted and sectoral development strategies were formulated. At this stage, there was strong collaboration with the Ministry of University and Education, which led to the establishment of a joint cluster program.

Universities played an important role in the design phase of the strategy. Specifically, they played an important role in the sphere of **decision-making and control**, conducting key analyses in *identifying Denmark's strengths*, going beyond the potential of the technologies and the scientific environment per se. To do this, several stakeholder meeting workshops were conducted as several individual meetings to understand the specific priorities of individual institutions, some of which developed policy documents and/or public consultation. Lesser has played a role in establishing *multi-level governance*. In this sense, universities sit together with other stakeholders on the board for business development for universities. Aarhus and Copenhagen have innovation units and departments that collaborate, but this is not formalised.

Regarding the **social dimension of networks**, universities have contributed to *the creation of collaborative dynamics* especially with small and medium-sized enterprises in the area. Specifically, they have also activated collaborations with SMEs that are not physically present in their territories, trying to build real regional innovation ecosystems. Universities have often seemed hampered by the national strategy and the collaborative difficulties of companies located throughout the country, as they were used to a regional cluster. At the same time, universities have also been contributing to the development of cluster organizations since 2020 when the Ministry of University and Education made the selection and funding. They are key and help thousands of SMEs find the right business partners and universities, and some clusters connect the SMEs directly with PhD students.

There are PhD programmes, grants and educational programmes promoting education-research relationships in areas like twin transitions. These are aligned to the RIS3 areas and are mainly promoted by the cluster organisations rather than by the universities themselves.

Also, the FSE+ is - to some extent - aligned with the RIS3 areas.

Nevertheless, the respondent was not aware of dedicated or educational programmes aligned with RIS3 and promoted by the university.

In the aspect of **cluster building**, universities have played an important role in *providing their knowledge, information and partnerships* for the RIS3 program. When monetary resources are available, it is the cluster organization itself that involves all resources, creating the basis for open collaboration in which universities are also well prepared. Cluster organizations bring together universities and SMEs and create new and innovation-driven business ideas and projects. Therefore, *the social capital and trust* between the parties are

built through collaboration projects starting from the cluster involvement and based on fundings. However, universities recently started to create collaborative dynamics alone.

At the national level, cluster organizations are private legal entities, with the dominant role initially played by the business side. In contrast, in the past, cluster initiatives were led by regions and the public sector. At the national level, clusters currently number fewer than 20 and act as strategic partners. They operate at high decision-making levels, such as the board of directors or strategic management level. Engagement with businesses occurs more strategically, especially if the national level provides the necessary funding. Universities, in particular, receive core funding calculated by the number of graduate students and the number of publications produced. In addition, there are specific funds at the national level, such as those from the European Social Fund Plus (ESF+), which finance programs for SMEs to hire graduates. University graduates help improve business productivity, and these programs have proven to be very effective. The management of these funds is entrusted to the Ministry of Higher Education.

Universities collaborated in terms of *evaluation and monitoring (decision making and control)*: the data collected include the impact of SMEs, such as moving from concept to commercialization of new products. National officers are responsible for this process, recording company identification numbers and creating a database to monitor results. Sometimes, these activities are supported by external consultancy. The strength of ecosystems also involves universities, along with other stakeholders in cluster programs. The latter are designed to be international, larger and more professionally managed. Through their national involvement, universities and clusters can easily make connections internationally, strengthening networks and promoting transnational collaboration.

For the future, the hope is that universities can have greater involvement in several areas. First, according to the sphere of **decision making and control**, to have a greater role in the design of the RIS3 structure, as has happened in the past. At this stage, universities have played a key role and it is important that they are there. Similarly, as of today, universities already have a fairly important involvement in the monitoring and control phase, but they could contribute further by providing input where there is a need for a greater connection between science and business, identifying specific technologies, for example, that could be implemented to solve those needs. Likewise, they could be more involved in the processes of “translating” specific knowledge for the design of products and services for people. Concerning the role of European University Alliances, the implementation phase of the RIS3 highlights the necessity of collaboration with other countries and regions to achieve success. This requires identifying gaps in knowledge, skills, and capabilities and addressing these deficiencies by leveraging complementary strengths. International relations play a crucial role in this context, enabling the analysis of strengths, competitive advantages, and the strategic use of connections to create synergies. Clusters are particularly significant in facilitating this process, as they help identify key universities and institutions to engage with at the international level. By fostering collaboration and knowledge exchange within these networks, clusters contribute to bridging gaps and driving innovation in alignment with regional and cross-border priorities

3.1.2 University of Belgrade, Serbia

3.1.2.1 Desk Research

In 2016, Serbia incorporated the Smart Specialisation approach into its innovation policy. Subsequently, the Joint Research Centre has provided guidance and technical assistance following the Smart Specialisation Framework for the EU Enlargement and Neighbourhood Region. In order to facilitate the coordination of the Smart Specialisation process, Serbia established a National Smart Specialisation Team, which was responsible for overseeing its implementation until the strategy was formally adopted in February 2020. The University of Belgrade directly identified the country's economic strengths and formulated the S3 strategy (Radovanovic et al., 2021).

In general, the business sector has a relatively low proportion of employees with a university degree. Many companies, representing over 15% of the total, have no employees with higher education qualifications.

However, it is notable that most of these businesses are small. Most medium-sized business entities employ between one and four per cent of highly educated employees. In comparison, nearly one-third of large business entities employ between ten and twenty-four per cent of highly educated employees (Radovanovic et al., 2021, p. 29). The Belgrade region represents the Republic of Serbia's most robust economic and academic hub. The proportion of university-educated employees is especially notable in the information technology sector, financial services, scientific and technical activities, public administration, and education, where it exceeds 60% (Radovanovic et al., 2021, p. 52). Belgrade is home to the most highly qualified workforce in the Republic of Serbia, coupled with a considerable scientific capacity. In June 2015, a collaboration between the Government, the City of Belgrade, and the University of Belgrade led to the establishment of the inaugural Science and Technological Park in Belgrade (Radovanovic et al., 2021, p.34).

The priorities identified for the S3 in the Belgrade region are listed in Table 2.2.

| S3 PRIORITY |
|--|
| 1 Computer programming and ICT |
| 2 R&D and technical consultancy |
| 3 Creative economy |
| 4 Monetary intermediation |

Table 2.2 S3 priorities for Belgrade region (Radovanovic et al., 2021)

3.1.2.2 Field Research

In the interview for Serbia, the respondent affirmed a lack of firsthand experience concerning the processes and activities related to RIS3. For this reason, it was not possible to produce results from this interview. The information reported here is retrieved from the questionnaire.

Role of the respondent for Serbia: Assitant Minister

Geographical extent of the RIS3: The RIS3 has a national perspective. The strategy can be found at the following link: https://pametnaspecijalizacija.mpn.gov.rs/wp-content/uploads/2021/06/Strategija-pametne-specijalizacije_EN_WEB.pdf

A list of activities and projects funded to support regional priorities can be found at the following link: <https://www.inovacionifond.rs/en/fond/about-fund>

Planned call for funding to support regional priorities:

All the programs implemented and in the plan to be implemented by the Innovation Fund of the Republic of Serbia are in line with RIS3 - <https://www.inovacionifond.rs/en/fond/about-fund>

About the role of universities

Overall perception of the universities' involvement in the RIS3's design phase: Universities played a crucial role in the RIS3 design phase by contributing research expertise, facilitating stakeholder consultations, and driving innovation in identified priority sectors to align academic advancements with national economic goals.

Overall perception of the universities' involvement in the RIS3's implementation phase: In implementing RIS3, universities serve as key partners by conducting applied research, developing innovative technologies, and fostering collaboration with industry and government to support growth in priority sectors

3.1.3 Humboldt-Universität zu Berlin, Germany

3.1.3.1 Desk Research

In Germany, the policy of R&I is overseen at both the national and regional levels, with a system of coordination and collaboration between the various stakeholders. The Länder are vested with complete competence in matters of educational policy, and they play a pivotal role in formulating R&I policies within their respective jurisdictions. They financially support universities, research institutions, and innovation clusters within their respective jurisdictions.

The High-Tech Strategy (HTS) 2025 represents Germany's overarching R&I strategy. In addition to the national strategy, each federal state develops its own R&I strategy, which is sometimes specifically titled a smart specialisation strategy.

The Circle U. reference university is the Humboldt-Universität zu Berlin. The capital region of Berlin-Brandenburg is an innovative location with numerous strong and dynamic companies, research beacons and world-renowned scientific institutions (innoBB, 2025).

Table 2.3 illustrates the five regional priorities.

| S3 PRIORITY | ECONOMIC CLASSIFICATION (NACE SECTION & DIVISION) | SCIENTIFIC CLASSIFICATION (NABS DIGIT 1 & 2) |
|---|--|--|
| 1 Healthcare Economy Translational medicine, prevention, diagnosis, systematic and secure use of medical data. | Q - Human health and social work activities Q.86 - Human health activities Q.87 - Residential care activities Q.88 - Social work activities without accommodation | 7 - Health |
| 2 Energy technology Energy technology, smart grids, storage concepts, synchronising energy demand and supply, renewable energies. | D - Electricity, gas, steam and air conditioning supply D.35 - Electricity, gas, steam and air conditioning supply | 5 - Energy 05.37 - Renewable energy sources |
| 3 Transport, mobility, logistics Road transportation, rail transportation, air transportation, future transportation systems, intelligent and sustainable mobility. | H - Transportation and storage H.49 - Land transport and transport via pipelines H.50 - Water transport H.51 - Air transport | 4 - Transport, telecommunication and other infrastructures 04.28 - Transport systems |
| 4 Information and communication technology, media, and creative economy Software, digital services, design. | J - Information and communication technologies J.60 - Programming and broadcasting activities J.61 - Telecommunications J.62 - Computer programming, consultancy and related activities J.63 - Information service activities | 4 - Transport, telecommunication and other infrastructures 04.27 - Telecommunication systems |
| 5 Optics and photonics Photonics, laser technology, photonics for communication and sensing, light technology, optical analytics, biomedical optics, and microsystems technology. | C - Manufacturing C.26 - Computer, electronic and optical products | 6 - Industrial production and technology 06.57 - Manufacture of computer, electronic and optical products 12 - General advancement of knowledge 12.107 - Physical sciences |

Table 2.3 S3 priorities for the Berlin-Brandenburg region (innoBB, 2025)

3.1.3.2 Field Research

Role of the respondent for the Berlin area: Desk officer

List of activities and projects funded to support regional priorities:

The current strategy and cooperation with Berlin in the context of innovation policy has been ongoing for around 10 years.

