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Contents

1	Introduction.....	3
2	The internationalisation of smart specialisation	4
3	From the design of RIS3 strategies to thematic smart specialisation platforms	6
4	The path towards the Thematic Smart Specialisation Platform on Agri-food	8
5	Consolidation of the Thematic Smart Specialisation Platform on Agri-food	12
5.1	The main steps in the working process	12
5.1.1	Preparatory phase for setting up a thematic partnership.....	13
5.1.2	Consolidation and connection phase	16
5.1.3	Demonstration phase	17
5.1.4	Commercialisation phase	17
5.2	Agri-food thematic smart specialisation partnerships	17
6	Cases of Smart Specialisation Agri-food thematic partnerships.....	19
6.1	High technology farming (Leading region: Tuscany)	19
6.2	Traceability and Big Data (Leading regions: Andalusia and Emilia-Romagna).....	20
6.3	European agri-food and smart electronic systems (Leading region: Flanders)	21
6.4	Bioeconomy Pilot - Agri-Food (Leading regions: Lombardy and Randstad)	22
7	Overlapping or complementarity with other EU Platforms?.....	24
8	Policy recommendations	27
9	Conclusions	30
	References	31
	List of abbreviations.....	32
	List of figures.....	33
	List of tables	34

Dynamics of Smart Specialisation Agri-food Trans-regional Cooperation

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Abstract

The objective of this paper is to inform the community of researchers, policymakers and practitioners about the dynamics of setting up the Thematic Smart Specialisation Platform on Agri-food, and to provide information about its functioning and governance. This work outlines the milestones of the process and the main achievements. The paper proposes the steps to be followed by policymakers and regional officers who are motivated to lead, support and actively contribute to a thematic platform within the Thematic Smart Specialisation Platform on Agri-food. At the same time, it discusses specific cases of such partnerships and describes the motivations and objectives of the regions that decided to embark on the journey towards establishment of specific thematic partnerships through this Platform.

Keywords

Regional innovation policy, smart specialisation, trans-regional cooperation, Thematic Smart Specialisation Platform on Agri-food

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1 Introduction

Regions and countries are currently investing resources to improve their Research and Innovation (R&I) capabilities in agri-food with the objective of improving the local innovation ecosystem. Many regions and countries have recognised the importance of enhancing their production performance and strengthening their position in value chains. These ongoing efforts aim at accelerating the transition to agri-food production that is more knowledge- and technology-intensive. This is particularly evident in EU countries and regions that have strong interests in agri-food and have identified it as one of their smart specialisation priorities. As of 2016, a total of 85 EU regions indicated agri-food as one of their key investment areas under smart specialisation and a total of over 270 agri-food related RIS3 priorities had been encoded in the Eye@RIS3 database. The most prominent priorities were new agri-food technologies (53 countries and regions) followed by agri-food and tourism (49 countries and regions) and food with higher added value (34 countries and regions) (Cavicchi and Ciampi Stancova, 2016). By selecting agri-food for strategic investments, the regions indicated the importance of the agri-food sector for their local economy and growth.

In 2016, the European Commission services (including Directorate-General (DG) REGIO, DG JRC, DG AGRI and DG RTD) established the Thematic Smart Specialisation Platform on Agri-food (S3P Agri-food) with the goal of accelerating the development of joint investment projects at the EU level in the smart specialisation areas linked to agriculture and food. With this initiative, the European Commission encourages the regions and member states to implement their RIS3 strategies more efficiently. Regional stakeholders benefit from the new cooperation opportunities with partners from other regions.

The objective of this paper is to inform the community of researchers, policymakers and practitioners about the dynamics of setting up the Thematic Smart Specialisation Platform on Agri-food, and to provide information about its functioning and governance. This work outlines the milestones of the process and its main achievements. At the same time, it discusses specific cases of such partnerships and describes the motivations and objectives of the regions that decided to embark on the journey towards establishment of specific thematic partnerships through this Platform.

The paper is structured as follows: section two describes motives for the internationalisation of smart specialisation and section three discusses the rationale of the S3P Agri-food platform. Section four focuses on the path towards the S3P Agri-food platform while section five proposes steps that can be followed to establish partnerships, giving the example of the process of building the S3P Agri-food platform. Section six provides information on proposed thematic partnerships and discusses specific cases of existing thematic partnerships. Section seven discusses briefly the differences between the S3P Agri-food platform and other EU Platforms. Policy recommendations are proposed in section eight.

2 The internationalisation of smart specialisation

Regions and countries enhance their R&I systems by looking beyond their national/regional administrative borders for opportunities, and by supporting trans-regional and international R&I activities. Therefore, trans-regional cooperation in R&I is an essential element of smart specialisation. Radosevic and Ciampi Stancova (2015) argued that the transformative power of smart specialisation can be seen in the capacity of the regions to combine locally accumulated knowledge and technologies with international knowledge and production networks.

First, internationalisation within smart specialisation includes not only export and foreign direct investments (FDI) but also 'strategic alliances, joint research, co-development, outsourcing, relocation, mergers and acquisitions, licensing intellectual property rights (IPR), soft landing, technology showcase' (Foray et al., 2012, p. 94). In fact, smart specialisation matches research strengths with business needs in an international environment. Second, internationalisation and smart specialisation is a context within which regions should be able to identify domains for (present and future) competitive advantage, and relevant linkages and flows of goods, services and knowledge that reveal possible opportunities for collaboration with other regions.

Rakhmatullin, Stanionyte and Mariussen (2016, p. 78) suggested that regions should consider opening up their smart specialisation strategies to:

- gain access to wider business and knowledge networks;
- get necessary research capacity;
- reach out to other markets;
- expand business opportunities;
- combine complementary strengths; and
- join global value chains.

Smart specialisation is by definition an on-going, evolutionary process based on continuous exploration and exploitation of research and business potential and opportunities. Consequently, smart specialisation domains cannot be viewed as fixed, unchangeable sets of R&I areas, but rather as flexible living domains that adapt quickly to new and changing conditions. What does this flexibility mean for trans-regional and transnational cooperation in smart specialisation? In the first place, policy-makers and public authority representatives are called to constant information gathering on research, business, and market opportunities at local as well European levels. This means a continuous entrepreneurial discovery process (EDP) and exploration of current activities, capacities and needs of regional actors, as well as future opportunities. Are regional actors searching for new partners to perform R&I in some niche technologies? Do they need to acquire some specific technologies to complement their products? Are they searching for designers, developers, manufactures or customers? At what level can their needs be satisfied best – local, national or international? Who are competitors and possible partners or consumers? The answers to these questions need to be sought in an on-going way, even at the cost of time and resources, but the effort is well worth the expense.

One way to better understand trans-regional cooperation opportunities is to map trans-regional collaboration in terms of research and innovation activities and outputs, for example, participation in specific R&I initiatives such as EU Framework Programmes (EU

FP), Joint Technology Initiatives (JTIs), Joint Programming Initiatives (JPIs), Knowledge Innovation Communities (KICs), INTERREG or other multiregional and multinational initiatives such as the Visegrad Group in Central Europe. Collaborations aimed at commercialisation of innovative products and services may involve taking out patents or writing publications together. In other words, exploration of collaborative networks among local actors and those in other regions can be the first step in the process, by asking questions such as: are there already linkages among actors in smart specialisation areas? What is the nature of trans-regional and transnational collaboration? What outputs including patents, publications, knowledge transfer through exchange of experts, etc. have been produced jointly with institutions, organisations, individuals, etc. located in other regions in Europe?

Opportunities for trans-regional cooperation can also be identified through mapping of selected priorities in the context of value chains. Furthermore, a good understanding of value chains contributes to better identification of collaboration opportunities, and consequently to technological upgrading and economic growth. Mapping the stages and actors in value chains makes it possible to explore subsequent production activities that lead to final production and end use. The cycle that starts with research and development and finishes with sales and service of products is a long and often knowledge- and resource-intensive process.

By mapping complementarities, similarities or equivalencies, regions can identify their current competitors and collaborators as well as their future potential partners. However, mapping of research and innovation activities and outputs, formal and informal collaborative networks, positioning within global value chains (GVCs), and flows of goods and services has not been performed by all regions and countries to the same extent and to the same level of granularity. In addition, some regions still do not have complete knowledge about their smart specialisation areas in terms of their capabilities, infrastructure (research, testing, business, etc.) or the supply and demand for services, products and research. Todeva and Rakhmatullin (2016) suggested that GVC mapping is an enabler in the policy implementation process, because it collects information about supply and demand of technologies, innovative services and products in the region, and the lead business actors who can drive the value chain integration. Thus, more work needs to be done to explore and map companies, research centres (including universities), research infrastructure, clusters, networks, etc. It is also important to understand what exactly different stakeholders offer and demand in terms of services, products, research, testing, demonstration, production and logistics.

