WP4 Cross-sectoral interactions and synergies

Cross-sectoral interactions as drivers of rural-urban synergies
D4.3 Synthesis Report

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Abstract

The synthesis report of Work Package 4 addresses key drivers of cross-sectoral interactions and rural-urban linkages. This integrates results from different sources: i) case studies (Living Labs and Communities of Practice) (Task 4.1), ii) regional workshops (Task 4.3) and iii) thematic workshops (Task 4.2). The different approaches to cross-sectoral interactions provide new insight on how they unfold according to specific characteristics of rural-urban areas, specific nature of sectors and different place-based initiatives. Moreover, broader areas of cross-sectoral interactions are also identified as a basis for promoting rural-urban synergies in different contexts. These analyses make it possible to identify key patterns of cross-sectoral interactions, factors influencing these interactions, substantive and structuring practices as well as implications for smart growth and rural-urban well-being.

Summary

Rural-urban linkages and synergies develop through interactions across sectors and depend on actions, strategies, and processes led by a wide range of stakeholders. Stakeholders implement different practices (e.g., flows of goods, new rules, coordination mechanisms, etc.), by which cross-sectoral interactions are effective. The notion of "sector" refers to topic areas related to public policies, e.g. EU policies, such as food, transport, labour market, natural environment, etc. In the ROBUST project, these sectors have been defined according to five themes (addressed by the five Communities of Practices): i) business models and labour markets, ii) public infrastructures and social services, iii) sustainable food systems, iv) culture, and v) ecosystem services.

In Work Package 4 (WP4), as part of the ROBUST project, we identify the main forms of cross-sectoral interactions linked to rural-urban relations, i.e. interactions that, in some way, mirror relationships and/or synergies across territories of urban, rural and peri-urban nature. Through a multi-actor and place-based approach, our research makes progress in distinguishing the conditions that are necessary to support the shift to work under a cross-sectoral approach on rural-urban relations. The specific objectives of WP4 are i) to identify patterns of cross-sectoral interaction in diverse settings and in relation to the five thematic fields or CoPs; ii) to understand the dynamics and diversity of cross-sectoral interaction patterns in terms of rural-urban relations, key actors, and enabling and constraining factors; and iii) to assess the impact of cross-sectoral interactions and synergies on smart, sustainable and inclusive growth. Further, we integrate the impact of COVID-19 on rural-urban relations and cross-sectoral interactions by translating the discussion around growth to welfare in a rural-urban economy.

The first section of this report presents a theoretical introduction to rural-urban relationships and cross-sectoral interactions. The introduction also presents the main methodological strategies and the different phases followed by the coordination team and Living Labs. In the findings we examine cross-sectoral interactions from different perspectives. Firstly, we focus on case studies according to the data collected from 11 Living Labs and five Communities of Practice. This allows us, on the one hand, to study cross-sectoral interactions according to each particular rural-urban context and Living Lab. On the other hand, working from the Communities of Practice approach make it possible to explore interactions from the perspective of each particular sector. In this report we also examine specific place-based initiatives involving cross-sectoral interactions, based on the data gathered from regional workshops. This section focuses on the nature of the place-based initiatives and the cross-sectoral interactions identified during the regional workshops. After exploring these initiatives in detail, we provide a second-level analysis developed during thematic workshops, from which broad areas and patterns of cross-sectoral interactions are identified. The results also analyse key factors influencing cross-sectoral interactions, including the COVID-19 pandemic. In the conclusion we discuss several key topics, such as key patterns of cross-sectoral interactions; the role cooperation, political will and conflict; the different stakeholders that lead cross-sectoral interactions; key practices to implement initiatives involving cross-sectoral interactions and rural-urban synergies; and the main implications of our study for smart growth and well-being.

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List of abbreviations

LL	Living Lab
CoP	Community of Practice
ES/ESS	Ecosystem service/s
LAG	Local Action Group
WUR	Wageningen University & Research
FE	Foundational economy
TEPs	Territorial Employment Pacts
UV	University of Valencia
IIDL	Research Institute of Local Development
NGO	Non-Governmental Organisation
RIA	Research and Innovation Agenda
BMLM	Business Models and Labour Markets
PI&SS	Public Infrastructure and Social Services
EC	European Commission
WP	Work Package
SME	Small and medium enterprise

1 Introductory remarks

1.1 Background and aim of the study

In the EU-project ROBUST— "Rural-Urban Outlooks: Unlocking Synergies"—within the Horizon 2020 Programme, the concepts of "Living Labs" (LL) and "Community of Practice" (CoP) are the main approaches to explore region-specific aspects and governance structures, as well as planning instruments (Kobzeva & Knickel, 2018). The main intention is to exchange knowledge among regional actors of the LLs as well as to elaborate a shared repertoire. A LL is here defined at the project as a placed-based form of experimental collaboration that emphasizes co-creation in a real-world setting (Voytenko et al., 2016). The "Communities of Practice" in ROBUST are organised around five rural-urban themes: sustainable food systems, cultural connections, ESS, new business models and labour markets (BMLM) and public infrastructure and social services (PI&SS). They provide a structured forum for sharing real-time experiences and findings from the LLs, creating in turn synergies among the themes.

In a total of 11 LLs (Figure 1), 24 European institutions worked together from June 2017 to November 2021 in national teams, each formed by a scientific and a practice partner. Both partners are involved in the conception and implementation of investigations within the LL. Together with policymakers, researchers, businesses, service providers, citizens and other stakeholders they form LLs that develop and test new ways to solve problems in a specific geographic region and through different rural-urban themes. Likewise, the interdisciplinary and transdisciplinary orientation of the content (Schneider et al., 2019) is reflected both in the representatives of the international scientific consortium from the fields of spatial sciences, geography, agricultural economics, environmental sciences, sociology and anthropology, as well as through the practice partners and stakeholders in the region.

Figure 1. Eleven LLs across Europe. Rural-Urban Outlooks: Unlocking Synergies (ROBUST).

The ROBUST project starts from the idea that rural-urban relations and synergies are important and need to be improved to strengthen rural-urban interdependence. The European Union is calling for the need to work under a cross-sectoral approach, particularly when addressing territorial development.

The overall aim of Work Package (WP) 4 is to evaluate the impact of cross-sectoral interactions and synergies on smart, sustainable and inclusive growth. The WP was planned to start for month 18 –November, 2018. The specific objectives of WP4 are:

- To identify patterns of cross-sectoral interaction in diverse settings and in relation to the 5 thematic fields.
- To understand the dynamics and diversity of cross-sectoral interaction patterns in terms of rural-urban relations, key actors, and enabling and constraining factors.
- To assess the impact of cross-sectoral interactions and synergies on smart, sustainable and inclusive growth objectives.

An initial attempt to meet these aims was started on May 24, 2019 at the Helsinki meeting. There, objectives and cross-sectoral relations that were sought were defined. Then, a proposed methodology by the Valencia team was discussed to carry out the whole work.

Four important milestones in the process are the identification, characterisation and analysis of cross-sectorial interaction (Task 4.1.), set of thematic workshops (Task 4.2) (planned for month 24 – May, 2019), regional workshops (Task 4.3) (planned for month 27 – August, 2019) and Synthesis report "cross-sectoral interactions as drivers of rural-urban synergies" (Task 4.4) (Figure 2)[1].

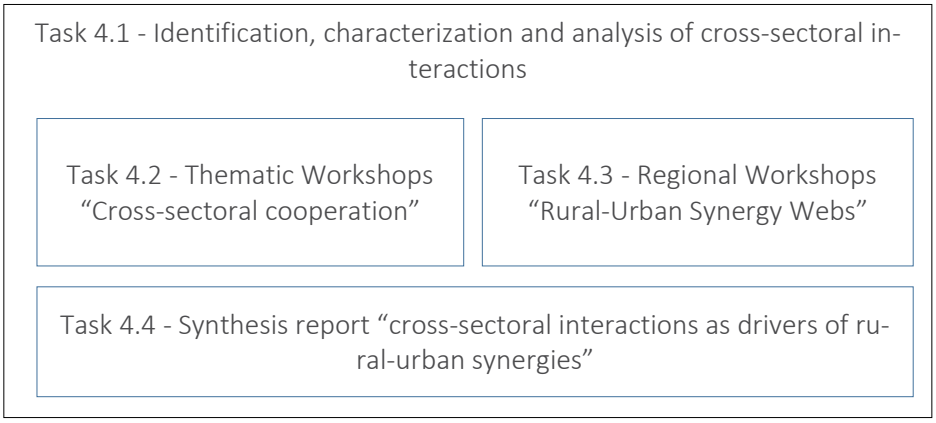

Figure 2. WP4 framework

This report is structured as follows. The following units of this section present the key conceptual ideas and introduce the method and data. Section 2 exposes the main findings of the study according to the three main approaches to cross-sectorial interactions. The first one (Section 2.1.) focuses on case studies and is based on the data collected from the LLs and COPs work during the whole project. The second part of the report (Sections 2.2 and 2.3), examines specific place-based initiatives involving cross-sectoral interactions based on the data gathered from the regional workshops. This section does not focus on the territorial context of each LL, but rather on the nature of the place-based initiatives. After exploring these initiatives in detail, Section 2.4

[1] The ROBUST coordination team decided to change the order of workshops compared to the Grant Agreement. So, the regional workshops were held before thematic workshops.

provides a second-level analysis developed during the thematic workshops from which broad areas and patterns of cross-sectoral interactions can be identified. Section 2.5. presents the main factors influencing cross-sectoral interactions. Finally, Section 3 presents concluding remarks.

1.2 Introduction to cross-sectoral interactions and rural-urban linkages

Rural-urban cross-sectoral interactions are certainly complex, even more so if we take into account the role of stakeholders at different scales or levels of action. Although referring to territorial governance, the conceptual framework developed by ESPON (2013a) (Figure 3) can help to understand this complexity, and it is useful to frame in it rural-urban cross-sectoral interactions, at least to some extent. In this scheme we have, on the one hand, the interactive resources, where we would have the different activities or practices, each of them with certain techniques and following certain rules. These resources (activities) are obviously managed by stakeholders, at different levels or scales, from local to supranational. In ROBUST, however, we are particularly interested in those where rural-urban relations take place, usually from the local to the regional scale. But often the stakeholders at these scales are also present at other scales, and this is an important plus, since these relationships constitute resources that can be important in development processes at the local, sub-regional or regional scales. And for all of this to work properly, different dimensions must be taken into account, from the coordination of actions (especially cross-sectoral actions), the integration or articulation of public development policies, to the mobilisation of participation and the transformation of this into cooperation, among others.

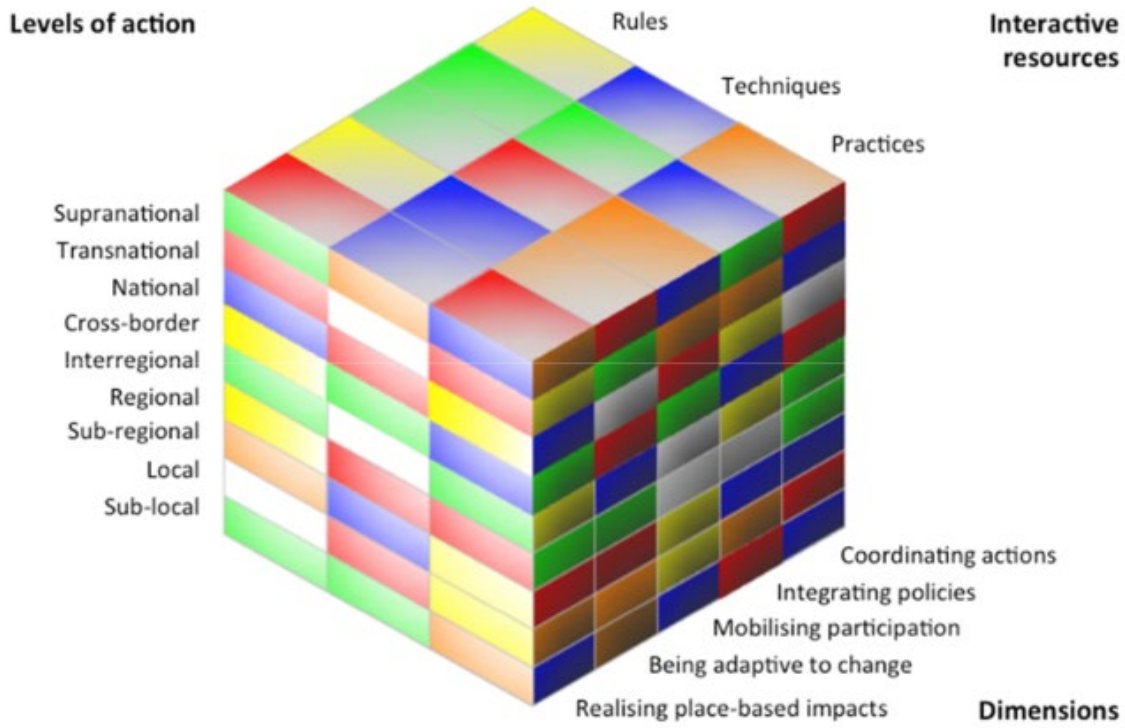

Figure 3. A conceptual framework for territorial governance (ESPON, 2013a)

The notion of "sector" has been mentioned. However, this is a complex notion. From a traditional economic perspective, it can be linked to the three conventional productive sectors: agriculture, industry, and services. However, this approach seems to be too narrow for improving the understanding of rural-urban linkages. "Sector" needs to be used with a broader meaning. It may refer to topic areas, for example in the case of EU policies and national level, such as transport, energy, food, agriculture, education, health, environment or employment; many of them interdependent by nature.

In the context of the ROBUST project, "sectors" may be taken to mean topic areas, i.e. the five themes represented by each of the five Communities of Practices (CoP themes): i) BMLM, ii) public infrastructures and social services, iii) sustainable food systems, iv) culture, and v) ESS. These five CoP themes are also broad enough to correlate with the sorts of examples of topics addressed at the European Union and national policy levels.

It is important to note that "sectors" do not represent the central focus of this WP[2], we are concerned here much more with the interactions they have between them. All the sectors listed above involve numerous and diverse interactions with each other that illustrate the nature of linkages and synergies between rural, peri-urban, and urban areas. "Interactions" are, therefore, the core element of WP4. In particular, WP4 is committed to unpack "cross-sectoral" interactions, in other words, interactions across sectors. By "cross-sectoral" we refer to processes relating to or affecting more than one group, area or section (Oxford Dictionary, 2021). More specifically, it is about what occurs when two or more sectors (the five topic areas represented by each CoP theme) share or coincide in some type of activity, product, stakeholder, regulation, etc. Thus, the five *CoP themes* express "what" kind of cross-sectoral interactions are being developed to enhance rural-urban linkages (Figure 3).

Building from the previous idea, cross-sectoral interactions, in practice, are led by a diversity of stakeholders, whose joint actions make possible those processes of connecting and impacting upon different sectors. *Stakeholders* express the "who" dimension –who develops the cross-sectoral interactions that support rural-urban linkages and synergies. Interactions between stakeholders refer to both individuals and organisations. We classify stakeholders as follows:

- Governmental actors (policy-makers, politicians, civil servants) and institutions (from local to national government, and public bodies in general).
- Private actors (farmers, entrepreneurs, firms, cooperatives, professional consulting, etc.).
- Representatives and interest groups (trades unions, agricultural professional organisations, business organisations, consumer organisations, etc.).
- Civil society –as individuals and organisations– (e.g. NGOs, users).
- Knowledge centres (universities, research/technological institutes and higher education organisations).

Furthermore, stakeholders make cross-sectoral interactions effective through a wide range of practices. Stakeholders generally implement an extensive variety of *practices* that illustrate "how" cross-sectoral interactions are implemented. These practices can have tangible and intangible dimensions:

[2] See WP3 report for a detailed analysis of each CoP theme

- Flows of goods (e.g., agricultural products and food).
- Flows of public services (e.g., education, transport, health, or administrative services) and private services (e.g., tourism, financial services, or consulting services).
- Flows of people (e.g., commuting and labour mobility, or migration flows).
- Cultural practices (e.g., history, beliefs and motivations, sense of place, identity).
- Socio-organisational practices (e.g., new ways of civic participation in economic activities, planning instruments and regulations, new ways of coordination between stakeholders, or the inclusion of new stakeholders in existing initiatives).

In WP4, cross-sectoral interactions are only explored if they involve processes supporting rural-urban linkages and synergies. Figure 4 shows that cross-sectoral interactions between CoP themes are effective through a set of interactions between stakeholders, and a plurality of practices. A relevant issue for our objective in ROBUST is the ways in which cross-sectoral interactions take place within the same territory or LL, as is the case in Valencia, where agriculture in peri-urban areas is strongly connected to regional food traditions, heritage and a singular landscape valued by the whole population. This could be defined as a cross-sectoral interaction between food systems and cultural connections that enhances the linkages between Valencia city and its metropolitan and peri-urban area. Further, cross-sectoral interactions can also have a "multi-locational" character, for instance, a new product or production process or a new initiative combining knowledge from different stakeholders located in different territories and different sectors

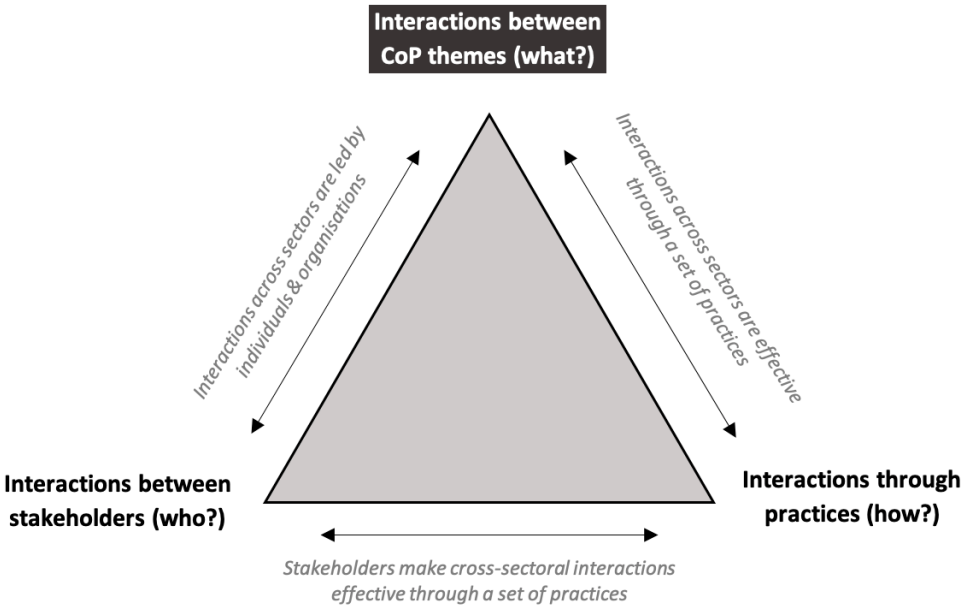

Figure 4. Interactions between CoP themes as result of interactions between stakeholders and practices

Socio-organisational practices can be linked to governance processes, which are key in cross-sectoral interactions and rural-urban relations. The governance process can be represented through three main elements: i) stakeholders, ii) action/development, and iii) strategies. At the same time, these three elements interact with each other through processes of coordination, cooperation, and innovation. Coordination between organisations and cooperation within initiatives or organizations are a source of innovation (commercial, organizational, and social) between areas, and that in turn involves new ways of relationships and rural-urban linkages

(Caniglia et al., 2021). Coordination and cooperation through stakeholder's, organisations, initiatives and actions, as well as strategies to integrate and engage different sectors and even regions or municipalities are the core of governance processes. The strategies here (for example for food procurement, or integrated transport) are also tools for cross-sectoral and rural-urban coordination of innovation and cooperation. It is understood by coordination when actors align and support their activities, but acting independently, in order to ensure they do not replicate information. Cooperation refers to shared actions and common objectives.

Our rural-urban cross-sectoral approach is based on coordination/cooperation and mutual learning for enabling multiple societal actors to flourish considering that cross-sectoral relations are also understood as interactions (communication, exchange, competition, conflict, coordination, cooperation, and control), as well as tangible and intangible flows (information, financial, human, or tangible resources) (Furmankiewicz et al., 2016; Weber & Schaper-Rinkel, 2017). These interactions and flows can enhance individual and social learning and help reorient decisions, reformulate plans, and move adaptively toward improved rural-urban synergies. It also invites attention to relationships and conditions that can hinder or foster joint efforts to generate knowledge and tackle big challenges (Schneider et al., 2019), in other words, enabling and hampering factors. Overall, effective relations can help to use, improve and conserve the goods and services found in the different sectors of rural and urban areas and thus strengthen rural and urban dependence (Woods, 2009).

1.3 Methods and data

Cross-sectoral interactions were explored according to the framework developed in the previous sections, and planned in two main phases: i) 11 regional workshops (D4.2) and ii) six thematic workshops (D4.1). The aim was to carry out an analysis of the kind of cross-sectoral interactions that have been found across CoP themes and within LLs (Figure 5). It is important to note that the results of this WP are also based on monitoring case studies, i.e. the 11 LLs and the five COP.

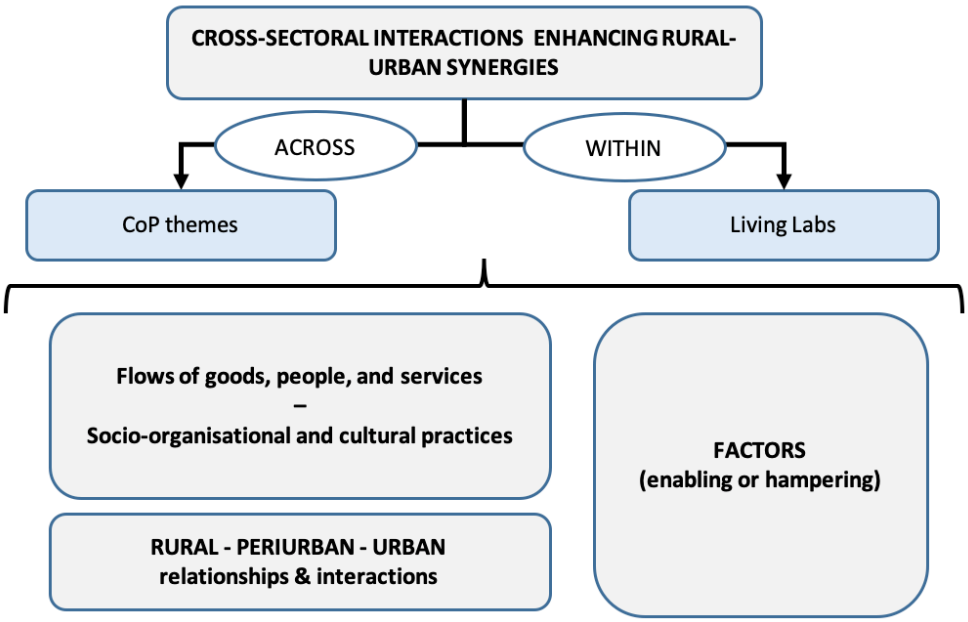

Figure 5. Analytical framework in WP4 for cross-sectoral interactions in rural-urban linkages.

The applied methodology for workshops consists of two phases (Figure 6): phase 1 corresponds to regional workshops based on stakeholders within LLs. Then, a comparative analysis of the regional workshop reports resulted in the identification of 6 themes that formed the basis for the thematic workshops (Phase 2), where experts in this domain (ROBUS T partners) identified broader areas and patterns of cross-sectorial relations.

1.3.1 Phase I: Regional Workshops[3]

In each of the 11 ROBUST regions (i.e. the LLs), regional multi-stakeholder workshops were organised by the LL teams. These workshops were particularly meant to explore and discuss the nature and characteristics of cross-sectoral interactions between different stakeholders within and across the different thematic fields. In addition, the regional workshops aimed to explore the place-specific potentials and bottlenecks for fostering rural-urban synergies. And finally, the workshops were a means to enlarge the LLs beyond the ROBUST consortium members.

Firstly, a practical guide was designed together with WUR and WP3 leaders in order to address all workshops. It was sent to all members by 20th of July 2019 (Table 2). Additionally, a questionnaire (Table 1) was developed (see Annexes) that served three goals:

- To get feedback from workshop participants on the workshop itself.

[3] The ROBUST coordination team decided to change the order of workshops compared to the Grant Agreement. So, the regional workshops were held before the thematic workshops.

- To explore which participants are interested to play an active role in the LL activities and in the future.
- To explore current and future relationships among the workshop participants.

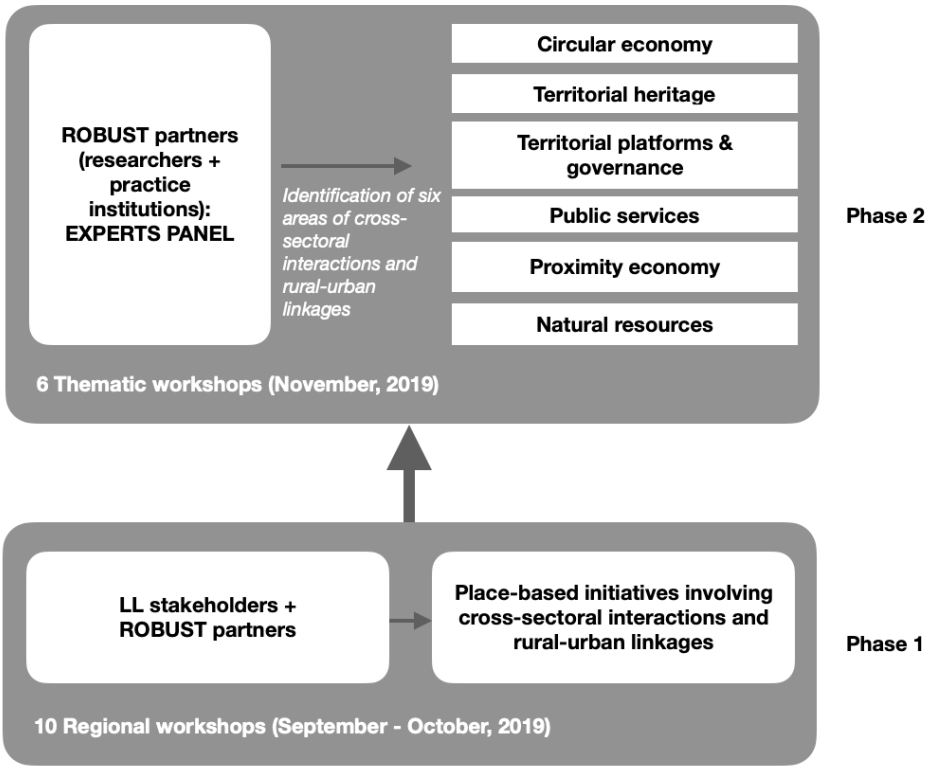

Figure 6. Methodological process from regional workshops to thematic workshops

Table 1. Questionnaire for Regional Workshop´s participants

PART A - Identifying (active) members for the LL - Kind of organisation - Thematic domain - Scale of operation - Rural, urban (or both) focus PART B – Assessment of workshop SOCIAL NETWORK – Current and future relationships

Table 2. Practical guide for regional workshops

Introduction: - What is the aim? - How are cross-sectoral interactions defined? - What kind of cross-sectoral interactions are we searching? Preparing and planning the regional workshop: - A - Defining objectives - B - Selecting the stakeholder participants - C - Duration, agenda, logistical aspects - D - Workshop methodology - E - Reporting, reflection and evaluation - Reporting template (see Annexes)

It was sent by 1 August 2019 and had feedback from Wales, Styria, Frankfurt and ICLEI. The questionnaire was then translated into the respective national languages by the LL teams. Afterwards, each of the teams had to transfer to us the data in an excel template built by the University of Valencia (UV). This greatly simplified the work process. The LLs were asked to carry out the regional workshop from September and October before the ROBUST meeting in Riga where the main findings would be given. Both report and questionnaire deliverables mean an important input for WP4.

In each of the 10 of 11 ROBUST LLs[4], regional multi-stakeholder workshops were organised by each team. About 25 stakeholders were recommended. In general, well-structured and diverse participatory methods (e.g. table rounds, mixed-working groups, and knowledge café or talk clubs) were carried out in the different regions (Figure 7). A Regional Workshops report with the information was provided by all 10 LLs. Additional details are summarized in Table 3, giving information about held date, number of participants, aim, method as well as whether the questionnaire was completed.

Some of the main findings were shared during the ROBUST meeting in Riga in November 2019. The data were presented through descriptive analysis by LL. As can be observed in Table 3, the Task 4.3 Regional Workshops 'Rural-Urban Synergy Webs' was not fully implemented by all LLs, resulting in high heterogeneity of data.

[4] There are some limitations in the implementation of the WP methodology. The regional workshop in Frankfurt was not carried out, the regional workshop in Mid Wales took place outside the scheduled time, three living labs were not able to distribute the questionnaire among participants (Lisbon, Ljubljana, and Mid Wales), and the second part of the questionnaire (part B) was incomplete in one living lab (Lucca). Furthermore, the participants in the regional workshops approached cross-sectoral interactions very differently in some living labs. For example, in Lisbon the regional workshop addressed potential initiatives and interactions for promoting rural-urban synergies rather than existing and effective cross-sectoral interactions. As a consequence, the report from the Lisbon regional workshop has not been included in the qualitative analysis. In addition, the regional workshops held in Mid Wales focused on the "Rural Vision for Wales", so data on cross-sectoral interactions were rather limited.

Figure 7. LLs held Regional Workshops on cross-sectoral interactions. Photos are provided by teams.

LL	Data	Nº of participants	Aim of the workshop	Method	Questionnaire* (PART A/PART B)
GLOUCESTERSHIRE	16th October 2019	17	Circular economy (CE) and natural capital (NC) growth	Working groups and blank paper exercises	Yes (17/16)
LISBON	1st October 2019	27	Institutional integration and articulation, political and economic circularity (Local power / empowerment / participation: promotion of citizen-focused dynamics)	World Café	No
EDE	9th October 2019	23	Circular farming	Working groups	Yes (14/13)
HELSINKI	11th October, 2019	15	Housing and the labour markets	Working groups	Yes (9/9)
STYRIA	9th of October 2019	16	Public infrastructure, social services, arts and culture, the labour market and innovative business models	Knowledge café and cross-organisational knowledge sharing.	Yes (15/15)
VALENCIA	25th September 2019	22	New BMLM, infrastructure and social services, sustainable food systems	Mixed-working groups and blank paper exercises	Yes (20/17)
LJUBLJANA	10th October 2019	16	Sustainable food systems and related business models	Talk group	No
LUCCA	26th of September 2019	36	Sustainable food systems: focusses on valorisation of culture and ESS	World Café	Yes (11/1)
TUKUMS	8 October 2019	25	The cultural strategy, the food system, and the role of PI&SS in relation to both food and culture.	Focus group	Yes (18/7)
WALES	16th January 2020	16	The “Rural Vision” for Wales	Working groups and post-it notes exercises	No

Table 3. Regional workshops carried out in ROBUST[5]

[5] Not all participants have completed the questionnaires (annexe 2) and often only filled in PART A. Some inconvenient with the relationships matrix (PART B) were related to difficulties involving actors: low motivation due to predominance of cross-sectoral perspective (e.g. farmers with public infrastructure sector).

1.3.2 Phase II: Thematic Workshops

The thematic workshops took place on the 6th of November 2019, at the ROBUST meeting in Riga (Figure 8). Both researchers and practical partners from 11 LLs as well as colleagues from Purple participated in the workshop. A comparative analysis of the regional workshop reports resulted in the identification of 6 themes that formed the basis for the thematic workshops:

- Circular economy: has been gaining attraction as an approach for achieving sustainability at different scales and cross-sectorial. A greater focus on circularity, focusing mainly on regeneration and transformation of production and consumption patterns (Kumar et al., 2019), could be key for rethinking rurality and the connections to urban in the definition of trajectories of development with the aim to create value and growth.

- Valorising territorial heritage: the rural economy is strongly linked to tourism and heritage. Place-based approaches to tourism have a direct link to territorial heritage (Fairclough, 2019), which means an economically valuable territorial asset for the urban demand. However, it can lead to diverse challenges related to urban management, functional balance, the control of flows, and preservation (Troitiño and Troitiño, 2018).

- Territorial platforms and governance: territorial platforms constitute the arena for full integration (in physical, economic, social and aesthetic terms) of new development projects into the local realm, including multiple stakeholder mechanisms (ESPON, 2013b; Gutierrez-Montes et al., 2020). Governance arrangements can also provide new ways of adapting to local and changing circumstances and increasing the possibilities of capturing added value, legitimacy and transparency of policies, overcome administrative boundaries, empowers local people and supports territorial development (Loft et al., 2015).

- Proximity economy: strengthening the connection between economy, society and the environment is one of the challenges in the EU. Proximity economy strongly contributes to rural development and rural-urban relations either by organisational and territorial innovations (Tricarico and Geissler, 2017). Some examples of proximity economy are territorial labels or short food supply chains and local food.

- Public services in (remote) rural areas: rural–urban inequalities are determining the course of public decisions. Distance and low population density are factors producing territorial and socioeconomic differences (Camarero and Oliva, 2019). Addressing these requires a cross-sectoral approach to plan location decisions, service delivery and a certain service provision, for example, digitalisation services (Ruiz-Martínez and Esparcia, 2020).

- New markets and public arrangements for natural resources: among the main social/economic effects related to the supply of rural ESS are the recreational opportunities and creation of niche-market opportunities for local and quality products (Schaller et al., 2018). The involvement of social and cultural aspects such as place identity or rural vitality, and a wider range of actors and services are increasing rural competitiveness in terms of innovativeness, resilience and improvement. In this regard, developing a new market

for providing natural services would put an end to the economic and environmental trade-offs.

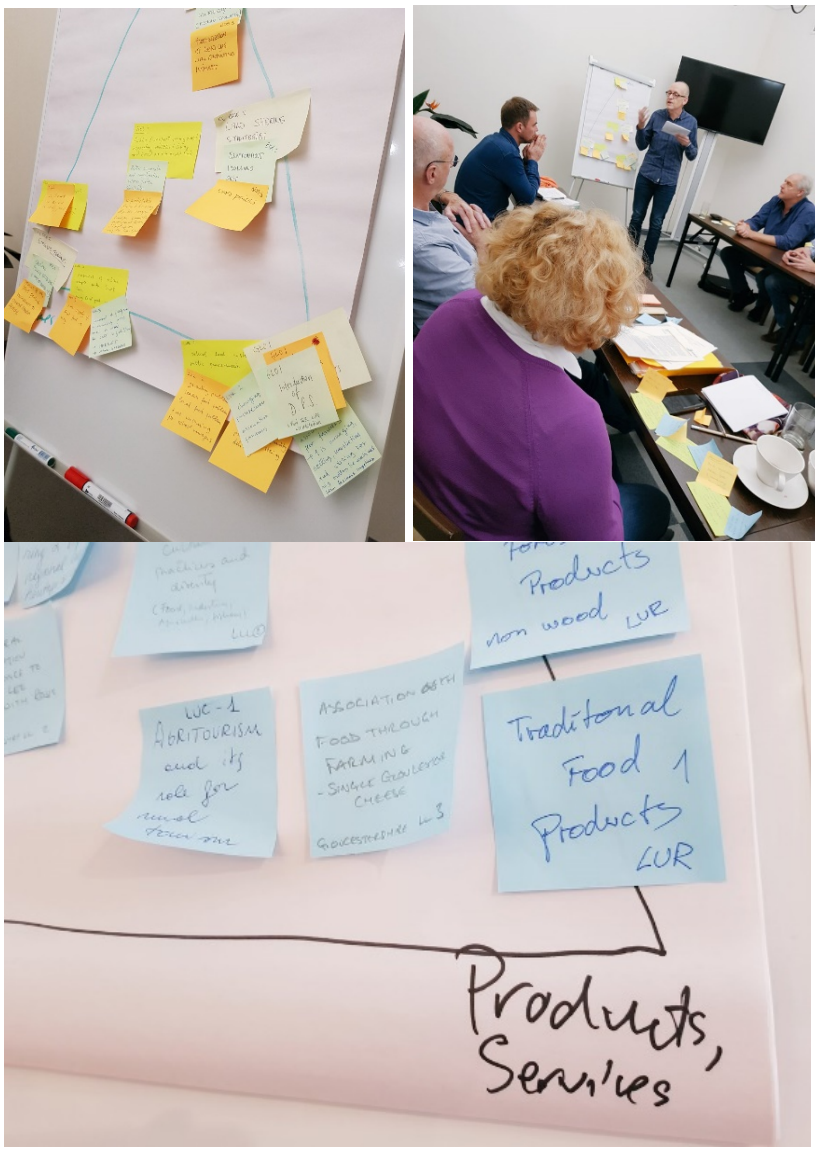

Figure 8. Thematic Workshops in Riga meeting

The methodology was prepared by WUR together with Gloucestershire and Valencia. Researchers and practitioners shared their knowledge and mutual-learning on rural-urban cross-sectoral relations according to six driver themes mentioned above. The corresponding facilitators to these six thematic workshops had a methodological guide with instructions in order to help the group do their best thinking together (Figure 9). This guideline contained four main steps:

- Step 1 - Collecting cases/examples: Workshop members were asked to write examples from their LL (as discussed in their regional workshop or encountered during ROBUST fieldwork) on post-its and position these in a triangle, with the corners shaped by the three kinds of cross-sectoral relations (Fig.9).

- Step 2 – Identifying enabling and hampering factors: Then, workshop participants wrote down, for each example, one factor that enables (on green post-its) and one factor that hampers (on an orange/red/pink post-it) cross-sectoral interactions. One person or LL and then the next one, and from the second one onward also trying to cluster/group similar/comparable factors.

- Step 3 – Selecting the top 3 to 5 enabling and hampering factors: Each workshop participant got 2 times 3 votes (3 for enabling, 3 for hampering factors) to select/choose the most important enabling and hampering factors for strengthening/supporting cross-sectoral interactions related to the workshop theme.

- Step 4 – Summarizing lessons learned: Workshop participants engaged in a brief discussion, led by the facilitator, to identify what the most important lessons (max. 5) are for enhancing cross-sectoral relations/synergies related to the workshop theme AND rural-urban connections/synergies.

- Step 5 - Reporting back in plenary session: The facilitators were requested to prepare (with the help of one or several workshop participants) one flipchart paper with the top 3-5 enabling and hampering factors and the lessons learned, to be presented in 5 minutes in the plenary session.

