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Synergies among EU funds in the field of Research and Innovation in Agriculture

Final report

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1. AIM AND METHODOLOGY

The aim of this study was to provide a better understanding of the potential and the use of synergies among EU funds in the fields of research and innovation in agriculture. The study explored the procedures with regard to stimulating synergies (including funding arrangements) of authorities responsible for EU funds at all relevant levels (EU, national, regional). It looked at both success stories and lessons learned from encountered challenges, identifying pioneering approaches in stimulating synergies. The study is intended to provide inspiration through cases that demonstrate added value and impact of synergies.

Research for this study:

- analysed case studies in order to identify good practices, including their success factors;
- identified barriers and approaches to overcome these;
- covered all relevant EU policies, but focused on Horizon 2020, EAFRD (incl. EIP-AGRI) and ERDF; and
- looked at both the European and the Member State levels.

At EU-level, interviews were carried out with policy-makers at the European Commission (DG AGRI, DG RTD, DG REGIO, DG ENV, ENRD, JRC). At Member State level, the research focused on five case study countries or regions: Lower Austria (AT), North-East Romania (RO), Scotland (UK), Slovenia and Tuscany (IT). In these, managers of Funds, programmes or instrument, as well as other policy-makers and researchers have been interviewed. However, in the research process, evidence and examples from other countries were included, too.

Section 2 presents the challenges of creating synergies, looking at the rationale and preconditions for synergies. Section 3 illustrates the policy environment for agricultural innovation and presents examples of AKIS and related projects. Section 4 presents the key findings related to the support environment, the identified success factors and ways to improve synergies with collaborative approaches. Section 5 finishes with some conclusions.

2. THE CHALLENGES OF CREATING SYNERGIES

2.1 The rationale for synergies

The pursuit of synergies is increasingly prominent in public policy, particularly in complex policy fields where a range of objectives, instruments and stakeholders is involved. Given this, definitional clarity is important to understanding what synergies can achieve, how they can be realised, and what the challenges are. In this respect, it is useful to compare ‘synergy’ with other related terms (see Table 1) to emphasise that, ideally, synergies should go beyond mere coherence, coordination or complementarity and achieve a product that is worth greater than the sum of the component parts.

Table 1: Synergy and related terms

Term	Summary definition
Synergy	The interaction of two or more agents, resources or activities such that the product is worth greater than the sum of the component parts (1+1>2).
Complementarity	Activities or policy efforts that build on the strengths and account for the limitations in each other (1+1=2).
Coordination	A process by which donors share information about or identify their respective resources, goals, processes and timelines to each other in order to reduce duplication and increase complementarity.
Coherence	Where two or more distinct policies or programmes are logically consistent and do not counteract each other.

Source: Adapted from Graves S, Wheeler V, Foresti M, Burall S and Highton N (2008) *Synergies between Bilateral and Multilateral Activities*, report for Evaluation Department, Ministry of Foreign Affairs/Danida, Denmark, 2008/2, http://um.dk/en/danida-en/results/eval/Eval_reports/evaluation-studies/publicationdisplaypage/?publicationID=685C5796-030A-4105-A370-62899E53AD03

In recent years, EU institutions and the practitioners implementing EU funding are increasingly recognising the need and, to a more limited extent, the potentials for greater synergies in the use of EU funds, including the area of research and innovation in agriculture. The need to harness synergies and complementarities between EU policies and instruments is an objective of the Council, European Parliament and European Commission (EC) both in the 2014-20 period and post-2020. The Common Provisions Regulation (CPR), which covers all five ESI Funds in 2014-20, specifically mentions synergies between individual ESI Funds as well as of ESI Funds with Horizon 2020: "*In order to optimise the added value from investments funded wholly or in part through the budget of the Union in the field of research and innovation, synergies should be sought in particular between the operation of ESIF and H2020, as set up in Regulation (EU) No 1291/2013 of the European Parliament and of the Council, whilst respecting their distinct objectives*."[1]

In order to encourage synergies in 2014-20, the EC presented a number of guidance documents and tools for policy-makers. This includes a 2014 guidance to encourage synergies between ESIF and other EU policies, which addresses some of the regulatory issues and recommends actions for policy-makers, particularly focusing on Horizon 2020.[2] Similarly, a 2016 EC publication provides a series of examples for synergies between ESIF and Horizon 2020, with the aim of supporting the development of similar approaches.[3] However, without much scope to adjust the current regulatory frameworks, the focus is increasingly shifting to post-2020, with demands for the policies of the future to be "*designed from the very beginning with synergies, coherence and complementarity in mind*".[4]

[1] REGULATION (EU) No 1303/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006 Common Provisions Regulation, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1303&from=EN

[2] European Commission (2014) *Enabling synergies between European Structural and Investment Funds, Horizon 2020 and other research, innovation and competitiveness-related Union programmes. Guidance for policy-makers and implementing bodies*, https://ec.europa.eu/regional_policy/sources/docgener/guides/synergy/synergies_en.pdf

[3] European Commission (2016) *EU Funds working together for jobs & growth. Synergies between the R&I Framework Programmes and the European Structural & Investment Funds*, http://ec.europa.eu/research/pdf/publications/ki-01-16-339-en-n.pdf

[4] Council of the EU (2017) *Synergies and simplification for cohesion policy post-2020: Council adopts conclusions*, press release 15 November 2017, http://www.consilium.europa.eu/en/press/press-releases/2017/11/15/council-conclusions-on-synergies-and-simplification-for-cohesion-policy-post-2020/pdf

As a practical solution for synergies in 2014-20, the EC launched the Seal of Excellence (SoE) in October 2015. Although it aims to facilitate synergies between ESIF and Horizon 2020, in practice it allows for unsuccessful proposals under Horizon 2020 to be funded by ESI Funds. Initially only in the Horizon 2020 SME Instrument, the SoE certificate is awarded to applicants of excellent proposals. Managing authorities of ESIF programmes can then use the certificate to award funding without carrying out a new qualitative assessment of the application. While some Member States have started to make use of it early on (e.g. Czech Republic, Italy), others remain hesitant, arguing that the rationales of the instruments are too different to allow projects to be simply transferred to a different policy area. Nevertheless, in the area of agriculture, even in the short period between the launch of the instrument and June 2016, 107 projects EU-wide have benefitted from the Seal of Excellence.[5]

While the potential is widely acknowledged, but **evidence of the use of synergies is limited**, also if looking at EU policies more widely. For instance, in the area of renewable energy and rural development, a 2018 ECA report identified potential for synergies between different EU policies, but more efforts are needed to make use of these.[6] In its replies to the report, the EC emphasised that it has actively promoted synergies between ESIF and other national and EU funding schemes. However, it also highlights that ultimate responsibility for implementation choices fall under the responsibility of the Member States.

Actors acknowledge that a strategic approach to the use of public money would be more efficient, but the evidence suggests that actors tend to follow a 'synergies by opportunity' approach. Yet, synergies are not easy to achieve due to the different funding objectives and frameworks, particularly between the largest sources of funding, ESIF and Horizon 2020, which relates to the difference between directly-managed instruments (Horizon 2020, LIFE) and those under shared management (ESIF). Both types of instruments operate under **different sets of rules**, for instance with regard to State aid, as instruments managed centrally at EU level which are not subject to State aid regulations and those with shared management between EU bodies and Member States. This different applicability in terms of State aid compliance is a disincentive for synergies, as the combination of ESIF with funding from directly-managed instruments can cause regulatory uncertainties. For instance, while a beneficiary can use Horizon 2020 funding without any notification requirement, the whole project must comply with State aid rules if the beneficiary combines Horizon 2020 support with ERDF support.

Another obstacle is related to **different objectives and rationales** of Horizon 2020 and ESIF.[7] ESI Funds are about the socio-economic development in Member States and regions, for instance reducing disparities and assisting structural change. Horizon 2020 instead is about research excellence more than anything. ESI Fund interventions are mostly territorially defined, either local, regional or national, while one of the key features and requirements of Horizon 2020 is its international set-up. An exception under ESIF is ETC, which is defined by its international dimension.

[5] Interreg Europe (2017) *Tapping into the potential of the Horizon 2020 Seal of Excellence. A Policy Brief from the Policy Learning Platform on Research and Innovation*, May 2017, https://www.interregeurope.eu/fileadmin/user_upload/plp_uploads/2017-05-09_Policy_brief_Seal_of_Excellence.pdf

[6] European Court of Auditors (2018) *Renewable energy for sustainable rural development: significant potential synergies, but mostly unrealised*, Special Report No. 5, https://www.eca.europa.eu/Lists/ECADocuments/SR18_05/SR_Renewable_Energy_EN.pdf

[7] This has been noted in the context of support for the bioeconomy, see Haarich S (2017) *Bioeconomy development in EU regions. Mapping of EU Member States' / regions' Research and Innovation plans & Strategies for Smart Specialisation (RIS3) on Bioeconomy*, Final Report, February 2017, p. 80, https://ec.europa.eu/research/bioeconomy/pdf/publications/bioeconomy_development_in_eu_regions.pdf

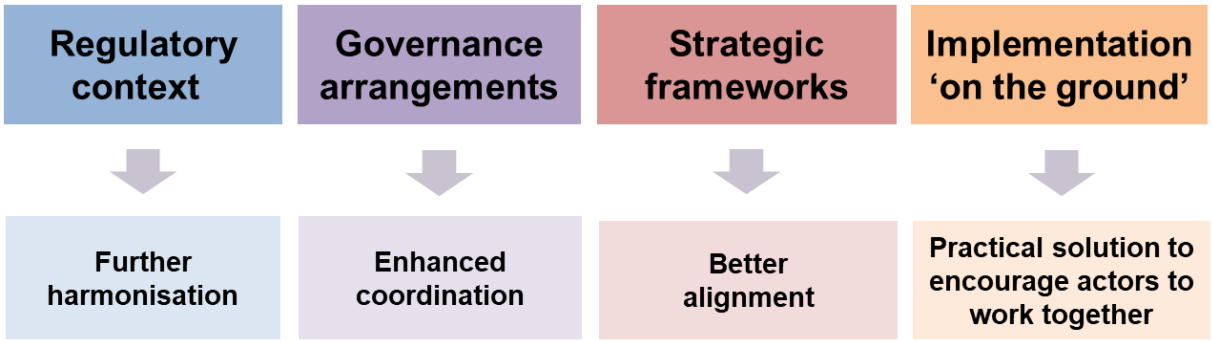
Of particular interest is its interregional dimension, which does not require beneficiaries to be located in a defined space, other than the countries covered by Interreg Europe (EU 28, Norway and Switzerland).

Domestic policies add an additional layer of complexity to support system for innovation. These play an important role particularly in more-developed Member States with a longer tradition of public support for economic development and larger domestic funds for research and innovation. Often, domestic support instruments are preferred by potential beneficiaries, as these do not entail additional, complex requirements imposed by the European level. However, relying on domestic frameworks are a less viable option in Member States where research and economic development funding is almost exclusively provided by the EU level.

2.2 Assumed preconditions for synergies

A 2016 study on synergies for the European Parliament Committee on Regional Development found that the potential for synergies between ESIF and other EU instruments has been under-exploited. It identified a need for further harmonisation of regulatory frameworks; enhanced coordination at Member State and EC levels, including soft governance options; better alignment of strategic frameworks; and practical solutions for implementation to encourage actors to work together 'on the ground' (Figure 1).[8] Although these findings result from research on EU instruments more widely, it can be assumed that they are also valid in the area of agricultural innovation.