3 From the design of RIS3 strategies to thematic smart specialisation platforms

Starting in 2012, EU member and regions have developed their RIS3 strategies and begun to implement them. These national or regional innovation strategies set a limited number of priorities, build competitive advantage by developing and matching strengths in research and innovation with business needs to address emerging market opportunities, whilst avoiding duplication and fragmentation of efforts. Currently over 120 RIS3 strategies are being implemented by countries and regions, which together can spend up to 40 billion euros from the European Regional Development Fund (ERDF) for projects complying with the aims of Thematic Objective 1 (TO1), and thus regional and national smart specialisation strategies. Regions and countries are now launching new projects such as testing facilities, incubators, technological transfer offices, research infrastructures, pilot plants, crowd-sourcing platforms, cluster services, and collaborative spaces with the objective of strengthening their regional innovation potential and enhancing their competitive advantage. In total, up to 250 billion euros can be unlocked for investments from European Structural and Investment Funds (ESIF), national and regional public funds, private investments, Horizon 2020, COSME and other competitive funds as well as the European Fund for Strategic Investments (EFSI). In this context, there is an emerging need to make policies and territories in Europe follow similar processes and patterns to promote innovation, as well as to help develop appropriate methodologies and tools for the implementation of innovation strategies.

Considering the extensive opportunities arising from RIS3 implementation and the interest of regions and countries in some specific areas such as energy, industrial modernisation and agri-food, the European Commission proposed the launch of Thematic Smart Specialisation Platforms. The first Thematic Smart Specialisation Platform was set up in 2015 to foster inter-regional cooperation in the field of energy. In June 2016, during the Smart Regions conference, the European Commission launched two additional Thematic Smart Specialisation Platforms: one on Agri-food and another on Industrial Modernisation.

By creating thematic platforms at the European level that support and enhance joint investments for development and innovation in strategic sectors, the European Commission aims to enhance economic and social growth in European regions. It is believed that the thematic platforms have the potential to improve the competitiveness, resiliency and sustainability of agri-food and industrial sectors by promoting a shared value economy. The European Commission supports thematic initiatives that are proposed and designed by the regions and foster trans-regional cooperation based on matching smart specialisation priorities. Specifically, the European Commission assists regions in their efforts to facilitate the development of new value chains through Quadruple helix interconnection of regional innovation eco-systems and their actors in specific S3 investment areas.

To facilitate trans-regional collaboration based on areas of smart specialisation, the European Commission is committed to combining the instruments of different Directorate-General (DGs) including the DG AGRI, DG ENER, DG GROW, DG JRC, DG REGIO and DG RTD. For example, the European Commission is committed to providing expert assistance to qualified partnerships, organising workshops to identify shared areas of interests, and discussing implementation actions. This can lead to organisation of partnering and matchmaking events for interested partners including industry, academia, and business, aimed at discussing, facilitating and accelerating the development of joint

investment projects. In the future, the European Commission will draw lessons from the thematic platform experience in order to improve complementarity of funding instruments and synergies among policies. The thematic platforms are managed by the Smart Specialisation Platform (S3P Platform) based at the DG JRC in Sevilla. The S3P Platform provides methodological support, expertise, advice and networking opportunities through workshops and seminars. In doing so, the S3P Platform facilitates the exchange of experience, helps participants meet and learn about each other, and stimulates cooperation among them, in order to improve learning and cooperation among the regions and innovation actors. In addition, the S3P Platform provides partnerships with support in identifying strong and missing competences among the participating regions, by combining existing EU analytical tools.

Regions participating in the thematic platforms benefit greatly from inter-regional and intra-regional cooperation on efforts around synergies and common goals. Their participation enables them to share resources to achieve common goals with greater efficiency than by pursuing them separately. Also, by participating in the thematic platforms, regions can: (a) identify new opportunities for investments and unlock new business opportunities, (b) connect partners in a better way, (c) enable regional representatives to improve their skills or gain new ones in networking, project management, diplomacy, etc.

4 The path towards the Thematic Smart Specialisation Platform on Agri-food

As previously stated agriculture and food have long been recognised as important production sectors and as smart specialisation domains. In fact, an analysis of the smart specialisation priorities registered in the EYE@RIS3 database¹ found that agri-food related priorities are one of the most prominent priority areas selected by EU countries and regions, along with energy, advanced manufacturing, the digital agenda and health. It is worth noting that three out of four regions selected an agri-food related priority, and that one in five priorities reported by countries and regions focus on agri-food and technologies.

Given the importance of agri-food for regional economies and R&I in Europe, the DG REGIO, DG JRC, DG AGRI and DG RTD initiated the Thematic Smart Specialisation Platform on Agri-food (S3P Agri-food) in 2016. The European Commission established the Thematic Smart Specialisation Platform on Agri-food with the goal of accelerating the development of joint investment projects at the EU level in the smart specialisation areas linked to agriculture and food.

In September 2015, within the context of implementation of Research and Innovation Strategies for Smart Specialisation (RIS3), an exploratory thematic workshop focused on smart specialisation and agri-food took place at the 2015 EXPO in Milan, Italy. The workshop focused on food, gastronomy and bio-economy as domains of smart specialisation. Workshop participants reflected upon the issues of food innovation as a driver of smart regional growth, the role of public and private institutions in supporting agri-food priorities, and cultural differences in gastronomy.

The workshop output – a policy brief entitled 'Food and gastronomy as elements of regional innovation strategies,' was prepared to share the lessons learnt and policy recommendations with the community of policy-makers and practitioners (Cavicchi and Ciampi Stancova, 2016). It articulated a number of messages and policy recommendations:

- Regions need to explore niches in the agri-food sector that have potential to generate innovative products and services.
- There is a need for systematic investigation and mapping of existing collaborations across different stages of the agri-food value chains in different EU regions.
- Innovative governance models should be developed that reflect needs of the regions and are supportive of cooperative behaviour of actors active in R&I, farming, food manufacturing and production, processing, logistics and marketing.
- Approaches that enhance closer collaboration among academia and businesses according to Triple/Quadruple Helix models should be adopted, in order to generate innovation and to share tangible outputs and other efforts.
- Regional and national authorities should consider the issue of sustainability, including economic, ecological, intra- and inter-generational equity, which is becoming mainstream in the food sector.

¹ Eye@RIS3 database is an open access database managed by the S3 Platform. The database contains information on S3 priorities selected by EU countries and regions. The database is available at the S3 Platform webpage: <http://s3platform.jrc.ec.europa.eu/map>

In May 2016, the European Commission organised a Smart Specialisation Agri-food Information Day for regional and national authorities, clusters and representatives of the agri-food sector motivated to take an active part in the setting up process of the S3P Agri-food platform.² The objective of the event was to explore agri-food innovation themes of interest to the regions and that they would like to address in the thematic partnerships. Another objective was to examine how EU funding can support the business-driven investments that are generated by the thematic partnerships.

This event gave the regions the possibility to participate in discussions about specific thematic areas of joint interest to them, such as agri-food and new technologies (including ICT, Key Enabling Technologies, etc.), agri-food and tourism, food and health, food processing as well as manufacturing and distribution. At the end of the focus group sessions, eight proposals were consolidated by North Brabant, Tuscany, Andalusia, Extremadura, Slovenia, Catalonia, North-East Romania and Skane (table 1).

Table 1. Results of Information Day focus group discussions

Proposals	Region (Country)
System innovation through crossovers for sustainable agri-food	North Brabant (The Netherlands)
Precision farming (high tech and ICT)	Tuscany (Italy)
Advanced quality, traceability and safety in the agri-food chain	Andalusia (Spain)
'Smart-fertirrigation': efficient water and fertilization management	Extremadura (Spain)
Sustainable food production	Slovenia
Health, diet and nutrition (functional foods, bioactive ingredients, special diet needs)	Catalonia (Spain)
'Bio products' meaning bio-based industry, food and non-food products	North-East Romania (Romania)
Personalised health (the interface of agri-food and health)	Skane (Sweden)

The Information Day event was followed by meetings organised by the regions. Later in May 2016, the Network of European Regions for Innovation in Agriculture, Food and Forestry (ERIAFF)³ organised a meeting to formulate a common vision and to find a common position on the S3P Agri-food platform. The objective was to open discussion with the European Commission and actively contribute to the creation of the S3P Agri-food platform. Some thematic areas of common interest were identified for the discussion: precision farming, climate change, water management and (agri)-bioeconomy.