In total, there were about 70 participants from the 11 LLs (Table 4), including both practice partners from local/regional institutions as well as from the international not-for-profit association PURPLE and researchers/experts belonging to universities/research centres. The six resulting sessions provided relevant qualified information for every thematic area. The collected data has been transcribed and analysed using qualitative techniques.

Table 4. Participation of LLs at the different thematic groups.

		NL	DE	UK[1]	FI	PT	SI	IT	AT	LV	ES	UK[2]	PURPLE	Key theme
Thematic workshops	1	x	x	x	x				x					Circular farming / local markets
	2			x	x		x	x	x	x		x	x	Culture and food / Branding
	3	x	x	x	x	x	x	x	x		x	x		Territorial governance
	4	x		x	x	x		x		x	x	x	x	Public food procurement
	5		x	x	x	x	x		x		x	x	x	Public transport
	6	x	x	x		x	x	x				x		Valorisation of ESS

Figure 9. Thematic workshops organised by groups.

2 Main findings

The results of this report include three main approaches to cross-sectoral interactions. The first one (Section 2.1.) focuses on case studies and is based on the data collected from the LLs and COPs work during the whole project. This allows us, on the one hand, to study cross-sectoral interactions from each particular rural-urban context and LL. On the other hand, working from the CoPs approach makes it possible to explore interactions from the perspective of each particular sector (or CoP theme) and the outputs these CoPs have worked on. The second part of the report (Sections 2.2 and 2.3), examines specific place-based initiatives involving cross-sectoral interactions based on the data gathered from the regional workshops. This section does not focus on the territorial context of each LL, but rather on the nature of the place-based initiatives. After exploring these initiatives in detail, Section 2.4 provides a second-level analysis developed during the thematic workshops from which broad areas and patterns of cross-sectoral interactions can be identified. Finally, Section 2.5. presents the main factors influencing cross-sectoral interactions.

2.1 Cross-sectoral interactions through case studies: a view from LLs and Communities of Practice

2.1.1 Cross-sectoral interactions within LLs

In this section we analyse cross-sectoral interactions from case studies (the 11 LLs). The aim is to examine the set of cross-sectoral interactions linked to each specific LL. The LLs are diverse in their geography, socio-economic characteristics and rural-urban dynamics. The cross-sectoral interactions explored by the LLs are defined by this diversity, which makes it difficult to find patterns of cross-sectoral interactions across rural-urban areas. In Table 5, the local context and rural-urban characteristics of each LL are synthesised. Implications of the diverse territorial contexts for cross-sectoral interactions are also presented. In Table 6, we pay particular attention to the cross-sectoral interactions that have been effectively explored by each LL.

Despite the territorial heterogeneity of the LLs, many of them have common elements linked to the degree of rurality and the emphasis on specific challenges and economic activities. For example, Helsinki, Lisbon and Ljubljana are national capitals with extensive rural hinterlands. Regional territorial concerns (such as labour mobility or the environmental impact of urbanisation) sit alongside their roles as seats of national government, nodes of international trade and European centres of culture. These areas show strong emphasis on cross-sectoral interactions between ESS and other sectors. However, interactions are not explored in the same way. In Helsinki, they focus on managing rapid growth and the intense flow of people who have multiple residences and cross-border links between Helsinki and Tallinn. They address this issue through governance arrangements and integrated actions in public infrastructures (housing, taxes), labour markets and business models (enterprises locations and teleworking) and ESS (land use planning). In Lisbon, the critical driver is generating stronger relations between urban, suburban, peri-urban and rural areas for multiple uses. The focus is the promotion of new agricultural models and interactions with the natural capital of the region, with growing interested in integrated development from the national government. In Ljubljana, actions aim at shortening food chains to improve economic

opportunities for regional farmers and reduce environmental impacts of distribution. Thus, their activity comprises interactions between food systems, ESS and new business models.

Valencia, Styria and Frankfurt are areas that dominate their regional economies and include cities concentrating a large share of employment, services and business activity. Town and rural interdependences emerge via discussions about municipal collaboration, sustainable public transport or spatial planning. These LLs pay particular attention to interactions between public infrastructures and BMLM. In Frankfurt, for instance, there is a need to adapt public infrastructures to the intense flow of immigration and subsequent pressure on labour markets. In Styria, the effects of a growing population and people flows require new ways of addressing the interactions between transport and labour market dynamics. Similarly, the Valencia LL aims at reducing territorial imbalances by integrating public infrastructure, public services and labour markets with a particular focus on rural areas.

Lucca, Ede and Gloucestershire share a few similarities in terms of their scale and provincial self-identity, underpinned by agricultural landscape designations and the importance of the agri-food sector. The three LLs aim at renewing proximity relations and enhancing ESS through interactions with new agricultural approaches. In Lucca, there is a particular interest in the interactions between food, natural capital, and cultural landscapes and traditions. This interest is linked to the importance of tourism in the area.

Mid Wales represents a singular context, with a strong rural identity linked to the Welsh language, which is widely spoken within the family-centred farming community. Upland livestock farming is set within relatively inaccessible landscapes making the goods and services of proximate cities seem distant, but which also support international countryside tourism and leisure industries. Mid Wales faces challenges as a predominantly rural region, including remoteness, limited infrastructure, and access to markets and services. These structural problems have a cross-sectoral nature and involve interactions between public infrastructure and rural labour markets. Potential changes in a post-Brexit scenario are of particular interest in this LL.

Tukums is also a predominantly rural area, largely rural/semi-rural, including some remote and underserved areas, which are experiencing depopulation. The celebration of rural customs, arts and cultures is a key motivation in this LL, a rural area benefitting from a well-developed network of cultural houses, distinctive architectural and food heritage. However, unlike Mid-Wales, Tukums lies close to the Latvian capital Riga, from which it draws visitors. Consequently, it raises interest in cross-sectoral interactions between public infrastructures, culture and labour markets.

As shown in Table 6, the experiments and cross-sectoral interactions explored by LLs are very specific. They are driven by the motto that the members of each lab agreed upon at the beginning of the project. In general, cross-sectoral interactions are defined by different flows of people and/or goods and services, depending on the particular activity or problem addressed by LLs. However, socio-organisational practices seem to be central in identifying, managing and promoting these flows and the overall cross-sectoral interactions. For example, Ede, Helsinki, Lisbon, Lucca and Valencia show an explicit focus on territorial planning instruments. These instruments allow an integrated view across rural-urban areas on topics such as new agri-food models and their effects in the natural capital (Ede), ESS and building planning (Helsinki), green infrastructure

(Lisbon), cultural and local food initiatives (Lucca), and labour market dynamics and public infrastructure (Valencia).

Territorial planning instruments are associated with innovations in governance, with special emphasis on multi-stakeholder and multi-level governance arrangements. In Ede, local governments play a key role in adapting existing governance mechanisms to the new framework opened up by the Environmental and Planning Act (national level), involving private and social stakeholders in the region. In Gloucestershire, innovative cross-sectoral governance mechanisms involving civil society are required to implement novel nature-based solutions to flooding. In Ljubljana, food procurement in schools is stressed as a complex system in which public, business and civic stakeholders are involved, and for which multi-stakeholder and multi-level governance arrangements are necessary. In Lucca, participatory governance is important for implementing food education projects, and new forms of territorial governance are highlighted as central to promoting cross-sectoral interactions. In Styria, governance mechanisms across different government levels are crucial for managing the interactions between labour market dynamics and public transport initiatives. Similarly, in Valencia this type of governance arrangements is essential to address transport and services needs in rural areas. They are also the basis for the emergence and development of Territorial Employment Pacts (TEPs). In all cases, the role of public sector, at different scales and especially in coordination across scales, is crucial.

Table 5. LLs'context and implications for cross-sectoral interactions

LL	Local context	Rural-urban characteristics	Implications for cross-sectoral interactions
Ede	**Intensive agri- and agri-tech growth** centre orientated to global markets via a cross-sectoral Food Valley initiative. Protected rural landscapes. Costly homes and land.	Predominantly rural. Largely **agri-rural landscape** with polycentric urban centres, which are home to two-thirds of the 115,000 population.	Increasing interest in an **integrative vision of agriculture and ESS** through national policies (EPA) involving a shift towards a more participatory stakeholder consultation.
Frankfurt / RheinMain	Half of all regional jobs are in Frankfurt city, which is growing quickly, due to its **global and national economic importance**.	**Mixed urban and rural with a large city**. Despite the presence of Frankfurt city, the region is polycentric and contains large areas of high quality rural open (outer) space.	There is **a need to adapt public infrastructures and services to labour market dynamics** and the intense flow of immigration. Favourable context for multi-level governance processes.
Glos.	**Two-tier municipal system**, with most local planning decisions delegated to 2nd-tier districts. Infrastructural planning, e.g. waste, minerals and transport is overseen by (1st tier) Gloucestershire County Council	**Predominantly rural**. Affluent rural county with two adjacent main urban centres. Well-served with transport infrastructure and over 50% of landscape is environmentally designated.	Growing interest in **enhancing ESS through interactions with the agri-food sector (circular models) and public infrastructure (flood management)**
Helsinki	**Rural-urban working patterns**, seasonal summer urban-to-rural exodus, and urban-to-urban commuting/enterprise investment (Helsinki-Tallinn).	**National capital metro-region**. The area's population is split roughly 70:30 between Helsinki city and the region of Uusimaa.	A cross-sectoral approach is required to better managed the **intense flow of people between rural and urban** areas through **integrated actions** in public infrastructures (housing, taxes), BMLM (enterprises locations and teleworking) and ESS (land use planning).
Lisbon	The region of 18 municipalities experiences peri-urban pressures and an **unbalanced territorial development** pattern, which exerts pressure on high-value natural capital.	**National capital metro-region**. Home to 25% of the national population. Urbanisation pressure linked to rural depopulation and migration.	There is a need to promote **new agricultural models and synergies with the natural capital** of the region. A growing interested in integrated development from the national government is perceived.
Ljubljana Urban Region	25 municipalities make up the region, including those in peripheral rural regions. High consumer **preference for local food and regional landscape protection**.	**National capital metro-region**. Home to 26% of the Slovene population. Suburbanisation linked to rapid development in the 1990s. Important European transport intersection. Extensive Natura 2000 designations close to suburban areas.	Increasing interest in **reinforcing short food supplies and interactions with ESS**.

Table 5. LLs'context and implications for cross-sectoral interactions

LL	Local context	Rural-urban characteristics	Implications for cross-sectoral interactions
Lucca	Second-tier authority of 38 municipalities, including the UNESCO World Heritage city of Lucca. The area is characterised by **a distinctive villa-based cultural landscapes**.	**Predominantly rural**. Lucca province is a varied area of rural landscapes, including coast, mountains and plains.	Strong interest and resources for improving **interactions between cultural landscapes, agri-food sector and the natural capital** of the region. Growing role of the public sector in delivering new planning policies and food strategies.
Mid-Wales	No large-scale urban settlements within the 9 municipalities. The importance of **smaller, market towns** as employment and service centres is emphasised.	**Exclusively rural**. Faces challenges as a predominantly rural region, including remoteness, limited infrastructure, access to markets and services, and post-Brexit changes.	The key problems of the area are defined in cross-sectoral terms (public infrastructure, labour markets, etc.). There is a need to address these interactions in a **post-Brexit scenario**.
Styria	The metropolitan region of Styria includes 51 municipalities, including Graz, Austria's second city. The region is orientated towards **post-industrial hi-tech growth.**	A **polycentric city-region**, dominated by Graz. Urban net migration leading to suburbanisation and car-commuter traffic challenges. Public service demands of a growing, affluent population.	The effects of a **growing population and people flows** require a cross-sectoral approach to **public infrastructure, services and labour markets**, among others.
Tukums	Tukums municipality, which is home to a little under 30,000, was created in 2009 and will be merged with adjacent councils in 2021. **Vibrant cultural life** is seen as one key ingredient of quality of life and sustainable living conditions in the region that can also boost economic and social activities.	**Predominantly rural**. Tukums is largely rural/semi-rural, including some remote and underserved areas, which are experiencing depopulation.	The nature of this rural/semi-rural area raises interest in a cross-sectoral approach between **public infrastructures, culture and labour markets**. A multi-stakeholder approach between the public sector and the cultural sector (business and civil society) is thus required.
Valencia	The region is divided into **three distinct industrial/economic areas**, namely the coast, the inland rural areas and the peri-urban territory.	**Mixed urban and rural with large city.** Economic development is uneven and directed towards the coast, causing concerns about rural poverty, **depopulation** and urban quality of life.	**Reducing territorial imbalances** requires a cross-sectoral approach that integrates **infrastructure and public services and labour market dynamics**, for example. **New territorial partnerships** and new business models will be relevant to achieve a more integrated and inclusive development.

Table 6. Cross-sectoral interactions from LLs' experiments (from page 26 to page 31)

LL & CoP themes	Motto	Experiment/s	Cross-sectoral interactions
Ede [Food, ESS, BMLM]	Further developing and integrating Ede's municipal food, environmental and spatial planning policies, by formulating goals and distinguishing key indicators for monitoring its agri-food system and natural capital.	**Agricultural land use** was the unifying focus. Specifically, the lab was designed to bring together urban and rural food stakeholders to develop indicators for an **urban food policy dashboard**. Ten circular farming topics were identified for an inventory.	Through **integrating spatial planning policies** (socio-organisational practices), this LL focuses on interactions between **food systems and ESS**. They explicitly aim at monitoring the agri-food system and natural capital of the area. The co-existence of different models of circular farming, with different interactions with ESS, imply tensions. The LL members acknowledge that implementations of interactions should be addressed at **a multi-level scale** (as a "experimental space") since the local community might be too sensitive to these tensions. The new opportunities opened by the EPA make **local governments** become key stakeholders in adapting existing governance (with private and social stakeholders) and monitoring tools to support a shift towards agri-ecological circular farming and dietary transitions.
Frankfurt/R-M [ESS, PI&SS, BMLM]	Transitioning from quantitative growth and expansion, to qualitative growth and quality of life: the role of regional land use planning.	The lab was designed to inform regional **land use planning** so that outer (rural) space was not a 'land-take' reservoir for development but regarded more holistically (**regional well-being**). The lab was used to **build the evidence base** through **specific data projects** (commuter flows, matching supply and demand of ESS, reducing rural-urban commuting for climate change, COVID & commuting)	Some experiments identify significant **commuter flows** between the urban core and peri-urban areas. Other experiments focusing on reducing commuting to support climate protection pay attention to **interactions between public infrastructure, labour markets and ESS**. In addition, COVID-19 has intensified the cross-sectoral approach since **interactions between new business models, changes in labour markets dynamics** (e.g., teleworking) **and climate impacts** are prioritised. The **ESS** approach is proposed **as a core part of cross-sectoral policies**.

Table 6. Cross-sectoral interactions from LLs' experiments (from page 26 to page 31)

LL & CoP themes	Motto	Experiment/s	Cross-sectoral interactions
Glos. [Food, ESS, BMLM]	To assess the potential and feasibility of circular economy and natural capital growth models in the county and their potential for synergies and improved urban-rural linkages.	**Circularity** and **natural capital innovations** to strengthen rural-urban relations was the unifying focus; identifying and implementing **practical governance experiments** was critical. Three specific innovation projects were implemented to: i) examine the potential for the county's school food contract to be part of a dynamic food procurement; ii) develop a competency group to plan the strategic integration of nature-based solutions in regional flood risk management; iii) 3. examine circular business models.	The dynamic food procurement innovation can be identified as a new regulation (socio-organisational practice) linked to a cross-sectoral approach to improving interactions between **public infrastructures, food systems and ESS**. **Flood management acknowledges effects on business activity, public infrastructure and ESS.** The Natural Flood Management requires **new cross-sectoral governance mechanisms** (socio-organisational practices) between the public sector, landholders, technicians and citizens. Circular economy models highlight the existing interactions between **new business models and ESS** (e.g., waste management). The role of public sector is stressed as key for promoting all these cross-sectoral interactions and rural-urban linkages.
Helsinki [BMLM, ESS, PI & SS]	Developing resilient urban-rural solutions that enable knowledge networks and multiple locations for life, work and entrepreneurship across the border of Finland (Helsinki) and Estonia (Tallinn).	**Multi-locality living** was the unifying focus of the work; specifically, **identifying novel solutions** to enable multiple locations for life and work. More specifically, the lab envisioned an over-arching experiment to develop a **meta-network platform** (for integrated rural-urban governance). Underpinned by studies to examine: (i) Finnish companies' FDI in Estonia; (ii) job switching between knowledge intensive enterprises in Uusimaa; (iii) analysis of multi-locality seasonal residency; iv) review of rural policy and its implementation, including links between rural and urban networks; & v) REKO-ring business study.	The identification of novel solutions to enable multi-locality living involves interactions between **business models, public infrastructure and ESS**. This model implies i) **knowledge networks** and locational choices for enterprises; ii) multiple residence in the **spatial interaction** between rural and urban areas (and changes in, for example, social services and contribution to local taxes); iii) since multi-locality implies growing pressures on ESS, considerations on how **ESS** should be taken into account in **land use and building planning** in relation to multi-locality are also relevant.

Table 6. Cross-sectoral interactions from LLs' experiments (from page 26 to page 31)

LL & CoP themes	Motto	Experiment/s	Cross-sectoral interactions
Lisbon [BMLM, ESS, PI & SS]	Territorial cohesion from within: bridging metropolitan communities and economies for improved urban-rural synergies.	**Ecosystems** and **territorial proximate economy** were the unifying focus (developing a shared vision). Strategically working towards the integration of ESS in **territorial planning instruments**, in particular the territorial plan. The lab work was complex and systematic. Six innovation projects (organised via two working groups (food and ESS) inform the vision: 1. mapping, valuing & integrating ESS into the territorial planning system; 2. Criteria for the delineation of Green Infrastructure; 3. Sustainable proximate supply to school canteens; 4. Study plan for sustainable food in the curriculum; 5. Creation of an agro-parks network; and 6. Business models to enhance ESS.	**Cross-sectoral interactions are explored mostly with ESS**. For instance, ESS are valorised through **the creation of new business models** and the **agroparks** network (public infrastructure). Territorial continuity of **green infrastructure** and rural space as a link between urban population and nature enables interactions between ESS, public infrastructure, culture and tourism. Promoting **sustainable food in school canteens** is an important short chain innovation and criterial of ecological public procurement that enhances ESS in the region. Cross-sectoral interactions are addressed through **territorial planning instruments**. Spatial planning, as a multi-class and multi-sector policy, plays an active and critical role in the flow of knowledge, materials and products across sectors and across rural-urban areas. Likewise, the need for reflective spaces between municipalities, supra-municipal entities and central administration is stressed in this LL.
Ljubljana Urban Region [BMLM, Food, PI & SS]	Functional collaborative partnership/platform to co-design and operate short food supply chains in the Ljubljana Urban Region.	The lab was designed as a partnership and platform model to co-design and operate **short food chains in the region**. The work was organised via projects that mapped **direct sales** initiatives; examined SFSC organisations; showcased & examined **food procurement in schools** (connecting catering & local producers); & improved understanding of farmers' markets (as local **food public infrastructures**).	Multiple cross-sectoral interactions are implicit to the LL's experiments, in particular between food systems and other sectors. For instance, food procurement in schools involves interactions between **public infrastructure and food systems**. This is recognised as a complex **multi-stakeholder and multi-level governance arrangement** in the country, in which interact schools and kindergartens, municipalities, parent committees, producers, and representatives of business networks. Direct sales identify interactions between **new business models and food systems**, with important **flows of people** to farms, and **flows of goods** from rural to urban areas. Farmer's markets are public infrastructures that support local food systems (and tourism), in which municipalities can play a stronger role (that needs to be developed further).

Table 6. Cross-sectoral interactions from LLs' experiments (from page 26 to page 31)

LL & CoP themes	Motto	Experiment/s	Cross-sectoral interactions
Lucca [Culture, ESS, Food]	Developing a local food policy and a territorial plan to reduce urban sprawl, steer synergies between the city and the countryside, and valorise cultural heritage, landscape and territory.	Food policy and **land use planning** are the focus. The lab worked on the establishment of a **governance model** for the participatory and formalised development of an **Inter-Municipal Food Policy for the Plain of Lucca**, which comprises five municipalities around Lucca city. As well as co-developing this food policy model, the lab explored solutions to maintain multifunctional cultivated land. The work was ambitious & challenging.	**Different cross-sectoral interactions are explored around food systems**. Interactions between **food, ESS and public infrastructure** are addressed through initiatives such as school-based food education or food waste. Interactions between **food and culture** are also stressed in those initiatives supporting traditional gastronomy, such as cultural events and food festivals. Projects, partnerships and initiatives linking farming with tourism (**ecotourism**) also show beneficial cross-sectoral connections. Food education projects are based on new socio-organisational practices, such as **participatory governance mechanisms** and **new structures** (food policy office). **Flows of knowledge and new forms of territorial governance** are underlined as enablers of cross-sectoral interactions.
Mid-Wales [Culture, Food, PI&SS]	Polycentric growth without an urban hierarchy.	**Polycentric growth** and **strategic visioning** for rural Wales was the focus. This lab was designed to offer a way to combine rural areas to provide more rural-specific policies in places where you have an absence of primary urban centres. The mechanism is a co-produced **rural vision for Wales**. The Rural Vision development process was experimental in seeking to build consensus. **Local food planning in Monmouthshire** was a specific innovation project.	Some scenarios projected for Wales recognise cross-sector interactions, for example, between **new business models, food and ESS**. These were linked to increased local food sourcing, biotechnology advancements to improve food security (e.g. lab grown meat, drone-borne logistics and self-drive cars), changes in working practices leading to increased rural tourism, and opportunities arising from policies to cut emissions and accelerate alternative energy generation. They also acknowledge **negative interactions**, i.e., increased levels of domestic **tourism and better transport networks**, while economically valuable, can be associated with **environmental damage**, increased house prices and the displacement of rural locals by urban incomers. The LL investigated cross-sectorial interactions between **public infrastructure and business models** related to the operation and impact of some rural development projects linked to retaining young people in the local economy, rural Wi-Fi provision in rural towns, and community banking. Procurement policies involve cross-sectoral interactions between **public infrastructure and food systems**. The role of public sector and **new multi-sector partnerships** are underlined. **Brexit** is seen **as an opportunity** to promote an integrated cross-sectoral approach.

Table 6. Cross-sectoral interactions from LLs' experiments (from page 26 to page 31)

LL & CoP themes	Motto	Experiment/s	Cross-sectoral interactions
Styria [BMLM, Culture, PI&SS]	Shaping vibrant rural-urban-cooperation to foster better quality of life through the enhanced provision of regional collaboration.	**Regional development** and **quality of life** was the focus. **Intercommunal budgeting** was experimented, using three pilot projects as material for discussion and dialogue. These are: (i) the law on planning and development (intercommunal budget); (ii) GUSTmobil (an on-demand rural mobility service – shared hailed taxi) and (iii) REGIOtim (a rural extension of urban pilots in the Graz/Voitsberg public transport network – multimodal nodes)	Intercommunal budgeting is approached as a way of promoting cross-sectoral interactions between **public infrastructure and other sectors**. In particular, it implies **multi-level governance arrangements** in which the **public sector plays a key role**. The two pilot projects on rural mobility and multimodal nodes encompass interactions between **public infrastructure and business models** (new way of transport) and **labour markets** (labour mobility). The LL members argue that **enabling actors** are needed, who are politically independent to act as supportive drivers and mediators of complex governance arrangements and cross-sectoral interactions.
Tukums [Culture, Food, PI&SS]	Developing a cultural strategy for the municipality by identifying key development objectives and priorities.	The preparation of a **cultural strategy** for the municipality was the unifying focus. Culture regarded as a way to enhance **quality of life** and mitigate negative impacts of **out-migration**. The lab established five working groups to enable the cultural industries sector to connect (museums, tourism and churches; libraries and culture houses; amateur art; schools; independent artists and publicists). Projects also **to improve use of Tukums market** (food) and **access to regional cultural events** (practical).	**The LL's work is linked to cross-sectoral interactions between culture, food systems and public infrastructures**. The cultural strategy requires **coordination and cooperation through a wide range of public, private and civic stakeholders**. The LL discussions about the **cultural, historical and social importance of markets** indicate strong interactions between food systems, public infrastructure, and culture. The work on the food innovations (Tukums market, PP, local food branding) all emphasise the **central role of the regional government in enabling cross-sectoral interactions** and these innovations to happen. The LL members highlight the **rural-urban innovations are dependent on mutually acknowledged cross-sectoral dependencies** (e.g., cultural events are excellent sales venues for local producers but need a clear vision for cultural events)

Table 6. Cross-sectoral interactions from LLs' experiments (from page 26 to page 31)

LL & CoP themes	Motto	Experiment/s	Cross-sectoral interactions
Valencia [BMLM, Food, PI&SS]	Contributing to implement rural-urban territorial processes in the domains of business, labour markets, public infrastructure and sustainable food systems.	Territorial or **territory-based strategic planning** is the unifying focus for this lab to counter currently unbalanced territorial economic development in the region. A key argument is the **central role of public actors**, especially regional government, in innovation projects. The lab is a research-led stakeholder engagement process, with projects examining the emergence of employment initiatives linked to **TEPs**, territorial participation in the development of governance structures / **plans for local food procurement** and improving **internet access** in small rural settlements (teleworking / digital service provision).	This LL work focuses on interactions between public infrastructure, new business models, and food systems. TEPs are explored as a novel form of **territorial governance** to promote **interactions between new business models and other sectors**, involving a wide range of **public-private and multi-level stakeholders**. Local food procurement projects emphasise the interactions between food systems and public infrastructure, with new cross-sectoral governance structures (municipal food council). All internet-related work incorporates a cross-sectoral approach that examines the interactions between public infrastructure and new business models and labour market dynamics. Socio-organisational practices (**territorial partnerships and new forms of territorial and multi-level governance**) are underlined as **central** for a shift towards a cross-sectoral approach and rural-urban synergies.

2.1.2 Cross-sectoral interactions based on Communities of Practice

The five Communities of Practice (CoPs) in ROBUST effectively represent thematic case studies, cutting across all 11 LLs. They offer a vertical way of learning, compared to the horizontal and context-specific insights gleaned from LLs. The purpose of the CoPs is manifold and can be characterised as a concerted cooperation (joint enterprise), an intensive exchange of experiences (mutual learning) and a knowledge transfer (shared repertoire) (Maye et al., 2018). They are leading to a first, higher-level synthesis of the project findings, in terms of how each theme supports or affects the achievement of rural-urban synergies as well as strengthening cross-sectorial relations. In the following sections we will examine how cross-sectoral interactions operate within CoPs through main core themes/outputs and then how cross-sectoral interactions develop among these themes and CoPs. In doing so, we will also evidence their relevance for rural-urban linkages and synergies, the key stakeholders involved, and the practices that make possible these interactions.

2.1.2.1 Main cross-sectoral interactions from each Community of Practice

Business Models and Labour Markets

This CoP was set out to examine business prospects, labour market dynamics and job opportunities that stimulate, or rely on, rural-urban interdependencies (Table 7). Whereas the growth of the creative class and knowledge-intensive businesses is often seen as typical urban phenomenon, there are also examples of the rise of the creative industry and a variety of micro-businesses in rural areas as a result of counter-urbanization. As the cross-sectoral linkages and socioeconomic interrelations between rural, peri-urban and urban spaces and economic activities are highly differentiated, it is crucial to understand more in depth how and under which conditions economic activity in urban, peri-urban and rural areas generate synergies that translate into a more balanced and more inclusive socioeconomic development.

Especially CoP-interests in synergistic business models revealed the significance of cross-sectoral relations. The business models' profiles use their resources in cross-sectorial ways, by creating business benefit through involving a range of stakeholders making possible a flow of goods and services. They are characterised by the presence of four cross-sectorial actors: public, private, civil society & for benefit orgs. The various profiles reflect a certain openness, willingness and capacity to go beyond sectoral boundaries and interests. Rural hubs and territorial cooperatives are markets often involving a wide range of stakeholders both public and private level and then making possible a flow of goods from the countryside into the city. This interaction mainly involves socio-organisational practices as well as cultural practices that allow going beyond area.

Multifunctional rural resource us often assumes the cross-cutting of sectoral boundaries between agriculture, nature, public health, care, leisure, energy, etc. Circular resource use may critically depend on novel forms of collaboration between food- and non-food sectors. They promote socio-organisational practices linked to business interactions and the management of the market area as well as for developing new tendering procedures and changing the existing regulations (for instance, for regional quality labels). Furthermore, there are examples that are part of the wider societal value creation and organisational innovation. Here cross-sectoral relations appear

in the form of novel alliances, partnerships and network relations between actors with different sectoral backgrounds. For example, EDE, Frankfurt, Styria and Valencia have ongoing projects/initiatives from a joint perspective between local public administrations, trade unions and employers (e.g. TEPs in Valencia). Moreover, there are new forms of working and forms of cross-sectoral cooperation, and innovative ways to modernise traditional businesses are highlighted in EDE. Most of them represent opportunities to valorise territorial assets, and integrated initiatives are seen as important strategic directions.

Cultural Connections

ROBUST's work on cultural connections aims to provide guidelines and practical examples that can help regions shape innovative solutions. However, most of findings were hampered by the COVID-19 pandemic in the first half of 2020. Despite of this, cultural connections are discussed through core themes such as sustainability of cultural activities, valorisation and proximity, governance of cultural connections (Table 8). Mid Wales LL explored the sustainability of cultural initiatives in a short-term oriented funding environment, and the links between culture and rural wellbeing. For this, it was used the rural strategy 'Vision for Rural Wales' in terms of cross-sectorial relations across stakeholders. This strategy reflects the shared challenges faced by the WLGA Rural Forum members and their territories in order to develop new regulations. Regulations are also exemplified by a regional cultural strategy in Tukums which works to consolidate cultural life by more efficiently connecting people, resources and ideas. Secondly, Lucca and Tukums decided that a greater emphasis on food would be more practicable. Specifically, the combination of proximity and food got results related to alternative food networks, authenticity, etc. These links would not be something intrinsically related to cultural connections, except for the Lucca LL where food is central to cultural connections between the urban and the rural.

These findings have been used in the preparation of a thematic briefing on local food branding in the Sustainable food systems CoP, and are thematic overlaps with the cultural connections CoP. Thirdly, Tukums and Mid Wales LLs were interested in the governance aspects of cultural connections concerning the development of a cultural strategy. They also produce new forms of collaboration between municipalities, food and cultural enterprises. Tourism operators and cultural associations are critical (shared networks). This interaction is defined by socio-organisational practices between public and private stakeholders with the support or development of local regulations. Likewise, there are strong cross-sectorial relations between culture and sustainable food systems and public infrastructures & social services. For instance, Tukums and the Metropolitan Area of Styria collaborated on a short report about cultural infrastructure in the public infrastructure & social services CoP.

Table 7. Cross-sectoral interactions from the BMLM CoP (from page 34 to page 38)

BMLM CoP: synergistic business models	Implications for cross-sectoral interactions and rural-urban linkages	Food CoP	PI&SS CoP	ESS CoP	Culture CoP	Description of interactions
Rural Service Hubs	Hubs are built by networks at local, regional and national levels, and between government and commercial actors. Regional governments are often better equipped to facilitate and maintain networks compared to individual hub operators. The role of hubs within communities also requires ongoing consultation on place-based service needs.	x	x		x	**Stakeholders**: Individual businesses, Consumers, civil society (NGOs, CSOs), (Local) government (incl. administration) **Sectors**: food, financial, amenities, commerce, healthy. **Examples**: Local initiatives at several sites as Styria, Tukums, Helsinki, Valencia, and Mid Wales.
Valorising food heritage and rural lifestyles	Valorising food heritage refers to the development of novel rural business activities on farms that put in value traditional local food culture and can be connected with a range of tourism activities and stakeholders.	x	x		x	**Stakeholders**: Individual businesses, especially farms, but also cultural institutions like a museum or cultural centre **Sectors**: Tourism, culture, education, food. **Examples**: Several tourism farms in Latvia have received a cultural label 'Latvian heritage' aimed for supporting businesses and initiatives that preserve and promote Latvian cultural and lifestyle heritage.
Multifunctional rural enterprise	Multifunctional rural enterprises reposition themselves within the food system and they combine, and if possible, integrate farming activities with the provisioning of a variety of rural services.	x	x	x		**Stakeholders**: Multifunctional rural enterprises and activities tend to involve a broad range of actors for example from food catering, social welfare, recreation, leisure, nature, landscape and water management, renewable energy, etc. **Sectors**: Food, social services, tourism, and a wide range of ESS **Examples**: There are many examples of successful multifunctional rural enterprises (Ede LL). Concrete examples: www.zonnehoeve.net; www.boerderijparadijs.nl

Table 7. Cross-sectoral interactions from the BMLM CoP (from page 34 to page 38)

BMLM CoP: synergistic business models	Implications for cross-sectoral interactions and rural-urban linkages	Food CoP	PI&SS CoP	ESS CoP	Culture CoP	Description of interactions
Regional Quality Labels	EU quality schemes emphasize the traditional production process or products made in protected natural areas such as mountains or islands.	x	x	x		**Stakeholders**: Individual businesses and marketing associations **Sectors**: Food, landscape, environment, healthy **Examples** : "Verein Dachmarke Rhön e.V." is a registered association umbrella brand in the Biosphere Reserve Rhön (Ede LL)
Local food Hub Retailing	The hub through creating a retail offer based on a curated set of local foods and craft items in a well-positioned retail space, with the option of an attached restaurant and café, allows for the layering of social benefits.	x	x		x	**Stakeholders**: Individual businesses, Consumers Civil society (NGOs, CSOs), (Local) government (incl. administration) **Sectors**: Food, social services, employment, training **Examples** : The Gloucester Services
Trans-territorial, rural-urban business partnerships	Rural-urban business partnerships address spatially extended trans-territorial relations and interdependencies through commercial activity. Other key features are a range of sectoral backgrounds, a broad spectrum of initiators, geographical distance, and often a relatively loose structure.		x		x	**Stakeholders**: Rural and urban actors with diverse backgrounds and motivations to engage in novel ways to valorise rural amenities, including private, public and civil actors **Sectors:** Commercial, amenities, geography, economy and culture **Examples** : Dutch Taste of Van Gogh: https://www.holland.com/global/tourism/hollandstories/van-gogh/taste-of-van-gogh.htm

Table 7. Cross-sectoral interactions from the BMLM CoP (from page 34 to page 38)

BMLM CoP: synergistic business models	Implications for cross-sectoral interactions and rural-urban linkages	Food CoP	PI&SS CoP	ESS CoP	Culture CoP	Description of interactions
TEPs	It builds on networks of actors that broaden the agenda of issues and initiatives addressed with public-private partnerships from employment issues within the areas of local, socio-economic development, ecology, social and technological innovation, immigration, inclusive and sustainable, or even the promotion of infrastructure development.		x			**Stakeholders**: Individual businesses and business associations, Trade unions, Civil society, Local) government **Sectors**: Employment, economy, social services **Examples** : Governance structures located in Valencia region.
Territorial Co-operatives	They are built by exploring novel forms of territory-based collaboration, not only among each other, but also with public policy bodies and civil society organisations.	x	x	x	x	**Stakeholders**: Rural entrepreneurs with various sectoral backgrounds, civil society organisations, and public policy bodies at local, regional, national, EU level (e.g. related to CAP-reform) **Sectors**: Landscape, entrepreneurship, tourism, leisure and a wide range of rural sectors (agriculture, economy, food, development etc.) **Examples** : "Water, Land en Dijken" (Water, Land and Dikes), a territorial cooperative in the vicinity of Amsterdam, https://waterlandendijken.nl/
Slow Food	Through the establishment of regional food value chains, regional businesses can be promoted and low-cost and sustainable supply of the population with products from the region can be guaranteed.	x	x		x	**Stakeholders**: Public institutions (public canteens in kindergartens, schools, hospitals, etc.), Small scale farmers, Individual consumers **Sectors**: Employment, culture, tourism, food, economy **Examples**: Projekt Essen ist Leben -Verein Kultur Schöcklland, Austria. https://www.huegelland.at/leader/projekte-und-veranstaltungen/604-6218-essen-ist-leben-nachhaltigkeitspreis-gewinner-2018/

Table 7. Cross-sectoral interactions from the BMLM CoP (from page 34 to page 38)

BMLM CoP: synergistic business models	Implications for cross-sectoral interactions and rural-urban linkages	Food CoP	PI&SS CoP	ESS CoP	Culture CoP	Description of interactions
High-Tech Circular Farming	Different forms of cross-sectoral cooperation play an important role involving agri-cultural, energy and environmental sectors. Novel public-private partnerships facilitate and finance innovative research and start-up investments.	x	x	x		**Stakeholders**: Agro-industrial experts, Agro-industry, Farmer-led innovation networks, National and regional environmental organisations, National innovation programmes **Sectors**: Industry, technology, innovation, agriculture, ESS, economy **Examples**: In Ede, for example. De Groene Mineralen Centrale (The Green Mineral Plant)
Food waste distribution	The institutional arrangements are vital for creating these opportunities, for example, the EU waste regulations created a chance to divert food at risk of being wasted and knowledge of the UK landfill taxes. Similarly, knowledge of the rules to allow profits to be shared, employment to be targeted, requires an in-depth understanding of the policy environment. Appropriate contacts within the food chain, including corporate actors very important.	x	x	x		**Stakeholders**: Corporations Civil society (NGOs, CSOs) **Sectors:** Food, agriculture, social services, economy **Examples** : The core organisation is FareShare UK www.fareshare.org.uk
Box Schemes	Measures include co-operation, setting up producer groups, LEADER, basic services and village renewal in rural areas, and knowledge transfer and information. Other measures include public sector procurement, organic farming support, quality schemes and EU regulations that protect local, high-quality and artisanal food products.	x	x			**Stakeholders:** Individual farms, Food businesses (bakers, butchers), Consumer **Sectors**: Food, economy, employment, innovation, communication **Examples** : Querbeet box scheme, Germany.