Figure 1: Recommendations to maximise synergies between ESIF and other EU instruments



Source: Ferry M, Kah S and Bachtler J (2016).

For the scope of this research, synergies are examined as features of interactive innovation approaches in a multi-actor environment. Previous research allowed identifying potential success factors for synergies, which have been translated into a series of potential preconditions (The validity of these assumed preconditions will be examined on the basis of the evidence gathered in the course of the research, resulting in a prioritisation of selected success factors.

Figure 2):

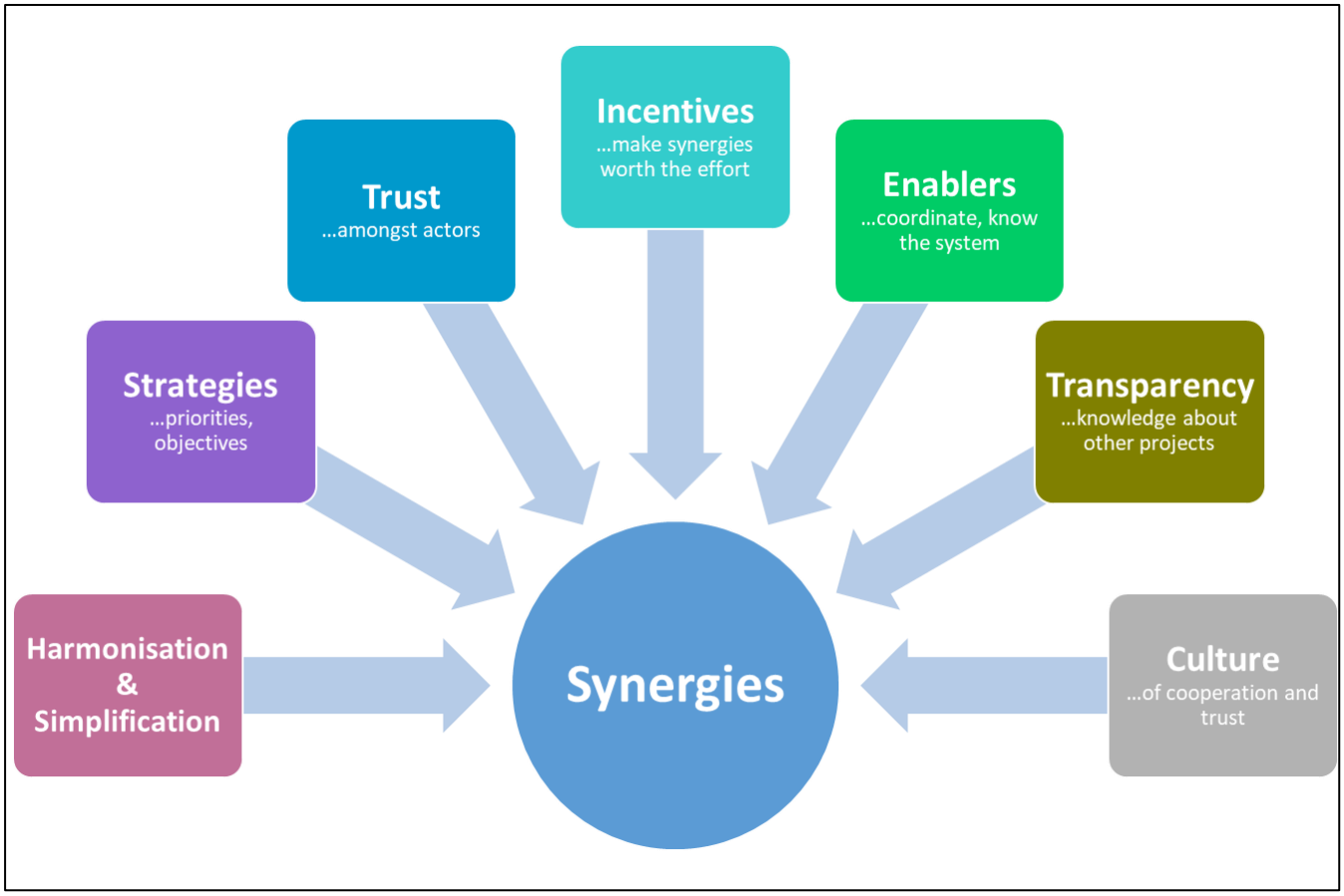
1. **Harmonisation and simplification** of regulatory frameworks
2. **Strategies** setting out priorities and objectives

[8] Ferry M, Kah S and Bachtler J (2016) *Maximisation of synergies between European Structural and Investment Funds and other EU instruments to attain Europe 2020 goals*, Report to the European Parliament's Committee on Regional Development, Brussels, https://tinyurl.com/zwt4yw3

3. **Trust** between actors in innovation systems, both vertical (policy-makers, researchers, end-users) and horizontal (e.g. amongst policy-makers and amongst farmers)
4. **Incentives** to make synergies worth the effort
5. **Enablers** that are able to coordinate activities of innovation actors, based on their in-depth knowledge of the system
6. **Transparency** that allows flow of information and awareness of other projects
7. **Cultural factors** (tradition of cooperation, demographics of innovation actors, particularly farmers)

The validity of these assumed preconditions will be examined on the basis of the evidence gathered in the course of the research, resulting in a prioritisation of selected success factors.

Figure 2: Assumed preconditions for synergies



Source: authors.

3. POLICIES FOR AGRICULTURAL INNOVATION

3.1 The challenge of innovation in agriculture

Innovation in agriculture faces a number of specific challenges, which have recently (2018) been defined as: 1) food and nutrition security; 2) climate change; 3) environment and biodiversity; 4) maintaining healthy lifestyles; and 5) rural areas and territorial cohesion.[9] Innovation can make useful contributions to all of these and particularly the fifth challenge to support rural development can benefit from synergies between innovation policies and other EU policies (e.g. ESI Fund support).[10]

However, global trends in public expenditure on agricultural R&D point to a relatively flat pattern of expenditure and the source of public agricultural expenditure is shifting from traditionally richer countries to countries with strong economic growth. Also, R&D and innovation has traditionally been industry-driven, not end-user-driven. The innovation culture amongst farmers is varied and suffers from its demographic context (ageing farmers, handover to the next generation) and the small size of farms in most parts of the EU. Traditional top-down approaches in promoting innovative approaches are not seen as appropriate anymore, not least due to a changing political context of food and farming systems that takes into account a variety of factors such as sustainability, consumer concerns, food security, food safety, environmental concerns, biodiversity and socio-economic developments in rural communities. Also, farming practices are getting more diverse and are often combined with other activities. At the same time, new knowledge is generated not only by researchers, but also by farmers. Linear innovation models from science to end-users are increasingly replaced by interactive models that give end-users a more active role.[11]

Innovation policy needs to take account of different preconditions in different Member States and regions. European AKIS are very diverse (see Figure 3), not only in terms of their strength. They also differ in terms of their degree of integration. In fragmented AKIS, several independent knowledge networks operate in parallel (e.g. Portugal, Spain, Netherlands). In integrated systems instead, there is a coordinating structure acting on the basis on national policies on AKIS and aligned advisory services (e.g. Luxembourg, Denmark, Ireland).[12]

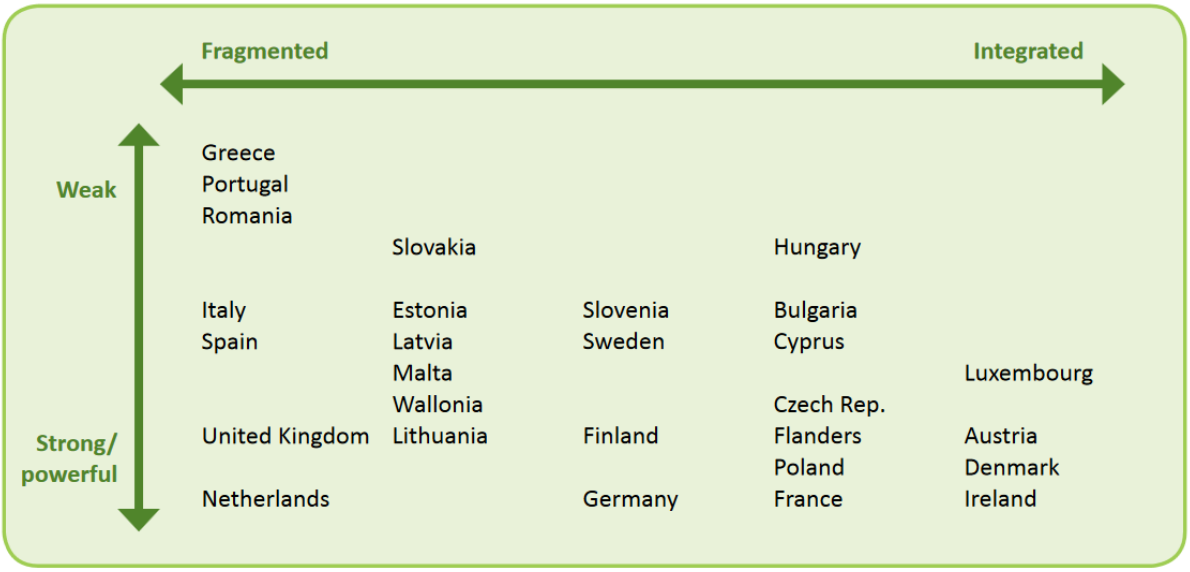
[9] Détang-Dessendre C, Geerling-Eiff F, Guyomard H and Poppe K (2018) *EU Agriculture and innovation: What role for the CAP?*, INRA and Wageningen University and Research, http://edepot.wur.nl/447423

[10] European Parliamentary Research Service (2019) *EU agricultural research and innovation*, Briefing, January 2019, p. 3, http://www.europarl.europa.eu/RegData/etudes/BRIE/2019/630358/EPRS_BRI(2019)630358_EN.pdf

[11] Fieldsend A (2013) 'Facilitating Innovation in Agriculture: Lessons from a European perspective', *Agricultural Economics and Rural Development*, vol. 10, issue 2, pp. 177-90, http://www.ipe.ro/RePEc/iag/iag_pdf/AERD1302_177-190.pdf

[12] Knierim A and Prager K (2015) *Agricultural Knowledge and Information Systems in Europe: Weak or strong, fragmented or integrated?*, http://proakis.webarchive.hutton.ac.uk/sites/www.proakis.eu/files/AKIS_characterisation_briefing_final.pdf

Figure 3: Diversity of European AKIS in 2014



Source: Knierim A and Prager K (2015).

Against this background, the EU launched an AKIS-specific strategy process, which resulted in the publication of an EU-level AKIS strategy in June 2016. It guides the programming of Horizon 2020 for the remaining part of the 2014-20 period and for the period beyond 2020 (then Horizon Europe). The EU AKIS strategy identified five priority areas[13] and **six key principles** that should be followed during its implementation:[14]

1. Strategic programme management
2. Synergies with other (public) research activities
3. International cooperation
4. Allow space for innovative approaches
5. Synergies with the private sector (interactive innovation)
6. Multi-actor approach

The **multi-actor approach (MAA)** aims to involve actors from different backgrounds (researchers, farm advisors, farmers/end-users, businesses, etc.), which should have complementary types of knowledge. The MAA should ensure that innovative solutions are resulting in practical solutions that are implemented in practice.[15]

3.2 European support environment for agricultural innovation

There is a wide range of EU programmes supporting innovation in agriculture in some form. The main sources of funding for agricultural innovation are the EU's Framework Programmes (currently Horizon

[13] Resource management, healthier plants and animals, integrated ecological approaches, new openings for rural growth, enhancing the human and social capital and rural areas.