Brandenburg has different funding Programs Brandenburg's innovation voucher (BIG-Digital) --> Implementation of digitalization projects by SMEs Knowledge and technology transfer (WTT) --> Cluster and transformation management --> Innovative university projects --> Projects at research institutions Program to

promote research, innovation and technology (ProFIT) --> Industrial Research --> Experimental development --> Market Launch

Planned call for funding to support regional priorities: Berlin takes part in supra-regional calls if they fit into specific strategic goals and companies can be supported with funding programs within the framework of the calls. The latest participation was in INNOVATION EXPRESS CALL 2024 (IEC2024) FOR CIRCULAR BIOECONOMY VALUE CHAINS | INNOBIOVC

About the role of universities

The respondent did not provide any specific insight in the questionnaire phase. Moreover, due to the limited knowledge of the respondents about the role that universities had or could have in supporting the regional innovation policies, it was not possible to plan an interview to gather better and deeper insights on the topic.

3.1.4 King’s College London, UK

3.1.4.1 Field Research

Smart Specialization's concept complements and enhances existing policies, structures, and funding programs. In England, Smart Specialisation employs an approach tailored to the country's unique circumstances. Innovation policies are developed at the national level in collaboration with businesses and research institutions nationwide. Concurrently, Local Enterprise Partnerships (LEPs) bring together business and civic leaders to set economic strategy at the local level and are empowered to make decisions that will allow their area to thrive. The government has requested that LEPs prepare Strategic Economic Plans, which include proposals to support innovation (Department for Business Innovation & Skills, 2015).

Table 2.4 illustrates the five regional priorities. London's area of specialisation is the information economy.

| S3 PRIORITY |
|---|
| 1 Information Economy |
| 2 Aerospace |
| 3 Automotive |
| 4 Life Sciences |
| 5 Energy Offshore Wind, Oil & Gas, Nuclear |
| 6 Agri-tech |
| 7 Professional Business Services |
| 8 Construction |

Table 2.4 S3 Specialisation in the UK (Department for Business Innovation & Skills, 2015)

3.1.5 UC Louvain, Belgium

3.1.5.1 Desk Research

The project to renew Wallonia's Smart Specialization Strategy (S3) was initiated in 2019, building on the pilot project's findings on industrial transition in which Wallonia participated. This process revealed the necessity to refine the preceding S3 in several respects, to align it with the challenges confronting Wallonia and reflect the evolving priorities and policies at the European level. In particular, it was paramount to guarantee that the strategy followed the European guidelines for the 2021—2027 programming period.

UC Louvain is Belgium's largest French-speaking university. The University actively participates in the development of the strategy. For example, it is a partner in the “CONNECT” (construction 4.0) project, which aims to demonstrate and experiment with digital technologies for the Construction sector. It will be the reference centre for digital construction on a European scale (Wallonie, 2021).

Table 2.5 illustrates Wallonia's five regional priorities.

| S3 PRIORITY | ECONOMIC CLASSIFICATION (NACE SECTION & DIVISION) | SCIENTIFIC CLASSIFICATION (NABS DIGIT 1 & 2) |
|---|--|---|
| S3 priority | Economic classification (NACE section & division) | Scientific classification (NABS digit 1 & 2) |
| S3 PRIORITY | ECONOMIC CLASSIFICATION (NACE SECTION & DIVISION) | SCIENTIFIC CLASSIFICATION (NABS DIGIT 1 & 2) |
| 1 Circular materials - Circular economy Upcycling, sustainable production, resource lifecycle. | E - Water supply, sewerage, waste management and remediation activities E.36 - Water collection, treatment and supply | 6 - Industrial production and technology 06.40 - Recycling waste |
| 2 Innovations for enhanced health Biomedical technology, wearable health tech, genetic research, health Diagnostics. | Q - Human health and social work activities Q.86 - Human health activities Q.87 - Residential care activities Q.88 - Social work activities without accommodation | 7 - Health 07.70 - Public Health Service |
| 3 Innovations for agile and safe design and production Rapid prototyping, lean manufacturing, safety engineering, flexible production. | C - Manufacturing C.25 - Fabricated metal products, except machinery and equipment C.26 - Computer, electronic and optical products C.27 - Electrical equipment C.28 - Machinery and equipment n.e.c. | 6 - Industrial production and technology 06.39 - Improving industrial production and technology |
| 4 Sustainable energy and housing systems Energy storage, energy-efficient appliances | D - Electricity, gas, steam and air conditioning supply D.35 - Electricity, gas, steam and air conditioning supply | 5 - Energy |
| 5 Future Agri-Food chains and innovative management of the environment Sustainable farming, ecosystem services, food traceability, biodiversity conservation. | A - Agriculture, forestry and fishing A.01 - Crop and animal production, hunting and related service activities A.02 - Forestry and logging A.03 - Fishing and aquaculture | 8 - Agriculture 08.73 - Agriculture, forestry and fishery |

3.1.5.2 Field Research

Role of the respondent for Belgium: Senior advisor – Public Service of Wallonia – Economy Policy Departement – coordination of the RIS3 team.

Geographical extent of the RIS3: regional. The RIS3 refers to the Wallonia region. In Belgium the research and innovation policy are directed by regions. Only some specific areas are developed at the federal level, such as defence or space. At the regional (and Francophone university community) level, teaching and research issues are also administered at the more industrial level.

The RIS3 strategy can be consulted at the following links:

1. <https://RIS3.wallonie.be/home/RIS3wallonne/les-domaines-d-innovation-strategiques.html>
2. <https://RIS3.wallonie.be/home/RIS3wallonne/documentation.html>

In this new RIS3 programming period, the regional government was involved in a DGREGIO pilot project on industrial transition in 2018. From this, a dialogue was initiated with other regions to understand how to address the industrial challenges. So, the basis of this new programming was formed, which takes into account the industrial challenges but from the perspective of what are the key social needs. From this point, the entrepreneurial discovery process was formed to identify the investment priorities, which are identified as the point of connection between these two elements.

List of activities and projects funded to support regional priorities:

There are 5 Strategic Innovation domains:

- Circular materials;
- Innovation for an enhanced Health;
- Agile and safe production and conception modes;
- Sustainable energy systems and buildings;
- Agro-food chains of the future and innovative management of the environment.

For each domain, sub priorities are defined in respective roadmaps

List of activities and projects funded to support regional priorities:

19 Strategic Innovation Initiatives have been selected. They are formed by 5 priorities each. These gather a consortium of innovation stakeholders around a joint strategy and action plan. They can mobilise the whole existing policy mix. Besides that initiative, some reforms were made to align the policy mix with the RIS3 priorities. So it is impossible to make an exhaustive list of activities and projects. We have also launched a specific calls to support those initiatives (for coordination and connection to the EU) and test a call to innovative projects close to the market. A dedicated website will be published on 19/11, presenting our RIS3 ecosystems.

Planned call for funding to support regional priorities:

the RIS3 relies on the mobilisation of the whole policy mix (thus not only ERDF). Some RDI calls (notably under ERDF) are focused specifically on RIS3 priorities. A pilot call (COODEVIIS) was launched in the context of RIS3 see: <https://RIS3.wallonie.be/home/etre-acteur-de-l-innovation/les-aides-a-l-innovation.html>

About the role of universities

Overall perception of the universities' involvement in the RIS3's design phase: Universities are key R&D stakeholders, and were closely associated with the design phase of the RIS3

Overall perception of the universities' involvement in the RIS3's implementation phase: Universities are key partners in the implementation of our RIS3; they are associated with the Strategic innovation initiatives and are asked to collaborate more with companies.

There are five universities in Wallonia (although not all are in the territory) that have collaborated in processes related to RIS3. However, not in the sphere of **decision-making and control** through a role in *multi-level governance*. That is, the universities were involved in the design phase of the strategy but as relevant stakeholders in research and teaching. This means that they had no intervention in policy design, but only in the implementation of roadmaps and specific projects to support the identified priorities. Rather, the involvement of the universities took place at the departmental level, depending on the topics of specialization of each, involving interested professors and researchers. Likewise, they did not deal with *assessing the needs of stakeholders or regional strengths to define the regional competitive advantage*. In fact, because they are only one of the stakeholders involved in the activities, the regional government saw fit to have the support of a specialized agency that could conduct this type of survey. Therefore, the various departments responded only for their expertise and knowledge of the issues. Similarly, universities have not been involved in the *monitoring and evaluation process*, as this has been conducted with some tools by the regional government. However, there is an ongoing reflection with respect to the role of the university in this regard, which could still be hindered mainly by the fact that no funds have been provided to support this activity.

Relative to the sphere of supporting the **social dimension of networks**, universities have contributed minimally to the creation of collaborative activities with companies. In fact, since they are mainly involved in specialization projects stemming from the priority design phases, they have certainly activated collaborations with local companies - thus, business-oriented collaborations (also driven by regional requirements in the allocation of funds) or Horizon projects. However, the level at which these collaborations occurred depended strictly on the target sector. In contrast, following the guidance provided by RIS3, universities have greatly expanded their collaborative networks, forming small ecosystems around different priorities. However, this does not register for *participation in local/international forums and networks*, for which it is the regional government that is pushing.

In contrast, the role of *training local actors* has been very limited, engaging mainly in classical teaching. However, collaborative chair structures have recently emerged for some topics of interest such as “circular economy,” for example. Relative to the **cluster building** dimension, universities have not activated specialization tracks such as PhD and research strictly related to the priority areas. Although universities have not directly contributed to *providing opportunities in terms of the market*, they have provided their strategic knowledge and developed large collaborative projects since the previous programming period (looking at the results of the previous programming period also helped to identify strong and strategic areas in the area). In contrast, universities have not played a role in *technology transfer*, as in Belgium, this function is assigned rather to research centres, thus depending on the complex structure of national and strategic programs. Likewise, there are not as many technical and applied universities in Belgium as there are in other countries.

The hope for the future is that universities can become more involved in the **social dimension of networks**, first and foremost by presenting themselves as institutions that look to the long term and the concreteness of the research activities conducted. To further this aspect, the regional government has banished that the “expression of interest” in participating in a call for proposals be released from funds at the time a project is submitted, which will come only after the project and associated vision have been evaluated. Similarly, universities should be more focused in outreach activities, not only relative to the needs of the area but also to exposure to the international context that can be counted on with the support of the regional government, which has also recently committed to investing in the creation of region-wide conferences to increase the exposure of its area.

