ROBUST

Deliverable D3.2 – Five summary reports with the results of the analysis of functional relations

November 2021

ROBUST receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727988.

Business Models and Labour Markets
Community of Practice Report

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July 2021

1 Introduction

1.1 Overview of the functional theme

ROBUST's Community of Practice 'new business models and labour markets' examinesbusiness prospects and job opportunities in relation torural-urban interdependencies and possible reciprocal relations between business models and these interdependencies. Whereas the growth of the creative class and knowledge-intensive businessesis 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. Rural population decline may have, under specific conditions, positive effects on start-ups, most likely as a re-sponse to the decline in public services. As the cross-sectoral linkages and socio-economic 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 develop-ment. Equally relevant in that respect is to better understand the significance of the 'local' in relation to structural global changes, the related flows of labour and capital between urban, peri-urban and rural areas, and the underlying patterns of urbanization and impacts on the distribution of economic activity (e.g. sharing of value-added, income generation and jobs). As Covid-19 did also differentiating impacts on rural-urban enterprise dynamics, this topic will be discussed later.

1.2. Aim of the CoP

Getting more profound insights intohow business models and labour market dynamics may contribute torural-urban synergieswas the overall aim of our COP-activity. This wider aim became thepoint of departure for(i) the identification of different fields of common interests, building upon participants Living Lab activities and (ii)the elaboration of a specific Research and Innovation Agenda in order to produce shared outcomes.

1.3 Co-ordination and management

In line with overall ROBUST's description of work, CoP-activities were coordinated by a representative of PRAC with ample experience in the field of (rural) business models and (rural) labour markets dynamics. The CoP coordinator elaborated a starting document that was discussed and further elaborated during various CoP sessions. Based on this 'rolling document' and step-by-step concretization of a collaborative research and innovation agenda, CoP-activities were shaped and agreed upon, resulting in a list of key topics to which partners adhered.March 2021 CoP coordination was taken over by WUR due to administrative reasons.

1.4 Report aim and structure

This report synthesizes principle findings of the various CoP-activities in line with the format suggestions of CCRI as WP3 coordinator.

2. The research process and learning cycle

2.1. Composition of the CoP

Starting from ROBUST's distinction between 5 synergy domains and partners interests in these domains, The CoP Business Models and Labour Markets (from now on CoP BMLM) included 6partners that selected this synergy domain as one of their principle interests. Table 1 provides an overview of participating Living Labs and their key contributors.

Table 1:CoP-composition

Living Lab Participant	**Name**
	Karl Heinz Knickel
Frankfurt	Rolf Bergs
	Reinhard Henke
	Alexandra Almeidas
Lisbon	Carlos Pina
	Mojca Habrar
Ljubljana	Jurij Kobal
	Katja Butina
	Mathew Reed
Gloucestershire	Carey Ives
	Daniel Keech
	Hillka Vihinen
Helsinki	Katja Vilkama
	Ulla Ovaska
	Hans Vulto
Ede	Henk Oostindie
	Rudolf van Broekhuizen
	Kerstin Hausegger-Nestelberger
Styria	Anna Reichenberger
	Lisa Bauchinger
	Javier Esparcia
Valencia	Joaquin Farinós
	Rafael Mesa
	Nestor Vercher

2.2 Timeline of activities

Our CoP activity started during the Ljubljanapartnershipmeeting in October 2018. The outcome of this first session resulted in a first list of fieldsof interests (see Annex 7.1). Subsequently this rolling document was step-by-step further elaborated by incorporating comments, feedback and other input from CoP-partners. The second and third CoP sessions were dedicated to formulating the research questions more precisely and the kind of output we expected to produce around these questions. Both in relation to overall goal of fostering more beneficial relations between rural, peri-urban and urban areas and by recognising that the various themes overlap and that in forthcoming analyses attention has to be paid to their interrelations. Table 2 and 3 summarize the key outcomes of these sessions in terms of principle fields of interests, CoP-

partners particular interest in these fields of interests and their translation into more concrete research questions.Annex 7.1 providessome additional info on associatedpreceding stages in CoP-based learning.

Table 2: Principle fields of interest of CoP-partners

Questions	1	2	3	4	5	6	7	8
How can "place-based" strategies promote "territorial BMs"?	x		x	x	x		x	x
How can "new BM" enhance "territorial relations"?	x							
What is the role of the "sharing economy" in fostering mutually beneficial relations?	x	x	x				x	
How can new forms of working and territorial BM enhance the connections between rural, peri-urban and urban areas?			x	x			x	x
What is the role of knowledge and learning networks?	x	x		x			x	x
In what ways are residency, mobilities and labour market dynamics influencing the relations between rural, peri-urban and urban areas?				x		x		
Which adjustments in financial, fiscal and capital systems are needed to foster improved relations?	x	x		x		x		

1=Ede, 2=Frankfurt, 3=Gloucestershire, 4=Ljubljana, 5=Lisbon, 6=Helsinki, 7=Styria, 8=Valencia

Table 3: Thematic Research and Innovation Questions

Theme	
1	How can "place-based" strategies and initiatives promote "territorial BMs"?
	Which relations between individual and territorial BMs?
	How do synergistic BMs differ from conventional BMs in terms of goals and mechanisms?
	How to encourage circular economy principles and natural capital concepts?
	Which roles for strategic planning and land use planning and local development agencies?
2	How to enhance the relations between rural, peri-urban and urban areas, through new BMs?
	How can we make sustainability pay?
	How to understand ‘territorial BMs’ as a concept?
	Which connections with local tax policy, tax regimes?
3	How can the "sharing economy" support new BMs and enhance the connections between rural, peri-urban and urban areas?
	How to interlink circular economy principles and the natural capital concept?
	What about the quality of labour?
	To what extend do the values that drive the "sharing economy" contradict working for economic return?
	Which new forms of service provisioning?
	Which criteria for identifying good practices?
	Which prospects for so-called fourth sector inspired business models?
4	How to interlink the circular economy principle with the natural capital concept?
	What about multiple businesses run by one household?
	How to include the growing importance of flexible and place-independent working pat-

terns?
Start-up businesses, rural business hubs, coops, partnership delivery
Which connection with new forms of service provision?
Which governance arrangements can support new/territorial BMs?
How to include changes in the configuration of work? (e.g. a portfolio of part-time or seasonal patterns of work or work being conducted across a wider space)

5 How can knowledge and learning networks boost innovation in rural economies and enable necessary shift in mindsets?
Which roles for novel innovation approaches (e.g. quadruple and helix thinking inspired)?
Which relations with "smart specialisation"?
How to incorporate locally embedded knowledge?
How to deal with information asymmetries between the rural and the urban?

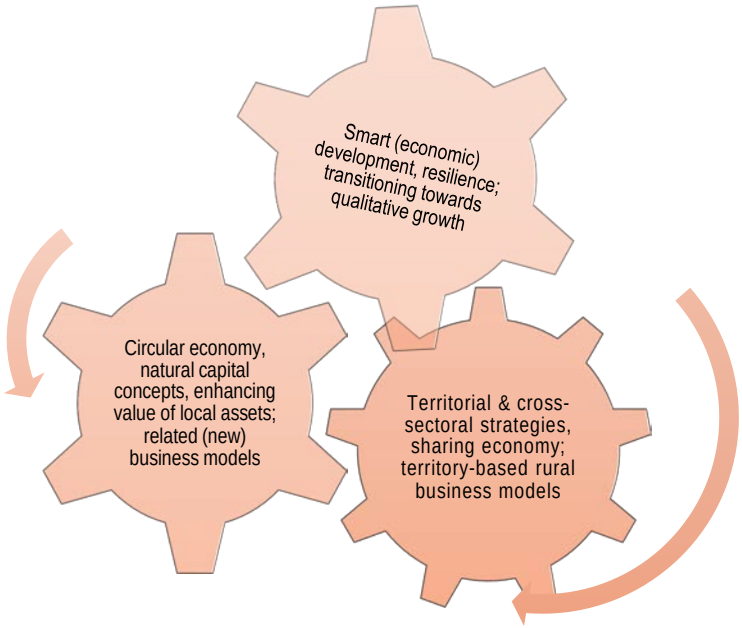
6 How to construct a system of residency that encourages more beneficial relations between rural, peri-urban and urban areas?
Which connections between residency, sustainable mobilities, and current labour market dynamics?
Which connections with the quality of jobs?
Which connection with EU policy frameworks?
How to address market failures of public transport in rural-urban linkages?
Which prospects for mobile services (e.g. library, care)?

7 Which adjustments in financial, fiscal (public finances) and capital systems are needed in order to foster more beneficial relations between rural, peri-urban and urban areas?
How can new forms (alternative ways) of financing support "territorial BMs"?
Where are rural-specific tax regimes?
How to use tax systems to steer things in desirable directions
Which alternative financial systems might by-pass the shortcomings of traditional financial institutions?

To emphasize the interwovennessof this more elaborated Research and Innovation Agenda (from now on RIA), Figure1 wasdeveloped as a broader CoP-compass by emphasizing the interdependencies with contemporary policy making challenges, sustainable natural resource use and place-based or territorial strategies.

Anticipated RIA learning processes were initially planned as thematic exchange meetings, to be organized by CoP-partners with a special interest in the particular theme. Due to Colvid-19 these plans had to be adapted and substituted by online contact and exchange of info. As part of these activities wider ‘Graz-project meeting’ was particularly used to share ongoing living lab experiencesand experiments in relation to these key interests. The ‘Valencia’ meeting allowed for making a start withsummarizing principle findingsas input for this synthesizing document. May 2021 a draft of this document was shared and discussed with CoP partners to check and fine-tuneoverall agreement on the principle CoP findings.

Figure 1: Interwovenness of Learning Themes



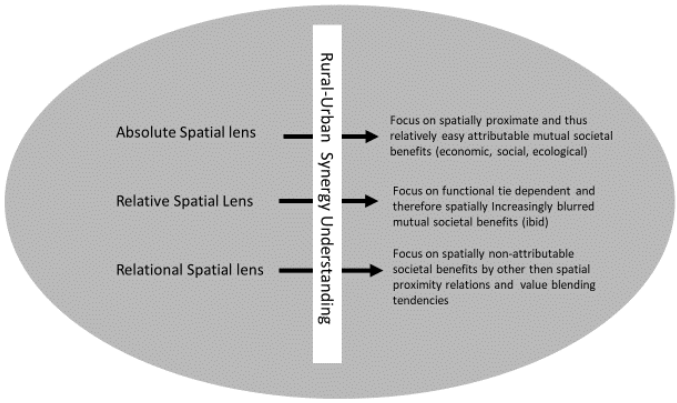
2.3. Processes for communication / knowledge exchange / learning

Aforementioned focus on living lab-based collaborative learning permitted, amongst others, to take interlinkages with ROBUST's other CoP themes into account, as e.g. reflected in the elaboration of synergistic business model profiles to which we will return later and a shared position paper on the interrelations between business models and eco-system service delivery (see Annex7.2).More generally learning and engagementbased on co-evolvingLiving Lab and CoP activity has been facilitated through:

- discussion group on LinkedIn.
- Sharepoint platformor a common document repository.
- shared repertoire with relevant data/methods
- pool of available methods (WP3)

One of therevolving topics in this collaborative learning process concerned the way how to approach ROBUST's central notion rural-urban synergies. Not all CoP partners started from the rural-urban dichotomy. Living Lab Frankfurt, for instance, preferred a distinction between inner and outer space, where outer space equals economic growth restrictions to the benefit of regional competitiveness, sustainability and quality of life concerns.This alternative spatial classification starts from the premise that it allowsto concentrate on mutual spaces functional ties and that it would allow to overcome the shortcomings of the traditional rural-urban dichotomy.Although less radical, in living lab Edesimilar tendencies could be witnessed to avoid the rural-urban dichotomy. It reflects the complexity of ROBUST's multi-spatial understanding of rural-urban relations and associated imaginations ofsynergistic effects. Figure 2 visualizes these imaginations in terms of boundary setting issues, attention for more distant rural-urban interdependencies and acknowledgement of non-spatial proximity relations. As such it problematizes the spatial attributability of rural-urban synergy manifestations and latter's interwovenness with 'politics of scale'.

Figure 2: ROBUST's multi-spatial perspective & the understanding of rural-urban synergies



These three lenses are not mutually exclusive. Place-based approaches, for instance, might be characterized by combining elements of all three lenses. The Figure wants to emphasizeprimarily thatthe synergy notion might raise questions and become subject of debate amongstakeholders. Contrasting circular farming views in living lab Ede, for instance, reflect regional stakeholders that prioritize a functional tie orientation on food related rural-urban interdependencieswhereas others prefer a more place-based lens. It explains why rural-urban synergies may become subject of interpretation and controversy. Other living labs did succeed to avoid such problems by prioritizing place-based synergy lenses (e.g. Lisbon, Ljubljana), by selecting less controversial rural-urban synergy topics (Helsinki, Styria, Valencia) or by deliberately avoiding most vulnerable policy topics in that respect (e.g. Gloucestershire). As such CoP-findings point at the significance of the presence of, or the need to actively create sufficient 'safe space' in collective learning processes.

3. CoP themes and common learning

3.1 Introduction

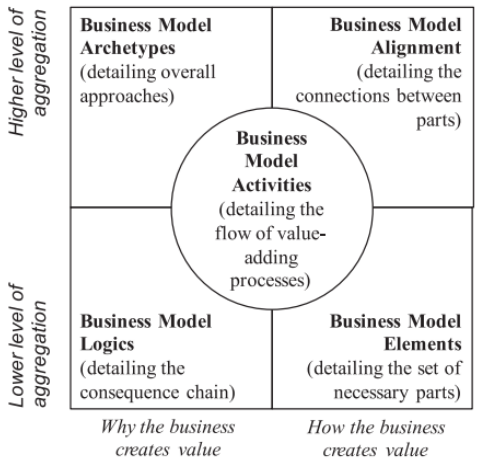
Not all RIA topics and research questions could be dealt with in similar depths. Sometimes this may be explained by the absence of CoP-internal expertise in combination with difficulties to mobilize necessary external expertise. This applied for instance for the role of tax systems and regulations in relation to the multi-locality phenomena. Other learning themes could be less profoundly addressed such as broadly defined themes as the role of learning and knowledge networks and the sharing economy. Also,in general it may be concluded that overallRIA scope may have been rather broad to guide, orient and delineate CoP-based learningand toconcentrate especially on the role of business models and labour markets in relation to rural-urban interdependencies and synergies.

3.2 Common learning regarding Business Models

A first line of CoP-based inquiry concerned the business model notion. As visualized in Figure 3, it concerns a notion that may be approached from various theoretical strands. Ritter &Lettl (2018)distinguish 5 theoretical perspectives on ongoing business-model research. As strategic management scholars, it is emphasized that the basic foundation of a business are its activities, its resource transactions, and its transformations. Activities (or processes and capabilities) serve as the basis for understanding what a business does

and they are thought to be the micro-foundations, or building blocks, of business models.As further argued, business activities only make sense when they follow logics of value creation and value capture constituted by a combination of activities. Moreover, these logics can be aggregated into business-model archetypes with a higher level of aggregation. Same strategic management scholars emphasize that thesevarious perspectives offer complementary insights into business models and allow in particular in combination for a complete understanding of their principle features.

Figure 3: Business Model Perspectives



Partly building upon these scholarly insights, our CoP-activity followed a two-step approach in its identification of synergistic business models. Firstly, specific business model mechanisms were distinguished as key leverages for the strengthening and sustaining of contemporary rural-urban relations. As summarized in Box 1 these mechanisms cover resource use characteristics, with a distinction between multifunctional, circular and shared resource use as potential synergy vehicles and drivers.Othermechanisms focus on a certain ability to induce wider societal value creation and fairness in value distribution characteristics. It underlines the significance of more integrative (e.g. ecological, social, cultural) valuecreation through novel product-service combinations, frequently closely interwoven with alternative organisational forms and features, including a certain re-shuffling of responsibilities between private, public and civic actors. Such novel organisation forms are closely associated with scholarly notions as 'fourth sector' businesses, public-private partnerships and 'social enterprises'. It is further important to emphasize that these disparate synergistic mechanisms may be to different degrees interwoven.

Box 1: Synergistic Business Model Mechanisms

Resource Use Characteristics (Multifunctional, Circular, Shared)
Wider Societal Value Creation
Spatially and Socially Well Balanced Societal Value Distribution
New Organizational forms, e.g. through re-shuffled responsibilities between public, private and civil actors

The second step of our identification of synergistic business models consisted of the further substantiationand illustration of these key mechanisms through the distinction of concrete business model logics or profiles. This has been done with the help of the principle fields of attention as illustrated in Table 3, which introduces the trans-territorial rural-urban business partnerships as a particular business model profile

Table 3: Example of the Business Model Profiling Format

BM	Trans-territorial, rural-urban business partnerships
Type	Business partnerships
Sector	Cross-sectoral
Organisational scale	A great variety of organisational forms that might be more or less formalized
Short description	Rural-urban business partnerships address spatially extended trans-territorial relations and interdependencies through commercial activity. Rural amenity valorisation is often a key component of shared commercial activities, thereby going beyond pure economic revenue seeking. Other key features are a range of sectoral backgrounds, a broad spectrum of initiators, geographical distance, and often a relatively loose structure.
Mechanism	Rural-urban business partnerships seek to incorporate specific rural qualities into product and service characteristics and simultaneously aim to share its accompanying financial revenues in more equitable ways.
Innovativeness	Innovativeness resides primarily in novel ways to valorise rural-urban relations with particular attention paid to rural imaginations, narratives and distinctive qualities. The collaboration among very different groups such as consumers, public authorities, institutions and associations as commercial partners represents another important innovative feature.
Value creation	A mixture of economic, social and cultural values, with a particular focus on rural amenity values.
Customers, product/service, revenue streams and main cost items	Urban dwellers, consumers and visitors. Only more incidentally rural dwellers might be the principle target group, e.g. as users of distance working facilities. Products and services encompass material and immaterial components with a prominent place for cultural connectivity and social justice. Revenue streams are characterised by more mutually beneficial value flows and by going, in this way, beyond extractive rural-urban relations. Main cost items are the transaction costs related to developing novel, trust-based partnerships. Material investments vary depending on the area.
Societal impact	Beneficial Increased prospects for more remote rural areas Value and employment generation Spatially extended knowledge exchange and innovation networks Novel manifestations of cultural connectivity Negative Little additional opportunities for amenity poor remote rural areas
Rural-urban synergies	Novel forms of rural-urban engagement and commitment. Mutually beneficial rural-urban knowledge exchange and innovation networks. Blending of rural-urban lifestyles.
Connections with labour market and employment effects	More balanced rural-urban growth in employment opportunities, with particular attention for employment generation in remote rural areas.
Enabling factors	Urban appreciation of rural cultural capital Trust-based rural-urban relationships Rural spatial quality and amenities Leadership
Limiting factors	Cultural barriers between rural and urban dwellers Lack of continuity in partnerships

	Local controversies around partnerships Necessary time required for building trust-based relations
Key partners and actors directly involved	Rural and urban actors with rather diverse backgrounds and motivations for engaging in novel ways to valorise rural amenities. Private, public and civil society sector might be part of commercial activities.
Role of (local) government	Sometimes as facilitator. Providing financial support. In few cases as initiator (e.g. in the case of remote working facilities).
Connections with the institutional / policy environment	Rural-urban business partnerships may be difficult to align with institutional and policy environments, as the latter, by their very nature, operate in territory bounded spheres. Institutional support, therefore, critically depends on novel institutional arrangements that also allow to support more distant rural-urban cooperation.
Internal/network governance arrangements	Some more broadly applicable internal governance features are: joint targets, agreed upon from both sides a considerable degree of consensus, involvement and participation a high degree of shared responsibilities to achieve the targeted results
A typical example	Ongoing initiatives encompass a broad range of commercial activity including food catering, rural leisure, remote working facilities, 'agritainment', fashion shopping and lifestyle fashion design.
BM references	Dutch Taste of Van Gogh: https://www.holland.com/global/tourism/holland-stories/van-gogh/taste-of-van-gogh.htm Danish Thorupstrand Fishermen's Guild: https://wayback.archive-it.org/12090/20191113214540/ https://webgate.ec.europa.eu/fpfis/cms/farnet/files/documents/Farnet_Pan2020_2.pdf Danish Black Safari: https://www.romo-tonder.dk/en/listing/sort-safari Scientific info on trans-territorial rural-urban business partnerships: https://journals.sagepub.com/doi/10.1177/0269094216686528

Following this format, a total set of20 profiles was elaborated by CoP-partners. Table 4 gives an impression of their scope.

Table 4: Overview of business model profile intro's

Box Schemes	Box schemes connect food producers more directly with consumers. Entrepreneurs running a box scheme assemble own food products and additional products typically from farms in a region in order to be able to offer customers a broad range of typically fresh fruits and vegetables. Produce is usually locally grown and often organic. The food boxes are delivered directly to the consumer or to a local collection point. Typically, the produce is sold as an ongoing weekly or fortnightly subscription. The offering may vary week to week depending on what is in season. More advanced box schemes use ICT to make the business more efficient and consumer friendly. Sometimes also a wider range of products is offered such as processed food products, tropical fruits, coffee or eco-cosmetics.
Commoning	Commoning may be expressed in a variety of ways. Building upon the definition of the commons (collectively owned property with broadly shared rules about access, use, responsibility and care of natural resources) many societal attempts can be witnessed to revitalize (parts of) its principle features in commercial activity. Commoning aspires to go beyond economic value creation by incorporating other

	sustainable resource use concerns, checks and balances. Examples are various expressions of community supported agriculture, regional land banks, green funds, crowdfunding, etc.
Cooperative Housing	Many urban dwellers are interested in spending part of the year in the countryside, but don't own a place, or are maybe not interested or able to buy one, and might like to try it on a temporary basis. The related business model aims at organising and offering multi-local housing on a cooperative basis, both for rural as well as urban dwellers.
Dynamic Purchasing Platforms	Dynamic purchasing platforms match suppliers efficiently with purchasers. These platforms are both the business model for some enterprises but rely on facilitating other businesses. The impact of these technologies is to dis-intermediate the social, financial and physical distance and transactions between actors in a product relationship. These platforms can operate across a range of products – food, drink, re-used products – and may link into separate delivery services. There is a spectrum of these platforms ranging from payment services attached to social media platforms through to bespoke software.
Green Tourism	Green tourism (or ecotourism) is a form of tourism that takes place in areas of high nature value. The areas involved typically include farmed landscapes, and sometimes also pristine and relatively undisturbed natural areas. Green tourism is typically low-impact and often small scale, and in both respects an alternative to standard commercial mass tourism. It means responsible travel to natural areas, maintaining environmental quality, and improving the well-being of local people.
Food Cooperatives	The food coops operate via social networks as closed groups, where orders and deliveries are agreed upon. Basically, anyone can start a group in a suitable social network following some basic instructions. The groups operate voluntarily, and their administrators do not receive any salary for their work – often the administrators are the farmers themselves.
High -Tech Circular Farming	High-tech circular farming aspires to improve natural resource use by recovery for reuse, remanufacturing and recycling. In line with these principles, moving towards circular farming implies searching for practices and technology that minimize the input of finite resources (e.g. phosphate, water), encourage the use of regenerative ones, prevent emissions (e.g. CO2, nitrogen, phosphorus), and stimulate the reuse and recycling of resources in a way that adds the highest possible value for businesses and the food system as a whole.
Renewable Energy Sourcing Partnerships	Renewable energy sourcing offers novel rural business opportunities. The business model involves novel forms of territorial collaboration, including village-based investments in solar and wind energy parks and energy cooperatives that connect rural and urban co-investors in renewable energy production and consumption
Rural Care	Common synonyms for the rural care business model are care farms, social farming, social agriculture and care farming. Rural care businesses are agricultural enterprises (often small-scale farms) which integrate people with physical, mental or emotional disabilities. Such people living and working on these farms benefit from working or having day care in a rural setting. Common activities in such settings are agriculture-related and sometimes in market gardens and in nature conservation (or combinations of those). Although the work is therapeutic in itself, blends with more professional forms of therapy are common. Prevention of illness, inclusion and a better quality of life are key features. Comparable offers focus on socially disadvantaged such as young offenders or young people with learning difficulties, people with drug dependencies, the long term unemployed and active senior

	citizens, and school and kindergarten farms
Social or Smart ride-sharing	Social or smart ride-sharing is a public-private joint venture that is to contribute to sustainable mobility in rural areas. It builds on the idea that transport services in particular in rural areas are a form of public goods provision that should be supported by society, and that other forms of passenger transport can and ought to be connected to these same transport services. Ride-sharing can be organized together, and vehicles that are already in use in the rural areas can be used for various transporting jobs, e.g. the carrying of parcels. There are plenty of transport service providers in rural areas. The objective of the joint venture is to increase the number and efficiency of transport trips provided by these entrepreneurs. The profitability of current taxi service providers will improve, and additional business opportunities will become available for new transport entrepreneurs.
Food waste Distribution (Franchising)	Creating a social enterprise that focuses on redistributing food that would otherwise be wasted to other charities and social enterprises at a discount. Once this model is created it is then franchised to other regions, in order to maximize the social benefits and minimize the transaction costs and administrative burden often associated with setting up a new social enterprise
Territorial Co-operatives	Territorial cooperatives bring actors from a diverse range of rural sectors together, including agriculture, leisure, tourism, artisan products, etc. The common objective is to enhance rural entrepreneurship, to sustain rural development and to improve rural quality of life. This is done by exploring novel forms of territory-based collaboration, not only among each other, but also with public policy bodies and civil society organisations. Territorial cooperatives build strongly upon social capital and historically rooted cooperativism.
Territorial Employment Partnerships	The business model addresses the problems of employment and socio-economic development from a joint perspective between local public administrations, trade unions and employers. 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. Likewise, these partnerships imply multilevel governance, both from the perspective of different levels of government, and from the coordination between different political, private and mixed actors
Local Food Hubs	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. Employment and training opportunities (apprenticeships) are created, and a share of the profits redistributed to local community development opportunities and projects. The branding of the enterprise can reflect its social mission or the distinctiveness of the retail offer
Regional Quality Labels	EU quality policy aims at protecting the names of specific products to promote their unique characteristics, linked to their geographical origin (Protected designation of origin, PDO) as well as traditional know-how. Product names can be granted with a 'geographical indication' (Protected geographical indication, PGI) if they have a specific link to the place where they are made. Other EU quality schemes emphasize the traditional production process or products made in difficult natural areas such as mountains or islands.
Multifunctional	The business model builds on the resilience strategies of family farms. Multifunctional rural enterprises reposition themselves within the food system and they

rural enterprises	combine, and if possible, integrate farming activities with the provisioning of a variety of rural services. These can include social services (e.g. care, education), tourism and leisure offers, ecosystem services provision (biodiversity, landscape, renewable energy, water management, etc.), often in conjunction with environmentally friendly farming and more direct relations with consumers through short food chains.
Valorising Food Heritage	Valorising food heritage refers to the development of novel rural business activities on farms that put in value traditional local food culture: local food, food production practices, tools, traditional culture and rural lifestyles. The new activities can be connected with a range of tourism activities: participatory educational visits, catering, beauty and healthcare services, as well as accommodation and recreational activities
Rural Service Hubs	Many rural areas struggle to support local services, from shops and banks to public offices. It is often not financially sustainable to replicate services across wide rural areas with small, dispersed populations and few economies of scale. However, centralising services in urban areas poses access challenges which can deepen rural-urban inequalities. Service hub models – where multiple services are co-located in the same space – can offer solutions for rural service provision and access. Service hubs are not a single business model, and may be for-profit, state sponsored or social enterprise. However, the co-location model aims to generate efficiencies and synergies.

Thecompleteprofileshave been shared through ROBUST's **Publication Library.** Their interrelations with ROBUST's other synergy topicsare omnipresent. This applies particularly for sustainable food systems (e.g. Box Schemes, Food Cooperatives, Local Food Hubs). Public infrastructure and social services appear in Rural Care, Partnerships for Renewable Energy Sourcing, Cooperative Housing and Rural Service Hubs. Ecosystem service delivery is represented by Green Tourism and Multifunctional Rural Enterprises. Cultural Connections aremanifested in Valorising Food Heritage, Regional Quality Labels and Trans-territorial rural-urban partnerships. Other profiles such as Dynamic Purchasing Platforms and Commoningpoint primarily at organisational featuresthat may underlie and drive synergy potential. Overall set of profiles underpins the multiplicity of business-led rural-urban synergy manifestations, as summarized in Table 5 in terms of principle associated societal benefits.

Table 5: Business model profiles & synergistic effects

Profile	Rural-Urban Linkages
Box schemes	Connects rural food producers to urban and peri-urban consumers which goes along with socio-economic and ecological sustainability gains
Commoning	Enables to re-connect and re-engage rural and urban people as co-owners/ co-producers/co-investors in rural business and -projects
Cooperative housing	Provides affordable and attractive residencies for urban and rural dwellers
Dynamic Purchasing Platforms	Bridges distances by directly linking sellers and buyers from different places, including rural and urban settings
Green (eco) tourism	Links urban tourists and leisure seekers to rural amenities (nature-, landscape-, cultural values, etc.)
Food waste redistribu-	Redistributes food surpluses and unavoidable food waste to urban ben-

tion	eficiaries (e.g. homeless) in combination with extra regional employment opportunities.
Food Cooperatives	Build active food communities with prominent roles for online food ordering.
Renewable Energy Sourcing Partnerships	Connect rural and urban co-investors in sustainable energy sourcing initiatives
Rural care	Offers health- and therapeutic activities in rural areas for urban clientele with positive impacts in terms of rural-urban meeting places and food education
Smart-Ride Sharing	Improves the accessibility of rural areas, mobility of rural-urban dwellers and flexibility of regional labour markets through a multimodal and partly sharing economy-based regional transport system
High-tech circular farming	Closes regional and rural nutrient cycles with renewable energy sourcing and urban waste flows reduction benefits
Territorial cooperatives	Coordinates integrative rural resource use to improve agri-environmental performances, to attract urban customers and to preserve rural business potential
Territorial employment partnerships	Functions as a cross-territorial public-private governance arrangement for more equitable and balanced rural-urban labour market dynamics
Trans territorial r-u business partnerships	Links rural and urban professional skills and lifestyles with special interest in the valorisation of rural amenities
Local Food Hubs	Combines the marketing of rural and peri-urban food production and crafts with employment opportunities for urban residents
Regional quality label	Valorises local traditional /artisanal products to attract urban customers and leisure seekers with various backgrounds and origins
Multifunctional rural enterprises	Integrate rural resource use supportive to wider regional ecosystem services delivery performances, also with the objective to reduce global food chain dependencies
Valorising Food Heritage and Rural Lifestyles	Creates new applications and new combinations for agricultural and rural resource valorisation through new forms of collaboration between the agricultural, tourism and culinary sectors
Rural Service Hubs	Co-locate and combine multiple rural services to improve their availability and accessibility and to realize efficiency gains, partly also based on social enterprise logics.

3.3. Commoning learning regarding Labour Markets

Labour market dynamics are the second wider field of RIA interests. Table6 gives an impression of CoP-partners principle living lab learning orientations and experiences around this second field of interests. It shows that these are partly closely interwoven with the exploration of synergistic business model prospects (e.g. Lisbon, Ljubljana, Styria, Gloucestershire and Ede). Others formulated theseinterests more independently. Living lab Frankfurt concentrated on novel data-analysis tools to monitor labour market interdependencies. Styria on shared economy prospects, Helsinki on the interrelations between labour markets and the multi-locality phenomena, Valencia on novel multi-stakeholder partnerships and rural digitisation processes.

Table 6: CoP-partners focal points regarding labour market dynamics

LL Helsinki:	Multi-locality Impacts & Rural Business Hubs
LL Valencia:	Territorial Employment Partnerships + Digitisation
LL Styria:	Identification & Mapping of Shared Economy Prospects in Rural Areas
LL Ede:	Business Models for Circular Farming and ESS delivery
LL Gloucestershire:	Circular Business Models & Dynamic Public Food Procurement
LL Frankfurt:	Small-Scale-Grid Data-analysis to Assess Labour Market Dynamics
LL Lisbon:	Business Models for Sustainable Food and ESS delivery
LL Ljubljana:	New Forms of Working and Territorial Business Models

Starting from these specific living lab interests, followed by their further specification in RIA themes as summarized in Table 1, again the question emerged how to understand and delineate these interests from a rural-urban synergy lens. Asquickly agreed, job and employment opportunities are in that respect rather limited indicators withoutcomplementary insights in job attractiveness and - satisfaction. As further concluded, the synergy-effects of labour markets may be expressed in less tangible outcomes as community resilience, life-style preferencesandquality of life perceptions. More 'soft' indicators that require in-depth analysis ofplace-specific outcomes of phenomena as commuting, seasonal-, temporal- and prolonged labour migration patterns, multi-locality residency, teleworking and other forms of non-place dependent employment (e.g. digital nomads).All in all this makes contemporary labour market dynamics not easy to unravel and unpack in terms ofrural-urban synergy effects and potential. Based on various living lab experiences, following conclusions could be drawn:

- Covid-19-led boosts in non-place-dependent working did strengthen the interwovenness of rural-urban labour markets, partly also due to a renewed societal interest in and appreciation of typical rural amenities and life-style characteristics (all Living Labs);
- Job satisfaction and attractiveness may be part of the principle drivers of emerging more synergistic rural business models (Living Lab Ede);
- Investments in physical and virtual accessibility, e.g. novel public transport systems and rural digitisation,may be a critical prerequisite for more equitable and balanced rural-urban employment dynamics (Living Lab Valencia and Styria)
- Sharing-economy based initiatives may induce novel business models that result in more flexible and demand driven public transport systems and, in that way, foster more balanced rural-urbanlabour market relations, including those of more remote rural areas (living lab Styria)
- More balanced and equitable rural-urban job and enterprise prospects maybe facilitated by a myriad of public policy interventions (e.g. teleworking/IT-support, promotion of business hubs, investments in training/ mentorship, etc.)
- Where multi-localresidence becomes increasingly part of contemporary labour market dynamics, latter's impact may become even more difficult to capture in terms of rural versus urban. (Living Lab Helsinki)
- Novel data-collection methods and statistics are needed to fully grasp the multi-facetted impacts of contemporary labour market flows in terms of rural-urban interdependencies and synergies(Living Labs Frankfurt and Helsinki)

3.4. Common learning re cross-sectoral relations

Especially CoP-interests in synergistic business models revealedthe significance of cross-sectoral relations. The various profiles reflectcertain openness, willingness andcapacity to gobeyond sectoral boundaries and interests. This may be illustrated in different ways. Firstly, in terms of resource use characteristics. Multi-

functional rural resource use often assumes the cross-cutting of sectoral boundaries between agriculture, nature, public health, care, leisure, energy, etc. Circularresource use may critically depend on novel forms of collaboration between food- and non-food sectors. And shared resource use may be strongly characterized by a certain capacity to overcome sectoralboundaries between public, private and civil sectors. Secondly, as part of the wider societal value creation and organisational innovation, earlier identified as twoother key mechanisms of synergistic business models. Here cross-sectoral relations appear in the form of novel alliances, partnerships and network relations between actors with different sectoral backgrounds. Annex 7.3 gives a more detailed impression of overall variety in sectoral boundary crossing that characterizes the synergistic profiles.

3.5. Common learning re governance

Governance is omnipresent in overall CoP-findings. Firstly,the identification of a set of synergistic business model profiles may be understood as particular governance arrangementsin the sense of (re-) distribution of responsibilities between public, private and civil actors. Especially as a whole, this set of profiles allows to emphasize that rural-urban synergies may know different backgrounds and driving forces. Secondly, thebusiness model profiling paid explicit attention toprinciple limiting and enabling factors, as summarized in Annex 7.4 and 7.5.Partly these limiting and enabling factorsrefer to context specific features as urban proximity and the presence of specific rural amenities. Additionally,these point at public policy domains as Spatial Planning, Housing, Public Health, Public Infrastructure, Food Policy, Social Welfare, Renewable Energy Production, Education & Innovation, ICT, Leisure, Transport,Fiscal Regimes, Environmental Policy. It demonstrates the interwovenness of public policy making with synergistic business models and the different roles that public policy interventions may play, ranging from removing regulatory barriers, creating supportive conditions to active co-creation of novel business models based on public-private partnerships. More generally overall set of identified enabling and limiting factor point at ambiguous relationships with public policy making in the sense of having both enabling as well as limiting component and reflect the challenges of place-based and integrative policy making.

Some of these challenges may be illustrated by ongoing spatial planning efforts of CoP-partners. Living lab experiences in Frankfurt, Lisbon and Ede involvenovel planning approaches to strengthen and sustain regional rural-urban relations. Frankfurt focuses on inter-municipal collaboration. Ede and Lisbon pay particular attention to more participatory planning approaches. These different spatial planning initiatives (i.e. upscaling in Frankfurt and downscaling in Ede and Lisbon) suggest that particularly in combination this mayresult in more favourable conditions forsynergisticbusiness models. Without upscaling initiatives, downscaling efforts might face serious limitations and vice-versa. Other, more multi-level governance challenges appear in pleas for CAP-reform that facilitates a better targeting of agriculture's wider eco-system servicedeliveryperformances, requests for extra policy space for public procurement within urban food policy making efforts and still prominently present digital as well as physical accessibility and mobility problems, particularly in remote rural areas.

As mentioned, participating living labsdid address the governance of labour market more or less directly. Styria's active engagement in the introduction of a multimodal public transport system did contribute, amongst others, positively toregional labour marketaccessibility and flexibility.Valencia's so-called Territorial Employment Platforms, as novel public-private-civic partnerships, helptomitigate persistent unbalances in regional labour market dynamicsto the benefit of rural areas. Helsinkifacilitates business hubs in (remote) rural areas to join the potential and societal benefits of different types of proximity relations. Its studies around multi-local residencesuggestthat public policy settings may have insufficient eye forits accompanying resource allocation and distribution challenges, including tax systems that may have to reconsider their accompanyingdistribution of costs and benefits.Helsinki further actively engages in new meta-

governance networks that aim to address, discuss and concretize rural-urban synergypotential to overcome rural and urban public policy siloing tendencies.

More generally labour market related learning experiences also reflect the significance of differences in scale and socio-economic realities. Ede's living lab, operating at municipal scale, perceives regional labour marketdynamics as something which largely liesbeyond its sphere of policy influence. Moreover, given its relatively good ruralsocio-economic performances, this is notreally considered as problematic. Living lab Helsinki's interests in multi-local residence represents in anotherway a socio-economic reality with predominantly relatively well-off and thus resourceful rural and urban stakeholders. Contrastingly, living lab Valencia's more remote rural areas are characterized by difficult living conditions, whereregional labour market interventions continue to be littlesuccessful. It confirms the significance of meta-level redistribution mechanismsthat address the particular needs and problems of rural areas, including experiencing predominantly the backsides of increasingly fluid rural-urban labour market flows and much less their associated synergy potential.

3.6 Common learning re growth and sustainable development models

CoP experiences demonstrate that partners'interests in business models and labour marketsare mostly motivated by other than economic growthconcerns. Economic growth might be evenincreasingly perceived as difficult to match or incompatible with wider regional social-wellbeingconcerns. Thisshifting balance is partly also reflected in embracing 'other economy' notions (e.g. foundational-, green- or circular). Although perhaps not unambiguously understood, such interestsclearly illustrate that growthisnot perceived as acritical indicatorfor rural-urban synergies. In that sense CoP findingsdeviate fromscholarly strandsthatconcentrate on the presence (or absence) of agglomeration or borrowed size effectsto explaindifferentiatingrural socio-economic performances(see list of references).CoP-openness for degrowth scenario'sappearsespecially in the focus on widersocietal value creation as part of synergistic business models and acknowledgement of jobattractivenessas critical aspect of labour market dynamics.

At the same timeit is important to mention that this wider synergy and sustainability perspective might coincide with different ideas on how to work in practice on sustainable development. This is probably most clearly reflected in Ede's living lab setting, where contrasting circular farming imaginations correspond with contrasting sustainability views, including different ideas on how to sustain food systems, how to optimize rural and urban land use and how to approach and sustain contemporary rural-urban interdependencies.

4. Monitoring and evaluation of learning

4.1 Assessment of methods used and the facilitation process

Overall broad CoP-scope as well as CoP-partners'particular interestsmade it rather challenging to establishnecessary common ground for CoP-based learning. ROBUST's methodological toolkit offered a broad range of tools to facilitate learning processes within living labs and CoPs. Several of these tools have been, albeit more or less explicitly and completely, used during CoP-meetings, including World café, Joint Visioning, Cross-Organisational Knowledge Sharing and Story-telling. Together their use certainly did contribute positively to CoP-based learning, to mitigate aforementioned complicating factors and to deal with the fuzziness that surrounds guiding notions as business models and rural-urban synergies. Moreover, wider CoP-based methodological approach to concentrate onthesharing of living labbased interests, expertise and experience made it possible to pay o lot of attention to potential linkages with ROBUST's other CoPs

themes. The latter is particularly reflected in the collaborative elaboration of (a format for) 20 synergistic business model profiles. At the same it should be admitted that the methodological choice to cover as much as possible the broad range of specific living lab interestsmade it impossible to address overall list of topics in a similar depth.

4.2 Evidence of learning processes

Firstly, CoP-basedlearning did allowto go more into depth on the critical feature of synergistic business models and subsequently translate these features in a set of more concrete synergistic business model profiles. As such CoP-activity resulted in more comprehensive insights in (i) how historically rootedas well as novel business models may induce rural-urban synergy effects; (ii) how synergistic business models may interact in specific ways with public and civil sectors (iii) which other contextual factors didimpact on the emergence of synergistic business models. Especially in conjunction these insights comprise an interesting reflective tool regarding their replicability, transferability andrelevant leverages for public policy support from different policy domains.

Secondly, especially CoP-findings with respect tolabour market dynamicsenable to underpin that rural-urban synergies should be approached asoverall outcome of spatial and non-spatial proximity relations (e.g. cultural, social, cognitive, digital), accumulating into more or less tangible societal benefits as community resilience and vitality, quality of life, social wellbeing, job opportunities and job attractiveness.At the level of living labs this often less tangible nature synergy manifestations may go along with more or less concrete ideas and interests in how to intervene in labour market dynamics to the benefit of rural-urban interaction.

Thirdly, overall CoP-findingsdid revealsome difficulties to putROBUST'smulti-spatial theorizing of contemporary rural-urban interdependencies into practice within living lab settings. Some living labs may focus primarily onplace-based rural-urban interdependencies and in that sense largely neglect more distant rural-urban relationships. In others stakeholder controversy might arise around most preferable spatiallens to identify synergy-effects. Sometimes the rural-urban dichotomy might be even completely avoided by preferring to speak of particular spatial functionsthat face particular sustainability challenges, making the rural-urban dichotomy increasingly obsolete.

5. Conclusion

Business models maycontribute positively tomoresynergisticrural-urban relations, as highlighted by the distinction of a set of supportivebusiness model mechanisms and their particular representation and translation into more concrete business model profiles. Different expressions of more sustainable resource use (e.g. multifunctional, circular, shared), wider societal value creation and novelorganisationalforms(e.g. public-private partnerships, social enterprises, cooperatives) have been identified as critical generic features of synergistic business models.CoP-efforts to translate these generic features into a set of concrete business model profiles reflect (i) the multiplicity of contemporary rural-urban interdependencies and functional ties; (ii) the specificity of business models interrelations with policy- and wider institutional settings; (iii) the variety in associated meaningful sectoral boundary crossingand (iv) the diversity in backgrounds and driving forces of synergistic business activity.