In June 2016, the European Commission organised an event entitled 'Smart Regions: Investments in Smart Specialisation Priority Areas for European Growth and Jobs'.⁴ One of the objectives of the event was to motivate the regions to come up with specific agri-food thematic areas for trans-regional cooperation. Specifically, participants interested in

² <http://s3platform.jrc.ec.europa.eu/-/agri-food-s3-platform-information-day> (accessed in February 2017)

³ The ERIAFF network focuses on moving EU regions towards a better coordinated multi-actor cooperation between its regions within the agriculture, food and forestry sectors. The network's main task is to create innovative actions for the growth and sustainability of the sector. There are around 30 EU member regions, and 19 observing regions participating in the actions of the network.

⁴ <http://s3platform.jrc.ec.europa.eu/-/smart-regions-conference> (accessed in February 2017)

agri-food, industrial modernisation, energy, digital growth and circular economy were asked to take part in discussion groups following the open space technology approach. Several areas of interest were discussed by regional officers, members of regional clusters, researchers and representatives from associations and networks (table 2).

Table 2. Areas of interest of the event participants

Areas of interest	Region (Country)
Precision Farming Food quality and health Sustainable agriculture Bioeconomy	Tuscany (Italy)
Bioeconomy Irrigation water management More efficient crop production R&D&I for a more competitive agro-food industry	Extremadura (Spain)
Food systems and food quality	South Ostrobothnia (Finland)
Agroecology Food quality Food for health	Pays de la Loire (France)
Increasing food production Food quality for a healthy ageing Sustainable territorial development	Basque Country (Spain)
Traceability and big data	Andalusia (Spain)
Agri-food and tourism	Central Macedonia (Greece)
Precision farming Food quality and health Sustainable agriculture Bioeconomy	Bretagne (France)
High tech farming systems Breeding, propagation, seed development Food, Health, plant ingredients & substances Bio-based materials & energy New sources for proteins Mineral re-usage	Limburg (The Netherlands)
System innovation in agri-food through crossovers Agri-food for health Circular economy Agri-food for leisure/tourism Food systems & quality	Agri-food Capital for South Netherlands (Provinces Zeeland- North Brabant and Limburg)

The 2016 Smart Regions conference was followed by a meeting of self-organised regions and networks of regions including ERIAFF, the European Regions of Gastronomy, Euromontana and the Vanguard Initiative⁵. Participants discussed specific thematic areas that emerged from previous events, specifically system innovation for sustainable food production, consumption, marketing and culture; system innovation for nutrition and health in agri-food; and system innovation for high-tech farming (including horticulture). Other issues discussed were possible funding mechanisms for the partnerships, investment opportunities for pilot projects, and potential collaboration with other already

⁵ <http://www.s3vanguardinitiative.eu/> (accessed in May 2017)

existing initiatives. The results of the discussions were presented to the European Commission, which appreciated input from the regions and stressed the importance of political and economic commitment of the regions as well as a need for a long-term vision and proactive attitude. A number of informal meetings among the regions, networks and associations continued between July and December 2016.

In December 2016, the Kick-off event of the Thematic Smart Specialisation Platform on Agri-Food took place in Florence to inaugurate the operational phase of the S3P Agri-food.⁶ The event, co-organised by the European Commission and the region of Tuscany, had ample participation of representatives of regional and national authorities, as well as of regional actors including clusters, businesses, academia, cities, etc. They discussed specific joint investment opportunities in specific thematic areas, and came to agreements on working arrangements for the preparation of thematic partnerships of shared interest such as traceability and big data, high-tech farming, or food, gastronomy and new technologies. In addition, the regions took steps towards the creation of project investment pipelines.

⁶ Further information about this meeting can be found here: <http://s3platform.jrc.ec.europa.eu/-/kick-off-event-of-the-smart-specialisation-platform-on-agri-food?inheritRedirect=true&redirect=%2Fagri-food> (accessed in May 2017)

5 Consolidation of the Thematic Smart Specialisation Platform on Agri-food

As stated above, the objective of the S3P Agri-food platform is to help regions develop trans-regional collaboration in agri-food, specifically by promoting the formation of partnerships for trans-regional cooperation in agri-food value chains, and helping participants exploit already existing sources of funding, such as the European Regional Development Funds (ERDF), national and regional public funds, and private resources, thus enabling them to spread out their investment risks and increase their profits.

One of the greatest benefits of the Thematic Smart Specialisation Platform on Agri-food is the inter-regional and intra-regional cooperation in which regions collaborate on common objectives. In addition, regions can share resources to achieve a joint goal with greater efficiency. The S3P Agri-Food platform has the potential to improve the competitiveness, resiliency and sustainability of the agri-food sector by promoting a shared value economy.

The S3P Agri-food platform is based on a bottom-up approach and is driven by the regions that wish to foster inter-regional cooperation based on matching their smart specialisation priorities related to agri-food. It is thus co-developed and co-led by proactive regions, with the active participation of business organisations, research institutions, academia and civil society. The S3P Agri-food platform is comprised of thematic partnerships that are proposed and coordinated by self-organised regions. Regions benefit from participating in this bottom-up process because they can bring their own ideas to the discussions.

5.1 The main steps in the working process

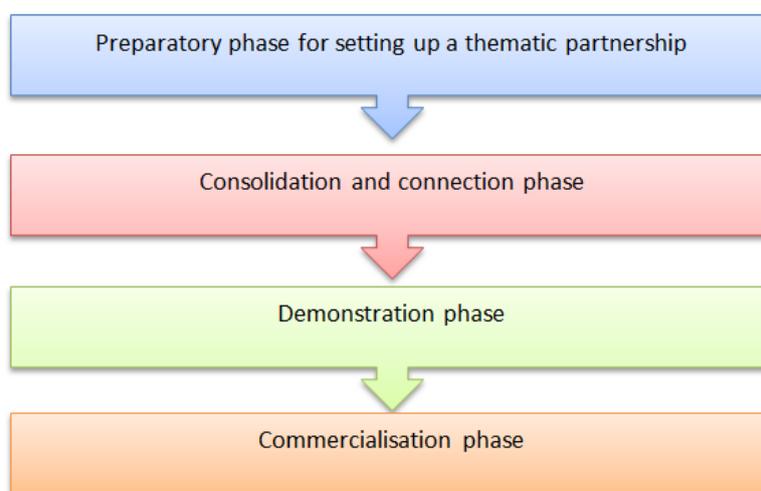
Four general steps can be proposed for those interested in developing partnerships for trans-regional collaboration on smart specialisation priority projects. They were used for this specific Thematic Smart Specialisation Platform on Agri-food, and also by the Industrial Modernisation and Energy thematic smart specialisation platforms, with good results. Drawn from the four-step Vanguard Initiative methodology,⁷ these steps are illustrated in figure 1 and described below in the context of the development of the S3P Agri-food platform, as an example that can be adapted to other smart specialisation priorities as well.

⁷ The Vanguard Initiative methodology follows a four-step process based on the following stages:

- 1) Learning by mapping the potential of regions in emerging value chains and identifying pivotal actors;
- 2) Connecting by 'matching' the actors;
- 3) Demonstrating by showcasing solutions that bring applications closer to market;
- 4) Commercialising by co-investing in commercial roll-out

<http://www.s3vanguardinitiative.eu/> (accessed in May 2017)

Figure 1 Steps in working process



5.1.1 Preparatory phase for setting up a thematic partnership

The three general objectives of the first stage are: (1) to propose a new thematic partnership related to agri-food smart specialisation priorities, (2) to identify potential partners for co-investment and collaboration projects within the priority domains, and (3) to carry out exploration and mapping activities to identify capabilities, common ambitions, challenges and gaps.

During this first, preparatory phase, the regions initiate a new thematic partnership for trans-regional collaboration in agri-food smart specialisation domains.⁸ The regions that have defined one or more smart specialisation priorities related to agri-food domains and are eager to set up inter-regional cooperation linked to this priority propose specific thematic areas by submitting their proposal. The proposals are generally submitted by a minimum of two regions interested in coordinating or leading one specific thematic partnership. Other regions can join thematic partnerships proposed by coordinating regions as participating regions or co-leading regions. Regions can participate in different thematic partnerships and be coordinating and/or participating regions.