The **role of a European university alliance** could benefit several areas: first, to be a tool for policy learning among various European regions and to lead areas of interest where you are further along. Second, it could be useful for the exchange of best practices that emerged from RIS3 but also define monitoring and evaluation tools and strategies.

3.1.6 University of Oslo, Norway

3.1.6.1 Desk Research

Norway lacks a dedicated document outlining the Smart Specialization Strategy (S3) specifics. However, the implications of this strategy have been incorporated into an active project that commenced in 2018. This project is known as the 21 Processes (with a perspective up to 2050). The main task is to provide strategic advice and recommendations on how Norway can best achieve the goal of sustainable growth and minimal emissions in the process industry.

Table 2.6 illustrates Norway's five priorities.

| S3 PRIORITY |
|--|
| 1 Waste management |
| 2 ICT |
| 3 Health Medical technologies, e-health and welfare technology. |
| 4 Urban energy solutions Smart and Sustainable Cities |

Table 2.6 S3 specialisations of Norway (Process21, 2021)

3.1.6.2 Field Research

Role of the respondent for Norway: Assistant Director General in the Department for Culture and Business Development, City of Oslo.

Geographical extent of the RIS3: Norway is not a member of the EU. Therefore, it does not have the RIS3, nor receive funds from the EU structural fund.

The strategy represented by the respondent for the Oslo area refers to a regional plan for Oslo and Akershus, the area surrounding Oslo. It is a regional joint plan implemented for the last ten years (from 2015), available

at this link: <https://afk.no/f/p104/i8cdc6e91-ce19-451f-a40f-8d7bb92da9d7/regional-plan-for-innovasjon-og-nyskaping-i-oslo-og-akershus-fram-mot-2025.pdf>

The regional government is also currently working on a new version of this strategy that will be implemented next year.

The main goal is for Oslo and Akershus to leverage the region's growth and unlock the innovation potential that lies in enhanced collaboration between businesses, research and knowledge environments, talents, capital, and the public sector to achieve increased value creation and competitiveness. To do so, six strategies are defined:

- Develop a joint regional platform for collaboration around innovation
- Support business clusters and innovative networks
- Support startups and growth companies
- Innovation through public procurement
- Early phase funding
- Commercialization

List of activities and projects funded to support regional priorities:

- Established a regional partnership for regional and national agencies working with business development in the Oslo Region;
- Supported the establishment of several cluster organizations and networks through the national cluster program as well as a grant mechanism in the City of Oslo;
- We have established Oslo Business Region - the City of Oslo's business development agency with a mandate to support start-ups and growth companies, funded a mechanism for startups, funded several incubators for research-based startups;
- Developed a procurement strategy to help the city agencies use procurement as a means to stimulate innovation in both the municipality and the private sector;
- Established a special grant program to stimulate the cooperation between municipal agencies and startups – SmartOslo;
- Helped with attracting investment for startups to Oslo - Established three innovation districts to foster the commercialisation of research.

Planned call for funding to support regional priorities:

- Currently working on a new joint plan which will be adopted in 2025. The plan will probably focus on many of the same topics as the present one. In addition, it will probably be focusing more on the need to attract talent and build an attractive brand to build partnerships, attract visitors, talent and investment.

About the role of universities:

Overall perception of the universities' involvement in the RIS3's design phase: no major role

Overall perception of the universities' involvement in the RIS3's implementation phase: The City cooperates closely with the universities through the innovation districts, and indirectly in regard to the incubators located in the innovation districts

There are five universities in the territory that collaborate with the regional government. Among those, most of the collaboration is with the University of Oslo, OsloMet University and the private University of Kirthiania.

In the design and implementation process of the regional strategy, the university played a rather limited role in **decision-making and control**. In particular, it played a small role in *multi-level governance*, but it was more active in the preliminary phase, related to assessing the needs of local stakeholders and regional strengths by participating in a few workshops and especially by providing useful comments and inputs when writing the strategy. Similarly, the universities did not have a prominent role in **the social dimension of networks**. Indeed, they have not been the most preponderant actor in *engaging local actors and creating*

territorial collaborative dynamics. This was possible only thanks to the regional strategy, including a specific “PentaHelix” formula that aims to involve different stakeholders in the regional strategy and that forms the basis of the territorial dialogue driving the local “Innovation Districts” where universities collaborate with the city government.

On the contrary, local universities played a major role in **cluster building** through *the creation of specific scientific-commercial pathways*. In particular, the collaboration of the regional government was mainly with natural sciences to perceive funds for research facilities that could also be used for commercial objectives. However, this type of pathway that enables knowledge transfer activities to local businesses is still underdeveloped. This has been possible mainly because both the city of Oslo and Oslo University owns the Oslo Science Park, a facility used as an incubator for start-ups and investors. Here, both the University of Oslo and the University Hospital have their technology transfer centre. Recently, the university started a new programme by using this space to train students (especially from natural and life sciences) in using their sectoral competencies for more commercial purposes. In contrast, a more established path is the participation of the regional government in research funding programs by master's students in the writing of theses with a focus on the specific needs of the area. However, this mainly concerns the public sphere. In the future, it could be better structured with business schools, for example, which have stronger corporate partnerships and make the pathway have an impact on a more commercial level as well.

For the future of the new strategy, the hope is that universities can be more incentivized to participate, especially in the role of **cluster builders** and the technical knowledge inputs they can give to the strategy. This is aided by the fact that, over the years, the relationships the regional government has woven with local universities have thickened. However, there are several obstacles to making this happen: the first is the lack of participatory “culture” in regional development that persists in an institution with a decentralized structure that, among other things, disfavors a central overview of all departmental specializations and activities. The second is the political aspect, which, with the upcoming elections to the rectorate, could influence this path. The intermediate step should be to create a more systemic communication structure within the university in order to have an overview of each department's activities.

What is important to note is that the regional government maintains a certain neutrality in the selection of stakeholders to be involved in the process. So, all universities are invited to participate to the same extent, depending on their specializations. However, how to ensure more active participation is a topic currently under discussion that falls mainly in the sphere of **decision-making and control** due to the difficulty of structuring meetings on a wide variety of topics, even quite general ones (as societal needs related to climate and demographic change or social inclusion maybe) and getting to detail them in a more specific way.

The role of a **European University Alliance** is extremely necessary for the future of regional development strategies, particularly in terms of **cluster building** and **exchange elements**. Local governments need to strengthen collaborations with local and international research communities. One way this could be met is through participation in Horizon programs, to which Norway has access, and which could create a true platform for government-university exchange not only locally but also inter-territorially. This could foster the competitiveness of the territories and enhance the ability of local universities to attract researchers and students.

3.1.7 Université Paris Cité, France

3.1.7.1 Desk Research

During the 2014-2020 programming period, all French regions developed an S3 strategy. The Regional Smart Specialization Strategy is a supplementary strategic document containing the Regional Plan for Economic Development, Innovation and Internationalization (SRDEII). The SRDEII has been prepared in collaboration with local authorities, interest groups, and chambers of commerce. Furthermore, it is a legally binding document, which implies that local authorities (such as departments, with the exception of metropolitan authorities) are obliged to comply with its guidelines. By contrast, the S3 represents a non-binding strategic framework prioritising regional research and innovation actions.

Table 2.7 illustrates the six regional priorities of the Île de France.

| S3 PRIORITY | ECONOMIC CLASSIFICATION (NACE SECTION & DIVISION) | SCIENTIFIC CLASSIFICATION (NABS DIGIT 1 & 2) |
|--|--|---|
| <p>1 Digital, data industry, and creative industry Culture, tourism, sport, innovation, technology, sustainability, digital sector.</p> | <p>J - Information and communication technologies J.59 - Motion picture, video and television programme production, sound recording and music publishing activities J.60 - Programming and broadcasting activities J.61 - Telecommunications J.62 - Computer programming, consultancy and related activities J.63 - Information service activities</p> | <p>4 - Transport, telecommunication and other infrastructures 04.27 - Telecommunication systems 6 - Industrial production and technology 06.57 - Manufacture of computer, electronic and optical products</p> |
| <p>2 Eco-construction, sustainable and smart city, green and low-carbon energies Green building, urban planning, smart infrastructure, renewable sources, energy efficiency, sustainable materials, urban gardens, smart grids, and low-emission technologies.</p> | <p>M - Professional, scientific and technical activities M.74 - Other professional, scientific and technical activities</p> | <p>2 - Environment 02.18 - The elimination and prevention of pollution 5 - Energy 05.32 - Energy efficiency - consumption</p> |
| <p>3 Aeronautics, space, defence, sustainable and smart mobility Aerospace engineering, satellite technology, defence systems, electric vehicles, space exploration, aviation safety, military tech, smart transportation, rocket propulsion, and urban air mobility.</p> | <p>C - Manufacturing C.26 - Computer, electronic and optical products C.27 - Electrical equipment C.28 - Machinery and equipment n.e.c. C.29 - Motor vehicles, trailers and semi-trailers H - Transportation and storage H.51 - Air transport J - Information and communication technologies J.61 - Telecommunications J.62 - Computer programming, consultancy and related activities M - Professional, scientific and technical activities M.72 - Scientific research and development M.74 - Other professional, scientific and technical activities</p> | <p>1 - Exploration and exploitation of the earth 01.04 - Exploration and exploitation of seabed 01.05 - Hydrology 01.06 - Mineral, oil and natural gas prospecting 01.07 - Sea and oceans 3 - Exploration and exploitation of space 03.19 - Applied research programmes for space 03.20 - Launch systems for space 03.21 - Scientific exploration of space 03.22 - Space Laboratories and space travel 4 - Transport, telecommunication and other infrastructures 04.27 - Telecommunication systems 04.28 - Transport systems 6 - Industrial production and technology 06.38 - Increasing economic efficiency and competitiveness 06.39 - Improving industrial production and technology 06.44 - Manufacture of textiles 06.45 - Manufacture of wearing apparel</p> |

| | | |
|--|---|--|
| 4 Health and care Preventative medicine, healthcare technology, patient care, medical research, holistic health, telemedicine, mental well-being, health services, medical devices, and wellness programs. | Q - Human health and social work activities Q.86 - Human health activities Q.87 - Residential care activities Q.88 - Social work activities without accommodation | 7 - Health |
| 5 Luxury and cosmetics High-end brands, skincare products, perfumery, designer labels, premium quality, cosmetic trends, luxury experiences, beauty routines, fashion statements, and elite craftsmanship. | C - Manufacturing C.13 - Textiles C.15 - Leather and related products C.31 - Furniture M - Professional, scientific and technical activities M.72 - Scientific research and development R - Arts, entertainment and recreation R.90 - Creative, arts and entertainment activities | 6 - Industrial production and technology 06.44 - Manufacture of textiles 06.46 - Manufacture of leather and related products 06.62 - Manufacture of furniture |
| 6 Agriculture, Agri-Food, and nutrition Agriculture, Agri-Food, rural space, sustainable, inclusive, solidarity-based, innovative. | A - Agriculture, forestry and fishing A.01 - Crop and animal production, hunting and related service activities A.02 - Forestry and logging A.03 - Fishing and aquaculture | 8 - Agriculture 08.72 - Agricultural forestry impact on the environment 08.73 - Agriculture, forestry and fishery 08.75 - Fertilizers, pest control and mechanisation of agriculture 08.76 - Food productivity and technology |

Table 2.7 S3 specialisations in the region of "Île de France". (Île de France, 2020)

3.1.7.2 Field Research

Role of the respondent for France: EU Project Manager at Ile-de-France Region.