Also, contemporary labour market dynamicsmay foster rural-urban synergies. Whether this is indeed the case,requiresprofound insights in the outcomes ofphenomena as labour migration, commuting, multi-localresidence and non-place-dependent working. As experienced, its accompanying interplays between spatial and non-spatial (e.g. social, cultural, economic, digital, cognitive) proximity relations makesthe synergyeffectsof labour markets often less tangible and /or spatially difficult to attribute. Moreover, their societal benefitsmight be closely interwoven with other functional ties as housing, job creation, innovation and learning, life-style preferences, public services accessibility and provisioning, etc. This interwovennesswith other functional ties allows for a broad range of supportive public policy interventions, with accessibilityto essential services and (digital) connectivity as critical preconditions.

It has been in many ways confirmed thatsynergistic business models and labour markets are closely interwoven with public policy support, efforts and challenges. More integrative and participatory rural and urban spatial planning may be critical prerequisites for synergisticbusiness models. More place-based governance may be crucial to induce their closely associatedcross-sectoral innovation, learning and collaboration. More consistent multi-level governance may be critical to sustain food production and consumption patterns as other key leverages for synergistic rural-urban relations. More balanced and symmetric labour market dynamics, particularlyin remote rural areas, may demand for novel meta-network governance networks that bridge often still largely separated urban and rural policy configurations. And more sophisticated data-information and collection systems may be needed toassess andreconsider taxrevenue distribution between the rural and the urban.

CoP-findingspoint at a growing openness to degrowth scenariosin line with'other economy' imaginations. It reflects a certain distancingfrom ROBUST's initial project proposal which considered rural growth an important rural-urban synergy indicator.Interestingly, degrowthscenarios to the benefit of social wellbeing,environmental and social resilience seems to beincreasingly part of policy discourses in the different socio-economic realities as represented by participating living labs. As such CoP-findings suggest that European policy frameworksmay build upon a growing societal acceptance of degrowth scenario's in their future co-shaping of rural-urban synergies as critical prerequisite for more sustainable and inclusive futures.

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Cultural Connections Community of Practice Report

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With contributions from CoP partners

July 2021

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1. Introduction

1.1 Overview of the functional theme

ROBUST posits that strong, mutually supportive linkages between rural and urban areas are key to realising smart, circular and inclusive development for a sustainable Europe. One way to strengthen synergies between rural and urban areas is by looking at the role of cultural connections.

While it can be challenging to develop a concise operational definition of culture, it matters in our lives and localities, and plays an important role in bringing people and places together. Culture is a broad concept with several meanings and permeates different aspects of our lives. Likewise, cultural connections between urban and rural areas can come in many different forms and reflect different strategies for facilitating the flow of goods, knowledge, and people.

Cities and rural areas tend to be associated with differing cultural offers, everyday rhythms and features that are nonetheless valued by residents and visitors. However, recent technological developments and mobility practices can blur the boundaries between urban and rural culture. These advances can be leveraged to stimulate mutually beneficial movement of people, ideas and resources, but they can just as easily result in heritage commodification and lead to the perpetuation of stereotypes and cultural fossilisation.
In view of the above, the **exploration of cultural connections between the urban and the rural aims to understand how different cultural offers and experiences can be connected for mutually beneficial cross-**

fertilisation (incl. between sectors), smart development and sustainable growth, thus contributing to the overall goal of ROBUST.

1.2 Aim of the CoP

The Cultural Connections community of practice (hereafter – CoP) is a network of researchers and practitioners from four European regions. The work in these regions involves multiple stakeholders, such as local and municipal government, development agencies, non-profit institutions, civil society organisations, and businesses.

The Cultural Connections CoP is grounded in practice and action research from the following regions: Tukums (Latvia), Metropolitan Area of Styria (Austria), Lucca (Italy) and Mid Wales (UK). These regions collaborate to generate ideas and identify tools to strengthen cultural connections by creating:

- shared innovation objectives and action plans;
- good practice examples that can be applied in other regions;
- guidance to inform regional, national and European policymaking.

The main research and practical questions guiding the work of the CoP are:

- How can cultural connections enhance rural – urban synergies and what are manifestations of these?
- How do cultural connections shape new localities?
- How do cultural connections stimulate smart development?
- How can cultural connections inspire (new) governance networks and novel political arrangements?

In addition to exploring and enhancing rural-urban cultural connections, members of the CoP share various common goals, themes and questions that cover a wide range of cultural practices, services and concerns.

- Possibilities of **coordinating cultural events and cultural life** within municipalities, across urban and rural territories
- Culture as a marker of local/regional identity
- Sustainable valorisation of local cultural resources

Furthermore, the living labs involved explored the possibilities to formulate and develop cultural strategies for the regions concerned, which gave the CoP a practical purpose. During the ROBUST project, the Cultural Connections CoP discussed and shared experiences on how cultural strategies and visions for cultural development are set up, organised and implemented in different regions. The CoP aimed to identify, analyse and promote the strategic lines over which the regions may work together to enhance the role of culture in sustainable development.

1.3 Co-ordination and management of the CoP

The achievement of the overall ambitions of the CoP was contingent upon the continued input and commitment of all partners (both practice and research) in the form of practical and methodological insights, feedback and identification of possible challenges and enabling factors.
The CoP had dedicated sessions at consortium meetings (May 2019 [Helsinki], November 2019 [Riga] etc.) with online communication (email, webinars) between consortium meetings to discuss activities and common issues, and circulate documents.

In addition, the CoP has jointly worked on a range of different outputs.

- Joint work on a collective conference paper "Strengthening rural–urban cultural connections in practice: lessons from living labs in Europe" for the 9th AISU Congress 'The Global City: The Urban Condition as a Pervasive Phenomenon. The Urban-Rural Discourse in the Field of Cultural Heritage', Bologna, 11-14 September 2019 (see Annex 7.1).
- Joint work on a publication "Strengthening rural-urban cultural connections. Three lessons from ROBUST's Cultural Connections community of practice", 2019.
- On-going work on reports about governance of cultural life and heritage commodification, difference in cultural offers between urban and rural areas.

1.4 Report aim and structure

The report provides an overview of the activities of the Cultural Connections CoP and the main lessons learned in the process. The second part of the report describes the research process and different activities in which members of the CoP have been engaged. The third part is devoted to the main insights gained and the issues that have been considered in reflecting on cultural connections between urban and rural areas.

2. The research process and learning cycle

2.1 Composition of the CoP

The Cultural Connections CoP is a network of four European regions: Tukums (Latvia), Metropolitan Area of Styria (Austria), Lucca (Italy) and Mid Wales (UK).

- Tukums is represented by a team from the local government of Tukums (practice partner) and the social research institute Baltic Studies Centre (research partner).
- The Metropolitan Area of Styria Living Lab is represented by the Regional Management of the Metropolitan Area of Styria (practice partner) and the Federal Institute of Agricultural Economics, Rural and Mountain Research (research partner).
- Lucca is represented by the Province of Lucca (practice partner) and the Universities of Florence and Pisa (research partners).
- Mid Wales Living Lab is represented by Aberystwyth University (research partner) and the Welsh Local Government Association (practice partner).

Each region had its own thematic priorities that were explored in their respective living labs. This means that, while there was ample opportunity for cross-fertilisations between different topics (e.g. culture, food, infrastructure), the role of cultural connections was not equally prominent in all the regions. Regardless, each living lab had an interest in culture and cultural connections, even though culture was not the first priority for all the members of the CoP.

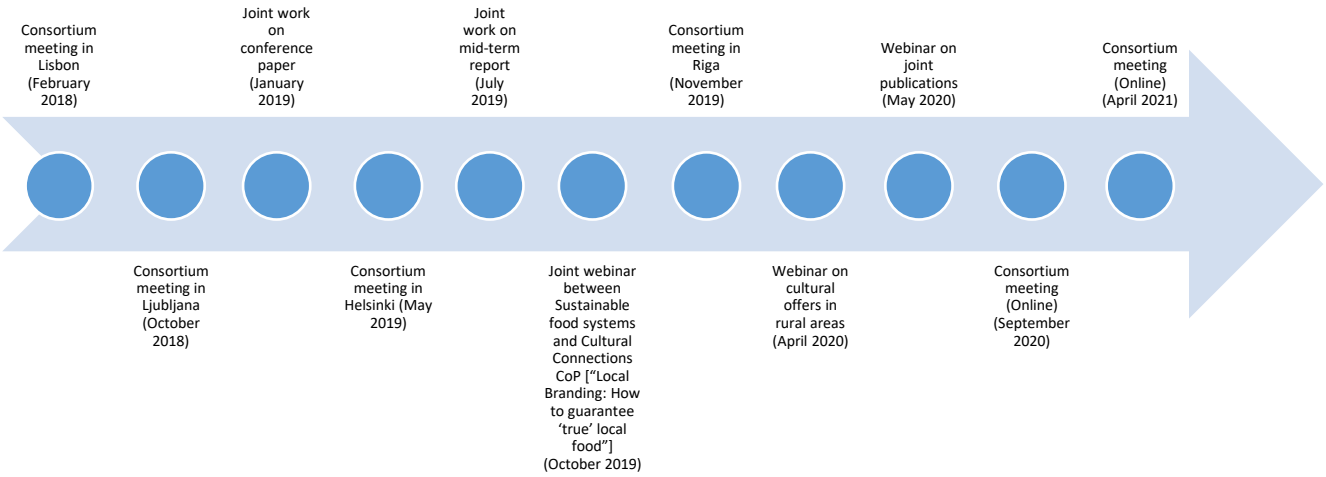
In the case of **Tukums, culture was the 1st priority**. The living lab dealt with issues concerning the historical cultural identity of the region, and the uncoordinated calendar of cultural events in the municipality. The living lab's specific interest was in developing a cultural strategy, a municipal planning document, that would allow for a cohesive approach to cultural life, better use of the available resources and cultural repertoire, and a synergy between urban and rural culture.

In the case of **Lucca, culture was the3rd priority**. The living lab looked at attempts to make connections between local cuisine and rural identity. Meanings and values attached to local food and typical products as vehicles for the conservation of landscape and traditional knowledge have become central to the promotion of rural-urban relations in the tourist experience. The main challenge for Lucca was identifying and articulating a framework for sustainable valorisation of cultural resources in the face of tourist influence on cultural life in the region.

In the case of **Mid Wales, culture is the 2nd priority**. The living lab highlighted the role of language in the context of cultural connections by looking at the importance of Welsh and tackling a policy discourse that equates the rural with agriculture and the environment. The living lab explored the sustainability of cultural initiatives in a short-term oriented funding environment, and the links between culture and rural wellbeing. In addition, the living lab aimed to produce an encompassing 'Vision for Rural Wales', which will be used by the practice partner (WLGA Rural Forum) as a campaigning platform to inform debates in the run-up to the 2021 Welsh Government elections.

In the case of the **Metropolitan Area of Styria, culture is the 3rd priority**. It is a larger area compared to the others and includes the second biggest city of Austria, Graz, and the districts of Graz Umgebung (surrounding of Graz) and Voitsberg. To strengthen the regional identity of the Metropolitan Area of Styria, the living lab aims to foster synergies between cultural life in the rural and urban areas of the region.

2.2 Timeline of activities / meetings and document interactions (real and virtual)



2.3 Processes for communication / knowledge exchange / learning

Initially, communication and exchange of ideas primarily took place during dedicated CoP sessions at consortium meetings. However, this was gradually supplemented with communication via email to share ideas and potentially useful publications, and discuss joint work on papers and reports. The CoP has also organised two dedicated webinars to discuss (i) topics of common relevance and (ii) potential outputs. The CoP has also been involved in the organisation of a joint webinar with the Sustainable food systems CoP. When preparing the CoP's research and innovation agenda, mutual exchange visits were proposed if partners had the means and budget for this. However, this did not materialise, largely due to the restrictions on travel imposed as a result of Covid-19.

Main forms of communication

Consortium meetings **E-mail** **Webinars**

During the meeting in Helsinki the CoP discussed the expectations of the members regarding the outcomes and outputs of the CoP**. Partners agreed on the need to make the CoP practically relevant.** This could take the form of new ideas to promote rural/urban synergies through culture and clear arguments for why cultural connections are important for territorial reform. Ultimately this could lead to the development of usable outputs of practical relevance that are widely shared.

In addition, several challenges were raised during the Helsinki meeting.

- How to create awareness about the importance of cultural connections?
- How to translate make CoP findings relevant to policy?
- How to introduce cultural issues in planning tools?

3. CoP themes and common learning

3.1 Initial scoping

In the initial stages (2018), CoP members grappled with the issue that **culture has many different meanings**, which hampers attempts to operationalise it. The main difficulties arise from the **fluid and multifaceted nature of culture**. It was suggested that this presents challenges because the actors involved in the individual living labs may have their own cultural visions and understandings of culture that are tied to specific artefacts, practices, and manifestations of sociality. Aligning them and embedding culture in regional development to stimulate urban-rural synergies may therefore be challenging. This led to the conclusion that **dialogue and collaboration between various agents matter**, as people may have divergent visions regarding culture and the role of culture.

The initial meeting in Lisbon touched upon several themes that have stayed with the CoP. Due in part to the composition of the CoP, culture was associated with festivals, heritage, food, identities, and specific geographical areas (Figure 1).The meeting in Lisbon also involved an exercise in which members from the different regions discussed the future of cultural connections in their regions (Figure 2).

Figure 1: Word cloud of topics discussed in Lisbon (2018)

Figure 2: Word cloud of future visioning exercise (Lisbon 2018)

As the word cloud shows, the future of cultural connections was conceptualised locally and regionally, with an emphasis on the renewed strength of the connections, innovation, knowledge, and their overall quality. Likewise, the CoP discussed the desirable impacts and outcomes of cultural connections (Figure 3).

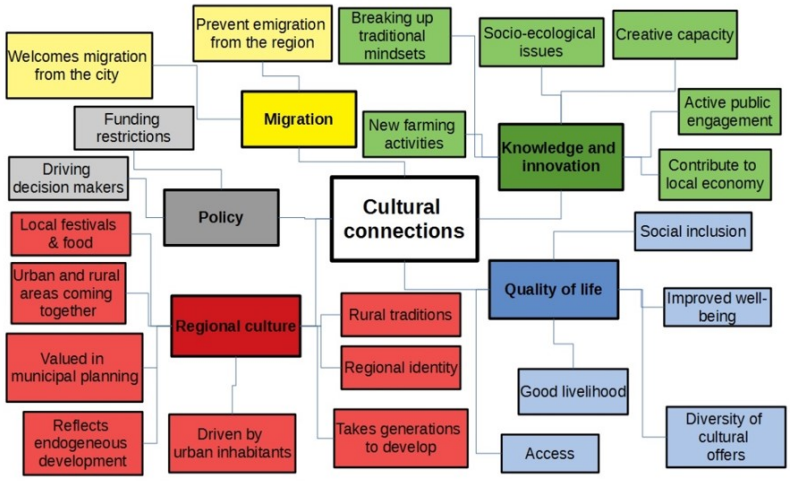


Figure 3: Desirable outcomes and impacts of cultural connections (Lisbon 2018)

As is evident from the word cloud, CoP members initially associated the outcomes and impacts of cultural connections with: (i) regional culture, identity and economy, (ii) quality of life, (iii) migration processes, (iv) knowledge and innovation capacities, (v) improved policy making. However, the foci gradually shifted.
In the subsequent meeting in Ljubljana, several propositions were made as to how culture could be framed and understood for the purposes of ROBUST. For instance, it was suggested that **culture could be approached as a way of adding value to places through the specific meanings, histories and values** attached to objects and places. Collaborations between different actors and policy decisions in relation to tourism and heritage can turn culture into a means of keeping rural areas liveable. However, a broader take is also possible, looking at **attitudes, values and the valorisation of urban-rural synergies**. Cultural connections can counteract negative socio-economic trends and enable spaces for development. For instance, by **counterbalancing outmigration and mitigating social disparities,** cultural connections can increase overall quality of life in a manner that meets the need of both urban and rural dwellers.

3.2 Common initial themes

How can cultural festivals connect urban and rural areas?

The CoP has discussed issues concerning the commodification of rural culture and the potential downsides of landscape tourism, which are associated with giving precedence to the tastes and gazes of tourists, and turning culture and heritage into a commodity. This was particularly prominent in Lucca. However, we noted the existence of various festivals in Graz and Tukums that contribute to the flow of people and ideas between urban and rural areas, without necessarily leading to cultural or heritage commodification. Consequently, we considered the possibility that festivals could be reframed as means of sustainable valorisation of cultural resources and equitable distribution of costs and benefits. Festivals should not exploit cultural resources solely for the needs and tastes of tourists and visitors, and at the expense of locals. This topic, however, was dropped after the meeting in Helsinki (May 2019) due to a lack of concrete proposals for outputs.

Example from Styria: La Strada

"La Strada" is a nine-day long international street artists and puppet theatre festival

in the city of Graz and in surrounding Styrian municipalities, usually organised in summertime (July/August). The festival was founded in 1997 in Graz with the goal to revive the city during the summer break of the traditional cultural institutions. For many years "La Strada" has also hosted productions in rural towns within about 40 km of Graz, like Stainz, Weiz and Leibnitz. The primary intention of "La Strada" is to entertain people and to enhance the exchange between urban, peri-urban and rural citizens as well as to build bridges and overcome differences between people and different spatial units. Since the festival expanded its programme to the countryside, several municipalities have developed as cultural 'hot spots' during the summer season and their attractiveness and quality of life has increased. The rural-urban cooperation is however dependent on two components: First, the capacities of "La Strada" itself and secondly, the cultural initiatives of the communities. This means, that "La Strada" only cooperates with rural municipalities if local stakeholders are interested and willing to develop the endogenous potential. "La Strada" then develops new and innovative concepts together with local groups, like a theatre group, a choir, a group of musicians or the local brass band. The local link is thus crucial in the implementation of cultural events in the countryside.

Figure 4: La Strada Graz / Clemens Nestroy (artist: Pierre Sauvageot/ production: Harmonic Fields)

Coordination of cultural life

The intention was to learn from each other's experiences in managing cultural life. A specific interest was in the application of digital and online tools that would facilitate the coordination of cultural life. In Helsinki, the Mid Wales team talked about the need for new governance arrangements to facilitate this process. For the Metropolitan Area of Styria, it was suggested that coordination could build upon good practices of inter-communal activities and examples in the field of shared economies. Tukums discussed the intention to (i) encourage a participatory process in the planning and governance of regional cultural life and (ii) articulate a joint vision for how coordination could and should happen. This was successfully implemented, and a process of creating a unified calendar of cultural events was initiated and the municipal cultural strategy was approved by the council in December 2020.

Culture as a marker of regional, local identity

Unsurprisingly, questions concerning identity stimulated fruitful conversations. Each region had an aspect that they highlighted. In the case of Lucca, questions of regional identity were intimately tied to local food. In the case of Mid Wales, questions of identity are tied to the Welsh language, dialects and political identity. For Tukums, the urban-rural dimension permeated all discussion of identity as there is tension between having a regional identity and a non-identity, which was further exacerbated by the redrawing of municipal boundaries that will take effect in June 2021.The Metropolitan Area of Styria is a larger region, that was extended by the district of Voitsberg in 2010. The articulation of a common identity is only just beginning, though there are already synergies between cultural offers in the rural and urban areas of the region.
At the Helsinki consortium meeting, the Mid Wales team emphasised the prominence of linguistic identities in relation to inclusive growth. For Tukums, identity was conceptualised in terms of the connections between food and culture, which were thought to be key aspects of heritage. This meant that there were overlaps with Lucca whose representatives talked about the importance of local recipes and landscape conservation.

Sustainable valorisation of cultural resources

This is a broad topic that concerns different ways of approaching the valorisation of culture and cultural connections, allowing for new interpretations of culture, securing equitable access to culture and enabling widespread participation in cultural life, and contributing to economic growth. Specifically, this topic concerns attempts to create sustainable futures for rural places, especially by highlighting what a living rural culture has to offer to local residents and visitors. In Wales, a coherent vision for rural Wales is necessary.

Example from Mid Wales: LLWYDDO'N LLEOL 2050

Llwyddo'n Lleol 2050 (Local Success 2050) is a scheme operated by the enterprise agency Menter Môn to encourage young people that they can be successful by staying in rural, Welsh-speaking communities in the counties of Gwynedd and Anglesey and don't need to move to large cities to find success. Out-migration by young people is a major challenge across rural Wales, but especially in the majority Welsh-speaking communities of north and west Wales, where it is viewed as contributing to the weakening of Welsh-language culture in everyday life. Llwyddo'n Lleol has focused on mentoring small groups of young people to develop an idea for a business that would allow them to live and work through the Welsh language in rural Wales. Most of the participants live in rural communities, but some are individuals who have moved to cities and are looking to return home. Support through the scheme includes help developing a business plan, mentoring from experts, a £1,000 start-up grant and funding to work on their business for one day a week for six months. Notably, many of the business ideas generated are based on cultural resources or creative practices, including freelance design, embroidery, making festival clothing, and using local food to make smoothies and milkshakes. Participants are encouraged to share their experiences in social media and podcasts to inspire other young people.

Figure 5: LLWYDDO'N LLEOL 2050 logo

In Tukums, the cultural strategy was envisioned as a means to ensure improved and equal access to culture and increase the number of people visiting cultural events. In Lucca, we noted the importance of local planning. In the Metropolitan Area of Styria, the emphasis is on diversifying cultural offers in rural areas in order to reach a broader target group, especially young people and women. Furthermore, knowledge exchange between rural, peri-urban areas and the city of Graz needs to be strengthened. In addition to these public governance tools for sustainable valorisation of culture, there are numerous private initiatives and businesses that regenerate local cultural resources by imbuing them with economic and social value; for instance, food businesses rooted in local food culture, hospitality businesses in historical buildings (Šūmane 2020).

3.3 Preliminary lessons based on initial themes[1]

A mid-term report (published on the ROBUST website) was prepared to summarise the key points that had crystallised in CoP discussions prior to the summer of 2019.

Lesson 1: *Coordinating cultural life means connecting activities, events, and the people who enjoy them. This helps reduce duplication, share resources, and make cultural institutions stronger together.*

The challenge for rural areas is that the cultural offer tends to be much more dispersed and rural attractions are often less well-known and perhaps more niche. This can make it hard for rural cultural sites to attract visitors from the city or further afield, which is only exacerbated by the fragmentation of regional cultural life. Without coordination, effort and resources can be needlessly expended without contributing to the overall quality of the regional cultural offer. Nonetheless, it should be borne in mind that local cultural institutions are accustomed to their own ways of working, and efforts to coordinate cultural life can feel like a loss of independence.

Before planning solutions, it is first important to assess how coordinated – or fragmented – cultural life currently is, and where the gaps are. Coordination might not seem innovative in itself, but forging connections takes ideas and energy, and can in turn produce new opportunities for creativity.

[1] This section is based on Goodwin-Hawkins (2019), https://rural-urban.eu/sites/default/files/Strengthening_RuralUrban_Cultural_Connections_JULY2019.pdf

Effective cultural coordination requires:

- Identifying which institutions and stakeholders need to be involved, and at what scale.
- Establishing connections between education, business, and planning.
- Choosing an appropriate governance structure, and using participatory processes to find and formulate a shared vision.

Reflections from CoP members

We can learn lessons from the Tukums living lab about attempts to coordinate cultural life:

- A regional cultural strategy works to consolidate cultural life by more efficiently connecting people, resources and ideas.
- Coordination can make cultural institutions, activities and events more accessible, especially across rural and urban areas.
- For institutions and stakeholders to work together effectively, participation is vital – developing a strategy takes collaborative decision-making, not top-down direction.

Lesson 2: *Enhancing local and regional identities means making positive connections between people and place, by supporting what makes a locality distinctive, and what makes cultural life shared.*

Rural and urban areas can often have different identities, and differences can be difficult to bridge, especially when it comes to cultural connections. This is further complicated by changing administrative boundaries, as people do not always identify with the new administrative unit. At the same time, some shared identities can exclude others. For instance, in regions with a large or dominant city, rural areas can be neglected by the cultural offer and this can make rural residents less likely to participate in regional life. Using identity to foster growth and innovation can risk suggesting that some residents need to take up a new identity or not get involved.

Because identity is part of culture, culture is also integral to overcoming challenges around local and regional identities. Culture, in this sense, needs to be framed as shared and inclusive. Shared cultural events, for example, can help build connections between rural and urban areas. Similarly, events that include residents' diversity can help more people to feel like they belong to place where they live.
Ways to make these cultural connections include:

- Building a joint network of local stakeholders to support quality events and activities that bring people together across the region.
- Using education to celebrate local landscapes and cultural heritage as shared assets that can be shaped together into the future.
- Enabling opportunities for regional growth through culture by finding a balance between a distinctive identity and innovative, open outlooks.

Reflections from CoP members

We can learn lessons from the Living Lab Metropolitan Area of Styria about enhancing regional identities through culture:

- Cities can support large cultural attractions that draw in residents and visitors – yet the cultural offer in rural areas should not be overlooked. For regions to be places that people want to live in and identify with, local cultural life needs to be vibrant and attractive.

- To be truly regional, cultural connections need a joint network that moves both ways: from rural to urban, and from urban to rural.
- Bringing together stakeholders like mayors and local cultural professionals helps establish and promote cultural projects that bridge the urban/rural divide.

Lesson 3: *Valorising rural culture sustainably means celebrating what is special and alive, enabling rural culture to be a valuable part of the present – not left behind in the past.*

There are stereotypes of rural places, and often these stereotypes mean that rural culture gets ignored and undervalued. This can lead to outmigration, jeopardising the future of these places. To address this, several challenges must be dealt with. For instance, while rural culture and rural landscapes are historically linked, often only landscapes are celebrated by, and promoted to, urban visitors, leaving the culture that conserves these places undervalued. Likewise, as rural areas are often perceived through what they do not have rather than what they do, celebrating rural culture can easily disappear from policy priorities, jeopardising the future of local livelihoods.

To reverse misperceptions of rural culture and foster sustainable futures for rural places, we need to valorise what a living rural culture has to offer. Importantly, the work needs to be ongoing. Possible tools might include:

- Identifying the aspects of local rural culture that can foster and support innovation, as well as what is attractive to visitors.
- Developing a future vision for the region which highlights what rural culture has to offer.
- Improving the quality of the cultural offer, so that visitors gain a positive impression and residents feel valued.

Reflections from CoP members

We can learn lessons from the Lucca living lab about valorising rural culture sustainably:

- Rural landscapes are cultural landscapes. Sustaining the landscapes that locals and tourists both value means sustaining rural culture.
- Supporting local food through events, markets and tourist trails is an important ingredient for sustaining rural culture.
- By celebrating local food, the knowledge and traditions that go into making it can be valorised, too – and vice versa.

Based on internal discussions, the CoP developed a question toolbox (see below) that was used in the living labs to assess the current state and future opportunities with regard to three main lessons. The table below contains questions that can also be used in other contexts to assess rural-urban cultural connections and identify new opportunities.

Identifying opportunities to strengthen rural-urban cultural connections	
Coordinating cultural life	Questions for assessing existing coordination: How do cultural institutions currently work together? How do visitors find out about cultural life in the region? What are the links between rural and urban cultural life?
	Questions for identifying new connections: Which institutions and stakeholders need to be involved? Where are the opportunities for rural-urban cultural links? What kind of structure is needed?
Enhancing local and regional identities	Questions for assessing local and regional identities: How strong is the existing regional identity?

	Are rural and urban identities complementary or divisive? Is identity encouraging local/regional participation?
	Questions for identifying ways to enhance identities: Which local cultural assets can be shared and celebrated? What kinds of events will bring people together? Which stakeholders need to be involved?
Valorising rural culture sustainably	Questions for assessing how rural culture is valued: How is rural culture currently perceived? Is rural culture valued in urban spaces within the region? Which negative stereotypes need to be countered?
	Questions for identifying ways to valorise rural culture: What are the strengths to be celebrated? What kinds of activities or events can help? What parts of rural culture offer opportunities to innovate?

3.4 Evolution of issues discussed

Several outputs were agreed upon after the Riga meeting (November 2019), based on issues that had been discussed in previous meetings. While the members reiterated their interest in the topics described above, the decision was made to approach them from a slightly different angle in an attempt to make them practically relevant. Specifically, by combining elements of the topics that had been explored thus far, the CoP agreed to prepare thematic briefings (see Annex 7.3) that would include recommendations for action that could be useful for practitioners. However, these have either failed to materialise (see below) or are still in the process of being developed.

Figure 6: CoP meeting in Riga (November 2019)

Sustainability of cultural activities

This thematic briefing was to be led by Mid Wales, but It is unlikely that a thematic briefing on the sustainability of cultural activities will be produced in the near future. This short report was an agreed objective with a local authority practice partner. Unfortunately, the collaboration was hampered by severe flooding in the region and the COVID-19 pandemic in the first half of 2020, and the practice partners understandably prioritised crisis management now for much of 2020 and were unable to contribute to lower priority projects. Furthermore, the topicality of this issue itself was perceived as being “pre-crisis”. Mid Wales will be looking at culture and the cultural sector as part of the COVID-19 rural recovery planning now being under-

taken by the WLGA (the primary practice partner in Mid Wales). That work proceeded according to WLGA deadlines.

Valorisation and proximity

The thematic briefing on valorisation and proximity was to be led by Lucca and Mid Wales. A Scopus search using the keywords *proximity* and *proximity economy* was carried out and got thousands of results about a great variety of related topics. Gradually, it was 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 living lab where food is central to cultural connections between the urban and the rural. These findings will be used in the preparation of a thematic briefing on local food branding in the Sustainable food systems CoP, and there will be thematic overlaps with the Cultural connections CoP.

Governance of cultural connections

The thematic briefing was initially led by Tukums and the Metropolitan Area of Styria. Both living labs were interested in the governance aspects of cultural connections and an initial exchange via email allowed the partners to identify several topics that could be of interest to the group, mainly concerning the planning and coordination of cultural events across the respective regions. However, the report gradually became the responsibility of Tukums as the data gathered in the living lab concerning the development of a cultural strategy proved to be a solid foundation for preparing the report as a case study. Nonetheless, Tukums and the Metropolitan Area of Styria started working on a short report about cultural infrastructure in the Public infrastructure and social services CoP.

> **Example from Tukums: Cultural strategy**
> The primary aim of the ROBUST living lab in Tukums was to develop a cultural strategy for the municipality. Prior to ROBUST, the local government had yet to develop and define a coherent policy approach that encompasses different varieties of culture. Despite Tukums municipality being well-known for different cultural events taking place in urban and rural settlements, there are several factors that limit beneficial relations between rural and urban areas via cultural ties and events. (e.g. an unwillingness to coordinate cultural life in the region in a centralised manner). The goal of the strategy was to help preserve the rich cultural and historical heritage of the region by identifying development objectives and priorities in the cultural sector and agreeing on their governance arrangements. The living lab, therefore, was involved in the activities of the municipality to address this topic holistically, potentially contributing to improved territorial cohesion and smart growth.

Figure 7: Workshop in Tukums (February 2020)

3.5 Evolution post-April 2020

In April 2020 (just after the outbreak of the COVID-19 pandemic), all living labs involved in the CoP prepared updates about their activities since the last consortium meeting (see Annex 7.4). Several questions were developed by the Tukums team based on these updates, which implicitly built on the initial scoping exercise.

These questions were discussed in a webinar, which was held on 24 April 2020.
Specifically, the CoP discussed:

1. What does rural culture mean for outsiders, people living in urban areas? (Folklore? Tradition? Artefacts? Values?)
2. How are visitors/tourists attracted? (Perceived authenticity? Stereotypes? More "natural" environment? Traditional food?)
3. What kinds of events take place in "rural" areas? (Traditional events, folklore? Contemporary festivals?)
4. What has been the impact of COVID-19 on cultural life in more remote, rural areas?
5. What is the meaning and value of rural culture for rural residents?
6. What are smart and innovative forms of valorisation and commercialisation of rural culture that can benefit local/rural communities?

While the CoP aimed to look at possible synergies between the urban and the rural, most participants unwittingly focused on rural culture. It is likely that this was due to the belief that rural culture and rural areas are more vulnerable, coupled with the assumption that urban culture is thriving and has no trouble developing innovative approaches and attracting an audience and skilled professionals. However, it was recognised that this is not necessarily true in all countries, or even municipalities within the same country.

The discussion reiterated that cultural connections between urban and rural areas were associated with enjoyment and heritage. The idea of enjoying rural space was quite prominent across all four living labs. This could be due to the unique qualities of the natural environment (ecosystem services), heritage sites

and the architecture present in rural areas. For instance, representatives of the Austrian living lab noted that rural areas are known as recreation and heritage sites.

Nonetheless, it was also suggested that urban sprawl and urbanisation in general mean that there is a confluence of rural and urban cultures and ways of life, a co-penetration of space by rural and urban inhabitants. Indeed, this may mean that some *traditional* events are targeted at local inhabitants, while others are organised with the idea of attracting outsiders from urban areas. For instance, the living lab of the Metropolitan Area of Styria noted that activities mixing culture and food were particularly attractive for urban residents. Furthermore, there are also tensions between urban and rural residents, as manifested by ideas of rewilding brought by urbanites but opposed by the locals (Mid Wales). Overall, this suggests that the meaning of rural culture depends on the lifestyles of residents (commuters, permanent residents etc.)

Example from Styria: KULTUR 24

KULTUR 24 is a cultural network of artists and creative professionals established through a LEADER Local Action group in the eastern part of the Metropolitan Area of Styria. The main goals of the initiative are to build a basis for active networking amongst cultural and creative professionals, to create an active cultural life in this peri-urban area, to implement common projects and to get to know new project partners within and outside the region. The activities started from a small community of artists within the region but have now evolved to a broad network beyond the borders of the LAG 'Hügel- und Schöcklland'. The network has expanded to the city of Graz and strengthens cultural exchange on a national and international level. It is active through recurrent meetings in alternating locations of the region. These encounters are professionally guided by the LAG team and external experts, who consult artists, for instance in the field of self-marketing. Besides professional assistance, the artists have the chance for informal exchange among each other. KULTUR 24 has therefore supported the creation of many initiatives and brought cultural professionals together for cooperation. Thus, not only creativity and innovation increased but also a broad cultural programme was established in this rural-urban area.

Figure 8: Maria Puregger, a member of the network produces handmade products from alpaca wool. (source: https://www.huegelland.at/gruppen/produzentengruppe/puregger-maria/)

There are perceived differences between the cultural offers of urban and rural areas. Rural areas tend to be associated with events that are tied to specific local traditions or landscapes (e.g. agricultural festivals). These are organised by cultural houses and countryside associations and municipal governments. The focus

varies between the regions, as gastronomic aspects are more pronounced in Lucca, while agricultural festivals and traditional folk celebrations were more prominent in Mid Wales and Tukums respectively.

Local culture is important to inhabitants of rural areas. In Tukums, local culture is a source of pride and people greatly enjoy community gatherings which take place in local cultural houses and open-air spaces. Consequently, the administrative reshaping of municipal boundaries makes some people feel threatened about their local culture and identity. Similarly, newcomers to the countryside are often affluent and entrepreneurial people with business ideas and access to knowledge and finances. They develop new businesses and brand them based on local cultural assets (e.g. ceramics, local guest houses). In Mid Wales, the situation is broadly similar, but the demographic aspect was emphasised - different offers to various age groups, e.g. the elderly. The Austrian living lab noted the social value added of rural culture. Cultural activities are seen as opportunities to meet and communicate among rural residents. What is more, these activities are often organised by local and regional actors invested in the future of the region in question.

However, there is also the problem of overabundance. For example, in the Metropolitan Area of Styria there are many cultural associations in rural areas organising their events. Consequently, there is almost oversupply and overconsumption of events in rural areas. Therefore, the living lab is concerned with finding solutions to this problem. In a stakeholder workshop, the coordination of event schedules was mentioned, which is already done in some municipalities. Likewise, there is a sense which local culture is packaged for the consumption of outsiders (Lucca).

Based on a synthesis of the living lab updates, webinar discussions and previous conversations at consortium meetings several topics were chosen for further exploration, as most of the initial ideas for thematic briefings were gradually dropped. These new ideas were further discussed in the online consortium meeting in September 2020.

Heritage commodification & the tourist gaze: The initial idea was that a report or article on this topic could tackle issues related to the commodification of heritage and rural culture to meet the (perceived) expectations or (primarily urban) tourists. It was acknowledged that there is a mutual dependence of sorts, as rural businesses rely on the influx of tourists. However, this may not necessarily be a mutually beneficial relationship. Building on this, the output could wrestle with the idea of rural place/spaces as destinations for people living in cities, rather than places with their own everyday routines and rhythms, and how tourism and leisure activities are based on, and contribute to, this idea. This should not disregard the perspective of rural inhabitants (i.e. how they adapt and attempt to benefit from this).

> **Example from Mid Wales: Rethinking culture and tourism after COVID-19**
> Tourism is important to the economy of rural Wales, with visitors attracted by the striking landscape and natural environment, but also by the cultural experience of exploring historical sites and local heritage, consuming local food and traditional crafts, and attending festivals and events. Most holidaymakers and day visitors come from cities in south Wales and England. The COVID-19 pandemic in 2020 however highlighted less positive aspects of tourism. The economic over-dependence of some communities on tourism was exposed during the lockdown, then the reopening of the businesses when international travel was still discouraged brought record numbers of visitors in a short, condensed summer season. The large numbers created problems with congestion, littering, trespass and illegal camping and provoked debate about the social and cultural impact of tourism on rural communities. As such, finding a new approach to tourism was a high priority for stakeholders contributing to the 'Rural Vision for Wales' produced by the Mid Wales Living Lab. Proposals put

forward included using smartphone apps to monitor congestion and direct visitors to less crowded sites, promoting less visited areas, developing more culture-based attractions and more strongly liking tourism and local food and drink, regulating numbers of holiday homes and encouraging more serviced accommodation to increase incomes to local residents.

Figure 9: Camping in Mid Wales

The September 2020 consortium meeting allowed the group to refine the topic and add new questions to consider. Overall, it was suggested that a nuanced view of heritage commodification is necessary by questioning a clear-cut difference between insiders and outsiders, and the assumption that commodification is a universally negative phenomenon, despite the positive impact it may have on rural areas (e.g. income, better infrastructure). It was suggested that the publication could further explore what kind of heritage gets commodified, and how the generated revenue is distributed. A more general point concerned the difference between commodification and valorisation, which implicitly questioned the assumption that heritage is viewed only in economic terms. The Tukums team agreed to work on an article based on this topic.

Tensions between different interpretations and experiences of rurality*:* the idea was that an output based on this idea could tackle issues that emerge from the influx (or re-migration) of urban dwellers and result in tensions and negotiations with the people living in putatively rural areas. In our discussions, Mid Wales alluded to disputes over rewilding in Wales, and there are similar experiences in Latvia (though not necessarily Tukums). This also raises questions around identity and being an insider/outsider, local/visitor, which, as Sandra (Tukums), Giovanni and Sabrina (Lucca) suggested, are not straightforward.
While it was acknowledged that this topic would be interesting, further discussions did not lead to the identification of a unique angle that would make a novel contribution to the existing literature.

Contemporary rurality: the intention was to tackle the implicit association of rural areas with nature, folk culture and tradition, and ask what contemporary manifestations of rurality can allow for the valorisation of rural culture in a way that is not reliant upon cultural fossilisation. This would build on the idea of rural modernity. None of the living labs expressed a particular interest in advancing this topic.

Differences in cultural offers: the intention was that a publication on this topic would explore the differences/perceived differences between events organised in cities and events that take place in rural areas, and what this says about urban-rural relationships.
The September 2020 consortium meeting provided additional questions that the report could tackle. A prominent theme was that rural culture is frequently associated with local folk culture and the identities of local inhabitants, while urban culture is perceived to be more global in character. This, however, raised the

question of whether niche culture would thrive in an urban context. Another theme was the role of infrastructure in facilitating (and hampering) access to cultural life in rural areas. While the quality of roads is atypical example of infrastructure hampering access, digital solutions may be a way to provide access, while dissolving the difference between urban and rural culture. Finally, it was suggested that rural culture can make use of ecosystem services. The team of the Metropolitan Area of Styria initially agreed to work on a report on this topic, but other commitments took precedence.

The impact of the COVID-19 crisis inspired a further topic: ***Rural culture, smart growth and post-pandemic recovery***, which was advanced by the Mid Wales team. Rural areas with a high dependence on the tourism sector are likely to be amongst the hardest hit by the crisis. Smart growth is part of the ROBUST conceptual framework – but there has been a tendency in rural areas to prioritise tourism as a 'smart specialisation'. However, the pandemic has challenged the viability of this approach**.**

Several potential directions were considered in the September 2020 consortium meeting. One area on which the paper could focus was the potential of the creative economy to counteract negative trends and facilitate smart growth, with projects focusing on the involvement of local artists and cultural professionals. The impact of digitalisation on local culture life could also be explored, as, while it can enable access to different cultural resources, it is not necessarily beneficial to local culture and rural festivals that are embedded in local customs and environments. For instance, the growing role of digital culture as a result of Covid-19 simply underlined the vulnerability of local cultural venues. On a related note, it can further exacerbate the digital divide. Initially, the Mid Wales and Lucca teams agreed to work on a report on this topic. However, the Covid-19 pandemic disrupted the workflow in these living labs and other commitments took precedence.

3.6 Summary of the main results for ROBUST

Broadly speaking, the CoP approached culture in two different ways: (i) as specific cultural institutions and cultural activities, and (ii) as an element permeating other sectors and activities. The living labs varied in terms of how and to what extent they operated with these two meanings and manifestations of culture. While Tukums focused on mechanisms for governing cultural practices and institutions, in Lucca culture was not an independent theme. Rather, it was regarded as an element shaping other aspects and activities of rural life and rural-urban relations.

Cultural connections can be imagined in many different ways. The internal discussions revealed that the nature of the *connections* and the *elements* or *entities* connected depends in large part on the frame of reference chosen. In practice, the imagined connections existed, or were to be forged, between the urban and the rural, which were both defined ostensively, rather than conceptually. However, the connections between people and places were an equally prominent topic (e.g. the prevention of outmigration).

Internal discussions largely focused on making rural areas liveable and ensuring the long-term prospects of rural culture, culinary traditions, and livelihoods. The implicit assumption was often that urban areas can take care of themselves, and their long-term prospects were not under threat, while the understanding and conceptualisation of rural areas needs to be reconsidered so that rural culture and rural life are valorised, rather than purely commodified, frozen in time or forgotten. This, unfortunately, meant that rural culture became the focus of the internal discussions, with urban-rural synergies receiving less attention.

Regarding rural-urban linkages, a key topic of discussion among CoP members was tourism and recreational activities, and the kind of relationship between urban and rural areas this can lead to. For instance, the Mid Wales living lab noted the dependence of rural communities on tourism. On a more optimistic

note, we concluded that drawing on the unique characteristics of urban and rural areas can lead to a symbiotic relationship whereby the differences in cultural and recreational offers complement each other. Thus, large-scale open-air festivals can make use of ecosystem services and more open (less congested) spaces characteristic of rural areas.