[14] European Commission (2016) *A strategic approach to EU agricultural research & innovation*, Brussels, https://ec.europa.eu/programmes/horizon2020/en/news/final-paper-strategic-approach-eu-agricultural-research-and-innovation

[15] For more information on the multi-actor approach see European Commission (2017) *Horizon 2020 Work Programme 2016-2017, 9. Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy*, http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-food_en.pdf

2020) and rural development policy, including mainly the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI), but also LEADER (Liaison Entre Actions de Développement de l'Economie Rurale). Table 2 provides a comparative overview of different public funding sources for innovation in agriculture, illustrating their aims and objectives as well as their spatial orientation or set-up. EU-level instruments for agricultural innovation can broadly be divided into **directly managed ones and those under shared management** between EU and Member States.

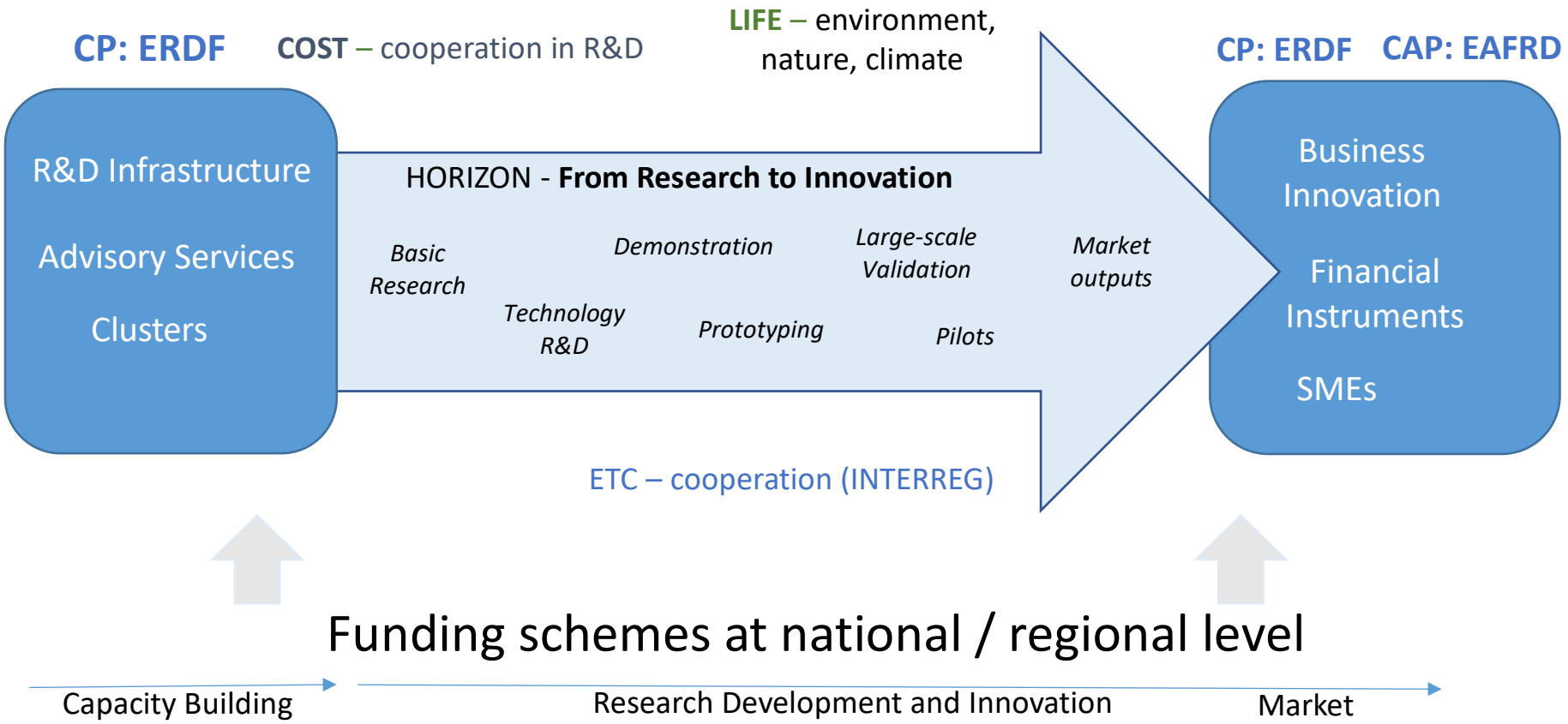
Table 2: Main funding sources for agricultural innovation

	Aims & objectives				**Spatial orientation / set-up**	
Instrument	**Capacity building**	**R&D**	**Innovation**	**Market introduction, diffusion, demonstration**	**Local, regional, national**	**International**
Shared management / ESIF						
ERDF	X	X	X	X	X	
ESF	X		(X)		X	
ETC	X		X			X
EAFRD	(X)		X	X	X	
incl. EIP-AGRI			X		X	(X)
incl. LEADER			X	X	X	X
Direct management						
Horizon 2020		X				X
COST		X				X
LIFE	X			X	X	
Erasmus+	X					X
Domestic Member State policies						
National & regional instruments	X	X	X	X	X	

Source: own research.

The table, together with Figure 4, illustrates how the different instruments cover the full innovation chain, from capacity building to research and then to market.

Figure 4: The role of different EU funding sources in agricultural innovation



Source: Kah/Gruber (2019) adapted from Doussineau M (2016) *Smart Specialisation and synergies in Agro-Food related Priorities*.

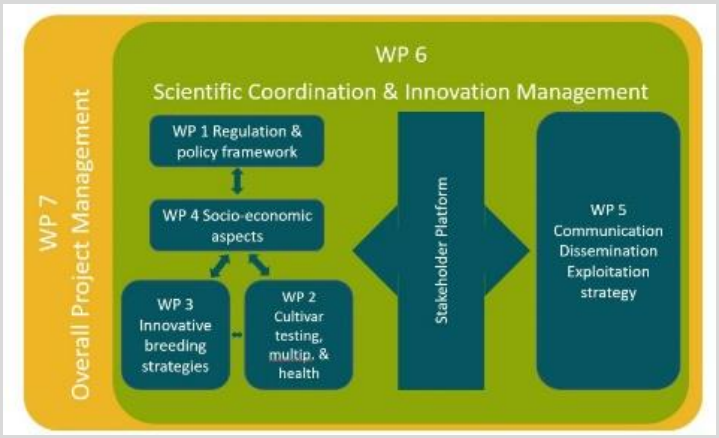
3.2.1 Instruments under direct management

The financially most important instrument under **direct management** is **Horizon 2020** (€80 billion in total 2014-20), which covers the full innovation chain. Horizon 2020 addresses agricultural themes under the Societal Challenge "Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the bioeconomy", to which 5% or €3.85 billion of the 2014-20 budget have been dedicated.

Box 1: LIVESEED (Horizon 2020)

The Horizon 2020 project LIVESEED (Boosting organic seed and plant breeding across Europe) involves 49 partners in 18 countries (EU Member States and Switzerland) and runs from 2017 to 2021. It benefits from EU funding under Horizon 2020 of €7.4 million and €1.5 million from Switzerland. LIVESEED aims at developing cultivars adapted to organic system. It will:

- foster harmonised implementation of the EU organic regulation on organic seed and strengthen organic seed databases in the whole EU;
- widen the choice of organic cultivars meeting the demand of farmers, processors, retailers and consumers;
- investigate socio-economic aspects related to production and use of organic seed; and
- Improve availability and quality of organic seed and develop guidelines for organic cultivar testing and registration.



The project consortium includes research institutes, breeding companies, seed companies, organic associations (farmers, processors, retailers) and national authorities.

LIVESEED

Source: https://www.liveseed.eu/

Horizon 2020 specifically supports MAA and by the end of 2017, over 50 MAA projects had been approved. An example for a multi-actor project funded under Horizon 2020 is provided in Box 1. A special form of MAA projects are so-called **Thematic Networks (TNs)**[16]. TNs collect existing scientific knowledge and best practices and translate this knowledge into easily understandable end-user material. By summer 2018, there were 29 thematic networks and more are expected until 2020. They are funded from Horizon 2020 and supported by EIP-AGRI. By November 2018, 29 TNs had been set

[16] https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_brochure_thematic_networks_2016_en_web.pdf

up. Examples for TNs include Smart AKIS, which offers a Smart Farming Platform where smart farming technologies and best practices are collected and shared, and Hennovation, which focused on innovation led by farmers and industry in the areas of injurious pecking and the transport and use of hens that no longer lay any eggs.[17]

Related to Horizon 2020 is the instrument **European Cooperation in Science and Technology (COST)**, which stimulates research cooperation. With a budget of €300 million for 2014-20, COST provides international research funding for researchers and innovators to set up interdisciplinary research networks. In practice, a financial contribution is provided for organising meetings, training schools, short-term scientific missions and other networking activities. Until early 2019, COST has supported 162 actions in the area of food and agriculture alone.[18]

Also the directly-managed **LIFE programme** (L'Instrument Financier pour l'Environnement) plays an important role in agricultural innovation. It focuses on demonstration projects, supporting environmental, nature conservation and climate action interventions. These three Priority Areas are strongly linked to agricultural themes. The current LIFE+ has a budget of €3.5 billion for seven years. An example of a LIFE project linking environmental and agricultural innovation is shown in Box 2.

Box 2: Coop 2020 (LIFE+)

Coop 2020 is a LIFE+ project involving five partners in Spain and one in Greece. It ran between 2014 and 2018 and benefitted from EU funding of €1,228,535 under LIFE+. Coop 2020 demonstrated the viability of business models for agricultural cooperatives that integrate energy savings and renewable energy.

Coop 2020 aimed to inspire the implementation and expansion of rural smart grids. It focused on:

a) the realisation of energy savings and

b) the generation of energy from different renewable sources.

For instance, the participating partners faced the challenge of having to deal with organic waste in the form of olive pits. These will be used in biomass boilers in order to generate thermal power.

The project provided evidence that decentralised, distributed power generation is economically feasible and desirable.

COOP2020

Source: http://coop2020.eu/en/

The **Erasmus** programme (EuRopean Community Action Scheme for the Mobility of University Students), currently Erasmus+, is an EU student exchange programme established in 1987. With a budget of €14.7 billion for 2014-20, Erasmus+ supports cooperation for innovation and exchange of good practices under its Action 2. There are several examples for projects related to agriculture, for

[17] https://www.smart-akis.com and http://www.hennovation.eu

[18] https://www.cost.eu/

instance SKIFF (Skills for Future Farmers), which provides training in seven languages, including specialised apps for smart phones.[19]

3.2.2 Instruments under shared management

ESI Funds are implemented in a **shared management** system. The ESI Funds are the European Agricultural Fund for Rural Development (EAFRD), the European Maritime and Fisheries Fund (EMFF), the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund.

Box 3: HopfeNO3 (LEADER)

The LEADER project HopfeNO3 (Praxisnahe Optimierung des Stickstoffkreislaufs im Hopfenbau) is aiming at maintaining hop productivity whilst protecting groundwater resources. It was implemented by the German LAG Landkreis Kelheim (Bavaria) between 2009 and 2014. €94,000 of LEADER funding from the Bavarian EAFRD programme were complemented by €129,000 private contributions.

It is an example of LEADER funding contributing to the development of innovative agriculture techniques, in this case hop growing strategies. The project brought together farmers, a water association and engineers providing the technical expertise.

The initiative is a result of previous LEADER projects reaching back as far as 2003 and implemented in cooperation with two other Bavarian LAGs.