Table 7. Cross-sectoral interactions from the BMLM CoP (from page 34 to page 38)

BMLM CoP: synergistic business models	Implications for cross-sectoral interactions and rural-urban linkages	Food CoP	PI&SS CoP	ESS CoP	Culture CoP	Description of interactions
Commoning	Governance arrangements in commoning differ substantially. For instance, shared ownerships mostly will result in much more formalised relations than other ways for sharing responsibility and care for natural resource management (such as crowdfunding or participation by means of voluntary or unpaid contributions).	x	x	x		**Stakeholders:** Civil society (NGOs, CSOs) **Sectors**: Agriculture, economy, food, commerce, sustainability **Examples**: Crowdfunding example: www.crowdfunding.bionext.nl.
Cooperative Housing	Cooperatives have to follow the national laws on coops, but they also have to set their own rules on how to run the coop. They may be members in wider networks (rural-urban and/ or international collaboration).		x			**Stakeholders**: Rural communities owning suitable housing (such as ecovillages). Individuals in urban areas. Possibly also rural and urban NGOs to organise the arrangement jointly. **Sectors**: Housing, economy, land use **Examples**: At Helsinki. Keuruun ekokylä Keuruu Ecovillage.
Green Tourism	Joint action is key in landscape level management and in the maintenance of natural resources, for example of clean lakes and rivers. Regional tourism boards typically play an important role in this coordination.		x	x	x	**Stakeholders**: Individual businesses, rural dwellers, Nature conservation organisations (NGOs, CSOs) Local administrations, Tourism office. **Sectors**: Tourism, ESS, social services, entrepreneurship **Examples**: The UNESCO Biosphere Reserve Rhö with its many green tourism businesses in the border triangle of Bavaria, Hesse and Thuringia provides a great example.

Table 8. Cross-sectoral interactions from the Cultural Connections CoP

Culture CoP	Implications for cross-sectoral interactions and rural-urban linkages	Food CoP	PI&SS CoP	ESS CoP	BMLM CoP	Description of interactions
Sustainability of cultural activities	Coordination can make cultural institutions, activities and events more accessible, especially across rural and urban areas.	x	x			**Stakeholders**: collaborative decision-making between institutions and stakeholders **Sectors**: Food, tourism, wellbeing **Examples:** Mid Wales explored the sustainability of cultural initiatives in a short-term oriented funding environment through 'Vision for Rural Wales'. A regional cultural strategy in Tukums works to consolidate cultural life by more efficiently connecting people, resources and ideas.
Valorisation and proximity	Culture and food connections. Specifically, the combination of proximity and food got results related to alternative food networks, authenticity, etc.	x				**Stakeholders**: Collaborations between different actors and policy decisions in relation to tourism and heritage. **Sectors**: Regional culture, identity and economy, quality of life, migration **Examples** : Lucca and Tukums LL.
Governance of cultural connections	The explicit governance mode presumes the active involvement of embedded cultural institutions, local authorities' governments and civil society. The implicit mode is characterised by collaborative arrangements that have not been formalised or, alternatively, emerging partnerships.				x	**Stakeholders**: A wide range of stakeholders **Sectors**: tourism, agriculture, food, economy **Examples**: The explicit mode was exemplified by Tukums, in which the development of the cultural strategy proceeded in a participatory manner, while still being coordinated by the municipality. The implicit mode was exemplified by the Rural Vision document, which was community-driven, even though it may have policy relevance at the local level. Despite these differences, the positive impact of network governance in the cultural sphere is the development of a joint cultural offer at a (wider) territorial level in an inclusive manner.

Ecosystem Services

The ESS CoP aim was to identify, map and integrate functional ESS relationships in four arenas, namely (Table 9): spatial and sectoral planning; contributions to a redefinition of rural-urban relations (for example shifting from zoned to integrated relations); associating ESS use and delivery to planning instruments and governance models at multiple scales; and exploring how ESS enhance rural-urban synergies. They agreed that optimising territorial ecological interdependence requires cross-sectorial coordination within a territory. It is identified a science-policy-practice gap to be bridged to foster territorial applications of ESS mapping.

Two main sub-themes were key for detect the main cross-sectorial relations: Circular economy (CE) and in terms of land use planning and mapping ESS supply and demand. ESS CoP recognizes the interrelationship of the main themes. ESS can be integrated in land use planning and become a factor to be considered in land take decisions. Gloucestershire aims to explore the potential for circularity through integrated water resources management and links with regulations. For Ede municipality, which is well-known for its concentration of intensive agricultural practices and associated environmental problems, circular farming brings major challenges. Regional implications in Ede for circular farming were inventoried, shared and discussed with stakeholders. This collaborative learning exercise also made links between circular farming and associated topics, such as: 1) municipal attempts to implement more integrative and participatory rural planning approaches; 2) Ede's urban food policy making efforts and 3) prospects for novel rural business models. Actually, circular farming represents a possible business model to enhance the valuation of land based on ESS while community partnership represents a possible governance model to ensure that multi-stakeholders' values and priorities are engaged. This can be exemplified with the value of water in regulation services, where these values are spatialized, and how subsequently the management of ESS in agriculture land use can be enabled through circular farming and community partnerships. There are strong cross-sectorial relations between the different thematic fields and making flows of goods and services between rural and urban areas.

On the other hand, LLs aims to build tools as support of linking ESS to participatory approaches and new governance models in progressing towards innovative multiscale and cross sectoral and place-based solutions. Frankfurt LL aims to understand of spatial relations and dependencies between Inner and Outer Space in terms of supply and demand for optimised spatial planning as well as valorisation of ESS services. Spatial planning is key for promote cross-sectorial relations. It seeks communication channels across multiscale planning for information and knowledge but also for rules (regulations), norms and responsibilities (path dependencies) to promote rural-urban synergies through ESS. Moreover, the focus in Lucca is on mapping and valorising food production, as one of the ESS delivered by the rural and peri-urban territory (open spaces) in the plain of Lucca. This is aimed at strengthening the existing regulations such as the Intermunicipal Food Policy, or how multi-locality is poorly captured in planning tools.

Table 9. Cross-sectoral interactions from the ESS CoP

ESS CoP	Implications for cross-sectoral interactions and rural-urban linkages	Food CoP	PI&SS CoP	BMLM CoP	Culture CoP	Description of interactions
Circular economy (CE)	The CE transition has spatial, organisational and cross-sectoral implications. Two different focuses have taken place: The focus in Gloucestershire is on water quality and water storage, together with flood regulation and food production. Whereas in Ede, more focused on circular farming enables looking at ESS tensions – business models are strategic to shift practices.	x		x		**Stakeholders**: A mixture of rural spatial planning with a range of other policy tools, including Triple and Quadruple Helix Innovation approach. Regional rural and urban dwellers + leisure seekers with different backgrounds **Sectors**: Especially strong relations with the CoPs for Sustainable Food Systems and BMLM (albeit somewhat less with latter's labour markets component) **Practices**: Regulations. In Ede, Eco-System Service Delivery in ongoing menu card approach as part of National Environment and Planning Act implementation. In Gloucestershire the objective is to explore the potential for circularity within integrated water resources management and links with the Natural Capital agenda in terms of new institutional arrangements to provide ESS.
Land use planning and mapping ESS supply and demand	Building tools as support of linking ESS to participatory approaches and new governance models in progressing towards innovative multiscale and cross sectoral and place-based solutions.	x	x	x	x	**Stakeholders**: consumers, farmers, forest manager, leisure seekers, multi-local dwellers, tourists, land use planners, Regional and local administrations. **Sectors**: Interconnected approach to CoP BMLM and CoP SFS. Connection with Public Infrastructures CoP, namely as green infrastructures. Connection with Culture CoP concerning cultural services, as well as education and knowledge. **Practices**: Planning and regulations. Lucca: by mapping and valorising food production, as one of the ESs delivered by the rural and peri-urban territory (open spaces) in the plain of Lucca. strengthening the Inter-Municipal Food Policy. Helsinki: by determining how ESS can be better accounted for in the land use and building planning system in the Helsinki-Uusimaa region. Frankfurt: by localization, measurement, and evaluation of ESS that are provided by the Outer Space as our natural basis for life.

Public Infrastructure and Social Services

The CoP interests are highlighted towards service accessibility and quality, population flows/mobility, proximity economy and territorial governance. These examples are innovative solutions making imperative the organisational flows (Table 10): mobility (esp. via public transport); digitisation and e-services; basic infrastructure for social services and cultural networking; multi-locality and service hubs. Specially, most of them were raised by the Covid-19 pandemic. This is the case of digitisation and e-services and the need of public transport in the most remote areas.

These themes involved a wide range of stakeholders from civil society and even private actors. The case of digitalisation can be a draw for businesses, services and people to rural regions as well as improving quality of life and access to virtual social and commercial services. The lack of basic financial services is an important challenge for rural areas. Finance arrangements need to be devised for rural broadband provision. Valencia LL presents an initiative as a new form of organisation, collaboration and management in the territory. The Valencia region acts as an intermediary between financial companies and municipalities through an Action Plan by promoting and incentivizing the installation of ATMs. This experience can provide suggestions and ideas for new cooperation models for efficiently using resources and public services, particularly in similar rural-urban regions. This initiative can be developed thanks to the agreement reached with local governments that are likely to be beneficiaries (municipalities where there are currently no ATMs) as well as the private sector (private financial companies and beneficiaries of the subsidy of the service).

Mobility-analysis of demand-responsive multimodal and complementary transport was mainly carried out by Styria, Ljubljana and Mid Wales. Growing demand for bicycle infrastructure at the rural-urban interface for everyday mobility as well as tourism, including cycle expressways. First and last mile connectivity to public transport nodes were examined, alongside demand-responsive initiatives. Such examples of 'mobility as a service' can be enhanced/integrated through digital technologies.

Helsinki LL explore the multilocality since integrates urban and rural residents into both directions as well as cross-sectorial interactions between different CoPs. Moreover, it represents one of the key messages emerging from the WP3 work (Maye et al. 2021) in terms of rural-urban relations because of produce new forms of 'counterurbanisation' and teleworking. Likewise, examples of service hubs are presented by several LLs by the need to be located at the core of a locality that makes sense for users, not maps. Hubs need to be organised through network governance, combining local participation and partnerships across scales and sectors. Hubs can be designed to support smart development priorities, and to enhance business opportunities and economic inclusion; they can be created by widening the range of services available at existing service facilities. Rural hubs build cross-sectorial relations with the BMLM CoP and even Sustainable food systems CoP.

Table 10. Cross-sectoral interactions from the PI&SS CoP (from page 43 to page 45)

PI&SS CoP	Implications for cross-sectoral interactions and rural-urban linkages	Food CoP	BMLM CoP	ESS CoP	Cul-ture CoP	Description of interactions
Mobility	Activities are focused on the use of public transport, improvement of internal relations and organisations within the study regions, including the elaboration of new systems of organising public transport.	x	x		x	**Stakeholders**: Public-private cooperation, close coordination between stakeholders, Information and Communication Technology (ICT), marketing and promotion of services, an effective interface with existing public transport, and, the support and expertise of regional bodies. **Sectors**: Migration, tourism, economy, transport, technology, innovation **Examples**: Multi-modal and complementary mobility, Mobility as a Service. the growing demand for cycling infrastructure in the rural-urban interface and its connectivity to mobility nodes were discussed in Frankfurt/RheinMain, Ljubljana Urban Region and Metropolitan Area of Styria LLs respectively.
Digitalisation, broadband coverage and e-services	Cross-sectorial relations through teleworking, broadband coverage and even activities related to e-commerce, remote work, health services, bank services.	x	x		x	**Stakeholders**: Public-private cooperation, close coordination between stakeholders, Information and Communication Technology (ICT), marketing and promotion of services, an effective interface with existing public transport, and, the support and expertise of regional bodies. **Sectors**: tourism, economy, transport, technology, innovation **Examples** : In the LLs of Tukums, Helsinki, the Metropolitan Area of Styria, and Valencia and but also in Mid Wales the theme digitalisation, broadband coverage and e-services plays was treated as an important issue.

Table 10. Cross-sectoral interactions from the PI&SS CoP (from page 43 to page 45)

PI&SS CoP	Implications for cross-sectoral interactions and rural-urban linkages	Food CoP	BMLM CoP	ESS CoP	Culture CoP	Description of interactions
Basic infrastructure, social services and cultural networking	Services can be public, private, community or non-profit, whereby 'essential services' can be characterised as services that all people need to access for full inclusion in society such as water, sanitation, energy, transport, financial services and digital communications.		x		x	**Stakeholders**: Public-private cooperation, close coordination between stakeholders, Information and Communication Technology (ICT), marketing and promotion of services, an effective interface with existing public transport, and, the support and expertise of regional bodies. **Sectors**: Culture, tourism, economy, technology, innovation **Examples**: examples from Mid-Wales, Tukums, Ljubljana, Styria and Valencia LLs include the provision of schools and training facilities, cultural facilities and events, leisure facilities and natural recreational areas. Moreover, service facilities like shops, village halls and pubs or other social meeting points are regarded as essential for social life.
Multilocality	Multilocality living is characterized by different aspects in urban and rural areas, as urban living often tends to be linked to work, study, family networks and relationships, and in rural areas the phenomenon focuses, in particular, on leisure and seasonal living. It contributes to rural development in terms of job creation, planning of cultural activities and provision of services.		x			**Stakeholders:** Public-private cooperation, close coordination between stakeholders, Information and Communication Technology (ICT), marketing and promotion of services, an effective interface with existing public transport, and, the support and expertise of regional bodies. **Sectors**: Migration, tourism, economy, transport, technology, innovation **Examples**: In the Frankfurt/RheinMain Region, a shift to telework is an opportunity to de-centre the city from commuting patterns. Similarly, in Finland efforts to understand seasonal populations are suggesting new ways to design local services

Table 10. Cross-sectoral interactions from the PI&SS CoP (from page 43 to page 45)

PI&SS CoP	Implications for cross-sectoral interactions and rural-urban linkages	Food CoP	BMLM CoP	ESS CoP	Cul-ture CoP	Description of interactions
Service Hubs	Service hubs, where multiple services are co-located in the same space, can offer solutions through cross-sectorial relations.	x	x		x	**Stakeholders**: Public-private cooperation, close coordination between stakeholders, Information and Communication Technology (ICT), marketing and promotion of services, an effective interface with existing public transport, and, the support and expertise of regional bodies. **Sectors**: tourism, economy, transport, technology, innovation **Examples** : In the LLs Tukums, Helsinki, Metropolitan Area of Styria, Mid-Wales and Valencia LLs a diverse range of rural service hubs were analysed, related to on behalf of transport, public administration, and primary healthcare and as well as a community shops, was analysed.

Table 11. Cross-sectoral interactions from the Sustainable Food Systems CoP

Food CoP main themes	Implications for cross-sectoral interactions and rural-urban linkages	BMLM CoP	PI&SS CoP	ESS CoP	Culture CoP	Description of interactions
Municipal food strategies	Strategies open the door to innovation and new business models based on public-private arrangements in order to enable the innovations that are used in value creation.	x		x	x	**Stakeholders**: Several actors of the quadruple helix. **Sectors**: They may influence more sectors and improve the cross-sector coordination (healthy, agriculture, food, environment, planning). **Examples**: Local food strategies such as Mid Wales, Lisbon metropolitan region, Lucca Province, Valencia region, Gloucestershire.
Branding	Branding has evolved from marketing campaign to a full flagged partnership approach where local and regional brands cover issue of standardisation, quality, origin and will in next period play a central role in traceability questions.	x	x		x	**Stakeholders**: Organisations. It brings together producers, consumers and regulators which plays an important role in the rural-urban synergies not seeing rural as a food producer and urban as a consumer but going beyond this syntagm. **Sectors:** Food, culture, landscape **Examples:** Regulations and planning. Lucca and Valencia LLs.
Public procurement	Governance structures need to assure necessary timely regulation of issues under the public law (e.g. public procurement procedures) but along this the governance structures need to assure proper monitoring of the quality of food and monitoring to stable delivery of food to public institutions.	x	x			**Stakeholders**: Public and private arrangements **Sectors**: Links to other food and non-food sectors (waste, energy, nutrition, health…) **Examples**: Regulations. It is an issue addressed by the EU Farm to Fork Strategy and the European Green Deal. Ljubljana, Gloucestershire, Lisbon, Tukums and Valencia LL.

Sustainable Food Systems

The CoP Sustainable Food Systems and its members were exploring new localities, governance and their networks and smart development opportunities and practices by finding local practices. The main themes in terms of rural-urban relations are proximity economy, territorial governance, circular economy and heritage tourism (Table 11). These findings were discussed through most of the municipal food strategies although not in all. In Tukums municipality food strategy had an integrated territorial and food system approach that addressed both rural and urban areas, food production and consumption from social, economic and environmental aspects. Otherwise, Gloucestershire's emerging food strategy Let's Grow is distinctive because of its predominantly rural focus. Furthermore, the strategy is not championed by a local council or health authority, but by a Local Enterprise Partnership (LEP) – which in the UK are local public sector agencies that distribute national government funding to implement economic development policies, and more or less overlap with counties. The public food procurement was conceived as processes taking into account the rural urban synergies, and as tools in developing more cross-sectorial synergies. These were explored by different LLs in terms of its link with BMLM CoP and as flows of existing and new regulations at local and regional level. It is stated that advances in sustainable procurement requires transparent and cross-sectorial brokerage. Actually, cross-sectorial regional initiatives can help overcome narrow pro-local agendas.

2.1.2.2 Main interactions across Communities of Practice

Interactions between Sustainable Food Systems and other CoPs

Styria LL presents interactions through cross-municipal budgeting to develop what could eventually become learning on the role of anchor institutes as drivers/influencers of food sourcing making possible cross-sectorial relations with social services and public infrastructure. The link with public infrastructure & social services is exemplified through the analysis of good practices on rural hubs and Demand Responsive Transport (DRT). Sustainable food systems and cultural connections are strongly linked. It is explored by Lucca to develop a local food plan which centralises the importance of local food. Moreover, food is considered as the main ES. There are diverse issues such as the sustainable land management in relation to urbanisation and green infrastructure (Ede LL) and the promotion of knowledge on ESS through to sustainable food education in primary and secondary schools (Lisbon LL). Similarly, development of new business models and the promotion of sustainable food systems in school food programmes as well as development of a Metropolitan Network of Agroparks (MNA) supported by a program extended to commercialization and restoration. These are representing relationships between Food and BMLM CoPs.

Interactions between ESS and other CoPs

The nature of the ESS concept acknowledges synergetic relations across sectors and rural-urban areas. For instance, food provision and cultural services (through Lucca LL) are two of the categories of ESS, ESS will likely enable new businesses and new markets to emerge and develop (through Lisbon LL), and green infrastructures can be regarded as public infrastructures and represent ESS such as Frankfurt LL shown (Figure 10). The main connections are with the Food CoP and Culture CoP, the former linked to the destination of rural spaces to agriculture and landscape

features (olive groves, vineyards, horticulture etc…), the latter to the typical products and dishes/gastronomy of the area. CE is analysed through strong relations with the CoPs for Sustainable Food Systems and BMLM. The latter is because of the case of Gloucestershire regulations are linked to urban enterprise flood resilience and environmental performance. On the other hand, spatial planning is liked to PI&SS CoP. The core theme of the Helsinki LL (multi-locality) is approached context based also in the CoP BMLM: ESS as a pulling force for teleworking and multilocal working as well as CoP PI&SS because of the use of ESS as a promotor for building new facilities for multilocal people in rural areas. Lisbon LL expresses an interconnected approach between Cop ESS, CoP BM and CoP SFS. Connections with CoP Food Systems, about the provisioning services and cultural services as knowledge and education. BMLM CoP, relevant in the role of ESS to the territorial economy, and the creation of the the Metropolitan Network of Agroparks. Connection with PI&SS CoP, namely as green infrastructures. Connection with Culture CoP concerning cultural services, as well as education and knowledge.

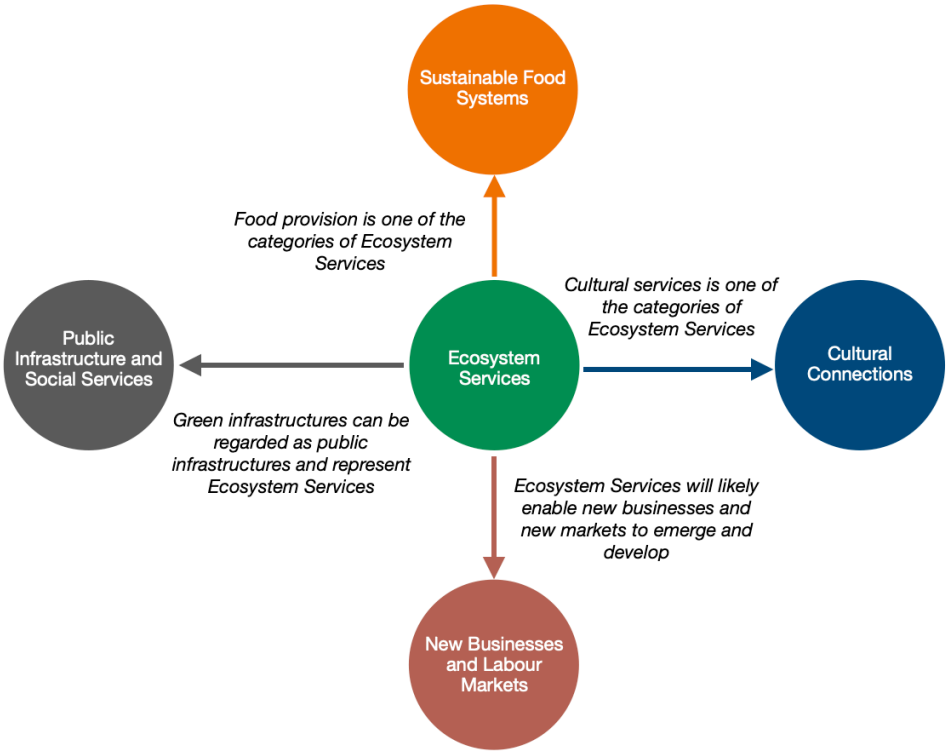

Figure 10. Interactions between ESS and other CoP themes

Interactions between Cultural Connections and other CoPs

Regarding cross-sectoral relations, several possibilities were raised, and numerous connections are possible because culture permeates all aspects of human life. However, the connections with food, infrastructure and ESS were particularly pronounced in this CoP.

In the case of food CoP, it is noted a frequent association of rural areas with traditional recipes and higher quality products. This indicated an implicit association between rural culture and culinary heritage, which provides food business based in rural areas with opportunities to market their goods and build upon a repertoire of regional culinary resources, whilst simultaneously experimenting with new flavours. The challenge once again is finding a balance between preservation and innovation.

The connection between culture and infrastructure was discussed in relation to roads, venues for cultural events and digital services. Finally, cultural connections are also intimately tied to the provision of ESS. This is likely due to rural culture being frequently associated with natural environments and active leisure activities.

Cultural connections are dependent upon cross-sectorial interaction, be it culinary traditions or ESS. Cultural CoP interests suggest that, in addition cultural practices and the perceptions of a certain way of life, cultural connections between urban and rural areas can be embodied in food products and landscapes. This provides local food businesses opportunities to market their goods and build upon a repertoire of regional culinary resources, whilst simultaneously experimenting with new flavours. Likewise, various ESS could be provided. However, this would likely require investments in infrastructure, which could increase the flow of visitors to more remote rural areas, while simultaneously improving the mobility of local residents and providing new labour opportunities.

Interactions between BMLM and other CoPs

The BMLM interrelations with ROBUST's other synergy topics are omnipresent. This applies particularly for sustainable food systems (e.g. box schemes, food cooperatives, local food hubs). PI&SS appear in Cooperative Housing and Rural Service Hubs. Eco-system service delivery is represented by Green Tourism and Multifunctional Rural Enterprises. Cultural Connections are manifested in Valorising Food Heritage, Regional Quality Labels and Trans-territorial rural-urban partnerships. Other profiles such as Dynamic Purchasing Platforms and Commoning point primarily at organisational features that may underlie and drive synergy potential.

Interactions between PI&SS and other CoPs

Within the framework of this CoP there were many expectations for mutual learning and knowledge exchange between the participating LLs. They addressed strong links with BMLM CoP through digitalisation, rural hubs and innovative solutions for transport. The development of social services and cultural networking make possible flows of goods and services, involve a wide range of stakeholders and socio-organisational practices. This is key through culture CoP.

2.2 Analysing cross-sectoral interactions across stakeholders

2.2.1 Introduction: key characteristics and performing of regional workshops

The source of information for this section corresponds to the part A of the questionnaire filled in by the stakeholders participating in the regional workshops organised by the different LLs. Part of the main findings were presented on ROBUST meeting in Riga. The data were shown through descriptive analysis by LL.

In general, regional workshops are held by a wide range of organisations despite having some differences. The participation of both government and public sector is higher than others. Particularly, Lucca has a more diversified range unlike Helsinki LL. Although civil society is well considered in Styria, both Tukums and Valencia need to increase the involvement. The private sector is also important although participation from this sector was generally low but comparable with interest groups (Figure 11.a).

The participants by LL are working on different thematic domains although some of them, such as Helsinki LL, are more specialised in one sector (such as spatial planning). In the cases of Ede, Lucca and Tukums LLs, the largest group of participants were drawn from agriculture and food sector, whereas in Styria they were from tourism & culture and economic development & business support in common with Valencia. Gloucestershire has a wide diversity although more prevalence on public services (Figure 11.b).

Most of participants' work at Gloucestershire LL (80%) is dedicated to create rural-urban relations whereas the others are more urban or rural focused. Ede, Lucca and Valencia participants were more rurally-oriented whereas Helsinki had more urban-oriented participants. In Tukums there was a polarisation about the presence of rural and urban. Indeed, rural-urban linkages were an ambiguous notion to the stakeholders participating in this LL (Figure 11.c).

Regarding the scale of operation there are different levels of decision-making: it could highlight that the most frequent is the municipal-local level both in Lucca and Tukums. However, Ede, Helsinki, Styria and Valencia work more at regional level whereas in Gloucestershire and Helsinki more than a third of participating organisations work at national or international levels (Figure 11.d).

Participants were generally interested and found the held regional workshops very useful. Styria´s participants are very satisfied unlike in Helsinki and Tukums where more participants seemed to be unfulfilled (Figure 12.a). The interest of participants was very diversified. However, Lucca participants mainly appreciated the knowledge exchange/inspiration of new ideas whereas in other LLs preferences were expressed either for cross-sectoral interactions (Gloucestershire, Tukums and Valencia) or enlarging social/professional network (Ede and Helsinki) (Figure 12.b). According to the participants, the trend regarding the ROBUST project contribution in the future was higher towards new approaches to rural-urban relations (Figure 12.c). Finally, the stakeholder's participation within ROBUST project in the future was generally very positive in each of the LLs (Figure 12.d).

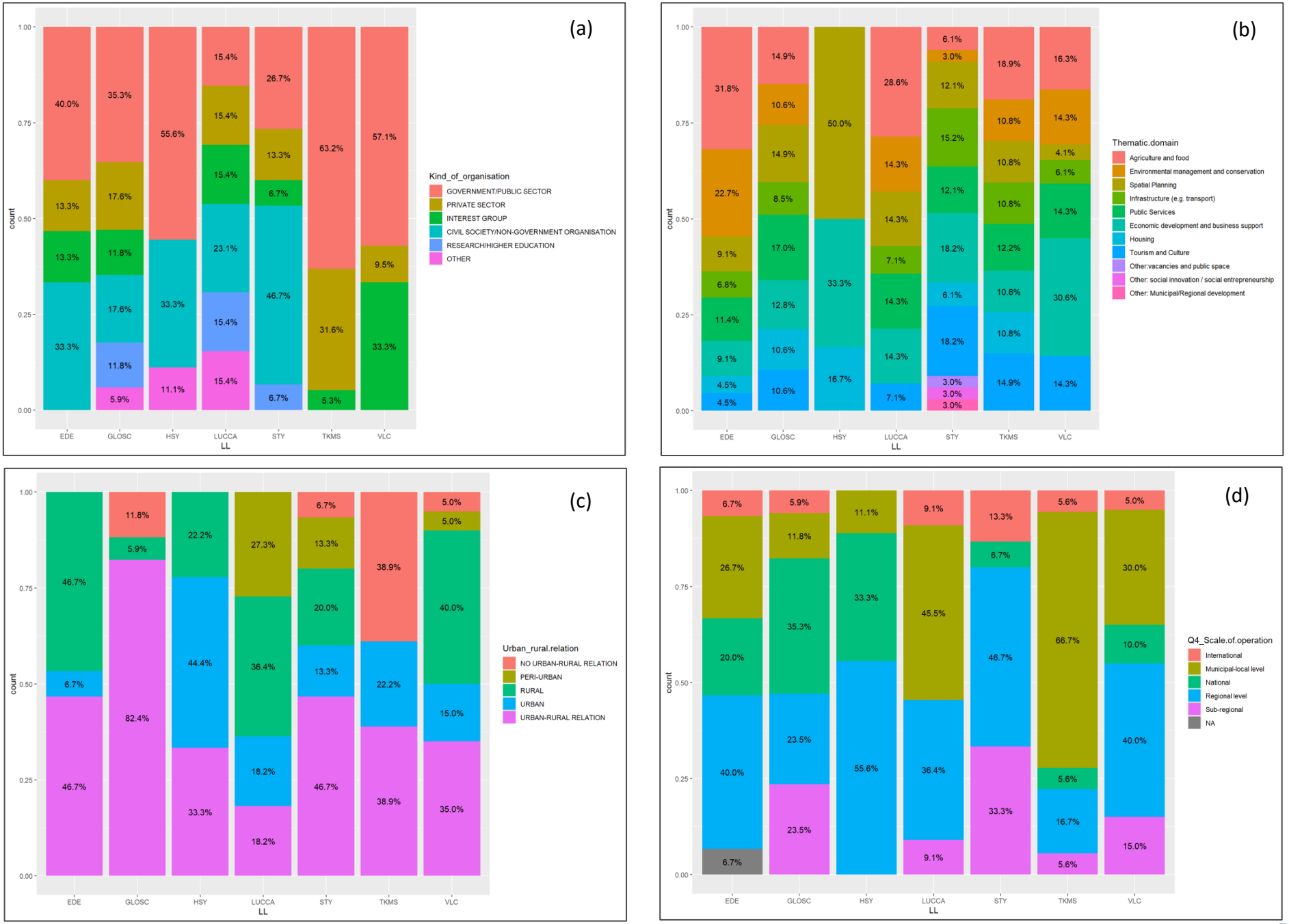

Figure 11. Description of organisations in regional workshops by kind of organisation (a), thematic domain (b), rural-urban relation (c) and scale (d). Living Labs (axis x): EDE, Gloucestershire, Helsinki, Lucca, Styria, Tukums and Valencia

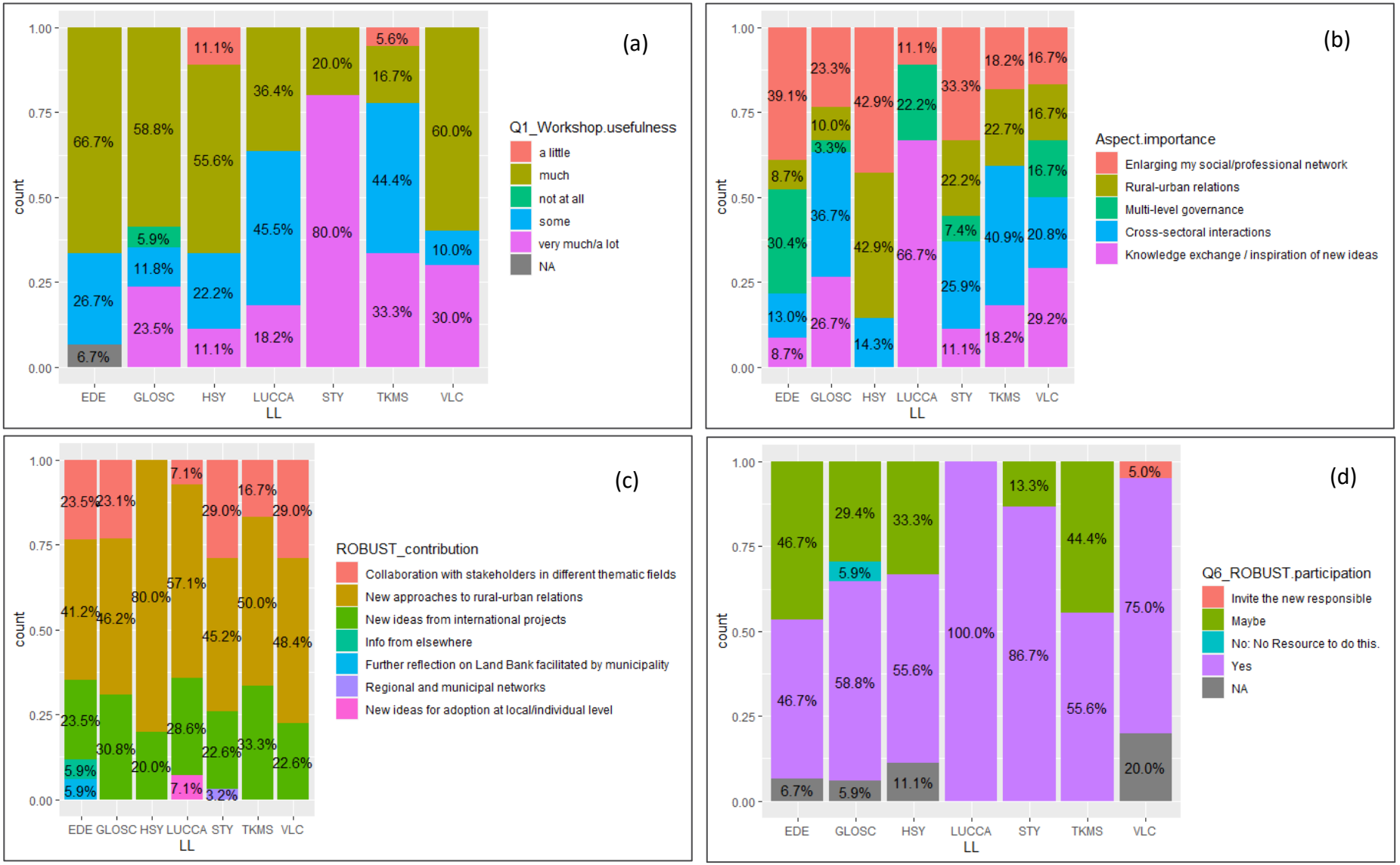

Figure 12. Evaluation of regional workshops by usefulness (a), aspect importance (b), contribution (c) and future participation (d). Living Labs (axis x): EDE, Gloucestershire, Helsinki, Lucca, Styria, Tukums and Valencia

2.2.2 Four strategic features as base for cross-sectoral relationships

This section is based on the information gathered from the sample of stakeholders and organisations that have participated in regional workshops. However, not all participants completed the questionnaires (annexe 2) and often only filled in PART A. In PART B, low motivation was detected among some stakeholders due to the predominance of cross-sectoral perspective (e.g. farmers with public infrastructure sector). In this sub-section, the characterisation and social networks for each LL (just for six of them) are reported, coming out from Part B of the regional workshop's questionnaires. These will be presented through a cross-comparison of the LLs.

Therefore, these analysis does not represent the totality of each of the LL. However, this sample does allow us to detect four main features, which are strategic in order to foster cross-sectoral relationships (Table 12): first, the stakeholders (and their organisations) show a wide range of scales, from local to international; second, the stakeholders (and their organisations) are of a wide nature, from public to private, NGOs, managers of local development or related issues, from education to practical implementation of policies, etc. Third, it predominates a rural-urban scope, instead stakeholders (and organisations) focused just or mainly on rural or urban scope. And fourth, the stakeholders (and their organisations) represent a high diversity of related sectors, from agriculture to economic development, tourism, infrastructures, environment, housing, spatial planning, etc. Therefore, when all these elements come together in an LL, it can be said that the conditions are in place for cross-sectoral relationships to be harnessed and to make a significant contribution to development processes.

a) Multilevel organisations. In the different LL (and specifically in their regional workshops), relatively large networks of stakeholders have worked (between 18 and 25 stakeholders) and diverse in terms of the scales or areas in which the different stakeholders operate in a preferential manner. Thus, the presence of local stakeholders is particularly important in the LL of Tukums (more than a half) and Ede LL. In the latter LL, we find a fairly balanced network, with an equal proportion of stakeholders operating preferentially at the local and regional level, the remainder operating at the national and even international level. The stakeholder networks of Gloucestershire LL and Helsinki LL are even more diverse, with a smaller proportion of local stakeholders and a majority presence of stakeholders operating at the national, and some of them at the international level. But what is remarkable is the presence of stakeholders at all levels, local, sub-regional, regional, national and international. From the point of view of the relationships between stakeholders, this composition can have great potential for development processes.

   On the other hand, the Valencia LL network is also diverse, although here, due to the characteristics of LL, stakeholders operating at the national and international level are not present. The strong presence of stakeholders that preferably operate at the regional level (half of them) is, however, an important element of support for the remaining members of the network, given their high capacity to act and make decisions at the regional level. In practically all LL, the importance of stakeholders operating at the sub-regional (or supra-local) level is also noteworthy, as it is important in terms of support for possible multi-level relations.