Geographical extent of the RIS3: the 2021-2027 Smart Specialisation Strategy refers to the territory of the Île-de-France. However, the specificity of this RIS3 is that it is included in the regional economic development, innovation and internationalization scheme "Impact 2028." The strategy can be accessed via the following links:

1. <https://www.iledefrance.fr/toutes-les-actualites/la-region-lance-impact-2028-sa-nouvelle-strategie-economique-face-aux-grands-defis-de-demain>
2. https://www.iledefrance.fr/sites/default/files/medias/2022/10/Impact_2028_complet.pdf

In previous programming, the strategy proved somewhat confusing. Considering the region's population of 12 million and the predominance of research and development centres in Ile-de-France, the government decided to combine different strategies, ensuring the coherence and dialogue among the European Development Fund and the Social Development Fund, especially Social Development and Economic Development. Therefore, the regional government proposes the calls for these funds, and it is obliged to create an ecosystem that responds to the needs of the area, which has been worked out in advance by the various government departments.

The region has selected seven strategic innovation areas covering digital, environmental, industrial, societal and deep tech issues. The areas of strategic innovation in the RIS3 include the following strategic sectors, which the new Regional Plan covers for Economic Development, Innovation and Internationalisation (SRDEII):

- Digital, data and creative industries;
- Eco-construction, sustainable and intelligent cities, green and low-carbon energies;

- Aeronautics, space, defence, sustainable and intelligent mobility (including automotive);
- Health and care;
- Luxury and cosmetics;
- Agriculture, food and nutrition
- With 6 groups of Strategic technologies:
- AI and high-performance computing;
- Quantum;
- Materials and cleantech;
- Hydrogen;
- Bioproduction, biotechnologies and health technologies

In addition, a domain is recognised as both a strategic sector and a strategic technology, namely Deeptech.

List of activities and projects funded to support regional priorities:

All calls for proposals issued under the ERDF programme relating to research and innovation must consider the strategic areas and technologies of RIS3 as eligibility criteria. The following calls are for projects that have already been published, or are scheduled for publication in the coming months:

- ERDF call for projects: Research platforms – Call for ERDF projects: Support for SMEs;
 - Call for ERDF projects: Large-scale Research, Development and Innovation (RDI) projects
- Creation of Roadmaps for each strategy technology, the aim of which is to:
- Justify the Region's priorities for each of the strategic technologies by drawing up an inventory of existing strengths;
 - Propose a coherent intervention rationale for each of the strategic technologies;
 - Monitor the progress of each strategic technology;
- Exchange on RIS3 with partner regions in Europe: e.g. Greater Stockholm – Response to the European call for proposals for large-scale hydrogen valleys; Membership of European networks: “Safe and Sustainable Mobility”, “Hydrogen Valleys RIS3 Partnership”, “European Semiconductor Regions Alliance”.

Planned call for funding to support regional priorities:

All calls for proposals issued under the ERDF research and innovation programme must and will have to take into account RIS3 strategic areas and technologies, both as project selection criteria and (in some cases) as eligibility criteria.

About the role of universities

Overall perception of the universities’ involvement in the RIS3’s design phase: A round of consultations had been organised with all major universities in Ile-de-France during the conception phase of the strategy

Overall perception of the universities’ involvement in the RIS3’s implementation phase: Universities are always considered eligible actors in all ERDF calls for projects published by the Ile-de-France region and are constantly approached within the framework of regional initiatives

Almost all universities in the Ile de France territory were consulted in the elaboration, with a four-year intervention in RIS3. However, at present, universities have not played a proactive role in the implementation of regional priorities. It is, in fact, the regional government that does so through specific calls for proposals in which universities are expected to be involved in specific themes.

Overall, local universities played a fairly active role in **decision-making and control**. However, the same phenomenon cannot be observed extensively in *multi-level governance*, where it was the regional government, with a specific board, that proposed the engagement of different stakeholders in the RIS3-related processes and determined an evaluation process, but in the specific inputs, they gave to the roadmaps of the different technology areas to be implemented. In contrast, universities played a large role in *defining regional needs and specializations*: for the previous economic development strategy, there was a consultation process with public universities in which their input was encouraged about the areas of research and economic

development according to specializations. For the current strategy, the level of consultation has become much higher, primarily due to the specificity of the strategy, aimed at higher education, research and innovation. Specifically, the universities, whose role is perceived as still somewhat disconnected from reality, have participated extensively in the various co-creation workshops of the strategy, which were co-organized with the regional government right in the different universities according to their own specializations and what were the needs of the area have picked up over time.

In terms of the development of the **social dimension of networks**, the universities have been very cooperative in this path, especially with the regional government. This is, of course, also due to their interest in incorporating funds (both at the European and non-European level) for research funding, including doctoral or postdoctoral programs. In contrast, they have not initiated general council and forum initiatives, as this is done in France at the national level: so-called “University Innovation Poles,” national university alliances specializing in different fields, are being created. In terms of **cluster building**, it was mainly the regional government that convened meetings to engage and maintain relations with local actors. On the other hand, universities play a leading role in terms of business training, depending on their specializations. This has been mainly due to the structure of individual university campuses, within which one finds the full pathway moving from undergraduate teaching to supporting research and student entrepreneurship. Similarly, universities are also playing an essential role in providing the regional government with opportunities to participate in wide-ranging projects in the European context. This shows the collaborative spirit of engaging the regional government in new spatial development activities, starting with research (which also responds to the dimension of **exchange elements**).

The hope for the future is that universities will play a greater role in translating research into opportunities for entrepreneurial and commercial growth in the area. The general feeling is that universities are well organised structures to do this but are still anchored to a pure research perspective and have little “link” to the territory. Being able to activate these activities more intensively would also allow regional funds to be channelled more consistently. In general, in order to be able to understand the importance of this need, we would first need to go to a more concrete assessment of the impact of research activities in some specific areas, e.g., the economic sphere, the number of job positions derived from them, etc.; and then to propose a greater level of involvement in RIS3 processes on the part of the regional government.

European University Alliances such as CircleU can certainly play an important role in achieving the development priorities of individual regions. The regional government supports the creation of international networks, such as CircleU (in fact, it is an associate partner) because it has conceived the need for research support with internationalization. This role translates mainly in terms of **element exchange**. In fact, regional governments are often unaware of the priorities, actions and various dynamics being defined in other territories. Alliance partner universities could undoubtedly play a central role in collecting such elements and providing an overview of them to the different territories. Inevitably, this role would also fall back on better **cluster building** as dialogue and project initiatives between different territories with the same development priorities could be fostered through specific European funding. In essence, one would also have to look at the fact that the next programming period is not far away; therefore, one could begin to define inter-territorial dialogue processes that could allow the exchange of practices and knowledge to develop regional priorities better. These initiatives would allow the creation of local-international ecosystems and coordinate strong strategic visions.

3.1.8 University of Pisa, Italy

3.1.8.1 Desk Research

Italy has a unified national strategy for Smart Specialization, complemented by 19 regional strategies and two additional strategies for the autonomous provinces of Trento and Bolzano. Coordination between the regional and national levels of Smart Specialisation Strategies (S3) in Italy has traditionally focused on two main areas: the development and understanding of the different S3s across the country through a monitoring system and

the leveraging of synergies between regionally managed Operational Programmes and those handled at the national level. Until 2023, the National Agency for Territorial Cohesion was tasked with developing instruments to facilitate the coordination of regional strategies and to foster synergies between national and regional research and innovation strategies for smart specialisation. However, since 2023, the Agency's responsibilities have been transferred to the Department of Cohesion, which operates directly under the Presidency of the Council of Ministers. In the current programming period, the coordination between the national and regional levels is governed by an inter-ministerial protocol involving MIMIT (the former Ministry for Economic Development) and MUR (Ministry of University and Research), as well as a "Subcommittee for National Smart Specialisation Strategy (SNSI)", which is tasked with monitoring and supporting the implementation of the national strategy.

The University of Pisa is engaged in several ITS projects, including MITA, Made in Italy Tuscany Academy, PRIME Tech Academy, TAB (Tourism, Art and Cultural Heritage), and VITA. Additionally, the university is involved in regional technology districts, namely Fashion, Interior and Design, Railway, and Advanced Manufacturing. Moreover, it represents a significant scientific research landmark in Tuscany, particularly within biotechnology and chemistry (Regione Toscana, 2020).