Sources: https://www.zvwv-hallertau.de/ and https://enrd.ec.europa.eu/sites/enrd/files/enrd_publications/publi-eafrd-brochure-06_2018.pdf

The **EAFRD** is part of the CAP and is the funding source for rural development programmes at national or regional level in all EU Member States. Amongst its objectives are fostering knowledge transfer and innovation in agriculture and the promotion of innovative farm technologies. A complimentary element of EAFRD OP is LEADER, to which a minimum of 5% of the funding has to be dedicated. The funding is implemented by Local Action Groups (LAGs) on the basis of bottom-up development strategies. LEADER has traditionally been *the* innovation instrument of the EAFRD, but it appears to have lost innovation capacity over the past programme periods.[20] LEADER funding can be used for bottom-up driven agricultural innovation (see example in Box 3) and can therefore provide

[19] http://future-farmer.eu/

[20] Dax T, Strahl W, Kirwan J and Maye D (2013) "The Leader programme 2007-2013: Enabling or disabling social innovation and neo-endogenous development? Insights from Austria and Ireland", *European Urban and Regional Studies*, Vol. 23(1) pp. 56-68.

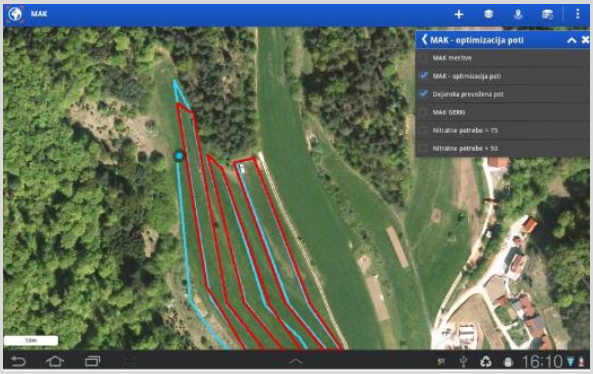
'disruptive institutional innovation'.[21] It is admittedly small-scale and experimental, but LEADER's role as an innovation instrument has not been used to its full potential.

The **EMFF** is providing investments for Europe's maritime and fisheries areas, supporting fisheries and aquaculture as well supporting the diversification of local economies.

Box 4: Collection of farm data using smart phones (ERDF)

The Slovenian project "Mobile Applications for the Agricultural Economy" was funded under Slovenia's 2007-13 ERDF programme. The Ministry of Public Administration as responsible intermediate body launched a series of calls for the promotion of research and development projects in the area of e-commerce and e-services. The focus of the supported project was not agriculture, but electronic commerce. Yet, in the end, farmers benefitted from the services developed.

Recording events at farms and farmer's daily activities is a precondition for establishing efficient information support for the operations of farms. A comprehensive approach is required which combines the information about events (calving, fertilizing, harvesting, etc.) with financial information of the agricultural holding to be properly managed and reported on. The key problem is that after performing strenuous work the farmer should manually enter and edit this information, arising from the operational implementation of agricultural tasks.



The mobile applications relieves the farmer of these tasks as much as possible, by providing the input of data on location and at the time of the occurrence of the data or the event for which data should be entered. The entry of certain data can be completely automated by using machinery connected to the network. The combination of mobile and automatic entry relieves the farmer, enables high-quality data collection and thus helps the farmer to improve the work and comply with legal and other requirements. The project is based on the assumption that farmers have (and use) smart mobile phones and have such phones at hand during the operational implementation of agricultural activities.

Project title: MAK – Mobile Applications for agricultural economy
(23 October 2012 to 30 May 2014)
Consortium structure: Datalab d.d.; Sinergise d.o.o.; Faculty of Computer and Information Science, University of Ljubljana
Project funding: €347.820,54
Share of ERDF funding: 85% (€295.647,46)
Share of national counterpart: 15% (€52.173,08)

Source: Slovenian Ministry of Public Administration.

The three other ESI Funds (ERDF, ESF, Cohesion Fund) are the EU-level funding source for Cohesion Policy. While the Cohesion Fund is not relevant for agricultural innovation,[22] the **ESF** plays

[21] Lukesch R (2018) *LEADER reloaded. The ELARD conference on the heartbeat of the LEADER community*, keynote paper, Évora, 26-28 September 2018, p. 3.

[22] The Cohesion Fund supports transport and environmental projects, but only in Member States with a gross national income per inhabitant less than 90% of the EU average.

an important role in innovation systems by funding capacity building (training, life-long learning) and labour market measures. The **ERDF** is an important investment source for innovation, concentrating most funding on the 4 (out of 11) Thematic Objectives for R&D, ICT, SME competiveness and the shift towards a low-carbon economy. It supports businesses and innovation through R&D centres, cluster structures and S3 platforms. Although agricultural themes are not covered by the Thematic Objectives of Cohesion policy, there are examples where ERDF programmes support agricultural innovation, e.g. by supporting an SME that develops applications that can be used in agriculture (see Box 4). The ERDF is also the source of funding for the European Territorial Cooperation (ETC) Objective, supporting cross-border cooperation (60 Operational Programmes) as well as transnational cooperation (15 Operational Programmes) in 15 larger cooperation areas. It also funds interregional cooperation across the EU through its Interreg Europe instrument.

In addition to EU-level instruments, there is a variety of funding schemes at **national and regional level**, albeit to a different degree depending on the strength of the domestic support environment for economic development and research and innovation.

A closer look needs to be taken at **EIP-AGRI**, which plays a crucial role in facilitating synergies between different funding sources in agriculture.[23] As set out in the 2010 EC Communication 'Innovation Union', the concept of EIPs encourages collaborative efforts in order to achieve synergies and EU value added.[24] EIP-AGRI applies the interactive innovation model using complementary types of knowledge. It supports co-creation and diffusion of solutions that are ready to be implemented in practice. It is funded b and its funding comes from both rural development and Horizon 2020.

The idea is that EIP-AGRI is closely related to Horizon 2020 and the interlinked activities are based on different platforms that bring innovation actors together (see Figure 5): a) **Operational Groups (OGs)** and b) **Focus Groups (FGs)** under EIP-AGRI, as well Thematic Networks (TNs) under Horizon 2020 (see above).

a) **OGs** are multi-actor innovation projects at the local level, consisting of a diverse group of partners (farmers, researchers, agri-business etc.) with a common interest in a specific, practical innovation project. Formally, OGs are projects funded by the EAFRD in the context of a rural development programmes (RDP). Participants in OGs include researchers, advisors, entrepreneurs, farmers, NGOs and others, with research institute most commonly (40% of all OGs) taking on the role of lead partner. In total, 3200 OGs are planned for 2014-20, funded by 95 EAFRD RDPs in 26 countries (Estonia and Luxembourg are not planning any OGs). By November 2018, 611 OGs had been reported. The size of OGs varies significantly, between an average budget of €2.85 million in Ireland and €33,000 in Belgium.[25]
b) **FGs** collect and summarise knowledge on best practices in a selected field.[26] In each FG, at least 20 experts work together, including researcher, farmers and consultants. FG members are selected by the EIP-AGRI Service Point and, on average, come from 12 different Member States.

[23] For more detail about the different elements of EIP-AGRI and their interaction see Cristiano S and Proietti P (2018) "Do EIP interactive innovation approaches interact each other*?", International Journal of Agricultural Extension*, 2018, pp. 53-63.

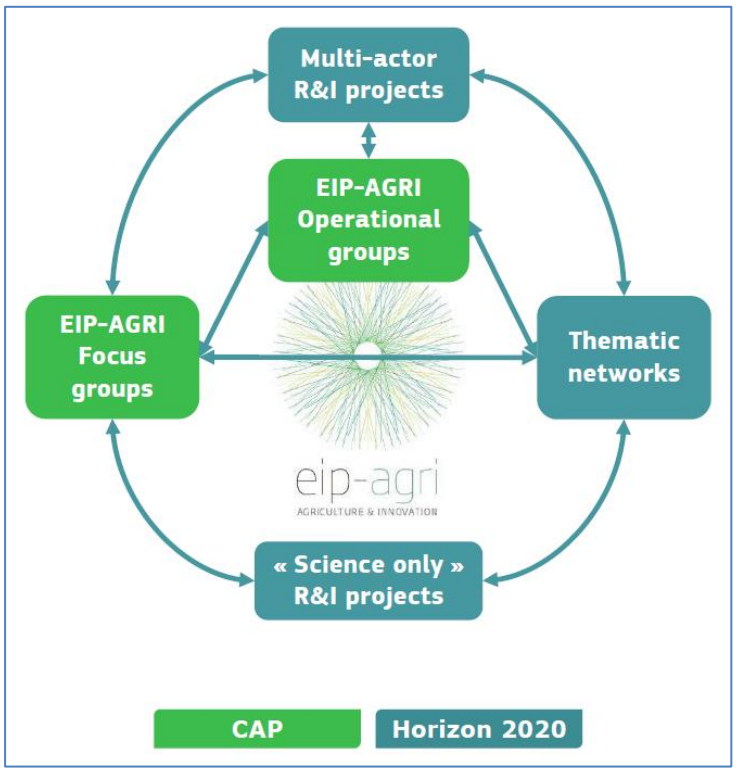
[24] https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_brochure_service_point_2014_en_web.pdf

[25] Van Oost I (2018) *The European Innovation Partnership (EIP) „Agricultural Productivity and Sustainability". Moving Innovation in Agriculture Ahead!*, SWG SCAR AKIS 4 meeting, Warsaw, 26 June 2018.

[26] https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_brochure_focus_groups_2016_en_web.pdf

FGs are temporary and meet at least twice. Between 2013 and summer 2018,[27] 33 Focus Groups had started their work, 22 of which have produced final reports and have dissolved again. In an ideal case, the results of FGs lead to the creation of a new OG.

Figure 5: CAP and Horizon7 2020 working together in EIP-AGRI



Source: Sauze-Vandevyver N (2018)[28]

According to an evaluation from 2016,[29] the potential of EIP-AGRI has not been fully exploited yet. positive are its bottom-up approach allowing it to respond to actual needs and its flexibility, allowing it to be tailored to different circumstances. Recommendations are not to water down the distinctive bottom-up approach, to allow advance payments and to invest in innovation support services and networking opportunities.

Finally, agricultural innovation is supported indirectly through the establishment of a **thematic platform on agri-food** as part of the EC's efforts to support smart specialisation. So-called Smart Specialisation Strategies (S3) can play an important role in facilitating synergies. Smart specialisation is "*a place-based approach, meaning that it builds on the assets and resources available to regions and Member States and on their specific socio-economic challenges in order to identify unique opportunities for development and growth*".[30] Having in place a S3 became a so-called ex-ante conditionality for all ERDF programmes in 2014-20. In practice, this means that agreeing a regional or national (depending on the spatial implementation level of the respective programme) innovation

[27] Van Oost I (2018) *The European Innovation Partnership (EIP) „Agricultural Productivity and Sustainability". Moving Innovation in Agriculture Ahead!*, SWG SCAR AKIS 4 meeting, Warsaw, 26 June 2018.

[28] Sauze-Vandevyver N (2018) *Agricultural and rural innovation R&I under Horizon 2020 & EIP-AGRI*, presentation at AgriResearch Conference - Innovating for the future of farming and rural communities, Brussels, 2 May 2018, http://ec.europa.eu/newsroom/horizon2020/document.cfm?doc_id=52042

[29] Coffey, AND, SQW, Edater and SPEED (2016) *Evaluation study of the implementation of the European Innovation Partnership for Agricultural Productivity and Sustainability*, Final Report, November 2016.