Nonetheless, **the extent to which the relationship is symbiotic depends on how and whether the interests of locals and visitors are balanced**. We note that this is an especially pressing issue to consider in the case of rural areas. For instance, left unchecked heritage commodification and a drive to preserve tradition can inadvertently lead to the fossilisation of local rural culture as (primarily urban) visitors expect to see certain practices and *ways of life* in rural areas. This can perpetuate the implicit association of rural culture with nature, tradition and folklore, while simultaneously precluding more contemporary expressions from emerging because there is little commercial incentive to innovate. Such a situation can be commercially viable, but it turns rural areas into recreational resources for paying, and likely more well-off, urban dwellers.

While rural inhabitants can benefit commercially from such a situation, the **vitality of rural culture may suffer in the long-term as its value is determined primarily in terms of whether it caters to the needs of urban dwellers**. In view of this, our discussions suggest that rural-urban linkages (in the form of tourism and recreational activities) can lead to mutual dependence, but care must be taken to ensure that they are symbiotic and do not stall the development of contemporary forms of rurality and the needs of local residents. For instance, the Austrian living lab noted the vibrant cultural life in the municipalities of the Metropolitan Area of Styria, which is mainly supported by the local associations. Culture is seen as being important for social cohesion and as a space for the population to share experiences and shape their lives.

Overall, it is important to recognise that **cultural connections between urban and rural areas can shape the emergence of new localities and can be a tool to encourage smart development.** New forms of heritage valorisation can be explored to revitalise cultural activity and develop new business models that are more attuned to contemporary consumption patterns. Cultural connections can stimulate smart development in several ways, e.g. by pooling cultural resources and encouraging stakeholder collaboration, using rural assets in smart development projects, including culture in regional development plans, creating a digital cultural offer highlighting regional assets, and fine-tuning regional cultural specialisation. The challenge, though, is to embed the new (or revitalised) cultural offer in rural and local contexts, avoid negative consequences and ensure spatial justice. Furthermore, rural culture requires greater care (compared to urban culture) as it can be more vulnerable.

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 ecosystem services were particularly pronounced** in our CoP, largely due to the interests of CoP members.

In the case of food, we noted **a frequent association of rural areas with traditional recipes and higher quality products**, or at least products that were perceived to be of a higher quality. This indicated an implicit association between rural culture and culinary heritage, which provides food businesses 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, though this was never the focus of our discussions. For instance, the poor

quality or even lack of paved roads is an oft-mentioned issue in Tukums, and this prevents the flow of visitors to more remote areas, while simultaneously hampering the mobility of people who live in these areas. We note that this also impacts the viability of certain cultural attractions and venues, and can determine policy responses vis-à-vis investment. This is especially true if the available infrastructure is susceptible to seasonal damage (e.g. flooding). Likewise, the Austrian living lab noted that convenient premises and venues are a precondition for inviting artists from other, mostly urban, areas. Thus, physical infrastructure and the availability of public transport are important preconditions for developing links between urban centres and remote areas. Alternatively, municipalities can decide to supplement existing physical infrastructural with IT infrastructure, allowing for the provision of services online in a cheaper and less labour-intensive way, which is evidenced by positive examples from Tukums (e.g. e-library services, online broadcasts of cultural events).

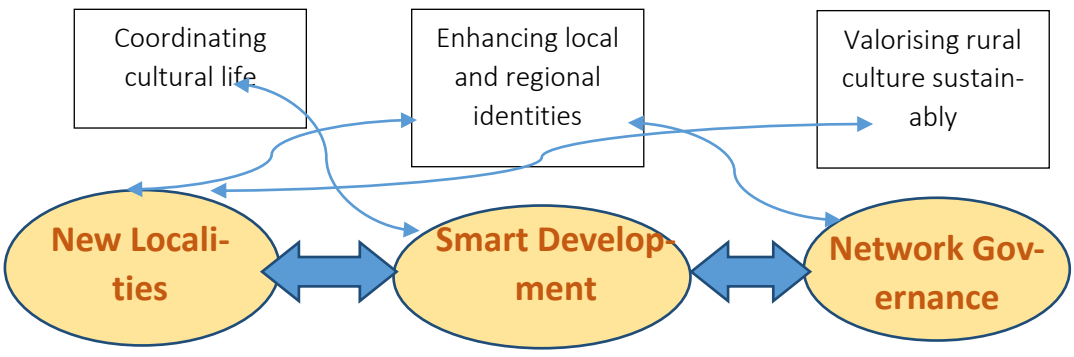
Example from Tukums: Culture online

The online broadcast facility on the website of Tukums municipality allows residents of both urban and rural areas to watch cultural events that are taking place in the city of Tukums. Several locally significant cultural events are also broadcast. This is done to allow more people to watch and experience them online, without having to attend in person. The solution was implemented by two of the municipality's departments - the IT department and the Department of Public Relations, though external help is engaged for important cultural events, as the municipality lacks the necessary equipment. The possibility to view and experience cultural events online is seen as a way to strengthen cultural connections between urban and rural areas in the municipality. What is more, it allows Tukums to share its cultural offer with a wider range of people – including those who have not visited the municipality.

Figure 10: Tukums municipality website

Finally, cultural connections are also intimately tied to the provision of ecosystem services. This is likely due to rural culture being frequently associated with natural environments and active leisure activities.

Imagining the role of cultural connections in territorial development



The living labs explored different governance strategies with the involvement of a diverse range of stakeholders. Overall, we note that cultural connections are fuzzy and difficult to govern. Furthermore, the extent to which culture can and should be governed is open to debate, and the particular solution chosen will likely depend on established political traditions and practices. From the perspective of network governance, two modes can be tentatively identified: *explicit* and *implicit*. The explicit governance mode presumes the active involvement of embedded cultural institutions, local authorities and civil society. This 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 is characterised by collaborative arrangements that have not been formalised or, alternatively, are being driven by emerging partnerships. This was exemplified by the *Rural Vision* document in Mid Wales, which was coordinated by a strategic partnership, the WLGA Rural Forum, engaging with various stakeholders, but which it is hoped will be adopted for implementation by relevant government institutions and delivery bodies. 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.

However, the emergence of novel forms of governance is hampered by institutional inertia. The experience in Tukums in developing the cultural strategy suggests that existing traditions of stakeholder engagement and document preparation are conducive to path dependency. This means that innovation can at best be incremental as it is bound by the particular municipal and legal framework, which gives preference to business-as-usual approaches.

Attempts to govern cultural connections in a centralised manner should bear in mind that **people's self-identification does not always correspond to administrative boundaries**. This clearly shows that people's identities are not tied to an administrative unit, especially if this unit is not based upon historical and cultural boundaries. Indeed, inhabitants can have diverging identities or even non-identities. Constant redrawing of administrative boundaries exacerbates this, as evidenced by Tukums. The municipality came into existence in 2009, and its boundaries will be redrawn once again in 2021. Secondly, attempts to govern and coordinate cultural life must be sensitive to existing patterns of communication and planning at lower administrative levels. By considering the realities of institutional inertia, centralised attempts can avoid encountering resistance from local governments (whether they be municipalities or parishes). Thirdly, it is crucial that implicit assumptions about rural culture be tackled in a policy context to ensure the well-being of rural inhabitants.

Growth and sustainable development models have mainly been discussed in relation tourism and the attraction of visitors by way of a competitive cultural offer. The challenge is finding a balance between making an area attractive to tourists, while simultaneously keeping it liveable and thriving for the locals. Furthermore, the COVD19 pandemic will have clear implications for how different regions approach growth and sustainability, but it is currently too early to tell.

4. Monitoring and evaluation of learning

The CoP has not been the primary focus for most of the partners involved. Culture was often part of other topics that the participating living labs worked on, but other aspects of urban-rural linkages took precedence. This is likely because, while culture permeates many aspects of urban-rural interactions, the focus has been on more tangible aspects of the relationship between urban and rural areas. For instance, culture

was envisioned as a part of the Sustainable food systems CoP output on place branding and the Public infrastructure and social services CoP report on cultural infrastructure, but these outputs were mainly focused on food and infrastructure respectively, with culture playing a secondary and supplementary role. This issue was also discussed at the final CoP meeting, with members noting that culture and cultural connections were frequently entangled with other aspects of urban-rural linkages, but seldom became the focus of the conversation.

The internal discussions have laid bare several conflicting sentiments regarding cultural connections between the urban and the rural. We have already noted that members implicitly focused on rural culture and the issues associated with the commodification and fossilisation of tradition and heritage, especially in terms of how this can prevent contemporary forms of rural culture from emerging and flourishing. However, protectionist and nativist sentiments that romanticise urban or rural culture can be equally pernicious, as they can prevent synergistic outlooks from emerging.

We note that there has been a gradual reduction in the number of topics which the CoP has explored. While a broad and diverse spectrum of topics was initially proposed, these were later narrowed down to a few themes that could be explored in different outputs. What is more, these topics are of primarily academic interest. This is likely due to the fact that researchers have taken a more prominent role in driving the research agenda of the CoP. Consequently, this meant that the goal of elucidating the policy relevance was only partially achieved.

The experiences of Tukums and the Metropolitan Area of Styria suggest that the goals of the living lab can be achieved if they are clearly defined, fit the municipal agenda and the practice partners take ownership of the process. We note that some of the member living labs achieved more tangible results, while others had less tangible impacts. In Tukums and Styria, the tangible practical outcomes were (i) the adoption of a cultural strategy and (ii) the consolidation of the rural and urban cultural offer respectively. On the other hand, in Mid Wales work on the Rural Vision report influenced the territorial planning dialogue, while In Lucca the recommendations provided by the living lab helped in addressing issues related to the rural landscape.

Given that the living labs are located in different parts of Europe, the CoP has had to rely on online tools to exchange ideas and communicate in between consortium meetings. This has presented few difficulties and webinars and mailing lists have proved to be efficient methods of communication. However, we note that members of the CoP had met in person, which may have been important for building trust.

Use of the ROBUST toolkit in the living labs

For the Tukums living lab the main focus was culture – the development of the municipal cultural strategy in particular. Consequently, several methods were used in the context of activities related to cultural connections, incl.:

- stakeholder mapping;
- participant observation;
- webinar/on-line forums
- focus groups
- expert interviews,
- stakeholder interviews,
- knowledge café,
- cross-organisational knowledge sharing.

As expected, each of the methods had its strengths and weaknesses, so their added value depended in large part on whether their application was justified. For instance, stakeholder mapping was useful for getting a clear sense of the actors involved in regional cultural life, while participant observation at workshops provided insight into the relationship between different organisations.

5. Conclusion

Culture has many different meanings, which hampers attempts to operationalise it and discuss it dispassionately. Culture is a broad concept and permeates different aspects of our lives. Likewise, cultural connections between urban and rural areas can come in many different forms. However, not all are conducive to mutually beneficial cross-fertilisation (incl. between sectors), smart development and sustainable growth. The challenge is finding a way to talk about culture and cultural connections in a transparent manner that allows for critical reflection and an interrogation of problematic assumptions.

The CoP has explored possibilities of coordinating cultural events and cultural life within municipalities, across urban and rural territories. It has concluded that coordinating cultural life means connecting activities, events, and the people who enjoy them. This helps reduce duplication, share resources and make cultural institutions stronger together. The CoP has looked at culture as a marker of identity and learned that enhancing local and regional identities means making positive connections between people and place, by supporting what makes a locality distinctive, and what makes cultural life shared. Finally, when looking at possibilities for sustainable valorisation of local cultural resources we noted that valorising rural culture sustainably means celebrating what is special and alive, enabling rural culture to be a valuable part of the present.

The interests of local (rural) inhabitants and (urban) visitors must be balanced to ensure that urban-rural interactions lead to mutually beneficial synergies. Unchallenged perceptions of what can and should be expected from rural areas can perpetuate the implicit association of rural culture with nature, tradition, and folklore. Simultaneously, this can preclude innovation and more contemporary expressions or rurality from emerging simply because there is little commercial incentive to innovate. Rural areas can certainly benefit commercially form such stereotypes and heritage commodification more broadly, but this can ultimately turn rural areas into recreational resources for paying outsiders. Conversely, rural culture should not be romanticised and approached from a protectionist perspective. A balance between preservation and innovation must be sought, which does not drain the vitality of rural culture but also encourages a synergistic outlook. In view of this, we suggest that care must be taken to ensure that rural-urban linkages (which the CoP discussed primarily in the form of tourism and recreational activities) are symbiotic and do not stall the development of contemporary forms of urban-rural synergies and allow for the emergence of new, networked localities.

Cultural connections are dependent upon cross-sectoral interaction, be it with culinary traditions or ecosystem services. Our explorations 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 ecosystem services (e.g. ecotourism) 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.

Successful governance of cultural connections should be sensitive to regional identities and local governance arrangements. People's self-identification does not always correspond to administrative boundaries, and centralised attempts to govern cultural life must bear this in mind to avoid resistance at local levels.

6. References

Goodiwn-Hawkins, B. (2019) *Strengthening rural-urban cultural connections: Three lessonsfrom ROBUST's Cultural Connections Community of Practice,* available at: https://rural-urban.eu/sites/default/files/Strengthening_RuralUrban_Cultural_Connections_JULY2019.pdf

Šūmane, S. (2020) *Valorising food heritage and rural lifestyles*, available at: https://rural-urban.eu/sites/default/files/Valorising%20food%20heritage%20and%20rural%20lifestyles.pdf

Ecosystem Services
Community of Practice Report

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June 2021

1. Introduction

1.1 Overview of the functional theme

This Community of Practice (CoP) is about Ecosystem Services and its role in establishing rural-urban links and enhancing synergies. 'Ecosystem services' (ESS) are the ecological characteristics, functions, or processes that **directly or indirectly** contribute to human wellbeing: that is, the benefits that people derive from functioning ecosystems (Costanza et al 2017). Figure 1 illustrates the concept of ESS using two different models: the categories of ESS as established by the Millennium Ecosystem Assessment in 2005 and revised by The Economics of Ecosystems and Biodiversity (TEEB) study in 2010, and the cascade model defined by Haines-Young and Potschin (2010) to express the relationship between biodiversity, ecosystem services and human well-being.

a) b)

Figure 1- Concept of Ecosystem Services: a) MEA, 2005 and TEEB 2010; b) Haines-Young and Potschin (2010)

In ROBUST the concept of ecosystem services was adopted as a functional theme because of its potential to enable rural-urban linkages and synergies, evident in the provisioning and regulating services but also in cultural and supporting or habitats services. The establishment of the scope of the CoP on ecosystem services (named from now on as CoP ESS for short) within ROBUST was driven by an initial selection of general challenges and issues considered relevant to be addressed in the CoP work. That scope is expressed here in the following key topics, which are further explained in section 3 of this report:

- Capacity to offer ecosystem services,
- Payment for ecosystem services,
- Economy-environment connection,
- Social well-being,
- Space/Land,
- Natural environment protection,
- Resilience,
- Governance.

As this report shows further on, these key topics evolved in multiple interactive discussions, with all partners and the six Living Labs (LL) involved. Eventually the final scope of the outcome of the CoP

ESS was revealed as five core matching research themes which acted as the Core Research Themes, resulting in Research Briefs as a main output of this CoP.

- Synthesis of the Core Matching Research Themes
- Community partnerships
- Multi-scale planning
- Mapping and bundling
- Payment for ESS
- Circular farming

1.2 Aim of the CoP

The aim of the CoP on ESS was to identify, map and integrate the key functional relationships of ESS in:

- spatial and sectoral planning,
- contributing to a redefinition of urban-rural relations,
- associating ESS use and delivery to planning instruments and governance models at multiple scales,
- exploring the role of ESS in enhancing rural-urban synergies.

1.3 Co-ordination and management of the CoP

The overall coordination of the CoP was with IST – Universidade de Lisboa. Partners included the research and practice partners associated to the following LL: Ede Municipality (Netherlands), Lucca Province (Italy), Gloucestershire County (UK), Helsinki City (Finland), Frankfurt Region (Germany), and Lisbon Region (Portugal).The management of the CoP was shared among partners. IST offered conceptual leadership and partnershad full initiative in implementing the proposed framework, while learnings were a result of the compilation and synthesis of partners' inputs.

1.4 Report aims and structure

The aims of this report are to show the work developed, the exchange of practices and the results of joint research outcomes generated by the collaborative work of CoP partners.

This report is structured in three main parts: the research process and the learning cycle that was followed, the common learnings achieved on the core topics adopted by this CoP and the monitoring and learning evaluation outcomes expressed in performance indicators. Conclusions are drawn that synthesize the main outcomes.

2. The research process and learning cycle

2.1 Composition of the CoP

As above mentioned, the CoP composition included research and practice partners associated to the following six Living Labs: Ede Municipality (Netherlands), Frankfurt Region (Germany), Lucca Province (Italy), Gloucestershire County (UK), Helsinki City (Finland) and Lisbon Region (Portugal). Partners of the CoP are identified in Table 1. Worth noting that the pattern of team composition in different LL varied, with some practice partners joining at different moments of the CoP, depending on the kinds of expertise needed and available as the CoP progressed (contrast between e.g. Glos and other LL).

Table 1- Partners of the ROBUST CoP ESS

Practice Partners Associated	Name
Ede Municipality (Netherlands)	Henk Oostindie (R) Bart van der Mark (P)
Frankfurt	Rolf Bergs (R) Reinhard Hans Henke (P) Sophie Herrmann (P)
Lucca Province (Italy)	Massimo Rovai (R) Francesca Galli (R) Giovanni Belletti (R) Andrea Marescotti (R) Maria Pia Caisini (P) Monica Lazzaroni (P)
Gloucestershire County (UK)	Daniel Keech (R) Damian Maye (R) Matthew Reed (R) Gary Kennison (P) Simon Excell (P) Carey Ives (P) James Blockley (P)
Helsinki City (Finland)	Ulla Ovaska (R) Olli Lehtonen (R) Toivo Muilu (R)
Lisbon Region (Portugal)	Maria Partidário (R) Isabel Loupa Ramos (R) Margarida Barata Monteiro (R) Joana Lima (R) Carlos Pina (P) Alexandra Almeida (P) Linda Pereira (P)

2.2 Timeline of activities / meetings and documented interactions (real and virtual)

CoP ESS activities were initiated at the project kick-off meeting in June 2017. Table 2 lists the various documented interactions, in presence and virtual, indicating the respective date, the documents produced and where they can be found in this report. Figure 2 provides a timeline of core outputs.

Table 2- Interactions, timing and respective documents and outputs

Interactions	Date	Documents and outputs of interactions	Reference in this report
CoP ESS meeting - Ede	June 2017	Meeting Minutes	Annex 7.1
		ESS lens	Figure 3
		Initial questions and challenges	Table 3
		Connections to other CoPs	Figure 4
CoP ESS meeting - Lisbon	February 2018	Meeting Minutes	Annex 7.1
		Priority themes and clusters of mutual interest	
		Fit priority themes in WP1 framework	Figure 6
		CoP focus and top priorities in each LL	Table 4
CoP ESS meeting - Ljubljana	October 2018	Meeting Minutes	Annex 7.1
		Matching Themes	Table 5
		First outline of shared repertoire	Table 6
		CoP research agenda priorities and workplan to interact with LL	Table 7
Mail interaction	March 2019	Shared Repertoire	Annex 7.3
Mail interaction	Jan-June 2019	Research and Innovation Agenda	Annex 7.2
CoP ESS meeting - Helsinki	May 2019	Meeting Minutes	Annex 7.1
		Established Core themes, leads and co-leads	Table 8
Mail interaction	September 2019	Core themes for matching tools	Table 8
CoP ESS meeting Hannover	October 2019	Meeting Minutes	Annex 7.1
		ESP10 conference - core learning points	
CoP ESS meeting - Riga	November 2019	Meeting Minutes	Annex 7.1
		Findings regarding the use of ESS in each LL – how to go in-depth	Table 9
		CoP output integrating core themes	
		Book for Springer – first time discussed	
CoP ESS meeting - online	March 2020	Meeting Minutes	Annex 7.1
		Status and difficulties with CoP – LL links	
		Draft CoP ESS Report	
		Proposed structure for Springer book	
CoP ESS meeting – online (only research partners)	April 2020	Meeting Minutes	Annex 7.1
		CoP ESS conceptual framework	Figure 8
Mail interaction	March – September 2020	Practice briefs	Annex 7.4
CoP ESS meeting – Graz (online)	September 2020	Meeting Minutes	Annex 7.1

Interactions	Date	Documents and outputs of interactions	Reference in this report
CoP ESS meeting – Valencia (online)	April 2021	Meeting Minutes	Annex 7.1
Mail interaction	May 2021	Research briefs	Annex 7.5

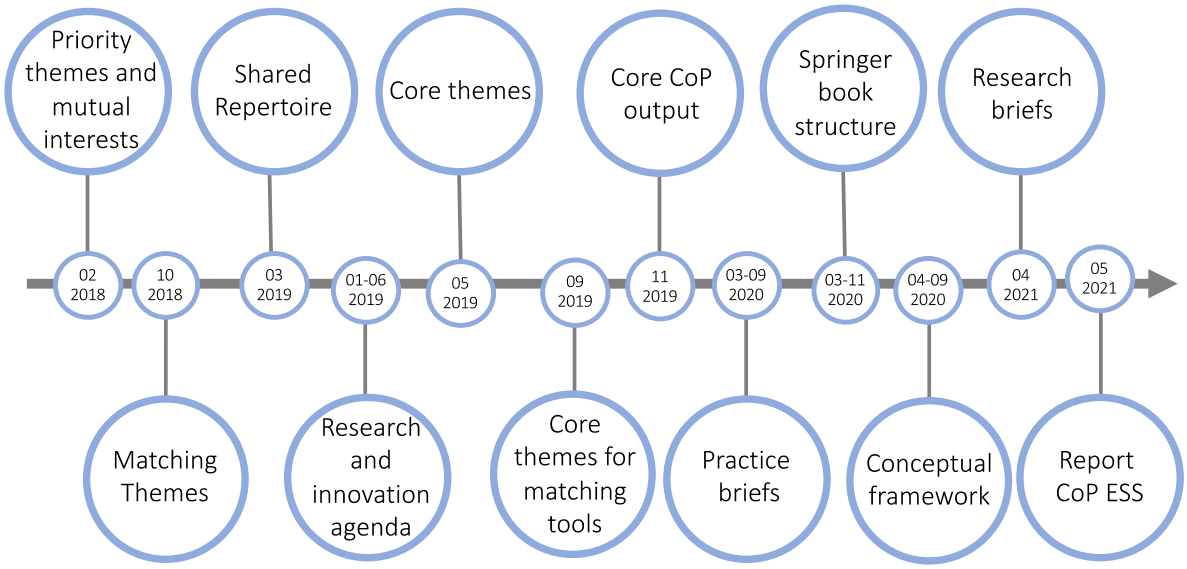

Figure 2- Timeline of core outputs

2.3 Processes for communication / knowledge exchange / learning

The process of interaction and communication among partners of the CoP ESS is reflected in the timeline represented in Figure 2. That timeline does not however include all moments in which bi and multi-lateral interactions took place. Formats were diverse, from consortium meetings dedicated time and space or varied length, to online/virtual meetings (through Skype and Zoom) not only since the pandemic started but even before in-between consortium meetings. Email communication was also engaged.

2.4 Tools of CoP Mutual Engagement

Throughout the duration of the project three key initiatives were carried out to enhance knowledge exchange and the CoP ESS learning process:

- A workshop to establish priority themes and cluster mutual interests across partners and LL was conducted with active exchange between partners, contributing to set the CoP focus (Feb 2018, Lisbon meeting)
- A matching exercise was conducted to explore mutual interests and define a shared repertoire of CoP ESS to be used as a reference by all LL and partners(Oct 2018 Ljubljana meeting)
- A world café interactive session was conducted to identify critical questions under the identified matching themes (May 2019 Helsinki meeting)

Other forms of mutual exchange and learning took place in the form of case-initiatives with inspiring examples on ESS delivery, particularly led by Frankfurt LL partners and from Luke (Helsinki) research partners. A field workshop was planned to take place in Lucca, in the Fattoria Urbana Albogatti, on the 2nd April 2020, to address ESS around the following topics: food production, flood regulation,

groundwater refill, recreation, and health. This was integrated in the ICLEI initiative 8th Informed Cities Forum field workshops. Unfortunately, due to the outbreak of the pandemic this initiative had to be cancelled altogether.

2.5 Knowledge Exchange events

In addition, the CoP ESS team actively participated in two open conferences: the ESP Conference in Hannover (Nov 2019) and the Leipzig Conference (Oct 2020 as virtual conference) where sessions were organized, papers presented, and discussions held around the role of ESS in rural-urban synergies. A guest pitch talk and participation in workshop was also invited on ESS in ROBUST as part of the European Commission's Rural Vision Week, held in March 2021.

Bi and multi-lateral exchanges were carried on throughout the entire duration of the project as part of the mutual clustering and matching exercises, with core themes being developed as research briefs by a selection of CoP ESS partners that shared mutual interest on such themes.

2.6 Outputs and Publications

Key outputs of the CoP ESS are represented in Table 2, with this report, as well as the research and practice briefs, and finally the Springer book becoming the most visible documents that include the multiple activities, exchanges, and learnings of CoP ESS. Both research briefs and practice briefs (short case-studies for dissemination)support the preparation of papers and book chapters.

Publications / Participation in Conferences

ESP Conference 2019 - CoP ESS participation
Maria Partidario (CoP ESS member) co-hosted a session with Louise Willemen, Twente University, on Governance of ecosystem services for rural-urban synergies: bridging science and decision-making. There were five contributions from CoP partners to this session:

- Blockley, J. and Keech, D. Rural catchment management for urban flood security? Governance of Natural Flood Management in Gloucestershire, UK
- Henke, R., Asdonk, K., Herrmann, S., Koşan, A., Planning from Outer Space: Assessing the limits to growth
- Oostindie, H. and van der Kamp, B., Circular Farming as Guidance for ESS Delivery in the Netherlands
- Pina, C., Almeida, A., Loupa Ramos, I. and Partidário, M.R., Multi-scale planning for ESS enhancement.
- Rovai, M., Galli, F. and Andreoli, M., Spatial analysis of ESs as a tool for understanding and promoting rural-urban synergies in planning.

URP Conference 2020 – CoP ESS participation

- Daniel Keech (CoP ESS member) and Theresia Oedl-Wieser (Styrian LL) co-hosted a session (No.23) at the URP conference on circular economies, which included presentations on municipal and entrepreneurial transitions towards a low-waste regional economy.
- Maria Partidario and Isabel Loupa Ramos (COP ESS members) - presentation on Multi-level governance for building a sustainable and resilient metropolitan region: the case of the Lisbon Metropolitan Area

Springer book – final agreement on structure and content. Maria Partidario, Daniel Keech, and Isabel Loupa Ramos are co-editors. CoP ESS partners are co-authors in different chapters. Other CoP chairs and partners involved in writing chapters on how ESS are relevant/recognized in respective CoPs.

Other publications

- Reinhard Henke: Refining a basic concept: The Outer-Inner-Space notion as a specification of the Rural-Urban dualism, ROBUST 2020
- Henk Oostindie and Daniel Keech: developing a manuscript drawing on the Gloucestershire and Ede LLs to examine ESS governance in urban and rural land use allocation, submitted to the scientific journal Land Use Policy in January 2020 (in review at the time of writing)
- Paper on the conceptual methodology adopted in the CoP ESS as laid out in the RIA
- Potential paper to build on key messages, elaborating on commonalities and differences – collective paper of the team

3.themes and common learning

3.1 Summary of scoping and identification of a common working framework

Whether we aim towards provisioning, regulating, cultural or even supporting or habitat services, the meaning and relevance of ESS can be observed through multiple lenses. The pluri, inter and transdisciplinarynature of ESS were reflected in ROBUST in the eight lenses elected by CoP partners to lead research in exploring the potential role of ESS in promoting rural-urban structural and functional aspects (Figure 3). Descriptions ofeach eight lenses are provided below.

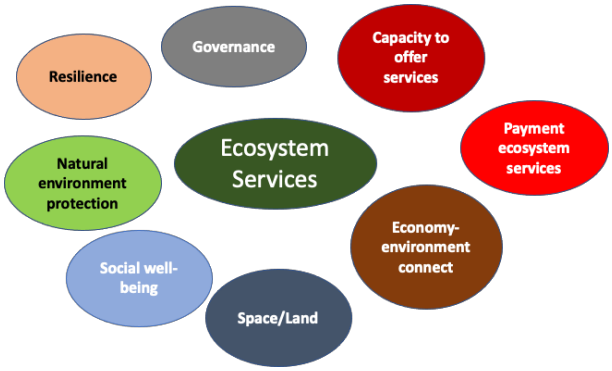

Figure 3- Lenses initially adopted in ROBUST to investigate ESS

Capacity to offer ecosystem services: renewable energy, flood alleviation and risk management, recreational uses, carbon sequestration, waste, purification of air and water and climate change mitigation and adaptation; rural and environmental amenities; new environmental, cultural, and recreational services; sustainable natural resource management among others.
Payment ecosystem services: remuneration for ecosystem services, the monetary compensation for stewards of ESS, as land managers, or users to maintain and promote ecosystem services.
Economy-environment connection: business opportunities; rural and urban social welfare; urban and rural green infrastructure complementarity: services from agriculture and forestry.
Social well-being: positive externalities or amenities enabled to individuals and groups, creating social capital and social cohesion rather than social exclusion.

Space/land: relates to scarcity of open space, conflicting demands for open space, i.e. often as land competition (housing with infrastructure development with natural environment protection).
Natural environment protection (biodiversity, water, distinctive landscapes) – conserving and protecting natural assets or resources (capital).
Resilience as the amount of change a system can undergo and keep the same functions and structure, the degree to which a system is capable of self-organizing; or the ability to build and increase the capacity for learning and adaptation.
Governance: rural-urban functions and local authority hierarchy; instruments and processes, related actors/players, governance arrangements; rural-urban multi-actor/player networks.

*In ROBUST initial reflections within CoP ESS were motivated by **six "How to"** questions concerning challenges and forms of addressing ESS: how to ensure, how to value, how to generate benefits, how to manage conflicts, how to build resilience and how to manage governance. Table 3 provides a synthesis of the initial questions and challenges identified by CoP partners in a brainstorming session at Ede, in June 2017.*

Table 3 - Initial questions and challenges systemized

INITIAL QUESTIONS AND CHALLENGES SYSTEMIZED	
How to ensure **ecosystem services**:	Biodiversity Water quality Flood risk management Distinctive landscapes Waste Air purification Priority habitats such as ancient woodland and limestone grasslands Food provision Cultural services
How to value ecosystem services **(payment**)	Land managers for their role in sustainable land management Financially quantify rural areas' valuable ecosystem services and find ways to ensure they are paid for
How to generate **mutual benefits** from ecosystem services	Harmonization of economic growth and environmental benefits Urban area benefits from the ecosystem services should enhance mutually beneficial relationships Integration of hard infrastructure with the maintenance of landscape values Multiple residence can create impacts on rural social welfare, business opportunities and sustainable regional development Patterns of food provisioning should be related to the provision and quality of ecosystem services, assuring environmental performance in agri-food production Urban regeneration may promote inclusive and diverse cultural opportunities and dynamism in urban areas can stimulate innovation in rural places Rural and urban cultural activities to contribute to regional social well-being, cohesion, and the combating of social exclusion Protection of the natural and historic heritage so that it can be used as an identity value for citizens and the promotion of tourism

How to **manage conflicts** ecosystem services	Management of conflicting goals between urbanization, and environmental management, and landscape conservation Recognize and manage conflicting goals such as the further expansion of economic activity and increasing demands for space Protection of traditional landscape, the regeneration of areas on a path to re-naturalization with the agricultural production Identification of areas with specific rules to follow so as to reduce the conflicts among urban areas and peri-urban or infra urban rural areas and to regenerate the biodiversity
How to build **resilience** with ecosystem services	Increasing overall resilience when connecting the dispersed rural settlements with the capital city Dispersed rural settlements in regional resilience building Preserve and strengthen the uniqueness of available ecosystem services in the light of vulnerability to climate change and the need for adaptive responses that will strengthen their territorial resilience
How to **manage governance** with respect to ecosystem services	What Instruments and processes, related actors/players, governance arrangements Rural-urban functions reflected in the hierarchy of local authority levels Novel rural-urban multi-actor/player networks Intercommunal cooperation to avoid land sealing and the exploration of green areas

An earlier point of reflection was also the **interconnections between ESS and the themes of other CoP in ROBUST**. The pluri-, inter- and trans-disciplinary nature of ESS, recognized in the identification of the lenses first adopted to look into the whole theme of ESS (Figure 3), is also explicit in the recognition of interconnections with other CoP, as in Figure 4. Later on these interconnections would be further elaborated in the four chapters of the Springer book section concerning "Across CoP boundaries centred in ESS".

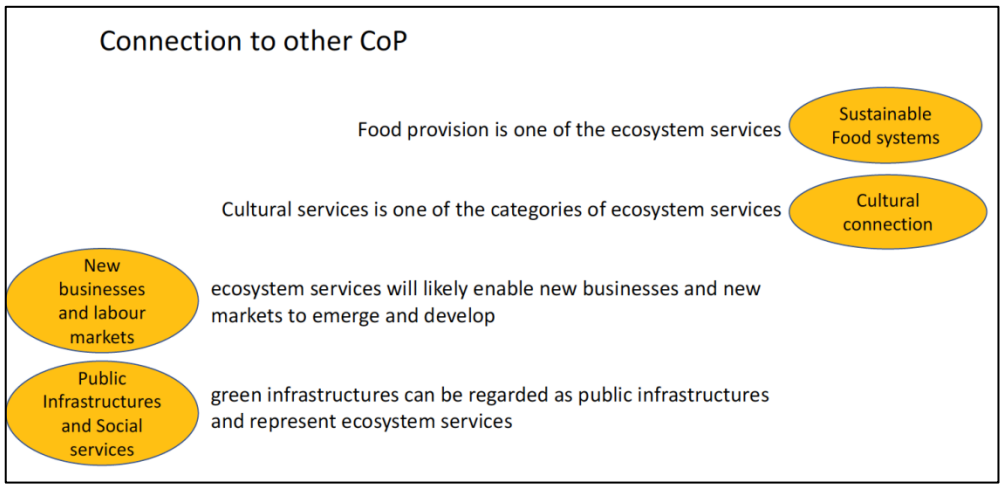

Figure 4 – Connections between CoP ESS and other CoP

3.2 Building a common working framework in the context of WP1 conceptual framework

A first conceptualization of the CoP ESS is shown in Figure 5. It identifies the **CoP ESS priority themes**, attempting to respond to the initial questions and challenges (Table 3) as well as to the initial feed-back resulting from its materialization in the different LL contexts. Above all this preliminary conceptual model intended to underline the need to: (a) ensure the balance between ESS supply (delivery) and demand (users); (b) seek the necessary instruments to enable such balance, including public policy, market and science and technology; (c) have the governance models, to encourage alternative practices and policy integrated goals, thus enabling resilience and social-well-being to occur. This conceptual model then evolved to the finally adopted model in September 2020, as represented in Figure 8.

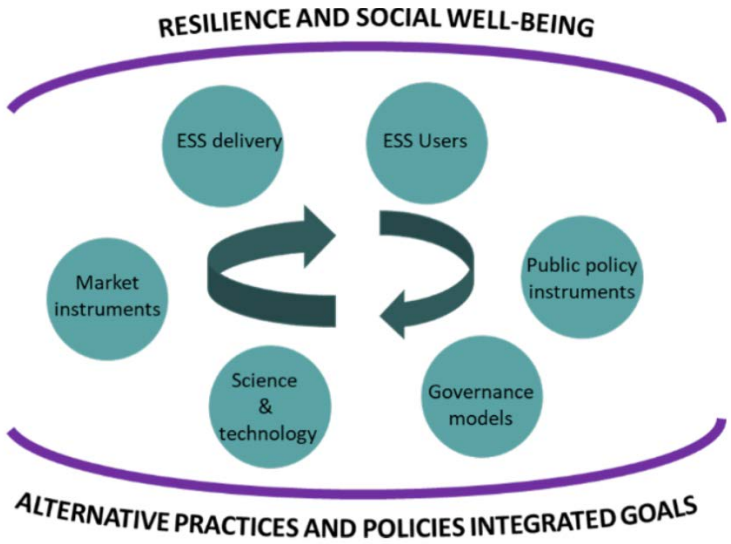

Figure 5 – Initial Conceptual model for CoP ESS

But first this initial model, represented in Figure 5, was further interpreted in light of the WP1 framework to ensure CoP ESS work would inform ROBUST regarding functional rural-urban relations. Figure 6 represents this effort of making the above priority themes fit the ROBUST WP1 framework, relating to new localities, smart development and network governance as related to ESS and its role in enabling rural-urban links and synergies.

The proposed CoP ESS model aims to set a framework that will enhance the value of ESS in the context of the concept model established in WP1, structured in new localities, smart development, and network governance, with ESS value transversal to these components.

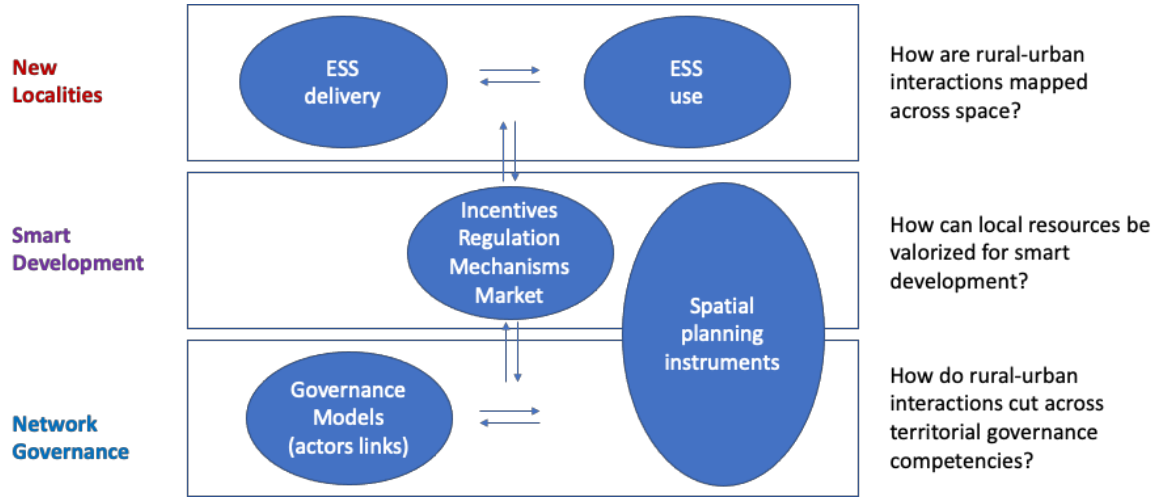

Figure 6 – Making CoP ESS fit ROBUST WP1 framework

The CoP ESS can contribute to ROBUST in terms of functional rural-urban relations, through the WP1 model, in the following way:

New localities – In the adopted CoP ESS concept model, ESS driven development can generate new localities engaging socio-ecological systems relational space and networks associated to the creation of new values, perceptions, and identities.
This may be achieved through:
Understanding the planning system with a focus on its Outer Space[2] exploring how urban and rural features co-exist, overlap and compete;
Inclusion of functional relations between urban and rural areas in the agendas of rural networks operating in the territory;
Creating a « relational space » where it is possible to emphasise the multifunctional potential of rural, peri-urban and intra-urban areas.

Smart development - The adopted CoP ESS concept model highlights policy, market, governance and sciences and technology tools to engage the enhancement of socio-ecological systems.
This may be achieved through:
Review of policy processes, some of which include new governance arrangements;
Provide actors/players with the (statistical and GIS) information needed to make more informed plans and decisions and commit actors/players to this cooperation.

Network governance - The adopted CoP ESS concept model builds upon collaborative arrangement with a cognitive reconfiguration of the territory to match ecosystem boundaries.
This may be achieved through:
Working on rural-urban synergy-building at a lower administrative level and by novel types of public-private partnerships;
More participatory and integrative municipal spatial planning procedures;
Co-creating a new experimentalist rural-urban governance space.

[2]Outer Space and Inner Space are concepts defined by the Frankfurt/Rhine-Main Regionpractice partner to distinguish urban areas (Inner space) from everything else that is not Inner Space - the Outer Space, which includes all areas with agricultural land use, plus nature reserves and forests.

3.3 Linking CoP ESS to LL priorities and interests - a methodology

CoP partners earlier motivation to work in this CoP is summarized in Table 4. CoP partners used their LL motto and research objectives (which were developed early in 2019) to express the overarching themes they would like to explore in their LL research agendas concerning ESS. CoP partners also elaborated on their research objectives and indicated types of innovation that could be generated (Table 4).

Table 4- Living lab CoP partner with each Motto, Research objective and Innovation

CoP Partner	Motto	Research objective	Innovation
Ede Municipality	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	Better insights into the opportunities / limitations of integrative municipal spatial planning through the inclusion of Eco-System Service Delivery in ongoing menu card approach as part of National Environment and Planning Act implementation. This novel municipal policy instrument aspires to contribute to more tailor-made, participatory and integrative spatial planning procedures, and approaches	A more participatory, inclusive, and integrative municipal spatial planning with special attention for the inclusion of rural ecosystem delivery and the prospects of circular farming futures
Gloucestershire County	To assess the potential and feasibility of circular economy (CE) and natural capital (NC) growth models in the county and their potential for synergies and improved urban-rural linkages	In the ESS theme, the objective is to explore the potential for circularity within integrated water resources management and links with NC agenda.	Experiment with more integrated approaches to water resource management in Gloucestershire, including new public/private arrangements, and foregrounding the opportunities of NC to respond to climate change, economic development, and land use planning.
Frankfurt/Rhine-Main Region	Transitioning from quantitative growth and expansion, to qualitative growth and quality of life: the role of regional land use planning.	Localization, measurement, and evaluation of ecosystem services that are provided by the Outer Space as our natural basis for life (natural capital). → qualitative and quantitative assessment	Not only qualitative but also quantitative assessment of the Outer Space and ecosystem services.
City of Helsinki	Developing resilient rural-	to determine how ecosystem	New model(s) of gov-

CoP Partner	Motto	Research objective	Innovation
and Luke (Finland)	urban solutions that enable knowledge networks and multiple locations for life, work and entrepreneurship across the border of Finland (Helsinki) and Estonia (Tallinn)	services can be better accounted for in the land use and building planning system in the Helsinki-Uusimaa region.	ernance to enhance the research-based decision-making. This aim is in-built in the objectives, and an irremovable part of all activities.
Lucca Rural-Urban Connections Lab	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.	Identify how territorial planning can contribute to promoting multifunctional and sustainable agriculture and food systems in peri-urban areas, restricting urban sprawl, protecting the environment and landscape.	The elaboration of guidelines will support the improved understanding of ESS relations across urban and rural areas. The development of guidelines will require new mapping tools and data collection, not already available. This innovation aims at reinforcing the current policy competences of the province, as is territorial planning, by providing input to territorial planning processes.
Lisbon Metropolitan Area (LMA)	Territorial cohesion from within: bridging metropolitan communities and economies for improved urban-rural synergies	Investigate solutions that enhance ESS in spatial planning for sustainable land use.	Use Geo-based synergies with several layers (e.g., green infrastructure; stakeholders).

Furthermore, the discussion was how to build into the Living Labs (LL) the principles, issues and the framework developed in the CoP ESS.In some cases it would be the LL experience that would be fed into the CoP activity This would become a matter discussed throughout the duration of the whole project. Several issues and challenges were raised by partners while considering CoP ESS through the lens of their LL. The identification of those issues per LL, and the synthesis of what were common issues shared by the six LL enabled their clustering into themes of **mutual interests** shared by all partners, across the LL, in the CoP ESS (a first identification of mutual interests). To follow-on, each LL were asked to look in detail to the priorities of the other LL, find their mutual interests, choose the appropriate terms, and keep the number of mutual interests to a maximum of six. This was the starting point for the integrative process and cross-related work that was further developed in this CoP.