Table 12: Typologies of stakeholders in relation to different characteristics in the LL's social networks

	LLs (with total number of sample of stakeholders)	Ede LL (18)	Gloucest. LL (19)	Helsinki LL (19)	Styria LL (25)	Tukums LL (25)	Valencia LL (24)
Scale of operation	Local	39%	11%	16%	0%	56%	13%
	Sub-regional	--	21%	21%	20%	4%	38%
	Regional	39%	32%	26%	48%	12%	50%
	National -Inter.	22%	37%	37%	20%	20%	--
	Not defined	--	--	--	12%	8%	--
	Total	100%	100%	100%	100%	100%	100%
Type of actor or organisation	Government	28%	37%	37%	36%	56%	50%
	Private Sector	17%	16%	--	8%	32%	--
	Interest Group	11%	11%	--	4%	--	--
	Civil Society - NGO	39%	21%	16%	28%	--	29%
	Research - H Educ.	--	11%	21%	12%	12%	--
	Other	6%	5%	5%	--	--	--
	Public-private	--	--	--	--	--	21%
	Not defined	--	--	21%	12%	--	--
	Total	100%	100%	100%	100%	100%	100%
Territorial scope of predominant relationships	Rural	44%	5%	11%	12%	0%	54%
	Urban	6%	0%	32%	8%	16%	8%
	Urban-Rural	50%	84%	37%	28%	56%	38%
	Peri-urban	--	--	--	8%	--	--
	No Urban-Rural Relat.	--	11%	--	4%	28%	--
	Not defined	--	--	21%	40%	--	--
	Total	100%	100%	100%	100%	100%	100%
Thematic domains: base for cross-sectoral relationships	Agriculture & Food (1)	17%	32%	--	8%	44%	46%
	Public Services	--	16%	--	--	4%	0%
	Tourism	--	--	--	12%	16%	4%
	Consumers	--	--	--	--	--	4%
	Food Health	--	--	--	--	--	4%
	Culture	--	--	--	--	4%	4%
	Environment	11%	16%	11%	4%	--	--
	Spatial Planning	--	11%	26%	--	--	--
	Infrastructures	--	--	--	4%	--	--
	Econ. Developm. (2)	--	5%	11%	8%	--	38%
	Housing	--	5%	5%	--	--	--
	Other or several	72%	16%	26%	24%	28%	--
	Not defined	--	--	21%	40%	4%	--
	Total	100%	100%	100%	100%	100%	100%

(1): Including rural development in Valencia LL

(2): Including employment and business support

b) Diversity of organisations. The stakeholders who are members of the different LL (and who have participated in the regional workshops) belong to a wide range of organisations, which highlights the diversity of interest groups and the high potential for cross-sectoral relations. The first aspect to be emphasised here is the predominance of stakeholders linked to or representing governmental or public sector organisations (at different levels, not only in terms of scale, but also in terms of their position in the organisation, from purely technical responsibilities to others with a more political or decision-making component, as is the case with several stakeholders in Valencia). The lowest presence of public stakeholders is almost 30% (EDE, 28%), but in the sample of some LL it is around half (Valencia) and even more (Tukums). In general, in the rest of the LL their presence is around one third, which is also very significant.

In this diversity of stakeholders according to the type of organisation, the second aspect to highlight is the important presence of civil society and NGOs. These occupy a preferential position especially in EDE, and to a lesser extent in Valencia and Styria. The third type of clearly differentiated organisations refers to research and/or higher education institutions, which are increasingly involved not only in the analysis, but also in the design and even the implementation of public policies and development actions by other organisations. A final peculiarity that should be mentioned is the presence of public-private partnerships in Valencia (mainly LEADER LAGs) which, in other countries, take the form of NGOs. In short, this typological diversity of organisations is also an important strength for the promotion, development or consolidation of cross-sectoral rural-urban relationships and, in general, socio-economic development processes in the territorial scope of LL.

c) Increasing potential for rural-urban relational perspective. The territorial scope in which the stakeholders or organisations that make up the sample of LL members preferentially operate is another particularly relevant aspect. The more specialised the scope of the organisation, the more difficult it tends to be to establish robust cross-sectoral relationships, but this does not mean that these more specialised spheres are less necessary. The LL under analysis has several different models. On the one hand, those in which most of the stakeholders maintain flows of relationships in both rural and urban areas (the LL of Gloucestershire, Tukums and Ede stand out in particular). This is an advantage for strategies, actions and policy implementation with a clear rural and urban scope. On the other hand, we have a second model in which there is a strong presence of stakeholders with a preferably urban scope of activity (Helsinki and, in part, Tukums). Finally, a third model derives from the strong presence of stakeholders or organisations whose activity is preferably linked to the rural sphere (Valencia).

In these last two cases, there could be a certain strangulation in the social network if the different stakeholder members (and, where appropriate, the LL itself) are not capable of successfully involve these other stakeholders who are preferably located in the urban or rural sphere, but who hardly operate or are present in both at the same time. Some of these stakeholders may appear isolated, and it is therefore important to promote and strengthen relations with those stakeholders who carry out their activities in the rural-urban sphere, as a "bridge" for their greater integration and participation in the social network.

d) A diversity of sectors as base for cross-sectoral interactions. The type of activity that the stakeholders or organisations preferentially carry out is another of the fundamental keys that conditions the extent to which rural-urban cross-sectoral relationships can be developed. The diversity of activities in which LL stakeholders work is very wide. One of the main strengths is the presence of many stakeholders (although here we should mention more the organisations they represent) that work or are involved in a variety of activities.

Ede is the most characteristic example of this model, with almost ¾ of the organisations conducting a wide range of activities, although most frequently the same stakeholders (or organisations) dealing both with agriculture and environmental issues. This association is particularly characteristic of Ede, and is somewhat less present in the rest of LL. Other organisations, especially in the public sphere (local government) have competences and therefore include links with spatial planning, infrastructure, public services and housing. Such stakeholders/organisations have a privileged position in fostering and maintaining rural-urban cross-sectoral relationships.

Another somewhat different model is one in which there is a greater tendency for at least a significant part of the stakeholders/organisations to be more specialised. This is the case in Tukums, Gloucestershire and Valencia. Thus, in these three LL a very important part of the stakeholders is linked to agricultural activities and food (mainly Tukums and Gloucestershire) and issues related to the implementation of rural development policies (mainly Valencia). Other specialisations focus on environmental issues (Gloucestershire, Helsinki, Ede), or spatial planning (Helsinki and Gloucestershire). Special mention should be made of the important segment of stakeholders or organisations focused on promoting economic development, entrepreneurship, and business and employment support. The most outstanding case is the LL of Valencia, given that several managers of TEPs, managers of local development agencies, as well as those responsible for these issues in the regional government, participate in the LL. Economic development is also present in a differentiated way in other LL (such as Helsinki), but also in those where stakeholders or organisations additionally conduct various activities (Styria, Gloucestershire).

In conclusion, the sample of stakeholders or organisations involved in all LL are linked and conduct a great diversity of activities, and therefore the cross-sectoral relationships that can be established, fostered or developed are clearly a strategic issue for rural-urban development processes. Certainly, this is a complex task considering the typological diversity of organisations, the diversity of administrative levels at which they are present, and the greater or lesser presence in rural, urban or rural-urban territorial frameworks. In this context, it is clear that LL could be regarded as exceptional laboratories, not only for the analysis of the different processes and trends, but above all for their practical implications, in order to advance in the design and establishment of development strategies that take into account and could rely on the multiplier effects that derive from rural-urban cross-sectoral relationships.

2.2.3 The strengths of LL's social networks to build strong cross-sectoral interactions

2.2.3.1 Introductory and methodological remarks

Methodologically, the regional workshops were largely inspired by socioeconomic network analyses. One of the targets was to enlarge the LL beyond the founding ROBUST consortium members by exploring current and future relationships among the workshop participants. The source of information for this section is the part B of the questionnaire filled in by the stakeholders participating in the regional workshops organised by the different LL.

This is a key challenge since the European Commission (EC) refers to the need to promote local partnerships and governance, and thus networking between urban, peri-urban and rural areas (Esparcia et al., 2015). The involved stakeholders form the core of the social network are the base of both development strategies and cooperation mechanisms to put in place within the local society (EEAA, 2016). Certainly, one of the main factors in the social networks are relationships. Only in this way, local development processes can be socially and economically sustainable.

This section includes the system of relationships that these stakeholders recognise as present and existent. The potential of this analysis is based on the fact that it is a set of relevant stakeholders in terms of rural-urban relations in each LL. The analysis will furthermore make it possible to detect which relationships are already present among them, and to check to what extent these relationships are more or less present within different settings, such as types of organisations, scales or thematic domains.

In the first case, it is of interest to know whether the relationships are produced mainly within the different organisations (between public organisations, between the private sector, civil society organisations, etc.), or whether there is a solid basis, as bridges of relationships, between different types of organisations (e.g. whether there are already stable relationships between public organisations and civil society organisations, or whether there are bridges of relationships between public organisations and civil society and the private sector, etc.).

In the second case, multi-scalar relations are practically a necessary condition for public policies, and it is therefore of interest to check to what extent the stakeholders involved show that relations from the local to the sub-regional, regional, national and, where appropriate, international level are already present. Or, on the contrary, whether there is still a significant tendency among these stakeholders to move within, for example, the local scale.

With regard to the thematic domains, these analyses will make it possible to detect to what extent these stakeholders have established bridges between sectors (thematic domains, as an extension of the CoPs defined in ROBUST) or, on the contrary, the predominance of relationships with homophilic tendencies is detected, within each of the different sectors.

Defining which are the characteristic tendencies in relation to all these cross-relationships may be an important element from the point of view of public policies. If we assume that such policies, and development processes in general, can be all the more important if relationships between different scales and between different sectors are strong, it can be very relevant to detect deficiencies in the system of relationships, as well as those stable bridges that can serve as a basis for promoting certain policies and actions.

From the methodological point of view, based on regional workshops information has been collected in order to conduct a Social Network Analysis. This allows us to explore in depth the role of the different stakeholders present in each of the social networks. It should be remembered that the work with the stakeholders of the social network has been restricted to the level of the sample of participants in the LL, which allow us to conduct a sociocentric approach, and that no systematic analysis of the networks of personal relationships of each of the members has been carried out, which would have allowed to carry out an egocentric or personal network approach (Wasserman and Faust, 1994). Such a systematic analysis of the stakeholders' personal networks (external to the LL) would have provided a very broad vision of the cross-sectoral relationships and an assessment of the potential of each of them. In short, it would have made it possible to widely identify present and latent (potential) strategic alliances for the promotion of rural-urban cross-sectoral relationships. Nevertheless, the available results, which are certainly more limited, therefore make it possible to define the role that each stakeholder has or can have in relation to the members that make up the sample of LL network. This is also very significant and constitutes a well approximation to the LL.

From a methodological point of view, of the wide variety of indicators (Table 13) and analyses provided by Social Network Analysis, we are going to work with only three basic indicators, the in-degree, the out-degree and the betweenness (detailed explanations of these and other indicators derived from Social Network Analysis can be found in Wasserman and Faust, 1994). Briefly, the first of these indicators, the in-degree, highlights the stakeholder's prestige, i.e. the extent to which other stakeholders (alter) in the social network report having a sufficient knowledge and relatively stable and fluid relationship with the stakeholder (ego), more or less frequent (it is not always necessary that relationships are taking place, but the certain possibility of such a relationship may be considered sufficient, implying that there is at least a good knowledge and possibility of direct access to that person, i.e. a latent relationship).

In practical terms, the more stakeholders (alter) report or acknowledge having such a relationship (real or latent), the higher the (ego) stakeholder's prestige, i.e. the more central the stakeholder's position in the social network (ego). A stakeholder with a very central position therefore has a high stock of social capital. The fact that a small number of stakeholders (egos) have a high level of prestige is beneficial for them, but it is not necessarily positive for the effectiveness of the social network, i.e. it does not necessarily facilitate (in fact, it sometimes hinders) the relationships between stakeholders within the social network. Sometimes high prestige in the social network is indicative of that stakeholder's leadership role (but high in-degree should not be automatically identified with leadership). But it is also true that, in certain social contexts, a social network with a small number of stakeholders with high in-degree levels could represent the presence of clientelist power structures.

The second indicator, the out-degree, indicates the capacity to access resources within the social network, i.e. how many other stakeholders (which constitute resources, e.g. relevant information) each of them is able to access in a direct, stable and fluid way. Therefore, a stakeholder with a high out-degree does not necessarily have to be a very prestigious stakeholder, but it does have a high capacity to access other stakeholders (resources). This is another element of the stock of social capital of the stakeholders that make up the social network, different from the previous one, but equally important.

Although these are two indicators that highlight different functions, it is common for stakeholders with a high in-degree (prestige) to also have a high out-degree (capacity to access resources). However, it may be the case that stakeholders with a relatively low in-degree can concentrate a higher out-degree, and this makes them particularly valuable in terms of inter-stakeholder relationships (and thus cross-sectoral relationships).

While the previous two indicators work with direct relationships (in or out), the third of the indicators we introduce here, the betweenness, works in a combined manner with direct and indirect relationships. In essence, this indicator indicates the capacity of an actor to mediate between two stakeholders who do not have a direct relationship with each other. This intermediation capacity can occur through direct relationships with one or the other stakeholder, or through other stakeholders. In short, intermediation capacity (is a fundamental component of social capital, because they are stakeholders who can bring together those who are far apart in a group or social network. They are, in fact, one of the most strategic components in social networks (and, therefore, in cross-sectoral relationships), because in real life it is quite common for a stakeholder to maintain direct, stable, fluid and bidirectional relationships only with a relatively limited number of stakeholders. This is where intermediaries can play a genuinely strategic and fundamental role in the relationship system of any social network (in this case, LL).

Table 13. Network indicators for the LLs

	Network indicators				
	Density	Degree centralization	Out-centralization	In-centralization	Reciprocity (dyads)
Ede LL	37%	54%	61%	24%	40%
Gloucestershire LL	15%	85%	90%	14%	24%
Helsinki LL	15%	79%	84%	14%	25%
Styria LL	32%	50%	71%	20%	19%
Tukums LL	7%	59%	62%	10%	14%
Valencia LL	31%	54%	72%	18%	22%

a) Ede LL

The social network that makes up Ede's sample of LL stakeholders has a relatively high density, which highlights a fairly remarkable cohesion, at least in the context of social networks with such varied stakeholders (Figure 13). This diversity is a strength rather than a weakness, as the stakeholder sample is not polarised around a very small number of stakeholders (as the comparatively low degree of centralisation of the network highlights). Thus, more than half of the stakeholders stand out because they have positions of a certain centrality in the social network (and therefore accumulate a significant stock of social capital). This is the result of their relatively high in-degree (prestige in the social network, in the case of 1L, 3N, 8N-I, 17L and 18L), their capacity to access other stakeholders (1L, 3N, 5L, 6R, 13N, 18L), a certain intermediation capacity (especially 1L, and to a lesser extent 3N, 4N and 18L, among others), or a combination of two or three of these elements of centrality. Therefore, these stakeholders are the ones who can play the most important role in the dynamics of this social network, insofar as they concentrate a high potential of social capital (1L, 18L, 3N, 4N, 8N-I).

As indicated, diversity is a strength in this social network. In this case, the stakeholders with the greatest centrality, those who accumulate the greatest stock of social capital and therefore have the greatest potential to foster cross-sectoral relationships within the social network (and, presumably, to the extent that they represent the LL well, also within it), come from different sectors and fields. Thus, although with a very important weight of stakeholders whose predominant activity is at the local level (linked to the municipal government, some of them, for example, with a strong specialisation in rural development issues), stakeholders operating at the national level are also very present (for example, an advisor on educational issues and a stakeholder linked to the Ministry of Agriculture, Nature and Food Quality).

In terms of scale, the intermediate level, the regional level, appears somewhat weaker, with only one stakeholder occupying positions of a certain centrality (6R). In any case, this relative weakness of the regional level does not seem to be a significant bottleneck, given the administrative structure of the country and the division of competences between the different levels of government.

Another important characteristic is the territorial scope in which these stakeholders operate. What is most remarkable in the case of Ede's social network is that the stakeholders with a higher stock of relational social capital work and articulate their activity in the sphere of rural-urban relations, far from limiting themselves almost exclusively to a rural or urban sphere. Finally, the stakeholders that make up the LL are characterised by another particularly important strength in terms of cross-sectoral relationships, which is the diversity of the thematic domains in which they are involved. This diversity is not only a characteristic of the stakeholders with the greatest relational social capital, but is present in practically the entire social network. Thus, for example, with regard to the stakeholders that make up the group of those with the highest centrality and relational social capital, they are present in agricultural activities, environment, spatial planning and infrastructure (1L), in agricultural activities and education (3N), in agricultural activities, environment and economic development (4N), and in a combination of all of them and some other sector (18L).

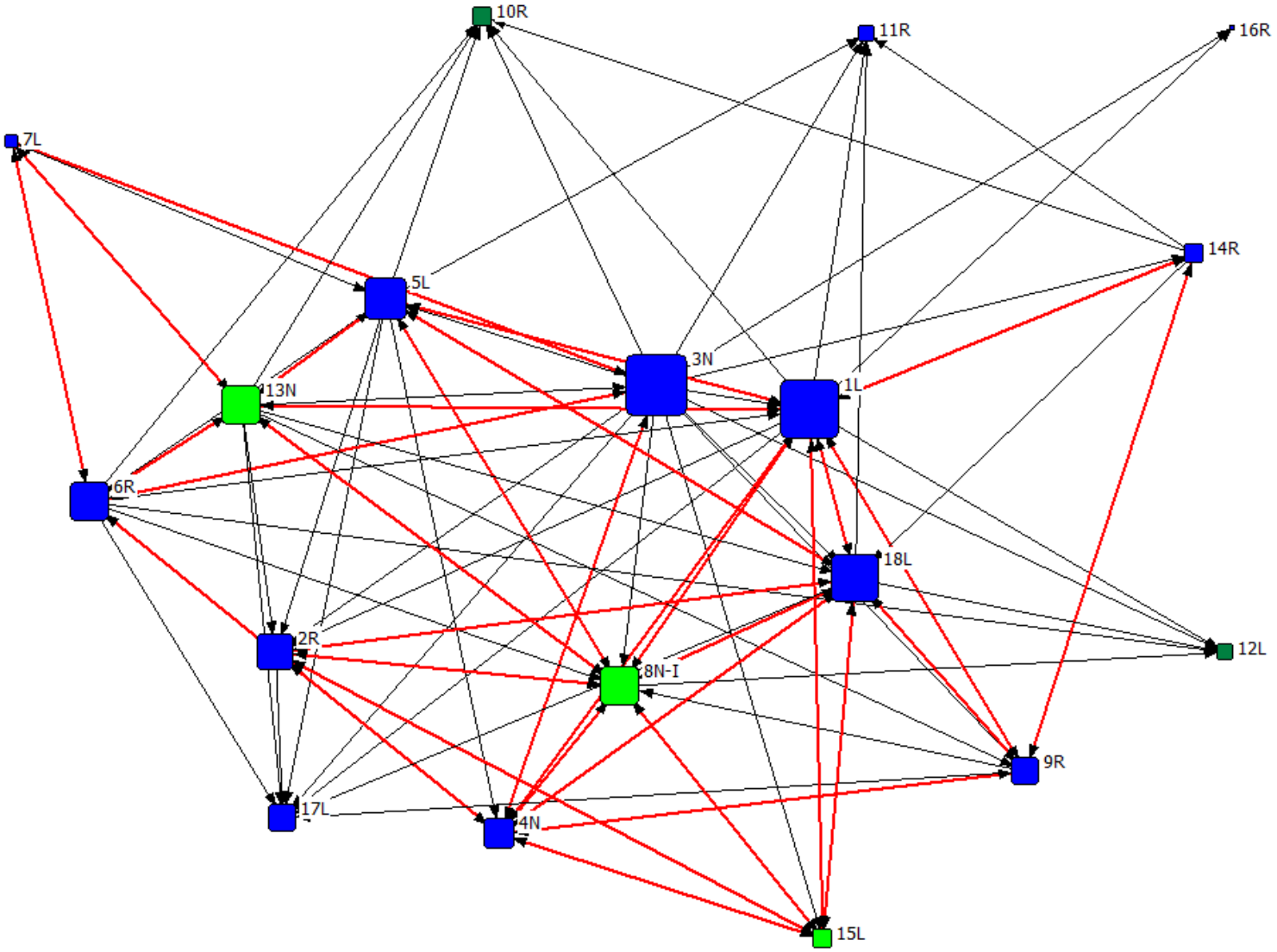

Figure 13: Ede stakeholders' social network. Legend: Size represent the degree of each stakeholder. Colour represent the thematic domains as base for cross-sectoral relationships: Blue: several sectors; Green: Agriculture & Food; Dark green: Environment. Red arrow: mutual relationships; Black arrow: non-mutual relationships. Source: Own elaboration from questionnaire´s PART B (Calculations and drawings have been made using Ucinet 6).

Only one of these stakeholders limits its activity to one sector, agriculture (8N-I), but its relatively prominent position in the social network, and the fact that it operates on a national and international scale, makes this stakeholder particularly valuable, clearly with everything related to agriculture, but eventually it could even develop some intermediary functions between other stakeholders.

In conclusion, the Ede social network is an excellent example of a fairly efficient relational structure, whose actors accumulate an important stock of relational social capital and which, we can deduce, has great potential for the promotion of rural-urban cross-sectoral relationships.

b) Gloucestershire LL

The Gloucestershire LL (always we should remember that we are working with a sample of the whole LL) has a social network with a low density, which highlights the fact that the articulation between its members is limited (Figure 14), largely due to the fact that it is made up of a wide variety of actors from equally diverse backgrounds. Another aspect that may constitute an initial weakness is high centralisation, i.e. the concentration of the most central positions (and the most effective relationships) in a small number of actors. The result of all this is that the indicators on prestige, capacity to access resources and intermediation capacity show low values, i.e. there is no set of actors who stand out especially in any of these three indicators of relational social capital.

The initial weakness that, from the SNA's perspective, characterises the social network of this LL, does not necessarily have to block future developments. In other words, the current diversity, even if it leads to difficulties, can be a strength if the social network (or the LL) can move towards a greater articulation of actors through the establishment of more and closer relations between their members. In the current configuration, the base is constituted by a set of actors with a certain better positioning in two or more of the centrality indicators.

Thus, for example, two groups of stakeholders are defined as being somewhat better positioned. The first of these belong to the same organisation, Gloucester County Council (3R, 11S, 14L), and have the additional advantage of operating at different scales (local, sub-regional and regional), maintaining their networks of relations mainly in the rural-urban sphere, and being linked to a variety of sectors, from the environment (3R), spatial planning (11S), or a combination of several sectors (14L).

The second group of stakeholders with a prominent centrality, although not very well articulated with the previous one, is also present in practically all three scales, but is linked either to the private sector (12N) or to civil society or NGOs (15N and 17S). In this case, although their networks of professional relations are rural-urban in scope, their sectors of activity are diverse and apparently not yet overly connected (e.g. housing and agriculture and food). However, there is also an important potential for cross-sectoral relationships, for example, those derived from activities linked to social housing (involving two of these stakeholders), an area in which one of the stakeholders could develop important intermediary functions (17S).

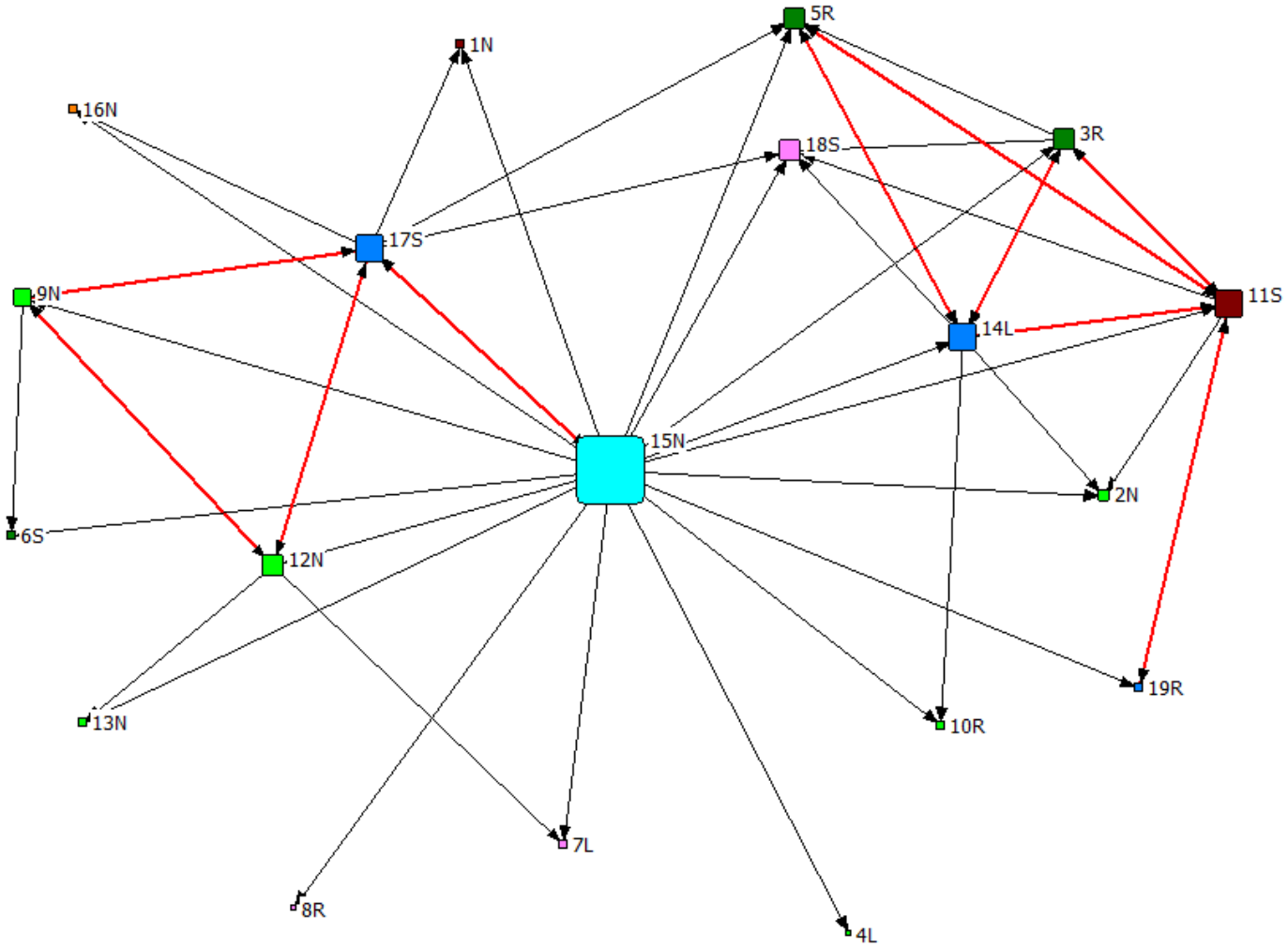

Figure 14: Gloucestershire stakeholders' social network. Legend: Size represent the degree of each stakeholder. Colour represent the thematic domains as base for cross-sectoral relationships: Blue: several sectors; Green: Agriculture & Food; Dark green: Environment; Pink: Public services; Brown: Spatial planning; Orange: Economic development. Red arrow: mutual relationships; Black arrow: non-mutual relationships. *Source: Own elaboration from questionnaire´s PART B (Calculations and drawings have been made using Ucinet 6).*

The SNA makes it possible to detect a possible bottleneck in the LL social network. As can be seen in Figure 14, one of the stakeholders has a very high degree in relation to the rest (15N). However, when this indicator is broken down into in-degree and out-degree, it can be seen that it is very high when it comes to access to other resources (out-degree), but it is an actor with very little prestige or recognition from the rest of the stakeholders in this social network (as is also highlighted because it only maintains one two-way relationship). In practical terms, this significant mismatch results in a bottleneck, so that this theoretical capacity to access other stakeholders is of little use if the rest of the stakeholders count very little on this organisation or stakeholder, as a reference for establishing or maintaining professional relationships.

Consequently, the conclusion is that we are dealing with a social network that is still insufficiently articulated, with some bottlenecks, all of which limits cross-sectoral relationships. In order to make the most of its full potential, this network needs stakeholders who carry out real intermediation tasks, which would result in greater cohesion, an improvement in the stock of relational social capital and, therefore, the capacity to develop cross-sectoral relationships within the LL.

c) Helsinki LL

The Helsinki LL social network is relatively large, but also has a low level of internal cohesion (Figure 15). This is due to the diversity, but at the same time dispersed relationships between its components, as well as the high centralisation of these relationships around a small number of stakeholders. Almost half of the stakeholders operate at the regional and sub-regional level, although more than a third is present at the national and international level. This distribution should, in theory, be a strength. However, according to the results, these are largely independent stakeholders with very few relationships between them. A good proportion are stakeholders linked to the public sector, although there is also a significant presence of stakeholders whose activities are focused on research and higher education. There is a somewhat more modest representation of civil society and NGOs. Although most of the stakeholders operate on a rural-urban basis, those more focused on one or the other are also important, and indeed this may possibly influence the limited connection between their stakeholders.

In terms of the thematic areas in which cross-sectoral relationships could potentially be developed, there are a significant number of stakeholders linked either to spatial planning, the environment, or economic development and entrepreneurship support.

In addition to the limited number of mutual or bidirectional relationships between stakeholders (derived from the dispersion mentioned above), this social network presents a certain strangulation, derived from the scarcity of stakeholders who accumulate both minimum levels of prestige and access to resources (to other stakeholders), or who only have a good intermediation capacity with one of these two components of relational social capital. All this converges almost exclusively in two of the stakeholders (11S and 17S), who, despite their low levels of prestige and access to resources, maintain mutual relations with at least three of the stakeholders in the social network. They are the ones that accumulate the largest stock of relational social capital and, according to the current network structure, are best placed to constitute the starting point for a strategy to foster cross-sectoral relationships.

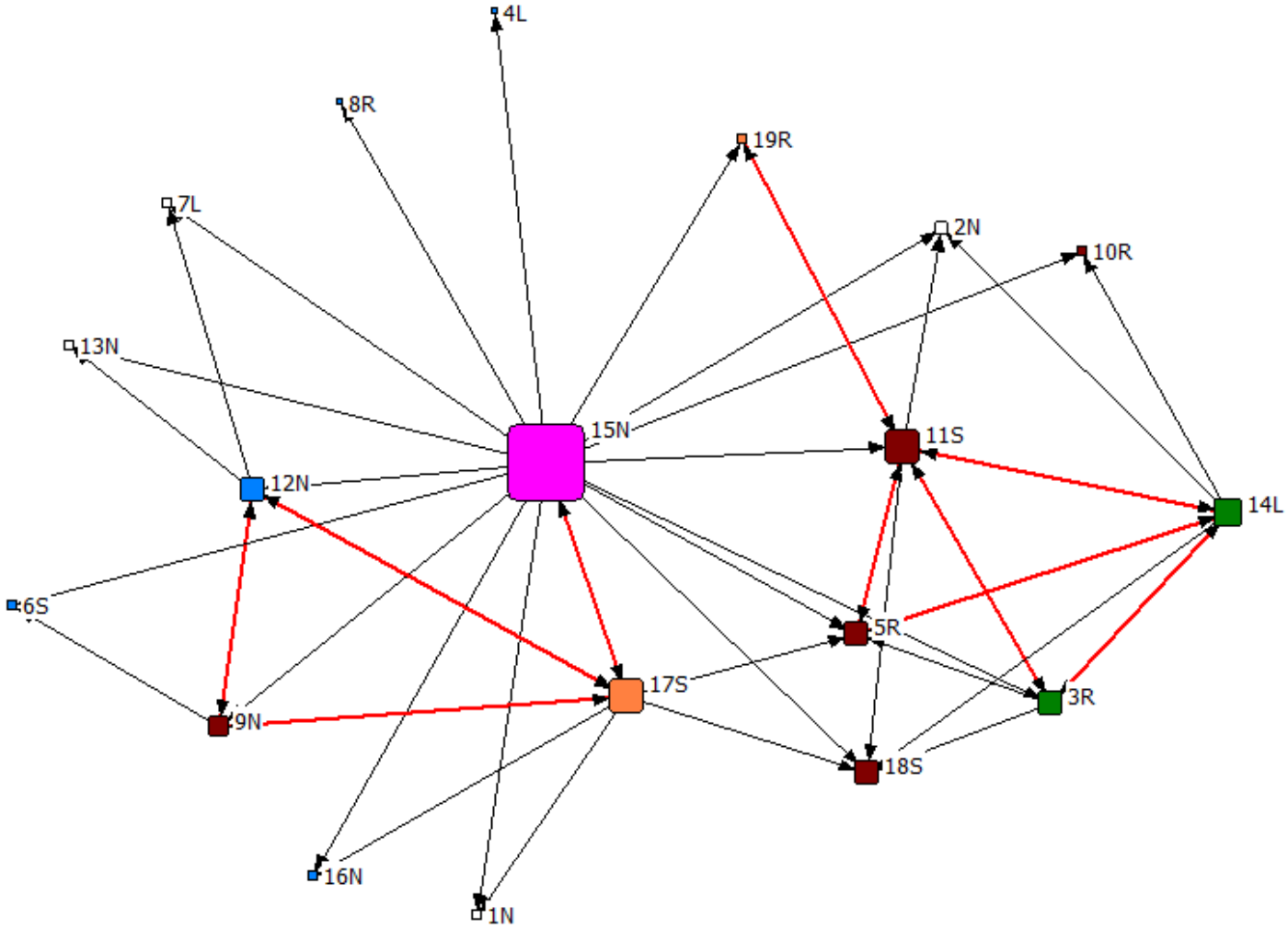

Figure 15: Helsinki stakeholders' social network. Legend: Size represent the degree of each stakeholder. Colour represent the thematic domains as base for cross-sectoral relationships: Blue: several sectors; Dark green: Environment; Pink: Housing; Brown: Spatial planning; Orange: Economic development. Red arrow: mutual relationships; Black arrow: non-mutual relationships. *Source: Own elaboration from questionnaire´s PART B (Calculations and drawings have been made using Ucinet 6)*.

The results obtained from the sample of stakeholders in this LL highlight another important bottleneck, which, if adequately overcome, could contribute very positively to improving cross-sectoral relations in the social network as a whole. This is the stakeholder with the highest centrality (15N). The reason why, in the current situation, this stakeholder is a bottleneck, despite its centrality, is that it derives from its out-degree relationships, i.e. it apparently has a high capacity to access many other stakeholders (resources), but is hardly recognised as a relevant stakeholder within this social network (very low prestige, as a result of the fact that it only maintains a two-way relationship). In a similar situation, another stakeholder could have a high potential as he is recognised as relevant by several members of the social network (18S).

However, in the current configuration of the network, this is an actor that seems to be very much on the margins of the rest of the stakeholders (this could be due to the fact that its activity is focused on research into urban dynamics). A greater articulation with several of the stakeholders in the network would mean a significant improvement in the overall relational social capital stock of this social network.

It can therefore be concluded that the social network derived from the Helsinki LL stakeholder sample has limited potential efficiency. However, it is worth highlighting two small clusters of stakeholders, which are cohesive, but at the same time excessively disconnected from the rest of the LL. The first is made up of three LAGs (12N, 17S and 9N), which is quite coherent. Here only one of the stakeholders can, in the current configuration, act as an effective bridge to other stakeholders in the social network, and it would be important for this core group of stakeholders to be able to articulate and involve themselves more effectively with the rest of the stakeholders. The second group is more numerous (11S, 5R, 3R and 14L) and, although there is a clear trend towards environmental issues as articulating elements of their relationships, it is also more diverse, and more and stronger cross-sectoral relationships are present. In turn, this group has at least two stakeholders with a comparatively higher capacity to establish and maintain bridges with the rest of the stakeholders.

d) Styria LL

In Styria's LL, the sample of stakeholders forms a large social network in terms of size and, despite this, comparatively good internal cohesion (it is common that when the size of the social network increases, internal cohesion is reduced) (Figure 16). Their degree of centralisation is not high, which means that the most central positions are shared by a significant number of stakeholders. Finally, in terms of the structural characteristics of the network, it stands out for its relatively high out-degree, i.e. a high proportion of stakeholders with potential access to resources (represented by the rest of the stakeholders in the social network). However, the proportion of stakeholders with significant prestige is relatively high, and in fact it is quite possible to speak here of a system of shared leadership. This is a question to be explored through a more qualitative approach.

Overall, we are dealing with a broad, diverse, but at the same time very solidly constituted social network, with close direct interrelationships between a large number of stakeholders, and all of this means that its capacity to promote cross-sectoral relationships can also be very high.

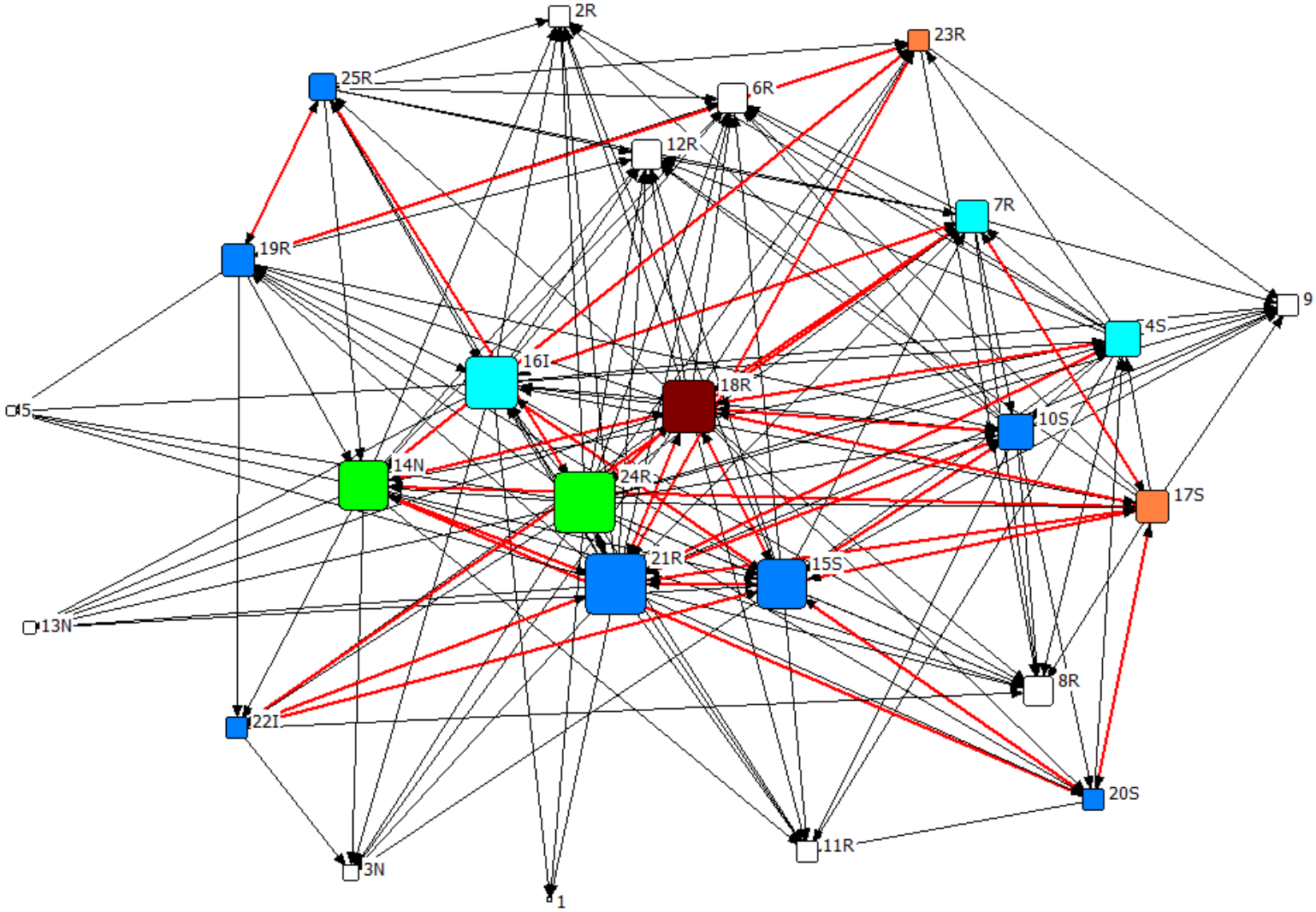

Figure 16: Styria stakeholders' social network. Legend: Size represent the degree of each stakeholder. Colour represent the thematic domains as base for cross-sectoral relationships: Blue: several sectors; Green: Agriculture & Food; Brown: Infrastructures; Light blue: Tourism; Orange: Economic development. Red arrow: mutual relationships; Black arrow: non-mutual relationships. *Source: Own elaboration from questionnaire´s PART B (Calculations and drawings have been made using Ucinet 6)*.