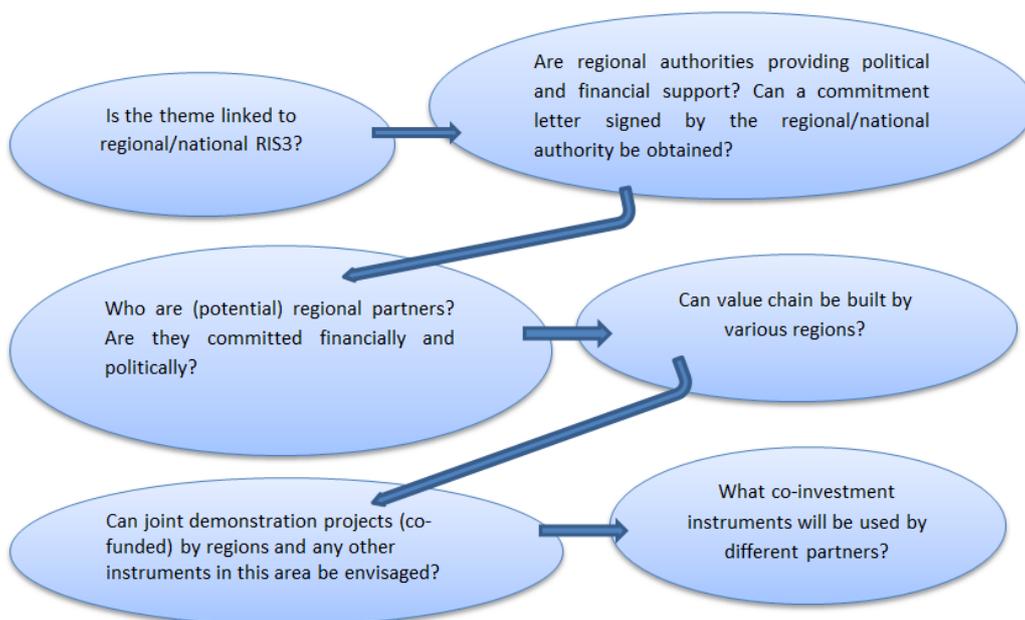
The regions that are interested in joining specific thematic partnerships are encouraged to get in contact with the coordinating/leading regions. Before doing so, they need to consider whether the theme is linked to their RIS3 strategy, whether they have dedicated resources for co-investment to implement agreed activities and whether collaboration is of mutual benefit for participating regions. At the same time, they need to have a clear idea of what they want to achieve from the partnership and collaboration, what exactly they are bringing in and how they see that their region's activities fit into their value chain and the value chain possibly developed by participating regions.

Local stakeholders such as businesses, industry, clusters, and knowledge institutions who are interested in activities of thematic partnerships can participate directly in existing thematic partnerships as long as they can contribute to the development and delivery of the projects. They need to connect directly with the coordinating regions and receive information on the conditions and format of their possible participation.

⁸ The Call for Expression of Interest is available at S3 Platform website: <http://s3platform.jrc.ec.europa.eu/agrifood-expression-interest> (accessed in February 2017)

Regions are encouraged to explore various sources of funding to support their participation in the S3P Agri-food platform, to coordinate/lead a thematic partnership and finance the development and execution of joint inter-regional projects. Financial sources include but are not limited to ERDF, national, regional, public and private funds. For example, one possible funding source can be ERDF “Technical Assistance” and the ERDF fund for the thematic objective 1 – Research and Innovation. Also, it is essential to get industry and businesses involved from the very beginning in the definition of the thematic partnership, roadmaps and pilot projects in order to trigger private investments.

Figure 2. Key questions for lead/coordinating regions and countries



Depending on the level of political and financial commitment as well as the maturity of the proposal in the specific thematic area of the S3P Agri-food, there is a possibility provided by DG REGIO to supply expert advice and support services in developing a scoping note.⁹ Specifically, targeted support services can be provided to the lead-region(s) whose proposals are the most advanced in terms of:

- the relevance and importance of the proposed thematic area for agri-food (transformative and innovative idea, clear added-value, sufficient granularity, business interest, synergies, etc.),
- the level of ambition and commitment (political and financial) expressed by the leading/coordinating and participating region(s) for the envisaged collaboration,
- leadership: two or more regions have committed to be lead-regions,
- the number of regions involved and geographical balance,

⁹ The scoping note is a reference document prepared by the thematic partnership. The purpose of the scoping note is to identify and specify an area for co-investment, with high potential business and societal return at the regional and European level, leveraged through combining smart specialisation investments across committed regions and bringing their cluster and innovation actors together. The scoping note therefore focuses also on the interested partner-regions.

- the envisaged involvement of stakeholders in academia, local, regional and national government, civil society and industry, including cluster organisations and business networks,
- links to RIS3 priority areas, and
- openness towards other regions.

The expert provides advice and support services in developing a scoping note for a proposed activity and helps to identify other possible regional partners as well as to map European networks and actors. In addition, the expert can help the thematic partnership to:

- interact with interested and potential regions and regional stakeholders in order to establish trustful relationships among them and ensure significant advances of the collaboration,
- provide support to partner regions on the mapping process including the development of the methodology, development of mapping survey and analysis of the questionnaires, and
- provide support in drafting the proposals for the management structure of the partnership, that is, possible governance models.

During this first phase, the coordinating/leading region(s) together with their partnering regions prepare the first drafts of the scoping notes (table 3). The scoping note is a reference document prepared by the thematic partnership that defines the vision on opportunities in specific domains for interregional cooperation. The purpose of the scoping note is to identify and specify an area for co-investment, with high potential business and societal return at the regional and European level, leveraged through combining smart specialisation investments across committed regions and bringing their cluster and innovation actors together. The scoping note supports the process of articulating the common understanding of the opportunities and challenges in cooperation and co-investment in the targeted area, and it gradually develops into a comprehensive reference document during the second, consolidation and connection phase.

Table 3. Possible content of the scoping note

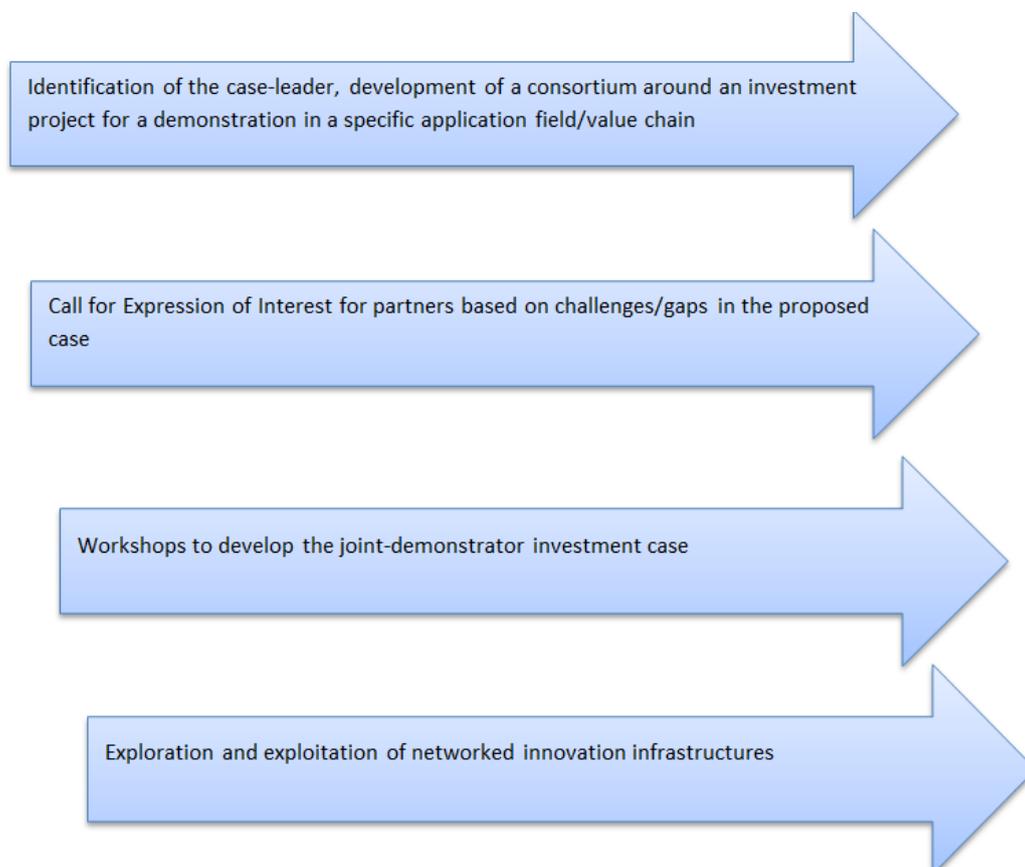
- the context: links to smart specialisation and description of specific interest expressed by the regional authorities and regional actors in Quadruple Helix
- the scope: technologies/innovation areas
- relevant actors in the existing value chains
- assets, potential, actors and capacities in coordinating/leading regions and partner regions, e.g. technology, infrastructure, services, testing facilities, etc.
- market gaps and market failure
- relevant (existing or potential) consumers and users
- common ambitions in developing joint demonstrators, e.g. articulate specific applications including technology, infrastructure, services and time-to-market
- joint action plan/ roadmap
- guiding principles for collaboration, e.g. co-leadership, governance, communication, project management, etc.