The feed-back from attempts of applying CoP to the LL acted as leverages of learning and improvement of the CoP in relation to its practical implementation. To assist the CoP implementation in each LL the following methodology was adopted:

1. Start with concrete policy issues that are on the LL agenda (e.g., flood risk management) identified by people in the LL
2. Link policy issues to ecosystem services (regulating services – flood alleviation and management through soil water retention or infiltration capacity, etc)
3. Organize ecosystem services from rural-urban synergies settings (spatial relationship)
4. Discuss and agree on how to address benefits and vulnerabilities

To help align the CoP ESS agenda with LL activities of CoP partners, and ensure a constructive and learning outcome for the CoP ESS and LL interaction, a methodology to assist an iterative process between the LL and the CoP was formulated as represented in Figure 7. A pool of alternative practices, policies, planning instruments and governance models was co-created, resulting from the application of the conceptual framework in each of the LL.

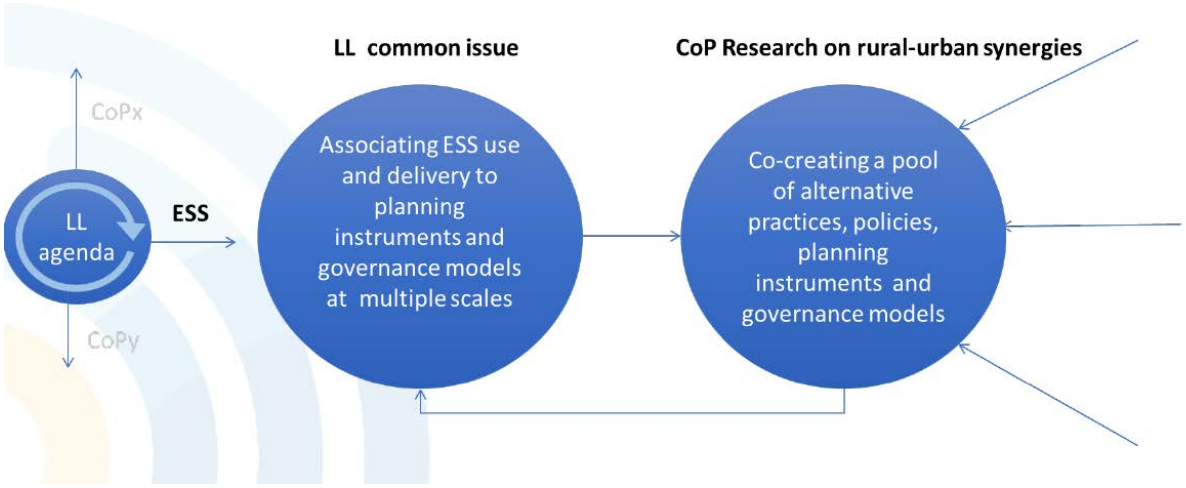

Figure 7 – Methodology to ensure iteration and learning with CoP and LL interaction

Based on this methodology, and previous conceptual model (Figure 5) and adaptation to WP1 framework (Figure 6), a common entry point, or driving line, for all LL was adopted:
Search for strategic approaches to integrate ESS in spatial planning, strengthening, and making a better use of, ESS in balancing planning decisions.

3.4 CoP ESS conceptual framework

The conceptual framework finally adopted by the CoP ESS intends to address the research questions with a multiple loop approach and is represented in Figure 8. In essence ESS expresses a dialogue between users and services delivered within rural-urban contexts. But ESS is closely dependent on the respective socio-ecological systems (SES), its social well-being objectives and the inherent resilience.
In a second loop, using appropriate tools, including multi spatial policy and planning, market instruments, governance networks and science and technological tools, users can influence the socio-ecological systems and its objectives, and consequently ESS outcomes. Placing it into a wider picture – the third loop – desired socio-ecological systems are also dependent on societal values promoted

by users, directly or indirectly, through the adoption of innovative multi spatial practices and policies that can enhance rural-urban synergies.

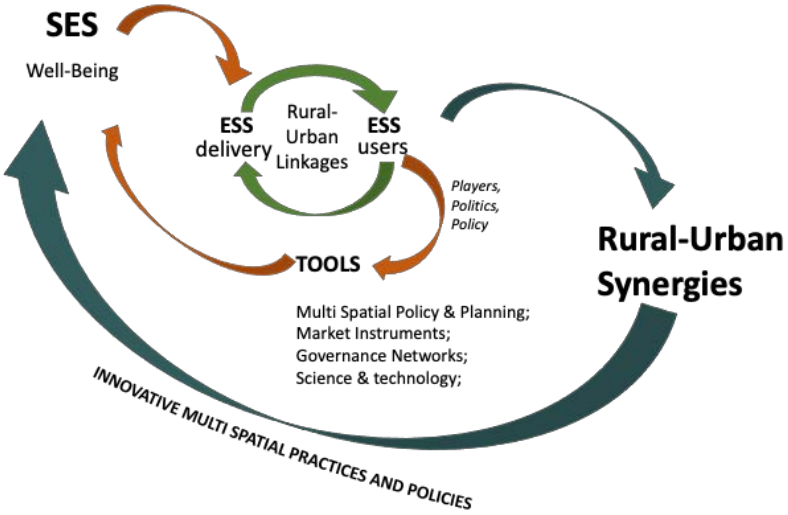

Figure 8 - CoP ESS - Conceptual framework multiple loop approach

This model was materialized, for the purpose of exploring rural-urban linkages and synergies in each LL, with the following research questions:

ESS users:
• Who are the actors or key players using ESS to enable rural-urban linkages/synergies?
• Who benefits from ESS (directly or indirectly) in case of rural-urban linkages/synergies?
• What is their role? (e.g., responsibilities in government, producers, inhabitants, students/ researchers)

ESS delivery:
• Which ecosystems deliver which ESS that play a role in rural-urban linkages/synergies??
• How can ESS maps be used? (e.g., matrix approach; monetary valuation; participatory GIS; social-cultural value)

SES:
• What are the main relationships, and dependencies, between social and ecological systems relevant in rural-urban linkages/synergies?
• What conditions may stimulate, or threaten, such a balanced SES?

Tools:
• What kind of tools may enable the enhancement of SES in term of its resilience and contribution to social well-being in case of rural-urban linkages/synergies?

Benefits and Values:
• What are the main benefits and core societal values enabling rural-urban linkages/synergies?

Repertoire of tools, matching exercise and RIA

Outcomes of rapid appraisals conducted in WP2, including the snapshots as well as the governance and planning instruments, were also a source of elements for analysis.
This gave the CoP ESS a wide range of possibilities for cooperation among partners, further explored in the CoP work by building matching themes and a shared repertoire. A matching session for knowledge transference and sharing took place during one of the consortium meetings in Ljubljana (October 2018). Table 5 represents the outcome of that matching exercise with the CoP matching themes as the key output of interactions between LL partners.

Table 5- CoP ESS Matching Themes

CoP ESS Matching themes						
	Gloucestershire	Frankfurt	Helsinki	Lisbon	Lucca	Ede
Gloucestershire		Payment private schemes 4ESS	GIS mapping ESS	Payment private schemes 4ESS	Payment private schemes 4ESS	Payment private schemes 4ESS
Frankfurt	Multi-scale integration Quick implementations Regional approach		Multi-scale integration	Multi-scale integration Quick implementations Integrate ESS through SP	Multi-scale integration Integrate ESS through SP	Multi-scale integration Integrate ESS through SP
Helsinki	GIS mapping ESS			GIS mapping ESS		GIS mapping ESS
Lisbon	Business models4ESS	Metropolitan approach				ESS based TDR Business models4ESS
Lucca	GIS mapping ESS		GIS mapping ESS	Communities 4 Biodiversity ESS through urban food policy		Communities 4 Biodiversity ESS through urban food policy
Ede	Integrated Goals Business models 4 ESS Soil erosion & degradation			Integrated Goals Business models4ESS		

It was then necessary to develop tools that would enable the mutual engagement of the partners, in different LL, to adopt the common themes. A CoP ESS Repertoire of resources and tools for matching was put together in March 2019 to signalize a synthesis moment in the research process.

Table 6- Repertoire **of** Tools for matching

Topic	Partners
Business Models and Eco-System Services	Prepared by Henk Oostindie, WUR
Community for Food and Agro-biodiversity	Prepared by Sabrina Arcuri, Francesca Galli, Massimo Rovai, University of Pisa, Lucca
Private Sector Payment Schemes for Ecosystem Services	Prepared by Carey Stevens, Simon Excell, Gloucestershire County Council; Daniel Keech, University of Gloucestershire/CCRI
GIS mapping of ecosystem services and regional land use planning	Prepared by Luke team, Hesinki

Topic	Partners
Multi-scale integration and integrate ESS through spatial planning	Prepared by Reinhard Henke, Regional Authority FrankfurtRheinMain
Transfer Development Rights	Prepared by Maria Partidario, IST-UL
Regional planning as a matrix for ecosystem services, Lisbon Metropolitan Area	Prepared by Carlos Pina & Alexandra Almeida, CCDR-LVT

Following from the matching exercise, the CoP ESS research agenda priorities relevant for rural-urban synergies were identified and the Research and Innovation Agenda (RIA) for this CoP developed, (included in annex 2), issued in June 2019, which acted as a referential for all CoP ESS working LL. Table 7 includes the CoP ESS core research agenda priorities.

Table 7 - CoP ESS research and innovation agenda (RIA) priorities
How ESS might reinforce rural-urban relations?
How can multiple ESS be prioritised or balanced in a particular region, which are key, are they equally important?
How different communities use ESS – what can be ESS indicators?
What governance models, and planning models, better practices (public and private), enable the delivery of ESS?
What participatory measures help to engage people with ESS s users (gardening, bird observation, among others)?
How do we discuss the unknowns of ESS (account for uncertainty) as a result of climate change, rural population dynamics, land use changes over time, among other?

The repertoire of tools eventually evolved into **CoP ESS Core Themes** finally adopted in September 2019, after multiple interactions among CoP partners. In this process it is particularly worth noting the dynamic held in the CoP meeting during the Helsinki consortium meeting in May 2019. The CoP ESS met four times during the three days of this 4th consortium meeting.
The first session aimed to clarify detailed aspects and concepts of the CoP RIA (version of 9th April), previously shared and briefly discussed online in April. The second session was dedicated to the presentation of each of the shared repertoire tools that had been identified in the Ljubljana meeting. These presentations were done by each partner leading the respective tool, as identified in table 6. The third session was conducted in a world café format to deepen the discussion on the potential of each of the shared tools in the repertoire. Finally, the fourth session was dedicated to identifying leads, and contributors, of each of Core Themes finally resulting from the discussion.
Figure 9 and Table 8 identify the Core Themes, the Lead partners and partners contributing to the development and preparation of each Core Theme, as well as the research question that led research in each core theme. Core Themes were developed into Research Briefs (Annex 5) by the respective lead and contributor partners.

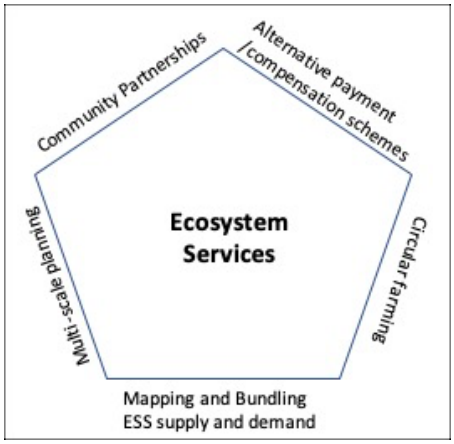

Figure 9 – Core themes

Table 8 - Core themes research questions and partners involved

Core theme	Partners	Research Question
Circular Farming engaging ESS in rural urban synergies	Lead: WU Contributing: Glos	What are the implications for land use planning of land sparing and land sharing in relation to the role ESS plays in rural-urban synergies?
Community Partnerships engaging ESS in rural urban synergies	Lead: UNIPI Contributing: IST+Glos+WU	What cases of community partnerships are there regarding management and the provision of ESS and how effective are they in enabling rural-urban synergies?
Multi-scale planning for ESS in rural urban synergies	Lead: IST Contributing: WU+UNIPI+LUKE+PRAC	How are ESS recognised in policy frameworks (European, national, regional, local); and how are ESS considerations applied in land use planning, both upscaling and downscaling?
Mapping ESS supply and demand for rural urban synergies	Lead: UNIPI Contributing: IST+LUKE+PRAC	What different types of mapping are there and how to use them in support of decision-making
Payment and compensation schemes for ESS in rural urban synergies	Lead: Glos Contributing: WU+UNIPI	How do payment/compensation schemes for ESS in European contexts reveal both public and private sector motivations within urban and rural contexts?

Figure 10 recognizes the inter-relationship of the five core themes of CoP ESS that were investigated. It showshow multi-scale planning enables the setting of a policy framework; and how, drawing on land value, through payment and compensation schemes, and ESS mapping; ESS can be integrated in

land use planning and become a factor to be considered in land take decisions. 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.

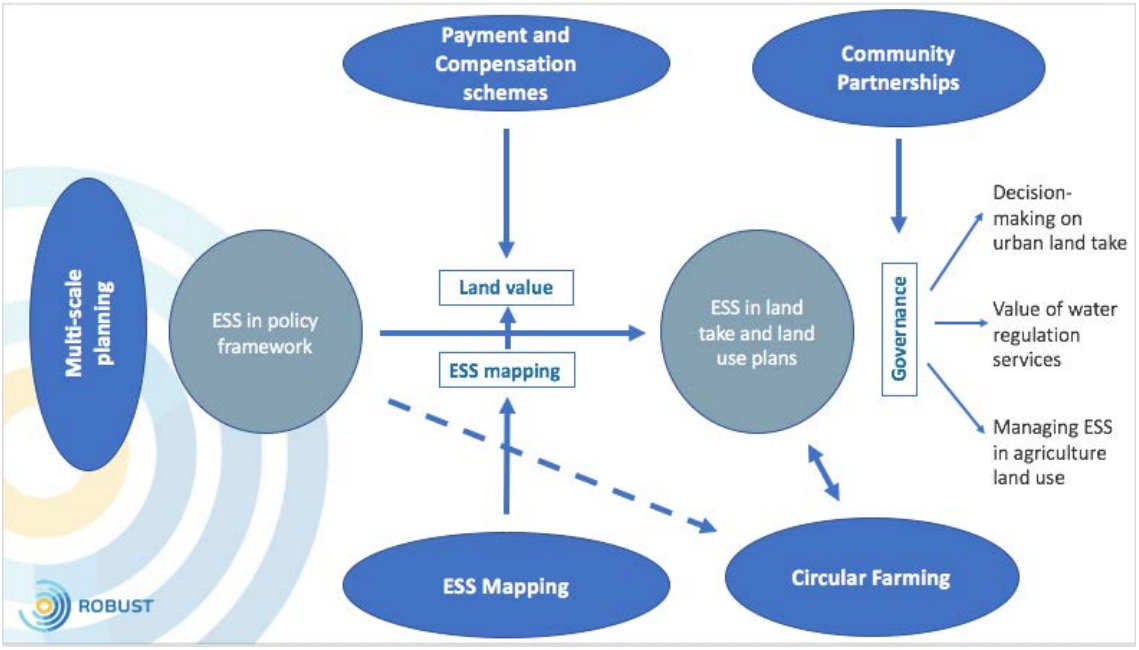

Figure 10 - Mapping the CoP ESS core themes relative contributions to the research

4. Lessons learned: how core themes endorse ESS

4.1 Research briefs

The lessons learned with the Core Themes on the role ESS play in rural-urban synergies were reported in the Research Briefs. These are summarized below.

Circular farming

- Circular farming may contribute in different ways to more synergistic rural-urban relations;
- The co-existence of different circular farming imaginations points at rather different ideas on how to understand and realize this synergistic potential;
- Place-based rural-urban synergy lenses interlink this potential strongly with rural land sharing strategies, characterized by a bundling of food production with other ESS (biodiversity, landscape values, sustainable water management, etc.)

- Other circular farming imaginations start from spatially increasingly blurred and extended rural-urban functional ties, including food systemic interdependencies, and prefer the (further) segregation of food production from other ESS by concentrating on the re-valorisation of waste-flows with various origins and at different scales.
- Analytically and theoretically the Circular Farming Research Brief outcomes confirm the difficulty to operationalize / work with the synergy notion in line with ROBUST's multi-spatial understanding of rural-urban interdependencies.

Community partnerships

- We interpret community partnerships as organizational forms which, based on shared principles and values, organize themselves for the management of goods and services useful for the well-being of the community itself. Specifically, the focus is on the production / management of ecosystem services aimed at strengthening urban-rural ties.
- In many cases, community partnerships, due to their ability to identify innovative and often hybrid solutions between market and volunteering, between formal and informal, are more effective than hierarchical forms (e.g., the State and / or public administrations) due to spending constraints and complex decision-making processes and to the market where the logic of maximizing individual interests often prevails.
- Community partnerships can be virtual (members who do not have a relationship of proximity) or physical (members who have relationships of proximity and who must share a space, common territory). The research brief focused on the second type.
- Organizational forms of community partnerships differ and are influenced by the specific environmental and socio-cultural conditions in which they develop. This determines the strengths but also the weaknesses with respect to the sustainable and resilient management of the resource (natural capital) and the mix of ecosystem services provided.
- The role of public institutions is fundamental to building community partnerships. This can contribute to a favourable regulatory environment, administrative support, financial support, etc. In the cases analysed, there is a mix of these forms of support. (e.g., community cooperatives are a mix of regulatory environment + financial support).
- The success of a community partnership depends on the degree of openness/closure (or inclusion / exclusion) (i.e., if too closed, risk of "implosion"; if too open, risk of loss of identity).
- The effectiveness of a community partnership depends on the territorial scale because social and environmental systems usually have relationships at different scales and, therefore, when managing some common resources that are part of a larger system, there is need for mechanisms to facilitate higher-scale cooperation and policy integration, to avoid inconsistencies.

Multi-scale planning

- Spatial planning may serve as a keystone governance instrument to explore the spatial implications of combined policies, frameworks and tools, and be understood as a policy mix in itself to ensure effective allocation of resources for safeguarding, restoring and enhancing biodiversity and ESS;
- Spatial planning informed by ESS can facilitate public participation and stewardship and provide the basis for targeted investments into ESS, assisted by scenario building and strategic environmental assessment to propose targeted strategies to seek synergies, avoid unintended outcomes, and deal with uncertainty;

- Seek 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;
- Ensure objectives, sectoral policies, spatial and values integration; promising strategies for enhancing the implementation of biodiversity and ESS in spatial planning with connections to rural, regional, and sectorial funding strategies include:
- mapping spatially explicit information on ESS in appropriate detail for decisions at respective scales, find the best scale to start with and recognize interactions with other levels/scales, ensuring coherence across scales;
- fostering delivery mechanisms that consider planning proposals as part of systematic governance and policy mixes;
- build alliances between planners, administrative, public, business, and civil actors to mainstream ESS in all relevant policy and decision processes towards more sustainable spatial development.

Mapping ESS Supply and Demand

- The concept of ESS and the link between quality of life and services provided by the ecosystems is still not sufficiently understood by decision makers and citizens; It is necessary to increase the awareness and knowledge around these concepts and improve the communicative capacity of ESS maps.
- A handicap to consistent assessments is the lack of experts' convergence in the evaluation and validation process, due to differences in interpretation, and value judgement, between data used and the level of provisioning of the ESS. Selection of data, as a function of purpose, and identification/definition of the most appropriate method may help to improve consistency in the assessment.
- The harmonization of expert evaluations is necessary to better understand the reasons behind divergences, particularly in participatory evaluation of ESS by citizens and stakeholders when these express the socio-cultural value of some ESS; the goal is to foster the use of scientific and non-scientific judgments together.
- Competitive ESS in the same territory can be conflicting or complementary and require trade-offs, but their representation is often disconnected from these considerations. Bundling different ESS might be needed for an effective "synthesis" of the assessment to be used for the decision process.
- The integration of ESS mapping and evaluation in planning processes should bridge strategic (more cognitive) tools (usually non-binding) with other binding normative tools (that rarely refer to the concept of ESS and their evaluation).
- Guidelines are needed for the integration of ESS mapping into spatial and urban planning at multiple scales; mapping ESS requires criteria / levels / objectives for rebalancing supply and demand, urban and rural etc, to demonstrate that ESS underline spatial planning in defining a truly sustainable and resilient territorial model.

Payment and Compensation schemes

- Payment for Ecosystems Services (PES) schemes can be innovative and effective at generating rural-urban synergies in many different locations, landscapes, and stakeholder groups.

- The nature of rural-urban interdependence is likely to change in the light of climate change and attempts to arrest its advancement, demanding flexibility in PES schemes as data emerge.
- Links to public sector agendas (agri-environment schemes, water quality, urbanisation, carbon neutrality etc.) delivering public benefit offer useful springboards for private PES schemes linked to cost savings via ESS enhancements. The role of the local / regional state, remains important, both as a contributor of tax-payers' money in some PES schemes and as the democratic representative of citizens who rely on ESS. The state can also play an important role in facilitating and enabling the alignment or prioritisation of multiple ESS through co-designing PES innovations. Consequently, more understanding is needed (through open innovation methods including Living Labs) to tackle challenges around how to develop, maintain and evolve blended ESS finance.
- PES works best where clear gains are generated through specific practice changes. A question remains about how long the PES may be workable once changes have been appropriated into culture, or if there is a weak market for ESS gains being sought (as in the pioneering days of fair trade).
- PES innovation may require closer solidarity between rural and urban ESS users-suppliers, especially in understanding ESS co-dependences, as the current relationship still conforms substantially to urban-based consumption of rural ESS with limited connection to or knowledge of the details of ESS provision.
- As nature-based solutions to environmental management take hold within policy, more systematic monitoring of the impacts of ESS interventions are needed, and this should be built into PES schemes from the outset.
- The blurring of public-private boundaries is evident in many existing European PES initiatives, especially where commercial or civil society actors apply land use change through the instrument of tenancy contracts. Given the diffusion of land holdings in Europe, land managers need to be involved in consultations to initiate PES schemes from the very outset, and be involved in their implementation, evolution, and evaluation.

4.2 Findings and outcomes in each LL

The following Tables 9 and 10 present the main results with the application of the conceptual framework, and core themes, in each LL represented in the CoP ESS.
Table 9 is more detailed with respect to the outcomes from the application of the conceptual framework. CoP partners were asked to consider the ESS research objectives in their LLs, and to reveal what their investigation provided in terms of:

- Who key ESS users are;
- What particular ESS delivery were prioritized in the LL experiments/innovations;
- What governance arrangement were in-place/required/initiated;
- What tools were used/initiated as a result of LL experiments/innovations;
- Which links with other CoPs in the ROBUST partnership became evident; and finally
- How our joint work stimulated rural-urban synergies.

Table 9 therefore presents the research objectives per LL in the CoP ESS followed by the more relevant rural - urban linkages expressed through the identification of ESS users and ESS deliveries that represent existing but also virtual bonds between rural and urban territories. It also indicates the governance arrangements and the tools, from the matching tools earlier identified, that were used

in each LL, and the connections that were recognized with other CoP within ROBUST. Finally, Table 9 suggests, for each LL, what could be an interpretation of rural-urban synergies based on ESS.

Table 10 subsequently summarizes the findings in each LL concerning the role of ESS for rural-urban synergies, and outlines the key learnings in each LL revealing many benefits and opportunities but also methodological and governance gaps that will need to be addressed and adopted to facilitate the potential role of ESS in enabling rural-urban synergies.

Table 9- Core outputs in each LL resulting from the application of the CoP ESS conceptual framework

CoP ESS Partner	Research objective	Rural – Urban linkages Ecosystems Services users	Ecosystems Services delivery	Governance arrangements	Tools	Links to other CoP	Rural – urban synergies
Ede Municipality	Better insights into the opportunities / limitations of integrative municipal spatial planning through the inclusion of Eco-System Service Delivery in ongoing menu card approach as part of National Environment and Planning Act implementation. This novel municipal policy instrument aspires to contribute to more tailor-made, participatory and integrative spatial planning procedures and approaches	Regional rural and urban dwellers + leisure seekers with different backgrounds	Focus on rural land use characteristics, with special attention for how to counterbalance and mitigate actual unbalances in regional agricultural ESS delivery profile	Multi-level governance arrangements that succeed to contribute to more integrative / participatory / synergistic / bundled ESS delivery	A mixture of rural spatial planning with a range of other policy tools, including Triple and Quadruple Helix Innovation approach, CAP-reform experiments around more collective ESS delivery approaches and a better targeting of agricultural' s wider ESS delivery capacity	Especially strong relations with the CoPs for Sustainable Food Systems and Business Models and Labour Markets (albeit somewhat less with latter's labour markets component)	Outputs point at the controversial nature of rural-urban synergies in Ede's setting. It reflects regional stakeholders' different understandings of this key notion, as well the difficulty to agree upon its concrete societal benefits meaning when starting from the multi-spatial perspective that guided our ROBUST WP1 framework.
Gloucestershire County	In the ESS theme, 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 ecosystem services in Gloucestershire.	Users are understood, in the current FRM assessment system, as businesses and residents of downstream towns and cities, where population density makes flood risk impact substantial. In fact, however, because NFM delivers multiple benefits, some of which are downstream, but some are at the point of intervention (in the case of habitat management), then rural	The main ESS delivered is flood risk management (through rural land use/GI interventions). Other ESS include habitat creation/restoration, water quality improvement, amenity access and community development/involvement.	The LL has helped establish a new sub-group of the Regional Flood and Coastal Committee to oversee strategic NFM investment potential and promote networking between regional NFM practitioners. The group is called the Working with Nature sub-group.	The main tool will be the sub-group, which will advise the RFCC on possibilities for NFM investments over its 5-year funding cycle. Because constituent municipalities have planning authority, the sub-group will also inform municipalities on NFM opportunities within development agreements, using S106 agreements and Com-	To Food CoP, as NFM generally has taken place on farmed land. Also to Business Models CoP because urban NFM (Sustainable Urban Drainage Schemes) are linked to urban enterprise flood resilience and environmental performance.	The NFM concept links upstream and generally rural land management to urban food protection. However, SUDS connect urban areas to downstream rural areas, too. Lastly, rural areas themselves are enhanced through NFM, linking urban recreation to rural habitat quality.

CoP ESS Partner	Research objective	Rural – Urban linkages Ecosystems Services users	Ecosystems delivery	Services	Governance arrangements	Tools	Links to other CoP	Rural – urban synergies
		ESS 'users' are also to be considered.				munity Infrastructure Levy (see CoP output by Excell/Stevens 2019) Useful repertoire tools include community for agriculture and biodiversity; and multi-scale integration in spatial planning. Community champions have proved vital in rural NFM interventions, both in driving demand for nature-based solutions as 'grey' flood infrastructure is predominantly located in urban areas, and to support monitoring and maintenance intelligence of NFM structures. Similar citizen involvement is a key aspect of urban drainage, indicating common, if spatially disconnected community skills and commitments. Multi-scale integration is a key focus of regionalising and connecting catchment-based (rather than municipal) flood risk management.		
Frank-	Localization, measure-	Main focus on Inner	Main focus on Outer		Complex, mature and	Indicator-based map-	Business Models	Understanding of spa-

CoP ESS Partner	Research objective	Rural – Urban linkages Ecosystems Services users	Ecosystems Services delivery	Governance arrangements	Tools	Links to other CoP	Rural – urban synergies
furt/Rhine-Main Region	ment, and evaluation of ecosystem services that are provided by the Outer Space as our natural basis for life (natural capital). → qualitative and quantitative assessment	Space: The beneficiaries are the people who live in the towns and cities Outer Space: Farmers and forest manager are the target groups	Space: 13 ESS (Preliminary selection from 27 suitable ESS for the region); ESS from all three main groups (providing, regulating and cultural ESS) were considered Inner Space: ESS not included in assessment	widely agreed system in place to foster regional development and to steer land use on the scale of the functional region. Ready to integrate ESS into the formal procedures. Legally based, democratically legitimated, and accountable. Level 1: Regional Land Use Planning procedures defined as an exception to the German rule, not 80 individual Land Use Plan done by 80 towns and cities individually but 1 Regional Land Use Plan done on behalf and with the participation of the 80 municipalities; Level 2: System of 20 regional companies (co-ordinated by the Regional Authority) dealing with elements 2 to 4 of the Planning Quadriga to complement element 1, the provision of space (=Regional Land use Planning)	ping (GIS) for ESS supply and demand. GIS-application for comparing different land use scenarios about the impact on ESS (incl. economic valuation) as a decision-making tool in regional land use planning (e.g., designation of new built-up area);	and Labour Markets: The value and importance of ESS for the functioning of the region. Public infrastructure and social services: ESS, or the areas providing them, are part of public infrastructure and provide social services.	tial relations and dependencies between Inner and Outer Space in terms of supply and demand for optimised spatial planning → valorisation of ESS services For example: regional added value through tourism & recreational services or local agricultural goods saving of societal costs (e. g. health care costs) by taking local climate regulation, etc. into account

CoP ESS Partner	Research objective	Rural – Urban linkages Ecosystems Services users	Ecosystems Services delivery	Governance arrangements	Tools	Links to other CoP	Rural – urban synergies
City of Helsinki and Luke (Finland)	To determine how ecosystem services can be better accounted for in the land use and building planning system in the Helsinki-Uusimaa region.	Leisure seekers and multi-local dwellers from local and regional levels, tourists, land use planners	Focus on recreational and green land use planning and mapping on the rural-urban interface in the Helsinki-Uusimaa region, and the conflicting forms of land use (e.g., recreational – traffic – construction)	Promotion of common round table platform for synergetic interaction of rural-urban dwellers and stakeholders, like LAGs' and planning authorities	Interactive workshops, videos and maps on multi-local living, exploitation of the existing rural and urban (policy) networks, integrated GIS tools for mapping ecosystem services	The core theme of the Helsinki LL (multi-locality) is approached context-based also in the CoP Business Models and Labour Markets: ESS as a pulling force for teleworking and multi-local working and CoP Public Infrastructure and Social Services: use of ESS as a promotor for building new facilities for multi-local people in rural areas	Mapping of the ESS in the Helsinki-Uusimaa region makes visible their potential for multi-local people and regional planning, on the other hand the environmental pressure of the use of ESS for both rural and urban land use planners
Lucca Rural-Urban Connections Lab	Identify how territorial planning can contribute to promoting multifunctional and sustainable agriculture and food systems in peri-urban areas, restricting urban sprawl, protecting the environment and landscape.	urban and peri-urban residents and consumers of the local (and non-local) food system	The focus in our LL is on rural and peri-urban space, land use characteristics and destination. The recovery of abandoned land, aimed at the production of local food, can serve to set up new farms or to enlarge existing ones. Other ESS are linked indirectly: landscape, ecological infra-	The intermunicipal food policy is the emerging governance arrangement. This integrates, depending on the topic, with land use planning.	Within the Intermunicipal Food policy, the "table on local agricultural production" is the tool. Another tool (limitedly explored) is the Land Bank, as a tool to match supply and demand of land (here ESs could be a framework for assessment, beyond land rent).	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…),	1)Strengthen citizens' awareness to consume local food and support farmers to reorient themselves towards more sustainable production models. Matching available and abandoned land with demand for it, with preference to new and old farmers.

CoP ESS Partner	Research objective	Rural – Urban linkages Ecosystems Services users	Ecosystems Services delivery	Governance arrangements	Tools	Links to other CoP	Rural – urban synergies
			structures, rainwater management, recreational value for citizens.		Another tool that has been developed is ESs mapping for land use planning.	the latter to the typical products and dishes/gastronomy of the area	
Lisbon Metropolitan Area (LMA)	Capture an integrated understanding and shared knowledge of local assets - learning with existing knowledge, and the creation of new knowledge Stimulate mutual dependencies and learning networks, through dialogues and joint initiatives, to enhance the value of local assets. Create innovative institutional frameworks for improved decision-making/governance systems Investigate solutions that enhance ESS in spatial planning for sustainable land use	Regional and local administrations to promote and support the implementation of green infrastructure planning. Schools for the promotion of sustainable food education in children. Tourists and Producers (wine, fruit, vegetables) to realize the value created in the territory by ESS Food market.	Food production and water provision (provisioning services) Water, climate and flood regulation (Regulation services) Recreation and tourism (Cultural services) Biodiversity conservation (support services),	Multi-level and multi-sector agents and organizations sharing knowledge and experiences in an open and transparent format never happened before creating the Urban-Rural Dynamics Laboratory (URDyLab)	ESS mapping ESS based Green infrastructure mapping to support sustainable land use planning, Multi-scale planning Land management Territorial Economy Agro-parks as a new BM	Interconnected approach between Cop ESS, CoP BM and CoP SFS. Connections with CoP Food Systems, re. the provisioning services and cultural services as knowledge and education. CoP Business models, relevant in the role of ESS to the territorial economy, and the creation of the the Metropolitan Network of Agroparks. Connection with Public infrastructures CoP, namely as green infrastructures. Connection with Culture CoP concerning cultural services, as well as	ESS act as bridges between rural, peri-urban and urban through the various services that can be acknowledged to create territorial value The connection of ESS and green infrastructures that establish spatial connections between urban and rural space. Education on sustainable food and healthy canteen food programmes foster the acknowledgement of food production and food producers (Farmers) and rise awareness for local food consumption. The Metropolitan Network of Agroparks, with a multifunctional nature, including commercialization and restoration, spreads as nodes along the Metropolitan Green Infrastructure,

CoP ESS Partner	Research objective	Rural – Urban linkages Ecosystems Services users	Ecosystems delivery	Services	Governance arrangements	Tools	Links to other CoP	Rural – urban synergies
							education and knowledge	integrating different components and actors of the food system, providing different services in an innovative way (food supply, leisure, research, education, etc)..

Table 10- Summary of findings regarding the use of ESS in each LL

CoP ESS partner Topic	Summary of findings	Key Learnings
Ede Municipality - Circular farming enables looking at ESS tensions – business models are strategic to shift practices	Circular Farming may contribute in different ways to more synergistic rural-urban relations. At the same time the best way to do some may be subject of stakeholder debate, including its implications for regional land use characteristics and strategic choices (e.g., land sharing versus land sparing) and the importance /necessity to take also distant rural-urban relations and interdependencies explicitly into account in attendant decision making processes	In some areas, including Ede, intensive livestock agriculture has, over time, become a form of economic lock-in which is difficult to reconfigure without structural reforms. Consequently, certain ESS, namely those that are closely associated with livestock agriculture can be prioritised, to optimise economic and environmental harmony of ESS supply and demand. These include water and air quality linked to agro-ecological husbandry; enhanced landscapes and biodiversity through subsidy and commercial PES, which connect and create agricultural habitats; and shared cultural services between rural and urban citizens leading to care for rural landscapes.
Gloucester County - The focus is on water quality and water storage, together with flood regulation and food production. Attention is placed on soil, biodiversity, and minerals, as well as in innovations in governance – mapping + indicators are used	Natural Flood Management is increasingly important as a nature-based intervention which offers multiple socio-ecological benefits. A major challenge remains the definitive isolation and quantification of FRM impacts, which may also depend on other variables. In urban areas, nature-based solutions called Sustainable Urban Drainage Systems and are usually nature-based green infrastructure solutions installed within urbanisation/building developments. A major challenge is the long-term maintenance of these features, as SUDS are not a legal requirement.	The wide diffusion of stakeholders needed to deliver catchment interventions require support networks and incentivisation; as well as cross-border and cross-sector governance. More and longer-term impact analysis is needed to assess the effectiveness of nature-based flood interventions. This includes a better alignment between FRM project funding periods (generally 5-6 years) and the life-span of NFM interventions. The long-term management of urban NFM is sub-optimal and not always enforceable over the lifetime of the intervention.
Frankfurt/Rhine-Main Region -ESS is intended to be used as a tool to reduce land take at regional scale based on mapping + indicators (quantification, and to provide direction to land use planning)	ESS is a crucial argument to inform decisions about land take Necessary steps for the application of the ESS concept in spatial planning: 1. Selection of relevant ESS and appropriate indicators.; 2. Decision on scales and system references: Grid area approach, hydrological catchment areas; 3. Assessment of supply and demand, normalisation via 6-step linear scaling (scale 0-5); 4. Monetisation of benefits and costs of ESS changes; 5. Implementation of a web GIS tool Pilot application needs funds for staff and data Spatial relations between supply and demand must be considered because even if	Making the benefits of ESS visible and integrating them into planning practice (GIS-based tools, SEA, landscape planning) is essential for sustainable development. Selection of suitable ESS for the region is crucial (relevance, scale etc.); Knowledge gaps especially on the demand/user side (including data availability) and monetization. Need for standards and guidelines to simplify application in practice German legal planning system needs to adopt ESS in a qualified

CoP ESS partner Topic	Summary of findings	Key Learnings
	ESS (supply) is sufficiently available in the Outer Space, it does not necessarily reach the user (demand), e.g., cooling potential and fresh air production of a forest and demand of residents (Inner Space). For sustainable development, not only should ESS lost due to interventions in nature be compensated, but also future demand of ESS created by the land use change.	way to comply with the legal demand to take all available information concerning planning decisions into account
City of Helsinki and Luke (Finland) -Seasonal mobility is the motivation to investigate ESS integration in land use planning as green infrastructure – namely how ESS are threatened / challenged by mobility and seasonality	COVID-19 has increased mobility and multi-locality => showing value in ESS but also increasing pressure on ESS. ESS is much more on the national and regional political agenda because of the increasing interest and pressure on ESS	Due to Covid-19, rural areas and benefits obtained from ESS are on the public and political agenda more than ever – a turn that nobody really expected in rural-urban relations.
Lucca Rural-Urban Connections Lab- The focus 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. In this context, this is aimed at strengthening the Intermunicipal Food Policy	Mapping and bundling are a tool for representing the potentialities of ESs supply of peri-urban spaces. The identification of the destination of the different spaces, in terms of agricultural activity in various areas of the territory, etc. provides knowledge useful for territorial planners.	The ESS concept is not widely known by policy makers and planners, neither by most citizens it remains implicit and not explicitly used as a tool for knowledge or for the definition of standards (in the domain of territorial planning). More often, single environmental issues are the concern and object of mapping (e.g., hydraulic risk maps, soil permeability maps, etc.). However, a wider and integrated view of the different issues is lacking. ESs mapping is a tool that aims (but partly succeeds in) integrating specialized knowledge (that normally supports the preparation of planning tools) and to make other territorial stakeholders aware of the connections between the various issues.
Lisbon Metropolitan Area (LMA) - Using ESS to promote more sustainable land use, reducing land take by exploring ESS based planning and management tools	ESS may become pivotal in spatial planning if linked to proper mechanisms and tools. There is a need to further develop methodological approaches tomultiscale ESS mapping mixing participatory and expert-based approaches, that integrate multiple knowledge bases as suitable to support planning practice Explore sustainable food education to rising ESS awareness.	The power of linking ESS to participatory approaches and new governance models in progressing towards innovative multiscale and cross sectoral and place-based solutions.

Tables 9 and 10 present outcomes and learnings achieved by CoP partners in the work developed in each LL. The next stage was a convergence of perspectives from all partners in the CoP, to cross-related their individual findings. This collective identification of overall findings and learning within our CoP ESS was achieved at a brainstorming meeting, using the MIRO platform, which took place on May, 14th, 2021. The meeting reflected upon the CoP process overall and the conclusions drawn from the LL activity and from other resources developed in the CoP such as our Research Briefs.

This collective process allowed CoP partners to summarise, and cross-relate, key learnings and findings in each LL, turning it into collective findings which are presented in Table 11, to synthesize the overall discussion. This outcomes exercise closed the learning process with CoP ESS.

Table 11 - CoP ESS collective outcomes, structured in findings and learning

- **Findings -** Our CoP findings provide examples that:
- Rural-Urban relations are fuzzy, the notion of synergies in rural-urban is intriguing and subject to interpretation
- It may help if ESS scientific findings are accessible to formal, legal planning procedures, as ESS are not yet established in formal spatial planning procedures; the bundling of ESS will help to avoid duplication in assessment, as will the long-term monitoring of the impacts of different types of land management, to support the process of bundling.
- There seems however to be a consensus that continuity in a territory must be ensured, with a constant Rural-Urban flow, but circular approaches are better and linear linkages in Rural-Urban should be avoided.
- Urban-rural should be seen as a proxy for the dualism guiding land take decisions in spatial planning, about developed land and not-yet-developed land, regardless of the areas in question being defined as rural or peri-urban.
- In the cognitive framework of planning tools there are many themes that highlight aspects that are not called ecosystem services but are indirectly related to them; the lack of cross-sectoral "communication" can drive towards a lack of policy coherence.
- The is a need for governance systems to link rural-urban, notably it is important to recognize the interconnection between urban and rural land managers and ensure rural land managers are represented in spatial planning decision-making bodies, or that they are consulted at the outset of any intended interventions which demand land use change; presently governance arrangements do not favour cross-sectoral relations.
- ESS are a crucial argument to inform decisions about land take; planning remains aligned with unsustainable functional land allocations, which stifle circular rural-urban ESS interdependencies and do not capture extra-territorial impacts; actually, the challenge for planners is to use approaches that allow or support them to resist pressures that lead to urbanisation.
- More research and financial tools are needed to understand the optimal composition of blended (state-private) payment for ESS for bundled ESS delivery. A vital aspect of this is ensuring longer-term ESS management of ESS is secured within spatial development.
- COVID-19 has increased mobility and multi-locality, showing greater understanding and value in ESS but also resulting in an increased (recreational) pressure on the ESS due to increased demand, perhaps also from new users.
- There is still a tendency to see rural as the exclusive ESS supplier, and urban as the exclusive ESS consumer, assuming that there is a unidirectional flow, limiting the valuation of proximity services.
- ESS mapping at multiple scales makes visible that ESS values are not absolute but relative to scale of analysis, the existing knowledge and the level of governance, challenging cross-border mapping, and scalar integration.
- 'GI as a nature-based, low-carbon solutions, remains highly marginal in water management approaches based on urban flood-impact risks that undervalue the importance of extended and diffuse rural land management arrangements.

Learnings - our CoP core learning points recognize that there is a need for:

- Methodological development to ESS mapping to integrate multiple knowledge bases; the attempt to use mapping comes after a compromise between expert and traditional knowledge - supply and demand need to be made explicit using a multiscale approach.

- Bundling of ESS is important in two ways: (1) patterns of association of ESS avoids double-counting, improves dealing with synergies and trade-offs; and (2) a specific ecosystem providing a set of ESS in systematic way values spatial coincidence of ESS for the same territory (multifunctionality). Identifying bundles is objective and method dependent; integration, or the connection to multi-functional land-use, needs further research.
- Transfer/translate existing information on biophysical process and functions into an ESS conceptual framework.
- Green infrastructure to be valued as a tool to make ESS operational in rural-urban relations and to structure ESS flows.
- Transparency and awareness of the limits of ESS mapping need to be understood and shared by all.
- Governance arrangements are required to make decisions on ESS priorities and conflicts.
- Role of community partnerships in setting new governance arrangements to enhance and promote ESS; the role for communities in taking care/preserving ESS needs to be explored further.
- New governance arrangements for payment for ESS, to ensure they are conducted in more balanced ways to realize synergistic effects.
- Exploring the potential of rural-urban contracts of reciprocity to enhance ESS.
- Compensation for ESS loss can need four times more land than the size of the area transformed from outer space to inner space.
- Integration of regional economic growth and ESS service delivery, by highlighting rural-urban interdependencies.
- Due to Covid-19, rural areas and benefits obtained from ESS are on the public and political agenda more than ever - which nobody really expected but is now likely to persist.
- Need to further explore the scale-specificity of each ESS, it integration ESS flows and value of proximity.