In fact, in relation to other social networks, despite its relatively large size, its diversity in terms of the origin of the stakeholders, the scales at which they operate and the sectors of activity in which they are present, this is another excellent example of a social network with a very important stock of relational social capital, which is fundamental for cross-sectoral relationships. One of the reasons for the high cohesion and strength of the Styria LL social network is that a significant part of its members belongs to the same organisation (Regional Management of the Metropolitan Area of Styria - RMSZR), although it is certainly not the only one.

In relation to the above, precisely from the point of view of multilevel relations, the stakeholders who preferably operate on a regional scale constitute a great strength (they account for almost half of the social network), but there is also a significant representation of those who operate on a national and even international scale.

The rest are mainly at the sub-regional level, which is also important from the point of view of maintaining cross-sectoral relations on a day-to-day basis. The composition in terms of typology of organisations is equally diverse, although stakeholders linked to public administration predominate, but organisations linked to civil society or NGOs are also very present. Likewise, a majority of stakeholders and organisations are present in the rural-urban sphere, and this constitutes a good basis for cross-sectoral relationships in relation to the different thematic domains to which the different stakeholders are linked.

As structuring elements of this social network, key to these cross-sectoral relationships, there are a series of possible shared leaderships, as has been pointed out, which occupy highly central positions in the social network. These stakeholders range from sub-regional (10S, 15S) to regional (7R, 18R, 21R), national and international (14N, 16I) levels. Almost all of them are involved in systems of rural-urban relations, and only two of them are preferentially linked to urban (10S) or rural (21R) areas. And this core of stakeholders, with a very high centrality in the social network, constitute an enormous stock of relational social capital, strategic in terms of cross-sectoral relationships, given that they are linked to very diverse sectors, either in a more specialised way, such as agriculture and food (14N), tourism (7R, 16I) or infrastructures and facilities (18R) (which, at the same time, is related to spatial planning issues).

However, most of this particularly central group of stakeholders, far from being focused on a single sector, are linked to a variety of sectors, such as spatial planning, agriculture and food, public services, promotion of economic development, and even culture-related issues (here the 15S stakeholder is particularly significant). From the perspective of social networks, therefore, the social network of LL Styria constitutes a huge stock of relational social capital, with a very robust and powerful structure of relations between stakeholders and their organisations for the development and consolidation of cross-sectoral rural-urban relations.

a) Tukums LL

The results derived from the stakeholder sample of the Tukums LL highlight a social network with a weak level of cohesion (Figure 17), due to a combination of factors. Notably, there are very few mutual relationships, several stakeholders are completely isolated (which, in practical terms, might seem a bit unrealistic), or many others are only "recipients" of a single relationship.

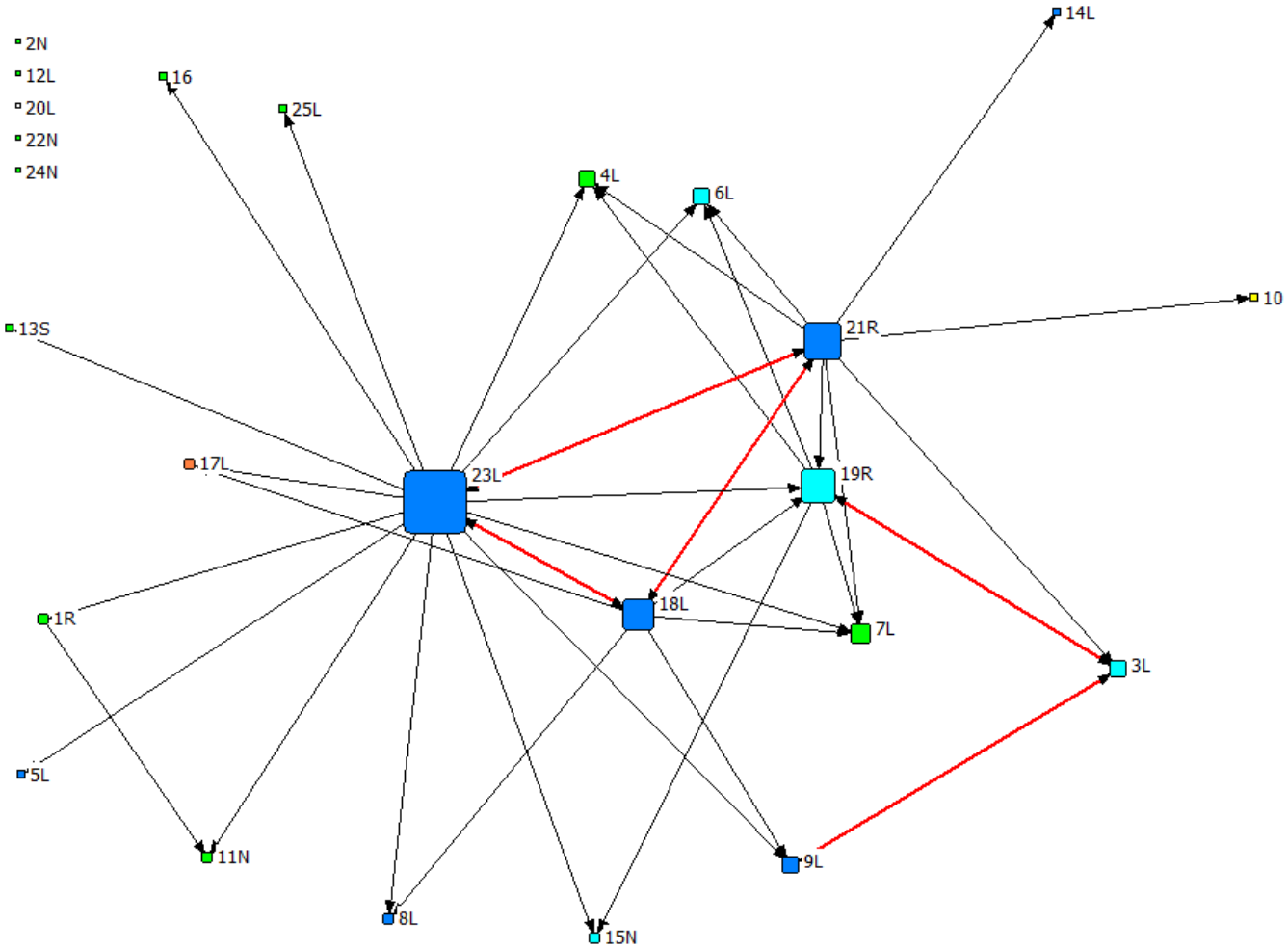

Figure 17: Tukums stakeholders' social network. Legend: Size represent the degree of each stakeholder. Colour represent the thematic domains as base for cross-sectoral relationships: Blue: several sectors; Green: Agriculture & Food; Light blue: Tourism; Orange: Public services. Yellow: Culture and journalism. Red arrow: mutual relationships; Black arrow: non-mutual relationships. *Source: Own elaboration from questionnaire´s PART B (Calculations and drawings have been made using Ucinet 6)*.

The indicator for the overall degree of centralisation of the network is not excessively high, which is, in principle, positive. However, it is masking a high degree of dispersion in the outgoing relationships (out-degree), which contributes to the fact that the social network is not very cohesive, and that, in its current configuration, it is not efficient in terms of promotion of development processes and rural-urban cross-sectoral relationships.

This is particularly striking since a large proportion (almost half) of the stakeholders belong to the same organisation (Municipality of Tukums). This highlight either methodological problems in the collection of information, or that the organisation is characterised by a structure with very independent and hardly connected departments (in fact, only a quarter of the stakeholders in this organisation achieve an out-degree of minimal relevance).

It is also important to highlight that, with regard to the in-degree, most of the stakeholders that obtain a certain degree of recognition are external to the Municipality, linked to sectors such as food business, tourism or culture. Therefore, this is a social network in which, possibly due to the insufficiency of the available information, it is not possible to say that the ideas that have been extracted lead to conclusions that can be considered sufficiently rigorous and definitive.

a) Valencia LL

The social network of the Valencia LL is extensive in terms of size and diverse in terms of levels or scales of operation (Figure 18), with a predominance of stakeholders at the regional level, the one with the greatest decision-making capacity in the administrative structure and competences in Spain, but also with a significant presence of stakeholders operating at the sub-regional level. The presence of stakeholders linked to public administrations is equally important, although a large number of them are in positions of purely technical and managerial responsibility. With regard to the rural, urban or rural-urban sphere, the presence of stakeholders whose main activity has been defined as being limited to the former is noteworthy, along similar lines to that of the Ede social network. In any case, the framework of rural-urban relations is also present in a very significant part of the stakeholders or organisations that make up the social network.

With regard to cross-sectoral relationships, and in line with the above, an important part of the stakeholders is linked to activities related to rural development (which, in this LL, have been differentiated from those specifically related to agriculture and food). In fact, as distinct from the above, some of the stakeholders are involved in agriculture, food, agro-ecology and, in some cases, rural tourism. There is also a specific feature, such as the presence, in the form of an NGO, of the main and most important regional consumer organisation (itself linked to the corresponding national organisation). Overall, therefore, it is a social network in which stakeholders are present in a variety of activities and sectors, and this is certainly also a favourable framework for a strategy to promote rural-urban cross-sectoral relationships.

Considering the size of the social network in this LL, from the point of view of the relational structure, its degree of cohesion can be considered relatively high, without an excessive concentration of relationships around a small number of stakeholders. This social network has several strengths. Firstly, a very high proportion of stakeholders have high levels of centrality (always taking into account the complexity of these social networks), which represents a very important stock of relational social capital.

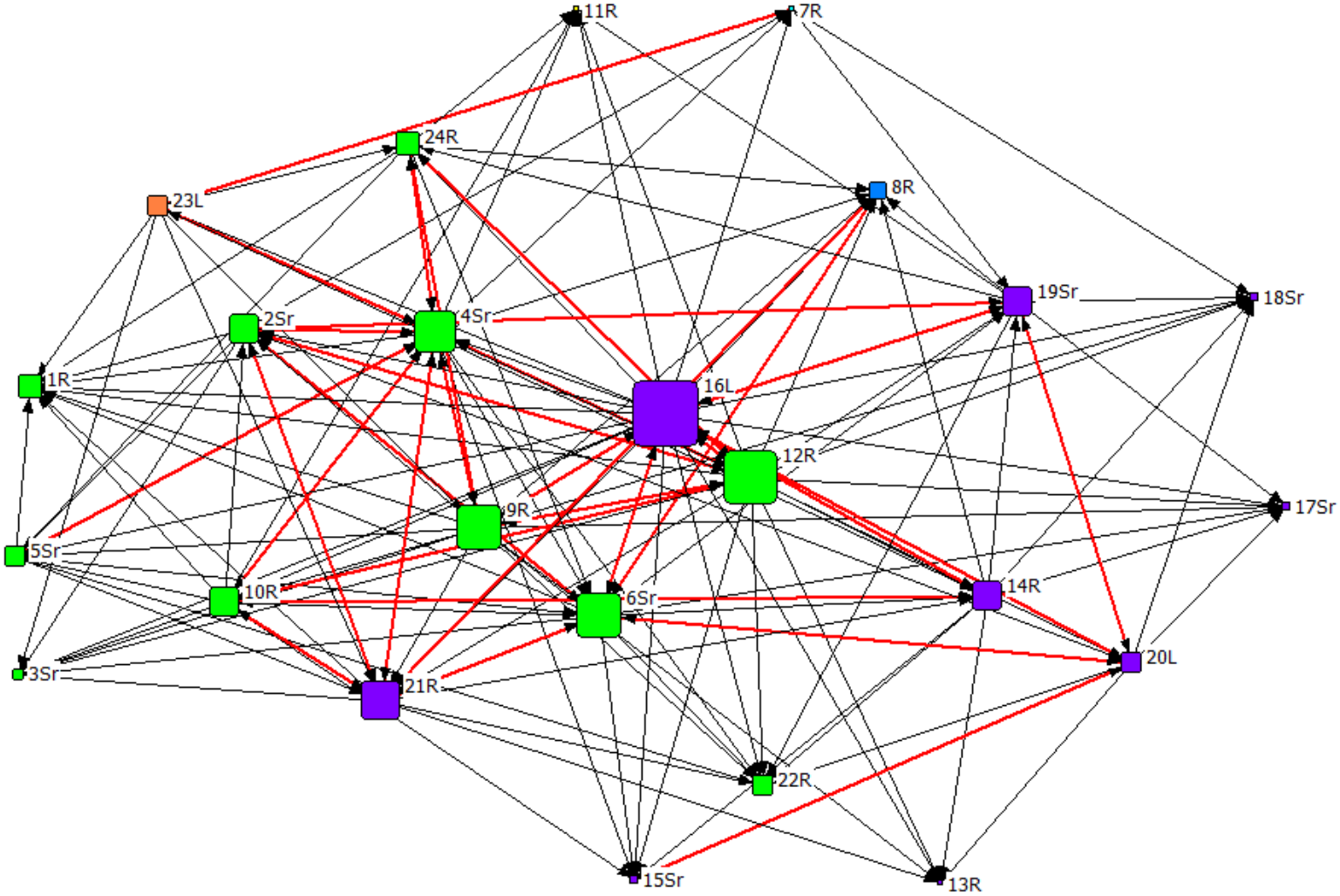

Figure 18: Valencia stakeholders' social network. Legend: Size represent the degree of each stakeholder. Colour represent the thematic domains as base for cross-sectoral relationships: Green: Agriculture, Food & Rural Development; Purple: Economic development & business support; Light blue: Tourism; Orange: Culture; Blue: ONG Consumers; Yellow: Food health. Red arrow: mutual relationships; Black arrow: non-mutual relationships. Source: Own elaboration from questionnaire´s PART B (Calculations and drawings have been made using Ucinet 6).

This centrality refers both to prestige (in-degree), i.e. stakeholders or organisations that are recognised as relevant and with which other stakeholders maintain relationships, and to the capacity to access resources (out-degree).

Secondly, there are also many stakeholders or organisations in which both types of relationships converge, which translates, for practical purposes, into a large number of mutual or two-way relationships, i.e. the capacity of many stakeholders to access resources, but at the same time to act as a reference point and, where appropriate, to make resources available to the rest of the stakeholders in the social network. It should be remembered that, although the stock of these two components is high (which would result in high overall centrality indices), if they do not converge in at least a relevant proportion of stakeholders, we could be dealing with a real bottleneck. This is not the case, because in this social network both components do converge in many stakeholders. Given that mutual relations are very present, the capacity for intermediation (the third of the indicators we are analysing here) loses much of its relevance and is less necessary to achieve or foster cross-sectoral relationships within the social network and the LL.

In this combination of the two components we are working with, this social network presents a differentiating characteristic. Thus, it is more common for stakeholders with the capacity to access resources to predominate in social networks over those who concentrate those resources or, at least, the relational prestige in that social network (i.e., the proportion of stakeholders with a relatively high out-degree is significantly higher than the proportion of stakeholders with a high in-degree). However, this social network presents the particularity that the number of stakeholders with relevant levels of prestige is higher, i.e., stakeholders who occupy privileged positions in the social network, who concentrate and have important resources (e.g., information or decision-making capacity). This result highlights the presence of strong, broad referents, possibly transcending the social network (otherwise probably not so many stakeholders would achieve significant levels of prestige), and also dispersed throughout most of the social network (which is not a weakness but quite the opposite). Such referents, in some cases, may even exercise a certain leadership role, but this is not always the case (i.e. as it has been mentioned high levels of prestige do not necessarily imply leadership within the social network).

Thus, by way of example, several important clusters can be distinguished around these referents, although always with a high level of interconnection between them, which also highlights the importance of cross-sectoral relationships. Firstly, the stakeholders linked to economic development, entrepreneurship, employment policies, etc. stand out. In this LL, these sectors are usually very present in the TEPs, which bring together a diversity of stakeholders, from managers themselves, to agricultural unions, to regional government officials, among others (16L, 21R, 14R, 20L, 19Sr). The stakeholders linked to all these sectors maintain close connections between them, but far from constituting a closed and isolated cluster, they are also in direct connection with another of the most well-represented clusters, that of agriculture and agroecology (10R, 24R) and, above all, rural development. Several LAGs (2Sr, 3Sr, 4Sr, 5Sr, 6Sr), but also regional government officials (1R), agricultural unions and producer groups (9R), representatives of agri-food cooperatives (12R), etc. are present in this last sector.

In conclusion, the social network derived from the sample of stakeholders in the LL of Valencia shows a relatively high degree of internal cohesion, with a certain diversity of stakeholders in

terms of scale, with an important presence of stakeholders and organisations in the field of rural-urban relations, and with a high potential for the promotion of strategies based on taking advantage of the important stock of relational social capital. All this could potentially result in strong and effective cross-sectoral relationships within the LL.

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Concluding the analysis of social networks in this section, it can be said that the social networks that have been analysed so far constitute an approximation to the different LLs, as they are a sample of the stakeholders involved in LLs. The results obtained from each of the networks are directly conditioned by the quantity and quality of the information available. Therefore, the fact that some of the social networks offer results that can be considered poor does not mean that they represent neither the LL social network as a whole, nor the LL itself. In fact, in some LLs, the participants in the regional workshops did not provide detailed information, which may clearly be conditioning the results obtained.

With this caveat regarding the information that was available, it is also clear that the Social Network Analysis approach allows, when precise and quality information is available, to detect and analyse bottlenecks in the social network, as well as the potentialities that derive from it. In conclusion, SNA can help to design the necessary strategies to improve the effectiveness of the stakeholder network itself, acting on certain stakeholders or alliances of stakeholders. Thus, in the previous analyses, many bottlenecks have been detected, but also many potentialities which, if well managed, can clearly contribute to mobilising urban-rural cross-sectoral relationships and, with this, contribute significantly to socio-economic development strategies.

2.3 Place-based initiatives of cross-sectoral interactions

This section focuses on the analysis of the regional workshops, from which a number of place-based initiatives and cross-sectoral interactions can be identified. Each initiative is explained in detail, with examples from different LLs, describing the stakeholders involved and the practices implemented.

2.3.1 Overview from regional workshops

The regional workshops carried out in each LL addressed a wide range of topics linked to rural-urban synergies, among other topics. Figure 19 shows the most frequent words mentioned by the workshop participants. As we can observe, “local”, “rural”, “food”, “public” and “interactions” are the most cited words during the workshops.

The most frequent topics in the different regional workshops were connected to Sustainable Food Systems, and BMLM were topics discussed in all the nine regional workshops. PI&SS was a theme deliberated in eight LLs, the Cultural Connections theme was discussed in six, while ESS only in three workshops (Figure 20).

Figure 19. Word cloud of regional workshops.
*Some words have been removed (the, or, are, and, in with...)

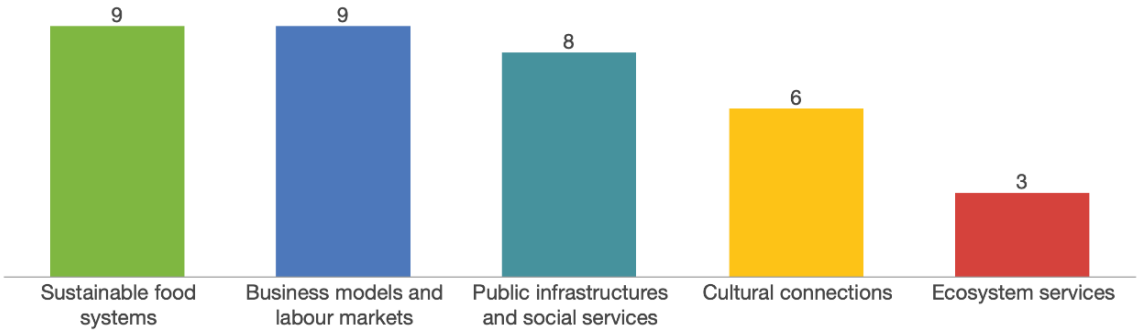

Figure 20. CoP themes by frequency in the nine regional workshops (counted only once per workshop) on cross-sectoral interactions

Moreover, in Figure 21 we observe the most cited CoP themes when explaining cross-sectoral interactions for each LL. Sectors or CoP themes form the rows and LLs the columns. The symbols

at the individual nodes indicate how many segments were coded with the row's code. The larger the symbol, the more segments there are. Obviously, there is a direct relation with the Research and Innovation Agenda (RIA) stablished at the beginning of the ROBUST project by each LL:

- In Tukums, the focus was on sustainable food systems.
- In Helsinki, the workshop participants mainly shared interactions with public infrastructures and social services.
- In Ede, three CoPs seemed to receive similar attention (ESS, sustainable food systems, and BMLM).
- In Lucca, sustainable food systems were central.
- In Styria, the focus was on public infrastructures and social services.
- In Gloucestershire, participants paid particular attention to BMLM, and sustainable food systems.
- In Mid Wales, the focus was on cultural connections.
- The Valencia LL was primarily focused on cross-sectoral interactions linked to BMLM.
- Finally, the Ljubljana LL paid great attention to sustainable food systems.

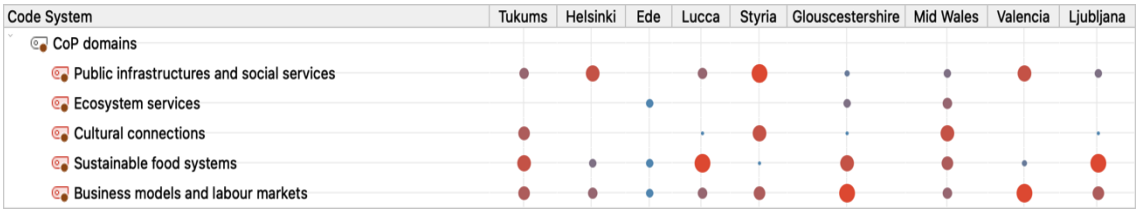

Figure 21. Frequency of CoP themes codes in the regional workshops

The main goal of regional workshops was to address interactions between CoP themes. According to experience in the regional workshops, we can observe three main groups of cross-sectoral interactions:

- Group I: BMLM, sustainable food systems, and public infrastructures and social services are the three sectors with the highest level of interaction linked to rural-urban relationships, and the highest number of initiatives collected from regional workshops.

- Group II: interactions with the cultural sector represent the second group, less frequent in our data, being particularly relevant the interactions with BMLM, and with sustainable food systems.

- Group III: the ESS theme was less present in the regional workshops as a source of cross-sectoral interactions enhancing rural-urban synergies. It should be noted that these results are limited by the LLs' thematic priorities in ROBUST (three CoP themes). Likewise,

ESS was the theme with the lowest number of encoded segments in the qualitative analysis of reports, which influence the number of cross-sectoral interactions we can identify. This does not mean that ESS are not relevant for cross-sectoral interactions and rural-urban synergies, but the regional workshops paid greater attention to other sectors and activities.

As explained in the Section 2 of this report, interactions between sectors or CoP themes take place through interactions between stakeholders and the wide range of practices they implement. In Figure 22 we show the interactions between stakeholders identified in the regional workshops. Colours reflect the three groups or levels of interaction. The size of the node is the number of times that a code is assigned to a segment, and results are shown by proximity of codes in the same document (one paragraph or line in tables). "Private" stakeholders represent the category with the highest number of encoded segments. The three groups we observe are as follows:

- Group I: interactions between private and governmental stakeholders, and between private stakeholders with civil society and NGOs are the most frequent combinations in the examples highlighted during the regional workshops.

- Group II: interactions between civil society and NGOs with governmental stakeholders, private stakeholders with representative of interest groups, representative of interest groups with governmental stakeholders, and representative of interest groups with civil society constitute a second level of interactions between stakeholders in the initiatives illustrated during the regional workshops.

- Group III: interactions between knowledge centres and other stakeholders are the third group, less present in our data.

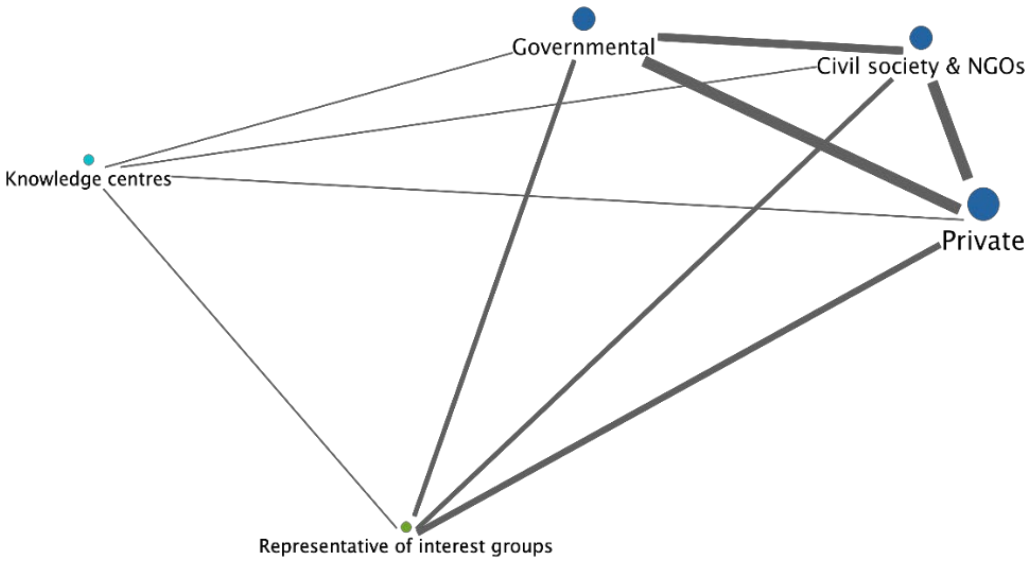

Figure 22. Interactions between stakeholders in cross-sectoral interactions

Finally, in Figure 23 we draw interactions between practices. The size of the node is the number of times that a code is assigned to a segment, and results are shown by proximity of codes in the same document (one paragraph or line in tables). The results allow us to identify three groups or levels of interaction:

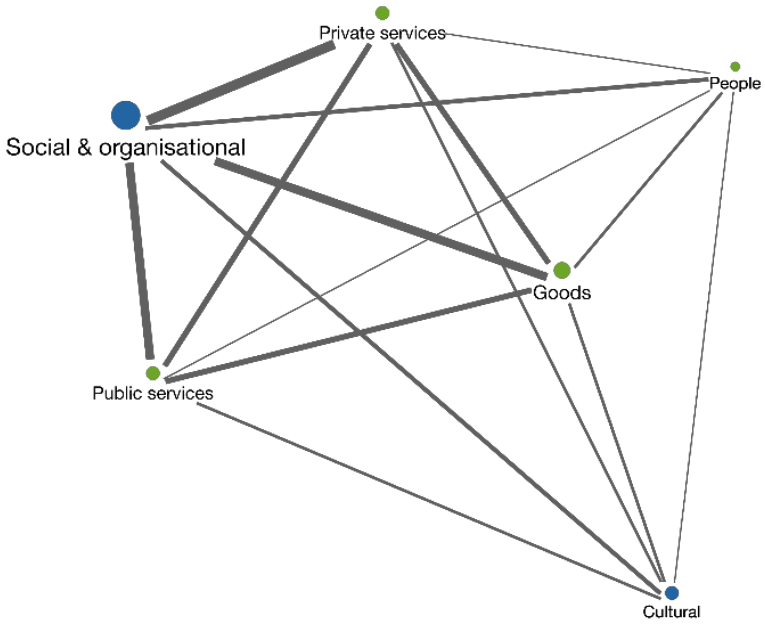

Figure 23. Interactions between practices in cross-sectoral interactions

- Group I: Socio-organisational practices are usually linked to private services, public services and flows of goods. It should be noted that "socio-organisational" is the category with the highest number of segments assigned.

- Group II: interactions between private services, flows of goods and public services are the second group, with an intermediate frequency in the examples collected during the regional workshops.

- Group III: interactions between flows of people with the other interactions, and cultural practices with other interactions are the combinations of interactions with the lowest frequency in the regional workshops.

2.3.2 Examples of place-based initiatives across Living Labs

In this section we will present cross-sectoral interactions initiatives in detail. We have organised the section according to the three groups mentioned above based on frequency. The examples of each type of interaction are grouped by categories of initiatives, although the experiences included always have specific (place-based) particularities. Among the great number of examples collected during the regional workshops, only those initiatives that are most evident and relevant in terms of rural-urban synergies are presented. The information on each initiative is also complemented with data collected throughout the case study work (LLs and CoPs).

2.3.2.1 Cross-sectoral interactions between business models and labour markets, sustainable food systems, and public infrastructures and social services

Interactions between business models-labour markets, sustainable food systems, and PI&SS are very frequent in the regional workshops developed by the LLs (LLs). In the following sections we will examine specific examples of cross-sectoral interactions among these themes. We will also discuss their relevance for rural-urban linkages and synergies, the key stakeholders involved, and the practices that make possible these interactions. We grouped the initiatives in the following categories: i) food markets; ii) food hubs; iii) digital businesses, direct sales and agriculture; iv) social enterprise and agriculture; v) school meals and public food procurement; vi) tourism, agriculture and health; vii) circular farming; viii) delivery services in rural areas; ix) demand-response transport; x) co-working spaces; and xi) TEPs.

a) Food markets

In Lucca, the LL participants paid great attention to sustainable food systems and their interactions with other sectors. During the regional workshop, they highlighted farmers' markets as a relevant interaction between the sustainable food systems and public infrastructure CoP themes. The markets are a public service and governmental stakeholders play a key role. Farmers, producer associations, local governments and citizens interact at these markets, making possible a flow of agricultural goods from the countryside into the city. This interaction mainly involves socio-organisational practices, through which a wide range of rural and urban stakeholders coordinate their productive and consumption activity; as well as cultural practices that allow urban citizens and tourists to learn and build awareness about local farming.

Similarly, the Ljubljana Food Marketplace was highlighted as an example of interaction between sustainable food systems and public infrastructure during the workshop held in Ljubljana. It was described as a "matchmaking" event for establishing potential contacts and deals between private stakeholders (farmers) and governmental bodies (different public institutions), in which rural stakeholders (farmers) and urban stakeholders (some public institutions) interact. This is mostly a socio-organisational practice. In addition, during the regional workshop, linked to this initiative, the LL participants underlined the relevance of food markets in the municipal centres in the region as another example of interaction between food systems and public infrastructure. Private stakeholders (farmers) and governmental (municipalities) are part of an initiative that involves public services (public utilities), a flow of agricultural products from farmers to urban markets, as well as socio-organisational practices linked to business interactions and the management of the market area and stalls by the municipalities and their public utilities. Municipal food markets are important because they enable direct sales of local produce.

In Gloucestershire, the Kempley Farmers' Market in the Forest of Dean was put forward as an interesting example of interactions between the sustainable food systems and business models CoP themes, instead of an interaction between sustainable food systems and public infrastructure. In this case, the role of private and civil society stakeholders is central as the market involves stallholders, mainly farmers, a Community Interest Company, and the whole local community. The market takes places monthly and predominantly represents a flow of goods from rural to urban areas. The LL participants also identified the market as a flow of people that brings urban and rural people together. Therefore, the market encompasses cultural practices linked to the

importance of small-scale, localised initiatives coming from the bottom up as a valuable means of raising awareness and beginning to change mind sets around the transition to mainstreaming circular economy practices.

In Tukums, however, the workshop participants explained that farmers see the Tukums Market –a public infrastructure–, as a time-consuming option, in which most days not enough people go to the market. Therefore, new forms of cooperation between farmers –with support from local governments– were claimed in order to find more effective business models (e.g., joint and co-operative shops) and strengthen rural-urban linkages.

b) Food Hubs

In Styria, the workshop participants suggested the relevance of Food Hub Systems as a cross-sectoral interaction between food systems and public infrastructure. Located on the outskirt of the region, food hubs are seen as an innovative solution to support public infrastructure for food supply as well as knowledge and consciousness about regional food systems. This is a future-oriented example for sustainable food distribution in the rural-urban context of Styria. The idea is that private stakeholders (farmers) bring their products to a central food hub. Then, the subsequent distribution to other private stakeholders (food retailers) should be organised through e-mobility (e.g., electric vehicles). The LL members emphasized that knowledge centres should also be involved in this initiative in order to incorporate a research dimension into the hubs' activity. Food hubs involve flows of agricultural products from rural to urban areas, public services (mobility solutions and the hub system itself) and, particularly, socio-organisational practices between the stakeholders mentioned above.

c) Digital business models, direct sales and agriculture

Digital business models are an important component of cross-sectoral interactions between sustainable food systems and business models. In Helsinki, for instance, retail and distribution of food from producers to consumers (direct sales) via networks operating in social media (REKO-rings) is seen as an important example of these interactions. This way of selling and distributing food involves mainly private stakeholders (farmers and consumers), as well as the civil society (volunteers in social media). Digital business models make it possible to expand the flow of goods from rural areas to urban areas. Nevertheless, this business model requires good digital connectivity in rural areas (public infrastructure), which it is not always the case, particularly in remote rural areas.

In Ljubljana, the LL participants also identified direct sales from farmers to individual buyers as means of increasing local food supply from rural to urban areas. This interaction between sustainable food systems and business models involves flows of goods (food) and private services (food distribution). In the specific context of this region, the frequency of direct sales has increased as households are changing their demand patterns (buying on demand, not anymore for the entire season). This interaction is developed between private stakeholders (farmers) and civil society (individuals/households). In this LL, the workshop participants highlighted other complementary initiatives, such us new forms of employment in food trade of locally produced food with focus on local production and quality standards (e.g., Zeleni zabojček –Green box, Foodko). Several successful businesses have been established, which pool together the food produce of a large

number of local (mostly small-scale) farmers and provide tailored delivery to the households, primarily in Ljubljana, but expanding across the region and beyond. The stakeholders involved are mainly private and civil society (households). The initiative was defined as a flow of food from rural to urban, as well as a cultural practice due to a novel focus on "local" and "quality".

In Tukums, the LL participants refer to online marketing and direct sales as an increasingly popular means of selling and purchasing food. However, they adopt a more critical perspective and explain that small farmers find practical difficulties with this model, as they also found in farmer's markets.

d) Social enterprise and agriculture

We found interactions between sustainable food systems and business models linked to social enterprise and agricultural-food initiatives. In Lucca, for instance, the workshop participants highlighted the relevance of Solidarity Purchasing Groups. These groups promote flows of agricultural products from the countryside and peri-urban areas into the city. By arranging new socio-organisational practices (reconnecting producers and consumers), the initiative potentially increases understanding of the links between food and both ecological and human health, a clear example of cultural practices. Solidarity Purchasing Groups enable the creation of a sense of community between the stakeholders involved. These stakeholders are mainly private (farmers) and civic (citizens, consumers and other civil society organisations).

Moreover, in Lucca, participants identified other interactions between business models, sustainable food systems, and PI&SS linked to social enterprise and agriculture. In particular, they introduced peri-urban farms undertaken in formerly abandoned land (or at risk) as initiatives promoting land recovering through new entrepreneurial activities involving workers from vulnerable groups. This model involves private (landlords, farmers, agricultural cooperatives) and civil society stakeholders (Caritas, vulnerable groups), and can be primarily defined a socio-organisational practice since peri-urban farms employ urban vulnerable groups as means of social inclusion –social services–. Additionally, these farming activities prevent land abandonment.

Another example of cross-sectoral interaction between sustainable food systems and business models linked to social enterprise was identified in the Gloucestershire LL: Gloucester M5 Services. This is a commercial motorway service station, with a unique reputation (in addition to its innovative architectural design) based around maximum local food sourcing, and a business model which employs staff from local target communities in the county's administrative capital, Gloucester. The stakeholders involved are mainly private (the company Westmorland Ltd and local producers) and a civil society organisation (Gloucester Gateway Trust). The initiative promotes flow of goods (from rural to urban) and local food chains, flows of people (Gloucester Gateway Trust employs people from target neighbourhoods in urban Gloucester to work at this rural business), as well as innovative socio-organisational practices between a small business and a third sector organisations (social inclusion projects).

e) School meals and public food procurement

In Lucca, the workshop participants identified cross-sectoral interactions between sustainable food systems and business models linked to school meals. School meals are seen as a way/opportunity to supply food from rural farmers to both rural and urban schools. This represents a flow of agricultural goods that involves governmental (schools), private (catering services and farmers) and civil society (pupils and families) stakeholders. It is highlighted as a socio-organisational practice that supports and require coordination between small –and groups of small– farmers; as well as a cultural practice that improves the educational function of the school meal. The school meals' initiative is complemented by food education projects, such as urban gardens and school garden projects. They are carried out in the frame of a regional government project (100.000 gardens in Tuscany) in which governmental (regional authorities, schools) and civil society stakeholders participate (Slow Food movement, agricultural high-school students, pupils and their families). Food education projects are defined primarily as a set of socio-organisational and cultural practices, aimed at raising awareness of the complementary value of the rural and urban dimensions through innovative multi-stakeholder and rural-urban constellations.