5.1.2 Consolidation and connection phase

During the second phase, two principal activities are carried out: (1) consolidation of the scoping note, and (2) matchmaking. Firstly, the thematic partnerships consolidate their scoping notes and establish their work plans with a coalition of regions. While a scoping note supports the process of articulating the common understanding of the opportunities and challenges in cooperation and co-investment in the targeted areas, a consolidated scoping note also includes the description of the governance structure, the overall management and communication within the partnership, as well as roles of facilitators/project manager(s). Secondly, the partnerships organise and participate in matchmaking events with the objective of identifying co-investment projects. The matchmaking events aim at a broad range of innovation actors including businesses, industry, research and technology organisations and others.

During the connection phase, the partnerships further define and specify the roadmaps as well as discuss and agree on initial 'flagship' pilot projects. Thus, the first demonstration cases are jointly developed among the partner regions with the support of facilitators/project manager(s) and regional stakeholders including innovation agencies, cluster organisations, industry and business, etc. At this stage, it is advisable to appoint facilitators with deep knowledge of the topic and market opportunities who can facilitate communication and collaboration among partners. Figure 3 illustrates possible workflow for the development of joint demonstrators.

Figure 3. Workflow for the development of joint demonstrators



During the second phase, it is crucial for the regional authorities to obtain practical commitment from the regional stakeholders and innovation actors. Engagement of experts from cluster organisations, industry and business in the preparation of a joint demonstration in identified areas for co-investment is also essential at this stage.

5.1.3 Demonstration phase

During the demonstration or pilot production phase, (1) fundable projects and business plans are prepared, (2) financial instruments are defined and investments put in place, and (3) Joint Demonstrations are readied. Business planning, definition of the financial tools as well as standardisation are activities that take place during this third phase. The projects that were discussed and pre-prepared during the previous phases are now structured and supported with a business plan for the operation of the Joint Demonstrations. Also, the financial instruments and funding of Joint Demonstrations are decided and put into place by the participants. It is thus the responsibility of the partners to look for funding opportunities and explore synergies among various funding sources.

5.1.4 Commercialisation phase

After pilot production and demonstration, the pilots move into the commercialisation phase and are introduced onto the market. During the market expansion phase, new products and/or services are brought to international markets, and thus contribute to generating revenue and to increasing employment in the regions, and ultimately to enhancing the competitiveness of the EU's economy.

5.2 Agri-food thematic smart specialisation partnerships

By May 2017, 12 proposals for thematic partnerships had been submitted by 13 regions and one member state (table 4).

Table 4. Proposals for the development of Agri-food thematic smart specialisation partnerships received by May 2017

Thematic area	Coordinating/leading region(s), (Country)
Traceability and big data	Andalusia (Spain)
Better food value chains, more resilient, transparent and competitive	Castile and León (Spain)
Applying spatial data in data-driven food production and policy-making	Estonia
Smart sensor systems 4 agri-food	Flanders (Belgium)

Sustainable development of production field crops	North East region (Romania)
Food, Gastronomy and New Technologies, previously entitled: Rural diversification and Smart Agri-Food destinations	Region of Central Macedonia (Greece) and Noord-Brabant (The Netherlands)
Public meal as a driver of sustainability, health and innovation in the agri-food chain	Skane (Sweden)
Nutritional quality of mass catering	South Ostrobothnia (Finland)
High-tech farming	Tuscany (Italy)
Vanguard Initiative Bioeconomy Pilot - Agri-Food	Vanguard Initiative (Italy and The Netherlands)
From farm to fork	West region (Romania)

Four partnerships demonstrated a good level of maturity:

- Smart sensor systems 4 agri-food, proposed by Flanders, Belgium
- High-tech farming, proposed by Tuscany
- Traceability and Big Data, proposed by Andalusia
- The Vanguard Initiative Bioeconomy Pilot - 2 Joint demonstrators: (1) Food and feed from agrofood waste and (2) Food and feed ingredients from algae, proposed by the Vanguard Initiative

A total of 41 territorial administrative units have committed to or expressed interest in participating in one of four partnerships. Some of these participate in more than one partnership. In particular, 12 administrative units take part in the Smart sensor systems 4 agri-food partnership, 14 in the High-tech farming partnership, 18 in the Traceability and big data partnership. The regions that participate in the Vanguard Initiative Bioeconomy Pilot, 2 Joint demonstrators focused on agri-food are: 8 in the food and feed from agrofood waste partnership, and 6 in the food and feed ingredients from algae partnership. The majority of these units are located in Italy (7), Spain (6), Netherlands (6) and France (4). Furthermore, one non-EU region from Turkey (Middle Black Sea Region) is taking part in the Traceability and big data partnership.

As of the first half of 2017, the S3P Agri-food platform has been focusing on the consolidation and the formalisation of the workflow and the thematic partnerships, preparation of regional scoping notes (working documents),¹⁰ mapping and identification of complementarities among the regions participating in the partnerships, matchmaking of players as well as the development of investment plans for joint projects. The first partnerships have consolidated their scoping notes and identified complementarities among other regions. They have defined their roadmaps and prepared for up-coming events and workshops.¹¹

¹⁰ An extensive explanation is provided in section 5.1.1 and table 3.

¹¹ For example, the Smart Regions 2.0 Conference taking place on 1st and 2nd June 2017 provides the opportunity to national and regional authorities participating in thematic platforms to share their experience and discuss specific issues related to their joint projects. More information at <http://www.cvent.com/events/smart-regions-2017/event-summary-b3ab1cc6b3314d33a9b5b3d647f69d93.aspx> (accessed in May 2017)

6 Cases of Smart Specialisation Agri-food thematic partnerships

6.1 High technology farming (Leading region: Tuscany)

In the context of the Thematic Smart Specialisation Platform on Agri-food, the Region of Tuscany has initiated a partnership on High Technology Farming. Several other EU regions and countries, among them Galicia, South Holland and Estonia, have joined the initiative. The Tuscany region acknowledged that this is an ongoing process that started with the preparation of an Expression of Interest and continued with the consolidation of the Scoping Note, which is a reference document prepared with the purpose of identifying and specifying areas for co-investment. The steps in this process are the mapping and identification of complementarities among the regions participating in the partnerships, matching of players, and development of investment plans for joint projects. The Region of Tuscany has promoted the partnership because it believes that shifting towards Precision Farming is of the utmost importance for its agricultural system. In general terms, by participation in the Thematic Smart Specialisation Platform on Agri-food, the Tuscany Region seeks to enhance its position within the global value chains in the area of high technology farming, but there are many additional positive implications such as improving its administrative capacity, creating synergies with other territories, and improving the focus of programmes and projects. The aim of the project is to meet the needs of end-users/companies. It is thus important to ensure that the project will bring added value to the industrial and entrepreneurial base within the participating regions, by identifying assets and needs of end-users, who in this specific context are farmers, breeders and silviculturists, and of companies. To this end, Tuscany conducts a thorough entrepreneurial discovery process to explore and understand regional capacities, potential and opportunities in high technology farming. In addition, Tuscany and the partner regions and countries are mapping formal and informal networks, their positions within global value chains, flows of goods and services, and cooperation in R&I projects. Based on the data collected, the partners will identify collaborative opportunities for co-investment.