[30] http://s3platform.jrc.ec.europa.eu/what-is-smart-specialisation-

strategy is a requirement for funding to be paid out by the European Commission.[31] The concept is particularly ERDF-oriented and has been driven by DG Regional and Urban Policy, but its principles and tools are relevant also to agricultural and rural development themes and funding. Smart specialisation is supported by the S3 Platform, which is located at the Joint Research Centre in Seville and employs 30 staff. By the end of 2018, over 180 regions have registered, including from European countries not in the EU.[32]

The S3 Platform has also set up three **thematic smart specialisation platforms**, which promote transnational learning, interregional collaboration and partnerships. One of these is the Smart Specialisation Platform for Agri-Food (S3P Agri-Food),[33] which has been set up in 2016 to "*orchestrate and support the efforts of EU regions committed to work together for developing a pipeline of investment projects connected to specific thematic areas of smart specialisation priorities through interregional cooperation*." Although several EU-level actors are involved (DG AGRI, REGIO, RTD, JRC) in the platform, its key frameworks are **thematic partnerships**, which are co-developed and co-led by regions themselves. The 5 thematic partnerships involve a total of 49 regional and national authorities and are led or co-led by 7 regions. By summer 2018, these were:

- Consumer involvement (Region FoodValley, NL; Ostergotland, SE);
- High-tech farming (Tuscany);
- Nutritional ingredients (Wallonia and Flanders, BE);
- Smart sensors for agri-food (Flanders and Wallonia, BE); and
- Traceability & big data (Andalucia, ES; Emilia-Romagna, IT).

The partnerships aim to ensure an active participation and commitment of industry as well as researchers and the civil society. Two of these partnerships, "traceability & big data" and "high tech farming" (led by Tuscany, see Section 3.3) have also been selected for DG REGIO's Pilot Action on Interregional Innovation Projects, which aim to commercialise and scale-up "bankable" interregional projects that can create or reshape European value chains.[34]

There are many instruments available, covering all stages of the innovation process. Each instrument is established in its own community. However, they have different logics and requirements. The main issues are a lack of harmonisation, in particular between direct and shared management instruments, and the complexity of the individual instruments and their diversity, thus resulting in a lack of transparency.

[31] For more information see: Polverari L (2016) *The implementation of Smart Specialisation Strategies in 2014-20 ESIF programmes: turning intelligence into performance*, IQ-Net Thematic Paper 39(2), European Policies Research Centre, Glasgow, http://www.eprc-strath.eu/public/dam/jcr:e14d1ac5-43d4-484f-853f-a6f40b8cd1c2/IQ-Net_Thematic_Paper_39(2).pdf

[32] http://s3platform.jrc.ec.europa.eu/s3-platform

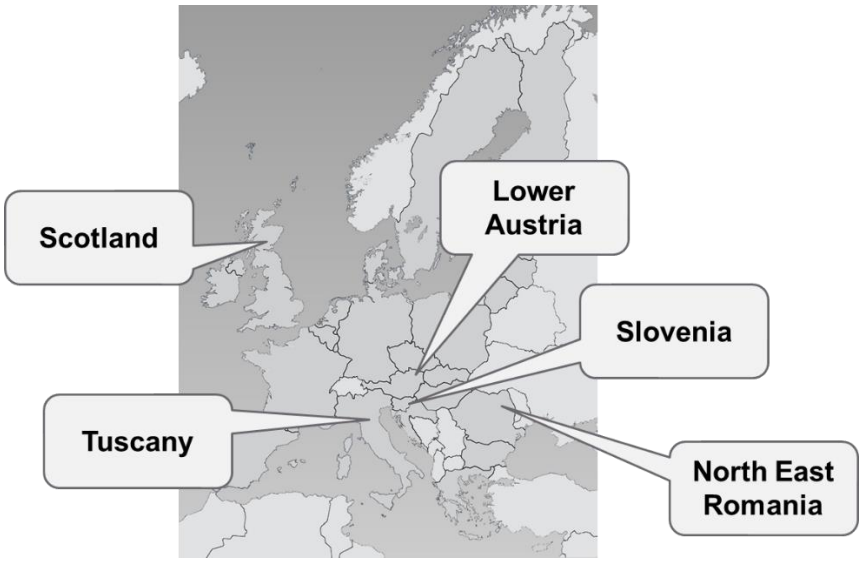
[33] http://s3platform.jrc.ec.europa.eu/agri-food and Ciampi Stancova K and Cavicchi A (2017) *Dynamics of Smart Specialisation Agri-food Trans-regional Cooperation*, S3 Policy Brief Series No. 21/2017, http://s3platform.jrc.ec.europa.eu/documents/20182/221449/JRC107257_CiampiStancova_Cavicchi_EUPolicyBrief.pdf/886f31c4-fdf3-416b-a3e4-d5ee8a33dce6

[34] European Commission (2017) *Call for expression of interest for thematic partnerships to pilot interregional innovation projects*, https://ec.europa.eu/regional_policy/sources/tender/pdf/expression/interregional_partnership_en.pdf

3.3 Snapshots from regional AKIS

The selected regions are all particularly active in agricultural innovation. All have a Smart Specialisation Strategy in place in which the agri-food sector is anchored. The case studies represent a range of geographies, governance approaches and development stages in terms of innovation in the agricultural sector (see Figure 6).

Figure 6: Case study countries and regions



Agriculture plays a particularly important role in **North-East Romania**, which has the highest share of agricultural employment in the EU (39.4%). The region is characterised by an ageing farming population and a very poor innovation culture. In addition to this, North-East Romania, as well as Romania overall, has very little domestic resources available for agricultural research, resulting in a very low national share of funding for R&D and innovation in relation to EU funding. The research showed that there is a lack of dialogue between agricultural stakeholders and research centres. More widely, there is weak cooperation between universities and the business environment. This is mirrored in weak coordination between the agricultural and rural development side of ESIF (EAFRD) and its business development side (ERDF). As one policy-maker pointed out: "*Often, the preparation phase of projects would be funded through a combination of ERDF and EAFRD. But when it comes to the main funding source for the implementation of projects it's just one of the two.*"

A key player in the region is the Regional Development Agency North-East, which is also the only Romanian RDA with a Brussels office. It acts as enabler in the regional AKIS and works on the basis of regional RIS3, which identified agri-food as one of six priority areas. The region is active in the S3P Agri-Food platform and has submitted a proposal for a thematic partnership on sustainable development of production field crops. The RDA is involved in several Interreg and Horizon 2020 projects. One agricultural innovation example is RETRACE (A Systemic Approach for REgions TRansitioning towards a Circular Economy), which is an Interreg Europe involving partners from France, Italy, Romania, Slovenia and Spain. The project runs from 2016 to 2020 and benefits from €1.4 of ERDF funding. In the context of the project, the agency organises roundtables with farmers and local businesses looking at potential uses of coffee waste and olive pips. However, the focus of the agency's work lies on ERDF. There is insufficient cooperation with EAFRD actors, particularly the

regional and local offices of its EAFRD equivalent, the Agency for rural Finance. Hence, policy silos remain.

In **Slovenia**, policy governance is characterised by national-level management of all 5 ESI Funds as well national-level bodies in charge of directly-managed instruments such as Horizon 2020. In recent years, Slovenia has been increasingly active in Horizon 2020, particularly as lead partner. Slovenia also makes strong use of the EC's Teaming Initiative, in which research institutions are teamed up with other leading institutions in other Member States.[35] Domestic policy silos are one of the key hindering factors for synergies. These exist particularly between the Ministry of Science, which provides research funding and research infrastructure, and the Ministry of Agriculture, which is charge of knowledge transfer and advisory services. An important mechanism for coordination across policy silos is Slovenia's smart specialisation strategy, which is set up at national level. The Government Office for Development and European Cohesion Policy takes the lead on the smart specialisation process and is also responsible for the implementation of its single Cohesion Policy Operational Programme (ERDF, ESF and Cohesion Fund). The "Slovenian Smart Specialisation Strategy (S4)" was launched in 2015 and is implemented via Strategic Research and Innovation Partnerships (SRIPs), which are long-term partnerships following a quadruple helix approach. SRIPs pool investments and intellectual potential, create a comprehensive innovation ecosystem and improve Slovenia's position in global value networks. One of the 9 Priority Domains or thematic clusters of the S4 is "Sustainable food production". The SRIP in charge has a key facilitator, the Slovenian chamber of commerce, which includes agricultural and food enterprises. The SRIP's activities are based on an action Plan setting out priorities (agri-food system & value chains; new marketing models; development of HR and competences) and a target of €95 million investments to be achieved by 2022. The S4 forms a strong strategic basis for potential synergies and its SRIP structure could potentially act as an enabler. However, a main challenge remains the continued policy silos, in which EU-funded agricultural projects are implemented in parallel to (explicitly) agricultural interventions (see ERDF project example in Box 4). Also, so far there is insufficient involvement of rural development and agricultural actors in the smart specialisation process. Stakeholders felt that *"…S3 is really something for the ERDF, not for rural development.*"

Also in **Scotland** it is challenging to bridge the gap between different policy areas. Scottish Enterprise, for instance, provided support for research on potatoes only because it was about seed potatoes and these are not destined for human consumption. There are two recent Scottish initiatives to strengthen agricultural innovation:

- The Rural Innovation Support Service (RISS) plays the role of an enabler. Only launched in February 2018 and co-funded by the EAFRD (£750,000, c. €850,000), it focuses on bottom-up rural innovation, aiming to address land managers' real needs. It does so by getting the right people together to explore practical and sustainable solutions. By summer 2018, 9 operational groups, similar to the EIP-AGRI format, had been approved.
- The Scottish Environment, Food and Agriculture Research Institutes Gateway (SEFARI) is an information measure to increase transparency. It was launched in March 2017 and is funded by the Scottish Government. SEFARI gathers the 6 leading Scottish institutes in the field and serves as a knowledge exchange and impact hub. Its aim is to "improve the flow of research and expertise, ensuring it gets to the right people, at the right time, in the right format."

[35] https://ec.europa.eu/programmes/horizon2020/en/h2020-section/teaming

Lower Austria has a comparatively high share of national funding in R&D and innovation. In the Austrian Land, the agricultural sector is strongly anchored in the regional smart specialisation strategy. Key themes and actors are the bio-based economy (Technopol Tulln on agricultural and environmental technology), food production and safety (Food Cluster Lower Austria) and agricultural technology (Technopol Wieselburg). An important enabler is the Food Cluster Lower Austria (LMC). It was established in 2009 and emerged from the Food Initiative Lower Austria, founded in 2006. The LMC is part of the Land's cluster programme and is funded under the Austrian ERDF programme and by the economic and agricultural departments of the Land government. The LMC is organized by ecoplus, the Regional Development Agency of Lower Austria. It gathers 105 companies and organisations, which make a small financial contribution for their membership. The tasks and services of the clusters comprises:

- Community Building in the area of food processing and marketing
- Recognising the needs of the sector and companies, creating awareness of development trends (such as digitalisation), organising workshops, community of practice, events
- Development of cooperative innovation projects (products and services)
- Organisation of cooperative training initiatives

LMC's projects are all multi-actor projects, based on a cooperation of several commercial enterprises and research bodies, usually with the involvement of agricultural producers. Farmers are represented by associations, cooperatives or the Chamber of Agriculture. Until 2018, LMC was able to carry out 10 major innovation projects with 80 different actors as well as numerous training measures. It is also involved in two EIP-AGRI OGs.