School meals are also emphasised in Gloucestershire. However, the workshop participants referred to it as a cross-sectoral interaction between sustainable food systems and public infrastructure (not business models). In this area, the County's School meals service provides meals almost 20,000 school children each day and has made a commitment to supporting local suppliers where possible. Governmental stakeholders (schools and Gloucestershire County Council), private stakeholders (catering contractor, local suppliers, local farms) as well as civil society organisations (Food for Life) and individuals (pupils and families) are involved in the initiative. This interaction is defined by a flow of goods from rural areas to rural and urban schools, and a public service. Besides, it requires new socio-organisational practices such as voluntary forms of regulation (or rather, accreditation) by third sector groups, namely the Vegan Society and Food for Life, and regulation by the Gloucestershire County Council in terms of statutory food safety. Additionally, the Gloucestershire County Council, the catering service provider and several local butchers have arranged an agreement to attempting to keep value in the county through local sourcing of meat for school meals. This is mainly a flow of goods from rural to rural and urban areas that tries to localise the meat food supply chain and, eventually, describes new cultural practices (commerce informed by social values).

School meals are closely linked to public food procurement. In Mid Wales, the workshop participants pointed out the importance of public food procurement in generating cross-sectoral interactions between sustainable food systems and public infrastructure. In this area, public food procurement brings together governmental actors (Welsh Government and local governments), private actors (farmers and catering businesses), and civil society organisations. This interaction is key to strengthening rural-urban relations since food is mostly produced in rural areas and sold in urban areas. This flow of agricultural products contributes to local food chains in a context (Mid Wales) where the majority of food produced is not consumed locally. Socio-organisational practices are also key in public food procurement for coordinating public and private actors (public sector procuring food from private producers). Moreover, civil society groups can develop different cultural practices that rise social awareness and give value to local food systems.

Public food procurement is also key in Ljubljana as an interaction between sustainable food systems and public infrastructure. Farmers selling their produce to public institutions is seen as a promising way to increasing the supply of local produce from rural areas to both rural and urban areas. The stakeholders currently involved in this interaction are mainly private (farmers) and governmental (primary schools, kindergartens and retirement homes). Public food procurement involves a flow of goods (agricultural goods) and public services (food provision). Despite the fact that the initiative is publicly supported in the region, socio-organisational practices are key for developing new tendering procedures and changing the existing regulations.

In Valencia, the above issues are explained within a broader set of initiatives and food strategies reflecting different cross-sectoral interactions between sustainable food systems, business models, and public infrastructure. For instance, the participants underlined the relevance of new legal frameworks[6] that contribute to short food chains. Likewise, they stressed the importance of new governance mechanisms, such as the Municipal Food Council of Valencia, which combines agricultural, food and public services' initiatives (e.g. public food procurement and local and organic food in school meals). All these processes involve a wide range of stakeholders, such as governmental (regional and local governments, schools, etc.), private (farmers, catering businesses) and representatives of interest groups (organic producer's organisations, NGOs, etc.,). During the regional workshop in Valencia, participants tried to connect and find synergies between different initiatives, e.g., TEPs and Local Actions Groups were seen as useful organisations, operating across rural-urban territories, to promote social awareness about the importance of healthy eating and more sustainable production methods. Food strategies comprise socio-organisational practices, such as new regulations, new interactions between producers and consumers, and a new food governance mechanism at the local level.

f) Tourism, agriculture and health

Tourism and agriculture represent a key component of cross-sectoral interactions between sustainable food systems and business models. In Lucca, the participants underlined the existing synergies between food initiatives and new business models providing tourism activities. These cross-sectoral interactions involve a wide range of stakeholders: private (farms, wineries, hotels, restaurants, agri-tourisms, shops, tour operators and guides), representatives of interest groups (producers' organisations, products consortia), governmental (tourism offices, municipalities, provincial and regional authorities) and civil society (tourists). Flows of people, goods and private services are identified between rural and urban areas. Besides, agri-tourism initiatives like those suggested in Lucca require solid socio-organisational practices between stakeholders –coordination–, as well as cultural practices that enhance the value of rural capital and its maintenance.

In the Ljubljana, food trails were highlighted as an example of cross-sectoral interaction between food systems and business models. They are a new marketing model for diversifying activities and increasing farmers' income. Some activities carried out in Ljubljana were joint mapping, signposting of local producers, or joint marketing events. The initiative is based on a flow of private services (combination of recreational routes, local tourism and local food production), for which new

[6] Some examples are the Law of Proximity (in 2017), the Decree "Public Green Purchase" (in 2018) and a the Law of Agricultural Structures (in 2019).

socio-organisational practices are critical, mainly, coordination between the different stakeholders involved to join marketing activities. Governmental stakeholders (municipalities), representatives of interest groups (local tourist organisations) and private stakeholders (farmers) also participate in an initiative that shows potential to increase the interest in rural areas as a combination of recreation and source of food supply.

In Helsinki, the workshop participants pointed out the importance of cross-sectoral interactions between business models and public infrastructure, in particular in relation to the existing synergies between rural tourism, recreation and rehabilitation services. Rural tourism (business models) could benefit further from new public health services such as green care. Through the involvement of tourism companies, NGOs, farmers, municipalities, public health departments, customers and patients, Helsinki LL is committed to reinforce rural services for urban customers and, eventually, create new rural-urban synergies.

g) Circular farming

In Ede, the most visible manifestation of cross-sectoral interactions stressed by the participants was the Food Valley initiative. This initiative brings together sustainable food systems and business models, unfolding new socio-organisational practices between regional governmental stakeholders, private stakeholders and knowledge centres. The Food Valley aspires to establish a strong cooperation between stakeholders –following the triple helix approach– in the field of sustainable and healthy food technology for transitioning towards a circular farming model. Regiodeal is one of the novel policy instruments developed within the initiative, with an objective to move forwards to more tailor-made, flexible, integrated and territory specific policy making through multi-stakeholder involvement. In this Regiodeal there is attention for both agroecological (e.g. sustainable soil management) and agro-industrial circular farming prospects (e.g. the so-called protein-transition that will reduce regional dependency on soy and other fodder import components from abroad). The stakeholders involved in the Food Valley initiative complement this by opting for and working on alternative forms of cross-sectoral collaboration through, e.g., regional food community building, developing novel, multifunctional rural business models, starting novel forms of territory-based cooperation and –in synthesis– exploring the prospects of territory-based rural-urban partnerships and coalitions.

h) Delivery services in rural areas

During the regional workshop in Helsinki, the participants underlined cross-sectoral interactions between business models and public infrastructure. Delivery of services run by grocery stores (shop keepers from urban areas delivering groceries and other services to rural areas) represent a relevant business model that provides an essential service to rural areas. Delivery services involve private stakeholders (urban shop keepers and rural consumers –mainly elderly people–), and are defined by a flow of goods and private services from urban to rural areas.

i) Demand-response transport

Delivery services are strongly motivated by the lack of public transport in rural areas. In Valencia, the workshop participants identified cross-sectoral interactions between business models and public infrastructures linked to transport demands and new transport solutions. Different local

initiatives in transport and social services are discussed, particularly in rural areas. At the regional level, for instance, the government is promoting demand-response transport and the "rural taxi" as an effective solution for rural and peri-urban areas. Despite the leading role of governmental stakeholders, civil society stakeholders (LAGs and other organisations) are emphasised as potential players to be involved in the definition of transport needs, as well as in creating innovative transport solutions. These cross-sectoral interactions involve public services (public transport in rural areas), and new socio-organisational practices essential to find new transport solutions and governance arrangements between governmental, private and civil society stakeholders at different territorial scales.

j) Co-working spaces

In Styria, the workshop participants carried out a deep discussion on timely and complex topics, such as the definition of paid labour, care and volunteer work, as well as income in general. They were concerned about the complex issues that will face society in coming years, since digitalisation and technological development is proceeding and several types of jobs will become no longer necessary. They focused the discussion on "sharing" approaches, such as the Sharing Economy, which are only conceivable if new policy frameworks enabling different working models are set. One of those include the concept of shared working spaces. The increase of digital jobs and the flexibility of working time demands digital workplaces. An infrastructure of co-working spaces, supported by the public sector, could contribute to decrease commuting flows, as well as to increase the attractiveness of rural areas for entrepreneurs and businesses operating in urban areas of Styria and beyond. A cross-sectoral interaction between new business models and public infrastructure is hereby illustrated. From their perspective, this interaction requires the involvement of representatives of interest groups (trade unions, business organisations...), civil society (community organisations, workers) and governmental stakeholders. It primarily involves new socio-organisational practices to set up the co-working spaces and between co-working users, as well as flows of people from urban to rural areas.

k) TEPs

The participants in the Valencia regional workshop stressed interesting cross-sectorial interactions between BMLM, and public infrastructures and social services. They emphasised the relevance of coordination between TEPs –territorial partnerships aiming at improving local employment– running in rural areas and metropolitan areas. Through improved coordination between territorial partnerships, governmental stakeholders (regional and local governments), private stakeholders (businesses) and representatives of interest groups (trade unions, business organisations) work together in other sectors beyond employment, such as innovation, public infrastructures or social inclusion. This is a socio-organisational practice that not only contributes to the improvement of local labour markets, but also to identifying, co-designing and developing public policies and public infrastructures adapted to the specific needs of each territory, particularly rural territories, with higher participation and engagement from private and civil society stakeholders.

2.3.2.2 Cross-sectoral interactions with cultural connections[7]

In the following sections we will examine examples of cross-sectoral interactions between the cultural sector (the Cultural Connections CoP theme) and other sectors, as well as their relevance for enhancing rural-urban linkages. The initiatives are classified in seven categories: i) food markets and cultural activities; ii) craftsmanship and local products; iii) food labels; iv) tourism and food traditions; v) farming communities and regional/minority languages; vi) leisure, transport and sense of belonging; vii) cultural platforms and public space.

a) Food markets and cultural activities

One of the most cited interactions with the culture sector referred to food markets with a cultural dimension. In Tukums, for instance, the workshop participants underlined the collaboration between food producers and representatives of the cultural sector in the context of seasonal markets and folklore events. The example of Skrīne market was provided as cross-sectoral interaction between culture and sustainable food systems. A local producer started this seasonal market, which is based on the permanent food market. To attract a wider audience, it was combined with cultural and artistic activities. Many other seasonal or festive markets were mentioned, but most of these are generally aimed at, and succeed in the attraction of local inhabitants. This market provides a space to socialise, purchase and consume food together, as well as an opportunity to participate in cultural/folklore events. Flows of agricultural products are combined with cultural services (public and private), which contributes to create new relationships and support the exchange of resources between people form urban and rural areas. The stakeholders involved in this interaction are mainly private stakeholders (local producers, vendors, farmers, and amateur art/folklore groups), with the support of public governmental stakeholders (regional cultural institutions).

A similar cross-sectoral interaction between culture and sustainable food systems was identified in Lucca. For the workshop participants in Lucca, cultural events and food festivals that focus on food and mobilise civil society in the organisation and development of events (e.g. a contest on a local traditional soup recipe made with local vegetables and beans) are an important way of enhancing the value of locally distinctive recipes and food-related rural traditions. They contribute to keep them culturally alive, in urban areas too. These initiatives are largely participated by citizens both from rural and urban areas, involving civil society stakeholders mainly in the organisation of the events (NGOs and other civil society organisations, as well as individual citizens). The workshop participants defined the interactions mainly as a cultural practice that reinforces the local identity and traditions.

b) Craftsmanship and local products

The cultural connections theme was also mentioned during the regional workshops as a key dimension of some business initiatives. In Styria, the workshop participants pointed to the fact that small businesses that produce innovative and sustainable or organic agricultural products, e.g. craft beer, gin, etc., are a crucial aspect in the field of cultural connection and in shaping regional

[7] Interactions between Culture and Ecosystem Services are included in the Section 2.2.2.3.

identity. This represents a cross-sectoral interaction between culture, new business models, and food systems. They perceive this interaction as part of a wider process of rethinking the role and tasks of rural and urban parts of the region. Therefore, the workshop participants agreed on the fact that many of those identity-building businesses should be identified, promoted and made visible to the local population. To this aim, the main stakeholders to be involved are private, such as small businesses, as well as representatives of interest groups. This interaction can be defined as a cultural practice that implies changes in motivations and a greater focus on endogenous resources and local identity in entrepreneurial activities.

Furthermore, the workshop participants in Styria mentioned a great portfolio of potential needs and initiatives to be addressed: i) the need of new business models in the cultural sector in order to establish sustainable structures and avoid too high dependence on public funding; ii) an opportunity to align new training and education models towards cultural fields, that can be completed in rural areas –this could, for example, mean the rediscovery and/or redefinition of traditional handcraft and its combination as well as cooperation with higher education, like design studies, in the city–; iii) the linkage of culture and cuisine and the knowledge of old varieties as well as traditional ways of cooking, which might as well create new chances for education and training and innovative business models –there already exist some examples in the region, but it still needs further development–. In order to develop these activities, the main stakeholders to be involved are representatives of interest group (tourism board), knowledge centres and the private sector (small businesses). All these complementary activities will also encompass flows of services (public and private) and, particularly, new ways of organising (within businesses and between businesses and public stakeholders).

In Ljubljana, a cross-sectoral interaction between culture and business models was also identified linked to entrepreneurship and craftsmanship. Many entrepreneurs in the area are focusing on niche markets based on heritage-related craftsmanship. This interaction is important for rural-urban synergies because heritage is often preserved in rural areas, while marketed and sold mainly in urban areas and/or to urban dwellers. The interaction is developed by private stakeholders (entrepreneurs), representatives of interest groups (Chamber of Craft and Small Business of Slovenia), and governmental stakeholders (municipalities). Flows of goods from rural to urban areas are a central element of this interaction, as well as different socio-organisational practices, e.g., business interactions, and use of local knowledge and infrastructure.

c) Food labels

Cross-sectoral interactions between culture, sustainable food systems, and business models were emphasised in Tukums. In particular, the workshop participants underlined the links between local brands and the cultural heritage of the region. They consist of joint initiatives organised by private stakeholders (individual entrepreneurs, local producers, vendors and farmers) and representatives of interest groups (producer associations), supported by governmental stakeholders (municipal governments), knowledge centres (Latvia Rural Advisory and Training Centre) as well as other private stakeholders (business consultants). This interaction is defined by a flow of food products and, particularly, socio-organisational practices between public and private stakeholders in order to develop new regulations, e.g., denomination of origin. Likewise, as these initiatives

are an attempt to establish a link between the place of origin of product and its special qualities, they contribute to build territorial identity (cultural practices) around rural-urban territories.

d) Tourism and food traditions

In Lucca, the workshop participants perceived some agritourism initiatives as interactions between business models, sustainable food systems, and culture. In particular, they mentioned guided tours in the countryside, such as wine and food tasting experiences in local farms intended for both locals and tourists. The attempt is to create a moment for reconnecting urban dwellers-consumers to the rural areas where farming activities allow for the maintenance and care for the land, strengthening their interest in local food traditions. The stakeholders involved in this activity are mainly private (tourist guides and farms) as well as citizens. The interaction is defined by a private service (tourism), flows of people from urban to rural, and, particularly, by cultural practices (sense of place, valorising traditions, etc.).

e) Farming communities and regional/minority languages

An interaction identified in Mid Wales was the key role of farming communities in keeping Welsh language alive. This was described as a cross-sectoral interaction between sustainable food systems and culture, perceived as one way in which rural areas, particularly farming families, contribute to the culture of Wales as a whole. It is in the rural areas where Welsh language is most spoken, linked to the more "conservative" way of living of these communities in relation to their traditions. Several stakeholders work maintaining this interaction: private stakeholders (farmers), civil society (community and civil society groups), representatives of interest groups (cultural organisations), as well as governmental stakeholders (Welsh Government and local governments). Beyond the cultural nature of this practice, governments and civil society groups play a central role supporting language and culture and have indirect influence through farming policies (socio-organisational practices).

f) Leisure, transport and sense of belonging

In Styria, the workshop participants were concern about leisure activities and their effect on young people's link with their municipalities. A strong relationship to the 'home municipality' can foster the returning of young people after leaving for education or training to an urban environment. An essential aspect related to that is the accessibility of these leisure activities and the existing offer of public transport. Several workshop participants identified a cross-sectoral interaction between cultural connections and public infrastructure since there is a need of improvement of cross connections between regions and municipalities through public transport, but as well the development of multimodal hubs that would provide next to public transport as well an improved offer of local mobility (micro-public transport), e.g. a shared hailed taxi or car-sharing systems, which complements the offer of the classical public transport means. This initiative would imply flows of people (both from urban to rural and from rural to urban), better and innovative public services (transport) and a stronger cultural connection with rural and peri-urban areas.

g) Cultural platforms and public space

Another potential interaction between culture and (public) infrastructure was identified in Styria related to the need of new cultural services. The workshop participants considered that it would be desirable to have a platform that coordinates cultural and creative institutions and infrastructure, organises formal networking events and informal knowledge exchanges, and offers information and support for everybody who is interested in producing or consuming culture and art in the Metropolitan Area of Styria. The independent cultural scene in Graz for example very often struggles with strict official requirements/regulations and with high prices and competition for venues. Municipalities outside the city or in peripheral areas, often have venues, like restaurants, event halls, workshops etc., and are pleased to host cultural attractions that contribute to the community. The main stakeholders involved in this initiative would be the private sector (art community) and representatives of interest groups in the cultural sector. The initiative would imply a flow of cultural services and, especially, new socio-organisational practices within the sector and across rural-urban areas.

2.3.2.3 Cross-sectoral interactions with ecosystem services

Cross-sectoral interactions between ESS and other CoPs were not frequently discussed in the regional workshops. However, the nature of the ESS concept acknowledges synergetic relations across sectors and rural-urban areas. This has been already examined in Section 2.1.2 when exploring interactions across CoPs.

The Gloucestershire LL identified interactions between ESS and food systems as Natural Flood Management (key theme in this lab) largely has taken place on farmed land. ESS are also connected to Business Models CoP because urban Natural Flood Management (e.g., Sustainable Urban Drainage Schemes) are linked to urban enterprise flood resilience and environmental performance. More specifically, one of the few examples from regional workshops that most clearly shows cross-sectoral interactions with ESS was identified in this lab. The participants in the workshop recognised interactions between ecosystems services and business models linked to *Building with Nature* (BwN), a scheme which supports and certifies developers in Gloucestershire who commit to creating and conserving habitats, enhancing natural capital and Green Infrastructure. Developed by civil society stakeholders (Gloucestershire Wildlife Trust) in association with knowledge centres (University of the West of England), Building with Nature offers a certification mark on completion of development schemes of any sort. Governmental stakeholders, such as planners, are also important stakeholders because strategic preference for developments adhering to the scheme can be included in planning permissions. This initiative can be defined as a socio-organisational practice, i.e. regulations, that generate synergies between the construction sector (both in rural and urban areas) and protection of natural ecosystems in the county.

Other examples of cross-sectoral interactions also emerged in the different regional workshops, albeit more narrowly defined. In Helsinki LL, where multi-locality is a central topic, ESS are seen as a pulling force for new ways of working and living (teleworking and multi-local working). This can be seen as an interaction with the CoP BMLM. Likewise, ESS are used as a promotor for building new facilities for multi-local people in rural areas. In Lucca, the main interactions identified are with sustainable food systems and cultural connections. The former is linked to the destination of rural spaces to agriculture and landscape features (olive groves, vineyards, horticulture

etc...), and the latter to the typical products and dishes/gastronomy of the area. Finally, in Lisbon, an interconnected approach between ESS, business models, and sustainable food systems is adopted. Connections between ESS and food services are linked to provisioning of food. At the same time, business models are relevant in the role of ESS to the territorial economy, for instance, the creation of the Metropolitan Network of Agroparks.

In Ede LL, there are particularly strong linkages between ESS and Business Models. This interaction is related to the main topic in this LL: **circular farming**. They differentiate two contrasting and competing perspectives on circular farming: agro-ecological circular farming and agro-industrial circular farming. Both are being promoted by different initiatives that have an impact on the Ede area (Foodvalley, RegioDeal, Ede's urban food policy). They have very different implications for the interaction between ES and business models, also for rural-urban synergies.

On the one hand, agro-ecological circular farming is inspired by an absolute spatial lens on rural-urban relations in the sense of starting from still clearly present, albeit perhaps increasingly porous, boundaries between rural and urban space. In this perception the distinctiveness of rural space resides, among others, in its capacity to integrate food production with other ESS through land-based agricultural practices. Mostly this is accompanied by other sustainability claims as better opportunities to (re-) establish close relations between food producers and consumers, positive trade-offs between farming and other rural economic activity and more mutual beneficial rural-urban functional ties. These ideas align particularly with more diversified and multifunctional rural business models, rural economies and integrative rural land-use. In doing so, they require strong socio-organisational practices to coordinate stakeholders, such as novel forms of territory-based collaboration, novel rural coalitions, novel producer-consumer relations or novel rural-urban partnerships, as well as the creation of new businesses. Agro-ecology circular farming is strongly linked to cultural practices introducing agroecology values and increasing awareness on small-scale initiatives, local farming and proximity. They also imply greater engagement of civil society stakeholders.

On the other hand, agro-industrial circular farming builds strongly on land sparing ideas. Starting from the premise that for regional, national, but also global land-use efficiency reasons it is better to segregate food production from other eco-system services as nature, biodiversity and landscape values and to concentrate food production in areas with most favourable ecological conditions. Agro-industrial inspired circular farming focusses on technological optimization of biomass and rest-flow valorisation and sustainability gains through the re-use, re-cycling and re-manufacturing of finite natural resources. This approach is particularly dependent upon socio-organisational practices, such as novel alliances between agriculture and other industrial sectors and technological innovation. Nevertheless, cultural practices seem to be play a less important role than in agro-ecological circular farming.

One of the most important interactions is the one between sustainable food systems and ESS. Rural-urban synergies are key for delivering more effective food policies with stronger positive impact on ESS. In this regard, we identified several **emerging food strategies** with ability to contribute to ESS and rural-urban linkages. These interactions can be examined trough the four dimensions of ESS: provisioning, regulating, cultural and supporting services. Provisioning services

refer to the production of food and water; regulating to the control of climate and disease; supporting to the nutrient cycles and crop pollination; and cultural, such as spiritual and recreational benefits.

This can be illustrated for example with the case of Valencia LL. In this rural-urban area, there are several emerging food strategies that mainly focus on stablishing direct provision of food (see Table 14). The provision is increasingly diversified and many farmers have embraced marketing strategies that are oriented towards local networks. Consumers more and more shop in the marketplace where many farmers directly sell the production. Moreover, municipalities have weekly stablished farmer's markets. Small-specialised food supermarkets and restaurants are responding to demand with a commitment to offer local and sustainable products.

Regarding supporting service, the emerging movement of small-specialised food supermarkets and restaurants offering local and sustainable products has led to new local strategies aimed at promoting biodiversity and increasing soil fertility. For instance, the land bank initiative is working to put in contact supply and demand of agricultural fields located in the municipality of Valencia and beyond. One of the interests of the city council is to increase urban food, which has already reduced CO2 levels in areas with the greatest presence of agricultural spaces. Over the last years, farmers have moved into organic production and to this they add diversifying their activities to increase their income.

The impact of new food strategies and instruments on regulating services is less clear. Regulating services from emerging food strategies in Valencia may derive from some complementary measures such as urban beekeeping initiatives. Currently, Valencia City Council contributes to maintaining the population of bees with the installation of more than twenty beehives in the city destined to research involving up to 2 million bees. This practice is essential in pollination, biodiversity and as bioindicator agents of environmental pollution to face climate crisis. Actually, the local council has the challenge of encouraging self-provisioning of honey at home.

Finally, it is not easy to empirically demonstrate the effects of the emerging foods strategies in Valencia on the cultural dimension of ESS. In Valencia, the match between agricultural supply and urban demand for food is visible in the development of agricultural activities by urban actors. There are great efforts to create awareness campaigns (e.g. in the streets and schools) for fomenting sustainable food such as craft and culinary traditions fairs. Regional plans have been elaborated with a participation plan involving a wide range of stakeholders. However, farmers are often unaware of the regulations. The regional public officers have been carrying out training in the different municipalities in order to solve needs to farmers and smallholders as well as respond to general questions of how and where to market proximity sales products, what products can be produced, processed and sold, who can do it and what requirements are necessary. Moreover, it is needed to make the guide for the elaboration of agri-food products and of shared craft-workplaces as socio-economic revitalization of the territory known. Together with initiatives and regulations aims to protect the cultural and traditional agricultural landscape of the Valencia Metropolitan Area, being an important natural and economic resource to produce food that supplies the city.

Table 14. Emerging food strategies in Valencia LL contributing to ESS. Own elaboration.

Food strategies	**Ecosystem Services**			
	Provisioning	*Supporting*	*Regulating*	*Cultural*
Valencia city food strategy	By increasing local food for canteens	New strategies such as urban beekeeping strategy and measures such as the land bank	By increasing urban food in the city where is isolated field	Urban initiatives for fomenting social awareness on sustainable food
Valencia regional law of proximity/Food public procurement	Increasing demand on local products	Increasing primary production e.g. promoting honey production	Encouraging short food supply chains	Training from local councils to farmers
Organic farming plan Territorial Action Plan for the Protection of the Huerta of Valencia	Increasing organic production in the region	Promoting biodiversity	By using sustainable and ecological practices	Increasing social participation in regional and local plans Protecting the traditional agricultural landscape of the Valencia Metropolitan Area

2.4 Six thematic areas of cross-sectoral interactions and rural-urban linkages

The thematic workshops represented a second-level analysis where experts examined the results from regional workshops and identified the six themes that formed the basis for the thematic workshops (Phase 2, see section 1.3). They are an abstract way of clustering the different place-based initiatives, providing broad areas and patterns of cross-sectoral interactions and rural-urban linkages adaptable to many regions.

The generated material was transcribed to facilitate the analysis of the outcomes and thus increasing authenticity to the studied cases. Based on the results, they were identified, first, the main examples and practices around the European countries; and second, the most relevant factors that enable and hamper cross-sectoral interactions[8].

2.4.1 Circular economy

The Styrian LL offers examples of cross-sectoral interactions in pursuing circular economy outcomes, by stimulating a range of social enterprises, including one, Akzente Handwerk, that repurposes unwanted fabrics. The initiative supports employment for rural women over 50 who have experiences long-term unemployment, by selling bags and clothes made in the city of Graz. The initiation of the project relied on state employment and local LEADER funding, and has benefited from design input from local schools while developing new private and public sector markets in Graz. In the Frankfurt-Rhein-Main LL, peri-urban and rural agricultural landscapes demonstrate circular ecological functions including urban waste regeneration and air and water quality services and biodiversity. However, attempts to include such functions into land use zoning in development plans are hampered by land use conflicts exemplified by the commercial interests of farmers, pressure for development linked to urban expansion and functional planning law. Meanwhile, consumer demand for organic and local food is growing. Similar pressures have emerged in the Ede LL, where national agri-environmental policies foresee a reduction in the Netherland's dependence on imported protein feed for livestock. Circular farming sets out opportunities to maximise agricultural land use for horticulture for humans, while food waste in the densely populated Netherlands is processed for animal feed. Associated by-products and dung can then be used as horticultural fertiliser. While technically innovative, such circular flows rub against expectations of the nature of Dutch cultural landscapes, the long-embedded structure of intensive dairying (especially in Ede) and the dominance of urban ecological interests in circular farming discourse. Similarly, in Tukums LL, efforts have been made through the local food strategy to stimulate multi-sector circular economy alliances, including efforts to re-use brewery residues for feeding rural sheep, while rural farmers whose retailer contracts result in cosmetically unmarketable fruit, have donated this produce to urban solidarity associations which support people on low incomes. Such initiatives nevertheless raise critical questions about how the structure of the food market may stimulate over-production of standardised produce, while philanthropy is not only an insecure solution to poverty, and may even imply the desirability of overproduction.

[8] This part of thematic workshops has been prepared as a scientific paper for submission to JRS. The main findings were re-written by ROBUST´s members who belong to Ede, Wales, Gloucestershire and Lucca.

In Gloucestershire, urbanisation is also a major concern in terms of rural-urban ecosystems interdependences. As in the Netherlands, recent national policy drivers have demanded that new developments offer 'net gain', which requires the ecological condition of the development to be equal to or better than before it took place. Detailed natural capital mapping in the county has quantified and defined the status of land in 1km squares and a process has started led by the multi-sector Local Nature Partnership which offers suggestions for optimising land use. Meanwhile, strategic development plans set out the need for 35,000 new homes plus 192 hectares of industrial and commercial development by the mid-2030s. The Building with Nature initiative, which have been described in the previous sections, is a good example of how circularity and multi-actor coordination can be arranged. In the recently adopted Minerals Local Plan, which sets out policies for the extraction, use, transportation and restoration of the county's minerals mineral resources (such as limestone and gravel), priority is given to developments which enhance natural capital and help facilitate Building with Nature adoption (GCC, 2018: 422). The whole plan, in fact, has been given Building with Nature accreditation, an accolade that, it is hoped, will be extended to district local plans.

2.4.2 Territorial heritage and tourism

The focus on valorising territorial heritage unites rural-urban economic relations with cultural connections. Culture and heritage are widely defined in this context, encompassing cross-sectoral aspects such as gastronomic traditions, historic landscapes, and cultural events and legacies. The aim for participants exploring this theme was to foster urban tourism to rural areas in ways that benefit visitors and residents alike. The key themes were thus twofold. First, to identify ways to celebrate rural culture and heritage as valuable in the present and uniquely, intrinsically place-based. Second, to establish how events and activities can be designed to attract tourists in ways that have sustainable benefits for local economies and can simultaneously support rural culture to thrive into the future.

In terms of the first theme, celebrating rural culture and heritage, workshop participants identified a wide variety of examples from their corresponding LLs. Food traditions were prominent, with locality foods particularly valued as repositories of heritage that can still be showcased today. In Gloucestershire, for example, the 'single Gloucester' cheese represents over five hundred years of local agricultural tradition. Similarly, Lucca celebrates local gastronomy through seasonal food festivals and related events. This heritage, together with the number of artisanal producers in the area, has enabled the development of local food and wine routes. These routes are, of course, also embedded in historic landscapes. In Lucca and Gloucestershire, historic agricultural landscapes offer an opportunity for people to reconnect with both natural and cultural capital. In the wider Ljubljana region, heritage landscapes include forestry. There are initiatives to celebrate this heritage through forest products, which leads on to the second theme, addressed below.

Although food and landscape stood out in this theme, it is important to note that this was not always in ways that were characteristically 'rural' and there was considerable diversity in the aspects of culture that participants were keen to valorise. In the Metropolitan Area of Styria, for example, the built environment stands out as a key element of local cultural heritage. By contrast, more intangible aspects of culture were valued in Wales, where rural areas are heartlands of the Welsh language. Other forms of territorial heritage identified included traditional handicrafts

(Styria), village-based cultural events (Ljubljana), cultural education (Tukums and Wales), and well-known literary connections (Gloucestershire).

These examples already begin to point to the second theme: strengthening the mutual benefits received through tourism. A number of areas offer rich tourist experiences, including the food festivals and food and wine routes already noted for Lucca, and an impressive museum portfolio in Tukums. Other areas are exploring opportunities to strengthen their tourist offer, with stakeholders in Wales particularly motivated to build up food tourism. While tourist spend clearly has welcome economic impacts for rural communities, the mutual benefit also extends to the role of tourism in helping to support cultural activities that are meaningful to locals. Styria is illustrative here. Local networks developed in the region have played an important role in supporting the arts sector. A strengthened sector is better able to contribute to the local tourist offer – and vice versa. PURPLE similarly raised the example of re-introducing old varieties of fruit trees, which both helps revive historic landscapes and provides new opportunities to sell premium food products. In both Wales and Tukums, sustaining cultural events and sites such as museums through tourism also enabled cultural education, especially so that intangible heritage could be passed on to new generations.

2.4.3 Territorial platforms and local partnerships

Territorial platforms and partnerships emerged as a key field of cross-sectoral interactions across rural and urban areas. We highlight concrete examples linked to governance, regional development and food. A first example of cross-sectoral and municipal coordination around governance can be seen from the arrangements that exist in Germany across the regional authority Frankfurt Rhein Main (Regionalpark RheinMain), the European office and territorial platforms as standing conference of regional companies. Together these serve to support cooperation and collaboration mechanisms, and promote social, organisational and institutional innovations. Similarly, in Valencia, Spain, governance structures are mobilized as tools for regions to achieve greater successes in the territory. For example, private, civil society and local governments and come together to develop territorial pacts related to employment by trade unions, business and local/regional government and Community-led local development (CLLD)-LEADER.

As a regional development strategy to counter-balance urban initiatives and further develop rural areas, the region of Mid Wales has a development program on small towns as hubs called the "Ten Towns Project." Its purpose is to build towards a rural deal (vs. city deal) by fostering territorial governance for economic development. Through this initiative they have developed the "Understanding Welsh Places Website" as a resource for information about towns, villages and the relationship between them (www.understandingwelshplaces.wales/en/). In Slovenia, the municipality of Domzale has supported formation of straw-hat museum, once a large local industry. Here, various activities including workshops on straw weaving are offered. This has led to new tourism opportunities (especially from the capital Ljubljana), leading local entrepreneurs to develop new tourism businesses. In Austria, the metropolitan area of Styria has implemented a Regional Development Law of Styria 2018 that includes revised regional structures and budgets. This has facilitated public infrastructures for example shared transport such as "GUSTmobil". In Helsinki, Finland, there is an agreement to support regional cooperation on land use, housing and transport between 14 municipalities in Helsinki-Uusimaa Region and State (MAL agreement).

Linked on food, Gloucestershire, has made use of initial interest in developing a Gloucestershire Food Strategy to review opportunities to localise food sourcing in the public sector linked to new IT innovations. In the Netherlands, the municipality of Ede has supported producers by establishing a joint action plan around coaching trajectory. The "Manifest van Salentein" is dedicated to future-proofing agriculture. It has been signed by local regional governments, industry (fodder), banks and farmer's organizations. In this programme agricultural coaches work with producers to identify futures within agriculture or alternative. These coaches also work closely with the regional government to pilot ideas for diverse projects on sustainability, ensuring room for experimental opportunities and solutions. In Helsinki and surrounding regions, the REKO retail and distribution model of food from producers to consumers has been operating successfully through social media. In Tuscany, Italy, municipalities are coming together to develop a regional food policy. Further, there are joint efforts to support producers and enhance tourism through "Food and wine routes". There have also been territorially organised efforts to address food education in primary schools ("Orti in connotta"), while regional agri-food cooperative, for example the association of organic fruit producers, work together through joint marketing, capacity building and sharing of tasks (one member in charge). In Portugal, there is also attention paid to food education. Towards this end, a Local Action Plan together with CLLD served to support a smart farm collaboration. As part of this arrangement, the town of Torres Vedras (located about 50 km from Lisbon) agreed to dedicate, share and publicize the Sustainability Program in School and Territorial Food.

2.4.4 Proximity economy

Although participants acknowledged proximity economy to have a wider scope, experience derived from the LLs shows a large prevalence of (local) food-related arrangements, both private and public sector food. The role of Public Food Procurement (PFP), for instance, was pointed out by several LLs/participants –namely: Valencia, Gloucester, Ljubljana, Mid Wales, Ede, Lucca– for it has a great potential as a connector between urban centres and their surroundings and across diverse sectors. Similarly, a strong case for supporting the creation/enhancement of shorter food supply chains was made during the workshop, confirming a crucial positioning of food-related initiatives in the wider field of proximity economies.

In Valencia (ES), PFP is one out of several instruments available to the regional government for the promotion of local food, along with the Local Agricultural Council and a decree regulating the marketing of agri-food products. In Gloucestershire (UK), where the potential establishment of a Food Strategy is envisaged with the aim of addressing agriculture and food-related health goals, school meals could represent a key lever for increasing the supply and consumption of local food and building on the 'proximity of interests' that PFP potentially favours. In addition, the idea of 'proximity of concern' was brought along by Gloucestershire participants as a way to mobilise efforts towards the implementation of green infrastructures and measures for flood risk management. In Ede (NL), the urgency of new criteria in relation to PFP is stressed, to encompass circularity performances and fulfil monitoring and evaluation tasks. Food waste initiatives as well as initiatives carried out with educational purposes were also brought to the for by Ede participants as important interactions across sectors. PFP is also crucial for the Ljubljana LL, particularly in relation to school meals catering, along with initiatives such as the regional scholarship fund and the local business angels fund. Participants from Lucca (IT) took farmers' markets and Solidarity Purchase Groups (GAS) as examples of rural-urban interactions across sectors, underlining the

value-based nature of proximity coming with physical proximity in these arrangements. Likewise, the importance of reconnecting local food actors via shorter food chains was raised in the Tukums (LT) LL, where local producers are included within a digital database. Tukums participants also highlighted the full spectrum of cultural initiatives in the region as an example of cross-sectoral interaction. Recreation/leisure and tourism are one of the two foci of the Lisbon (PT) proposal for promoting shorter agri-food chains and local activities, the second being education in schools aimed at raising awareness on the environment and opportunities for local knowledge exchange. Mid-Wales participants were the first to raise the issue of potential limitations of the proximity economy, highlighting the need for balancing the focus on the local with the more general need of connections. They showed the need for enabling town-centred proximity economies. Finally, Purple representatives raised the need for geographical indicators.

2.4.5 Public services in -remote- rural areas

The stakeholder´s focus on public services proves to be an important challenge for the most rural areas in European regions. Special attention was devoted to both transport and digitalisation deficiency. The region of Frankfurt links public transportation with lengthy planning procedures and then, it is affecting on the accessibility of regional infrastructure (clinics, universities and even museums). Moreover, it considers broadband needed to discourage commuting which is stated a threat to climate. Digitalisation is for all regions one of the most important services to extend in rural areas and it should be taken by local authorities.

Further place-based examples were inspirational as good practices on the provision of integrated and inclusive services. That is the case of Helsinki model towards smart mobility and its aim to develop place based-independent public services thanks to the "Public Transport Geographical Expansion" of Helsinki-Uusimaa region representing a regional traffic network. Styria region presented the “RegioTim”, as multi modal nodes in Rural-Urban areas and electric car sharing in Graz city and 11 municipalities, where public transport is combined with e-car sharing, public charging stations, bicycle parking, micro-public transport and other functions. It is not only working on urban areas but in the adjacent peri-urban municipalities. However, a flexible and demand-responsive transport is seen as one of the key options in the most remote rural areas. “Bwcabus” is an innovative and popular demand responsive service that is transforming transport in rural West Wales adapting to local needs. Some local councils in Valencia region have provided a rural taxi working for the access to health centre or hospitals. This example works in Wales but with volunteer means.