The discussion about inter-regional shared investments strengthens the networking among innovation stakeholders. At the same time, inter-regional planning and road-mapping enhance opportunities for further collaboration among regions and investment pipelines.

Regarding institutional change, participation in the Thematic Smart Specialisation Platform on Agri-food initiated organisational change at the level of regional Ministries and behavioural change among regional officers. Communication on smart specialisation among the regional Ministries and collaboration among different operational programmes was improved in Tuscany after the region undertook a coordinating role in the High Technology Farming partnership and organised the Kick-off event of the Thematic Smart Specialisation Platform on Agri-food in Florence in 2016. This led to more focused connections in the operational phases, for example, better integration and complementarities in European Agricultural Fund for Rural Development (EARDF) and ERDF operations, and more focused discussion in the RIS3 regional coordination task force. The Tuscany RIS3 governance is based on two entities, an internal coordination task force and an external observation group formed of the main regional stakeholders in innovation. In both entities, joint investment opportunities provided by inter-regional cooperation are examined and discussed, then synergies within regional programmes are

taken into consideration and integrated initiatives are fostered. Similarly, regional officials working in the agricultural department have had the chance to explore the specific opportunities offered by the smart specialisation strategy roadmaps and related programming and thus contribute in a more structured way to trans-regional cooperation in smart specialisation at European levels. Five value chains have been proposed within this context to cover different agricultural areas and applications:

- Tree nurseries, viticulture, fruit (relatively more intensive)
- Outdoor livestock
- Indoor livestock
- Arable lands, cereals, vegetables (outdoor)
- Protected cultivation (different types of greenhouses, highly intensive)

Participating regions: Galicia, Extremadura, Gelderland, Central Macedonia, Marche, West Macedonia, South Holland, Limburg, North East Romania, East Sweden, Emilia-Romagna, East Sweden, Weser-Ems, Northern Ireland, Estonia, North Holland, Pays de la Loire, South Ostrobothnia, Veneto, Brabant, Basilicata, and Flanders.

6.2 Traceability and Big Data (Leading regions: Andalusia and Emilia-Romagna)

Andalusia contributed significantly to the creation and the development of the Thematic Smart Specialisation Platform on Agri-food from the perspectives of the thematic partnership on Traceability and big data. For Andalusia, it is imperative to converge regional R&I interests with the national and EU priorities not only in terms of principles, indicators and objectives but also in terms of real harmonisation and coordination to increase innovation potential and leverage a synergetic effect of funding. The Traceability and big data thematic partnership aims at encouraging, motivating and facilitating the incorporation of new digital technologies and data applications including big data, open data, biotechnologies, and traceability in agri-food sector value chains. How can we bring together data that we generate at the regional level? What standardisation is needed? How can we capture, assemble and jointly analyse big data and make sense of them at the EU level?

The co-creation process and inter-regional collaboration offer an opportunity for stakeholders in Andalusia as well as those in partner regions and countries to expand their research and business opportunities, and improve their position within the knowledge and global value chains. Although initial identification and involvement of partner regions was not straightforward, mainly for political and economic reasons, the theme of traceability and big data attracted the interest of regions and countries, and this interest was consequently translated into more specific collaboration on the partnership reference document, the scoping note, which describes and specifies an area for co-investment, with high potential business and societal return at the regional and European levels. As noted above, the design and development of the smart specialisation Agri-food thematic partnership Traceability and big data follow a four-step process (learn – connect – demonstrate – commercialise). Curiously enough, in the inception phase, the most interested actors were business clusters, universities or research centres, which had no or only symbolic links with their corresponding public bodies managing the regional smart specialisation strategies. However, these local actors, also with help of Andalusia, have been able to engage their regional authorities and seek their political and

financial commitment. Involving companies and industry from the very beginning in fields as diverse as agri-food and new technologies is a strategic objective, given that these actors will enable trans-regional projects to happen. Activities of the thematic partnership focus on three specific topics and cross-cutting one:

- Specific topic 1: Traceability and Big Data in the “Lifecycles of the value chain”.
- Specific topic 2: Traceability and Big Data in the “Smart monitoring of the value chain to improve the overall competitiveness of the agri-food sector”.
- Specific topic 3: Traceability and Big Data to “incorporate consumer experience and the different operators in the food chain in decision-making processes”.
- Cross-cutting topic: Open data, interoperability, data governance and information security, cyber security.

Participating regions: Emilia-Romagna, Friuli-Venezia-Giulia, Sardinia, Extremadura, Navarra, The Basque Country, Galicia, Limburg, Pays de la Loire, Bretagne, South Savo, South Ostrobothnia, Satakunta, Central Macedonia, Hajdú-Bihar, South Transdanubia and Middle Black Sea Region (Turkey).

6.3 European agri-food and smart electronic systems (Leading region: Flanders)

The thematic partnership aims at setting up a platform between agri-food- and electronic/IT cluster organisations, relevant research and technology organisations (RTO’s) and other related stakeholders, to lower the barriers for agri-food companies to access and implement the newest smart electronic systems and to enable the Internet of Things (IoT) transition of the agri-food industry. The collaboration between the clusters and RTO’s will create a trust zone between the involved sectors. This will facilitate the exchange of know-how and will accelerate the introduction and integration of smart electronic systems and embedded technology solutions in the agri-food industry in a broad sense (from multinationals to locally operating SME’s).

The agri-food industry has specific requirements for smart food sensors and for dealing with the related IT challenges of cloud- and big data management. By creating this envisaged European IoT-based agri-food partnership, the stakeholders involved will gain a better understanding of each other’s possibilities, needs and requirements regarding these technologies. Four challenges have been identified and will be tackled first within the partnership:

- 1st Challenge: Matching the needs of agri-food companies with what technology suppliers can offer, and building a trust zone between both sectors, for example, through demonstrations and living labs (‘Seeing is believing’).
- 2nd Challenge: Exploring and demonstrating the integration of sensors, techniques etc. in the production line, which is often a harsh production environment
- 3rd Challenge: Stepwise approach towards digitalisation through the creation of an IoT and big data environment in agri-food companies, starting with investments in IT solutions such as data acquisition platforms and data analysis software, as well as in data analysts who are capable of handling food-related issues.
- 4th Challenge: Set up or adaptation of education and training programs to re-orient the organisations and their employees. Dedicated programs on food science and data science will be initiated to meet the demands of this industry.

These four challenges will be tackled by following the 'Funnel towards sector or community oriented validation model'. The aim of the 4-step model is to increase awareness, explore application, and implement existing, new and upcoming smart electronic systems for the agri-food industry:

1. Awareness: This is a continuous process. Activities: identify intermediate players, cluster organizations and RTOs; convince them to join forces; identify top players in agri-food and IT-technology; hold frequent meetings and activities.
2. Platform creation: Set up a forum that offers a trust zone between the involved sectors and is managed by a cross-sectorial team with a centralized contact point. Activities: set up living labs as knowledge transfer and demonstration vehicles; identify needs and opportunities for the agri-food industry; keep informed about emerging sensor innovations; provide advisory services; match partners; conduct thematic seminars, workshops, training courses and demonstrations.
3. Evaluation and validation: This collaborative process among all stakeholders provides insight into the specifications needed for industrial applications. Activities: perform validation through living labs or other methods; knowledge centres develop technology to a level that technology suppliers and integrators can then bring forward to implementation for end users; convince end users (agri-food companies) to move towards the implementation phase.
4. Implementation: System integrators play an important role in this step as they forge the links from prototype to industrial process. Knowledge partners will give advice and further support. Activities: knowledge partners will obtain licensing; new partners will be recruited for newly defined validation tracks (reinforcing the funnel).

Participating regions: Wallonia, Eindhoven, Lower Saxony, North-Rhine Westphalia, Lombardy, Central Transdanubia, Navarra, Galicia, Asturias, Auvergne-Rhône-Alpes.

6.4 Bioeconomy Pilot - Agri-Food (Leading regions: Lombardy and Randstad)

The Vanguard Initiative - New Growth through Smart Specialisation - is driven by a political commitment made by some 30 European regions to use their smart specialisation strategies to boost new growth through bottom-up entrepreneurial innovation and industrial renewal in European priority areas. The aim of Vanguard is to focus on pilots and large-scale demonstrators where synergies between different regions are necessary to overcome the substantial size of the challenge and help the deployment of new technologies with a high technology readiness level (TRL) usually above 5. The Bioeconomy Pilot concerns the implementation of synergies in new biobased value chains that are cross region, based on their smart specialisations. Its main objective is to develop new integral biobased value chains and new connections between sectors such as chemistry, agriculture, wood & paper, cosmetics, and energy, leading to new interregional business opportunities and co-investment through interregional cooperation and partnerships for co-investment, exchange of information and ideas.