Table 2.8 illustrates Tuscany's regional priorities.

| S3 PRIORITY | ECONOMIC CLASSIFICATION (NACE SECTION & DIVISION) | SCIENTIFIC CLASSIFICATION (NABS DIGIT 1 & 2) |
|--|--|---|
| <p>1 Information and communication technology</p> <p>Technology adoption, software and automation, industrial integration, IoT, big data analytics, cybersecurity.</p> | <p>J - Information and communication technologies</p> <p>J.60 - Programming and broadcasting activities</p> <p>J.61 - Telecommunications</p> | <p>4 - Transport, telecommunication and other infrastructures</p> <p>04.27 - Telecommunication systems</p> |
| <p>2 Advanced manufacturing technologies</p> <p>The regional Industry 4.0 platform facilitates the relationship between research and industry. It identifies strengths such as the presence of highly innovative companies and excellence centres in robotics and advanced production systems, as well as specific expertise in areas like biorobotics and robotics for medicine.</p> | <p>C - Manufacturing</p> <p>C.26 - Computer, electronic and optical products</p> <p>C.27 - Electrical equipment</p> <p>C.28 - Machinery and equipment n.e.c.</p> | <p>6 - Industrial production and technology</p> |
| <p>3 Advanced materials and nanotechnologies</p> <p>Composite materials, biomaterials, nanomaterials, smart materials.</p> | <p>C - Manufacturing</p> <p>C.24 - Basic metals</p> | <p>5 - Energy</p> <p>05.33 - Energy production and distribution efficiency</p> |
| <p>4 Technologies for life and the environment</p> <p>Environmental and life technologies, chemical disciplines, pharmaceutical disciplines, biological disciplines, digital technologies, IoT, big data</p> | <p>Q - Human health and social work activities</p> <p>Q.86 - Human health activities</p> <p>Q.87 - Residential care activities</p> <p>Q.88 - Social work activities without accommodation</p> | <p>7 - Health</p> |

| | | |
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| analytics, and human-machine interactions. | | |
|--|--|--|

Table 2.8 S3 specialisations in Tuscany. (Regione Toscana, 2020)

3.1.8.2 Field Research

Role of the respondent for Italy: Manager in the Tuscany Regional Administration – Research division

Geographical extent of the RIS3: regional. The RIS3 refers to the Tuscany region in the Italian context. The RIS3 strategy can be consulted at the following links:

1. http://www301.regione.toscana.it/bancadati/atti/Contenuto.xml?id=5351828&nomeFile=Delibera_n.1321_del_28-11-2022-Allegato-A

2. <http://www.regione.toscana.it/strategia-di-ricerca-e-innovazione-RIS3-piano-degli-interventi>

Tuscany RIS3 defines priorities according to two main dimensions:

- Sectors of application (further detailed in strategic missions) and
- technological priorities (further detailed in sub-priorities)

Application sectors are the following (detailed in 12 strategic missions):

- environment and energy;
- culture and cultural heritage;
- health;
- smart agri-food;
- smart and sustainable enterprise;

Technological priorities are:

- Digital tech (detailed in 7 sub-priorities);
- advanced manufacturing tech (4 sub-priorities);
- advanced material and nanotech (5 sub-priorities);
- environmental and life/health technologies (11 sub-priorities)

List of activities and projects funded to support regional priorities:

Tuscany region has already funded research projects for:

1. SMEs also, in collaboration with research organizations
2. Large enterprises in compulsory collaboration with SMEs and eventually with research organizations.

It financed:

- innovation projects to promote access to advanced services, largely in the digital domain, by SMEs;
- training and education courses (digital skills) aimed at workers employed by companies in crisis, vouchers for entrepreneurs and workers reskilling through individual training;
- ITS courses;
- PHD programs (although some courses are not strictly related to the RIS3 priorities); research grants for young researchers with projects realized in collaboration between academia and local enterprises.

Planned call for funding to support regional priorities:

The next year's calls (specifically related to the respondent's department- Research) will finance:

- PHD courses implemented by networks of universities and research centres operating in Tuscany (courses with PHD research projects coherent with RIS3 strategy receive an additional score in the selections process);
- Industrial PhD: grants for PhD students co-funded by firms operating in Tuscany -Research projects carried out by University or Public Research Centers in compulsory collaboration with firms or other organizations operating in Tuscany. Projects have to deal with selected research topics coherent with RIS3 priorities
- Grants financing training and applied activities in technology transfer and other university outreach activities

About the role of universities

Overall perception of the universities' involvement in the RIS3's design phase: University experts have been consulted to define the contents of specific technological domains considered strategic; these

technological domains have been identified partially according to relevant literature, partially on the basis of entrepreneurs and trade associations indications. A public consultation of Universities and Research Centers to discuss the RIS3 strategy design did not take place for the 2021/2027 period. The 2021/2027 smart specialization strategy has largely taken from the 2014/2020 RIS3. This latter was defined, at least in part, taking into consideration the point of view of universities and involving them in the discussion of the strategy. **Overall perception of the universities' involvement in the RIS3's implementation phase:** In research projects financed by ERFS, Universities play an ancillary role. On the side of training and education, financed with ESF, Universities represent the principal regional stakeholders for tertiary education programmes, and an important counterpart in other training activities.

Local universities play an active role in RIS3-related processes through a two-year involvement. However, it is not easy to provide an overview of the involvement that individual institutions have had because much depends on the different departments but also on the involvement of individual regional directorates.

In the previous programming period (2014-2020), there was a great deal of involvement, where they brought their views and explained their research and specialization activities. Relative to the sphere of **decision-making and control**, universities played an important role in identifying and involving different actors, working alongside the regional government in the strategic definition of *multi-level governance*. With the new programming (2021-2027), the level of involvement has been markedly lower not only because the current programming stems from the previous one but also because there was the installation of the new regional junta, which also created delays in the moments of sharing activities. However, the involvement of universities was initially not very easy. Only after a while was the process facilitated, partly due to the presence of an institution named "Regional Conference for Research and Innovation", defined by Regional Law n.20 of 2009 and supported by a specific observatory. The universities also joined forces with other institutions as well: the National Institute of Nuclear Physics, Astrophysics, the National Research Center, etc. The universities played a preponderant role in *assessing the needs of stakeholders*, having been responsible for carrying out commissioned studies by consulting key stakeholders and territorial associations. Related to the **cluster-building** dimension, universities have always been seen as an indispensable player in the creation of collaborative projects and the development of specific expertise. In the first case, involving them directly in partnerships for their expertise, while in the second case, making the expertise of the specific institution available to companies in the area. Relative to *technology transfer*, the regional government has tried to solve this problem by creating a dedicated inter-university office, which helps companies find the right expertise but also helps universities get more territorial connections. Universities have been very proactive in this respect, even establishing entrepreneurial education programs (see the "PHD plus" format at the University of Pisa). However, one of the biggest obstacles to these programs may be the nationwide funding cuts that are being discussed at this time. It could be very complicated to find funds to run similar university or inter-university programs.

In this sense, universities have played an essential role in *training local actors* (and, therefore, in the **social dimension of networks**) by having numerous opportunities to intervene in the needs of companies. It is no coincidence that the regional government has developed a platform titled "Cantieri 40" (4.0), which maps the specialisations of universities and can be consulted by companies. This helps to reduce the problem of a lack of overview of the expertise and departmental interests of local universities, which are very large. Similarly, over time, universities have formed numerous partnerships locally and internationally: this is mainly through European projects, primarily involving SMEs and addressing their need for technology readiness. However, this discourse is limited to some university departments that have a lot of expertise in this area. For others, it is not the same, as they need support in building partnerships and joint project opportunities. This is why the regional government has established the Task and Organization for Research in Europe (Tour4You) to build partnerships with respect to specific issues, which has already brought home very important results in terms of the number of partnerships it has managed to form.

In the future, it is hoped that universities can play a greater role in regional development on several fronts. Firstly, under the sphere of **decision-making and control**, with respect to outreach and identification of local needs. Secondly, under the sphere of the **social dimension of the network**, preparing ad hoc educational

pathways for the development of soft skills needed by the younger generation and bridging with industries and the entire working world. In this sense, pedagogical formulas that allow students to “put their hands in the dough”, such as project/challenge-based learning, deserve special consideration.

With this in mind, universities could also play a central role in the **cluster-building** dimension by involving their international university networks in dialogue on these issues, encouraging, among other things, the development of a domestic or international job market for students. This applies not only to students who will be future workers but also to paths of long-life learning, ensuring that universities can foster the knowledge generally provided to workers placed in the production centre by training agencies only.

At the same time, the specificities of local cases should also be brought back into a European University Alliance, as in the Italian context, which is increasingly suffering from the demographic decline. This constitutes one of the reasons for the reduction in the number of students enrolled in upcoming degree programs. It is, therefore, necessary for Italian universities to structure more English-language courses to encourage the enrollment of international students. Consistently, one of the main **contributions that the European Alliance** could make for regional development could proceed from the definition of dual or multiple degrees, where students can gain experience from their own field of specialisation of the priority and specific areas of other territories. Obviously, this pathway needs to be well organized at the international level in order to avoid pathways that are elitist and inaccessible to most, including in terms of financing the expenses students have to incur for international mobility.

3.1.9 University of Vienna, Austria

3.1.9.1 Desk Research

Austria has a national strategy for smart specialisation, designated as the Austria RTI Strategy 2030. Moreover, each of the nine federal states (Länder) has its own economic and innovation strategy aligned with the overarching framework of the federal RTI Strategy 2030.

The Austrian RTI Strategy 2030 addresses the fragmentation of high-level research and institutional disciplines by fostering collaboration and reducing the innovation gap. The strategy's governance structure adopts a cross-departmental approach led by the RTI Task Force, which includes representatives from various federal ministries. This task force coordinates policy and oversees the strategy's implementation, drawing on the expertise of a wide range of stakeholders.