Many of the rural areas have also seen essential services such as financial banks disappear due to the depopulation processes. As a solution, Valencia region presented a first initiative about the installation, maintenance and commissioning of cashier machines (ATM). More initiatives such as local food markets are very important in the region of Ljubljana as meeting points for farmers and consumers. Purple Flanders point to mobile library in villages as example to revitalise these areas. In this line, Gloucestershire presented by own experience, the need to develop growth hub network as business support.

2.4.6 New markets and public arrangements for natural resources

LLs are about heritage-related (niche) markets focusing on valorisation of culture and ESS. The Ede LL 'proposal was on nature development by exchange land with farmers and spatial re-allotment. In this way, citizen can participate by buying nature square meter as well as recreation and biodiversity gain farmers. Two more examples emerged in relation to water and sewage management: in the first, the removal of rainwater from sewage is associated with a lower water tax rate; in the second, planning permission is contingent on complying with obligations to add to landscape / biodiversity / community well-being. Gloucestershire took part in a funded pilot which helped land managers access agri-environment subsidies for the installation and maintenance of natural flood management features in upper river catchments. Similarly, in Frankfurt the greenbelt and environmental services provision were highlighted. In this case, the city concludes environmental land management agreements with farmers. In addition, its experience goes beyond, reviving traditional orchards in surrounding areas of Frankfurt by supporting cider processing and labelling (as investment support). Similarly, the region of Wales gave as example the project, entitled "Nature isn´t neat" on cutting planting regions by developing pollinator friendly towns. It is funded by the National Heritage Lottery Fund and Welsh Government and is delivered by Council's Countryside Service and Neighborhood Services Department and the Local Nature Partnership. Otherwise, Lisbon focused on mapping ESS at regional scale. They have as example the planning on metropolitan food strategy (park/network).

Ljubljana focused on public procurement of locally produced food in schools and kindergartens and its effect on local landscape and biodiversity. In Ljubljana, support for young entrepreneurs was also important, through having young generation more entrepreneurial through new business ideas for exploring new models including more sustainable tourist packages (e.g. the local experience of nature and protected areas: bird and bear watching). In the same line, Ljubljana is developing ways for healthy and local food experience by tourism (gastro) (e.g. families and "hipsters"). The Mid-Wales LL also focused on Food procurement and current data mapping to estimate the capacity of Monmouthshire (one of the nine Mid-Wales council areas in the LWLGA) to supply local food as well as growing patterns, soil mapping: food development, growing, policy strategy. They have the Scottish Pollutant Release Inventory (SPRI) data information sharing with NGO's, consumers, politics, people as well as providing investor support, hand to business development. Lucca proposed different experiences about the regeneration of "Brownfield Sites" in peri-urban areas and the impact on use of natural sources; another example about land bank to match abandoned lands plots with demand for land (i.e. renting); and even farmers as a "custodian of the territory" (hydraulic, landscape) with payments to support farmers to manage land around rivers.

2.5 Factors influencing cross-sectoral interactions and rural-urban linkages

A wide range of factors affecting to cross-sectoral interactions positively and/or negatively can be identified. In this section, we present the most relevant ones arising from the workshops (regional and thematic) and the case studies' experience (LLs and CoPs). Some strategies are also discussed. The factors have been classified in three main categories: i) social factors; ii) economic factors; and iii) institutional factors. There is an additional section in which the effects of COVID-19 on cross-sectoral interactions are discussed.

2.5.1 Social factors

During the analysis of social factors influencing cross-sectoral interactions and rural-urban synergies, four main elements emerged: i) skills and knowledge, ii) agency and leadership, iii) coordination and cooperation, and iv) education.

2.5.1.1 Skills and knowledge

In Lucca, the role of skills was identified as an enabling factor in two initiatives of cross-sectoral interactions: food markets and food educations projects. In the first case, the knowledge and experience of the farmers that attend the market are underlined. Farmers are often lively, want to engage in speaking with customers, and have great knowledge of their products. This is an added value to food markets that builds customer loyalty and makes a difference comparing to other sales channels. In the second case, food education projects, high school students in agriculture are able and serve to teach the skills for gardening in lower level schools. Thanks to this collaboration, school gardens can develop successfully and new intergenerational relationships are generated across the territory. In Mid Wales, skills and knowledge are key when addressing food production and procurement initiatives. On the one hand, they are underlined due to the importance of having databases to promote local food. At the same time, the lack of information about local food resources is hampering factor of these processes.

In Valencia, the identified synergies between TEPs and LAGs (LAGs) are limited by the lack of knowledge from some territorial pacts about the proceedings to start formal cooperation with LAGs and promote rural entrepreneurship together. Improved action guidelines for rural entrepreneurship would be an important strategy. In Ljubljana, skills and motivations are central for assessing farmers' capacity to improve their business. For example, farmers often do not have negotiation skills to sell their products to retailers, so they prefer small clients. Farmers also find public procurement processes too bureaucratic and have little knowledge on how to get successful. Moreover, when selling products to individual buyers, only those farmers with suitable marketing skills can sell directly to households, while others are still reticent to use internet and social media. In addition, diversification largely depends on farmers' skills and motivations, e.g., agritourism or gourmet tourism require high marketing skills. Skills are also underlined in Ljubljana related to public food procurement and school meals. Well-trained staff in public institutions is needed in order to design new public procurement rules and procuring meals in schools that match high quality standards. Likewise, skill also play a key role in the activities joining entrepreneurship and craftsmanship. Entrepreneurial skills are needed to find new niche markets and build business strategies based on cooperation, joint promotion, and exchange of experience.

2.5.1.2 Agency and leadership

In Mid Wales, the role of farming unions in promoting the Welsh language and culture is a key factor. The extent to which these organisations are willing to continue to use the language and enhance regional traditions is crucial to maintain the support from national institutions and keep rural families confident that their cultural specificities are not at risk. In Valencia, leadership is a key factor to integrate all forces in the territory, and make coordination among TEPs possible, particularly among those linked by proximity and/or functional reasons; not the case in Valencia yet. By promoting leadership, it is possible to identify key actors (individuals and organisations) that foster rural-urban coordination. In addition, the lack of leadership and local initiative, especially from private stakeholders, is limiting initiatives on new transport solutions and better financial services. In Ljubljana the promotion of new forms of marketing through "Food Trails" is being limited by the different farmers' strategies, e.g. many farmers are quite content with their small-scale business models and steady small-scale partners, which can be also related to farmers' skills and knowledge.

2.5.1.3 Coordination and cooperation

Coordination is a key factor of cross-sectoral interactions. In Tukums, more cooperative initiatives among farmers are needed in order to find new market solutions, such as joint shops, and overcome some difficulties in online sales and food markets. Besides, cooperation between farmers and local government is also relevant for the success of local food markets. In Lucca, trust is an element of cohesion within Solidarity Purchasing Groups. These initiatives are aimed at re-establishing a direct personal relationship based on trust between local producers and consumers, mutually benefitting from it. A single case of fraud would lead to the disruption of entire networks working for this form of social enterprise in agriculture. Coordination of local suppliers was pointed out as a key element in the Kempley Farmers' Market, in Gloucestershire. Indeed, the farmers' market was possible thanks to a strong working relationship and cooperation between rural community groups and local producers. Nonetheless, coordination on the demand side still has room for improvement. Improved coordination could lead to joint purchases and lower prices –price is still an important factor in food purchasing decisions.

Cooperation is also considered a central factor for cross-sectoral interactions in Valencia. In particular, there is a lack of cooperation between TEPs and LAGs, although both are active in similar fields (agriculture, employment, food, services, innovation, etc.). Cooperation is one of the main hampering factors of joint action between both initiatives, from which new rural-urban synergies could be developed. On this matter, lack of cooperation is evident between local and regional government. This is a hampering factor, for instance, of demand-response transport initiatives, in which top-down action requires a minimum threshold of local initiative and multi-level coordination. In Ljubljana, cooperation is a relevant factor in many cross-sectoral interactions. For example, direct sales to individual buyers would benefit from joint marketing and joint distribution, which requires improved cooperation among farmers. Indeed, cooperation of farmers is enabling the Food Trails initiative as local producers follow up the demand and the marketing opportunities with joint marketing events on annual/biannual/seasonal basis. In addition, the Ljubljana Food Marketplace is growing due to a better awareness of the event and communication to other stakeholders.

2.5.1.4 Education

Another factor is related to the creative awareness of local values and assets through education. Education and training help people to take better advantage of services such as digitisation, increasing social inclusion. A more receptive mindset, as well as the development of diverse skills, enables progress in the design and development of new projects adapted to regional or local circumstances. This is especially important for rural areas. Local economies can benefit from new business models (e.g. rural hubs) as well as from the development of marketing thinking (and this can lead to increased consumer interest). In addition, circular economy models are benefiting from the growing need to link the production of goods and services to local prices (e.g., ESS compensation or responsible production).

2.5.2 Economic factors

The analysis of economic factors influencing cross-sectoral interactions and rural-urban synergies leads to four main categories: i) productive capacity, ii) infrastructure & logistics, iii) funding, and iv) prices & costs.

2.5.2.1 Productive capacity

In Lucca, the significant reliance on volunteer work in food education initiatives (urban gardens, school garden projects...) is identified as hampering factor that limits the sustainability of projects over time. However, civil society mobilisation in the organisation and development of cultural and food events works successfully (e.g. a contest on a local traditional soup recipe made with local vegetables and beans) and contributes to greater social participation. In Gloucestershire, on-line ordering (Dynamic Procurement System – DPS) has been piloted in the region and promises to be an enabling technical and logistical factor in integrating smaller producers in efficient food distribution in both public and private supply chains. While local producers may wish to participate in local sourcing, many of them lack supply capacity as well as technical capabilities compared to global supply chains. The weakness of employment in the Valencia agricultural sector (low wages, low interest among young people...) is a hampering factor of the emerging food strategies. These strategies, such as a new legal framework for public food procurement, will require an increase in local production and crop diversification, which not all the territory is capable of generating –beyond the peri-urban area around Valencia city where the "Huerta" is located. Similarly, in Ljubljana the farmers have several obstacles in relation to public procurement of food. The high volumes required cannot be provided as most farms in Slovenia are small. The lack of productive capacity will limit the procurement of local food in several public institutions, such as kindergartens, schools, retirement homes and hospitals. This problem is also important in direct sales from farmers to retailers since most farms are too small to be able to supply the demanded quantities.

2.5.2.2 Infrastructure and logistics

In Tukums, logistics are an important factor influencing digital business initiatives and direct sales. The experience in this lab shows that direct sales are time-consuming for farmers, while online marketing is also too expensive and time-consuming for many small producers. In Lucca, farmers' markets require better communication and advertising from farmers (timetables...). Also, in food education initiatives, the space available out of school building is often limiting the projects due to their small size and inadequacy to host a vegetable garden. In Gloucestershire, public food procurement initiatives are limited by a problem of production capability and equipment since not all schools have

production kitchens. Therefore, preparing fresh food from base ingredients is impossible for some schools, who rely on supplies from nearby schools with production kitchens. Thus, while meal costs are limited by specified public budgets, municipalities may see investments in the equipment and expansion of school production kitchens as a beneficial long-term strategy. Other public sector institutions may also be able to supply cooked food in 'hub-and-spoke' arrangements. Finally, in Ljubljana farmers see serious limitations in selling their produce to individual buyers as it requires infrastructure for distribution (e.g. vending machines, vans, storage), an extra investment that not all farmers can undertake alone, especially small farmers.

2.5.2.3 Financial resources

Financial resources are very important, particularly those generated by projects from income related to their activity. For example, in Lucca some agritourism initiatives, such as wine and food tasting experiences in local farms, revealed unsustainable in the long run without public financial support, especially when undertaken in remote rural areas. In Mid Wales, there is a great deal of available funding for local food initiatives, which has led to increased demand and supply. At the same time, this is mostly limited-term funding which does not ensure the long-term viability of the initiatives as small farmers lack resource for direct sales. In Valencia, there is a lack of funding for initiatives promoting new coordination between TEPs, especially between those located in rural and urban areas. Such socially innovative initiatives that create new networks and new governance arrangements require specific funding, which is usually limited to productive projects within the areas of influence of each organisation, not across areas. Therefore, new financial and fiscal mechanisms are needed to design and develop new transport solutions (e.g., demand-response transport), particularly in rural areas. Innovative economic incentives would enable better rural transport with social purposes (e.g., accessibility to health services).

In Ljubljana, funding is both an enabling and hampering factor. Regarding new business models in farming activities, such as online marketing, direct sales, or agritourist, many initiatives started enthusiastically and as part of projects funded by EU, national or local funds, but faded as they failed to devise a business model that would be sustainable beyond the end of the project. An example was joint distribution of local farmers' produce by a LAG which failed to scale sufficiently. Some ongoing strategies to overcome financial limitations are joint investment and management in infrastructure, such as cold storage facilities, in order to reduce the costs, improve the quality of produce and jointly provide larger quantities when demanded by the market.

It is necessary to ensure that what´s funded by EC or other public institutions can be self-sufficiently (post project funding), thus proving sustainability in the projects. Developing rules for using rural-urban funds and development of funding mechanisms (e.g., in the use of instruments for greening and address fragmentation, as Frankfurt has shown). From such examples it is suggested that alongside local-level engagement, European-level engagement is an enabling factor in facilitating territorial governance arrangements.

2.5.3 Institutional factors

The rural-urban areas represented by the 11 LLs comprise different and diverse institutional environments, with distinctive legal contexts, political trajectories and formal and informal rules. In this regard, two main institutional factors should be underlined: i) legal framework and institutional environment, and ii) politics.

2.5.3.1 Legal framework and institutional environment

One of the main hampering factors related to the institutional context is administrative borders. In Helsinki, delivery services run by grocery stores are limited by these borders since grocery stores do not necessarily deliver services to other municipalities outside the region. This focus on administrative borders does not address the real needs of functional territories and their population. In Valencia and Mid Wales, "institutional inertia" seems to be a hampering factor of different cross-sectoral interactions. In the first LL, the main problem is the way local and regional governments interact, as well as interdepartmental interaction. This inertia consists of a lack of coordination and cooperation, and a rigid limitation of activities to the area of action and territory of each administration/department. This lack of openness to new ways of acting across departments and territories is negatively affecting both TEPs and the emerging strategies on sustainable food. In Mid Wales, the existing legal framework is reducing the potential for local procurement of food.

On the other hand, bureaucracy is also identified as a hampering factor in public food procurement processes in Ljubljana and Lucca. In Ljubljana, farmers often find the procurement process too bureaucratic, which yields little success. In Lucca, specifications for school meals are hard to change, and regulation is very strict, so the initiatives only involve special days' menu. Despite this, in Mid Wales the high number of public bodies adopting local procurement policies generates growing optimism and enables the emergence of new initiatives.

In Mid Wales, the legal framework is also influencing the cross-sectoral interactions linked to farming communities and regional languages. The Welsh Language Act provides statutory authority for action in this field, keeping farming communities and their culture safe. Additionally, cross-sectoral interactions between culture and food systems are limited by the different policy silos culture and farming mean in public institutions. In Lucca, bureaucracy is influencing many initiatives. For example, bureaucracy prevents many small farmers to take part in food markets (e.g., applications for stands, fees, certificates of activity, etc.). In relation to Solidarity Purchase Groups, the high costs of the certification for organic production limit the opportunities of small farms adopting sustainable production methods, especially when they are not known yet. In addition, there is a lack of trust (and knowledge) in this certification, a common problem in many LLs

2.5.3.2 Politics

Politics is another factor influencing cross-sectoral interactions and rural-urban synergies. In Gloucestershire, for example, this is both an enabling and hampering factor of interactions between ESS and business models, particularly in the scheme that supports and certifies developers who commit to creating and conserving habitats (Building with Nature). On the one hand, the development of a multi-stakeholder county Green Infrastructure strategy would help to integrate local and national policies and be tied to political and budgetary allocation periods. On the other hand, national and local green infrastructure priorities may vary, while the long-term habitat management needs do not conform to relatively short municipal political cycles. In Mid Wales, politics are central when understanding the interaction between farming communities and the Welsh language. While the strong political resonance of farming associations and Welsh language in the region strengthen this interaction, uncertainty on possible changes to agricultural policy after Brexit are seen as a potential threat.

Public food procurement initiatives are also influenced by politics. In Ljubljana, kindergartens, schools, retirement homes and hospitals have special provisions for procuring locally produced food for up to 20% of the cost of procurement. However, its use largely depends on the interest and capacity of institutions as there is considerable administrative burden both for institutions and farmers.

2.5.4 The effects of COVID-19 on cross-sectoral interactions

One of the most recent factors that has influenced cross-sectoral interactions and rural-urban relations is the COVID-19 crisis. The onset of the pandemic in 2020 and the set of restrictive measures resulting from it have transformed rural-urban linkages in many ways, as well as the interactions between sectors, actors and practices.

COVID-19 had an obvious impact on the society and the environment. But it remains to be seen how many of the patterns developed during the pandemic will remain active after the new normal is reached. The pandemics showed how important it is to observe the rural-urban links in terms of cross-sectoral interactions, for example, food systems in relation to their environmental effects and ESS, and the interdependences with logistics, restrictions in consumption and labour activities, or changes in access to markets. Pandemic clearly pushed the development of short value chains, strengthening local food supply, encouraging local buyers to purchase more local food at markets or directly to farmers, developing new business opportunities for local farmers. This was clearly the case in Tukums, Gloucestershire, Valencia or Ljubljana. On the other side, the pandemics also hindered several producers as they were not able to sell due to overspecialisation or dysfunctional logistics. In that context, public procurement emerged as a reliable and large market for struggling farmers (for example in Gloucestershire), stressing the interactions between food systems and public infrastructure. In Ljubljana, direct sales from farms represent a business model that expanded dramatically during COVID as a way to capture demand for local food during periods of restricted consumer mobility. One innovation has been the consolidation of products from multiple producers into box scheme services by farm entrepreneurs.

The pandemic has also brought about changes in labour markets derived from the consolidation of teleworking. In Frankfurt, for example, a study focusing on teleworking, COVID-19 and climate protection suggests that teleworking has an important and significant impact on the reduction of GHG emissions. The study was at rural and city district level in Southern Germany and emphasises the importance of the use of teleworking for climate protection.

At the same time, teleworking has influenced the flow of people from urban to rural areas, which has increased exponentially in many regions. However, it poses several challenges in terms of digital infrastructure, in particular to those most remote and disadvantaged rural areas. In Helsinki, Covid-19 brought an interesting change to the movement of people, with increased interest in teleworking and staying in isolated summer cottages. This has forced organisations to take a telecommunications leap enabling place independent work. In Wales, perceptions of inequalities stemming from rural-urban connections were amplified by the Covid-19 pandemic. The unequal reach of digital infrastructure and tensions around tourism and second homes were key issues in this LL. In Valencia, digital service provision in rural areas was prioritised as a consequence of COVID, with particular focus on its interactions with retail, home-working, mobility and socialising.

The pandemics also revealed **inefficiencies in the current governance structures**, which were unable to respond quickly and effectively to most of the disruptions in logistic chains and to the basic needs of the most vulnerable populations and territories. This is why COVID-19 has brought to the table the importance of configuring **new cross-sectoral, multi-actor and multi-level governance mechanisms** in order to improve community resilience and joining efforts in times of scarcity. At the same time, the crisis was a driver of innovation in many rural and urban areas, some motivated by the government and others by grassroots movements. Several innovative approaches were used to address the logistical and distribution problems that arose early in the pandemic. Further, several **social innovations** with solidarity goals were also identified, giving rise to new socially responsible business models. For example, in Wales COVID-19 is described as an opportunity for **community empowerment** and **to extend cooperative and social enterprise models**. These new business models will continue to be in place in the new normal as well, although their evolution remains to be seen.

3 Concluding remarks

3.1 Key messages on cross-sectoral relations and rural-urban linkages

Rural-urban relationships and synergies take place not only within individual sectors, but through interactions across sectors, being individual stakeholders as their organisations the main protagonists of those cross-sectoral resulting interactions. Social networks within LL, but also those personal networks from their stakeholders and organisations with other "external" stakeholders and organisations (in and out the defined territorial scope), are strategic in order to foster more and more efficient cross-sectoral relationships and, doing so, to promote socioeconomic development processes.

Rural-urban linkages in, for example, food systems, are not limited to that specific sector, but depend on actions, strategies, processes and stakeholders interacting with other sectors and across sectors, e.g., public transport (key to moving products from production places to markets) or labour markets (central in regulating production factors). In this study we tried to identify the main forms of cross-sectoral interactions linked to rural-urban relations, i.e. interactions that, in some way, mirror relationships and/or synergies across territories of urban, rural and peri-urban nature. It helps researchers and policy makers to understand how to strengthen rural-urban synergies and how to overcome regional imbalances (Ashkenazy et al., 2018; Meijers and van der Wouw, 2019). Through a multi-actor and place-based approach, our research makes progress in distinguishing the conditions that are necessary to support the shift to work under a cross-sectoral approach on rural-urban relations (Furmankiewicz et al., 2016).

The specific objectives of WP4 were i) to identify patterns of cross-sectoral interaction in diverse settings and in relation to the five thematic fields or CoPs; ii) to understand the dynamics and diversity of cross-sectoral interaction patterns in terms of rural-urban relations, key actors, and enabling and constraining factors; and iii) to assess the impact of cross-sectoral interactions and synergies on smart, sustainable and inclusive growth. Regarding the latter objective, the COVID-19 crisis has, in general, reoriented the ROBUST's objectives towards the notion of a rural-urban well-being economy. Thus, later in this chapter (Section 3.2) we discuss how cross-sectoral interactions support such well-being approach to rural-urban economy.

The notion of "sector" we used in this WP refers to topic areas related to public policies, e.g. EU policies, such as food, transport, labour market, natural environment, etc. In the ROBUST project, these sectors have been defined according to the five themes addressed by the Communities of Practices (CoPs): i) BMLM, ii) public infrastructures and social services, iii) sustainable food systems, iv) culture, and v) ESS.

This WP has sought to provide new empirical evidence by examining cross-sectoral interactions from different perspectives. Firstly, Section 2.1. has focused on case studies and it was based on longitudinal data collected from LLs and COPs during the whole project. This allowed us, on the one hand, to study cross-sectoral interactions according to each particular rural-urban context and LL. On the other hand, working from the CoPs approach made it possible to explore interactions from the perspective of each particular sector (or CoP theme) and the outputs these CoPs have worked on (e.g., rural-urban business models). The second part of the report (Sections 2.2 and 2.3), has examined

specific place-based initiatives involving cross-sectoral interactions, based on the data gathered from regional workshops. This section did not focus on the territorial context of each LL, but rather on the nature of the place-based initiatives and the cross-sectoral interactions they integrate. After exploring these initiatives in detail, Section 2.4 provided a second-level analysis developed during the thematic workshops, from which broad areas and patterns of cross-sectoral interactions have been identified. Finally, Section 2.5. presented key factors influencing cross-sectoral interactions.

In the following sections we synthesise key messages in relation to several aspects, such as the main patterns of cross-sectoral interactions and rural-urban linkages; the role of cooperation, political will and conflicts which arise in those cross-sectoral interactions; the key stakeholders; the role of socio-organisational practices in such a context; the implications for smart growth, and some lessons for regional policy, all of them in the view of fostering cooperation as a basis for those cross-sectoral interactions and rural-urban linkages.

3.1.1 Identifying patterns of cross-sectoral interactions and rural-urban linkages

Rural-urban linkages and cross-sectoral interactions are a highly complex phenomenon. The analysis of different projects, in different locations, sectors and environments, allow us to identify policies, stakeholders, governance models and practices that foster mutually beneficial relations between rural and urban areas, between different rural and urban stakeholders, and between different socio-oeconomic sectors.

Each rural-urban territory gives rise to very different cross-sectoral interactions. However, some patterns can be distinguished according to some basic shared territorial characteristics:

- The LLs representing **national capitals with extensive rural hinterlands** show greater concern on how the context of urbanisation affects its natural environment. These areas show strong emphasis on how interactions across sectors can enhance ESS, for example, addressing multi-locality living (Helsinki), new agricultural models and green infrastructure (Lisbon), or promoting short food chains (Ljubljana).
- Other LLs are defined by **a mix of rural and peri-urban areas, including cities** that play a key role in the regional economy. These rural-urban territories tend to emphasise cross-sectoral interactions with potential to reducing territorial imbalances and improving the management of population flows. Some examples include new business models that improve rural-urban transport (Styria and Valencia), or new business models and public infrastructures that contribute to reducing commuter flows (Frankfurt).
- Some LLs have an **important share of agri-food activities,** and are defined by **their singular rural landscape.** In these contexts, there seems to be a tendency to develop initiatives of cross-sectoral interactions between food systems and ESS. In particular, new circular models are being examined (Ede and Gloucestershire), and agricultural initiatives involving symbolic and cultural elements (Lucca).
- Finally, we also found **predominantly rural territories** that cannot be aligned with the previous patterns, but with particular elements linked to the specific conditions and processes at stake in that moment. For example, they were involved in developing a rural vision for a post-Brexit scenario (Wales) or implementing a cultural strategy in the region (Tukums).

Analysing cross-sectoral interactions from the CoPs perspective provided some interesting findings. Distinctive patterns have resulted from this approach:

- **BMLM tends to take up the core of the CoPs**, showing synergistic relationships in a wide range of activities and sectors. This is because in some way the activities in all CoPs aim to create added value, which partly would be converted in monetary benefits.
- By definition, ESS are the multitude of benefits that nature provides to society**. ESS CoP generates, although indirectly, the most relationships with all CoPs** across sectors and rural-urban areas. The main connections are with Food CoP (linking with landscape and agricultural vocation of rural areas), and with Culture CoP (linking ESS with local products such as dishes or gastronomy). ESS will likely enable new businesses and new markets to emerge and develop. Moreover, ESS act as a pulling force for teleworking and multi-local working connecting with CoP Public Infrastructure and Social Services because of the use of ESS as a promotor for encouraging and supporting new facilities for multi-local people in rural areas.
- However, the **cultural connections CoP requires new and improved models for enhancing cross-sectorial relations**. It is clearly linked to the Food CoPs, but not explicitly to BM and ESS. Often, simply a change in mindset or dissemination is undervalued to introduce new strategies or give rise to circular economy practices.

Considering the wide range of **place-based initiatives** identified (see Section 2.3.), we observed that the initiatives involving cross-sectoral interactions between **business models and labour markets, sustainable food systems, and public infrastructures and social services represent the most frequent pattern in the ROBUST LLs**. Several initiatives can be implemented in many rural-urban contexts in order to promote interactions across these sectors and enhance rural-urban linkages, such as food markets, food hubs, digital businesses and direct sales agricultural models, social enterprise in agricultural activities, public procurement of food, eco-tourism and health tourism, circular farming, delivery services in rural areas, demand-response transport, co-working spaces and TEPs. The cultural sector also encompasses some interesting place-based initiatives that imply interactions with other sectors, and there are very good examples, such as cultural food markets, craftsmanship and local products, food labels, tourism and food tradition initiatives, and cultural platforms.

Ecosystem services has also relevant interactions with other sectors in relation to the creation and development of rural-urban synergies. Circular farming and food strategies (see for example Section 2.1.2) are promising examples of these interactions. However, initiatives involving interactions between ESS and other sectors seem to have less visibility, as it was shown in the regional workshops. From this point of view, in order to design strategies for promoting cross-sectoral interactions between ESS and other sectors, it is necessary to identify and make the role and potential of ESS in territorial development visible to local communities and the whole society.

In this regard, **the thematic workshops were useful to better identify and analyse the transition from place-based initiatives to broad areas of cross-sectoral interactions in rural-urban contexts**. Working together, both researchers and practitioners, identified six main fields or key areas. These are Circular economy; Territorial heritage and tourism; Territorial platforms and local partnerships; Proximity economy; Public services in -remote- rural areas; and New markets and public arrangements for natural resources. In some way, these areas represent patterns that integrate forms of cross-sectoral interactions that promote rural-urban linkages. For example, there are significant patterns of rural-

urban cross-sectoral interactions around proximity economy (which includes circular economy practices, tourism and heritage, even new markets and public arrangements for natural resources). The social and relational dimensions of proximity were pointed up, which served to highlight how proximity economies are also linked to shared culture, knowledge and values among local stakeholders' and communities. These are, in turn, aware of the importance of local resources and are actively involved in their management and use, in the primary interest of the (local) communities and place.

There were several examples of cross-sectoral interactions in pursuing circular economy outcomes, by stimulating a range of social enterprises. Innovation are especially for agri-food, for example, through the local food strategy. In this regard, urbanisation is also a major concern and cooperative agreements are built in order to offer suggestions for optimising land use.

Territorial heritage and tourism is another area in which in which important and strong cross-sectoral interactions develop, for example with food strategies that have emerged in recent years at the municipal and regional level. Cross-sectoral connections are emerging in relation to aspects such as historic landscapes, education and cultural events and legacies as well as more intangible aspects of culture, such as Welsh language.

Several connections with food and proximity economy were about new markets and public arrangements for natural resources focusing on valorisation of culture and ESS. Actually, public food procurement is exemplified by several LLs as a tool that allows to use government buying power to promote health and environmental objectives.

There also are significant common patterns in territorial platforms and partnerships to support cooperation and collaboration mechanisms, and promote social, organisational and institutional innovations. These were seen around governance from the arrangements and structures that serve as tools for regions to achieve greater successes in the territory.

On the other hand, there are different patterns of rural-urban cross-sectoral interaction depending on the economic development and political will when overcoming with the lack of public services in remote areas. Regions often face the challenge of reconciling economic development and environmental objectives leading to act in a sectorial path that does not allow connecting smart and sustainable growth.

3.1.2 The role of cooperation, political will and conflict in cross-sectoral interactions and rural-urban linkages

In our findings we stressed different social, economic and institutional factors influencing specific initiatives that promote interactions across sectors. In this section we underline the key role of three elements from a broader perspective in relation to cross-sectoral interactions and rural-urban linkages. The first one is related to the culture of cooperation, development of better policy integration and overcoming sectoral thinking. The greatest success in project development is linked to factors that highlight the presence of social innovation processes, such as partnerships, new governance arrangements at the local and regional level, as well as a sense of creativity in institutions. Institutional commitment and support are necessary to make all this possible, but it is difficult to implement. In fact, such proactive attitudes are neither common nor rewarded at the level of, for example, local governments. It is therefore necessary to develop and implement value systems that encourage

such approaches. This would enable more sustainable and long-term projects to be defined and implemented. One area where this would be applicable is sustainable food, and indeed some examples have been identified in this direction, with growing demand for new ways of working which, in turn, contribute to the development of both rural-urban relations and the circular economy.

On the other hand, political will should be considered as the most important and frequent factor enabling driving most of processes. In addition, it is worth to highlight that it is necessary to ensure that what´s funded by EC or other public institutions can be self-sufficiently (post project funding), thus proving sustainability in the projects. It is needed the building of rules for using rural-urban funds (to how funds are spent=limiting) and development of funding mechanism (e.g. in the use of instruments for greening and address fragmentation as Frankfurt shown). From such examples it is showed that alongside local-level engagement, European-level engagement is an enabling factor in facilitating territorial governance arrangements.

Otherwise, the factors that limit more beneficial territorial relations are related to conflict of interest's situations leading to, or be accompanied by, the complexity in production systems as well as lack of financial resources. The analysis of projects and initiatives show that there is an insufficient leadership role, such as trust and empathy, in the planning process and governance, which is hindering the capacity of creating and developing new ideas and innovations.

Such competing interests are taking place, for example, on the design and implementation of spatial and regional and local plans. All these occur on the context of an international competitive disadvantage due to less restrictive planning instruments and water quality or land use schemes, among others. It takes place where socio-circular objectives compete with (e.g.) free –trade. Additionally, corporate structures tend to focus on brand over regional identity, thus without satisfying local needs. This is also a challenge for waste production and management under the difficulty to change the way of production and consumption systemically, while using all waste as a resource. Some good place-based examples actually reveal a dependence on waste production. However, logistics are costly (lack of transparency, supply chains, commute). Therefore, at EU, regional and local levels policy consistency is not always sufficiently consistent.

Most of processes are not progressing either due to lack of resources such as financial. An overall lack of good rural leadership and high-level professional skills are hampering the capacity of creating cooperation and decision making in the right direction in a transversal, inclusive and integrative way. This is producing poor commitment from partners and lack of collective action which is policy challenging to move from short cycles to long term commitment.

3.1.3 Key stakeholders in cross-sectoral interactions and rural-urban synergies

Cross-sectoral interactions between different stakeholders (organisations or individuals) are effective through processes of communication, exchange, competence and knowledge. Well-structured and diverse participatory methods brought together different groups of stakeholders in this project.

In the different regional workshops, the presence of the government/public sector has been dominant, although in many cases both civil society and interest groups have also been very present. However, all actors recognise the importance of the private sector, even though the private sector has been much less present. Many of the actors participating in the regional workshops tend to have

either an "urban" or "rural" focus, partly linked to the fact that they develop their activities and initiatives in one or the other type of areas. Indeed, the regional workshops have highlighted the difficulties in establishing and fostering cross-sectoral and rural-urban relationships, given the sectoral specificity of many of these activities and actors (e.g. farmers). Despite these difficulties, it was also noted that many organisations about civil society do tend to engage in approaches (and activities) more linked to rural-urban relations.

In this regard, the participating actors agreed on the strategic importance that for their work in particular, and for territorial development processes in general, have issues such as knowledge exchange or social/professional/territorial networks, as well as the great potential that derives from rural-urban cross-sectoral interactions. In this sense, the participants valued very positively the opportunity of the ROBUST project, firstly, by offering and stimulating new approaches in which the presence of rural-urban relations are an important part of development processes; secondly, by providing the opportunity to create and develop networks and knowledge exchange, which in turn allow to strengthen and consolidate rural-urban synergies in particular and development processes in general.

Coalitions and cross-sector cooperation between private actors, governmental actors and civil society is crucial in promoting rural-urban linkages. Two issues need to be raised here. Firstly, there are different powers and models in this triple articulation of actors depending on the territorial context, where participation and coordination between public-private stakeholders embrace different paths and dependencies. For example, in the Gloucestershire case, the food market initiatives are more dependent on the action of private actors and civil society, while in the rest of the LLs public actors are more decisive.

The second issue relates to the lack of knowledge centres and representatives of interest groups. On the one hand, the lack of representatives of interest groups reflects the need to promoting intra-group coordination to create organisations of collective interests. To some extent, this is related to the need to foster socio-organisational practices and greater cooperation between rural-urban actors. On the other hand, knowledge centres are perceived to play a less important role in cross-sectoral interactions initiatives. It can be addressed in the future with the continuity of the ROBUST LLs, which encourage the creation of new organisations and collective representation of interests. This can also be promoted by consolidating new and better formulas for knowledge co-production, e.g. citizen-science.

3.1.4 The role of socio-organisational practices in cross-sectoral interactions

Our results illustrate the importance of socio-organisational practices in combination with flows of goods, private services and public services in enabling cross-sectoral interactions and promoting rural-urban linkages. Many cross-sectoral interactions identified in this study underline the key role of socio-organisational practices. This term refers to new ways of civic participation in economic activities, planning instruments and regulations, new organisations, new ways of coordination between stakeholders, or the inclusion of new stakeholders in existing initiatives. Thus, it frequently involves new governance arrangements.

Table 15. Selected examples of cross-sectoral interactions in relation to substantive and structuring practices.

Examples of initiatives representing cross-sectoral interactions	Substantive practices	Structuring practices
Food markets	Flow of goods (food)	Coordination between farmers/producers to set the market Coordination between producers and consumers Coordination between producers and public actors that manage public utilities Awareness about local farming
Digital business models, direct sales and agriculture	Flow of goods (food) Private services (food distribution)	Coordination between farmers and public actors to provide economic infrastructure Farmers' coordination and new channels for joint sales Awareness about local farming and food quality
Social enterprise and agriculture	Flow of goods (food) Flow of services (social)	Coordination between producers and consumers New organisations for collective purchasing Coordination between farmers, NGOs and vulnerable groups for job inclusion
School meals and public food procurement	Flow of goods (food) Public services (meals)	Coordination among small farmers Coordination between farmers and the public sector New legal frameworks New ways to educate about food Social values in public procurement
Tourism and agriculture	Flow of people (tourists) Private services (tours)	Coordination between farmers and service businesses Awareness about local farming, landscape and rural areas
Craftsmanship and local products	Flow of goods	Stronger values on local identity and heritage

The results of this study allow us to improve the understanding of the practices related to cross-sectoral interactions and rural-urban relations. Flows of public and private services, flows of goods and flows of people could be defined as substantive practices as they determine the character and nature of cross-sectoral interactions. On the other hand, cultural and, in particular, socio-organisational practices are structuring practices, that is, they create the framework and conditions for substantive practices to unfold (Figure 24). Table 15 illustrates some examples of how substantive and structuring practices operate in different initiatives involving cross-sectoral interactions.

Cultural practices provide cross-sectoral initiatives (and, especially, their stakeholders) with intangible elements that make it easier for them to align interests. We refer to aspects such as shared identity, common values, sense of place, social/environmental awareness, etc. At the same time, these (cultural) intangibles require a framework and an environment that facilitates acting and implementing initiatives. Such framework may imply new territorial partnerships, governance arrangements, new legislations, etc., in which different stakeholders across different territorial scales can be involved.