4.3 Recommendations based on findings and learnings with the CoP ESS research

The essence of the CoP ESS research findings and learnings, as above described, is presented in the following bullet points:

- Rural-Urban relations are fuzzy, however ESS are recognized to play a key role in a constant rural-urban flow, where it makes more sense to think of circular approaches in a territory in continuity; urban-rural should be seen as a proxy for the dualism guiding land take decisions in spatial planning, about developed land and not-yet-developed land, regardless of the areas in question being defined as rural or peri-urban.
- There is still a tendency to see rural as the exclusive ESS supplier, and urban as the exclusive ESS consumer, assuming that there is a unidirectional flow, limiting the valuation of proximity services. More research and financial tools are needed to understand the optimal composition of blended (state-private) payment for ESS, for bundled ESS delivery. A vital aspect of this is ensuring longer-term ESS management of ESS is secured within spatial development.
- ESS are not yet established in formal spatial planning procedures, but ESS are a crucial argument to inform decisions about land take; the bundling of ESS will help to avoid duplication in assessment, as will the long-term monitoring of the impacts of different types of land management.
- ESS mapping at multiple scales makes visible that ESS values are not absolute but relative to scale of analysis, the existing knowledge and the level of governance, challenging cross-border mapping and scalar integration.

- The is a need for governance systems to link rural-urban, notably it is important to recognize the interconnection between urban and rural land managers and ensure rural land managers are represented in spatial planning decision-making bodies, or that they are consulted at the outset of any intended interventions which demand land use change.

Given the above, our CoP ESS research highlights the following four recommendations:

Methodological development for ESS mapping need to integrate multiple knowledge bases, including expert as well as traditional knowledge - supply and demand need to be made explicit using a multiscale approach; it is also needed to further explore the scale-specificity of each ESS, the ESS flows and value of proximity; bundling of ESS is important to avoid double-counting and improves dealing with synergies and trade-offs; integration, or the connection to multi-functional land-use, needs further research;
Governance arrangements are required to make decisions on ESS priorities and conflicts; there is a key role for community partnerships in setting new governance arrangements to enhance and promote ESS and their in taking care/preserving ESS needs to be explored further; new governance arrangements are also needed for payment for ESS, to ensure they are conducted in more balanced ways to realize synergistic effects; and the potential of rural-urban contracts of reciprocity to enhance ESS need to be further explored;
Green infrastructure needs to be valued as a tool to make ESS operational in rural-urban relations and to structure ESS flows; 'Short, medium and long-term data is urgently needed to understand the specific and combined impacts of rural and urban flood interventions based on GI enhancement. To support this, maintenance and monitoring of interventions will be needed in the form of: (i) the inclusion of cross-sectoral monitoring partnerships at the initiation stage; (ii) blended and co-produced PES schemes which respond to local commercial interests and subsidies; and (iii) stronger and clearer regulation of long-term GI maintenance within development agreements.
We found that the **importance of spatial planning**, especially in regulating urbanisation and categorising rural functions in our constituent LLs, highlighted mainly proximate rural-urban ESS relationships, such as water quality, waste cycles and landscape recreation. Other ESS, e.g., air quality, biodiversity (and its multi-level governance) and food production linked to global markets, exposed different constellations of stakeholders, governance arrangements and regulatory tools in dispersed rural-urban ESS relationships. In both cases, we were able to highlight the interdependence of rural and urban territories through ESS user-supplier relationships (cf. figure 8 and 10); we also learned about the integration of regional economic growth and ESS service delivery, by highlighting rural-urban interdependencies.

5. Monitoring and evaluation of learning

5.1 Background

Throughout ROBUST, CoP ESS evolved through a process of sharing and learning across the pluri-disciplinarity of both research and practice partners that worked in an interdisciplinary way. At regular moments, coincident in general with the consortium meetings, meetings of the CoP partners would be facilitated in different ways to encourage participations of all partners (brainstorming, world café, and other). Initial expectations with the CoP ESS at start where subsequently structured in five themes agreed by all partners in an interactive way. This enabled the consolidation of the application of the conceptual framework of the CoP ESS in each LL. Finally, an outcomes exercise, reflecting partners' experiences, closed the learning cycle.

Section 2 of this report outlined the process of iteratively and systematically discussing, articulating and elaborating a research agenda for the CoP ESS. In summary, the main steps included:

- Agreement of shared interests
- Development of a conceptual ESS research framework to examine rural-urban links
- Composition of a research agenda with related questions
- Conversion of the agenda into a shared repertoire
- Distillation of the repertoire into two levels of research outputs in standard templates (research briefs and their shorter equivalents, the practice briefs)
- Regular internal CoP partners' communications and their timings are provided in table 2, showing the various moments of exchange and learning.

Within ROBUST, the LL form the main experimental arenas for the innovation and were largely driven by the needs of practice partners. By contrast, CoPs, as thematic research fora, shared cross-cutting challenges which emerged from the LL. Section 3 above outlines the process of conceptualisation of the research agenda. The CoP research agenda nevertheless remains focused on the illumination of practical challenges of rural-urban governance in relation to ESS. To try support common understandings, accessible and transferable terminology across research-practice boundaries and to embrace and learn from distinct national and cultural perspectives, CoP ESS made good use of several the participatory methods provided in the WP3 guidance (D3.1). We employed the following techniques:

- Stakeholder mapping (demanding leadership by practice partners)
- World Café (whereby CoP partners hear about multiple local contexts from a LL and question the presenter in detail, for a set period, in rotation);
- Systematic evidence reviews (for the development of the Research briefs);
- Concept mapping (to graphically synthesise group discussions).

The development of the Tools for Matching was an explicit attempt to ensure practice-based considerations were compiled and presented from the different LLs, either through practitioner authorship, or with a high degree of data provision and oversight by practice partners. The Tools exposed some contexts that are highly localised and have only limited transferability. An example of this is Multi-scale Integration of ESS in Spatial Planning, which covers legally contexts behind German spatial planning law. Nevertheless, opportunities are identified linked to governance scale which tie ESS to functions, rather than (more conventionally allocated) land uses:

Balancing of interests (of all kind, usually conflicting demands for land use) is a core legal requirement and central to spatial planning. Introducing and applying the idea of ecosystems providing services potentially put them at eye level with other land uses and land use functions. … Too often eco systems are mentally connected to nature reserves … or seen as an add-on… The Regional Authority is in charge of a dedicated instrument of spatial planning which operates on an appropriate level to assess eco system services within a functional region: It is the right scale to, for example, reflect on the regional effects of different ecosystem services and possible translocations[3].(Henke 2019)

In Garfagnana, Tuscany, the development of a regional food strategy was designed to underpin ESS through the protection of small-scale farming and the preservation of agricultural bio-diversity. This process relied on the development of multi-actor 'food communities' defined in Italian law, to embed multiple ESS in the agri-food chain.

'The creation of the Community for Food is a key element for supporting ecosystem services, through the maintenance and dissemination of historical and cultural values of agricultural biodiversity, local knowledge, and traditions. In addition, it represents an opportunity to set up new farm enterprises that are more aware of the necessity to develop multifunctional, more resilient farming models.' (Arcuri, Galli & Rovai 2019).

These two locally unique examples, prepared with rural-urban ESS functional links in mind, nevertheless offered accessible and transferable insights for all CoP ESS partners.

The focus on a few core themes contributed to establish a collaborative learning process at CoP level.In addition, the CoP started with a common entry point which provided some link across different LL teams, even though it was rather spatial planning driven. The fact that different LL operated at different levels, some at metropolitan level others at municipal level might have delayed the collaborative learning process, namely the interaction between the different research and practice partners involved, as well as the reflections upon findings achieved in LL.

5.2 The facilitation process

The CoP started off with a strong conceptual and methodological direction to enable CoP partners' full application in the specific LL

Early attention to sharing ideas and discussing joint interests was a useful start to sketching out what became a CoP research agenda. In particular, the matching themes (see table 5) and subsequent matching tools development was a good way to ensure that technical ESS expertise a) was developed together by individual LL teams of practice / research partners and b) complemented expertise and experiences within the CoP. The matching tools were later refined into research briefs. In both cases, writing within templates was a useful mechanism to achieve a consistent approach across the CoP themes.

Communication across CoP partners was good, and we had several opportunities to exchange and elaborate. The participation in two academic URP conferences benefitted from the technical contribution of practice partners and revealed the co-productive potentials of the CoP.Implementation of CoP ESS in the work developed in the LL is still an ongoing process.

[3]Translocation: Eco systems threatened by land take transplanted, or: Eco system services provided by eco systems located elsewhere.

The methodological approach, based on findings exclusively emerging from LL, showed limitation in progressing the scientific knowledge on ESS in ROBUST, but proved its value in identifying and bridging science-practice gaps as well as alerting to the relevance of ESS in reinforcing rural-urban linkages.
Evidence of learning processes via the CoP

Testimony from James Blockley

> *"As principal officer for the Gloucestershire Lead Local Flood Authority team, I have been involved in the Community of Practice [ESS] for around two years. During that time, I have found the process to align perfectly to both my own aspirations for the direction of flood risk management in the County and also to wider organisational priorities.*
>
> *In October of 2019, I was fortunate enough to join the CoP for their meeting in Hannover. This provided a real-world context of how local authority delivery and academic strategy can come together for the benefit of shared goals; not just in Gloucestershire, but across the EU.*
>
> *Since then, my involvement at a local level, primarily with the University of Gloucestershire, has brought invaluable perspective and constructive support in promoting awareness and delivery of the 'working with natural processes' methodology and rural-urban synergies across the region.*
>
> *I look forward to remaining involved."*

6. Conclusions - Core messages of the CoP ESS

- ESS are crucial in ensuring and sharing the benefits across different types of territories and, notably, ESS highlight the ecological interdependence of rural and urban territories.
- Optimising this requires better cross-sectoral (e.g., planning, economic development, and resource management) policy co-ordination within a territory.
- ESS needs to be fully integrated into different scales of spatial planning - local, municipal, and regional - to capture the cross-border reach of ESS (e.g., river catchments, landscapes, and shared public benefit).
- ESS provide substantial economic benefits and economic incentives are needed in the market and public sectors to enhance green enterprise innovation.
- New forms of governance are needed that succeed to involve and engage multiple urban and rural actors' interactions and stimulate collective action.
- There is still a major science-policy-practice gap that needs to be bridged to foster territorial applications.
- Living Lab approaches show potential in creating a common knowledge-base and lexicon on ESS amongst stakeholders across scales and sectors.

7. References

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Sustainable Food Systems
Community of Practice Report

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September 2021

1. Introduction to the CoP

1.1 Aim of the CoP 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 and match them with research grounds to testify good and bad examples of rural urban relations.

In new localities, we were researching different urban planning and land use techniques and practices that have impact on sustainable food systems and resources while we were trying to better understand new forms of space and resources for production. When it comes to governance, the key was to understand the networks of governance and its functional results. We wanted to understand forms of knowledge sharing among different social and age groups, we wanted to understand the motivation for cooperation and how to keep it. By understanding legislative solutions to enable sustainable food systems we tried to better understand possibilities for smart development and the necessary capacities and instruments to develop and implement related strategies.

This gave us an opportunity to better read the smart growth and analyse links to other policies unrelated to food and agriculture as a base for the development of knowledge on cross-sectoral impact. In some cases, our partners tried to understand the cost and benefits of the different food systems. Our results lead to the development of "how to" guide to support future development of lively sustainable food systems. To share knowledge, we implemented webinars and published articles and short learning papers on different angles of food systems.

1.2 Co-ordination and management of the CoP

The CoP was a coordinated action among Ede Municipality (Netherlands), Gloucestershire County (UK), Lisbon region (Portugal), Ljubljana Urban Region (Slovenia), Lucca Province (Italy), Mid Wales (UK), Tukums Municipality (Latvia) and Valencia Region (Spain).The CoP was coordinated by Oikos (research partner from Ljubljana Urban Region, Slovenia). The CoP work took participatory approach where partners are strongly leading the content and pace of the work while coordinators were supporting the CoP with information sharing and administrative support.

1.3 Report aim and structure

The aim of the report is to present the joint work and results of the members of the CoP as a group and to show joint research and exchange of practices. The report is structured to show the research process and learning cycle, review of the CoP themes and common learning. The monitoring and evaluation of learning show to the impact of the CoP activities and should be seen as a key to the wok of the CoP.

1.4 Overview of the functional theme

In popular understandings of the rural and the urban, food production is often presented as one of the defining features of the former. This association has been partly overcome both in academic thought (in understanding the rural and the urban as contingent and socially constructed categories) and through the lived experience (with decreasing importance of agriculture in rural economies of the global North). However, food remains one of the key linkages between cities and the countryside.

Literature investigating food systems and supply chains thus often more or less explicitly touches upon rural-urban relations and synergies.

Within the literature addressing territoriality more directly, calls for localized food production are contrasted with the "food from nowhere" produced by industrial and long supply chains. Some of the early debates summarized by Feagan (2007) emphasize the importance of place in food production, with concepts such as foodshed or terroir relating particular qualities of food product to the place-specific biophysical conditions. In practical terms, this connection can be expressed through European certifications of geographical indication (Protected designation of origin or Protected geographical indication) aiming to acknowledge the value of the local bio-social environment, including often also traditional production methods. While such geographic certification can serve as leverage to particular production areas, they do not adequately account for issues of distribution and consumption.

Efforts to bring together consumption and production, along with distribution, sustainability and health, are seen in the rise of urban food policies. Urban food policies are defined as a "concerted action on the part of city government to address food-related challenges" (IPES Food 2017, p. 9). Urban food policies often emerge by way of engagement and pressure by civil society and other actors. These policies reflect different concerns and contexts. Their organizational structures and foci differ, but they tend to share similar goals of supporting sustainable and just food systems, with some working to support policy development for improving healthy food, increase availability and access to sustainable food, reduce waste, change land use or influence land use planning, enhance local markets, and/or strengthen local food economies. Moreover, urban food policies are often developed to address democratic deficits at the national and global level, with a focus on participatory processes and greater citizenship engagement, linking diverse stakeholders and policy domains, and prioritizing sustainable, inclusive planning and health.

It must be stated that urban food policies are but one aspect of broader-scale food systems change (Barling et al 2002). Many problems associated with the food system rely on issues that expand beyond the jurisdiction of cities including: trade, economic, agriculture and public health. These are policy areas that usually cannot be fully addressed at the city level and point to the need for policy integration (see below). That does not however take away from the transformative potential of cities and of municipal policy and the emerging role cities are playing in these processes.

However, the increasing recognition of relations between rural and urban areas are supporting new territorial governance arrangements. Such arrangements are being championed by cities including Ede and Lucca, and supported by actors like the FAO who are promoting a city-region approach that aims to foster the development of resilient and sustainable food systems within urban centres, peri-urban and rural areas surrounding cities by strengthening rural-urban linkages. Such an approach requires city-regions to assess their food (inter)dependencies, identify weaknesses and potential pressure points, and where possible, develop targeted strategies to improve their food systems in such a way to include all actors, processes and relationships that are involved in food production, processing, distribution and consumption in a given city region (FAO 2019).

Another stream of literature calls for the localization of both production and consumption as a way of improving the ecological impacts of food (mostly through decreasing transportation, packaging, cooling etc.), fostering local economies and agency. Authors promoting economic localization (such as Desai and Riddlestone 2002, Douthwaite 1996) do not limit themselves to food alone, though agriculture has a prominent space in their imaginaries.

A transition to more sustainable forms of food production and consumption is likely to involve the reorganization of food production closer to urban markets. We already see the peri-urban emerging as a key site for sustainable agriculture initiatives, not only because of the proximity to urban consumers, but also because of other structural conditions that create space for experiments with alternative food systems. However, an over-emphasis on peri-urban areas must not come at the expense of what happens to rural regions farther from the cities. These rural regions should still be linked to sustainable urban food networks, but there is more research and analysis needed to understand how to most appropriately move beyond (re)localization.

2. The research process and learning cycle

2.1 Composition of the CoP

CoP members had their set of goals i.e. overarching themes they would like to explore. This gave the CoP a wide range of possibilities for cooperation among members but also to make coordination rather complex as the list of topics is broad. Further on, each of the CoP partners also defined their research objectives to guide their exploration of the overarching theme selected for the motto. In the end, each of the CoP partners defined what would be innovative with respect of their current experience, research field and needs of research stakeholders.

CoP partners teamed up in smaller, more focused groups for research of similar or interrelated topics. Such associations fluctuated freely during research, as some of the CoP partners may have joined after observing the relevance of the specific group's research topic for their own objectives. The Living Labsof each of the CoP partners were the key for the joint work of the CoP.

CoP Partner	Motto	Research objectives
Ede Municipality	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.	Better insights into the opportunities/limitations of wider municipal food policy dash-boarding in terms of regional rural-urban relations and interdependencies.
Gloucestershire County	To assess the potential and feasibility of circular economy (CE) and natural capital (NC) growth models in the county and their potential for synergies and improved urban-rural linkages.	In the sustainable food systems theme, the objective is to collaborate with stakeholders in food procurement contracts to identify and promote practices which reflect CE ap-proaches to material flows, for example minimizing waste.
Lisbon region	Territorial cohesion from within: bridging metropolitan communities and economies for improved urban-rural synergies.	How to enhance functional relations through processes of co-creation, learning and innovation? 1. To capture an integrated understanding and shared knowledge of local assets - learning with existing knowledge, and creation of new; 2. To stimulate mutual dependencies and learning networks through dialogues and joint initiatives for cooper-ation to enhance the value of local assets; 3. To create innovative institutional frame-works for improved decision-making/governance systems
Ljubljana Urban Region	Functional collaborative partnership/platform to co-design and operate short food supply chains in Ljubljana's City rural-urban relations.	Understand the needs in the region and the potential to increase the use of locally produced food in region's public institutions
Lucca Province	Developing a local food policy and a territorial plan to reduce urban sprawl, steer synergies between the city and the countryside, and valor-ise cultural heritage, landscape and territory.	Analyse the policy process and the governance model for the local food policy (promo-tion of sustainable food system, strengthening of rural urban connections) and identify how territorial planning can contribute to promoting multifunctional and sustainable agriculture and food systems in peri-urban areas
Mid Wales	Polycentric growth without an urban hierarchy.	To examine and strengthen mechanisms for engaging governance actors within and

CoP Partner	Motto	Research objectives
		beyond Mid Wales in collectively developing a strategic vision for the region, examine the extent to which principles of smart development are reflected in economic growth plans and projects in the region and to identify and test opportunities for incorporation and to assess how rural and urban resources are enrolled in smart development initiatives and the added value achieved through rural-urban synergy
Tukums Municipality	Developing a cultural strategy for the municipality by identifying key development objectives and priorities.	Expand upon the significance and popularity of Tukums market by organizing a series of events on rural-urban relations, focusing on the best ways for rural producers to present and package their products and highlight their connection to local culture and cuisine.
Valencia Region	Contributing to implement rural-urban territorial processes in the domains of business, labour markets, public infrastructure and sustainable food systems, in the framework of a more territorial and comprehensive view.	To analyze what rural-urban relations and governance models are being generated in relation to sustainable food systems, playing an active role promoting and participating in work-groups as governance bodies focused on development strategies in the field as well as specific initiatives.

2.2 Timeline of activities/meetings and documented interactions

The CoP members cooperated on several research topics and developed several joint research or practice papers. A broad agreement on topics and form of cooperation was reached at the Partners Meeting in Helsinki in May 2019, based on preparatory and exploratory activities performed in 2018 and early 2019. As a result, CoP members collaborated on preparation of the 3 types of papers: snapshots, thematic briefings and articles (see chapter 2.3 for further description).

The work of the CoP was affected by the COVID-19 outbreak in 2020, with cancellation of the already planned meetings between the stakeholders at Partners Meeting and ICLEI Informed Cities Forum in Lucca in March/April 2020. This limited already planned collaborative research activities of project partners, as well as further closer collaboration among Living Labs as the possibilities to meet and discuss challenges in detail with possible field visits. Collaboration thus shifted to purely online format and was limited to research that could be done online as the usual fieldwork techniques (interviews, focus groups, observation) were restricted.

Snapshots

Topic	Partners	Coordination
Food strategies (preparation, participation, implementation)	Tukums Municipality, Lucca Province, Ede Municipality, Gloucestershire County, Mid Wales, Lisbon Region, Valencia Region	Gloucestershire County
Indicator frameworks	Ede, Lucca	Ede
Branding, alliances, and link to PGS	Lucca Province, Ljubljana Urban Region, Tukums Municipality, Mid Wales	Lucca
Governance	Mid Wales, Lucca Province, Valencia Region, Tukums Municipality, Lisbon region, Ede Municipality	Tukums
Territorial cohesion	Mid Wales, Valencia Region, Tukums Municipality, Lisbon region	Mid Wales
Procurement Innovation	Ljubljana Urban Region, Lucca, Tukums	Ljubljana Urban Region

Thematic Briefings

Topic	Coordination
Innovation practices that LLs are using or have identified during their work	CoP Coordinators
Branding and cross sectoral practices (branding practice, cooperation of authorities/sectoral institutions)	CoP Coordinators
Public procurement and food systems (fostering the sector, governance and coherent policymaking, synergies)	CoP Coordinators

Articles

Topic	Partners	Coordination
Food policy indicators	Ede Municipality, Lucca Province, Ljubljana Urban Region	Ede
Comparison of local food strategies	Mid Wales, Lisbon Region, Tukums Municipality, Lucca Province, Ede Municipality, Gloucestershire County, Valencia Region	Gloucestershire County
Food policy and territorial cohesion	Mid Wales, Valencia Region, Tukums Municipality, Lisbon region	Mid Wales

In addition to papers, the CoP members agreed to organise several webinars as a way to present and discuss their findings and to include their Living Lab (LL) members. Discussions about local practice and with other CoPs also led to organisation of a field day to see the local experience and look at synergies between topics of two CoPs – food systems and cultural heritage.

Webinars

Topic	Partners	Coordination	Timing
Branding	Lucca Province, Ljubljana Urban Region, Tukums Municipality, Mid Wales	Lucca	27 July 2020
Public procurement and impact on local food chains	Ljubljana Urban Region, Lucca, Tukums, Lisbon	Ljubljana urban region	15 May 2020
Local food strategies	Tukums Municipality, Lucca Province, Ede Municipality, Gloucestershire County, Mid Wales, Lisbon Region, Valencia Region	Gloucestershire County	10 October 2019

CoP meets local experience

Topic	Partners	Coordination	Timing
Expectations and experience of LL members with new food system concepts (local food strategies, branding, PGS) and its cultural connections	Tukums LL, CoP Sustainable Food Systems members and CoP Cultural Connections members	CoP Cultural Connections coordinator - as an additional day to the Partners Meeting in Riga in November 2019	5November 2019

2.3 Processes for communication / knowledge exchange / learning

Outputs

Outputs of the CoP work may be seen in different papers/documents which were produced over the period of the project and ensured the cross fit of the researchers' and practitioners' work. Papers developed are listed in tables above.

The idea of the snapshots was to record practice, principles or example for other COP members to looks at and examine within their own LL. When the research work was done these generated grounds to develop thematic briefings as a semi scientific and focused paper among practitioners and researchers to better understand the related processes and structures. Along with the whole process articles were written by the research partners using and observing cases presented with in the Snap-

shots and thematic briefings. As discussed CoP members agreed to develop three levels of outputs and developed them as follows:

Paper/document	Level or capacity or scope	Content
Snapshots	Information, focus on practitioners, sharing, motivation	Information, contacts, practices, practitioner oriented
Thematic briefings	Semi scientific and focused on practitioners	Cross cutting information from practitioners with scientific background and analysis.
Articles	Scientific	Based on scientific work and findings developing articles with scientific value but cross fitting them with practitioners needs and topics

Communication

Regular communication in the CoP was based on the Skype and Zoom meetings and email communication with information provided to all members of the CoP and coordinators of other CoPs.

Database

The database of the CoP available at the Wageningen University data management system updated regularly with the final version of the documents.

Deliverables

In the time of project implementation members of the CoP contributed over 45 pieces of evidence or documentation to the body of the knowledge of Robust in several forms. Some of the knowledge and information was developed for the us in the Living lab while some of the knowledge and information was developed to be shared and to be built on within the common objective of the CoP. In other cases, the members of the CoP contributed the information and material which was used in other deliverables of other CoP or in the joint deliverables of the Robust project.

Type	Contributing or coordinating Living Lab	Title of the contribution
Practice based abstracts **8 items**	Ljubljana Urban region	Green Crate Scheme
	Ljubljana Urban region	Local Food Marketplace
	Gloucestershire	Dynamic Procurement Systems
	Municipality Tukums	Food system governance enabling rural-urban synergies
	Valencia Region	How stakeholders in Valencia living lab adopt a sustainable food systems approach?
	Valencia Region	ROBUST Living Labs held regional workshops on cross-sectoral interactions
	Province of Lucca	Participatory Guarantee Systems for the Red Bean of Lucca
	Municipality Ede	Urban Food Policy Dashboarding in Ede
Snapshots/ Rapid appraisals **10 items**	Valencia	Expressions of Urban – Peri-Urban – Rural Relationships: Valencia - avier Esparcia, Juan Ramón Gallego, Sergio Mensua, Rafael Mesa Manzano (rapid appraisal)
	Ljubljana Urban Region	Rural-Urban Governance Arrangements and Planning Instruments: Ljubljana – Jurij Kobal (rapid appraisal)
	Ljubljana Urban Region	Expressions of Urban – Peri-Urban – Rural Relationships: Ljubljana – Mojca Hrabar (rapid appraisal)
	Municipality Ede	Rural-Urban Governance Arrangements and Planning Instruments: Ede - Henk Oostindie (rapid appraisal)
	Municipality Tukums	Expressions of Urban – Peri-Urban – Rural Relationships: Tukums - Talis Tisenkopfs, Emīls Ķīlis, Sandra Šūmane (rapid appraisal)
	Municipality Tukums	Rural-Urban Governance Arrangements and Planning Instruments: Tukums - Sandra Šūmane, Emīls Ķīlis, Miķelis Grīviņš(rapid appraisal)
	Lisbon metropolitan area	Expressions of Urban – Peri-Urban – Rural Relationships: Lisbon - Maria do Rosário Partidário (rapid appraisal)
	Gloucestershire	Expressions of Urban – Peri-Urban – Rural Relationships: Gloucestershire - Daniel Keech, Matt Reed, Carey Stevens (rapid appraisal)
	Province of Lucca	Expressions of Urban – Peri-Urban – Rural Relationships: Lucca - Francesca Galli, Sabrina Arcuri, Massimo Rovai (rapid appraisal)
	Province of Lucca	Rural-Urban Governance Arrangements and Planning Instruments: Lucca Francesca Galli, Sabrina Arcuri, Massimo Rovai (rapid appraisal)
Research and Innovation agendas **9 items**	Ede Municipality, Gloucestershire County, Lisbon region, Ljubljana Urban Region, Lucca Province, Mid Wales, Tukums Municipality, Valencia Region, Lisbon metropolitan area	
Thematic briefings 2 items	Gloucestershire	Food strategies
	Ljubljana urban region	Public procurement
Webinars and workshops	Gloucestershire	Webinar: Muncipal Food Systems available at: https://rural-urban.eu/publications/webinar-muncipal-food-systems
	Province of Lucca	Webinar: Local Branding - How to Guarantee "True" Local

Type	Contributing or coordinating Living Lab	Title of the contribution
6 items		Food available at: https://rural-urban.eu/publications/webinar-local-branding-how-guarantee-true-local-food
	Ljubljana urban region	Webinar: Public Procurement for a Sustainable Food Supply available at: https://rural-urban.eu/publications/webinar-public-procurement-sustainable-food-supply
	Robust	Webinar: Happy Hour with Carolyn Steel - Q&A Session available at: https://rural-urban.eu/publications/webinar-happy-hour-carolyn-steel-qa-session
	Robust	Webinar: Sitopia - Rethinking Our Lives Through Food available at: https://rural-urban.eu/publications/webinar-sitopia-rethinking-our-lives-through-food
	Robust	Stakeholder Dialogue Breakfast Summary Report: Fostering the Circular Food Economy Through Stronger Rural-Urban Linkages available at: https://rural-urban.eu/publications/stakeholder-dialogue-breakfast-summary-report-fostering-circular-food-economy-through
Articles and other publications Over 10 items	Municipality Ede	A comparative assessment of local municipal food policy integration in the Netherlands – Lara Sibbing (article)
	Ljubljana urban region	Public participation as condition for quality strategic planning – Jurij Kobal (MSc thesis)
	Valencia Region	The impact of COVID-19 on alternative and local food systems and the potential for the sustainability transition: Insights from 13 countries - Gusztáv Nemesa, Yuna Chiffoleaub, Simona Zolletc, Martin Collisond, Zsófia Benedeka, Fedele Colantuonoe, Arne Dulsrudf, Mariantonietta Fioree, Carolin Holtkampg, Tae-Yeon Kimh, Monika Korzuni, Rafael Mesa-Manzanoj, Rachel Reckingerk, Irune Ruiz-Martínezj, Kiah Smithl, Norie Tamuram, Maria Laura Viterin, Éva Orbána (article)
	Lisbon Metropolitan Area	Lisbon Food Strategy - Alberto Serra (policy document)
	Mid Wales	A Rural Vision for Wales - Thriving Communities for the Future: Evidence Report - Michael Woods, Jesse Heley, Helen Howells, and Bryonny Goodwin-Hawkins (report)
	Mid Wales	How Local Is Local? Rethinking local food and the public plate in Monmouthshire, Wales - Bryonny Goodwin-Hawkins (report)
	Municipality Tukums	Rural-Urban Business Model Profile: Valorising Food Heritage and Rural Lifestyles – Sandra Šūmane (factsheet)
	Gloucestershire	Rural-Urban Business Model Profile: Local Food Hubs - Matthew Reed (factsheet)
	Ljubljana urban region	SFSCs in Ljubljana during the COVID-19 pandemic - Janne Hemminki, Jessica Duncan, Mojca Hrabar (report)
	Styria	Rural-Urban Business Model Profile: Slow Food - Lisa Bauchinger (factsheet)

Type	Contributing or coordinating Living Lab	Title of the contribution
	Robust	Rural-Urban Business Model Profile: Box Schemes - Karlheinz Knickel (factsheet)
	Robust	ROBUST Food Strategy Review - Dan Keech and Damian Maye, (report)
	Robust	Local Food Production to Boost Rural Regeneration - Simona Tondelli
	Robust	B@S Stakeholder Event Summary Graphic: Sustainable Food Systems - Norma Nardi
	Robust	Sustainable Economic Development and the Italian Network on Local Food Policies - Giampiero Mazzocchi
	More articles and scientific papers were produced while the reference is held by the central Robust project and will be listed in other publications.	

Note: not all material produced is recorded in this table.

3. CoP themes and common learning

3.1 Summary of scoping and identification of common issues, indicators and matching (joint enterprise)

Scoping and identification of common issues, indicators and matching took more time than envisaged at the beginning. The structure of joint focused work on research objectives was kept open and dynamic so that the CoP partners could join in or drop out from the focused research groups, depending on how their research and their LL's interests developed with time. Nevertheless, several topics were found where core topic could be explored and each of the CoP partners could branch out if desired.

After Covid-19 pandemic limited face-to-face cooperation, CoP partners focused on specific topics which could be researched regardless of the limitations of the pandemic. As a result, the activities became more academic as LL involvement became limited, but still enabled exchange of experience and findings. Living labs were observing changes in the marketing approach of the small businesses but also changed behaviour of consumers. There is significant difference between the small and larger producers where larger were more reliant on logistical networks which quite often experienced disturbances by the COVID-19 outbreak. Smaller producers in shorter value chains were expecting to gain more advantage of their size and links to the local environment which did not prove true, yet. After the initial shocks caused by CIOVID 19 the markets and the logistic networks bounced back even if in the beginning it look, like the shrink of long value chains will be longer. In the initial stages of the crisis people were more interested in quality of life and their health while it remains to be seen how long the care for the quality of food and personal recreation will remain.

Common learning process ensured integration both of several LLs in the joint work in the CoP as well as of practitioners with the research partners.

Linking expected outputs with interest of each CoP partner

The table below shows individual the Living Labs that were members of CoP, their research objectives, activities and links to other Living Labs with which they cooperated on joint research. Each living lab had different objectives, focus and activities based on needs and interests of their members which in turn influenced cooperation with different living labs in other countries. Moreover, the table also indicates how the joint results and learning were analysed and summarised in joint conclusions.

CoP Partner	Research objective	Innovation	Activities and topics in the CoP	Engagement with	Participation in other CoPs
Ede Municipality	Better insights into the opportunities/limitations of wider municipal food policy dashboarding in terms of regional rural-urban relations and interdependencies.	A more robust and convincing - in the sense of mobilizing extra policy support - monitoring and evaluation of ongoing urban food policy making in Ede municipality.	PhD thesis and coordination of preparation of Snapshot on the Indicators.	Food policy Indicators with Lucca Inputs on indicators for local food strategies coordinated by Gloucestershire County Preparation of article on food policy and territorial cohesion coordinated by Mid Wales.	<u>New business models and labour markets</u> <u>Ecosystem services</u>
Gloucestershire County	In the sustainable food systems theme, the objective is to collaborate with stakeholders in food procurement contracts to identify and promote practices which reflect CE approaches to material flows, for example minimizing waste.	Experiment with strategies to reduce (materials and food) waste in the local food sector, via innovations within supply chain management arrangements. Focal point: User-centered innovation.	Public procurement and especially its facilitation through new IT called Dynamic Procurement Systems (DPS). How the school food contract wording supports local sourcing through the DPS is of particular interest as a governance tool for rural-urban food flows.	developments around on-line retailing in Ljubljana, regional sourcing networks in Lisbon and Valencia municipal collaboration in Styria (for a regional trial of DPS, working across different public sector food buyers). Tukums plans for developing local sourcing in public procurement. Strong collaboration with Mid-Wales around DPS, local food strategy development and anchor institutes.	<u>Social services and public infrastructure:</u> Styria in relation to cross-municipal budgeting to develop what could eventually become learning on the role of anchor institutes as drivers/influencers of food sourcing. <u>Cultural connections</u>: interested in efforts in Lucca to develop a local food plan which centralises the importance of local food. <u>Ecosystem services</u>: Ede: issues of sustainable land management in relation to urbanisation and green infrastructure. Submitted a paper on rural-urban ESS governance and land management to Land Use Policy.
Lisbon region	How to enhance functional	Development of a Metropoli-	Proximity Territorial Economy	Lisbon team contributed to:	<u>New business models and labour</u>

CoP Partner	Research objective	Innovation	Activities and topics in the CoP	Engagement with	Participation in other CoPs
	relations through processes of co-creation, learning and innovation? 1. To capture an integrated understanding and shared knowledge of local assets - learning with existing knowledge, and creation of new; 2. To stimulate mutual dependencies and learning networks through dialogues and joint initiatives for cooperation to enhance the value of local assets; 3. To create innovative institutional frameworks for improved decision-making/governance systems	tan Network of Agroparks (MNA) extended to support commercialization and restoration integrates different components and actors of the food system, providing different services in an innovative way (food supply, leisure, research, education, etc).Developing new approach to new business models that capitalize on ecosystem services using a territorial perspective, including food.	based on Sustainable Food Program in Schools and Networks of sustainable initiatives motivated by ecosystem services (based on a multiple WG actor-based structure). Lisbon Food Strategy was prepared as a guide to approach food systems.	Webinar on public procurement organized by Ljubljana Urban Region, Webinar on food strategies organized by Gloucestershire and Lucca In addition, the team provided support to Wageningen student internship in Lisbon LL on food strategies.	markets: Development of new business models and the promotion of sustainable food systems in school food programmes); development of a Metropolitan Network of Agroparks (MNA) supported by a program extended to commercialization and restoration; developing new approach to new business models that capitalize on ecosystem services using a territorial perspective, including food. Ecosystem services: Promoting knowledge on ecosystem services through to sustainable food education in primary and secondary schools; exploring a MNA spreading as nodes along the ecosystem service based Metropolitan Green Infrastructure, promoting sustainable food systems; capitalizing on ecosystem services including sustainable food systems for territorial development.
Ljubljana Urban Region	Understand the needs in the region and the potential to increase the use of locally produced food in region's public institutions	1. New methods of data collection from producers and users to develop on-time information for the co-development of products meeting consumers' needs and 2. New forms of measuring the impact of different approaches to food chains	The main topics were public procurement innovation, local food supply chains and use of indicators. Due to Covid-19, additional research was conducted on the effect of Covid-19 on direct marketing and local food supply. The Ljubljana team prepared a webinar on public procurement and is leads the preparation of a Snapshot on similar	Forms and approaches to public procurement with Gloucestershire, Lucca and Tukums, Food strategies coordinated by Gloucestershire, possibilities of online retailing with Gloucestershire, Governance coordinated by Municipality Tukums.	New business models and labour markets: shifts in development strategies and their effect on rural-urban connections. Public infrastructure and social services: analysis of open air markets, communal gardens and Demand Responsive Transport (DRT)

CoP Partner	Research objective	Innovation	Activities and topics in the CoP topic. Possible link to PhD thesis and Snapshot on the Indicators together with Lucca.	Engagement with	Participation in other CoPs
Lucca Province	Analyse the policy process and the governance model for the local food policy (promotion of sustainable food system, strengthening of rural urban connections) and identify how territorial planning can contribute to promoting multifunctional and sustainable agriculture and food systems in peri-urban areas	1) The food policy/governance model. Specifically, the innovation consists in experimenting a specific strategic competence that the regional law, within the institutional change occurred in Italy concerning the Provinces, has assigned to the Province itself within its territorial planning competence. The Province thus takes the chance (in ROBUST) to experiment and develop new skills and functions. And 2) The elaboration of Guidelines will support the improved understanding of three functional relations across urban and rural areas (i.e. sustainable food systems, cultural connections and ecosystem services). This will require new mapping tools and data collection.	Main topics covered were food policy governance and territorial planning. Lucca team focused on branding and link to Participatory Guarantee Systems(PGS), as well as on building alliances for food branding and marketing.	Lucca team coordinated the activities related to the topics of branding and PGS. In addition, in was involved in research on: Food strategies coordinated by Gloucestershire County, Indicators coordinated by Ede, Governance coordinated by Municipality Tukums, Procurement Innovation coordinated by Ljubljana Urban Region.	Cultural connections Ecosystem services
Mid Wales	Polycentric growth without an urban hierarchy.		Mid Wales team was involved in development of a Rural Vision for Wales and preparation of Monmouthshire food strategy. In addition, Mid Wales coordinated activities on territorial cohesion.	Strong collaboration with Gloucestershire around DPS, local food strategy development and anchor institutes, Collaboration with Lucca on branding and PGS, Collaboration with Valencia on territorial cohesion	<u>Cultural connections:</u> Collaboration with Tukums <u>Public infrastructure and social services</u>: Cooperation with Metropolitan Region of Styria and Helsinki

CoP Partner	Research objective	Innovation	Activities and topics in the CoP	Engagement with	Participation in other CoPs
Tukums Municipality	Expand upon the significance and popularity of Tukums market by organizing a series of events on rural-urban relations, focusing on the best ways for rural producers to present and package their products and highlight their connection to local culture and cuisine.	Innovations related to the market will be developed and the living lab will look into the possibilities of developing local certification schemes.	Gloucestershire County, Mid Wales, Ljubljana Tukums team focused on food supply planning, public procurement and branding. In addition, the team coordinated preparation of the Governance snapshot.	Food strategies coordinated by Gloucestershire, Branding, alliances and link to PGS coordinated by Lucca Province, Territorial cohesion coordinated by Mid Wales, Procurement Innovation coordinated by Ljubljana Urban Region.	Public infrastructure and social services: Collaboration with Graz Cultural connections: Collaboration with Lucca, Mid Wales, Graz
Valencia Region	To analyse what rural-urban relations and governance models are being generated in relation to sustainable food systems, playing an active role promoting and participating in work-groups as governance bodies focused on development strategies in the field as well as specific initiatives.	1. Promotion of networking among stakeholders at rural – urban and private (business, employees, etc.) – public (regional and local governments) – social (consumers) level. 2. Exploration of potential for new cooperation activities. 3. Exploration of potential for new models of territorial governance, for example linked to some comprehensive instruments (e.g. territorial planning, territorial agreements) and some others (such as Plan for the Protection of the Huerta de Valencia, Smart Specialization Strategy, etc.).	You are listed as partner in Food strategies coordinated by Gloucestershire County, Governance coordinated by Municipality Tukums, Territorial cohesion coordinated by Mid Wales.	Food strategies coordinated by Gloucestershire, Branding, alliances and link to PGS coordinated by Lucca Province, Territorial cohesion coordinated by Mid Wales, Analysis of networks of sustainable initiatives with Lisbon.	Public infrastructure and social services: Collaboration with Helsinki, Styria and Frankfurt New business models and labour markets: Collaboration with Helsinki, Styria and Frankfurt

3.2 Summary description and analysis of themes co-developed

The main topics addressed by the Living Labs are analysed are summarised in the table below.