Table 2.9 illustrates Austria's regional priorities.

| S3 PRIORITY | ECONOMIC CLASSIFICATION (NACE SECTION & DIVISION) | SCIENTIFIC CLASSIFICATION (NABS DIGIT 1 & 2) |
|--|--|--|
| 1 Materials and Intelligent Production Advanced materials, production automation, smart manufacturing, digital fabrication, industry 4.0 | C - Manufacturing | 6 - Industrial production and technology |
| | C.26 - Computer, electronic and optical products | 06.56 - Manufacture of fabricated metal products, except machinery and equipment |
| | C.27 - Electrical equipment | 06.57 - Manufacture of computer, electronic and optical products |
| | C.28 - Machinery and equipment n.e.c. | 06.58 - Manufacture of electrical equipment 06.59 - Manufacture of machinery and equipment n.e.c. |

| | | |
|---|---|--|
| <p>2 Quantum science</p> <p>Artificial intelligence, big data and AI-based data analysis technologies, cloud and high-performance computing (HPC and quantum computing).</p> | <p>C - Manufacturing</p> <p>C.26 - Computer, electronic and optical products</p> | <p>12 - General advancement of knowledge</p> <p>12.107 - Physical sciences</p> |
| <p>3 Mobility</p> <p>Smart transportation, autonomous vehicles, urban mobility solutions, green transportation, mobility-as-a-Service (MaaS).</p> | <p>H - Transportation and storage</p> <p>H.49 - Land transport and transport via pipelines</p> <p>H.50 - Water transport</p> <p>H.51 - Air transport</p> | <p>4 - Transport, telecommunication and other infrastructures</p> <p>04.28 - Transport systems</p> |
| <p>4 Life sciences and pharmaceuticals</p> <p>Bioinformatics, biomedical technology, precision medicine, human-machine interaction, machine learning models, single health & access to digital services.</p> | <p>Q - Human health and social work activities</p> <p>Q.86 - Human health activities</p> | <p>7 - Health</p> <p>07.69 - Public health legislation and regulations</p> <p>07.70 - Public health management</p> |
| <p>5 Information and communication technology and digital transformation</p> | <p>C - Manufacturing</p> <p>C.26 - Computer, electronic and optical products</p> | <p>6 - Industrial production and technology</p> <p>06.57 - Manufacture of computer, electronic and optical products</p> <p>06.58 - Manufacture of electrical equipment</p> <p>06.59 - Manufacture of machinery and equipment n.e.c.</p> |
| <p>6 Green tech (incl. bio-economy, circular economy, environmental technology)</p> <p>Sustainable agriculture, renewable energy, waste management, carbon capture, and clean water technologies.</p> | <p>D - Electricity, gas, steam and air conditioning supply</p> <p>D.35 - Electricity, gas, steam and air conditioning supply</p> | <p>5 - Energy</p> <p>05.31 - Energy conservation</p> <p>05.32 - Energy efficiency - consumption</p> <p>05.33 - Energy production and distribution efficiency</p> <p>05.37 - Renewable energy sources</p> |
| <p>7 Creative Industries</p> <p>Culture and creative industries, media, arts and entertainment, sports, access to cultural content, heritage and history.</p> | <p>R - Arts, entertainment and recreation</p> <p>R.90 - Creative, arts and entertainment activities</p> | <p>10 - Culture, recreation, religion and mass media</p> <p>10.85 - Cultural services</p> |

Table 2.9 S3 Specialisations in Austria (Federal Government of the Republic of Austria, 2020)

3.1.9.2 Field Research

Role of the respondents for Austria: 1 Municipality officer, 1 Vienna Business Agency officer.

Geographical extent of the RIS3: Federal level for the RTI Strategy 2030 (promoted by the Federal Government Republic of Austria); Municipality level for the Vienna 2030 – Economy and Innovation strategy. The latter represented the focus of the interviews. This is not directly connected to the RIS3, although some thematic areas and objectives may overlap.

The **RTI Strategy 2030** can be accessed at [this link](#), while the **Vienna 2030 Strategy** can be found [here](#).

List of activities and projects funded to support regional priorities:

From the **RTI Strategy 2030**:

- **Objective 1:** Become an international innovation leader and strengthen Austria as an RTI location
 - Expand research and technology infrastructure (RTIS) and facilitate access
 - Increase participation in EU missions, EU partnerships and IPCEIs
 - Promotion and strategic targeting of internationalisation
- **Objective 2:** Focus on effectiveness and excellence
 - Promote excellence in basic research
 - Support applied research and its impact on the economy and society
 - RTI for the achievement of the climate targets
- **Objective 3:** Focus on knowledge, talents and skills
 - Develop and promote human resources
 - Support researchers and students in developing an international outlook

From the **Vienna 2030 Strategy – Economy and Innovation**:

It is based on **six thematic areas**, corresponding to the local strengths and areas of leadership, implemented through more than 100 **flagship projects**. The strategy development process was coordinated by the Economic Affairs, Labour and Statistics Department of the Municipality of Vienna. The strategy is linked to the [Smart City Framework Strategy](#), which focuses on innovation for circular economy in the city, and especially on high quality of life, resource conservation and social & technical innovations.

Vienna 2030 thematic areas:

- Smart solutions for life in the 21st-century city
- Vienna as a metropolis of health
- Digitalisation, Vienna-style
- Smart production in the big city
- place of international encounter
- Vienna - a metropolis of culture and creativity

Areas of strategic action:

- Labour market & top talent
- Universities and research
- Climate protection and adaptation to climate change
- Vienna's infrastructure
- Innovative municipal administration
- Innovative milieu
- Regulatory framework
- Subsidy structures
- Vienna – a metropolis of culture and creativity

Planned call for funding to support regional priorities: concerning the RTI Strategy 2030, the RTI Pact, based on the Research Financing Act (FoFinaG), sets out specific measures for implementation of the objectives and fields of activity described in the RTI Strategy for a 3-year period. Moreover, the National Foundation for Research, Technology and Development will become a “Future Austria Fund”, which will create a funding instrument to complement the RTI Pact. Vienna 2030 Strategy is funded by the Municipality of Vienna. The Federal government designed a huge funding programme, the [COMET programme](#), namely

Competence Centers for Excellent Technologies, to foster the creation of strategic consortia in Austria and in its provinces, bringing together industrial and scientific partners. This funding also supports some projects of the Vienna 2030 Strategy.

About the role of universities

Overall perception of the universities' involvement in the design phase of Vienna 2030: The strategy design required several steps and the involvement of Vienna stakeholders and experts, including representatives from academia and research.

Overall perception of the universities' involvement in the Vienna 2030 implementation phase: in this context, the Vienna Economic Council was set up to support the development and implementation of the strategy through a panel of experts, including social partners, entrepreneurs and representatives from science and research. Among them, there is also a representative from the Vienna University of Technology. Universities are part of dedicated advisory boards that support the strategy implementation (**decision making and control**). In general, besides traditional universities, Wien counts on several universities of applied sciences.

Viennese universities are often involved in and founders of innovation hubs. These coordinate some of the flagship projects foreseen by Vienna 2030. In this sense, they act as collaboration agents to foster innovation networks in Vienna (**social dimension of networks**) and to support knowledge transfer and exposure for the city, also in a market-driven perspective and at an international level (**cluster building** and **exchange elements**). In this sense, Wien – through its Business Agency – also aims at attracting international companies to settle there: to do so, they show the availability of advanced research partners at the university level and of well-trained students and graduates who could become their future employees (**exchange elements**).

In certain cases and for specific topics, Viennese universities work on contract research. They disseminate their knowledge at various events promoted by the Municipality and by other local entities (e.g., projects presentations, stakeholder engagement events, festivals, etc.). Universities are also partners in several labs promoted through the COMET programme (e.g.: [BEST](#) – competence centre for bioenergy and sustainable technologies running projects on the creation of biofuels and biogas from organic waste; [VRvis](#) – competence centre for visual computing working – among other topics – on Flood risk management and providing an app for citizens alert systems). Finally, in the past, the Technical University of Wien promoted a joint PhD programme in collaboration with the City to support candidates running research aligned with the city challenges (**cluster building**). Moreover, there is a trainee programme for university alumni which allows them to work with peers in different city departments and organisations and to be potentially employed after their training (**cluster building**).

The future perspective on the role of universities: public strategies/actions' impact measurement: finding expertise for the proper application of the Theory of Change (also applicable to the role of European Alliances)

Role of European University Alliances: good practice exchanges at the international level to provide inspiration and examples/case studies on some sectors and topics; expertise from international partners, e.g.: good practice from other cities that implemented a certain innovation supported by the local university; good examples of impact measurement and assessment: finding researchers/experts in a proper application of the Theory of Change.

3.2 Impacts

This research was conceived with a highly practical objective: to investigate the territorial development policies across the diverse contexts involved in the European CircleU alliance. The aim was to establish and promote a shared foundation for research, teaching, and third-mission activities that could be conducted collaboratively among the various institutions. At the same time, this objective addressed an existing gap in the scientific literature—an ontological gap—concerning the lack of studies on the role of universities in the design and implementation of territorial development policies.

The main outputs of this research include:

- Mapping the investment priorities of the different regions participating in the alliance;
- Providing an overview of both the current and potential roles that local universities could play in supporting territorial development policies;
- Identifying the potential contribution of the universities involved in the alliance to the design and implementation of territorial development policies at the local level.

The expected impacts of this research are as follows:

- Bridging the existing knowledge gap and improving interventions that support territorial innovation policies by fostering stronger connections between academia and public governance;
- Raising collective awareness among faculty members and regional officers regarding the scope of regional development policies and the actual involvement of universities in supporting them;
- Sharing results and best practices from different regions through the preparation and dissemination of a short report among faculty and researchers within the alliance, particularly those directly involved in WP5-CU2030 activities (currently in preparation).

In the medium to long term, the anticipated impacts extend to:

- The development of transnational collaborations in teaching, research, and third-mission activities among the partner universities, focusing on shared territorial priorities;
- Strengthening cooperation between universities and local/national governments, enhancing universities' ability to understand and support territorial innovation and development policies;
- Fostering greater collaboration among the universities within the alliance by creating cross-border educational, research, and third-mission initiatives.

By establishing a solid foundation for long-term cooperation, this research not only contributes to a deeper understanding of universities' roles in territorial development but also paves the way for sustained, strategic engagement between higher education institutions and public policy actors across Europe

4 Challenges and Learning

This report has been compiled to present the findings of research carried out in the framework of the CU2030 WP 5.3. This report should be considered as the deliverable of Task 5.3., integrating the research steps described in the previous Milestone. The Milestone report outlined the theoretical framework and research design—encompassing both desk and field research—that contributed to this final deliverable. Additionally, it presented the results of the desk research, which systematically examined the investment priorities, primarily those outlined in the Smart Specialisation Strategy, of all the partner countries in the alliance. Overall, the research was conducted to generate insights valuable to the European Alliance for the organization of joint activities to support the territories involved. Indeed, this research can feed into concrete activities in collaboration with other Circle U. WPs, Platforms and Hubs. For instance, understanding the most critical regional priorities for a cluster of regions can help set up valuable and productive challenge-based activities and Master or Intensive Courses with outcomes and results replicable and scalable in other contexts. Furthermore, the collaborative environment we aim to build between regions and universities can help to foster a dialogue on the most fruitful and compelling calls for funding/innovation/entrepreneurial ideas that could be adopted at local and international levels and funded by Structural Investment Funds managed by Regional Authorities. This allows for creating a broader research playground area by fostering new opportunities for both senior and early career researchers to explore these topics through action research approaches to address specific priorities and challenges and to allow a cross-country comparison of cases. Key reflections of this section will be built on the insights generated from the results, as well as from the methodological aspects of the research and the challenges faced during its development.