The Bioeconomy Pilot is currently focusing on seven cases for Joint Demonstration, two of which deal with agri-food issues:

1. Food & Feed from Agrofood Waste

Challenge: Extracting functional foods and feed from different waste streams, such as fish, domesticated animals, cereals, fruit, and vegetables.

Participating regions: Scotland (leading), South Netherlands, Flanders, Wales, Haute de France, Navarra, Asturias, Lombardy.

2. Food and Feed Ingredients from Algae

Challenge: Extraction of high value products from microalgae for the food & feed sector.

Participating regions: Asturias (leading), Wallonia, Galicia, Scotland, Navarra, Lombardy.

7 Overlapping or complementarity with other EU Platforms?

Since its inception, the S3P Agri-food platform was presented as broad and pan-European, with the aim of complementing other existing platforms and initiatives at the EU level. In fact, the S3P Agri-food platform is supportive of other initiatives and does not overlap their objectives and methods. The S3P Agri-food platform has very concrete objectives that differ significantly from those of other EU initiatives and platforms: it seeks to create an investment pipeline for mature projects in new growth areas linked to regional/national smart specialisation strategies, by providing tailored advice and helping regions establish links with business and research communities.

Other EU Platforms and initiatives play complimentary or supporting roles. For example, the Interreg Europe programme helps regional governments to develop and deliver better policies. It covers different policy areas, divided into four Interreg Platforms on Policy Learning: Research and innovation, SME competitiveness, Low-carbon economy, and Environment and resource efficiency. These sub-platforms can be defined as hubs for information and interaction for a continuous exchange of knowledge in order to improve the effectiveness of regional funds and regional development policies.¹² Both the S3P Agri-food platform and the Interreg Platform on Policy Learning promote interregional collaborations to avoid duplication of efforts across the EU and enable regions to deliver concrete project initiatives and to sustain a more policy-focused approach. However, Interreg Platform on Policy Learning aims specifically at policy learning, while the S3P Agri-food platform aims at co-investments in joint trans-regional projects, so that regions use and combine different regional, national and EU investment instruments, such as the European Structural and Investment Funds (ESIF), COSME, and Horizon2020.

Other European partnerships, platforms and initiatives supported by EU institutions are:

- The European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI). It was promoted in 2012 to provide proposals and suggestions to ensure a steady supply of food, feed and biomaterials. Specific actors such as farmers, advisors, researchers, and businesses work together in multi-actor projects to find a solution for a specific issue or develop concrete opportunities.¹³
- European Technology Platforms (ETPs). The ETP Food for Life Vision for 2020 and beyond was launched in Brussels in July 2005. The objective of the ETP is to identify the needs for an effective integration of strategically-focused, trans-national, concerted research in the nutritional, food and consumer sciences and food chain management. The aim is to deliver innovative, novel and improved food products for, and to, national, regional and global markets in line with consumer needs and expectations. In 2014, the Platform launched the implementation plan of its Strategic Research and Innovation Agenda for the food and drink industry. The priorities include the promotion of informed consumer choices, the delivery of strategic solutions for safe food and healthy diets for all, and the creation of opportunities for a sustainable and competitive agro-food industry through innovation in food processing.¹⁴
- The European Institute of Innovation and Technology (EIT). It works to increase European sustainable growth and competitiveness and reinforce the innovation

¹² <http://www.interregeurope.eu/policylearning/> (accessed in February 2017)

¹³ <http://ec.europa.eu/eip/agriculture/> (accessed in February 2017)

¹⁴ <http://etp.fooddrinkeurope.eu/> (accessed in February 2017)

capacity of EU member states. The EIT is the first EU initiative to fully integrate all three sides of the Knowledge Triangle (higher education, research and business) through the so-called Knowledge and Innovation Communities (KICs). In 2016, a new KIC "Food4Future – Sustainable Supply Chain from Resources to Consumers" was denominated. This project addresses significant societal challenges and contributes to the delivery of the Europe 2020 agenda and is complementary to the EIP "Agricultural Productivity and Sustainability".¹⁵

Furthermore, the Framework Programme 6 (FP6) and Framework Programme 7 (FP7) supported various networking initiatives which helped bring together industry and farmers from different countries, creating a number of collaborative platforms and networks. They designed strategic research agendas and inspired innovation on the ground, among them the Era-Net networks in Food, Agriculture and Fisheries.¹⁶

In addition, the Joint Programming Initiatives are attempts to pool national research efforts to optimise use of Europe's public R&D expenditure. In particular, the Joint Programming Initiative on Agriculture, Food Security and Climate Change (FACCE-JPI) brings together 22 countries that are committed to building an integrated European Research Area addressing the interconnected challenges of sustainable agriculture, food security and impacts of climate change. FACCE-JPI provides and steers research to support sustainable agricultural production and economic growth, to contribute to a European bio-based economy, while maintaining and restoring ecosystem services under current and future climate change. It aims to do so with a strong transdisciplinary research base, encompassing economic and social aspects in addition to scientific ones, and with a creative approach towards the alignment of national programmes and the input of multiple actors and stakeholders.¹⁷

The most recent of these initiatives, the Partnership for Research and Innovation in the Mediterranean Area (PRIMA), was approved on April 26, 2017, by the COREPER, the EU's Committee of Permanent Representatives, on the basis of an agreement between the Maltese presidency and the European Parliament. PRIMA is a public-public partnership, expected to be operational in early 2018 after the formal adoption of the decision by the European Parliament and the Council, involving 11 EU member states: Croatia, Cyprus, Germany, Greece, France, Italy, Luxembourg, Malta, Portugal, Slovenia and Spain, and eight non-EU countries: Algeria, Egypt, Jordan, Israel, Lebanon, Morocco, Tunisia and Turkey. This initiative has been set up under article 185 of the Treaty on the Functioning of the European Union (TFEU), which allows member states to implement joint programming of research activities that receive EU funds from the framework programme of research. The focus will be on two key socio-economic issues, food systems and water resources, with the main objective of integrating small-sized projects into one coherent large-scale research programme in the long run.

The EU's participation includes a contribution of 220 million euros from the "Horizon2020" Programme, which is the EU Framework Programme for research and innovation, while participating countries have committed to providing a total co-funding of 200 million euros over 10 years.

Thus, it is clearly evident that many different research and development programmes on food and agriculture are promoted and supported by European Union institutions. Central

¹⁵ <https://eit.europa.eu/eit-community/eit-food> (accessed in February 2017)

¹⁶ https://ec.europa.eu/research/fp7/index_en.cfm?pg=eranet-projects&mode=keyword#results (accessed in February 2017)

¹⁷ <http://www.faccejpi.com/> (accessed in February 2017)

and regional governments need to be updated on the opportunities emerging from this complex framework. For this reason, close collaboration between universities, research centres, public institutions and private sector, and effective stakeholder engagement are desirable for discovering real innovation opportunities.