Finally, **Tuscany** has a strong track record in synergies between funding streams. It is very engaged in the S3 Agri-Food Platform, leading a thematic partnership on high tech farming (S3 HTF). S3 HTF started in 2016, with the aim of accelerating the development and adoption of precision farming technologies. In 2018, it has been selected by DG REGIO as a Pilot Action on Interregional Innovation Projects (see Section 3.2.2). The Pilot Action is still in its starting phase, but it is expected to create leverage of cross-regional investments, as there is a limited market for high tech farming applications in individual network regions. The plan is to aggregate potentials, provide expertise and to set up demonstration farms. There will also be synergies between different Funds, not only EAFRD. While the EAFRD will support some projects, the ERDF will invests in two regional demonstration farms in Tuscany. Tuscany is also the lead region for the ERIAFF (European Regions for Innovation in Agriculture, Food and Forestry) network.[36] Founded in 2012, ERIAFF is an informal network with over 40 members engaging in cross-border and interregional activities. It organises workshops and seminars, as well as an annual conference, and supports the development of Horizon 2020 consortia amongst its members. ERIAFF can be understood as an enabler, albeit an international one and an example in which the enabling body is in practice a very engaged individual, the coordinator of the network.

[36] https://eriaff2018.seamk.fi/eriaff-network/about-eriaff-network/

4. FINDINGS

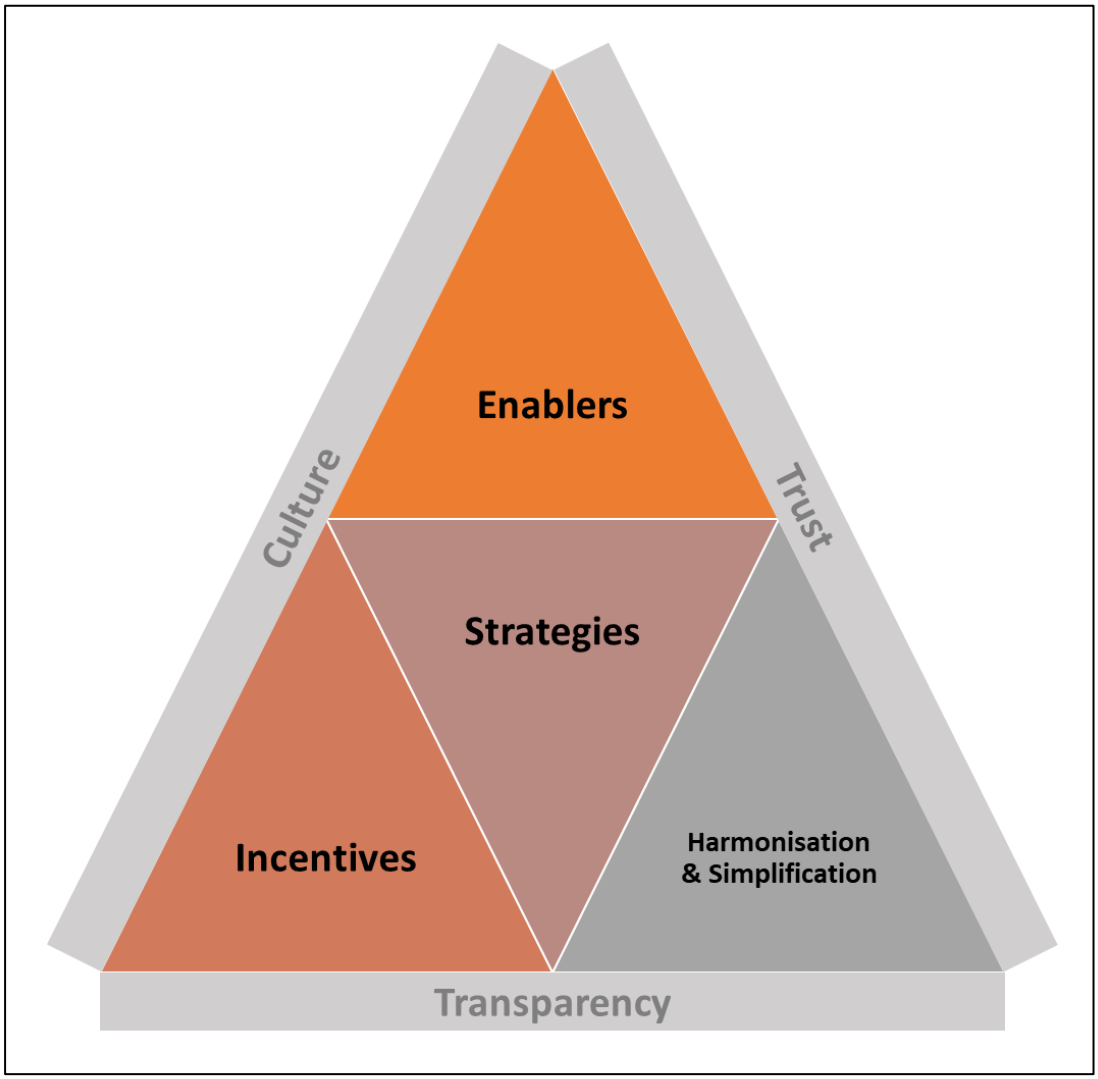
4.1 Complex but sufficient support environment

The above section has shown that there is a vast variety of support instruments available for innovation in agriculture. There are enough instruments to cover all types of needs and there are many successful projects dealing with different stages of agricultural innovation, covering a range themes and funded by a diversity of policy areas. These include the more obvious sources such as the EU's R&D policy (Horizon 2020) and agricultural policy (EAFRD – incl. EIP-AGRI and LEADER), but also others. There is evidence that also LIFE+ and particularly ERDF – both in mainstream OPs and in ETC – are supporting projects that contribute to agricultural innovation in a wider sense. Interestingly, the focus on R&D and innovation seems to be comparatively modest in EAFRD OPs, at least outside of EIP-AGRI and LEADER projects. However, there remain issues of harmonisation due to different rules, not only between direct and shared management instruments, high complexity of the innovation systems and their individual instruments and in a lack of transparency. Different communities are acting predominantly in their respective silos.

4.2 Focus on success factors for synergies

The factors discussed in Section 2.2 are not equally important and while some can actively be influenced by policy, others are more difficult to change (e.g. culture, trust). Research at EU level and the examples encountered in case studies suggest addressing the six principles of the EU AKIS strategy outlined above. Particularly, the **MAA provides a rationale for suggesting a focus on four key factors**: (1) enablers, (2) strategies, (3) incentives and (4) harmonisation and simplification (see Figure 7). The following sections present these key factors and also illustrate three other, so-called supporting factors: transparency, trust and culture.

Figure 7: Key factors for synergies



Source: Kah/Gruber (2019).

4.2.1 Enablers

The support environment for agricultural innovation is very complex and requires actors who have an overview across policy silos. These enablers of synergies need to know the system and be connected to all relevant players. This allows them to coordinate activities and bring actors together, thereby creating synergies. They stimulate cooperation, build trust and manage the complexity of the innovation system. Table 3 lists a number of examples resulting from the case study regions and beyond. Enablers can take different forms and can take the form of a cluster organisation, innovation platform, advisory service etc.

Table 3: Examples for enablers

Country	Enabler	Description
Austria	Food Cluster Lower Austria	Community building, identifying the needs / trends, development of cooperative innovation projects, cooperative trainings; over 100 members
Belgium (Wallonia)	The Innovation Route of the Walloon rural development network[37]	Educational peer-to-peer programme for farmers that are engaged into innovative practices, facilitated through participative techniques and scientific expertise
Belgium (Flanders)	Academy on tour[38]	Organised day trips for farmers, food entrepreneurs and advisors to projects in neighbouring countries
France	USAGES - peasants' knowledge base for the Commons[39]	Digital open platform for disseminating innovative approaches, co-funded by the EAFRD
Ireland	Teagasc (Irish Agriculture and Food Development Authority)[40]	Offers knowledge programmes responding to farmers' needs, e.g. ConnectEd giving access to publications, training and support tools
Scotland	RISS (Rural Innovation Support Service)[41]	Bottom-up rural innovation, addressing land managers' needs And exploring practical and sustainable solutions

Source: authors.

Yet, bodies that could serve as enablers are hindered by silos and a lack of communication between different policy fields. In Scotland, interviewees mentioned that Scottish Enterprise as the body responsible for business development tends to cater for big business and does not show much interest in farmers. In Lower Austria, for instance, there seems to be a "red line" between R&D support for the primary and secondary sectors. Support is provided by policy either for one or for the other area; a combination is not foreseen. However, Lower Austria has created its own solution by regional funding instruments. Elsewhere in Austria, the red line can only be crossed via EIP-AGRI.

4.2.2 Strategies

It can be argued that synergies can only be created systematically if there are strategies that set out priorities and objectives. In other words, there are no systematic synergies without strategies. Most individual instruments are already operating on the basis of strategies, which serve as frameworks for aligning and focusing resources. ESI Funds, for instance, are implemented on the basis of national ESIF-wide strategies (Partnership Agreement) and national or regional Fund-specific strategies (Operational Programmes). Yet, there is no obligation for Member States to set up strategies for directly-managed instrument. Even if these would exist, there is a need for strategies that are thematically oriented, not segregated by policy instruments. These should define objectives that will be pursued by using a variety of instruments and funding sources. **Smart specialisation strategies**, for instance, can be a suitable approach and the implementation of the S3 approach has been viewed positively so far. According to the EC (2018), smart specialisation prepared the ground for better innovation governance interregional teaming up around S3 priorities.[42]

[37] https://enrd.ec.europa.eu/projects-practice/innovation-route-walloon-rural-development-network_en

[38] https://enrd.ec.europa.eu/projects-practice/academy-tour_en; http://www.innovatiesteunpunt.be/en

[39] https://enrd.ec.europa.eu/projects-practice/usages-peasants-knowledge-base-commons_en; https://www.latelierpaysan.org/USAGES-2015-2018

[40] https://www.teagasc.ie/

[41] https://www.innovativefarmers.org/welcometoriss

[42] For instance, Stairway2Excellence, support for lagging regions by the S3 Platform, Twinning and Teaming, Vanguard Initiative, thematic platforms, interregional S3 partnerships and preparing transnational Horizon 2020

While the S3 approach is suggested as a way for regional specialisation more widely, the EU launched an AKIS-specific process, which resulted in the publication of an EU-level AKIS strategy in June 2016 (see above). For 2021+, current regulatory proposals include the requirement for **CAP Strategic Plans**. These will need to be set up at Member State level, acting as national strategic framework for all the CAP agricultural and rural development support.[43] The plan will need include a strategic AKIS plan, following the requirements resulting from the regulatory proposal.[44] These AKIS plans present an opportunity to outline objectives and pathways for potential synergies in each Member State.

4.2.3 Incentives

Incentives are needed to stimulate cooperative activities, as synergies do not offer a direct benefit to policy-makers focused on implementing their own instruments. Currently, pursuing synergies means additional workload and increased risks for policy-makers and particularly beneficiaries, e.g. in terms of audits. While synergies are part of the high-level and political discourse, commitment by actors at implementation level is limited. Examples for provisions specifically encouraging synergies are rare. Also, while these only require vague commitments by potential beneficiaries in funding applications, the incentive effect of these is not very high, as the potential benefits are potentially too low to outweigh the additional efforts and risks. For instance, during the appraisal phase of LIFE+ projects, extra points are given for projects that exploit synergies. This is currently not the case in Horizon 2020, as this would go against the principle of excellence and would disadvantage regions which only receive little Cohesion policy funding and therefore would have less opportunity to create synergies.