Concerning the desk research, the analysis outlines the Smart Specialization Strategy (S3) priorities across various European regions. Here is a comparison of the regional priorities mentioned in the document, highlighting the most common transversal priorities across regions:

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

- Aarhus University, Denmark: ICT, digital technologies, including robotics and artificial intelligence.
- Belgrade, Serbia: Computer programming and ICT.
- Humboldt-Universität zu Berlin, Germany: Information and communication technology, digital services, and creative economy.
- King's College London, UK: Information economy.
- Université Paris Cité, France: Digital, data industry, creative industry.
- University of Pisa, Italy: Information and communication technology (software, automation, big data analytics).
- University of Vienna, Austria: Information and communication technology, digital transformation.

Observation: ICT-related technologies are a highly transversal priority, particularly digitalisation and automation, with an emphasis on innovation through AI, robotics, big data, and cybersecurity.

HEALTH AND LIFE SCIENCES

- Belgrade, Serbia: R&D and technical consultancy related to healthcare.
- Berlin-Brandenburg, Germany: Healthcare economy, including translational medicine and medical data use.
- Île de France, France: Health and care technologies, preventative medicine, telemedicine.
- Tuscany, Italy: Technologies for life sciences and the environment.
- Vienna, Austria: Life sciences, pharmaceuticals, biomedical technology, precision medicine.

Observation: Health and life sciences are consistently prioritised, especially medical technologies and e-health services, showing a focus on improving healthcare systems and biotechnology.

ENERGY TECHNOLOGIES

- Denmark: Energy technologies, including energy-efficient solutions and renewable energy.
- Berlin-Brandenburg, Germany: Energy technology (smart grids, renewable energy).
- Paris, France: Sustainable and smart energy systems, including low-carbon technologies.
- Tuscany, Italy: Advanced energy-efficient production systems.
- Vienna, Austria: Green technologies, renewable energy, and circular economy.

Observation: Sustainable energy solutions like renewable energy, energy efficiency, and smart grids are common regional priorities, reflecting a strong focus on addressing climate change and the energy transition.

ADVANCED MANUFACTURING AND PRODUCTION

- Aarhus, Denmark: Advanced production, high-quality industrial products.
- Belgrade, Serbia: Focus on innovation and competitiveness in production sectors.
- Vienna, Austria: Advanced materials and intelligent production.
- Tuscany, Italy: Advanced manufacturing, industry 4.0, biorobotics.

Observation: Several regions prioritise advanced manufacturing and production technologies, often focusing on industry 4.0 principles and combining robotics and automation with new materials.

ADDITIONAL TRANSVERSAL PRIORITIES

- Sustainable Development and Green Technologies:
Focus on sustainability is prevalent across multiple regions, especially concerning green technologies, waste management, bio-economy, and circular economy (e.g., Wallonia, France, Vienna).
- Creative Economy and Culture:
Digital and creative industries, including animation, games, film, and cultural sectors (France, Denmark, and Austria), indicate a common interest in fostering the creative economy.

REGIONS PRIORITIZING FOOD, AGRIFOOD, AND AGRICULTURE

While agrifood and agriculture are not always featured as top priorities across all regions, they are core areas in regions like Denmark, Belgium (Wallonia), and France. These regions emphasize *sustainable agriculture, food innovation, bio-resources management, and the integration of food production with environmental sustainability*.

- Aarhus University, Denmark: Food and bioresources: The region emphasises agroecology, biorefining, sustainable fishing, and food ingredients. There is also close cooperation between raw material producers, food companies, and research institutions in Central Jutland, highlighting the importance of the agri-food sector.
- UC Louvain, Belgium (Wallonia): Future Agri-Food chains and innovative environmental management: This includes sustainable farming, ecosystem services, food traceability, and biodiversity conservation. It reflects a strong focus on agricultural innovation and environmental sustainability.
- Université Paris Cité, France: Agriculture, Agri-Food, and Nutrition: In Île de France, agriculture and rural development are prioritized, focusing on sustainable, inclusive, and innovative farming systems. This covers the entire food chain, from production to food technology.
- University of Pisa, Italy: Tuscany's advanced manufacturing technologies indirectly mention the agrifood sector, with projects related to food innovation and sustainable production systems.

Concerning the field research, the research design proved to be highly effective, enabling the collection of meaningful and actionable results that align with the research objectives. The use of a questionnaire to gather preliminary information from regional officers served as a crucial first step, offering specific insights into their contexts while establishing a valuable point of contact. For the online interviews, the integration of a well-considered theoretical framework and supporting literature significantly informed the question design, facilitating productive and insightful discussions that enriched the study's findings.

One noteworthy observation is the overlap among the four dimensions representing universities' roles as articulated in the responses from regional officers. While this overlap suggests a level of complexity in delineating these dimensions, the framework itself was instrumental in identifying universities' roles, allowing for meaningful comparisons across territories. This comparative approach is essential, as the research highlights substantial territorial differences in the way RIS3 or other policies are structured. These differences extend to the level at which policies are implemented—whether regional, local, or national—and to the organization of interventions and the distribution of responsibilities among stakeholders.

Based on these considerations, it has been possible to draw some transversal conclusions (bringing together the different perspectives of the interviewees) on the four dimensions of analysis:

Decision-making and control: in most cases, universities did not play a prominent role in the multi-level governance (Norway, France, Belgium, Denmark) but took part in the participatory processes for assessing the needs of local stakeholders and regional strengths by giving their scientific perspective and technical input for the strategies development. Their contribution is based on specific fields of expertise that change from university to university and from faculty to faculty. Sometimes, they did it as part of advisory boards, institutional tables and observatories (Austria, France, Belgium, Italy, Denmark);

The social dimension of networks: usually, RIS3-related regional officers and their teams played a key role in engaging local actors and creating territorial collaborative dynamics. The universities played this role when directly running innovation hubs and specific R&I programmes and projects, funded under the RIS3 or other similar strategies at a local level (Austria) or even through specific EU research funding (e.g.: Horizon). In general, they often acted as a support to innovation processes by taking part in innovation districts and regional department units (e.g., Denmark) and other participatory infrastructures (e.g., University Innovation Poles, National level, France) in contact with SMEs and major industry partners as well as regional governments. Rather than leading the collaboration, in most cases, they are part of it (e.g.: participation in funded research projects' consortia) (Norway, France, Belgium, Italy, Denmark);

The **cluster-building** role was taken by universities through the creation of specific scientific-commercial pathways. They supported the creation of a knowledge basis among different private and public actors

through the dissemination of research results (Norway, France, Italy, Austria, Denmark), by running contract research (Austria) and by supporting knowledge transfer through R&I projects and more structured initiatives involving devoted departments at the universities (e.g.: TTOs, the establishment of university-business/community-business collaboration to fund joint industrial PhD programmes, internships, inter-university office to increase territorial connections, entrepreneurship education programmes for students, etc.);

Exchange elements show the universities' positive interest and tendency to involve the regional institutions and the related territories in European and International funded projects to implement collaborative, innovative experiments both involving researchers and scholars as well as students and young researchers (Norway, France, Italy, Austria, Denmark).

In all cases, it emerged that the role of a **European University Alliance** is extremely necessary for the future of regional development strategies, particularly in terms of **cluster building** and **element exchange**. Collaborative projects can be developed to allow peer learning among various European regions based on similar specialisation areas, to leverage complementary strengths. This could be done by actively involving universities, regional governments, and industry partners in knowledge exchange and technology transfer initiatives and by putting students, graduates and young researchers at the forefront of such collaborative initiatives.

4.1 Challenges

In this section, we will outline a series of challenges encountered during the research process. Additionally, we will highlight potential future challenges that the alliance may face. In general, this research work has produced significant results and has led to several strategic lines of intervention for the University Alliance in the future. However, our research also faced numerous challenges during its implementation, which will be summarized as follows:

- First, significant challenges to obtain data regarding the projects implemented from S3 priorities. The Smart Regional Specialization documents uploaded on regional websites often lack sufficient detail to indicate the projects arising from such spatial development programs accurately;
- Second, it should be pointed out that the extent of policy intervention varies among the regions considered, ranging from the regional to the national area. In some areas, investment priorities are identified on a circumscribed (regional) territorial basis. In contrast, in other areas (e.g., Norway), priorities are identified at the national level and instead identified as missions. The obstacle faced in this research might make it challenging to compare different cases and envisage intervention in the community on a narrower scale than nationally identified;
- Third, Circle U. Partner Universities are essential research and training centres for the economic development of their regions. They are involved in projects funded by Regional Development Funds such as the European Regional Development Fund (ERDF) and the European Social Fund+ (ESF+). Monitoring the ongoing projects would be essential to capitalise on them and increase the geographical coverage of their outcomes and impacts;
- Concerning the field research, at the national level, a challenge arose in identifying appropriate regional officers to participate in it. Initially, project partners participating in the WP5 faced difficulties locating personnel who had been or were actively involved in RIS3 processes. During the interview phase, it became evident that some regional officers had limited engagement with RIS3, often referencing complementary but distinct strategies outside the study's scope. Additionally, the process of establishing contact and scheduling interviews proved lengthy, with varying levels of cooperation among the officers. Consequently, the representation of some alliance member states remains incomplete;

Another noteworthy challenge was the officers' limited ability to recall the extent of universities' contributions to RIS3-related activities, particularly for strategies implemented some time ago. Understandably, regional

officers were often more familiar with the role of government actors in these processes than with the universities' contributions.

4.2 Learnings

Despite these challenges, this research underscores the importance of universities as strategic partners in regional innovation systems. By identifying their roles, the study lays the groundwork for future collaborations between universities, regional governments, and other stakeholders. While there remain gaps in knowledge and varying degrees of engagement across regions, this research highlights the potential for European alliances to bridge these gaps and enhance the alignment of education and research initiatives with regional innovation priorities.

However, three important areas of reflection for universities emerged from this research:

1. **Clarifying the role of universities in the Smart Specialization Strategy (S3)**

It is essential for universities to have a clear understanding of their role in the processes related to S3. A sign of the opportunity to strengthen this awareness emerges, for instance, when universities encounter difficulties in providing appropriate contacts for institutional representatives who have been actively involved in S3 processes. This suggests that, in some cases, there may be a disconnect between universities and the regional governance dynamics of the strategy. Greater alignment with these processes would enable universities to play a more strategic and impactful role. For instance, a university might be actively involved in research and innovation projects that align with the regional S3 priorities. However, when a regional government representative seeks to collaborate with the university on a specific S3 initiative, they may struggle to identify the right contacts within the university who are knowledgeable about the S3 processes. This difficulty in establishing connections can hinder effective collaboration and limit the university's strategic contribution to the regional innovation ecosystem. To address this issue, universities should enhance their internal communication and coordination mechanisms. By ensuring that key institutional representatives are well-informed about the S3 processes and maintaining an up-to-date directory of contacts, universities can facilitate smoother interactions with regional governance bodies. This greater alignment with S3 processes would enable universities to play a more strategic and impactful role in regional development, ultimately leading to more successful implementation of the Smart Specialization Strategy.