8 Policy recommendations

The Thematic Smart Specialisation Platform on Agri-food can generate new research and business opportunities for regional stakeholders, but in order to be effective, the thematic partnerships need to be fully endorsed by regional authorities. Participation in the S3P Agri-food platform helps regions foster strategic interaction in their region and across borders. In addition, regional authorities benefit because the partnerships formed in their regions are helped in developing investment projects of better quality than otherwise possible, within a shorter timeframe. Below, we outline some policy recommendations for regions that are motivated to take part in this new and exciting trans-regional European initiative:

- Regions should explore and exploit opportunities for trans-regional cooperation in smart specialisation areas that they have identified to strengthen their position in international markets, gain necessary research capacity, join or develop new global value chains, etc.
- Regions need to continue with the entrepreneurial discovery process as well as analysis and mapping of activities, capacities and needs of regional actors, because these are preconditions for finding partners in other countries and regions.
- Regions should map actors and relevant stakeholders as well as analyse their position in global value chains relevant to their smart specialisation domains, to better identify collaboration opportunities that can consequently lead to technological upgrading.
- Regions should better explore and exploit synergies among existing funding such as ERDF, national and regional public funding, and private resources, and thus share investment risks and increase gains.
- Regions are welcome to self-organise themselves in the S3P Agri-food platform and its thematic partnerships because they are co-developed and co-led by proactive regions. This ensures active participation and commitment of business organisations, research institutions, academia and civil society.
- The S3P Agri-food platform is not limited to networking activities. Coordination/leading a thematic partnership and/or participation in a thematic partnership sometimes requires a change in the organisations' behaviour, practices and procedures. In fact, the S3P Agri-food platform is based on bottom-up approaches and is composed of self-organised regions willing to co-invest in joint trans-regional projects.
- Regions that are pro-active and interested in proposing and coordinating thematic partnership should bear in mind some criteria that can distinguish the maturity of their proposal from others, such as the technical quality of the proposal, the level of political and financial commitment, the fact of having two or more regions committed as coordinating regions, or the involvement envisaged with industry stakeholders, etc.
- Regions that are interested in joining a specific thematic partnership of the S3P Agri-food platform need to consider whether the theme is linked to their RIS3 strategy, whether they have dedicated resources for co-investment to implement agreed upon activities, and whether collaboration is of mutual benefit to all participating regions. At the same time, they need to have a clear idea of what

they want to achieve from the partnership and collaboration, what exactly they are bringing in and how they see that their region's activities fit into their value chain, possibly developed by participating regions.

- The regions have to ensure strong political and financial commitment. At the beginning, it can be difficult to obtain political and financial endorsement from regional authorities. It can be the case that local government and companies do not want to make extra effort and explore opportunities for international cooperation because national funds can be more easily accessible. Therefore, regions should explain to local actors the strategic importance and advantages of being international.
- It is crucial for the partnerships to set up a good governance system that effectively achieves the objectives of the partnership. For example, a team of people in charge of the thematic partnership should be ideally composed of a project manager who oversees all the managerial work of the partnership, a technical expert in the specific thematic field, and a facilitator/broker who is able to commit and inform all stakeholders involved, including local/national public administration and regional stakeholders (across quadruple helix).
- The regions involved in the S3P Agri-food platform need to allocate the necessary human resources for the management and coordination of the partnerships. A good mix of skills is a precondition for successful execution of the projects. As the thematic partnerships have a very strong international component, not only technical but also good communication and language skills are essential prerequisites. As the working language is English, members of the taskforce teams should have a good working knowledge of this language.
- Regions can identify and engage with local partners in other regions. Local actors including business clusters, universities or research centres, which have no links with their corresponding public body involved in the RIS3 or specific topic, can show interest in the partnership. They can involve their regional authorities at the earlier stages of the setting up of the partnership or they can join the partnership on their own initiative at the later stage when specific projects are defined.
- In some regions, organisational change needs to take place in order to integrate R&I policies (smart specialisation) and agriculture policies. In some regions, different barriers exist among the ministries responsible for the implementation of RIS3 strategies and those implementing agri-food policies.
- There is a clear need to collaborate with universities, research centres and innovation brokers. At the same time, it is essential to get strong commitment from the industry and key innovation players. To this end, it can be more important to focus on "challenge driven" pilot projects (that is, a real bottom up approach, because it starts from real needs of the involved stakeholders) than on those that are "technology driven".
- It is important to have innovation brokers and scientific facilitators at the regional level who are able to disentangle information on different EU programmes and initiatives, and focus attention on bottom up projects that lead to real investment opportunities.
- The participation in the S3P Agri-food thematic partnerships requires an ongoing mapping of EU funded programmes for research and development in food and

agriculture. The availability of different frameworks can be an opportunity if member states and regions are able to align their smart specialisation priorities with both EU and national programmes. An alignment between Horizon2020, national research programmes and ESIF funds managed at the regional level can help unleash the potential of innovation and specialisation at the transnational level.

- At the local level, there is a clear need for training of administrative staff involved in the EU programmes, initiatives and policies. Part of this training can include short periods of staff exchange among regional offices and presentations on the best practices adopted by other regions. This education is important to help administrative staff and officers to think beyond their daily routine and to get the most out of the entrepreneurial discovery process. At the transnational level, scientific facilitators can help regional officers, many of whom may come from different educational backgrounds, to understand the potential of collaborations with other regions.
- Regions coordinating and/or participating in the thematic partnerships of the S3P Agri-food platform need to bear in mind that the process from proposing a theme for the partnership to the actual execution of a joint interregional project is long and requires dedication and resources. The process starts with the preparation of the proposal for thematic partnership and continues with the preparation of the scoping note, mapping and identifying of complementarities among the regions taking part in the partnerships, and matching regional players. The process culminates with the development and execution of the investment plans for joint projects.
- It is important to invest in communication to provide effective information about the potential of trans-regional collaboration and disseminate the results of joint trans-regional projects.

9 Conclusions

The aim of the Thematic Smart Specialisation Platform on Agri-food is to bring together and support regional partnerships for trans-regional cooperation to boost investments in the agri-food value chains using existing funding instruments. The S3P Agri-food platform has very concrete objectives that differ significantly from those of other EU initiatives and platforms: it seeks to create an investment pipeline for mature projects in new growth areas linked to regional/national smart specialisation strategies, by providing tailored advice and helping regions establish links with the business and research communities.

While the European Commission does not provide direct financial support to the thematic partnerships, it does offer methodological support and targeted services in form of expertise, advice and annual events. Regions are encouraged to explore possible sources of funding to support their participation in the S3P Agri-food platform, to coordinate or lead a thematic partnership and finance the development and execution of joint inter-regional projects by the use of ERDF, national, regional, public and private funds. It is essential to get industry and businesses involved from the very beginning in the definition of the thematic partnership, roadmaps and pilot projects so as to trigger private investments and ensure the sustainability of the projects.

The authors have pointed out how regions gain from the significant advantages of participation in S3P Agri-Food platform. Firstly, inter-regional and intra-regional cooperation among different actors enables joint efforts around synergies and common goals as well as the sharing of resources to achieve the same goal with greater efficiency than could be possible by working separately. Participation in thematic partnerships allows regions to develop investment projects of better quality than otherwise possible, within a shorter timeframe. Secondly, participation in the S3P Agri-food platform helps regions foster strategic interaction in their region and across borders. This means building effective collaborative relationships within regional institutions, e.g. dismantle barriers that exist among the ministries, and improving the skill sets of regional representatives, for example, their abilities in networking, project management, and diplomacy. Also, by participating in the thematic platforms, regions identify new opportunities for investments and unlock new business opportunities locally and internationally. Finally, regions can better connect regional stakeholders with potential partners outside the region and thus generate better opportunities for them.

On the other side, there are still some issues that require the special attention of the regions. These include a) political and financial commitment of the regions, b) active participation of regional stakeholders, including industry, businesses and investment institutions c) access to and use of funds to manage and participate in the partnership, d) finding the optimum mix of financial instruments to fund projects, and e) protecting the intellectual property rights of regional players who participate to trans-regional projects developed by agri-food thematic partnerships.

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List of abbreviations

DG	Directorate-General
EAFRD	European Agricultural Fund for Rural Development
EDP	Entrepreneurial discovery process
EFSI	European Fund for Strategic Investments
ERDF	European Regional Development Fund
ERDF	European Regional Development Funds
ERIAFF	Network of European Regions for Innovation in Agriculture, Food and Forestry
ESIF	European Structural and Investment Funds
EU FP	European Union Framework Programme
FDI	Foreign direct investments
GVCs	Global value chains
IoT	Internet of Things
IPR	Intellectual property rights
JPI	Joint Programming Initiative
JTI	Joint Technology Initiative
KETs	Key Enabling Technologies
KICs	Knowledge Innovation Communities
R&I	Research and Innovation
RIS3	Research and Innovation Strategy for Smart Specialisation
RTOs	Research and Technology Organisations
S3P Agri-food	Thematic Smart Specialisation Platform on Agri-food
S3P	Smart Specialisation Platform
TFEU	Treaty on the Functioning of the European Union
TO	Thematic Objective
TRL	Technology readiness level

List of figures

Figure 1 Steps in working process.....13
Figure 2. Key questions for lead/coordinating regions and countries14
Figure 3. Workflow for the development of joint demonstrators16

List of tables

Table 1. Results of Information Day focus group discussions 9

Table 2. Areas of interest of the event participants.....10

Table 3. Possible content of the scoping note15

Table 4. Proposals for the development of Agri-food thematic smart specialisation
partnerships received by May 201717

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