In order to create networks (multi-actor projects following an interactive innovation model), incentives are needed for the individual partners, especially end-users/farmers. Ideally, there would be advisory support (e.g. enablers, see above) and / or some small-scale financial support for project development to cushion the direct costs of network building and project development (e.g. travel, external consultants etc.). This could be combined with a vouchers system, for instance innovation vouchers. At international level, the incentives could operate in similar ways to what COST is currently offering in research. A COST-like instrument for agricultural innovation could help lifting national-level projects to the international level.

4.2.4 Harmonisation & Simplification

Different policy instrument operate under different sets of rules. This does not only create unnecessary complexity that discourages synergies, but it can also sometimes mean that there are

consortia. See Reppel K (2018) *New Opportunities for Synergies & Complementarities between ESI Funds and Horizon 2020*, presentation at SCREEN Project event, 22 February 2018.

[43] In 2014-20, rural development programmes funded by the EAFRD are covered by the current Partnership Agreement, together with all other ESI Fund. However, according to current proposals, the 2021-27 Partnership Agreement will not cover the EAFRD anymore. See also European Parliamentary Research Service (2018) *CAP strategic plans*, Briefing, December 2018, http://www.europarl.europa.eu/RegData/etudes/BRIE/2018/630324/EPRS_BRI(2018)630324_EN.pdf

[44] See Article 95: "*1. Each CAP Strategic Plan shall contain the following sections: […] (g) a description of the elements that ensure modernisation of the CAP;*" in European Commission (2018) Proposal for a regulation of the European Parliament and the Council establishing rules on support for strategic plans to be drawn up by Member States under the Common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulation (EU) No1305/2013 of the European Parliament and of the Council and Regulation (EU) No 1307/2013 of the European Parliament and of the Council, COM(2018) 392 final, Brussels, 1.6.2018.

regulatory obstacles that cannot be overcome. Regulatory frameworks should be harmonised or at least simplified to reduce complexity. In the area of agricultural innovation, most issues arise from the different rules for directly-managed instruments (mainly Horizon 2020) and funding under shared management (ESI Funds). Although policy-makers in Member States tend to blame the EU level for regulatory complexity, Member States also play a role in creating a complex, multi-layered system of rules. According to some EC officials, large parts of it are homemade and there is a lot of gold-plating.[45]

Significant progress in view of harmonisation and simplification has been made with the adoption of the **omnibus regulation**, which revises the EU's financial rules.[46] Both the omnibus regulation of the current period as well as the proposals for the regulations for the period 2021-27 provide extended possibilities for the application of simplified cost options.[47] In addition to the standard unit costs (e.g. for staff costs), the following proposals for 2021-27 are worth mentioning:

- flat-rate financing of up to 40% of the direct eligible staff costs to cover the remaining eligible costs ("residual costs flat rate") (Art. 51, CPR proposal); and
- flat-rate financing of direct staff costs at 20% of the direct costs (Art. 50, CPR proposal).

The increased use of simplified cost options in the future is an opportunity for significant simplification. For instance, the option of 40% flat-rate financing on direct eligible staff costs can be used to cover the residual costs of staff-intensive innovation measures. Ideally, a combination of the above-mentioned standard unit costs for staff hours and the 40% flat-rate for "residual costs" could be pursued.

4.2.5 Supporting factors

Transparency

The area of agricultural innovation is very complex, with a context-specific vast diversity of actors carrying out a wide range of activities. Individual actors are not necessarily aware of other projects operating in a similar area, which could offer scope for synergies. Transparency is needed to identify opportunities for synergies. Information about regional/national activities (topics of calls, projects, OGs) in agricultural innovation needs to not only be made available but also proactively promoted. Tools can include searchable databases or events, both of which need to be facilitated, e.g. by an enabler (see above). Hence, transparency is considered to only be supporting factor, as it is of limited usefulness without the proactive promotion of these tools by an enabler.

[45] For more information on gold-plating see Böhme K et al (2017) *Gold-plating in the European Structural and Investment Funds*, Report to the European Parliament's Committee on Regional Development, Brussels, http://www.europarl.europa.eu/RegData/etudes/STUD/2017/585906/IPOL_STU(2017)585906_EN.pdf

[46] see Omnibus regulation, articles 125 and 181-184, http://data.consilium.europa.eu/doc/document/PE-13-2018-INIT/en/pdf

[47] Greater use of simplified cost options (or payments based on conditions) for the ERDF and the Cohesion Fund could substantially reduce total administrative costs – by 20-25% if these options are applied across the board. Implementing these types of funding is possible through a “delegated act”, which should provide both increased legal certainty and direct negotiation with the EC. If, at the same time, the EC is clearly pushing ahead with the deployment of the delegated acts, a certain pragmatism can also be expected from the drafting of the “delegated acts”.

Currently, many information initiatives exist only within their specific silos, e.g. the searchable CORDIS database of Framework Programme projects since 1990[48] and a collection of rural development projects.[49] There also databases gathering examples across policy areas, such as the "EU Budget Focused on Results" initiative[50] and the EC page "investEU".[51] However, the depth of information is very limited (no information about funding sources and implementation governance) and, particularly in the latter case, the number of entries is very limited (only 17 entries under "agriculture"). Most importantly, the lists of interventions are "ex-post", i.e. they provide information about already concluded projects and best practices and are therefore of limited use.

Trust

Only actors that trust each other can work constructively to create synergies. This requires conceding some control over instruments and funding to other actors. Silo mentalities and competitive attitudes in in different policy areas do not allow for trust. To some extent, these attitudes have been encountered in this research, both in Member States, at national/regional levels, and at EU-level, between policy-makers in different ministries, DGs or other bodies. Trust is necessary for the development of multi-actor projects. The partners must get to know each other and be able to build trust in each other. Since enablers play an important role here, it requires a trusting relationship between enablers and the actors involved so that projects can emerge.

Culture

Some areas benefit more than others from a culture of cooperation and innovation. Agricultural innovation can be particularly challenging in traditional farming contexts, with low pick up of innovative and an ageing farming population. Policy measures to change existing cultures are limited and long-term

[48] https://cordis.europa.eu/projects/en

[49] https://enrd.ec.europa.eu/projects-practice_en

[50] https://ec.europa.eu/budget/euprojects/search-projects_en

[51] https://europa.eu/investeu/projects_en

4.3 Improve synergies with collaborative approaches

4.3.1 Creating an enabling space for synergies

Figure 8: The gap between internationally-oriented and place-based support systems

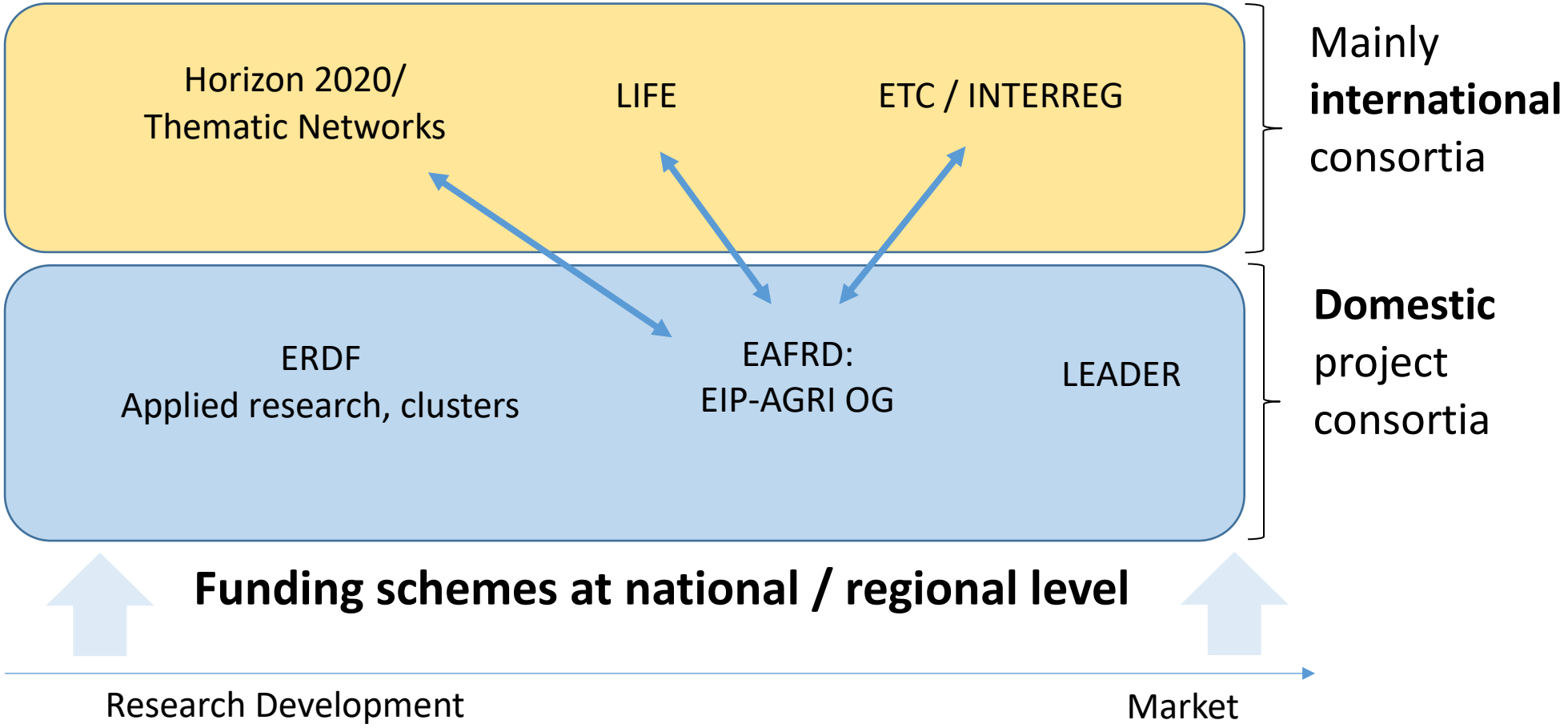
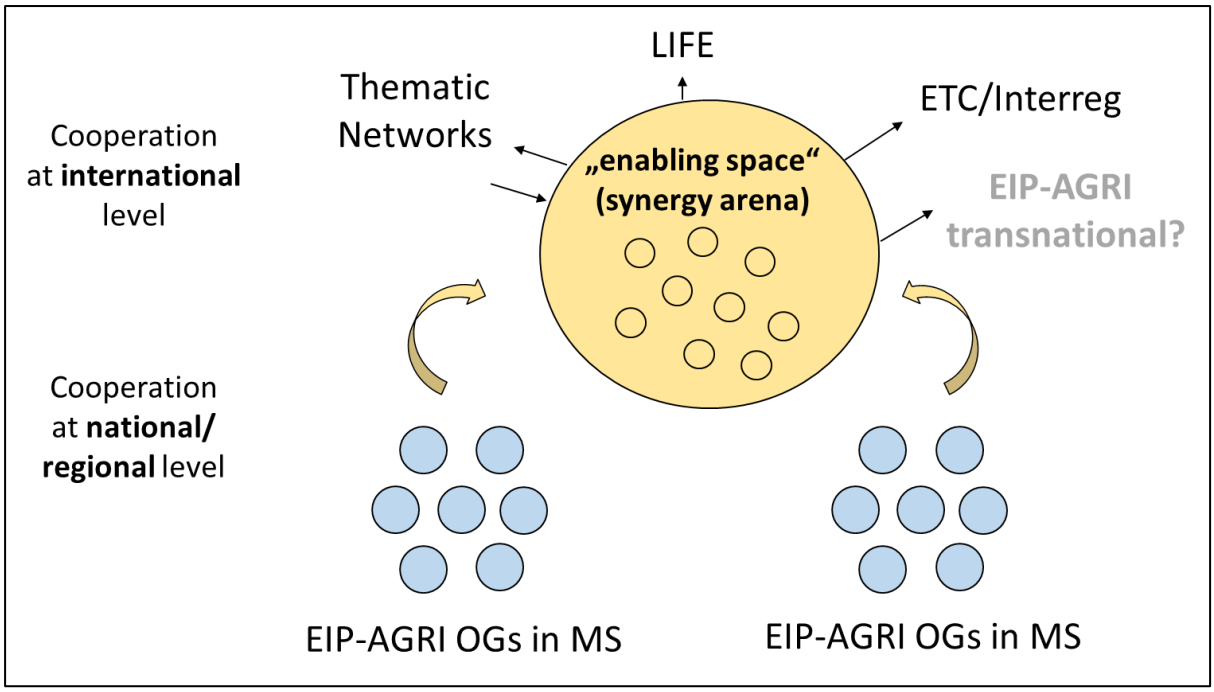


Figure 8 illustrates the gap between place-based support systems for innovation, which result in domestic project consortia, and internationally-oriented ones, which result in international project consortia. This gap exists at early research development stages as well as at stages closer to the market (e.g. ERDF-funded applied research vs. Horizon 2020 projects) and is difficult to bridge. EIP-AGRI OGs operate in their respective area and their members do usually not interact in a multi-actor space internationally. There is the option of participating in Focus Groups, but these remain temporary structures.