2. **The value of the European Alliance in enhancing territorial development**

For universities that have played a significant role in the development and implementation of S3, being part of a European alliance represents a valuable opportunity to strengthen their impact on local territories. This highlights the importance of a proactive commitment from universities in regional strategic planning processes, fostering effective synergies between academic institutions and territorial stakeholders. For instance, through the alliance, the university can engage in an Open Discovery Process, mapping regional needs in cooperation with local governments. This approach helps identify shared innovation priorities and facilitates a consortium-wide strategy to address these challenges. By collaborating with other universities and regional stakeholders, the university can contribute to the design and implementation of regional innovation policies that promote social and territorial development.

3. **Focusing on common priorities to maximise the impact of universities on territorial development**

Regardless of the level of involvement of individual universities in S3, shared priorities among different countries can serve as a strong foundation for collaboration. Concentrating on these common areas of interest allows for the development of initiatives that bring value to all the territories in which the alliance universities operate. This approach not only promotes greater coherence in regional development strategies but also reinforces the role of universities as key actors in the innovation ecosystem. As an example, consider a European alliance of universities that focuses on

sustainable rural development as a common priority. These universities collaborate on an EU-funded project aimed at addressing pressing issues for the development and well-being of various rural territories. Each university organises location-based learning activities, such as workshops and field studies, in their respective regions to identify local needs and challenges. For instance, one university might conduct workshops with local farmers, businesses, and community members to understand the specific agricultural challenges they face. Another university might engage students in problem-based learning projects designed to develop innovative solutions for sustainable tourism in their region. By concentrating on these common priorities, the universities can develop initiatives that bring value to all the territories involved in the alliance. This approach not only promotes greater coherence in regional development strategies but also reinforces the role of universities as key actors in the innovation ecosystem. By organising location-, place-, project-, or problem-based learning activities, universities can foster effective synergies between academic institutions and territorial stakeholders, ultimately maximising their impact on territorial development.

These three aspects represent fundamental areas to consider for improving the integration of universities in smart specialisation processes. However, each institution may identify additional insights based on its own experiences and the mapping exercise emerging from research.

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7 ANNEX A

REGIONAL INVESTMENT PRIORITIES AND RELATED ACTIONS

SECTION 1 - INTRODUCTION

Dear officer,

In the [Circle. U - European University Alliance](#) framework, the research group led by [Prof. Alessio Cavicchi](#) (University of Pisa) is currently investigating the investment priorities for regional development in various European areas. Your region's development priorities within the "Smart Specialisation Strategy", the activities undertaken to support them, and the current and future investment calls to support them, are all crucial pieces of this puzzle.

Your participation is crucial in helping us gather accurate and comprehensive data for your region.

The results will be used to customize co-creation activities among the partner universities of the alliance in line with the needs of our communities and regions.

Therefore, we invite you to reflect on the few targeted questions proposed by this questionnaire, which is designed to be completed in approximately 15 minutes.

We thank you in advance for your time and invite you to contact Prof. Cavicchi (alessio.cavicchi@unipi.it) for further information on the investigation.

Email: _____

SECTION 2 - CONSENSUS TO DATA COLLECTION

By completing this questionnaire, I authorize the processing of my personal data in accordance with Art. 13 of Italian Legislative Decree 196/2003 and Art. 13 of EU Regulation 2016/679. The data will be collected, stored for specific purposes, and deleted when no longer needed. Only the form authors will have access to the data.

* I give my consent to the treatment of the data provided

SECTION 3 - INFORMATION ABOUT THE RESPONDENT

Name

Surname

Country

Professional ROLE

SECTION 4 - REGIONAL INNOVATION PRIORITIES

1. What are the priorities and sub-priorities in your Smart Specialization Strategy?

2. Could you provide us with specific links where to find this information/documents?

3. Could you please provide a list of the activities and projects that have already been funded or implemented in accordance with the regional priorities?

4. Have you already planned any calls to fund the above-mentioned priorities and activities? If so, can you provide details?

5. We are interested in conducting follow-up interviews to gain a deeper understanding of some of the topics investigated in this questionnaire. These interviews will last up to 30 minutes and will take place at a mutually convenient time soon.

Would you be willing to participate in such an interview?

A.01 Yes

A.02 No

6. If you are open to this, please provide your contact information. We assure you that all information shared will be treated with the utmost confidentiality and used solely for research purposes.

Thanks for your time and availability!

8 ANNEX B

INTERVIEW PROTOCOL

| | |
|---|---|
| <i>Intro</i> | |
| <p>This research is part of a project proposed by CircleU. which is an alliance of European Universities with the aim to develop a way of teaching and researching for the sustainability of the different territories where they operate. Being a university alliance means that they work together – despite each of them operating in its own territory- on finding innovative ways to address the todays common societal needs. For example, by involving students and researchers to create new business ideas, or by creating bootcamps or intensive challenge-based learning weeks.</p> <p>In particular, this research builds on the Work Package 5 – which is dedicated to “strengthening the societal engagement”. Therefore, with our research, we would like to gather knowledge about your region’s development priorities within the "Research and Innovation Strategies for Smart Specialisation" (RIS3), and your perception about how universities contribute not only to the design phase of the RIS3 but also how could they contribute to the implementation – with concrete collaborative activities – in order to reach the development of the priorities identified.</p> <p>At the end our interview process, we will have an overview of where universities need to focus their efforts to effectively support regional development in your area as well as in all regions represented within the Alliance.</p> | |
| | Related questions |
| About the interviewee | |
| Name of the interviewee | |
| Institution represented | |
| About the RIS3 | |
| Geographical coverage of the RIS3 (2023-2027) | 1. Which is the geographical area covered by the current (2023-2027) RIS3 you are responding for? |
| Role of the interviewee within the RIS3 (2023-2027) | 2. Which role did you have in the RIS3 of your region? And in which phases? |
| About the role of the university-ies | |
| The university-ies (and specific department(s)) involved in the process of RIS3 | 3. Which universities have been involved in the process of RIS3? With which specific department/office did you interact? |
| Perception about the role of the university within the RIS3 process | OVERALL What did local universities contribute to the RIS3? |

| | |
|---|---|
| <p>Elements that our interview should catch* (Pinto, 2023; Kangas & Aarrevaara, 2020)</p> <p>* Consider that some of these elements could probably be mentioned by the interviewee during the discussion even without having posed the question. Please, consider addressing the remaining questions to make sure the conversation is going to provide relevant elements for this research.</p> | <p>From your perspective, what has the university contributed to/interacted with/promoted:</p> |
| | <p>1. the multilevel governance of the RIS3? With which bodies? In what terms? <i>(Decision making and control)</i></p> |
| | <p>2. assessing the needs of stakeholders, regional strengths, and defining regional competitive advantages for the RIS3? <i>(Decision making and control)</i></p> |
| | <p>3. supporting the creation of collaborative dynamics, trust, and social capital among the involved actors? <i>(Social dimension of networks)</i></p> <p>4. supporting the maintenance and continuity of such forms of collaboration over time? <i>(Cluster building)</i></p> |
| | <p>5. providing an informational basis (making information/knowledge available) for regional collaboration in the context of the RIS3, in terms of partnerships, funding, projects, market opportunities? <i>(Cluster building)</i></p> <p>6. mobilizing resources in favour of regional collaboration in the context of the RIS3, in terms of partnerships, funding, projects, market opportunities? <i>(Cluster building, Exchange elements)</i></p> <p>7. training local actors to improve their capabilities? <i>(Social dimension of networks)</i></p> <p>8. transferring knowledge to local businesses or startups? <i>(Cluster building)</i></p> |
| | <p>9. the development and implementation of monitoring and evaluation forms for the RIS3? <i>(Decision making and control)</i></p> |
| | <p>10. which regional innovation networks and what partnerships has the university developed? <i>(Social dimension of networks)</i></p> <p>11. through participation in regional councils/forums? <i>(Social dimension of networks, Decision making and control)</i></p> |

| | |
|---|---|
| | <p>12. acting as a contact for access to international university networks/collaboration and/or market opportunities? Which ones? What is your perception about their work in light of the RIS3 process? <i>(Social dimension of networks, Cluster Building, Exchange elements)</i></p> |
| Perception on the role (ACTUAL AND NEEDED) of the regional universities in the implementation phase of RIS3 for regional development | <p>13. Are you aware of any initiatives by the university in line with the RIS3? For example, do you know if the university has research directions aligned with the priorities of regional RIS3s? Has it created specific doctoral programs and/or research grants for regional RIS3 priorities? Has it established research infrastructures (centers, hubs, networks) consistent with regional innovation trajectories? <i>(Cluster building)</i></p> <p>14. With regard to the priorities and structure that the RIS3 has assumed in your region, what do you believe is the necessary contribution that the universities in your region should provide during the implementation phase of these activities? <i>(Are there any suggestions concerning specific needs or challenges that the university should take into account when designing educational and research activities to support the implementation of the RIS3?)</i></p> |
| The role of the European Alliance (CIRCLEU) and universities' contribution to regional RIS3 objectives | <p>15. What do you think could be the contribution of an international network of universities to the development of your region to support the RIS3 process and implementation? <i>(Exchange elements)</i></p> |
| <p style="text-align: center;">Conclusions</p> <p>We have come to the end of our interview. Therefore, we would like to thank you because we think your contribution has been relevant for the purposes of our research!</p> <p>Now, we will proceed to analyse your responses together with the ones provided by other regional officers in other areas covered by the CircleU. alliance to understand how universities could they contribute to the implementation – with concrete collaborative activities – in order to reach the development of the priorities identified. We will keep you updated about the results of this process and we will be happy to continue this dialogue with you to start co-creating activities.</p> <p>Following this interview, we will send you two documents by email:</p> <ul style="list-style-type: none"> • The consent form • The information notice on data processing <p>To be filled in by you with the signature and date of today.</p> <p>We would kindly ask if you could also forward us the contact details of the universities or university departments that have contributed to the development or implementation of the RIS3 (2023-2027). We may consider reaching out to some contacts to further enrich our research with insights from the universities involved in this process.</p> | |