Table 1 – Summary of Challenges and their Drivers and Barriers supporting the Urban-Rural linkages with sustainable food systems

	Addressing rural urban links in terms of sustainable food systems	
Topic	**Drivers**	**Barriers**
Financial support	Financial support can enable the development of new business models and governance structures. In such cases it can be function as a driver of development or improvement of new value chains. In these cases government should carefully plan public-private partnerships in order not to limit entrepreneurship. Financial instruments may also be considered as a **driver of conservation** when help at preserving certain traditions, territories and products which would be extinct without support. These traditions, territories and products may later be used as an added value for other value chains like tourism (case of traditional straw hat production in Ljubljana urban region).	Even if in some cases, such as food production standards or LAGs (which also represent influential cross-sectoral instrument), the **financial support (e.g. CAP pillar 2 as it only affects farmers) remains mono sectoral** and does not promote the cross sectoral approach needed for the improved rural and urban synergies, some positive steps in the development of public procurement are evident, enabling the purchase of locally produced food. On the other hand these systems will need to integrate more sectors/sciences like health, logistics and similar to be more effective for the consumers and the rural and urban synergies. More financial incentives (mainly soft measures e.g., procurement measures, producer support for navigating procurement contract readiness) will need to be invested in the **promotion of the cross-sector coordination** which will further enable the rural and urban synergies. This is even more needed in the development of infrastructure and services that need to address multi-use and consumer- not sector-centric orientation.
Soft instruments (e.g. food strategies)	Functional **networks** (e.g. Tukums municipality, Lucca Province) are key drivers for improvement of rural and urban synergies. Networks need to develop their own organizational formats to be able to operate sustainably. **Strategic guidance** (e.g. Gloucestershire county, Mid Wales, Lisbon metropolitan region, Valencia metropolitan region) may help networks to be more efficient and outcomes-focused while they need to improve linking of the food systems to other sectors. **New business models** (e.g. Ljubljana urban region) are the key for the development of the functional rural and urban synergies. In some cases, the **branding and collaborative networks behind the brands** (e.g. Lucca) are a key driver of the rural	

	and urban synergies.	
Tangible assets (e.g. logistics infrastructure, market places)	Areas with **developed local food systems infrastructure** (e.g. Tukums municipality, Lucca Province, Ljubljana urban region) are more integrated with diverse urban consumer markets and capable of developing dynamic rural and urban synergies with urban areas where the infrastructure tends to be more advanced. A revival of open air markets (Ljubljana urban region) affects regional food flows; such markets strengthen the connection between local, largely rural producers and largely urban consumers. As seen in the cases studied by ROBUST the **developed logistics and related services enable** (e.g. Ljubljana urban region, Tukums municipality) more dynamic rural and urban synergies. Governing structures need to develop functional and cross sector infrastructure to enable improved rural and urban synergies. Examples of this include metropolitan and regional food policy councils where these strive to ensure that urban food consumption supports regional rural food producers	**Outdated public infrastructure with capacities and characteristics** below the current needs disables new business models to grow(e.g. Tukums municipality, Ljubljana urban region). **Poor management**(opening hours, spot allocation, hygiene) **and design** of public space (parking, storage facilities) needed for the daily operations of the local food markets can demotivate farmers and consumers from using this specific infrastructure (local markets)(e.g. Tukums municipality, Ljubljana urban region). **Limited public services particularly** in terms of **mobility and accessibility** of products and services limit the development of small entrepreneurs and their small business models.
Market instruments: (public procurement; taxes on emissions)	**Public procurement** can be seen as a driver for the local food chains, but the governance structures need to actively promote the procurement of locally produced and processed food (Ljubljana urban region with Food Market Place, Gloucestershire county with DPS).	**Current structure of food value chains (with several intermediaries and long structures) often limit** the development of new business models that would be beneficial to the rural and urban synergies (e.g. Lisbon metropolitan region, Ljubljana urban region, Tukums municipality). There are **governance tools** (branding, DPS) that were designed to enable more dynamic short value chains, but these will need more promotion to become predominant standard procedure (e.g. Gloucestershire county, Mid Wales, Lucca Province)
Command and control instruments (legislative and govern-	**Public consultation and participation are the key drivers of learning and need to be strengthened** (all cases studied) in order to improve skills and knowledge of all participants (policy-makers and all other stakeholders). Some cases show (e.g. Ede) the need for the **development**	In some countries the **legislation blocks the development** of the more dynamic food systems (e.g. Ljubljana urban region) due to old legislation or inability of regulators to follow the pace of the development. **Vertical integration of the local food strategies** to regional and

ance structures)	**of modern indicators** for tracking strategies and tools for the improving the efficiency of food strategies. Lack of cross sector coordination is a weak point in the monitoring systems. In the Gloucestershire County and Mid Wales multi-dimensional procurement criteria issued by the government (DEFRA 2015; which we call the balanced score-card) help to guide procurement officials in balancing cost against a range of other benefits offered in tenders, such as nutrition, fair-trade and waste impacts.	national level is essential for strategies to be functional (e.g. Ljubljana urban region, Lisbon metropolitan region, Mid Wales).

3.3 Summary of the main results with common learning on rural-urban linkages /synergies, governance and new growth models

The table below summarizes how the main aspects of sustainable food systems support the four core themes of ROBUST project, i.e. rural-urban linkages, governance, new growth models and innovation.

Supports / Supported by	Rural-urban linkages /synergies	Governance	New growth models	Innovation
Food strategies	For the food strategies to improve the rural-urban synergies they first **need to recognise the rural-urban aspects** and use their advantages for the overall approach (e.g. Gloucestershire County, Mid Wales, Lisbon metropolitan region, Ljubljana urban region, Valencia metropolitan region). Many urban municipal food strategies do in fact want to reach out into the rural peripheries and support activities such as local sourcing, because they recognise that the city's consumption behaviours can improve the sustainability of regional food systems. Not all of them do this, however, because a key focus of urban food strategies is resilience (by which consistency of supply and the overcoming of food poverty is generally meant). 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. By developing the rural-urban	In order to be functional food strategies need **governance models that are able to implement** agreed vision; an example is Lucca Province where the food communities actually do this, and Ede which developed the concept of Food Valley. In Wales the process is more directly led by Monmouthshire council, while in Gloucestershire County it is being led by a civil-society group. Similar approach was taken in Tukums municipality where the authorities integrated several stakeholders in the management of the food market. In Lisbon the food strategy was prepared as a guide to food systems. Food strategies have an effect beyond agriculture, as food systems may be viewed as a one of the key elements of sustainable territorial development. Activities in Tukums have shown how food can be a social binding element of rural-urban areas and populations. Research on rural-urban dynamics in the food supply chain conducted in Mid Wales focused showed difficulties in defining 'local' food (including historic linkages of food supplies) and related criteria for assessment of quality and sustainability.	Food strategies **enable the development of new business models which need to be based on public-private partnership and cooperation.** Relying on "business as usual" approach usually doesn't lead towards change in the value chains that is needed to achieve results (e.g. Tukums Municipality). Such innovative example may be seen within the M5 Motorway Services (example reviewed by the New Business Models and Labour Market CoP) although this example does not emerge from a food related strategy. When developing the food strategies, the **innovation and new business models need to be forerunner of the transition** (e.g. Gloucestershire county, Mid Wales, Lucca Province, Valencia metropolitan region). **Enabling close to market research and improvement of the relations in the value chains is a key element of the success** which needs to be managed and strengthened (e.g. Gloucestershire county, Mid Wales, Lucca Province, Valencia metropolitan region).	When developing food strategies the governance structures ensure **close and open public consultation** among several actors of the quadruple helix in order to guarantee that the strategies will use the new business model as a prevailing structure of the strategic planning. 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. As food strategies have an effect beyond agriculture, viewed as a one of the key elements of sustainable development the food strategies may enable spread of innovations to different layers of society and sectors beyond agriculture, such as health and education (e.g. Ljubljana Urban Region with understanding of food impact on child development). This may have an **enormous potential for acceleration of digitalization, links between academia and business, diffusion of innovation.**

Supports / Supported by	Rural-urban linkages /synergies	Governance	New growth models	Innovation
	aspect the strategies may utilize the **wide spectrum of the rural-urban resources** to develop improved territorial vision (e.g. Mid Wales). Food strategies are often industry sector-related and focused on agri-productivity. We may conclude that urban policies are more connective socially and environmentally, while rural policies try to address farm sector performance and costs (but do not directly think about cities). **Better rural-urban synergies might be achieved through the regionalisation of food strategies, or at least the drawing together of rural and urban objectives in ways that acknowledge both sets of concerns.** By accepting the rural-urban view the food strategies are not only widening the territorial scope but also improve the positive social impact (Gloucestershire County, Mid Wales, Lisbon metropolitan region, Ljubljana urban region, Tukums municipality, Lucca Province, Valencia metropolitan region, Ede Municipality). When strategies **open their view and actions towards rural-urban synergies more innovation and new business models are possible** (Gloucestershire County, Mid		Despite the comprehensive approach to advances towards a more sustainable regional food system, Tukums region food strategy brought about limited changes as there were missing incentives to food chain actors to review and adapt their business practices.	

Supports / Supported by	Rural-urban linkages /synergies	Governance	New growth models	Innovation
	Wales, Ljubljana urban region, Tukums municipality, Lucca Province, Valencia metropolitan region, Ede Municipality).			
Actors/stakeholders	They may influence **more sectors and improve the cross-sector co-ordination** (Mid Wales, Lisbon metropolitan region, Lucca Province, Valencia metropolitan region).	The strategic vision concerns **long list of stakeholders** who need to develop trust and improve their operations (business) (e.g. Ede municipality, Mid Wales, Ljubljana urban region). When addressing the food systems, the strategies also **need to address other related sectors** (e.g. mobility, communication, environment). Food strategies require new approach to public consultation and co-creation of implementing arrangements (e.g. Gloucestershire county, Mid Wales, Lucca Province).	**Actors in the food systems develop the governing capacity and ability to form collaborative platforms among business and pubic actors** to engage in value chains (being food systems actors (engaged food supply chain actors) which takes time and resources (e.g. Ljubljana urban region, Tukums municipality). As an example, Tukums municipality and Ljubljana Urban Region show that the capacity building and networking is particularly important for smaller producers in the region. For them, it is challenging to establish or to enter value chains on individual base and therefore a coordinated collective action (like, local branding, joint supplies, open public selling points like Ljubljana Urban Region's farmers' markets, Ljubljana Food Marketplace as a speed dating-like networking event for producers and consumers, Tukums food market or a collective shop) is needed that pool their resources together. **Active management and arrangements of the networks around joint tools and strategies** (e.g. Lucca Province, Tukums municipality; agricultur-	**Actors and other stakeholders on all levels promote entrepreneurship and private sector engagement** which improves entrepreneurship skills. Actors **can develop new forms of climate-neutral economy** which will foster local energy transitions through local food value chains based on new business models.

Supports / Supported by	Rural-urban linkages /synergies	Governance	New growth models	Innovation
			al trade unions in Valencia) are the key for the success of the specific tool used for the improvement of the food systems.	
Information (data, indicators, and evaluations)	**Active development of rural-urban synergies is not possible if there is lack of data and indicators** (e.g. Ede Municipality, Ljubljana urban region, Valencia metropolitan region) as there is no evidence that would enable steering the development to better management and governance.	The governance structure needs to enable the **development of informative and performance-focused indicator systems** and **enable monitoring** of the data. This needs to enable the evaluation of the tools for rural urban linkages (e.g. Mid Wales, Ljubljana urban region, Ede Municipality). For example, in Ljubljana urban region the local authorities and Regional Development Agency could improve public procurement and develop new forms if information on public institutions' needs and local supply, as well as health effects of school meals based on local food were monitored and readily available. **Proper management of the data and their availability needs to be assured** to maintain the necessary transparency and assure public participation. Ede Municipality had intended to develop and maintain a multi-criteria dashboard for food performance the results of this initiative are to be observed in future. In Wales, Monmouthshire county initiated a comprehensive review of food producers, estimated production capacity and potential local market opportunity. In Gloucestershire, an analysis of the economic value of the food and drink sector was commissioned by the Local Econom-	**The data is essential for the development of new business models and for the innovation** and needs to be generated, managed and available (e.g. Ljubljana urban region, Ede food policy dashboard). Additional motivation for Tukums municipality's decision to take over Tukums food market was the conclusion from the municipality's local consumers' survey that revealed that Tukums market is a central place for local consumers to buy local food and that there are not many alternatives for this supply channel.	**The data will enable the developing of the evidence based decision making and increased precision in the food value chains (food waste, quality of diet for children).** This will in long term encourage territorial co-operation through rural-urban partnerships, ensure digital connectivity and digital services in remote regions. **The data and evidence will further improve the development of tools for climate-neutral economy**, mainly in food production and processing through local food value chains.

Supports / Supported by	Rural-urban linkages /synergies	Governance	New growth models	Innovation
		ic Partnership. The ROBUST partners have been working with a number of external partners to understand the data needed to encourage producers to work with the South West Food Hub.		
Specific tools tested in LL under the CoP:				
Public procurement	When public food procurement processes take into account the rural urban synergies, they are a successful tool in developing more synergies. This needs to further evolve from promotion campaigns usually set up by national governments to real/daily food supply to schools and kindergartens to larger consumers. With this many suppliers fail to have enough capacity, or their logistics is weak. These shortages need to be addressed by modern strategies, new business models and financial incentives. As seen in many cases studied the public procurement has evolved and has many forms (like Dynamic Procurement System - DPS in Gloucestershire County) but the system still needs improvements which will more intensely apply knowledge from different sectors food and non-food studies (impact on the environment, waste, nutrition and health, logistic, ICT). For example, nutrition is very close-	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. The future development will require more attention to the healthy nutrition for children, minimization of waste from school meals, and improved logistics to enable timely and safe delivery of food. Procurement procedures need to develop indicators system to assure learning on positive and negative effects of the public procurement systems. This includes environmental effects, an issue addressed by the EU Farm to Fork Strategy and the European Green Deal. Constant management of the networks behind the food procurement systems need to address supply and demand and needs to address common goals and operations.	The development of the public food procurement processes takes time. Getting the right shape and developing the networks behind products is a long process but they can generate new business models. The new business models may be expected in the logistics, improved intelligence (data) to inform both supply and demand, packaging and waste management and others. Links to other food and non-food sectors (waste, energy, nutrition, health…) are needed to develop new products in functional food, ready to eat food and similar products. DPS is a major breakthrough in logistics management for small-scale and seasonal producers which was initially developed in the retail sector.	Public procurement can be seen as a driver for the new data driven and user lead applications for better sales and distribution of local food. This will improve the whole value chain (from production, processing to packaging and waste) which will set the scene for the circular economy models.

Supports / Supported by	Rural-urban linkages /synergies	Governance	New growth models	Innovation
	ly monitored in Gloucestershire County. Catering managers are especially worried about their safeguarding obligations in relation to allergies. The Food for Life scheme includes children and their parents in menu-setting. But this situation is not common across the EU and there is a very strong perception among catering managers that either cost or regulations restrict pro-local, or pro-sustainable purchasing. Probably a way to overcome this would be to ensure new technologies and logistical innovations such as the DPS are trialed and adapted to maximize their usability within a low-budget, high-liability context.	Procurement of food for meals in schools and kindergarten is relatively simple and effective form of public procurement (easier to organize compared to hospitals, retirement homes and similar as shown in Ljubljana Urban Region) that can contribute to environmental, social and health awareness (examples of Valencia, Lisbon). Sustainable school food procurement Lisbon team is preparing of a policy brief on public procurement in schools based on quality, sustainability and proximity criteria. Public procurement may help in the post-Covid-19 recovery (Gloucestershire, Valencia, Ljubljana).		
Branding	Branding is seen as other possible tool for the improvement of rural-urban synergies. 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. The local and regional brand bring 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.	Each brand needs a governance structure being able to assure standardisation, quality, origin and traceability questions are respected among members of the brand. Associations behind the brands are a key player but they need to cover all partners in the branding process and operation from regulators to producers and consumers. Self-standardisation will play an interesting role in the future but will require strong partnerships to sustain integrity and durability of the brands.	Brands are drivers of innovation and development of new product based on new business models. They will drive new products and services in data management and blockchains, they will develop new products in terms of packaging and evolve in circular systems being able to answer waste, energy and other questions.	

Supports / Supported by	Rural-urban linkages /synergies	Governance	New growth models	Innovation
	New and existing evidence shows that PDO/PGI branding in particular leads to higher quality rural jobs, transparency and helps to standardize good practice. The Lucca Province LLs show exactly to the benefits of the regional/local branding in terms of assuring quality and local cooperation which leads to new business models and job opportunities.			
COVID-19	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. Pandemic clearly pushed the development of the short value chains and developed new business opportunities for local farmers. On the other side the pandemics also hindered several producers as they were not able to sell due to over-specialisation or dysfunctional logistics. The pandemics showed how important it is to observe the rural-urban links in terms of different dimensions of food systems from logistics, consumption, changes in access to markets and others. This calls for closer look to the rural-urban links in normal times in order to improve the resilience.	The pandemics showed the inability of the governance structures to be ready to timely address the impact of the pandemics such as breakdowns of logistics networks, necessary social safety for producers and health issues of children not going to schools for longer period. This requires more intense understanding of the needed governance structures to enable swift data collection, stakeholder engagement and development and implementation of measures to mitigate impact of the crisis. Public procurement has potentially significant post-COVID agri-sector recovery, due to the large volumes of food required in the public sector.	The COVID–19 crisis was a driver of innovation in most strata of societies, some motivated by government some motivated from the citizens. Some of the business models will remain in use also in the new normal but their evolvement is still to be seen.	A number of innovative approaches were used to address the logistics and distribution issues that arose at the beginning of the pandemic.

Source: own research

4. Monitoring and evaluation of learning

4.1 Summary of key data and findings in terms of:

Assessment of the methods used and the usefulness / limitations of the toolkit

The findings on the methods used and their usefulness are summarized in the table below.

Paper/document	Current use	Possible improvement
Snapshots	Information, contacts, practices, practitioner oriented. The snapshots tools used in the process were to date used for reviews prepared by one or the other CoP partner.	Use the Snapshots to prepare joint papers to review the practices and give practitioners possibilities to exchange information and experience. Joint papers of partners in each snapshot would improve the information on the specific topic and give more comprehensive information on what to further explore.
Thematic briefings	We intended to use Thematic briefings to cross cutting information from practitioners with scientific background and analysis. Thematic briefings were planned to be developed by CoP coordinators but was altered to CoP members with relevant expertise and activity which would improve the scope of the Thematic briefings and make it more scientific research oriented.	Currently no Thematic briefings have been developed yet, so it is too early to comment. But the Food Strategy Review prepared on the 11thSeptember 2019 could be easily developed to the level of use Thematic briefings with adding additional examples from (Snapshots) to be provided by partners in the Food strategies Tukums Municipality, Lucca Province, Ede Municipality, Gloucestershire County, Mid Wales, Lisbon Region, Valencia Region. Additional value would be added by a "how to" manual.
Article	Based on scientific work and findings; articles with scientific value would be cross fitted with practitioners' needs and topics.	Publications by individual partners. As the focus was on preparation of snapshots and the cancellation of in-person meetings reduced the opportunities for joint discussions and exploration of ideas, the CoP members published articles on their own or in smaller groups. More effort should be put in regular on-line meetings for joint brainstorming and preparation of articles for publication.
Webinars	To date one webinar was organized for the internal CoP exchange on the topic of the Food Strategy Review.	Discussion on the topic was rather scarce which calls for more preparation of partners for the discussion. In addition, in order to make prost production of the webinar to the level of publicly available material the presentation and discussion experience for the user needs to be improved by adding more pictures, video clips, clear messages and as discussed before prepared discussion among partners.
Mailing list	All participants in CoP information sharing are listed	Mailing list could be expanded, or an additional, broader mailing list could be prepared to be also used for larger group of participants, i.e. including the level of LL members.
Database - SharePoint	Used only by CoP coordinator	Some of the working versions of the documents could be posted.

The facilitation process (what worked / did not)

The facilitation process relied on email, Skype and later Zoom communication with periodical meetings of the CoP partners along the ROBUST planned events such as Partners' Meetings. Communication from the CoP coordinators should be further strengthened despite weak feedback.

On the other hand, smaller groups working on specific topics (e.g. food strategies, public procurement) formed quickly and worked efficiently with the common goal of Snapshot preparation, comparison of research results and article preparation. While these groups worked independently, there was significant overlap as individual members were involved in several such groups. As a result, most of the CoP members were aware of the topics and results of other groups.

Communication between the CoP members on their respective LLs, between the individual LLs and between CoP members and the CoP coordinators could be improved to help with timely developments and provide support where and when necessary. Inclusion of other LL members in communication could be particularly helpful in the analysis and comparison of examples.

The Living Labs were possibly too optimistic in the beginning when setting the research agenda by selecting a variety of research interests to be put in the workplan. Being more selective in the beginning and focusing only on few issues might have taken the CoP further and deeper into specific topics. Such approach may have resulted in the weak resilience of the teams to the COVID-19 crisis outbreak which impacted the planned activities of the Living Labs.

While each of the CoP members nominated a CoP coordination member, some of the teams experienced changes and in some cases the nominations were not made in a timely manner. In some cases the practice partners were not as active as their research partners in Living Labs which lead to a bit more academic approach and less focus on providing and testing practical solutions.

Evidence of learning processes via the CoP (summary of monitoring and evaluation data collected)

Most of the CoPs partly deviated in their activities from their Research and Innovation Agenda. Amendments were made on the basis of joint identification of topics that could be jointly explored as new information, concepts and ideas emerged. Thus, the deviations can be seen as adjustments to the potential of the ROBUST partners' contribution.

In addition, Covid-19 pandemic disrupted the core activities as planned for 2020 and approaches and methods had to be adjusted, resulting in delays. While the pandemic brought unprecedented levels of remote working and online cooperation at the global level, the level CoP activities decreased, as the level of response declined and scheduling of meetings became more difficult. This might be partly a result of oversaturation with online presence and more difficult juggling of work and private life.

Conclusions and recommendations

ROBUST brought together research and practice partners and this give the LL a great opportunity to address the interesting issues of rural-urban linkages/synergies, governance and new growth models in sustainable food systems. Given this opportunity this needs to be further explored in order to assure practice partners are stronger in joint definition of the research problems and their needs, while research partners should be able to help with their knowledge and research skills.

Research has provided valuable exchange of experience and analysis of common issues which might help practitioners to solve identified problems. CoP activities hopefully also helped to research partners to research relevant issues and to provide practical solutions for improvement of efficiency of the rural – urban relations and sustainability of the food systems in the participating regions.

ROBUST project brings together research and practice partners from all over Europe which gives a great opportunity to learn and exchange experience and information. This opportunity needs to be

further exploited with more internal LL and CoP exchange that would strengthen mutual learning processes.

4.2 Rural-urban linkages /synergies

Many urban Municipal Food Strategies want to reach out into the rural peripheries and support activities such as local sourcing as they recognize that the city's consumption behaviors can improve the sustainability of regional food systems. To improve the rural-urban synergies they will need to recognize the rural-urban aspects of mutual impact and utilize the wide spectrum of the rural-urban resources to develop improved territorial vision. Better rural-urban synergies might be achieved through the regionalisation of food strategies, or at least defining together the rural and urban objectives in ways that acknowledge both sets of concerns. When food strategies open up their vision and actions towards rural-urban synergies, increased innovation and more new business models can be achieved but the active rural-urban synergies aren't possible if there is lack of data and indicators needed to enable governance and innovation.

When public food procurement processes take into account the rural urban synergies, they are a successful tool in strengthening the synergies and developing new ones. Their approach needs to further evolve from promotion campaigns usually set up by national governments to real/daily food supply ranging from to schools and kindergartens to larger consumers. However, many suppliers fail to have enough capacity, or their logistics is weak.

Branding as other possible tool for the improvement of rural-urban synergies has evolved from marketing campaigns 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 issues. The local and regional brands bring together producers, consumers and regulators which play an important role in the rural-urban synergies, shifting away from the outdated view of seeing rural as a food producer and urban as a consumer.

4.3 Governance

To be functional, the food strategies need governance models that are able to implement agreed vision. To do so they need to have an effect beyond agriculture, as food systems may be viewed as a one of the key elements of sustainable territorial development.

The strategic vision concerns long list of stakeholders who need to develop trust and improve their operations (business) but also other related sectors (e.g. mobility, communication, environment). To improve the urban-rural relations the food strategies require new approach to public consultation and co-creation of implementing arrangements that will enable the development of informative and performance-focused indicator systems and enable monitoring of the data.

Governance structures need to ensure necessary timely regulation of issues under the public law (e.g. public procurement procedures) but along this the governance structures need to ensure proper monitoring of the quality of food and monitoring to stable delivery of food to public institutions.

4.4 New growth models

New business models need to be based on public-private arrangements for innovation and can be the forerunner of the transition. Close to market research and improvement of the relationships in the value chains is a key element of success which needs to be managed and strengthened.

Active management and arrangements of the networks using joint tools and strategies are the key for the success of the specific tools used for the improvement of the food systems. The data is essential for the development of new business models and for the innovation and needs to be generated on time, managed and made available.

4.5 Innovation

During the development of food strategies the governance structures need to ensure open public consultation performed in close cooperation with several actors of the quadruple helix to ensure that the strategies will use the new business models as a prevailing method of the strategic planning.

Strategies need to open the door to innovation and new business models which are public-private arrangements in order to enable innovation that leads to value creation.

Food strategies have an effect beyond agriculture. They can be viewed as a one of the key elements of sustainable development, thus the food strategies may enable spread of innovations to different layers of society and sectors beyond agriculture, such as health and education. This may have an enormous potential for acceleration of digitalization, links between academia and business, diffusion of innovation.
The data will enable development of the evidence based decision making and precision in the food value chains (food waste, quality of diet for children etc.).

4.6 COVID-19

COVID-19 had an obvious impact on the society and the environment. However, it remains to be seen how many of the patterns developed during the pandemic will remain after the new normal is reached.
Pandemic clearly pushed the development of the short value chains and developed new business opportunities for local farmers. On the other side the pandemics also hindered several producers as they were not able to sell due to overspecialization or dysfunctional logistics. The pandemic showed how important it is to observe the rural-urban links in terms of different dimensions of food systems from logistics, consumption, changes in access to markets and others. This calls for a closer look to the rural-urban links in normal times in order to improve the resilience.

The pandemic showed the inability of the governance structures to timely address the impact of the pandemic such as breakdowns of logistic networks, necessary social safety for producers and health issues of children out of schools for longer period. This requires more intense understanding of the needed governance structures to enable swift data collection, stakeholder engagement and development and implementation of measures to mitigate impact of the crisis. Public procurement has potentially significant post-COVID agri-sector recovery, due to the large volumes of food required in the public sector.

Public Infrastructure and Social Services Community of Practice Synthesis Report

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July 2021

This is the report of the "Public Infrastructure and Social Services" Community of Practice (CoP) within the project "ROBUST - Unlocking Rural-Urban Synergies". A total of seven Living Labs (LL) participated in the CoP and shared their experiences and expectations, exchanged views on a variety of topics and governance systems and developed common knowledge. The report was informed by the seven LL reports and the results of the numerous joint working sessions in the context of the ROBUST Consortium Meetings. Furthermore, the findings from the good practice examples and short reports, which were developed in the CoP, were used to inform this report. Analyses for scientific papers that were jointly prepared within the framework of ROBUST also provided important insights and results[4]. The iterative organisation of activities was an interesting transdisciplinary learning and working process for the participating LL. Despite the different sizes and conditions in the Living Labs, it was possible to work on common interests and topics and benefit from each other.

1. Introduction

Working together and learning from each other was the core of the empirical work in the ROBUST project. The overarching theme of the project “Unlocking Rural-Urban Synergies” includes a wide range of topics. Therefore, five themes were selected in ROBUST to be worked on: New Business Models and Labour Markets, (ii) Public Infrastructure and Social Services, (iii) Sustainable Food Systems, (iv) Cultural Connections and (v) Ecosystem Services. Five Communities of Practice (CoP) were created for each of the five themes. The 11 LLs within the framework of the ROBUST project, which each consists of a practice and a research partner, selected three priority themes to work on (see table 1).

Table 1: Priority themes of the Living Labs of the Public Infrastructure and Social Services CoP

Living Lab	1. Priority theme	2. Priority theme	3. Priority theme
Tukums (LV)	Public infrastructures and social services	Sustainable food systems	Cultural connections
City of Helsinki (FI)	New businesses and labour markets	Public infrastructures and social services	Ecosystem services
Ljubljana Urban Region (SI)	Sustainable food systems	Public infrastructures and social services	New business models and labour markets
Frankfurt/Rhine-Main Region (DE)	Ecosystem services	New businesses and labour markets	Public infrastructures and social services
Metropolitan Area of Styria (AT)	New businesses and labour markets	Public infrastructures and social services	Cultural connections
Mid Wales (UK)	Sustainable food systems	Cultural connections	Public infrastructures and social services
Valencia (ES)	Public infrastructures and social services	New businesses and labour markets	Sustainable food systems

Source: D 8.3 Minutes of second General Assembly, ROBUST 2018, 7.

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).In the following sections, the topics, characteristics, working methods and results of activities of the “Public Infrastructure and Social Services” CoP will be described. In the final sections, the focus will turn to common learnings regarding rural-urban linkages and synergies, cross-sectoral relations, governance, growth models and sustainable development.

[4]Ruiz-Martinez and Esparcia 2020; Oedl-Wieser et al. 2020; Bauchinger et al. 2021; Knickel et al. 2021; Ovaska et al. 2021.

1.1 Overview of the functional theme

The provision of public infrastructure and social services is a condition for the functioning of urban, peri-urban and rural areas as well as for people's well-being. Often services are concentrated in urban contexts, which may hamper the accessibility for residents of rural areas and, hence, results in unequal living conditions. Moreover, demographic changes such as outmigration and aging of the population challenge the quality of life, especially in (remote) rural areas. At the same time rural areas have an important role to play, for instance when it comes to climate change goals, for which the rural residents' readiness to collaborate is essential. In short, there is, hence, a situation of interdependence and need to improve and promote rural-urban co-operation. The synergies that are created through such co-operations depend, to a large extent, on well-designed (multi-level) governance systems. They address resource challenges through new orientations towards renewable resources and circular economy pathways, strategies to avoid waste and systemic assessment of sustainability features in rural-urban regions. These synergies were mainly addressed in the CoP for Ecosystem Services.

Our Cop on "Public Infrastructure and Social Services" focused on development strategies that aim to improve the well-being of citizens in the regions and are based on improving social services and enhancing the accessibility to (social) infrastructure. Among these services, transport is particularly relevant, since it has an impact on social cohesion and on how people can access goods and services. Amenities and environmental goods are also central dimensions of rural-urban linkages because rural residents need urban amenities such as complex consumption or cultural events, while urban residents' value rural amenities such as the quality of the environment and biodiversity, less congested living arrangements and closer social relationships. The Public Infrastructure and Social Services CoP topics cover a wide range of infrastructure and service fields, including: multi-modal public transport, ICT and broadband coverage, e-services, cultural and tourism infrastructure, green infrastructure, health care service, elderly care service, working space for new working-time-models, use of vacancies, regional food supply chains and logistics, innovative forms of GIS- and satellite-data application for rural-urban-planning approaches, new governance arrangements and innovative modes of intercommunal co-operation.

1.2 Aim of the CoP

In ROBUST the CoP acts as an analytical instrument on a meta-level above the LLs and thus considers the thematic focuses of the individual regions in an overarching manner. Through joint learning and exchange processes, multi-sectoral cooperation opportunities are explored and governance structures are analysed that drive rural-urban relationships and synergies. The action-oriented approach of the LLs, which explores special features of a region and the specifics of governance arrangements, enables thematic comparisons at the CoP level between the different case study regions, to support an international exchange of experience and knowledge. One of the most important steps for the co-operation in the CoP was the development and initial establishment of the joint Research and Innovation Agenda, completed in parallel with the envisioning phase of the following LLs:

- Tukums (LV)
- City of Helsinki (FI)
- Ljubljana Urban Region (SI)
- Frankfurt/Rhine-Main Region (DE)
- Metropolitan Area of Styria (AT)
- Mid Wales (UK)
- Valencia (ES)

The RIA of the “Public Infrastructure and Social Services” CoP is a comprehensive working document which entails a description of the current status of infrastructure development and service provision of each LL, plans for establishing new forms of governance and for strengthening rural-urban-co-operations in the respective LLs. It further refers to expected common learning experiences, modes of communication and new forms of co-operation, and describes possible areas of activities such as new approaches to stakeholder participation and networking, the transferability of approaches in the different LLs and testing new forms of governance and innovative ways of implementation.The overall ambition of the Public Infrastructure and Social Services CoP is therefore (RIA 2019):

When implementing the LL strategies, the practice and research partners can profit from each other’s experiences and exchange practical and methodological knowledge. Furthermore, all CoP members can provide feedback and support as well as insights in challenges, failures and successes of the processes in the case study regions.

1.3 Co-ordination and management of the CoP

The Public Infrastructure and Social Services CoP was coordinated by the Federal Institute of Agricultural Economics, Rural and Mountain Research (BAB), Vienna, Austria. Seven of the eleven LLs in ROBUST chose the “Public Infrastructure and Social Services” theme as one of their three priority themes (see table 1). For the LLs Tukums and Valencia, it was their first choice, for Helsinki, the Ljubljana Urban Region and the Metropolitan Area of Styria their second choice and for Frankfurt/Rhine-Main Regionand Mid Wales it was their third priority theme.Co-operation in the CoP took place at different levels and was to a large extent inter- and transdisciplinary in character. In the individual LLs, the practice and the research partners worked on a transdisciplinary basis with the intention of mutual support and inspiration. Between the seven LLs there was continuous as well as a selective co-operation on a bi-and/or multi-lateral basis on specific thematic issues, an exchange on procedures, working methods and on strategic focuses on regional development processes and governance arrangements. In particular, the design of rural-urban linkages and examples of intercommunal co-operation were in the foreground in this context.

1.4 Report aim and structure

After the introductory section, the research process and learning cycle of the CoP will be described in the second section. Herein, the composition of the CoP, the numerous activities, outcomes and meetings will be explained, as well as an overview of the communication structures that were developed. The most relevant CoP themes, namely: (i) mobility, (ii) digitalisation, broadband coverage and e-services, (iii) basic infrastructure, social services and cultural networking, (iv) multilocality, (v) service hubs and (vi) food infrastructure, are then introduced in the third session. The main results regarding rural-urban linkages and synergies, cross-sectoral relations, governance and growth and sustainable development models are then presented and discussed. In the next section, the monitoring and evaluation of learning at a CoP level will be reviewed. The final section of the report presents key messages from the CoP, including lessons and innovations that have the most potential to be translated to strengthen rural-urban linkages, cross-sector co-operation and governance – including opportunities or bottlenecks – as well as policy implications.

2. The research process and learning cycle

2.1 Composition of the CoP

The "Public Infrastructure and Social Services" CoP consist of seven LLs which are located in different EU member states (see figure 1). There are significant differences in the scope of the regions as well as in the socio-economic contexts of the LLs (see table 2). The composition of the LLs is very diverse considering the size of the (core) cities and the range of the surrounding and rural areas of the case study regions such as (i) examples, where the urban part has a crucial role for the development of the metropolitan area, (ii) further an example of a smaller town (e.g. Tukums, LV) in the vicinity of bigger cities or (iii) in other cases cross-border aspects (e.g. Helsinki, FI, and Graz, AT) and (iv) particularly the peri-urban fringe of many of the analysed regions is affected by urban growth and regions face high pressures on land use and extension plans (e.g. Region Frankfurt/Rhine-Main, DE, Valencia, ES).

Figure 1: Map of the ROBUST Living Labs

Source: https://rural-urban.eu/about

The intensity of rural-urban linkages might depend, to a large extent, on physical proximity which has impacts on the availability of and accessibility to jobs, goods, services and other amenities. The differences in LLs, taking into account the size of the cities as well as the outreach into surrounding rural areas, may also imply that there are substantial divergences in the focus of development strategies. On the one side, those that seek to highlight activities of rural development and others that have more urban development in mind. Therefore, it is crucial to assess in this rural-urban context to what extent the needs of rural areas are perceived and addressed as provision of infrastructure facilities and services across the whole rural-urban area is often inadequate. It is important to find a territorial balance, especially for the rural and smaller municipalities, because they often have limited resources and capacity for participation in development strategies of regions. These circumstances have to be recognized by the "stronger" and more influential partners – in our LLs, medium-sized and large cities – so that rural, remote and less represented municipalities are not "left behind" by the others. Especially in times of climate change, high traffic load, large land consumption and loss of biodiversity, a deliberate integration of rural parts' concerns in the common regional approach to solving these problems is essential.

Table 2: Characteristics of the Living Labs of the "Public Infrastructure and Social Services" CoP

Living Lab	Character of rural-urban area	Area size km²	Population	Population in the (core) city
Tukums (LV)	Small town (in the metropolitan area of Riga)	1,191	29,834	18,154
City of Helsinki (FI)	Metropolitan	9,568	1.460.000	635.000
Ljubljana urban region (SI)	Mid-size Metropolitan	2,334	320.000	730.000
Frankfurt/Rhine-Main Region (DE)	Metropolitan	2,458	2.320.000	733.000
Metropolitan Area of Styria (AT)	Mid-size Metropolitan	1,890	498,186	291,130
Mid Wales (UK)	Cities outside of Living Lab	Core: 6,975 Wider area: 16,164	Core: 205.130 Wider: 1.022.000	0
Valencia (ES)	Metropolitan*	10,700	1.700.000	800.000

* Sub-regional: Valencia's province consists of Valencia metropolitan area, inner and intermediate areas, as well as mid-size cities in the south. The region of Valencia has three provinces (Castellón, Valencia, and Alicante).Source: ROBUST D 8.3 Minutes of second General Assembly, 2018, 25.

Therefore, the following questions arise: (i) How can we find a common basis for working together, (ii) What kind of thematic comparisons are possible and reasonable among the seven LLs and (iii) What exchanges of knowledge and experience can take place between the participating LLs? For sure, many aspects are driven by local contexts, but there are also numerous aspects to be compared (similar challenges, main infrastructure topics, emerging threat on service development, space-time relations, and governance issues as predominant drivers of rural-urban synergies). The manifold compositions of the case study regions and the different sizes of the cities involved pose a particular challenge and the wide range of topics that are addressed poses another challenge. Nevertheless, a common working basis and many intersections could be found by comparing the dimensions and features of the different thematic topics, development strategies, governance arrangements and processes of implementation.In the following paragraphs the characteristics of the seven LLs will be briefly described.

Living Lab Tukums (LV)

Tukums municipality is the smallest case study region. It was established in 2009 and is located in the Western part of Latvia and it is part of the Zemgale historical and cultural region and of the Pierīga statistical region. The total number of inhabitants is 29,834. The number of people living in more remote parts of the municipality of Tukums has declined. Nonetheless, one of the goals outlined in the municipality's sustainable development strategy is to maintain connections between, and provide services to, communities located in different parts of the municipality, irrespective of whether they live in cities or any of the rural parishes. Vibrant cultural life in the whole are 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.
Partners: Local Government of Tukums (practice partner) and the Social Research Institute Baltic Studies Centre (research partner).

Living Lab Helsinki (FI)

The heart of the Helsinki LL is the Helsinki metropolitan area with a total of 1,6 million inhabitants. The wider Living Lab region includes the whole province of Uusimaa (1,7 million inhabitants). Some studies made within the ROBUST project also included Tallinn, Helsinki's twin city in Estonia. These city regions are connected by the 65 kilometre-wide Gulf of Finland. In addition, our multi-locality case covers the whole country, demonstrating rural-urban interaction at a distance. The region's

priority is to promote smart growth and adaptation by enabling knowledge networks and multi-locality for sustainable life, work, and entrepreneurship both in rural and urban areas.
Partners: City of Helsinki (practice partner) and Natural Resources Institute Finland, Luke(research partner)

Living Lab Frankfurt/Rhine-Main Region (DE)

The Frankfurt/Rhein-Main (FRM) region is the third largest regional association in Germany, and is known for its international airport, the finance sector and stock exchange, and high-tech industry. The region is economically successful, with considerable job growth and in-migration. Indeed, the region as a whole, and not just the city of Frankfurt am Main is economically successful with favorable employment opportunities, with continuing population growth foreseen. The city of Frankfurt am Main plays an important role (with about half of the jobs located there),but the region is polycentric with an intricate pattern of peri-urban centers and high-quality open space. Municipal decision-makers and planners recognize the importance of quality of life and good living conditions but face the challenge of "urban sprawl", accommodating a rising demand for affordable housing while preserving remaining green spaces.
Partners: Regional Authority FrankfurtRheinMain(practice partner) and PRAC – Policy Research & Consultancy(research partner)

Living Lab Ljubljana

The interactions and dependencies between Ljubljana and the surrounding towns are increasing and this find expression in urban sprawl and suburbanization. The accelerated sub-urbanisation and inadequate spatial planning and housing policies contribute to this situation, and the surrounding communities are increasingly becoming satellite communities of Ljubljana. Within Ljubljana's urban region, the City of Ljubljana acts as the gravitational center of the region where the main regional and inter-regional flows merge. Employment in particular remains focused on Ljubljana, which causes intense flows of commuters coming for work, school and public services which generate a lot of traffic and environmental pollution.
Partners: Regional Development Agency of Ljubljana Urban Region (RRA LUR) (practice partner) and Oikos (research partner)

Living Lab Metropolitan Area of Styria

The Metropolitan Area of Styria includes the Styrian capital city of Graz and the two districts of Graz Surrounding and Voitsberg. The region is home to 486.605 inhabitants and consists of 52 municipalities, including two LEADER regions. Despite consistent growth in the last decades, the rural-urban gap in the region is widening. Graz is a vibrant city with more than 270,000 inhabitants, higher education institutions, creative jobs, and cultural amenities, and thus benefits significantly from immigration. Conversely, the rural areas of the Metropolitan Area of Styria, consisting of small towns and many small and remote municipalities, are often inaccessible and do not benefit from the same growth. Decision-makers are pooling existing resources in the different sub-regions, fostering inter-regional cooperation in public infrastructure, social services, and cultural activities, and creating synergies that can benefit the whole region.
Partners: Regional Management of the Metropolitan Area of Styria (practice partner) and the Federal Institute of Agricultural Economics, Rural and Mountain Research (research partner)

Living Lab Mid Wales

Mid Wales is a rural region without a dominant urban centre and with ambiguous boundaries. The Living Lab has focused on the largely rural region that occupies the central part of Wales, between the more urbanized and (post-)industrial south and the urban areas of north east Wales and the north coast. With no town of more than 20,000 people, this landscape consists of fields and forestry, large hills and small towns. At the core of the Living Lab is the 'Mid Wales' region of Ceredigion and Powys, however in some aspects of its work the Living Lab has extended to cover a wider region constituted by nine predominantly rural local authorities (Carmarthenshire, Ceredigion, Conwy, Denbighshire, Gwynedd, Isle of Anglesey, Monmouthshire, Pembrokeshire and Powys). Higher order services and some employment is provided by a number of cities outside the region, including Cardiff (population 366,963) and Swansea (population 246,993) to the south, Wrexham (population 135,957) to the north, and Shrewsbury across the border in England to the east (population 71,715), which are up to 2 hours travelling time. The major challenges Mid Wales faces as a predominantly rural region are: remoteness, limited infrastructure, access to markets and services, the changing agricultural economy, and the future after Brexit. As a predominantly rural region, mid-Wales has been structurally overlooked by national policies that focus on investment in city-regions. Local government priorities hence focus on strategies for fostering rural growth, while maintaining agricultural landscapes, natural resources, and the distinctive Welsh culture and language.
Partners: Welsh Local Government Association (practice partner) and the Aberystwyth University (research partner)

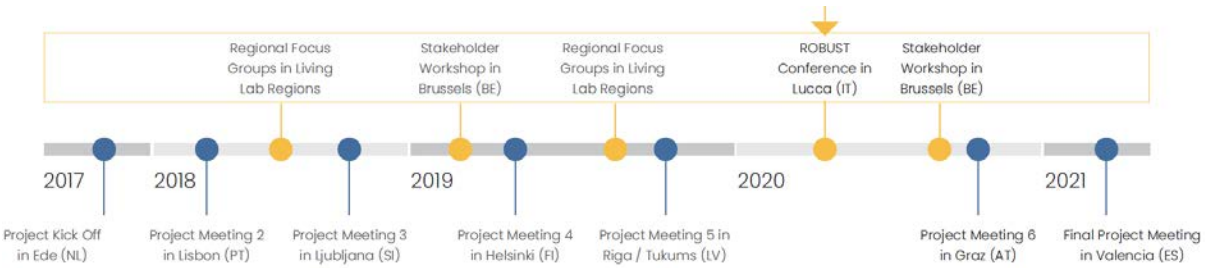
Living Lab Valencia

The Province of Valencia is confronted with a wide range of strategic planning questions including potential complementarities in urban and rural green infrastructure, the integration of hard infrastructure with the maintenance of landscape values, conflicting goals between urbanization and environmental and landscape management, and the necessary improvement of rural-urban communication infrastructure. Most of the population is concentrated in the metropolitan area. Over time, unbalanced population growth and development has resulted in complex territorial, social and economic tensions. A key question for decision-makers is whether shifting from sector-based (mainly tourism) short-term growth to a territory-based, more comprehensive longer-term view could help the region better manage challenges in the future. Focus areas include fostering smart growth to improve rural–urban relations and overcoming the negative impacts of low-cost tourism.
Partners: Valencian Federation of Municipalities and Provinces (FVMP) (practice partner) and the University of Valencia (research partner)

2.2 Timeline of activities and meetings – real and virtual

Since the beginning of the ROBUST project there were manifold official occasions for personal meetings of the LLs and the CoP as is visible in figure 2. However, since March 2020, the Covid-19 pandemic made it impossible to travel or to organise meetings with physical presence.