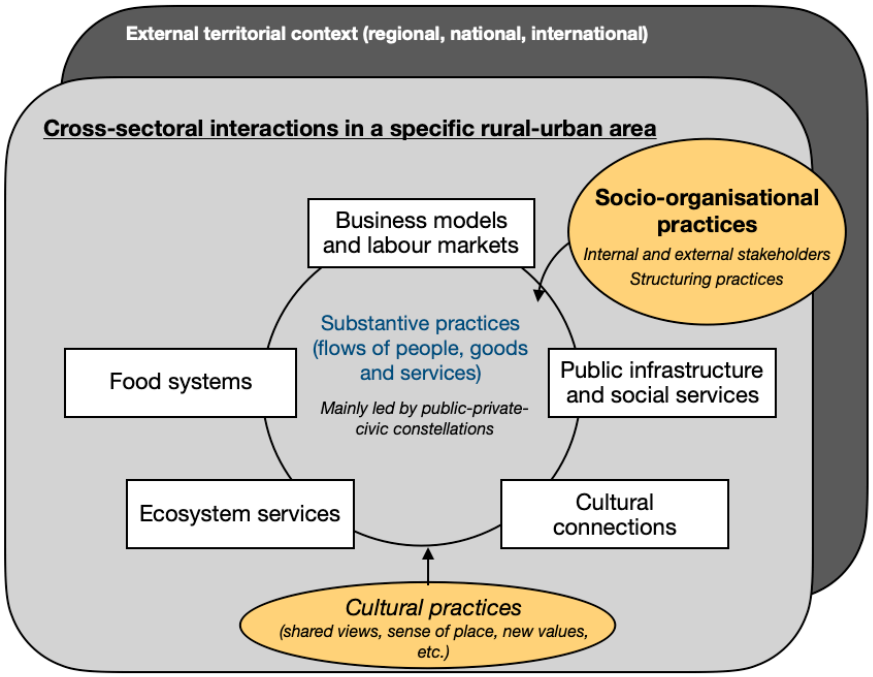

Figure 24. Substantive and structuring practices in cross-sectoral interactions and rural-urban linkages.

Many LLs pay particular attention to territorial planning instruments as means of implementing an integrated view across rural-urban areas on topics of cross-sectoral nature (e.g., circular models, green infrastructure, new transport models, etc.). This type of instrument should be taken into greater consideration in order to reinforce a cross-sectoral approach and promote rural-urban synergies. However, spatial planning instruments are often too rigid and require formalities (e.g., bureaucratic processes) that make participation and engagement difficult for weak organisations or those less powerful stakeholders (e.g., small farmers). Therefore, it is important to design new territorial planning instruments that comprise multi-stakeholder and multi-level governance arrangements across rural-urban areas.

Participatory arrangements should be implemented in order to engage with new stakeholders, such as small farmers and civic organisations. Indeed, territorial partnerships (e.g., TEPs and LAGs) are a good way to design and envision new projects and business models with a cross-sectoral approach to regional development. In many of these cases, the public sector (whether local authorities or regional governments, depending on the national context) can play a central role in activating these partnerships and in encouraging different actors to participate. To this aim, clear benefits should be visible to the different stakeholders, with appropriate budget and a long-term vision. In this regard,

the LLs' experience in the ROBUST project can be of great interest to better inform regional policies on how to design plural spaces, with a cross-sectoral and participatory approach, from which improved territorial instruments and novel initiatives aiming to promote rural-urban synergies can be designed.

3.1.5 Implications for smart growth

Smart, sustainable and inclusive growth are three mutually reinforcing priorities put forwarded by the European Union (EC, 2010). In ROBUST, we adopted this approach and developed a framework for rural-urban linkages in which growing smart by prioritising what each local economy can do best was a central dimension (Woods et al., 2018).

Cross-sectorial relations combined with increased resource efficiency can improve competitiveness and foster job creation. In this section we distinguish different ways in promoting smart, sustainable and inclusive growth from a cross-sectoral and rural-urban perspective.

Cross-sectoral interactions promote innovation. At the same time, through innovation new cross-sectoral interactions and rural-urban synergies can be promoted. It is observed the innovation level is linked (indirectly and directly) to enhance connections between business models, food, public services, public procurement, culture and land use and planning. On the one hand, networked governance and new ways of coordination between stakeholders have been raised at both new and existing regulations to ensure inclusive decision-making, improve competitiveness and foster job creation (e.g. TEPs in Valencia). The detected cross-sectorial relations through existing regulations (Rural Vision of Mid Wales or the Inter-Municipal Food Policy in Lucca) enhance the prospect for inclusive growth. Regulations (e.g. in Gloucestershire) are also linked to create market and public incentives which are needed to enhance innovation and sustainable growth. On the other hand, the use of ICTs has been key for develop innovative solutions in teleworking and transport. The idea to reflect on the relation between less commuting and the Covid19 has forced experiences in the Rhein-Main region. COVID stimulated the involvement of new stakeholders from civil society and private actors towards sustainable growth of a wide range of activities (e.g. to improve internet access in small, rural settlements).

A cross-sectoral approach is required to introducing differentiation and symbolic elements into rural-urban economies. As Maye et al. (2021) has proven, cultural connections can stimulate smart development in several ways e.g. by pulling cultural resources and stakeholders together; and using rural assets in smart development projects. These are strongly connected with food through local economy, branding and direct sales since it rises social awareness and give value to local food systems. Cultural connections are a valuable means of raising awareness and beginning to needed change mind sets around the transition to mainstreaming circular economy practices. Culture is taking place as a new way of civic participation in economic activities, planning instruments and regulations, new ways of coordination between stakeholders, or the inclusion of new stakeholders in existing initiatives. Similarly, socio-organisational practices have been key both for developing new tendering procedures and changing the existing regulations and enhance business interactions and the management of the market area and stalls by the municipalities and their public utilities.

The cross-sectoral approach allows linking territories and improving optimal social and ecological capacities. It taking place in several rural-urban relations ranging from the efficient use of natural re-

sources, building connections across sectors, creating cooperation, networked governance and development of new services. It, for instance, can take place when there is an interaction between sustainable food systems and business models e.g. Ljubljana and Lucca LLs. This interaction involves flows of goods (food) and private services (food distribution). However, it is often hampered by the frequency of direct sales has increased as households are changing their demand patterns. The role of proximity economy has emerged in such regions as a potential for SME-based innovation that can promote efficient direct sales and underpin green infrastructure, help manage urban sprawl and enhance urban ecosystems. There are more interactions across thematic fields (PI&SS, BMLM, Food, ESS and Culture) enabling and improving the flows of public and private services. Some examples are ATMs (at Valencia Region), ongoing examples of demand responsive transport and multi-modal, local branding and the creation of business models such as Local Food Hub Retailing. Additionally, rural business networks and institutions are vital in planning regional growth. Moreover, such practices, as circular economy and spatial planning, define targets to investing in cleaner, low carbon technologies will help our environment, contribute to fighting climate change and create new business and employment opportunities.

3.1.6 Some lessons for Regional Policy. Fostering cooperation as a basis for cross-sectoral interactions and rural-urban synergies

Cooperation is a key issue for addressing rural-urban linkages from a cross-sectoral approach. In order to make cooperation across stakeholders successful, three issues must be taken into account. Firstly, cooperation has a territorial scope, not only sectoral. Traditional sectoral barriers must be overcome and territorial cooperation mechanisms must be promoted, including the rural-urban dimension.

Secondly, territorial cooperation cannot be promoted adequately if it is not accompanied by adequate governance mechanisms as the efficient promotion and management of cooperation requires explicit rules and instruments. Motivation, positive incentives, and a cooperative attitude are some of the required skills in participatory processes. However, it should be note that in rural areas (much more than in urban areas), stakeholders willing to maintain a long-term commitment to cooperation mechanisms tend to run out over time due to the lack of replacement and new leadership (Esparcia, 2014; Esparcia & Abbasi, 2020). Hence, the sustainability and adequate territorial representation of governance instruments is clearly a relevant aspect. Useful strategies here include developing clear and specific outcomes from the outset of initiatives so that stakeholders know what they are working for and information is openly shared.

Finally, the third condition implies the effective integration of sectors in cooperation processes. Territorial cooperation, and its governance instruments, will only be successful if rural-urban linkages are addressed effectively, with particular focus on cooperation between sectors. This report presented some examples of how territorial cooperation could be implemented, for example, through food strategies, territorial platforms or spatial planning instruments. Despite being a very complex issue, territorial cooperation can contribute to social and territorial cohesion in regions, and lead to stronger and more sustainable development processes. Therefore, the involvement of the public sector is crucial as it can design appropriate incentives for multi-actor processes and implement multi-level mechanisms across rural-urban areas.

The importance of cooperation is not new, and the analyses that have been carried out in the framework of ROBUST confirm its strategic and critical role in territorial development processes. A reference framework that is still perfectly valid in which to frame the complexity involved in transferring cooperation, and its governance, to regional development policies, is that developed by ESPON (2013a) (Figure 25).

The analyses carried out in the ROBUST framework through the different CoPs and LL also converge in this scheme. Indeed, the coordination of actions and initiatives promoted by stakeholders with institutions is a first important element, which has also been detected and analysed through ROBUST. In terms of governance, this implies overcoming the restrictions that coordination structures may have, and strengthening them, as well as leaderships, but at the same time distributing power and decision-making capacity among the different levels (dimension 1), i.e. giving the protagonism that each of the levels must have, with particular attention to the local scale.

The analysis through the CoPs and LL has also highlighted that the integration of the different sectors of activity is another key element. This requires that conflicting sectors or activities are identified and managed appropriately in order to stimulate synergies through cooperation (dimension 2).

Sustained stakeholder involvement has been identified as key to territorial development processes (dimension 3). The work of the LL in ROBUST has made it possible to identify key stakeholders and an effort has been made to integrate interests and points of view, also by conveying to them the importance of cooperation, not only at sectoral but also at territorial level. And this requires their governance instruments, as we have stressed.

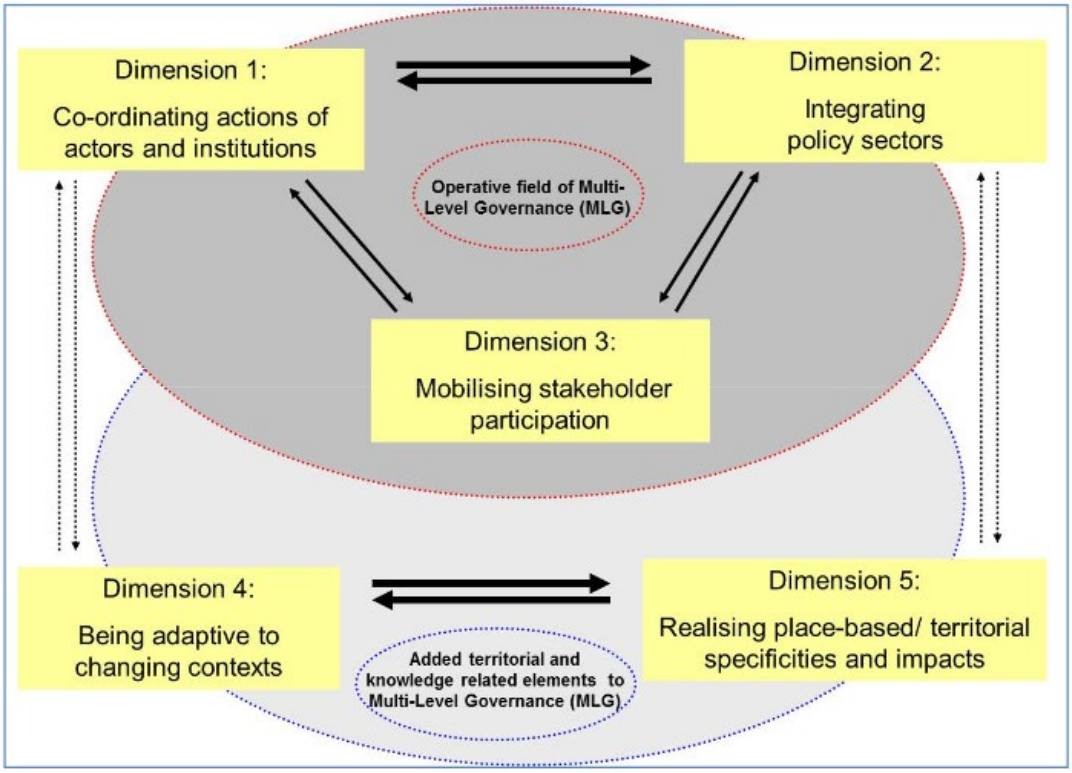

Figure 25. Main dimensions of territorial governance (ESPON, 2013b)

The Covid-19 pandemic has highlighted, in all its harshness, that stakeholders, territories, and the structures and instruments of cooperation and governance, require great flexibility and capacity to adapt to such a tremendously changing context as the one we are experiencing (dimension 4). It follows from all this that, for regional policies, it is essential to develop mechanisms for individual and collective learning and reflection, especially at the level of organisations and institutions. And policies will have to take into account, more than ever before, the need to maintain and promote a wide field for flexibility and experimentation, contributing to forward-looking actions that promote sustainable processes, adapted to the new contexts.

Finally, place-based approaches (dimension 5) have been addressed and valorised in ROBUST, taking into account the important role that territorial specificities have as a basis for rural-urban cross-sectoral interactions. Indeed, these cross-sectoral interactions are largely based and take place in functional spaces, in our case rural-urban. This requires not only the existence of products, supply and demand. Sustainable development and the consolidation of this approach also requires stakeholders who are involved in its management, who know how and are able to collect and make the most of all the territorial knowledge and expertise, and put it at the service of development processes.

3.2 Implications for a well-being rural-urban economy

One of the main goals of this report was to assess the impact of cross-sectoral interactions and synergies on smart growth. However, the results presented in the previous sections lead us to explore new ways of looking at rural-urban relations beyond the notion of growth. Our findings put participatory and networked governance, place-based approaches and territorial planning at the centre of regional development. Moreover, when analysing the content of the activities deriving from the identified cross-sectoral interactions, it is also evident that many of them are promoting different models of development, but not only growth, i.e., greater participation of civil society organisations, cooperative and solidarity practices, place-based activities, nature-based solutions, etc.

The importance of going beyond the notion of growth is especially evident owing to the pandemic crisis and its negative effects on the most vulnerable populations and territories. The COVID-19 showed us that people's well-being must be at the centre of regional development processes, prioritizing essential needs such as health, basic income, and sociability and connectivity with other people. In addition, the pandemic has also shown that the interdependencies between rural and urban areas are stronger than ever, and that a cross-sectoral approach is required to identify and promote such interdependencies.

The ROBUST colleagues have shown interest in framing our work within the paradigm of the foundational economy. The Foundational Economy (FE) is a new way of thinking about economy that puts well-being and, in the case of ROBUST, rural-urban welfare (OECD, 2020), at the centre. It is about providing material goods and providential services for everyday life (FE Collective, 2018; Froud et al., 2020). FE should be understood as a place-based approach that supports foundational infrastructures for a rural-urban economy. As such, this perspective should pay particular attention to territorial imbalances and well-being in isolated territories, such as remote rural areas. FE can enrich smart development by focusing on those activities that are most essential for people, and not only on those we are particularly good at.

Table 16. The six broad areas for cross-sectoral interactions explored in the thematic workshops

Cluster name	Review
Public services in -remote- rural areas Territorial heritage and tourism	The clusters are broad. There is also a risk that FE's attention to infrastructure becomes most closely linked to Public Services.
Territorial platforms and local partnerships New markets and public arrangements for natural resources	These clusters are already articulated as governance arrangements, pre-empting WP5.
Proximity economy Circular economy	These types are good; they represent ways to organise rural-urban links.

In order to develop our results towards the FE framework, we reflected upon them and decided to adapt the six areas of cross-sectoral interactions (Table 16) and rural-urban linkages to five dimensions of the FE (Table 17). Identifying rural-urban relations and ways to strengthen them is core to ROBUST, so clustering the WP4 findings in this way is important. The six themes presented so far in

Section 2.4 emerged inductively from the experimental work. They provide an excellent baseline but are not starting from the same point (two are broad and thematic; two focus on governance; two focus on forms of economy).

Table 17. Dimensions of the FE. Source: Maye et al. (2021).

Dimension	Description	Examples
Services	Accessibility and availability of basic public and private services	Health care, transport, internet
Proximity	Focuses on reducing the social and / or spatial distance between providers/producers of services / goods and the customers / consumers of these services / goods	Public food procurement contracts, direct sales, territorial branding
Circularity	Closing cycles and enhancing the circular economy	Circular farming, local food chains
Ecosystems	Biodiversity, soil, water, landscape, climate change	Catchment-based partnerships, ecosystem service payment schemes
Culture	Focuses on the role of culture and heritage in strengthening rural-urban relations (primarily linked to the Culture and Food CoPs, but also BMs and ESS).	Municipal cultural strategies, regional branding, gastronomic tourism, Welsh language

We relabelled the six categories as five dimensions of a FE: i) services; ii) proximity; iii) circularity; iv) ecosystems; v) culture. Table 17 shows the main description and some examples of these dimensions. The different dimensions are all important, but services are the basic essential foundation, given the intention to put well-being and welfare at the heart of this approach. This is why rural-urban linkages are important, as this can ensure basic services are accessible in rural places (and 'liveable' places) in exchange for contributing to the foundation of urban areas through other dimensions (ecosystems, circularity, etc.). The other four elements work as pairs, with proximity about reducing socio-spatial relations and culture about socio-cultural relations, which reflects the role of culture and for ROBUST heritage in particular. Ecosystems and circularity are different resource relations to help territories reach climate objectives, safeguarding rural assets (land, biodiversity, renewable energy projects, bio and circular economy models), as part of a larger transition to climate neutral economies.

Table 18. Interactions across the five dimensions of the FE

	Services	Proximity	Circularity	Ecosystems	Culture
Services		Food markets food hubs Digital business models, Delivery services in rural areas Demand-response transport Public Food Procurement TEPs	Circular farming	Agriculture and health Social enterprise and agriculture Green Infrastructure	Food markets and cultural events Food labels
Proximity	Food markets food hubs Digital business models, Delivery services in rural areas Demand-response transport Public Food Procurement TEPs		Circular farming	Food strategies	Food markets and cultural events Food labels Craftsmanship and local products tourism and food traditions Food strategies
Circularity	Circular farming	Circular farming		Food strategies Circular farming	
Ecosystems	Green Infrastructure	Food strategies	Food strategies Circular farming		
Culture	Food markets and cultural events Food labels	Food strategies Food markets and cultural events Food labels Craftsmanship and local products tourism and food traditions Food strategies		Food strategies	

The results we have obtained about cross-sectoral interactions have several implications for a well-being rural-urban economy. For example, they allow us to identify place-based initiatives promoting interactions across the five dimensions of the FE (Table 18). This makes it possible to identify which initiatives are conducive to strengthening rural-urban linkages while working towards a well-being rural-urban economy. For instance, food markets provide basic services (food provision), proximity economies (local products) and enhance rural-urban linkages. Food strategies show potential to promote local food (through public food procurement), contribute to the different dimensions of ESS, and represent an excellent arena for promoting circularity in local food systems. Similarly, circular farming initiatives are obviously linked to circular models and, moreover, have a particular impact on ESS.

While each territory and rural-urban context may entail a particular emphasis on some specific interactions between dimensions of the FE above others, the nature of this approach implies that none of such dimensions, and therefore the interactions between them, should be neglected. Moreover, the service dimension, as we have stated before, is of particular relevance as it is at the basis of the population's well-being. Service provision to rural-urban population requires special attention to cross-sectoral interactions. For example, some public services, such as on-demand transportation or public food procurement, require this cross-sectoral vision. In the first case, between public infrastructure and business models, and in the second case, the interactions occur between food systems and public services. Once again, territorial planning instruments and participatory and multi-stakeholder governance agreements are essential to move towards a well-being rural-urban economy.

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5 Annexes

5.1 Reporting template

Please include pictures of the workshop in the report, but make sure that you ask for consent to take pictures and to include them in a report that will become publically available on the ROBUST website

1 General information about the workshop

- Date and location of the workshop
- Give a brief description of the topic(s)/theme(s) and focus of the workshop
- No. of participants per stakeholder group:
    - Government:
    - Private sector:
    - Representatives of interest groups:
    - CSO/NGO representatives:
    - Research / Higher Education:
- The program of the workshop (including start and end time, duration and brief description of the different sessions).
- Give a brief description of the interactive/participatory methods that were used to exchange knowledge and capitalise on new insights and common understandings

2 Workshop results

- Give a brief description of the main issues that have been addressed / discussed during the workshop
- Describe which kind of cross-sectoral interactions you have found and which stakeholders are involved. Are these interactions primarily spatial (flows of goods & services and mobility of people) or non-spatial (social, cultural, organisational). Do these interactions foster/support rural-urban relations and synergies? Please explain. *You may also use the table below to address these questions*
-

Cross-sectoral interactions (please describe briefly)	Stakeholders involved (please describe the relevant stakeholder)	Spatial interaction (Y/N and if Y define)	Non-Spatial interaction (Y/N and if Y define)	Supports rural-urban relations and synergies (Y/N plus explanation)
Cross-sectoral interaction 1				
Cross-sectoral interaction 2				
….				

- For each of the above mentioned cross-sectoral interactions, please identify which factors (e.g. geographic, institutional, stakeholder´s strategies, socio-economics ...) enable or hamper these interactions and rural-urban synergies? Also explain how/why a particular factor enables or hampers interactions and synergies. *You may also use the table below to address these questions.*
-

Cross-sectoral interactions	Factors	Enabling? (Y/N) + explanation	Hampering? (Y/N) + explanation
Cross-sectoral interaction 1	Factor 1.1		
	Factor 1.2		
Cross-sectoral interaction 2	Factor 2.1		
	Factor 2.2		
	Factor 2.3		
....	....		
....	....		

3 Moving forward

- Describe which strategies or actions should be promoted to improve cross-sectoral interactions and rural-urban synergies? Relate this to the overall theme and focus of the workshop.
- Describe who the responsible stakeholders are to take this further? Did these stakeholders attend the workshop? If yes, what are their ideas to boost these strategies. If no, how will they be involved?
- Which agreements have been made to move forward. What are the next steps? Who is responsible for moving forward (i.e. for implementing proposed strategies and actions)?

4 Reflection and evaluation

- Briefly reflect on the workshop. What did (not) go well? Which interactive/participatory methods worked (not so) well? Have the objectives been achieved? Did the participants enjoy / appreciate the workshop? Has the workshop resulted in more active / committed LIVING LABmembers?
- Three main lessons learned from the workshop (can be content-based, methodological, strategic, ...).

This questionnaire serves three goals:

1. *To get feedback from workshop participants about the workshop itself (Part B: questions 1-3), which will be used for the workshop report;*
2. *To easily collect some key data for WP4 (Part B: questions 4-5) including some basic information about the participants (Part A);*
3. *To identify which participants would be interested in playing an active role in ROBUST, particularly in the LIVING LAB activities (Part B: question 6)*

The questionnaire should be completed by each of the participants at the end of the workshop. Completing the questionnaire should take about 10 minutes, so please reserve time for this and actively encourage the participants to fill out the entire questionnaire. Workshop participants will need a list of the participants (name, affiliation, kind of organisation) to complete the questionnaire.

5.2 Questionnaire

Part A

Participant number (see participant list for participant number) _____

Organisation name _____

Kind of organisation:

- Government / Public sector
- Private sector
- Interest Group (trade union, agricultural professional organisation, business, consumers, etc.)
- Civil society / Non-government organisation
- Research / higher education
- Other_____

Is your organisation's work mainly urban or rural focussed or both? If both, please consider whether there is an "urban-rural relation" or not below?

- Urban
- Rural
- Peri-urban
- Urban-rural relation
- Both urban and rural but no urban-rural relation

In which thematic domain is your organisation working? You can choose more than one answer. Please also indicate the scale of operation.

□ Agriculture and food
□ Environmental management and conservation
□ Spatial Planning
□ Infrastructure (e.g. transport, communications)
□ Public Services (e.g. Health, education)
□ Economic development and business support
□ Housing
□ Tourism and Culture
□ Other _____

Scale of operation:

□ International

□ National

□ Regional level (administrative NUTS-2 or NUTS-3)

□ Sub-regional

□ Municipal-local level

Part B

Please answer the following questions:

1. How interesting or useful has this workshop been for you? Please circle the number which corresponds most closely to your desired response from 1 (not at all) to 5 (very much/a lot).

not at all	a little	some	much	very much /a lot
1	2	3	4	5

2. What aspects of the workshop did you consider to be most important for your work?

□ Enlarging my social/professional network

□ Rural-urban relations

□ Multi-level governance

□ Cross-sectoral interactions

□ Knowledge exchange / inspiration of new ideas

□ Other _____

3. Based on what you saw and heard in the workshop, what do you think ROBUST can bring you in the future?

□ Collaboration with stakeholders in different thematic fields

□ New approaches to rural-urban relations

□ New ideas from international projects

□ Other_____

4. Among the workshop participants, with whom do you already have a specific kind of relationship? Please indicate which kind(s) of relationship(s) with whom would you like to maintain/strengthen your current relationship, and with whom would you like to establish and develop a future cooperative relationship. Please fill in as many rows as participants.

Participant number	Existing type of relationships (X = Yes)							Future relationships	
	Commercial	Political	Social	Public financial support	Information exchange (e.g. technologies, products…)	Public Services (e.g. education, health care, administrative…)	Private services (e.g. leisure & tourism, gastronomy, professional advice, banks etc.)	Maintain/strengthen future cooperative relationships with participant you have collaborated with before? (X = Yes)	Establish future cooperative relationships with participant you have not collaborated with before (X = Yes)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									

Participant number	Existing type of relationships (X = Yes)							Future relationships	
	Commercial	Political	Social	Public financial support	Information exchange (e.g. technologies, products…)	Public Services (e.g. education, health care, administrative…)	Private services (e.g. leisure & tourism, gastronomy, professional advice, banks etc.)	Maintain/strengthen future cooperative relationships with participant you have collaborated with before? (X = Yes)	Establish future cooperative relationships with participant you have not collaborated with before (X = Yes)
17									
18									
19									
20									
21									
22									
23									
24									
25									

5. In your opinion, which other relevant stakeholders were missing from the workshop and would be useful to involve? Please indicate name and kind of organisation and, if appropriate, name of the stakeholder as well.

Kind of organisation: Private sector; Public sector; Interest group (trade union, agricultural professional organisation, business, consumers, etc.), Civil Society Organisation / Non-Governmental Organisation (NGO); Research/higher education.

6. Are you willing to be involved and participate in the future activities of ROBUST?

   □ Yes

   □ Maybe

   □ No: Please explain why not? _____

5.3 Living lab profiles

5.3.1 Living Lab Ede (Netherlands)

Key characteristics	Description
Location	Ede municipality, Netherlands
Territorial level[9]	Local Administrative Unit (LAU)[10]
Area (km^2)[11]	318
Population density (inhabitants/km)^2	364
Population change (%) in last 5 years in % per year (approx. 2015–2020) [12]	+0.9%
Local context	Intensive agri- and agri-tech growth centre orientated to global markets via a cross-sectoral Food Valley initiative. Protected rural landscapes. Costly homes and land.
Rural-urban characteristics	Predominantly rural. Largely agri-rural landscape with polycentric urban centres, which are home to two-thirds of the 115,000 population.
Practice partner type	Local government
Research partner type	University
Professional background of partners[13]	Social sciences, Planning, Environmental Sciences
Lead partner[14]	Co-leadership
Priority CoPs[15]	**Food**, ESS, BMLM
Main outputs[16]	**Co-developing concrete practical tools for policy implementation:** indicators for current municipal urban food policy dashboarding, indicators for better agricultural ESS delivery through the menu-card approach **Co-producing good practice examples:** inventory of circular farming topics

[9] Source: European Commission, 2021, unless indicated otherwise

[10] Source: https://ec.europa.eu/eurostat/web/nuts/local-administrative-units

[11] The three characteristics "Area", "Population density" and "Population change" presented in each Living Lab profiles are based on Knickel et al., 2021

[12] Source: Knickel et al., 2021

[13] Based on the data from the three surveys run over the course of the ROBUST project

[14] Based on the baseline survey data

[15] In the cases where Living Lab work significantly contributed to one or two CoPs, the CoP(s) is highlighted in bold

[16] Based on the synthesis report elaborated by the WP3 team

5.3.2 Living Lab Frankfurt Rhein Main (Germany)

Key characteristics	Description
Location	Frankfurt Rhein Main, Germany
Territorial level	Equivalent to four complete NUTS3 entities plus parts of three other NUTS3 entities.
Area (km^2)	2458
Population density (inhabitants/km^2)	960
Population change (%) in last 5 years in % per year (approx. 2015–2020)	+1.2%
Local context	Half of all regional jobs are in Frankfurt city, which is growing quickly due to its global and national economic importance.
Rural-urban characteristics	Mixed urban and peri-urban with a large city. Despite the presence of Frankfurt city, the region is polycentric and contains large areas of high quality rural open (outer) space.
Practice partner type	Regional development agency
Research partner type	Consulting firm
Professional background of partners	Planning, Economics, Environmental Sciences, Agricultural Sciences
Lead partner	Practice partner
Priority CoPs	**ESS**, PI&SS, BMLM
Main outputs	**New data:** multiple datasets and study reports (e.g. spatial clustering analysis, commuting, statistics) **Testing & deliberating novel policy implementation:** enhanced regional land use plan

5.3.3 Living Lab Gloucestershire (United Kingdom)

Key characteristics	Description
Location	Gloucestershire County, England, UK
Territorial level	NUTS 3[17]
Area (km²)	3150
Population density (inhabitants/km²)	239
Population change (%) in last 5 years in % per year (approx. 2015–2020)	+0.9%
Local context	Two-tier municipal system, with planning decisions delegated to second-tier districts.
Rural-urban characteristics	Predominantly rural. Affluent rural county with two adjacent main urban centres. Well-served with transport infrastructure and over 50% of landscape is environmentally designated.
Practice partner type	Local government
Research partner type	University
Professional background of partners	Social sciences, Geography, Economic development, Planning, Flood risk management
Lead partner	Research partner
Priority CoPs	Food, **ESS**, BMLM
Main outputs	**Testing and deliberating novel policy implementation:** a new flood management sub-group, agreed drafted wording for the school food contract tender (with dynamic food procurement as an option) **Co-producing good practice examples:** circular business inventories

[17] (Eurostat, 2018)

5.3.4 Living Lab Helsinki (Finland)

Key characteristics	Description
Location	Helsinki-Uusimaa Region, Finland
Territorial level	NUTS 3
Area (km^2)	9568
Population density (inhabitants/km^2)	176
Population change (%) in last 5 years in % per year (approx. 2015–2020)	+1.0%
Local context	Rural-urban working patterns, seasonal summer urban-to-rural exodus, and urban-to-urban commuting/enterprise investment (Helsinki-Tallinn).
Rural-urban characteristics	National capital metro-region. The area's population is split roughly 50:50 between Helsinki city and rural Uusimaa.
Practice partner type	Local government
Research partner type	Research institute
Professional background of partners	Social sciences, Geography, Management, Political science
Lead partner	Co-leadership
Priority CoPs	**BMLM**, ESS, **PI & SS**
Main outputs	**New data** on labour mobility, foreign direct investment and multiple locational occupancy; REKO-ring business study

5.3.5 Living Lab Lisbon (Portugal)

Key characteristics	Description
Location	Lisbon Metropolitan Area, Portugal
Territorial level	The living lab covers both NUTS 2 and NUTS 3 territories.
Area (km^2)	3015
Population density (inhabitants/km^2)	944
Population change (%) in last 5 years in % per year (approx. 2015–2020)	+1.3%
Local context	The region of 18 municipalities experiences peri-urban pressures and an unbalanced territorial development pattern, which exerts pressure on high-value natural capital.
Rural-urban characteristics	National capital metro-region. Home to 25% of the national population. Urbanisation pressure linked to rural depopulation and migration.
Practice partner type	Regional development agency
Research partner type	University
Professional background of partners	Geography, Planning, Environmental Sciences
Lead partner	Practice partner / co-leadership
Priority CoPs	BMLM, **ESS**, PI & SS
Main outputs	**Strategic visioning:** integrated city-region strategy (territorial plan) **Co-developing concrete practical tools for policy implementation:** green infrastructure criteria, mapping ecosystem services **Testing and deliberating novel policy implementation:** AgroParks network, study plan for sustainable food in the curriculum **Co-producing good practice examples:** ecosystem business models, short food supply chains in procurement

5.3.6 Living Lab Ljubljana (Slovenia)

Key characteristics	Description
Location	Ljubljana Region, Slovenia
Territorial level	NUTS 3 level
Area (km^2)	2334
Population density (inhabitants/km^2)	237
Population change (%) in last 5 years in % per year (approx. 2015–2020)	+0.8%
Local context	25 municipalities make up the region, including those in peripheral rural regions. High consumer preference for local food and regional landscape protection.
Rural-urban characteristics	National capital metro-region. Home to 26% of the Slovene population.
Practice partner type	Regional development agency
Research partner type	Consulting firm
Professional background of partners	Regional development, Environmental Sciences, Management, Planning
Lead partner	Co-leadership
Priority CoPs	BMLM, **Food**, PI & SS
Main outputs	**New data and co-developing concrete practical tools for policy implementation:** direct sales mapping, analysis and reports on local food marketplace and public procurement for Ljubljana's food strategy **Co-producing good practice examples:** short food supply chain examples on how to expand regional food procurement → new practices that enhance regional operations

5.3.7 Living Lab Lucca (Italy)

Key characteristics	Description
Location	Lucca Province, Italy
Territorial level	NUTS 3 level
Area (km^2)	1773
Population density (inhabitants/km^2)	220
Population change (%) in last 5 years in % per year (approx. 2015–2020)	-0.1%
Local context	Second-tier authority of 38 municipalities, including the UNESCO World Heritage city of Lucca. The area is characterised by a distinctive villa-based cultural landscapes
Rural-urban characteristics	Predominantly rural. Lucca province is a varied area of rural landscapes, including coast, mountains and plains.
Practice partner type	Local government
Research partner type	University
Professional background of partners	Economics (e.g. Food and Agricultural Economics), Planning, International relations, Environmental Sciences
Lead partner	Co-leadership / practice partner
Priority CoPs	Culture, **ESS**, **Food**
Main outputs	**New data:** land bank and shared assets data **Testing and deliberating novel policy implementation:** intermunicipal food policy (joint management model to share functions on food policies), draft Provincial Territorial Coordination Plan

5.3.8 Living Lab Mid-Wales (United Kingdom)

Key characteristics	Description
Location	Mid-Wales, Wales, UK
Territorial level	Mid Wales approximately covers the two NUTS3 regions of Powys and South West Wales[18].
Area (km^2)	17,034
Population density (inhabitants/km^2)	60
Population change (%) in last 5 years in % per year (approximately 2015–2020)	-0.2%
Local context	No large-scale urban settlements within the 9 municipalities. The importance of smaller, market towns as employment and service centres is emphasised.
Rural-urban characteristics	Exclusively rural. Faces challenges as a predominantly rural region, including remoteness, limited infrastructure, access to markets and services, and post-Brexit changes.
Practice partner type	Local government
Research partner type	University
Professional background of partners	Geography, Regional development (including rural development), Social sciences, Economics
Lead partner	Research partner
Priority CoPs	Culture, Food, PI&SS
Main outputs	**New data for policy implementation:** Evidence Report, study on multi-locality seasonal residency, 'How Local is Local?' Report as a knowledge input to inform the Monmouthshire County Council's food policy work **Strategic visioning:** Rural vision, WLGA Rural Manifesto, Local food planning **Testing and deliberating novel policy implementation:** local and regional food planning

[18] https://ec.europa.eu/eurostat/documents/345175/7451602/nuts-map-UK.pdf

5.3.9 Living Lab Styria (Austria)

Key characteristics	Description
Location	Metropolitan Area Styria, Austria
Territorial level	NUTS 2 level
Area (km²)	1890
Population density (inhabitants/km²)	261
Population change (%) in last 5 years in % per year (approx. 2015–2020)	+1.1%
Local context	The metropolitan region of Styria includes 51 municipalities, including Graz, Austria's second city. The region is orientated towards post-industrial hi-tech growth.
Rural-urban characteristics	A polycentric city-region, dominated by Graz. Urban net migration leading to suburbanisation and car-commuter traffic challenges. Public service demands of a growing, affluent population.
Practice partner type	Regional development agency
Research partner type	Research institute
Professional background of partners	Social sciences, Regional development, Geography
Lead partner	Research partner / Co-leadership
Priority CoPs	BMLM, Culture, **PI&SS**
Main outputs	**Testing and deliberating novel policy implementation & co-producing good practice examples:** shared multi-modal transport and municipal budget setting examples and best practice reports → new practices that enhance regional operations **Co-developing concrete practical tools for policy implementation:** online database / regional visitor guide (intercommunal rural-urban cultural networking and tourism promotion)

5.3.10 Living Lab Tukums (Latvia)

Key characteristics	Description
Location	Tukums Municipality, Latvia
Territorial level	Local Administrative Unit (LAU)[19]
Area (km²)	1195
Population density (inhabitants/km²)	23
Population change (%) in last 5 years in % per year (approx. 2015–2020)	-1.2%
Local context	Tukums municipality, which is home to a little under 30,000, was created in 2009 and will be merged with adjacent councils in 2021.
Rural-urban characteristics	Predominantly rural. Tukums is largely rural/semi-rural, including some remote and underserved areas, which are experiencing depopulation.
Practice partner type	Local government
Research partner type	Research institute
Professional background of partners	Social sciences, Planning, Regional development
Lead partner	Research partner / co-leadership
Priority CoPs	**Culture**, Food, PI&SS
Main outputs	**Strategic visioning:** Tukums cultural strategy **New data** on Tukums market and public infrastructure **Co-developing concrete practical tools & practices for policy implementation**: food labels, place branding and local food marketing initiatives

[19] https://ec.europa.eu/eurostat/web/nuts/local-administrative-units

5.3.11 Living Lab Valencia (Spain)

Key characteristics	Description
Location	Province of Valencia, Spain
Territorial level	NUTS 3 level
Area (km^2)	10,812
Population density (inhabitants/km^2)	228
Population change (%) in last 5 years in % per year (approx. 2015–2020)	+1.0%
Local context	The region is divided into three distinct industrial/economic regions, namely the coast, the inland plains and the peripheral sierra.
Rural-urban characteristics	Mixed urban and rural with large city. Economic development is uneven and directed towards the coast, causing concerns about rural poverty, depopulation and urban quality of life.
Practice partner type	Non-profit association representing the interests of municipalities and provinces
Research partner type	University
Professional background of partners	Geography, Regional development, Environmental Sciences, Economics, Social sciences
Lead partner	Research partner
Priority CoPs	BMLM, Food, PI&SS
Main outputs	**New data for novel policy implementation:** recommendations on extension of TEPs into peripheral areas, a study report on school food procurement models and sustainability good practice, recommendations and report on digital service provision, plus also rural transport, cultural resource services, and the rural ATM network **Co-producing good practice examples:** short food supply chains in procurement