Hence the aim should be to create an **international synergy arena for multi-actors** (see Figure 9). If innovation activities should be lifted from the domestic level, funded by shared management instruments, to the international level, funded by direct management instruments or ETC, the innovation actors require a forum – or synergy arena – in which they can build contacts and develop ideas (e.g. to apply for a Thematic Network under Horizon 2020). Similarly to the existing instruments of COST, funding could be made available to multi-actors to meet, e.g. covering costs related to travel and other activities needed to develop networks and, in the end, create synergies. Another angle could be the provision of funding through some Erasmus-like instrument under EIP-AGRI. A practical recommendation would therefore be the creation of a **transnational EIP-AGRI scheme**.

Figure 9: Enabling space for synergies



Source: authors.

However, this so-called enabling space or synergy arena requires a series of preconditions. There must already by a sufficient number of actors/OGs. The OGs must be consolidated: they need to settle and organise themselves before they can start with international cooperation. Hence, one crucial condition is that synergies need to be given sufficient time to develop.

Ideally, a transnational EIP-AGRI scheme would be under direct EC management, to avoid the complexity that transnational cooperation encountered in shared management systems (e.g. ETC and LEADER). Some lessons can be learned from LEADER, which has been supporting transnational cooperation since its start in 1994. While transnational cooperation has been seen as providing

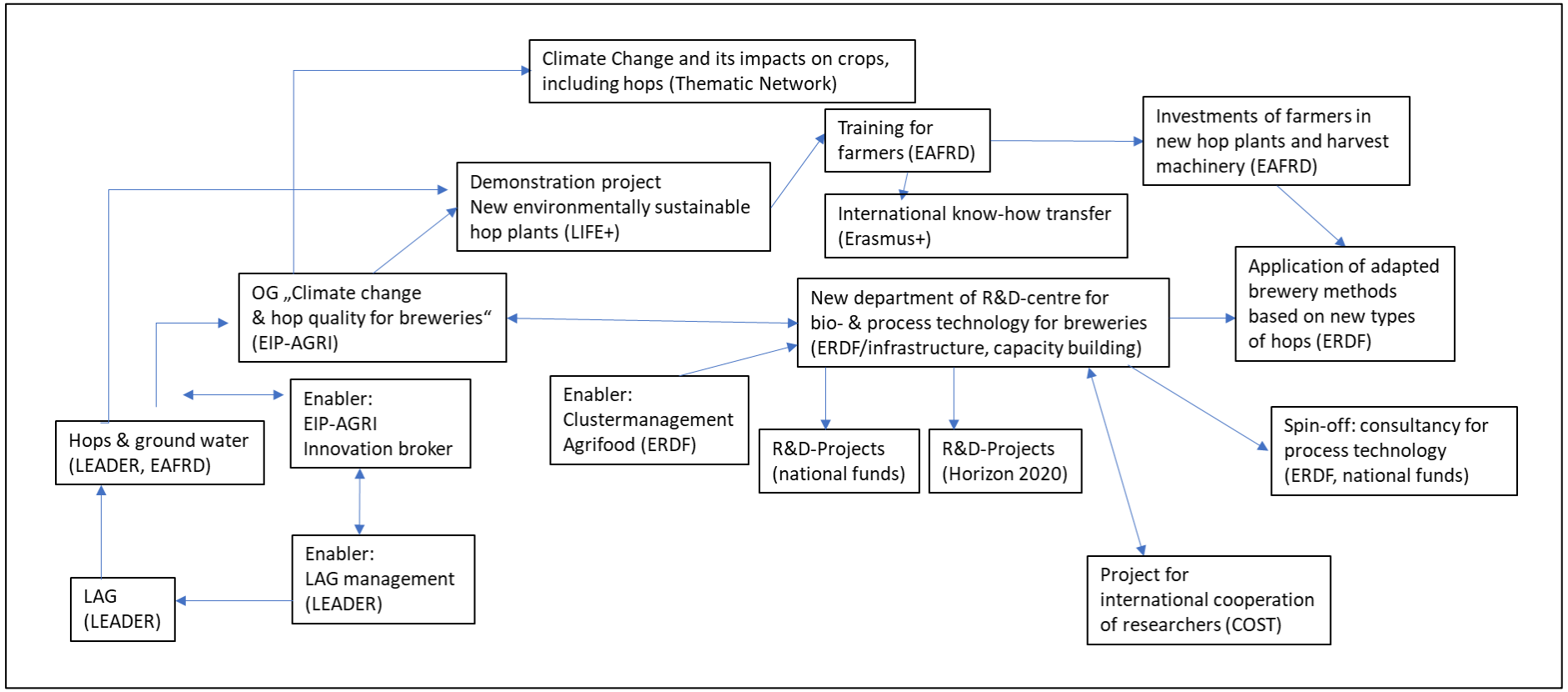
substantial added value, its full potential could not be fulfilled due to the challenges of shared management. The funding for transnational LEADER project comes from different EAFRD OPs in different Member States, which means different rules and conditions in for each cooperation partner, different time frames, different call themes, etc.

4.3.2 Virtual case of synergies in agricultural innovation

A virtual case on how synergies in innovation could work is illustrated in (see Figure 10), using the example of hop growing and brewing.

- The starting point was the challenge that the cultivation of hops for brewing also had a negative impact on the pollution of groundwater. This issue has been identified by a LEADER group and the LAG management and a project has been developed (funded by **LEADER/EAFRD**).
- As part of the project, it was recognised that climate change had a significant impact on hop planting and hop quality (early maturation, pest infestation, etc.), which also affected the quality of the brewing process. This issue has been addressed through an innovation broker in the context of the EIP-AGRI and a trans-regional Operational Group has been formed (**EIP-AGRI/EAFRD**).
- As the topic of climate change and the impact on crops is of major importance, parts of the OG were able to could join Thematic Network (**Horizon 2020**).
- At the same time, the experiences gained in the LEADER project and the EIP-AGRI OG led to a demonstration project about new cultivation methods for hops pre-serving groundwater resources (**LIFE+**).
- Through Erasmus+, a training programme for farmers has been developed and tested internationally in collaboration with research and educational institutions (**Erasmus+**, **EAFRD**).
- Also, a new department for biotechnology and process technology in brewing (**ERDF**, **national funding**) was set up in a research centre.
- This research centre was soon able to carry out research, funded both domestically and internationally (**domestic funding**, **Horizon 2020**).
- For the preparation and coordination of the research, a COST project was successfully acquired. This also allowed establishing a large research network (**COST**).
- Finally, farmers have invested in new hop growing methods (**EAFRD**) and brewers have adapted their technologies and made investments into brewing (**ERDF**, **national funds**).
- A successful spin-off has emerged from the R&D centre, which focuses in the area of "process technologies for breweries (**ERDF**, **national funds**).

Figure 10: Virtual case – innovation in hop growing



Source: Kah/Gruber (2019).

5. CONCLUSIONS

The research showed that there is a broad variety of support instruments available for innovation in agriculture, covering all stages of the innovation process. However, they are not necessarily linked to each other and operate independently, making the creation of synergies challenging. Also, a high complexity and different sets of rules, particularly between direct and shared management instruments, deter policy-makers from pursuing synergies.

Synergies do not easily develop automatically, but have to be supported proactively. In order to identify in what policy intervention is best suited, the research started from the assumption of a series of preconditions. These were then narrowed down to four success factors:

- Enablers that can provide guidance and coordination in agricultural innovation systems
- Strategies that define objectives and priorities
- Incentives that make synergies worth the additional effort and associated risk
- Harmonisation of rules between different instruments and associated simplification

In addition to these, transparency, trust and culture play the role of supporting factors.

In terms of recommendations to policy-makers, creating and supporting enablers appear to be the most important course of action. The main reason for this is that the activities of enablers are linked to other success factors. Enablers can, for instance, coordinate strategy development or ensure transparency by managing information flows. Another aspect that should be emphasised, but could not be discussed in detail is the importance of continuity. Synergies require a collaborative innovative culture built on trust, and building trust takes time.

It is interesting to note that the findings of this study relate in great part to the six implementation principles of the EU AKIS strategy mentioned in Section 3.1, for instance by suggesting ways to increase interactive innovation and the use of the MAA, or by emphasising international cooperation and the need for strategic approaches.

Looking ahead, EC proposals indicate an increased visibility of agricultural innovation in 2021-27. There will be a dedicated €10 billion budget under the new Horizon Europe for research and innovation in food, agriculture, rural development and the bioeconomy.[52] To what extent there will also be measures to facilitate an increased use of synergies in the future remains to be seen.

[52] At the same time, some proposals risk to reinforce existing silos. The current plans for the future MMF indicate that the EAFRD is decoupling itself from other ESI Funds. It is not covered by the CPR anymore and is not integrated into the Partnership Agreement, which will only cover the other 4 ESI Funds.

6. ANNEX

List of interviewed institutions

6.1 EU level

- DG Agriculture and Rural Development
- DG Research and Innovation
- DG Regional and Urban Policy
- DG Environment
- EIP-AGRI Service Point
- European Network for Rural Development Contact Point

6.2 Member State level

North-East Romania

- North-East Regional Development Agency
- Gheorghe Zane Institute of the Romanian Academy

Slovenia

- Government Office for Development and EU Cohesion Policy (ERDF, ESF and Cohesion Fund Managing Authority)
- Ministry of Agriculture (EAFRD Managing Authority)
- Ministry of Public Administration
- Smart Specialisation Contact Point
- Agricultural Institute of Slovenia

Scotland

- Scottish Enterprise
- Scottish Rural Network
- Soil Association

Lower Austria

- Regional development agency ecoplus
- Cluster management “Food Cluster Lower Austria (LMC)”
- Ministry for Sustainability and Tourism

Tuscany

- Regional Government (ERDF Managing Authority)
- Tuscany Brussels Office / ERIAFF network