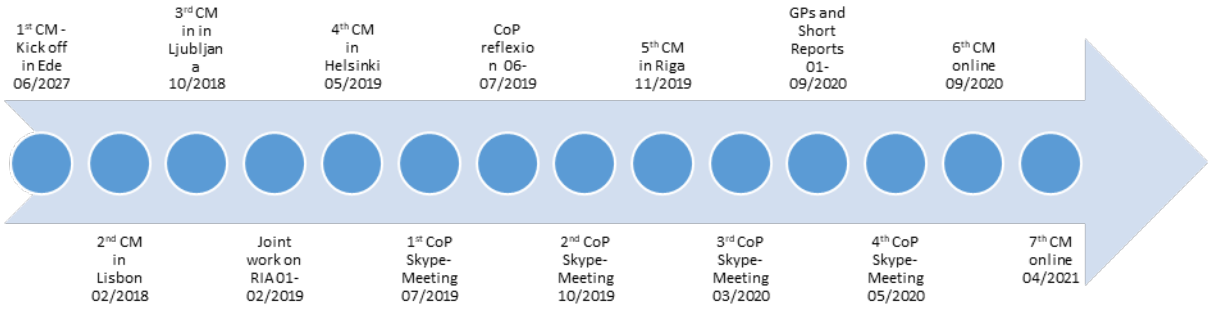
Figure 2: Timeline official meetings of ROBUST



Source: ROBUST 2018.

During the Consortium Meetings of ROBUST, which were scheduled twice a year, the CoP members met for intensive working sessions to share experiences and research results, comment on methodologies and analytical tools they used in their LLs, discussed upcoming work and new forms of regional co-operation as well as the role of governance arrangements. At the 4thConsortium Meeting of ROBUST in Helsinki (FI), the CoPs had time for intense working sessions where each LL presented a poster of their case study region. The sessions were very interactive and were intended to identify common goals and topics that could be worked on together. In between, four Skype meetings and some interim discussions (RIA) took place. Unfortunately, planned personal meetings of several LLs could not take place due to the Covid-19 pandemic. Furthermore, there were many bi- and multilateral communication and contacts e.g. when reviewing the Rapid Appraisals and Snapshots, the Good Practice Examples and the Short Reports (see figure 3 and table 3).

Figure 3: Timeline of meetings of Public Infrastructure and Social Services CoP



2.3 Processes for communication, knowledge exchange, learning

Within the framework of the Public Infrastructure and Social Services CoP there were many expectations for mutual learning and knowledge exchange between the participating LLs. They can be summarised as follows: (i) new forms of governance, (ii) common learning experiences, (iii) communication, cooperation and networking (iv), benefits for the LL and (v) strengthening rural-urban cooperation. The strongest interest was in common learning experiences where the exchange of knowledge between the LLs is an important momentum. Learning from good and bad practices was also expressed as a significant aim by the participating LLs. Moreover, an active and lively communication within the CoP, as well as considerations on the dissemination of information about activities in the LLs and the results of the CoP work to a wider professional audience in Europe, was considered as important (see table 3). Finally, the LLs were expecting great benefit from the different LL activities and their implementation processes in order to get new insights in terms of rural-urban cooperation.

Communication patterns in the "Public Infrastructure and Social Services" CoP

As the ROBUST project has chosen an action-oriented and transdisciplinary approach via LLs, communication between the members of the CoP was a very important mechanism to share common learning and sense of purpose. As shown in figure 3 and table 3, numerous meetings were held in the Public Infrastructure and Social Services CoP. These were of different character and purposes, but were intended to further the work in the LLs. The CoP meetings at the consortium meetings were the most important basis for cooperation and therefore required intensive preparation and follow-up in order to formulate, discuss and subsequently implement the activities in the LLs. The main communication formats for exchange between the LLs in the CoP are outlined below.

Consortium Meetings

- 1st Consortium Meeting in Ede-Wageningen, NL (Kick-off), June 2017
- 2ndConsortium Meeting in Lisbon, PT, February 2018
- 3rdConsortium Meeting in Ljubljana, SI, October 2018
- 4thConsortium Meeting in Helsinki, FI, May 2019
- 5thConsortium Meeting in Riga, LV, November 2019
- 6thConsortium Meeting – online (planned in Graz, AT), September 2020
- 7thConsortium Meeting - online (planned in Valencia, ES), April 2021

Skype-Meetings

In between the consortium meetings, four Skype meetings and some interim discussions (RIA, reflexion on CoP work) took place. Unfortunately, planned personal meetings of several LLs could not take place due to the covid-19 pandemic. Furthermore, there were many bi- and multi-lateral communication and contacts e.g. when reviewing the Rapid Appraisals and Snapshots, the Good Practice Examples and the joined elaboration of Short Reports or working together on scientific papers.

- 1st Skype-Meeting, 2nd July 2019
- 2nd Skype-Meeting, 7th October 2019
- 3rd Skype-Meeting, 16th March 2020
- 4th Skype-Meeting 13th May 2020
- Bi- and multilateral contacts

Table 3: Meetings and communication structure of the "Public Infrastructure and Social Services" CoP

"Public Infrastructure and Social Services" CoP		
Meetings	1st Consortium Meeting in Ede-Wageningen, NL (Kick-off)	Presentation of the Living Labs 1 CoP session Which issues should be prioritized in this thematic group? Are there practical or research questions which should be discussed? Where can we find linkages with the other thematic issues? How to work in the Community of Practice?
	2nd Consortium Meeting in Lisbon, PT	1 CoP session Undertaken and ongoing activities Planned activities in forthcoming months/years Activities/topics we would like to focus on in the CoP
	3rd Consortium Meeting in Ljubljana, SI	1 CoP session Developing a CoP agenda
	4th Consortium Meeting in Helsinki, FI	Preparation work Creation of a poster Introduction of the Living Lab, but emphasize activities related to Public Infrastructure and Social Services What happened so far? (methods, important projects, successful implementations, etc.) What will happen in the LL in the future? (goals, planned activities, etc.) Answering reflective questions Regarding your Living Lab Regarding possible areas of activities in the Community of Practice 3 CoP sessions Expectation rounds – identifying common goals for CoP session Marketplace for the 7 posters – 10 min presentation World Cafés – 15 min brief poster presentation and discussion in the group – permanent circulation Discussion on the Research and Innovation Agenda – joint and future activities in the CoP
	5th Consortium Meeting in Riga, LV	2 CoP sessions Matching issues of the CoP Discussion on Good Practice Examples of the Living Labs Identifying groups working jointly on issues and fixing a responsible person
	6th Consortium Meeting – online (planned in Graz, AT)	1 CoP session CoP report - Short presentation of the implemented activities since November 2019 and activities planned in the next months Discussion on Common learning processes on rural-urban linkages, governance arrangements Gained benefits for the LLs so far Feedback on the methods used Development of the stakeholder network in the LLs What kind of hampering factors did you experience? Future perspectives and visioning Which lessons and innovations have most potential to be transferred? What are opportunities for the future of public infrastructure and social services?
	7th Consortium Meeting - online (planned in Valencia, ES)	1 CoP session Start with a quiz Brief report on main activities and experiences since September 2020 Discussion on the Research and Innovation Agenda of the CoP Discussion on common learnings in the CoP
Additional Steering Committee Meetings	11th February 2021	Update WP3 Discussion on the clustering paper "Rural-urban linkages as

"Public Infrastructure and Social Services" CoP		
		five dimensions of a foundational economy" Finalising LL and CoP work Updates WP5, WP6 and WP7 Forthcoming General Assemblies (May and September 2021)
Steering Committee Meetings	7th June 2021	ROBUST conference program WP3 state of the art – finalisation (incl. review) of LL and CoP reports WP5 – European workshop 4.Any other business
Skype-Meetings	1st Skype-Meeting, 2nd July 2019	Update of Living Labs (activities, challenges, …) Reflective Questions – (summary by CoP coordinator) How to proceed? Good and bad practice examples? Reporting Template CoP PI_SS Dissemination – Ideas for paper / other forms of publications (infographics, reports, …) Communication / Next CoP meeting (Riga)
	2nd Skype-Meeting, 7th October 2019	Update of Living Labs Reporting of activities Ideas for paper CoP meeting RIGA
	3rd Skype-Meeting, 16th March 2020	Update of Living Labs Good Practice Examples Short Reports Invitation CoP Pre-Meeting to the RSA Conference in Ljubljana in Graz
	4th Skype-Meeting 13th May 2020	Update of Living Labs Good Practice Examples Short Reports
Interim discussions	February 2019	Research and Innovation Agenda
	June/July 2019	Questionnaire for LLs – Reflection on CoP work
Bi- & multi-lateral communication and contacts	Several	Peer review of Rapid Appraisals & Snapshots Peer review of Good Practice Examples Peer review of Short Reports Joint elaboration of scientific papers

3. CoP themes and common learning

3.1 Summary of scoping and identification of common issues, indicators and matching, research and innovation agenda (joint enterprise)

The process of identification of the topics of the CoP took considerable time in view of the different sizes of the LLs, their specific socio-economic circumstances and interests. A wide range of topics were raised and some crystallised as relevant to address within the group. Due to the heterogeneity of the LLs within the Public Infrastructures and Social Services CoP, there were very many different interests and priorities from the beginning. In the LLs, there were existing priority working areas and in the course of the work in the LLs, some of them were deepened or new aspects and questions were dealt with. Another momentum was the different socio-economic contexts and challenges, which were varying between more prosperous city-regions and LLs with a higher share of "rural character".

Because of the lively work organization of the LLs and the cooperation of different stakeholders, there were also frequent adaptations in focus of some LLs. For example, in the City of Helsinki LL, more intensive cooperation and a joint action plan with Tallinn, Estonia, was planned. However, the focus of this LL's work evolved over time towards multilocality (see table A 1 in the annex 7.1).The LL Metropolitan Area of Styria has been pursuing the implementation of a Citizen Card for the rural-urban region and has intensively exchanged information with the LL Ljubljana Urban Region, which had already implemented such a service card. However, due to political decisions in the regional association of the Metropolitan Area of Styria, this idea could not be pursued further, as it was decided to implement other topics. In the LL Tukums, for example, there was a change in the project team, so that the focus on public transport and cycling path ways had to be abandoned because the expert was no longer available. With reference to these examples, it can be argued cooperation in LLs between stakeholders from politics, administration, intermediary organisations and civil society requires enhanced adaptability and flexibility.

The development of the topics in the individual LLs of the "Public Infrastructure and Social Services" CoP can be seen as work in progress and aligned with the needs and possibilities in the LLs (see tables A 1-3 in the annex 7.1). During the first three consortium meetings, important LL topics were discussed in the CoP. This was a process of invention and, in a way, also a space for experimentation. Finding topics that are relevant to several LLs in their different variations, so that a common exchange and learning can take place, was the most important task of the CoP. In working out a common Research and Innovation Agenda (RIA), the CoP goals extend to a wide range of service fields in the area of public transport, broadband infrastructure, E-services, basic infrastructure requirements for food supply chains and logistics, cultural and tourism infrastructure, green infrastructure, health care service, elderly care service, working space for new working-time-models, use of vacancies, innovative forms of application of GIS- and satellite-data for rural-urban-planning approaches, new governance arrangements and modes of intercommunal co-operation (see RIA in the Annex 7.1).

During the 5th Consortium Meeting in Riga the CoP members decided that the responsibility for dealing with specific topics was assigned to the various LLs with regard to the preparation of good practice examples, practice papers, short reports and scientific and to secure the exchange of knowledge and to create a shared repertoire. The Covid-19 pandemic made personal exchanges more difficult,

but there was nevertheless intensive (online) cooperation and very interesting findings could be obtained.

3.2 Description and analysis of themes/resources (shared repertoire) co-developed in the CoP

This section will report the shared repertoire which was elaborated in the Public Infrastructure and Social Services CoP within the ROBUST project. As already outlined in the introduction, the topics covered in the CoP are diverse and have different levels of relevance in the LLs. Intersection and interest between the LLs are found in the following topics:

- Mobility
- Digitalisation, broadband coverage and e-services
- Basic infrastructure, social services and cultural networking
- Multilocality
- Service hubs
- Food infrastructure

Each individual topic in this section is described in detail and underlined with examples from the LLs. The topics presented here are structured as following: At the beginning of each topic, the key messages are presented, then a table reflects on the shared repertoire on this topic.

3.2.1 Mobility

Box 1: Key messages– Mobility

There is an ongoing demand of responsive transport and multi-modal shifts as well as complementary mobility systems to enhance transformations towards sustainable transport systems. These considerations are urgently needed to address negative environmental outcomes of existing transport organization and to foster sustainable and integrated regional development which should, at the same time, improve accessibility and connectivity across rural-urban spaces.

One of the consequences of this commitment is the increasing demand for cycling infrastructure in the rural-urban interface and its connectivity to mobility nodes.

If complementary transport implementations should be successful they need to be efficient for providers, convenient and integrated for users, and developed in accordance with local needs.

Cycle path networks in (core) cities and their surroundings can serve for both commuting and recreation purposes.

Cooperation with companies in the context of commuting by bike aiming at encouraging their staff to use bikes for commuting for example by providing lockers for the bikes and showers for the employees.

Table 4: Shared Repertoire – Mobility

Shared Repertoire –Public Infrastructure and Social Services CoP Mobility		
Living Lab	**Kind of outcome**	**Title**
Frankfurt/RheinMain	Good Practice Examples	- Commuting as a threat to climate: Is there a potentially effective regulating screw for policy? - Cycle Highways Network
Ljubljana	Good Practice Example	Development of a Cycle Path Network in the Ljubljana Urban Region
Metropolitan Area of Styria	Scientific paper (English) *Joined publication of CoP*	Developing sustainable and flexible rural-urban connectivity through complementary mobility services (Sustainability)

	Good Practice Examples	- GUSTmobil – a regional micro-public transport system - REGIOtim – a multi-modal mobility network
	Scientific paper (German)	- Multimodale Verkehrslösungen als Chance für nachhaltige städtisch-ländliche Beziehungen (Corp 2020) - Nutzung von städtisch-ländlichen Synergien als Treiber für eine nachhaltige regionale Entwicklung im Steirischen Zentralraum (AJARS 2020) - Zukunftsweisende Mobilitätssysteme des Steirischen Zentralraumes – Erkenntnisse aus städtisch-ländlicher kommunaler Zusammenarbeit (Standort 2021)
Mid Wales	Good Practice Example	Demand Responsive Transport in rural areas

Source: BAB 2021.

One of the main priority topics of LL partners in the CoP is how to improve mobility and public transport patterns. In general, ongoing and planned 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 oforganisingpublic transport. In the three Living Labs Ljubljana Urban Region, Metropolitan Area of Styria and Mid Wales, ongoing examples of demand responsive transport systems and shifts in multi-modal split as well as complementary mobility systems were analysed(Bauchinger et al. 2021a; Goodwin-Hawkins 2020a; Reichenberger and Bauchinger 2020a; b). The comparison of the different systems should answer the following questions: (i) What are the promoting and inhibiting factors for multimodal complementary transport systems? and (ii) How can multimodal complementary transport systems improve the sustainability and accessibility of public transport in rural-urban contexts?

Furthermore, the growing demand for cycling infrastructure in the rural-urban interface and its connectivity to mobility nodes were discussed in three LLs: Frankfurt/RheinMain, Ljubljana Urban Region and Metropolitan Area of Styria respectively. In these LLs, cycle paths are not only developed or planned for recreational purposes or for tourists, but increasingly also for everyday mobility which can help to reduce commuting by car (Henke 2020a; Hrabar and Kobal 2020a; Bauchinger et al. 2021a). Another aspect regarding mobility was the effect of reduced commuting on the climate, which was conducted by the LL Frankfurt/RheinMain. This study explicitly benefitted from the covid-19 pandemic, since many people in the region suddenly did not commute to the city centre any more due to lockdown (Bergs 2020; Issa and Bergs 2020).

(i) Multi-modal and complementary mobility, Mobility as a Service

Transport is crucial to connect remote areas to central or urban areas and it is a key concern for mitigating climate change, through reducing traffic, emissions and dependency on private vehicles. Yet, sustainable and flexible transport is among the greatest challenges for rural areas and rural-urban regions. Innovative transport concepts and approacheslike demand-responsive transport and multi-modal mobility are urgently needed to foster sustainable and integrated regional development and to reach sustainability, accessibility, and connectivity through examining complementary systems to existing public transport. A comparison of practice examples from the Ljubljana Urban Region (EURBAN, Bicikelj), the Metropolitan Area of Styria (GUSTmobil, REGIOtim) and rural Wales (Bwcabus, Grass Routes) was the basis for analysing the effects of services on accessibility for different groups, connectivity to public transport and usability as a “First and Last Mile” feeder. Furthermore, weaknesses of complementary transport systems, including legal, organisational and financial barriers were explored and potential solutions for structuring and communicating complementary transport systems were offered to improve access and use (Bauchinger et al. 2021a)[5].

[5]For detailed information on the examples presented please see: Bauchinger et al. 2021a; Goodwin-Hawkins 2020a; Reichenberger and Bauchinger 2020a; b; Henke 2020; Hrabar and Kobal 2020; Bauchinger et al. 2021b; Bergs 2020.

Promoting and inhibiting factors for multimodal complementary transport systems
If complementary transport implementations should be successful they need to be efficient for providers, convenient and integrated for users, and developed in accordance with local needs. Several promoting factors are important: 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. The absence of, or poor performance in, many of these aspects will inhibit development and user take-up. Additional inhibiting factors include user-friendliness, geographical reach and the long-term viability of project funding and financial models. There exists no one-size-fits-all model for multimodal complementary mobility. Rather, approaches that are place-based and tailored can improve accessibility, especially where existing public transport is limited or infrastructures unviable. Small-scale solutions can in turn contribute to longer-range rural-urban connectivity by improving convenience for the user and filling first and last mile gaps in existing provision (Henke 2020a).

Mobility as a Service
There is considerable scope for practical innovation in complementary multimodal mobility, and for enabling policy and governance mechanisms. This also points to future directions in Mobility as a Service (MaaS). In this approach, different transport services are technologically linked to each other and integrated on a single platform offering on-demand service to users. The aim is to provide users with a single source for routing information and streamlined booking and payment options to enable an optimal multimodal combination adapted to individual travel requirements. In other words, MaaS brings together single pieces of a puzzle to form a comprehensive mobility picture. To date, MaaS has been primarily oriented towards cities. Yet MaaS has clear potential wherever complementary mobility services exist alongside backbone public transport systems.

These future directions, however, will depend on both the short- and long-term effects of disruptions to public transport resulting from the covid-19 pandemic. Travel restrictions and social distancing requirements have had considerable impact on public transport provision in many regions. There are concerns that virus transmission fears will lead to a continued fall in patronage and a consequent return to private cars, exemplifying an unsustainable 'negative trend'. At the same time, emerging evidence suggests that covid-19 restrictions and public health and environmental risks are stimulating new counter-urbanisation patterns. While this trend could drive the return of some services to rural areas and thus their accessibility, it might also increase the use of private cars over longer distances. One potential response to both counter-urbanisation trends and public transport concerns may be to temporarily expand complementary mobility provision through interventions that offer users alternatives to the private car, and can be integrated once again with public transport in the future. There may indeed be opportunities to increase the demand for micro- public transport as it could be perceived as providing a safer mobility option compared to regular public transport. The covid-19 pandemic has shaken up the mobility status quo and shows that future development must continuously adapt and stay flexible. Any mobility solution must always meet the needs of the local population – but future sustainable mobility systems must do so by out-competing the private car.

(ii) Cycling pathways

Living Lab Frankfurt
There will be a network of 9 cycle highways connecting the centre of the city Frankfurt with the adjacent towns and cities north and south, east and west, with an average length of 30 km.The routes are linear where it is possible, and avoiding crossings, to enable uninterrupted cycling at an average

speed of 25 km/h. This is the speed for which pedelecs (pedal electric cycle) are designed: They have an electrically powered motor which supports the cyclist as long as the cruising speed doesn't exceed 25 km/h. The idea emerged from a long-term engagement of the Regional Authority FrankfurtRheinMain, called 'Bike + Business', working with companies aiming at encouraging their staff to use bikes for commuting for example by providing lockers for the bikes and showers for the employees. The Regional Authority FrankfurtRheinMain was partner in the innovative CHIPS project (2016-2019), co-financed by the EU through INTERREG NWE laying the base for European standards for cycle highways.

Living Lab Ljubljana Urban Region

The municipalities that comprise Ljubljana Urban Region started planning for improved, multimodal mobility in the early 2000s. The prospect of EU funding, particularly ERDF, helped the authorities to focus and plan improvements on a regional level through the preparation of the Regional Development Plans since 2004. A series of projects was implemented on the basis of the long-term vision of establishing a network of cycle paths in the region that would connect to the public transport network and to the national cycle path network and that would serve for both commuting and recreation. The new cycle path network now connects urban areas, dominated by Ljubljana with its extensive cycle paths within the city, with the rural areas and the smaller, rural municipalities in the periphery. It enables both commuting (predominantly from rural to urban areas) and recreation (predominantly from urban to rural areas). Moreover, it enables recreational tourism linked to the development of agritourism establishments and visiting Protected Areas as well as eco-tourism (Hrabar and Kobal 2020a).

Living Lab Metropolitan Area of Styria

While public transport is largely strengthened in all municipalities, individual municipalities also prioritise small-scale mobility solutions, such as cycling or micro-public transport. Cycle paths are therefore not only developed for recreational purposes use or tourists, but increasingly also for daily transport, such as commuting. In some cases, neighbouring municipalities in the study area cooperate and jointly develop new cycle path concepts, which are to be implemented in the next few years and promoted in the course of the Province of Styria's Cycling Strategy 2025.For the peri-urban municipalities, improvements in walking and cycling connections with the city of Graz are an important aim for the coming years. Some municipalities, which have a high share of commuters to Graz, are examining concepts of cycle express links. With the cycle offensive Radmobil Graz 2030, the city region follows the approach of other European cities such as Copenhagen, Amsterdam and London, which have enhanced the attractiveness of cycling and created incentives for commuting by bicycle by means of fast connections to the surrounding area. Regional companies can play an important role in promoting cycling by providing the infrastructure for commuters, such as bicycle parking, showers, etc. Individual mayors in the Metropolitan Area of Styria are therefore seeking to cooperate with companies in order to promote suitable and safe cycling infrastructures (Bauchinger et al. 2021b).

Table 5: Mobility and rural-urban linkages in the CoP

Aspects	**Mobility** **Experiences in the Public Infrastructure and Social Services CoP**
Rural-urban dynamics	Public transport is largely strengthened in all municipalities Individual municipalities also prioritise small-scale mobility solutions such as cycling (cycling paths)and micro-public transport
Cross-sectoral relations	Transport Tourism Health Recreation

Governance	Decentralized contractual relationships with external support and central public control by regional management Cooperation of Regional Authority with private companies Considerable scope for practical innovation in complementary multimodal mobility, and for enabling policy and governance mechanisms
Growth	Sustainable and resource-saving transport through Mobility as a Service (MaaS) A single platform offers on-demand service to users Optimal multimodal combination adapted to individual travel requirements
Sustainable development models	Multimodal mobility Micro-Public Transport Systems (Call-a-bus service, Shared-hailed taxi) Shared Mobility (Carsharing, Carpooling, Bike-sharing, Ridesharing) Mobility as a service Cycling highways
Opportunities	Several promoting factors are important here, including: Public-private cooperation Close coordination between stakeholders Information and Communication Technology (ICT) Marketing and promotion of services Effective interface with existing public transport Support and expertise of regional bodies
Bottlenecks	High start-up subsidies for the implementation of the infrastructure by EU, state and regional fund Bicycle-sharing system require costly installation of self-service terminals High costs of expanding and upgrading the existing fleet and implementing new technologies Recognition of the services among potential users is often not evaluated Quantitative journey data and GIS methods could illuminate how users incorporate complementary services into multimodal journeys, and the spatial extent of their mobility patterns

Source: BAB 2021.

3.2.2 Digitalisation, broadband coverage and e-services

Box 2: Key messages – Digitalisation, broadband coverage and e-services

To maintain or strengthen the competitiveness of rural areas it is important to offer and gain access to high-efficient broadband infrastructure.

Especially in times of the Covid-19 pandemic, the importance and sensibility of digitalization, its access, application and usability came into the foreground.

To enable an optimized broadband coverage in a rural area, an inter-municipal and cross-regional approach with participation of all relevant stakeholders is crucial. Digital network plans for optimized and future-oriented broadband expansion as well as public financial instruments for the implementation are necessary.

Digital government services can streamline the services and reduce the need of residents to travel from rural areas to a distant government office.

The possibility of teleworking might contribute to social, economic and ecological sustainability as it enables the revitalization of rural areas and reduces the number of cars travelling to city offices, as well as the employer can save office costs.

In the future, the time- and place-independent new forms of working contribute to the possibilities of choosing a multi-local way of living.

The possible post-pandemic continuation of increased remote working modes and accompanying rise in urban-to-rural migration can help processes to rejuvenate rural communities and to retain young people, at the same time raising concerns that the new wave of in-migration would trigger house price inflation.

Both teleworking and e-commerce provide an opportunity to attract additional population and revitalize the local economy in rural areas, which will only consider relocation towards rural places on the condition of significantly improved internet availability.

Table 6: Shared Repertoire Digitalisation, broadband coverage and e-services

Shared Repertoire –Public Infrastructure and Social Services CoP Digitalisation, broadband coverage and e-services		
Living Lab	**Kind of outcome**	**Title**
Tukums	Good Practice Examples	- Online broadcast facility on the municipality's webpage - Library e-services - e-library and online databases - The municipality's online document management & service provision systems
Metropolitan Area of Styria	Good Practice Example	Broadband coverage – strategy for an accessible and reliable infrastructure in rural areas (forthcoming)
Valencia	Scientific paper	Internet Access in Rural Areas: Brake or Stimulus as Post-Covid-19 Opportunity?

Source: BAB 2021

Long before the outbreak of theCovid-19 pandemic and its far-reaching consequences, the need for comprehensive coverage of rural areas with high-speed internet, including more remote areas, was intensively and widely discussed. In particular, advances in technology and internet infrastructure are relevant for low-density regions. Improvements in internet connectivity can overcome some of the core challenges remote areas face, including isolation, high transportation costs, high costs of delivery services and distance to markets (OECD 2020).The increasing use of teleworking, remote learning and e-services as well as streaming services will persist in the near future. In this regard, immediate action must be taken and widespread broadband access and fast connection must be provided in (remote) rural areas. The state, provinces, cities and municipalities have to ensure that this offer is created in a timely manner. In rural economies, the increased connectivity of services can further unlock opportunities for future work, synergies and regional integration between rural places and their surroundings (OECD 2020).

Due to digitalisation and ICT, the spatial distance between urban and rural regions seems to become less important, albeit there remains a marked gap in connectivity within many rural regions. In particular if more remotely located regions have limited access to high speed broadband or just access to low quality ICTs, such deficiencies would hamper their ability to work from "everywhere". Furthermore, access costs tend to be higher and thus they have to pay much higher prices or have to arrange access by themselves. Many companies have adapted their home office arrangements to the experiences gained during the pandemic. More flexible workplace concepts are in formation with the realization that parts of work can be done from home in future. The possibility of home office working also generates new forms of lifestyles like the strategic distancing from urban areas through digital or multi-local work. A further trend that will continue is to work in co-working spaces or hubs in rural areas. There already exists a variety of new working (and living) spaces in rural areas as well as new forms of jobs with higher flexibility such as entrepreneurs, IT specialists or creatives.

On account of the risk of a digital divide in society, the responsible authorities and actors have to invest in digital education, in order that everybody is able to handle the digital challenges and to work with the digital tools, and to provide sufficient and affordable access. Aspects such as age, income, level of education, social milieu, language and technical competence play a crucial role in the use of the internet. Therefore, training opportunities and tailored trainings for digital tasks as well as

mutual help between digital natives and digital newcomers are crucial aspects in this new era. In the LLs of Tukums, Helsinki, the Metropolitan Area of Styria, Valencia and Mid Wales the theme digitalisation, broadband coverage and e-services plays was treated as an important issue.

LL Tukums

The population in more remote parts of Tukums is declining and this increases the costs of providing services, including the municipal government's own administration. To help residents to connect with Tukums Municipality wherever they live, the municipality created an online hub. The hub is a digital portal for government services that streamlines administrative services and reduces the need to travel to a distant government office. The reasons for the implementation of the online document management and service provision systems were essentially twofold. Firstly, online facilities allow local residents to spend less time interacting with the local government. Secondly, the document management process simplifies the internal processes within the municipality as the system is used to streamline communication and the exchange of internal documents (e.g. reports, forms) between different departments. The target group is, therefore, different for each side of the system –public servants and local residents, which use the facilities that allow them to access services (Kilis 2020a; Goodwin-Hawkins et al. 2020).

Furthermore, an e-library service was established which contains a bundle of various services that allow the residents of Tukums to gain online access to a wide range of literature, databases, and mass media publications. Associated tools also allow people to access various Latvian online resources, such as the databases and catalogue of the National Library of Latvia. While some of these services are provided by the municipality others are maintained by state institutions and are available free of charge. These services can assist in maintaining connections between urban and rural areas despite limited public transport options and poor-quality roads, but their benefits are not limited to urban-rural synergies (Kilis 2020b).

LL Helsinki

Multilocality is a common phenomenon in Finland and around one third of population is regarding themselves as both urban and rural at the same time. The rural areas of Finland are linked especially closely to multilocality through the rural identity, telework, summer cottages and the leisure activities which take place in the rural area. The possibility of teleworking contributes to social, economic and ecological sustainability as it enables the revitalization of rural areas and reduces the number of cars travelling to city offices. On the other hand, the employer can save in office costs. Multilocality is still neglected by statistics but should be better taken into account in regional development and service planning. Sustainable multilocality requires, for example, services or infrastructure with scalable solutions and systems that adapt more dynamically to changing demand over time (e.g. social and health services, energy production, food, waste, transport and widespread broadband coverage).In the future, the time- and place-independent new forms of working contribute to the possibilities and environment-friendliness of choosing a multi-local way of living. At the moment, the rural-urban dwellers are promoting the branding and marketing of villages as good places to live as well as to raise children. One concrete step in achieving the goal and finding new residents is to provide more rental houses in rural areas for people who want to try living in the villages before making the decision to purchase a home (Ovaska 2020a; Ovaska et al. 2020).

LL Metropolitan Area of Styria

In the Metropolitan Area of Styria, the Regional Management Agency initiated together with the Province of Styria a three-year project, called "Masterplan Breitband" (broadband masterplan). The region recognized the urgent need for a fast and reliable internet access, especially in rural areas

where the supply of ultra-fast internet is thinning out. More rural areas are often forgotten by the telecommunication companies due to low profitability. To maintain competitiveness, it´s important to offer and gain high-efficient broadband infrastructure. Especially in times of the Covid-19 pandemic, the importance and sensibility of digitalization, its access, application and usability came into the foreground. It shows that especially the expansion of high-speed broadband infrastructure is needed as a basis. The masterplan was first about getting data about existing communication infrastructures in the municipalities and about the operators involved. Afterwards a digital FTTH (Fibre to the Home) Network Plan was set up. This plan shows all the infrastructure, material and costs that are needed to build up a high-efficient infrastructure and enables faster project planning as well as application for funding. Beyond that, it gives the municipalities the opportunity to build and improve the adequate infrastructure in cooperation with the providers. At the same time, the province of Styria sets up a company, which coordinates broadband expansion and finances it in rural areas, the so-called 'white areas'.

LL Mid-Wales

The Covid-19 pandemic from March 2020 onwards had mixed implications for the Rural Vision innovation project in Mid-Wales. Participants in this visionary process highlighted an unequal reach of digital infrastructure by the switch to online working, study and services, with rural residents in some areas disadvantaged by poor internet connectivity and limited mobile phone coverage. Tensions around tourism and second homes were also intensified, especially by fears that visitors would bring the coronavirus into rural communities from cities. Similarly, anticipation of the post-pandemic continuation of increased remote working and accompanying rise in urban-to-rural migration divided opinion among Living Lab participants, between hopes that remote working could help to rejuvenate rural communities and to retain young people, and concerns that the new wave of in-migration would further escalate house price inflation. The contributions of stakeholders to the co-production of the Rural Vision were strongly influenced by these experiences and perceptions. Challenges were also raised around the adequacy of current infrastructure in many rural areas to support remote working and increased populations, notably broadband infrastructure but also services such as childcare. A wide range of suggestions were received, however most concerned changes to policy (for example with respect to planning and housing) or calls for funding or investment (for example in broadband infrastructure).

LL Valencia

The health crisis caused by theCovid-19 pandemic brought an increase in digital tools in all various sectors like health, education, work or administration and revealed existing territorial inequalities in the broadband coverage. However, it also highlighted that rural areas are areas of opportunity. In the Valencia Region a survey was conducted in order to determine the situation regarding internet access in the 71 inland municipalities. This research has practical implications that should be considered: Firstly, there is a need to reconceive the current policy approach to internet access. Greater rural digital inclusion may be achieved by focusing on connectivity as a public interest goal, targeting aims to suit local contexts, and implementing participatory digital government practices. Secondly, internet access in rural areas has to consider the main stakeholders, since it not only depends on the installation (data provided by the companies) but also on the reach and coverage at all points. This also requires that inhabitants in rural areas are updated through digital training. Thirdly, local stakeholders are the biggest drivers of local initiatives and strategies, so they need support and collaboration to be so. And fourthly, and most importantly, both teleworking and e-commerce provide an opportunity to attract the population and revitalize the local economy in rural areas, which requires good internet access, along with everything it implies (Ruiz-Martínez and Esparcia 2020).

Table7: Digitalisation, broadband coverage and e-services and rural-urban linkages in the CoP

Aspects	**Digitalisation, broadband coverage and e-services** **Experiences in the Public Infrastructure and Social Services CoP**
Rural-urban dynamics	Rural and urban areas are connected through a wide range of economic, political, social and cultural flows Digitalisation can make rural areas more attractive for people and companies in many areas as the importance of locality decreases (see multilocality) Rise in urban-to-rural migration can help processes to rejuvenate rural communities and to retain young people At the same time raising concerns that the new wave of in-migration would trigger house price inflation Technological progress can improve the quality of life and the provision of services Need to provide enabling conditions as infrastructure (broadband internet) and training of workers and citizens to work, study and communicate digitally (appropriate education services)
Cross-sectoral relations	Economy E-commerce Remote work Health services Bank services
Governance	Increased use of teleworking, remote learning and various e-services through confinement measures during theCovid-19 pandemic Acceleration of the use of these digital tools beyond the crisis period With changing habits and more willingness to embrace these digital tools, government and private operators may increase investments to realise their potential benefits Public Private Partnerships should be established for the coordination and financing of the broadband expansion in rural areas
Growth	Coverage with high-speed internet and the increased connectivity of services can further unlock opportunities for future work, synergies and regional integration between rural places and their surroundings
Sustainable development models	The possibility of teleworking contributes to social, economic and ecological sustainability as it enables the revitalization of rural areas Teleworking reduces the number of cars travelling to city offices Employer can save in office costs through teleworking
Opportunities	Digitalisation can create new jobs, new ways to deliver services and transport people and goods This improves attractiveness and value creation in rural areas Flexible working hours and workplaces are more and more common Co-working spaces or hubs are an opportunity for rural areas Remote working could help to rejuvenate rural communities and to retain young people in the region
Bottlenecks	A comprehensive broadband coverage in rural areas causes massive costs This is the reason why providers usually only expand in profitable (urban and peri-urban) areas and this leads to an unbalanced situation in rural and urban areas Aspects such as age, income, level of education, social milieu, language and technical competence play a crucial role in the use of the internet and have to be considered To avoid a digital divide in society, training opportunities and tailored trainings for digital tasks as well as mutual support between digital natives and digital newcomers are essential

Source: BAB 2021

3.2.3 Basic infrastructure, social services and cultural networking[6]

Box 3: Key messages – Basic infrastructure, social services and cultural networking

In many rural municipalities, the basic infrastructure has been reduced due to rising provision costs, austerity policies, financial crisis, population loss and the resulting ageing of the population which means a decrease in the quality of life.

Place-based and tailored service provision which is supported by the public sector are crucial to adapt to these trends and particular challenges, and to avoid the exclusion of rural residents from basic social, health and financial services.

Cultural networks are important supportive elements to make cultural workers visible and strengthen their position in the rural area and they create and foster an active cultural life and link cultural initiatives and professionals at the rural-urban fringe, and beyond.

The cultivation of regional languages (and "cultural expressions") is very important for the regional identity of people and shows the importance of cultural initiatives and networks for a vivid social life in rural areas.

Table 8: Shared Repertoire – Basic infrastructure, social services and cultural networking

Shared Repertoire –Public Infrastructure and Social Services CoP Basic infrastructure, social services and cultural networking		
Living Lab	**Kind of outcome**	**Title**
Frankfurt/RheinMain	Good Practice Example	Regional park RheinMain (open space, green infrastructure, public access)
Metropolitan Area of Styria	Good Practice Examples	- We are region – a primary school exchange in the Metropolitan Area of Styria (forthcoming) - The Coordination of educational and career guidance and the Regional Youth Management in the Metropolitan Area of Styria" (forthcoming) - Kultur 24 – cultural network in the rural-urban context
	Short report	Cultural infrastructure and networking (forthcoming)
Mid Wales	Good Practice Examples	- 'Papurau Bro' – Community Newspapers as cultural infrastructure - Young Farmers' Clubs as cultural infrastructure
Valencia	Short report *Joined CoP publication*	Market Failures in Rural Areas
	Good Practice Examples	- Avoiding financial exclusion of rural areas: the cashier machines (ATM) network - Rural Taxi for Medical Purposes in Castellón Province - Cultural infrastructures and services in Valencia province

Source: BAB 2021.

Many rural areas face major challenges due to remoteness, insufficient infrastructure and public facilities, as well as limited access to markets and services. In the European Union the access to services is related to territorial cohesion which represents one of the principal European policy objectives. Access to relevant public infrastructure and social services in rural areas is a key element of well-being of citizens and ensures social inclusion and social justice (Ruiz-Martínez et al. 2020). The concentration of services in geographic and demographic centres, privatisation since the 1980s in many areas and austerity in the last decades has led and will lead to even fewer services in the fu-

[6] The *physical or tangible cultural infrastructure* can be defined as physical space, where culture is consumed, such as museums, galleries, theatres, cinemas, libraries and historical cultural sites, and places, where culture is produced, such as creative workspaces (music recording studios, architecture or graphic designer office). Albeit, cultural infrastructure also includes premises that are used temporarily or occasionally for cultural events (vacant buildings, markets or local bars. The *intangible cultural infrastructure* defines networks, databases, concepts, organisational capabilities.

ture. Inadequate services also exacerbate rural poverty and deprivation and create feelings of isolation. Therefore, tackling rural-urban inequalities in services is crucial for inclusive development across Europe's regions (Goodwin-Hawkins et al. 2020).

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 (see European Pillar of Social Rights 2017). These services – along with others, like healthcare and postal services – are also described in EU policy as 'services of general interest' (Goodwin-Hawkins et al. 2020). Beyond these essential services, rural well-being also includes 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. However, individuals as well as communities can also have their own ideas about infrastructure and services that matter most to them, and make their localities liveable.

Unfortunately, there are many disparities in services between urban and rural areas. Rural areas pose particular challenges for service provision and access, including (Goodwin-Hawkins et al. 2020):

- Higher costs due to distance and without economies of scale
- Small populations resulting in less demand and little commercial viability
- Dispersed populations for whom distant services are difficult to access
- Inadequate transport and digital infrastructures
- Changing demographics, especially ageing populations and seasonal residents.

Although rural and urban areas need the same services, they need different solutions for getting services to people and people to services. In the Frankfurt/RheinMain, the Metropolitan Area of Styria, Mid Wales and Valencia LLs there is evidence for examples of place-based solutions regarding green areas for recreational purposes, bank and health services, cultural networking, as well as for educational facilitation.

LL Frankfurt/RheinMain

The Regional park RheinMain is originating from the "*RegionaleGrünzüge"*, which are roughly comparable with the English *Green Belts.* The main difference being that they are not ring shaped but following the polycentric structure of the built-up areas. These are enshrined in the formal plans established since decades to protect open space from land take. The intention of the project 'Regional park RheinMain' was to enhance this regional asset and to provide these "green spaces" as kind of "infrastructure service" to all the population of the rural-urban region. Frankfurt/RheinMain is presenting itself as unique among the European metropolitan regions due to its polycentric structure and the resulting presence of open space which everybody can reach easily. When the project started some 20 years ago there was a window of opportunity due to shared political interests and the simultaneous process of drafting a new edition of the Regional Land Use Plan (Henke 2020b).

- The Regional park RheinMain has an unusual structure. It is a network of routes and attractions for pedestrians and cyclists covering a large area.
- It is actually regional because it is touching the territories of dozens of municipalities.
- Most of the park is located in the peri-urban area, where open space is a valuable asset under pressure from urbanisation. It has rural features, but cities are never far away.
- The Park is a part of the regional public infrastructure and provides social services as recreation.

LL Metropolitan Area of Styria

In the Metropolitan Area of Styria, the cultural network "Kultur 24" has been established in the funding period 2007-2013 by the Local Action Group "Hügelland-Schöcklland" in the north of Graz. since 2010. The main goals of the initiative are to build a basis for active networking amongst cultural and creative professionals, to create an active cultural life in this peri-urban area, to implement common projects and to get in contact with new project partners within and outside the region. It started as a small group of artists within the region but has now developed to a broad network beyond the borders of the region 'Hügel- und Schöcklland' and has expanded to the city of Graz and fosters as well cultural exchange on a national and international level (Bauchinger 2018).

LL Mid Wales

The example of Mid Wales shows the importance of cultural initiatives and networks for a vivid social life in rural areas. The cultivation of the Welsh language is very important for the regional identity of people. Papurau Bro are Welsh language community newspapers providing a hyper-local media outlet and calendar for community events and organisations. As cultural infrastructure, they support the Welsh language and cultivate a sense of belonging, while stories of people and places connect communities to their heritage. 'Bro' is a Welsh term relating to an area, and can be attributed to a municipality, a town locality, or even a valley. Papurau Bro normally cover small towns and their surrounding locality. The majority are based in rural areas, signifying the importance of agriculture and rural communities as strongholds of the Welsh language (Howell 2020).

LL Valencia

In Valencia Region, many municipalities in rural areas lost their bank offices due to the 2008's financial crisis and subsequently citizens lost a primary service as the possibility to have cash, pay for goods or to commerce. This represents a decrease in the quality of life. Therefore, the Regional Government of Valencia has launched a first initiative against financial exclusion through the promotion of the installation, maintenance and commissioning of basic banking services, mainly by cashier machines (ATM) (Ruiz-Martínez et al. 2020b). Another challenge in Valencia Region is the poor access to health services and hospitals, which is especially decisive for elderly. In the province of Castellón (North of Valencia), has a lack of public transport which also fits the needs of disabled and elderly persons with reduced mobility. Therefore, the province initiated a Rural Taxi for Medical Purposes. It is a free transport service for residents who do not have their own vehicle or manifest the inability to drive, to get assistance in hospitals, medical examination and dental centres in nearby municipalities (Ruiz-Martínez et al. 2020c).

Table9: Basic infrastructure, social services, cultural networking and rural-urban linkages in the CoP

Aspects	**Basic infrastructure, social services and cultural networking** **Experiences in the Public Infrastructure and Social Services CoP**
Rural-urban dynamics	Inadequate services exacerbate rural poverty and deprivation and create feelings of isolation It is crucial to tackle rural-urban inequalities in services for inclusive development across Europe's regions
Cross-sectoral relations	Bank sector Health sector Cultural sector
Governance	Local governments should adopt alternative models of service delivery to relieve the lack of public goods provision New forms of working and coordinating means making stable connections between people and place, building trust, promote participation and create positive externalities
Growth	In the context of sustainable rural development, essential services must be guaranteed This is the only way to ensure economic viability
Sustainable development models	Access to relevant public infrastructure and social services in rural areas is a key element of well-being of citizens It ensures social inclusion and social justice

Opportunities	Although rural and urban areas need the same services, they need different solutions for getting services to people and people to services
Bottlenecks	The public sector has to pay or invest in infrastructure if there is no benefit for the private sector The centralization of services in urban areas can create a vicious circle leading to even fewer services in future

Source: BAB 2021.

3.2.4 Multilocality living

Box 4: Key messages – Multilocality living

This topic of multilocality emerged as an influential aspect from the LL Helsinki addressing particularly the issue of seasonal population peaks and ensuing substantial fluctuations in service demand in remote rural areas throughout Finland. The LL activity and geographical scope thus extended across a large geographical space, analysing long-distance expressions of multi-local dwellings across almost all the country.

Challenges are particularly related to limited information sources, divergent periods of settlement, dispersed locations and lack of new models for service management adapted to these remote contexts.

In principle, multi-local dwelling is a widespread phenomenon across European regions (including second homes, multi-locals, irregular settlement options etc.) with particular relevance in certain rural regions (like the Alpine regions, commuting regions and historically linked contexts). As such it is of high significance to other LLs as well, but could not be explored in the LL activities due to other work preferences.

In particular, Covid-19 pandemic was a recent strong trigger for increased settling and official registration in rural areas (e.g. in Austria) implying a significant increase in multi-local visibility and appreciation of ecosystem services, which reveals an interesting option for rural-urban synergies.

Table 10: Shared repertoire - Multilocality

Shared Repertoire – Public Infrastructure and Social Services CoP Multilocality		
Living Lab	**Kind of outcome**	**Title**
Helsinki	Short Report – *Joined publication of CoP*	Multilocality
	Good Practice	Multilocality – underlines use of regions as a starting point for regional planning and development
	Scientific Papers in European countryside	- Multi-Local Living – An Opportunity for Rural Health Services in Finland? - Rural policies for sparsely populated areas in Finland - old problems, new challenges and future opportunities
	Article in Helsinki quarterly 3/2020	Multi-local living broadens our understanding of urbanisation
	Broadcast feature	
	Several publications in Finnish	- Future of second homes - Observations about the human mobility and net migration during the corona pandemic

Source: BAB 2021.

Multilocality living offers an alternative perspective to the current debate on urbanization and population concentration. It is not a simple matter of rural-urban interaction, but a multiform phenomenon that integrates urban and rural residents into both directions. Therefore, a strict division be-

tween the urban and the rural undermines the understanding of where people spend their time and does not allow for a more complex understanding of their relation and effects on services. There are challenges connected to the phenomenon. As experiences from Finland show, population statistics overestimate urban and underestimate rural populations, because people are moving and living temporarily in many places over the year (Ovaska et al. 2020a). The provision of public services is based on estimations and projections of census data on permanent inhabitants, and thus, multilocality is still largely ignored in policy and planning. From the perspective of rural areas, there are challenges linked to maintaining cultural sustainability. The housing price level may rise beyond the reach of many local people, in particular, the younger ones. Moreover, there is a risk of negative impacts on the environment, such as increasing greenhouse gas emissions or excessive land use (Bergs 2020).

Indeed, people who are multilocal by definition have multiple localities. As the Finnish example (but also other observation from e.g. Switzerland and Austria) shows, this presents challenges for traditional models of taxation and service provision that presume static populations within administrative boundaries. In the Austrian case, multilocality across national borders raises further questions about how to plan for changing populations. On a smaller scale, multilocality can pose challenges for the coherence built around shared local identities by full-time residents. In Wales, second home ownership has been particularly controversial for this reason. At the same time, multilocality living can create opportunities for designing services around localities in more sustainable ways. 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 (Ovaska et al. 2020a; Ovaska et al. 2020b).

On the other hand, multilocality also contributes to rural development in terms of job creation, planning of cultural activities and provision of services. New forms of time- and place-independent work reduce the need for commuting and enable teleworking. However, teleworking is not possible without a proper Information and Communication Technology (ICT) coverage. Sustainable multilocality requires services or infrastructure with scalable solutions and systems that adapt more dynamically to changing demand over time like social and health services, energy production, food, waste, transport. In addition, multilocal people could be seen capable of initiating and developing new ideas and practices that benefit rural-urban interaction and synergies.
In Finland, seasonal migration to summer cottages located in sparsely populated areas is a cultural custom and habit. In Germany, commuting to cities is a common phenomenon. In Wales, rural sustainability is an important aspect of multilocality. In Austria the phenomenon is visible in multiple ways.

As mentioned earlier, seasonal living in summer cottages is a well-known Nordic phenomenon that is based on cultural customs and habits. Nevertheless, the taxation system is not taking this into account, which forms a challenge to service provision. The same problem with second homes and service provision affects Mid Wales. The demand for second homes also increases housing costs in Wales, which makes it difficult for local people to find reasonably priced housing. This is a challenge also in the Metropolitan Area of Styria, which is a popular recreation destination and additionally has many university students. Moreover, commuting is taking place more or less everywhere in Europe, and Frankfurt/RheinMain Region with its large population has worked with the problems it causes – but has also come up with new ideas on development.

The municipal taxation system in Finland is based on a single and permanent place of domicile: all the municipal taxes are paid there and used for financing e.g. public health and social services to the local people. Multilocal people and families may annually spend even several months in the munici-

pality where they have summer cottages. Nevertheless, they do not pay taxes to finance the public services.The use of official statistics as the basis of social and regional planning and resource allocation is therefore problematic. The statistics do not recognize seasonal populations, and thus current regional policy and planning favour urban areas and ignore seasonal mobility. With political rhetoric tending to focus on the financial contributions of second home owners through taxation and spend, it is also the case that this cohort have the potential to increase the viability of local services as well as introduce new opportunities and social capital to communities through, for example, volunteering and leadership. Furthermore, the status of their multilocal connections as intra-regional, international and/or intra-rural is also likely to have some bearing on their relations with place.

As we have seen, there are also several benefits that can be obtained from multilocality. In this context, the most important issue is that it can help to revitalise rural areas and thus benefit the whole society. At the same time, society has not been completely able to keep up with the development. This has had effects e.g. on the provision of public infrastructure and social services. The most important lesson to learn from the case studies presented here is that multilocality in its different forms is becoming more common. During the covid-19 outbreak, the phenomenon has become more interesting than ever. It is even possible that the current covid-19 crisis not only accelerates the changes in the way we work and live but launches the onset of a new multilocality for good.

Table 11: Multilocality living and rural urban linkages

Aspects	**Multilocality living** **Experiences in the Public Infrastructure and Social Services CoP**
Rural-urban dynamics	Multilocality is not a simple matter of rural-urban interaction, but a multiform phenomenon that integrates urban and rural residents into both directions.
Cross-sectoral relations	Infrastructure and service provision are at the heart of considerations, but Multilocality directly links to aspects of attractiveness. It is dependent on the awareness of the range of ecosystem services in the area, cultural attributes seen in this context and aspects of valuing local food systems as particular place-sensitive assets.
Governance	The principles of participation and partnership are useful for envisaging how multilocality can be better integrated into planning and decision-making systems. As the case studies illustrate, multilocality has to date largely been treated as a governance problem insofar as it affects municipal taxation.
Growth	Rural Regions, with positive connections to urban regions and high amenity values and are well positioned to gain benefits from people with multilocal working and living patterns.
Sustainable development models	Using smart development planning strategies to foster rural-urban synergies could offer ways to find a healthy balance.
Opportunities	To date, multilocal residents have often been overlooked as resources for smart development in many rural regions, where they could be a source of 'brain gain'. The possibility of teleworking contributes to social, economic and ecological sustainability as it enables the revitalization of rural areas and reduces the number of cars travelling to city offices. On the other hand, the employer can save in office costs. Empirical results from Finland showed that knowledge intensive industries show clustering tendencies also in semi-urban and rural areas.
Bottlenecks	Mobile populations have figured in development in ways that are, arguably, not smart – such as unsustainable commuting patterns in Frankfurt, or the knock-on effects of tourism in Austria, which is making some areas increasingly unaffordable for full-time residents.

Source: BAB 2021.

3.2.5 Service hubs

Box 5: Key messages – Service Hubs
Service hubs are assessed as "anchor points" for service provision throughout all parts of the region. Thus, they can be (and need to be) developed in many different places and contexts in order to tackle local and regional challenges in service provision and access.
They are established with the intention to bring together a range of services, which may or may not be directly related and can be integrated in different ways.
Service hubs can offer alternative models for providing rural services and strengthening rural-urban cohesion and connectivity.

Table 12: Shared Repertoire Theme Service Hubs

Shared Repertoire – Public Infrastructure and Social Services CoP Service Hubs		
Living Lab	**Kind of outcome**	**Title**
Tukums	Good Practice Example	Municipal Online Document Management & Service Provision Systems
Metropolitan Area of Styria	Good Practice Examples	- Allerleierei – a modern farmer's shop - REGIOtim – a multi-modal mobility network
Mid Wales	Short Report *Joined publication of the CoP*	Rural Service Hubs
	Good Practice Examples	- A community-owned rural service hub - Village halls as digital hubs
	Fact Sheet	Rural Service Hubs - (New, rural) business models, their mechanisms and impacts
	Infograph	How to plan a rural service hub
Valencia	Good Practice Example	Avoiding financial exclusion in rural areas: the cashier machine (ATM) network

Source: BAB 2021.

Many rural areas struggle to support local services, such as shops, banks and public offices. Service hubs, where multiple services are co-located in the same space, can offer solutions. In many rural areas, shops struggle to stay open and services are centralised further afield. The growth of urban services against declining rural access and provision is problematic. Inclusive and sustainable growth in Europe requires mutually beneficial rural-urban relationships. However, just as it is not inclusive to locate services solely in urban centres, it is often not financially sustainable to replicate services (of the same kind, type and scale) across widespread rural areas. Service hubs can offer alternative models for providing rural services and strengthening rural-urban cohesion and connectivity.

The Long-Term Vision for Rural Areas (EC 2021) published in June 2021 clarifies in the initial chapter setting the scene for appropriate rural action that "(l)ife in rural areas crucially depends on access to **quality public services and infrastructure**" (emphasis in the document). The enabling aspect of many services (social, but also infrastructure and digital) is emphasized throughout the document and will be crucial for the Rural Action Plan to be developed on that basis. As to the ROBUST cases, in the Tukums, Helsinki, Metropolitan Area of Styria, Mid-Wales and Valencia LLs a diverse range of rural service hubs were analysed, related to transport, public administration, primary healthcare and community shops. These examples show that hubs can be developed in many different places and contexts, in order to tackle local and regional challenges in service provision and access (Goodwin-Hawkins et al. 2020).

What EU policy terms 'essential services' and 'services of general interest' include transport, finance, digital communications and healthcare. In rural development research, facilities like local shops and village halls are often included, too. In policy and practice, service provision is about getting services to people; and, service access is about getting people to services. Balancing both provision and access is crucial. Although rural and urban areas need the same services, they need different solutions for getting services to people and people to services. Service hub models can offer solutions to rural provision and access challenges. A hub co-locates multiple services in a single, central space with associated infrastructure. Three principles from ROBUST can be practically applied to rural service hubs:

- Hubs should 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.

Service hubs bring together a range of services, which may or may not be related and can be integrated in different ways. The relationships between co-located services can be distinguished from the ways in which the services are integrated. In the following bullet points the main findings and lessons learnt from a range of cases of rural service hubs in action from the LLs in the CoP are presented.

LL Metropolitan Area of Styria – Allerleierei

Hub models which engage local producers and suppliers can help retain economic value within the region.

As well as reducing costs, co-located services can reduce resource use and waste.

Combining skills from different fields of expertise can create new synergies and innovations.

Commuters and seasonal visitors are also important customers; facilitating access for these different groups can further generate revenue to support the hub.

Funding applications can be daunting for local entrepreneurs – knowledge networks, such as local LEADER groups, can provide crucial development support.

LL Metropolitan Area of Styria: REGIOtim– network of multimodal mobility hubs

Hubs can be used to link existing services and infrastructures in innovative new ways.

Existing mobility and service patterns can be used to place hubs in convenient places where people will be more likely to access them.

A hub does not need to be in a single location – there are many possibilities for developing synergies through networks of hubs.

Alongside their key role in facilitating service provision and access, hubs can also support local and regional transitions to more sustainable futures

LL Mid-Wales: Cletwr

To operate effectively, service hubs must interface with a range of other organisations, such as providers, funders, government and NGOs.

New hubs need external support, through expert advice and development funding.

However, community needs must drive the project, and regular communication and consultation is essential.

It is equally vital not to exhaust voluntary time and energy; leadership is important, but so is the capacity of other community members to take over if necessary.
A successful community enterprise needs to operate sustainably as a business – dependence on grants creates the risk that the hub will close if funding dries up.

LL Mid-Wales: Village Halls in Monmouthshire
Hubs offer a way to make targeted investment when blanket provision is not feasible.
Hub development can be used to re-purpose existing rural facilities, giving them a new lease of life and expanding the user base.
Delivering digital infrastructure through hubs can help connect communities and create new ways to bring people together across age groups.
Partnerships between hubs and local government bodies connect community knowledge about their own access needs with resources and expertise for service provision.

LL Helsinki: Village Shops
Hubs can be created simply and effectively by widening the range of services available at existing facilities.
Government funding can be used to strategically stimulate hub development, without the government itself needing to become the hub operator or service provider.
Hub models can attract entrepreneurs, but entrepreneurs also need support to maintain and grow their businesses in regions where traditional retail is no longer viable.
In areas where seasonal residents are an important part of demographic patterns, hubs can help ensure services are maintained as the population fluctuates.

LL Valencia: ATM
Hubs do not need to be large-scale – small ambitions can have large impacts.
Losing certain services affects some groups more than others; co-locating services can help ensure continued access for those who need them most.
Hub models can be efficiently developed using existing public infrastructure, and it is especially beneficial when that infrastructure is already a local focal point.
To contribute to balanced growth in rural areas, hub models require rural-urban cooperation mechanisms.
In places where commercially-run services are being withdrawn, hub models can provide opportunities for local and regional governments to step in to ensure provision, without needing to become the direct provider.

LL Tukums: Putting the hub online for local government services
A hub model does not necessarily need to be built in physical space; online hubs can also be targeted to tackle challenges for rural service provision and access.
Online hubs can be especially beneficial in reducing costs and time by removing the need to travel.
By integrating administrative processes, hub models can also be used to create efficiencies for municipal staff.
User-friendly integration does not require all the services to be co-located – there are opportunities for hubs to help connect users to services elsewhere.

Table13: Service Hubs and rural-urban linkages

Aspects	**Service Hubs** **Experiences in the Public Infrastructure and Social Services CoP**
Rural-urban dynamics	Connectivity through high speed internets in rural hubs Co-working spaces also for tourists
Cross-sectoral relations	Different offers at the same location
Governance	Public funding as well as assistance of intermediary structures like development agencies can be used to strategically stimulate hub development.
Growth	Rural Service Hubs can be designed to foster smart development like local food and the circular economy or co-working spaces Services themselves support regional growth through business opportunities and economic inclusion Liveable regions are workable regions
Sustainable development models	Tackling rural-urban inequalities in services is crucial for inclusive development across Europe's regions
Opportunities	Rural Service Hubs can be created simply and effectively by widening the range of services available at existing facilities Government funding can be used to strategically stimulate hub development Government must not be the hub operator or service provider Hub models can attract entrepreneurs But entrepreneurs need support to maintain and grow their businesses in regions where traditional retail is no longer viable In areas where seasonal residents are an important part of demographic patterns, hubs can help ensure services are maintained as the population fluctuates
Bottlenecks	Rural services typically cost more to provide and access, due to the lack of economies of scale, and longer travel and transport distances Small and dispersed rural populations mean less demand for services This can lead to market failure, when services are not commercially viable Providing and accessing some services depends on infrastructures that may be inadequate or unavailable in rural areas

Source: BAB 2021.

3.2.6 Food infrastructure

Box 6: Key messages – Food infrastructure

Regarding rural-urban synergies it is crucial to enhance the connections between local producers and consumers in a regional food system. A central issue in this regard is to identify ways of improving and making better use of existing (famers') market structures.

As the CoP on Sustainable Food Systems is exploring the agricultural and food system aspects in detail, this CoP is linking to those activities insofar as basic infrastructure needs and appropriate hub structures and market organization are considered as fundamental requirements for an effective establishment of any food system, and in particular alternative, sustainable systems. Here we emphasize the *foundational* aspect of providing appropriate structures for food system developments.

New kinds of farmers' shops provide residents, commuters or tourists with local high-quality food products and innovative farm products. Additional services like extended opening hours on working days and weekends are convenient for customers to buy fresh regional food without long transport routes.

Food-Coops are rural (-urban) services networks which provide consumers with (mostly) regional fresh food. The products are ordered online and picked up from a certain place at a certain time.

In order to revive regional markets, suitable places and administrative and financial support from municipalities and intermediary structures such as regional management agencies or LEADER organisations are needed to establish a solid management of the market infrastructure, which is often challenging.

Table14: Shared Repertoire Theme Food Infrastructure

Shared Repertoire –Public Infrastructure and Social Services CoP Food Infrastructure		
Living Lab	**Kind of outcome**	**Title**
Helsinki	Good Practice Example	REKO retail and distribution model
Ljubljana	Good Practice Examples	- Revival of Local Farmers' Markets - Establishment of equipped community gardens in the Municipality of Medvode
Metropolitan Area of Styria	Good Practice Example	Allerleierei – a modern farmer's shop
Mid-Wales		Cletwr - A community-owned rural service hub

Source: BAB 2021.

As some LLs of the "Public Infrastructure and Social Services" CoP had also chosen the topic "Sustainable Food Systems", there were overlaps on this topic. As markets and shops selling regional food in rural regions are important for the quality of life of the population and for short value chains, the theme of sustainable food systems was also chosen to be treated in this CoP. Due to the increased awareness for the origin and production of food there is an increasing interest in the local food supply of cities and their surrounding regions, as local food is considered to be a crucial factor toward more sustainable and resilient urban food systems. Environmentally conscious consumers have altered their demands in favour of locally and regionally produced food. In the Tukums, Helsinki, Ljubljana and the Metropolitan Area of Styria living labs physical and virtual examples of food infrastructure such as farmers' markets, (new) farm shops and food-coops were presented.

Tukums

With regard to food, the initial intention of the farmers' market was to expand upon the significance and popularity of Tukums market and reorganise public procurement procedures and rural tourism in Tukums municipality. This was to be done primarily by focusing on the best ways for rural producers to present and package their products and highlight their connection to local culture and cuisine. Innovations related to the market were to be developed as the LL gained focus, and has investigated sustainable food sourcing and the possibilities of developing local branding and certification schemes. Another direction of work was focused on rural-urban relations in the regional food system, primarily by enhancing connections between local producers and consumers. A central issue in this regard was identifying possible ways of improving and making better use of Tukums market.

In addition, the market has a strong cultural meaning: it continues a long historical tradition. The current "new" marketplace was constructed in 1935, replacing the historical market that was located in central square of Tukums due to lack of space, where it operated since 14th century. Furthermore, Tukums market is believed to be a significant component of maintaining urban-rural relations and a component of the city-region's brand. The market brings together producers and consumers from rural and urban, and regional and extra-regional territories. The market facilitates food-related innovations and new initiatives, such as new products, cooperation between producers, and food events. At the beginning of the ROBUST project, the market was governed by a kind of public-private partnership. Specifically, the market was run by a private company, but it was located on municipal land.

LL Helsinki

REKO, a rural (-urban) services network, offers consumers a way of buying products directly from the producer (typically farmer), without the need for middlemen like grocery stores. The products are ordered online and picked up from a certain place at a certain time. In other parts of Europe this type of retail and distribution models are called food-coops or online-sale. The REKO model contributes to the rural (-urban) services network. The REKO rings operate via Facebook as closed groups, where orders and deliveries are agreed upon. Basically, anyone can start a REKO group on Facebook following the instructions on the REKO website. Once set up, producers and consumers can join a local REKO group for free.

The groups operate voluntarily, and their administrators do not receive any salary for their work – often the administrators are the farmers themselves. Every one or two weeks, producers bring the ordered products to a certain place (marketplace, school yard etc.), where customers come and pick them up. The most active REKO rings operate in Southern Finland, particularly in the Helsinki region. Thus, REKO shows that also people living in cities and peri-urban areas have an interest in buying local food directly from the producer in nearby rural areas. This is an example of the win-win arrangement between urban dwellers and rural producers, which increases synergy between rural and urban areas (Ovaska 2020).

LL Ljubljana Urban Region

Across the Ljubljana Urban Region, there have been different initiatives for the establishment of local farmers' markets. Partially, they are based on the demand of urban inhabitants of the towns which are familiar with farmers' markets in Ljubljana and other towns like Kamnik, Vrhnika in the region and possibly shop there on their daily commute. However, there has been also a strong initiative by local farmers: While more input and stronger marketing approaches might be needed than for sales to a retailer or a middleman, direct sales at farmers' market have greater return and enable the farmer to be more flexible. Moreover, farmers' markets provide a great opportunity to sell the surplus produce that might be not interesting for retailers, due to low volume to the large retailers. Var-

ious events such as local festivities and festivals where farmers can set their stalls similar to farmers' market have shown that the approach could be successful and that there are both demand and supply for the local produce.

The (re)established farmers' markets are quite small and held once or twice a week, however they have gained considerable popularity. farmers' markets were (re)established in different ways, combining various initiatives and funding sources. Often, the public utility in charge for maintenance of public areas manages the market, providing infrastructure, regulation and other activities, while some municipalities have outsourced the management to local entrepreneurs or private companies. The main challenge was to provide a suitable space and to establish a solid management of the market infrastructure. Most of the municipalities in Ljubljana Urban Region provided the space on one of the town squares or other easily accessible areas owned by the municipality (Hrabar and Kobal 2020a).

LL Metropolitan Area of Styria

The "Allerleierei" is a new type of a "farm shop", which is run in cooperation of a hotelier, a restaurant owner and an organic vegetable farmer. Farmers and other suppliers (bakery, juice producers, wine growers) can deliver and sell their food products as well as innovative and processed high-quality food products (local gin, popcorn, rice) there. The shop is located in Laßnitzhöhe, a small municipality about 20 km east of the Styrian capital Graz. The innovatory aspect and the signaling effect of this example can be seen in the manner how the three project operators have entered new ground by offering a wide range of new local high-quality food products and innovative farm products for local customers, adopting the principles of sustainability and resource-saving as well as waste-avoidance as determining guidelines. Also, the extended opening hours on working days and weekends are convenient for commuters to buy fresh regional food on their way home. Moreover, the shop offers farmers from the region and other regional suppliers to sell their products without long transport routes.

Within the cooperative approach of the "Allerleierei" – both, the responsibilities and tasks between the business partners can be shared and the concept of sustainable circular economy can be implemented meaningfully. Furthermore, the social aspect of the farm shop – to create a new meeting point – can be emphasized adequately. The Allerleierei is open all week, including Sunday mornings, and is therefore an important local supplier in the center of Laßnitzhöhe. The extended opening hours are construed for local people, commuters, guests and employees in health care institutions, but also address specific behaviors, e.g. of church visitors to attract them to take a coffee and buy groceries on Sundays. The lunch offer is supplied by the hotelier and the restaurant owner, since there is no proper kitchen facility in the Allerleierei. Every autumn, suppliers are also invited to present their products and to provide appropriate recipes and food preparation recommendations. There are two full-time employees, one part-time employee as well as two marginally employed students working in the farmer shop (Oedl-Wieser and Hausegger-Nestelberger 2020a).

Table15: Experiences with different aspects of rural-urban linkages regarding the Food Infrastructure theme

Aspects	**Food Infrastructure** **Experiences in the Public Infrastructure and Social Services CoP**
Rural-urban dynamics	People from urban areas are visiting the markets and buying regional produced food
Cross-sectoral relations	Producers Restaurants
Governance	Public funding as well as assistance of intermediary structures like development agencies can be used to establish the farmers' markets

	Furthermore, Local Action Groups of LEADER/CLLD and public private partnership can also help to operate such markets
Growth	Value added remains in the region and with the farmers.
Sustainable development models	Short food supply chains Producer consumer alliances
Opportunities	Promotion of regional value chains Direct marketing, providing farmers with a greater livelihood Customers are more connected to the origin and producers of their food – increase of valuation Opportunities for rural tourism Farmers markets, farm shops and food-coops can be social places to meet up Awareness raising about relationship between food production and issues such as health and nature conservation
Bottlenecks	Administrative effort for municipalities when managing market infrastructure

Source: BAB 2021.

3.3 Identifying common learning across the CoP themes

3.3.1Rural urban linkages/synergies

Despite huge differences between LLs in scale and strategic approaches of the "Public Infrastructure and Social Services" CoP, several aspects of rural-urban linkages are predominant regarding place-based adaptation and policy development. These address particularly multi-modal mobility, service hubs, multi-local living and new working models, which all provide opportunities for rural-urban synergy development and represent inspiring examples of innovative services and multi-level governance mechanisms. In the following, critical rural urban linkages and synergies found in the CoP are presented.

Enhancing mobility and regional accessibility

- Rural and urban areas are connected through a wide range of economic, political, social and cultural flows.
- Multi-modal mobility development may provide adapted transport frameworks, which enhance use of spatial interactions in rural-urban regions.
- Increased concern for "last-mile" is crucial for remote areas and less densely populated spaces in both rural and urban parts of regions.
- Shift towards public transport modes and reduction of car dependency should contribute to sustainable transport models in the long run.

Adaptation of service delivery through digitalisation

- Digitalisation can make (remote) rural areas more attractive for people and companies in many areas, as the importance of locality decreases (see multilocality).
- Technological progress can improve the quality of life and the provision of services if adapted to place-specificity and taking account of distributional aspects and personal accessibility.
- Therefore, it is crucial to provide enabling conditions like extension of infrastructure facilities (broadband internet) and training of workers and citizens to work, study and communicate digitally (appropriate education services).
- The overall impact of technological change on rural development depends on the willingness and engagement of the state, the provinces and urban regions but also on the capacity of rural regions and policies to face these changes as well as to find appropriate responses to these challenges.

Multilocality living?

- 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. The interwoven, but multi-faceted dimensions of multilocality living should be recognized and the conditions for living should be developed at both ends – in rural and urban spaces.
- The multi-locality topic increasingly covers whole countries, like in the case of Finland, but is an emerging aspect in most European countries and regions, demonstrating rural-urban interaction at a distance.
- There exist important functional relations between urban and rural areas like the need for social and health-care services for multiple residence people and families.
- Rural-urban linkages find their expression also in contradictions and in consolidation in land use planning between rural and urban areas.
- Multilocality is also about grassroots interaction between rural and urban areas. In the context of public infrastructure and services, it is important to notice that multi-local and seasonal population forms a large group of people, who also need services outside their official place of residence.
- Multilocality offers an alternative perspective to the current debate on urbanization and population concentration. Therefore, consideration should be given to the need for (regional) policies that consider the fact, that multi-local people also live and work outside urban areas for a long period of time, even though officially their place of residence is in the cities.

Teleworking

- The Covid-19 pandemic has enforced changes even for "traditional" jobs and employment, instigating a telecommunications leap enabling "place-independent" work. This can be an incentive for the design and extended roll-out of more flexible working models in the future, which would increase the length of stay of people in rural regions.
- The Covid-19 pandemic enables a regional laboratory experience of how important the high ability of teleworking in a region is for climate policy due to the high proportion of services and administration.
- The rise in urban-to-rural migration can help processes to rejuvenate rural communities and to retain young people, at the same time raising concerns that the new wave of in-migration would trigger house price inflation.
- Teleworking might strengthen the resilience of the regional economy and reduce the health risks for workers like accidents, infections, air pollution.

Others

- Inadequate services and limited accessibility of services exacerbate rural poverty and deprivation and create feelings of isolation. Therefore, it is crucial to tackle rural-urban inequalities in services provision and accessibility for inclusive development across Europe's regions.
- Tourists, connectivity through high-speed internet in rural hubs, co-working spaces also for tourists.
- People from urban areas are visiting the local markets in rural areas and buying regional produced food.

3.3.2Cross-sector relations

The availability of public services is foundational and essential for the use of other opportunities such as sustainable food systems that add to synergetic rural-urban relations. It is important to connect public infrastructure and social services to other thematic issues in order to better plan and implement cross-sectoral usage of infrastructure and services, including more just investments in the creation of infrastructure (Maye et al. 2020). In the following some key cross-sector relations found in the CoP are presented:

- Internet access holds a clear link to all the other projects and sectors as it has an obvious impact on the possibilities of developing new businesses opportunities as well as on new transport solutions or mechanisms for food provision.
- New flexible working models of work and an adequate offer of co-/working infrastructure like co-working hubs or vacant buildings adapted for that purpose could attract people working in the creative sector or people who want to link holidays and work (“coworkation”).
- There is a need for the promotion of cultural activities and provision of physical as well as intangible cultural infrastructure (e.g. networks, databases, concepts, organisational capabilities) in rural areas, which strengthen links to urban regions but can also become an economic incentive and innovation factor themselves if they concur in their remit with other regional sectors, in particular tourism and gastronomy.
- Experiences show that stakeholder organizations and the individuals working for them are often focused on a single sector, which can inhibit broader innovative thinking and lead to defensive responses to proposals that are perceived to dilute their influence or resources by combining different sectors.

3.3.3 Governance

The understanding and interest in inter-municipal cooperation and rural-urban linkages is not yet pronounced among many local and regional stakeholders, but there is a need to strengthen collaboration as a means to foster the "foundational economy" to enhance rural-urban synergies. In the following bullet points the learnings of governance aspects across LLs in the CoP are described:

- There is a need for formal and informal governance arrangements. Both together act as key drivers for strong rural-urban partnerships – e.g. through legal foundations, basic funding schemes, regional strategy building process and a long-trust building partnership.
- Enabling actors are needed (like the Regional Management Agency) who are (politically) independent and act as supportive drivers and mediators of complex governance arrangements.
- Importance of partnership working between the public, private and third sectors, in the framework of network governance.
- Network governance arrangements are most effective when they are tightly defined, have a formal and transparent structure, allow for local accountability and balanced influence of partners, and work evenly across a coherent geographical territory.
- The joint understanding of functional rural-urban relations has to be enhanced and is dependent on the recognition of the nature and significance of the rural-urban interaction and inclusion of the need for cooperation in both, rural and urban agendas.
- Priorities are shifting and governance arrangements are changing as a consequence of both municipal cooperation and population shifts in rural and peri-urban areas.
- Success builds on the recognition of regional traditions and histories vis-à-vis stakeholder engagement and involvement in governance processes.

3.3.4 Growth and sustainable development models

In the following bullet points, aspects from the CoP work and individual LL reflections therein are described that have an impact on growth and sustainable development models.

Mobility

- Motorized individual transport needs to be minimized and sustainable alternatives, such as walking, cycling and (micro-) public transport need to be fostered.
- Mobility as a Service (MaaS) can enable flexible and resource-saving transport in rural, peri-urban and urban areas. The different transport services are technologically linked to each other and integrated on a single platform offering on-demand service to users. The aim is to provide users of a region with a single source for routing information and streamlined booking and payment options to enable an optimal multimodal combination adapted to individual travel requirements.

Digitalisation

- In rural economies, the coverage with high-speed internet and the increased connectivity of services can further unlock opportunities for future work, synergies and regional integration between rural places and their surroundings
- The possibility of teleworking contributes to social, economic and ecological sustainability as it enables the revitalization of rural areas and reduces the number of cars travelling to city offices. On the other hand, the employer can save in office costs.
- Empirical results indicate that knowledge intensive industries show clustering tendencies also in semi-urban and rural areas.

Basic infrastructure

- Access to relevant public infrastructure and social services in rural areas is a key element of well-being of citizens and ensures social inclusion and social justice. Therefore, essential services must be guaranteed. This is the only way to ensure economic viability.

Multilocality living

- Rural regions, with positive connections to urban regions and high amenity values are well positioned to gain benefits from people with multilocal working and living patterns.
- Using smart development planning strategies to foster rural-urban synergies could offer ways to find a healthy balance between rural and urban living habits.

Rural Service Hubs

- Rural Service Hubs can be designed to foster smart development like local food and the circular economy or co-working spaces.
- Services themselves support regional growth, through business opportunities and economic inclusion. After all, livable regions are workable regions.
- Tackling rural-urban inequalities in services is crucial for inclusive development across Europe’s regions.

Food Infrastructure

- Through the provision of food infrastructure like farmers' markets, farm shops etc. short food supply chains can be reached to a certain extent, consumers can buy locally produced food and the value added remains in the region and with the farmers.

4. Monitoring and evaluation of learning

The launch of the work in the CoP was together with the work in the LLs, which means that from the beginning, the contact and the regular exchange with all members of the CoP was a central concern. The possibility of personal meetings every six months was embedded in the structure of the ROBUST project. During the first working meetings of the CoP, it became apparent that the practice and research partners in the LLs were looking for specific topics and guidance on a common working mode. The challenges arising from largely different contexts and place-based experience were discussed very intensively throughout the CoP activity. The heterogeneity of the topics in the "Public Infrastructure and Social Services" CoP led to thematic clustering, with groups of LLs working together on specific topics, such as mobility, multi-local living, digitalisation, etc. The CoP was also an inspiring forum for the exchange of ideas and experiences.

For the CoP leaders, the phase before and after the Consortium Meetings was very important, especially at the beginning of the ROBUST project, in order to develop an appropriate working agenda for the CoP and to take up the impulses given by the exchange of the LLs and during the discussions at the meetings and to integrate them into the further work of the CoP. In some LLs, there were repeated personnel fluctuations or political decisions that influenced the work of the practice partners. As a result, some of the thematic priorities were also changed. The development of the RIAs of the CoP was an important milestone that strengthened and promoted the concrete implementation of the projects in the LLs.

Following the Consortium Meeting in Helsinki in May 2018, about halfway through the project, a survey was conducted among the CoP members, in which they were asked to reflect on their current situation and their plans for the future. The LLs were asked which kind of assistance they would like to get from the other LLs. Most of them raised the view, that the exchange of good practice examples is crucial to see what already works in other regions and what could work in the own region. Furthermore, these good practice and innovative examples can be introduced to stakeholders, administrators and politicians and to explain them the impact of the actions regarding cooperation, networking and rural-urban linkages and synergies. A further important aspect of CoP work was the exchange of experiences about different governance systems and processes (experimental governance, networks, platforms, extended stakeholders, etc.).

Unfortunately, personal meetings could no longer take place since February 2020 due to the Covid-19 pandemic and changes towards online meetings hampered exchange and common reflection, at least in the first period of the pandemic. Nevertheless, once having accepted the new working mode, cooperation in the CoP intensified and numerous good practices (27 in total available) as well as three short reports and several scientific papers were jointly produced. Within the CoP, a double review system was applied for elaboration of the good practice examples and the short reports. During the two online Consortium Meetings in September 2020 and April 2021 the focus was on the exchange of the progress of the work in the LLs and summarising key findings of the CoP for the work on thematic papers of ROBUST.

5. Conclusion

In times of economic change, increasing social challenges and the fatal covid-19 pandemic, new pathways are required and should be explored to strengthen the linkages between rural and urban regions in order to achieve sustainable and inclusive regional development. How could a potential increase of cooperation of rural, peri-urban and urban regions be achieved and which hidden rural-urban synergies might unfold in the future? In this context it is particularly important to have common visions and goals, to expand the stakeholder network and include representatives from various fields of activities in communication and planning processes. To strengthen rural-urban linkages in the future, the activities should consider the manifold new linkages between sectors and topics. This is not just about "optimizing" projects and the organization of economic adaptation, but largely involves an assessment of resource use, referring particularly to natural resource shortages. Shifts in transport modes and focusing on action enhancing public transport shares are crucial to changing currently dominant choices and policy solutions.

In a highly complex multi-level governance arrangement, coordination among a wide set of involved institutions and careful steering of the implementation is an ongoing process. In this process, key requirements are an open-mindedness that yields new and innovative ideas, the participation in transnational projects as well as permanent exchange with other territorial 'anchor institutions' like 'intermediaries' such as Regional Management Agencies and Local Action Groups of the LEADER/CLLD action. To further strengthen the rural-urban partnership, it is decisive that all involved public and private partners are in constant discourse and exchange to question current unsustainable behaviour and policy performance, find common objectives that represent mutual interests and address long-term sustainable goals. Both formal and informal governance arrangements are decisive in shaping and negotiating an effective framework for future proceedings and synergies in this rural-urban context (Oedl-Wieser et al. 2020).

It seems particularly crucial to enhance cohesion among the different types of municipalities – rural and urban, small and large, central and remote, with different economic structure and other distinctions. The diverse groups, and each individual municipality, would contribute specific aspects and provide important functions, even at different scales to the region. This is less of an issue of "quantifying" contributions and balancing them, but more on addressing the emotional dimensions involved in the interaction (or non-interaction). Place-based policy concepts have underpinned the relevance of this factor in order to overcome spatial gaps, and thrifts between various small-scaled areas. For the rural-urban space, the aspect of fine geographical differences, expressed through locational qualities and indicators is particularly pertinent.

While discussions on rural-urban interaction used to start on material "flows" between different parts of the regions, and thus involve, in the first instance, socio-economic decisions of employment, housing, transport and related issues, all these are tightly interwoven with ecological performance trends (Oedl-Wieser et al. 2020). The increasing pressures from climate change adaptation requirements and societal consequences of rising inequality recall a thorough investigation of the implications of spatial decisions. As these issues are hardly tackled explicitly in regional development processes of rural-urban spaces, or are separated in different thematic "silos", we need to take account of the relevant impacts. In numerous policy fields, action is inspired by the need to target action and changes towards the Sustainable Development Goals and inclusion objectives. Spatial interaction, decisions on resource allocation and activities as well as organization of flows are decisive in this

respect. They are hence directly affecting participation and inclusion aspects, as well as the sustainability of future societies of the rural-urban space.

In the following closing paragraphs three key lessons from the "Public Infrastructure and Social Services" CoP are outlined that are important in terms of how to strengthen rural-urban linkages. Each will be presented and we look specifically at cross-sector co-operation and governance, and the need to include opportunities and bottlenecks in policy assessment.

Key lesson I –Digitalisation

Long before the outbreak of the Covid-19 pandemic and its far-reaching consequences, the need for comprehensive coverage of rural areas with high-speed internet, including more remote areas, was intensively and widely discussed. In particular, advances in technology and internet infrastructure are relevant for low-density regions. Improvements in internet connectivity can overcome some of the core challenges remote areas face including isolation, high transportation costs, high costs of delivery services and distance to markets. Therefore, to maintain and strengthen the competitiveness of rural areas it is important to offer and gain access to high-efficient broadband infrastructure. Especially through the increased challenges and mobility restrictions due to the Covid-19 pandemic, the importance and sensibility of digitalization, its access, application and usability came into the foreground.
The possible post- pandemic continuation of increased remote working modes and accompanying rise in urban-to-rural migration might contribute to processes of rejuvenating rural communities and to retain young people. But there are also quite mixed or even adverse effects of digitalization increase. In particular, concerns are rising that the new wave of in-migration would trigger house price inflation in remote places. In order to achieve full-coverage access to fast internet in rural areas in the sense of a foundational economy, it is crucial to develop comprehensive plans for full-coverage in collaboration with all stakeholders - inter-municipal and cross-regional –concerned, which take into account the needs of the residents in the regions and also provide instruments for financing this essential infrastructure service. Public Private Partnerships should be established for the coordination and financing of the broadband expansion in rural areas. Main lessons learnt from the Covid-19 pandemic in the

Public Infrastructure and Social Service CoP are the following:

- The possibility of teleworking might contribute to social, economic and ecological sustainability as it enables the revitalization of rural areas and reduces the number of cars travelling to city offices, as well as the employer can save office costs.
- In the future, the time- and place-independent new forms of working might contribute to the possibilities of choosing a multi-local way of living.
- Both teleworking and e-commerce provide an opportunity to attract additional population and revitalize the local economy in rural areas, which will only consider relocation towards rural places on the condition of significantly improved internet availability.
- With changing habits and more willingness to embrace the digital tools, government and private operators may increase investments to realise their potential benefits.
- Co-working spaces or rural service hubs with high-speed internet access are an opportunity for rural areas.
- Aspects such as age, income, level of education, social milieu, language and technical competence play a crucial role in the use of the internet and have to be considered. It is crucial, and oven a neglected aspect, that technological integration often follows the "market-doctrine"

and largely ignores issues of distribution, access by different social groups and inclusion of deprived social groups.

- To avoid a digital divide in society, training opportunities and tailored trainings for digital tasks as well as mutual support between digital natives and digital newcomers are essential.
- There must be serious efforts between the actors of politics, administration, as well as providers to ensure a comprehensive expansion of high-speed internet in (remote) rural regions in the near future.

Key lesson II - Mobility[7]

In Europe, the existing transport system remains highly oriented towards 'automobility', creating negative effects for environment, health, and pressures on spaces and spatial reorganisation within the built environment. However, while much of the focus on innovation in sustainable transport has (first) occurred within urban contexts, many rural areas struggle with the logistics of providing public transport in dispersed or remote settlements with low population density and, often, underdeveloped infrastructures. Since rural and urban are not separate spheres but mutually interconnected, these differences have implications for effective rural-urban linkages and future sustainable development. Public transport systems are crucial arteries for rural-urban connectivity, yet can rarely provide blanket coverage and flexible access. The concept of multimodal complementary mobility services is presented as a means of framing small-scale localised implementations that are both flexible and demand-responsive which can contribute to sustainable, accessible rural-urban connectivity.

What are the promoting and inhibiting factors for multimodal complementary transport systems? Our investigations confirm that there exists no one-size-fits-all model for multimodal complementary mobility. Rather, approaches that are place-based and tailored can improve accessibility, especially where existing public transport is limited or infrastructures unviable. Small-scale solutions can in turn contribute to longer-range rural-urban connectivity by improving convenience for the user and filling first and last mile gaps in existing provision. Several promoting factors are important here, including: well-established governance arrangements, close coordination between stakeholders, Information and Communication Technology (ICT), marketing and promotion of services, the support and expertise of regional bodies, an effective interface with existing public transport to support multimodal mobility and the concept of Mobility-as-a-Service. The absence of, or poor performance in, many of these aspects will inhibit development and user take-up. Additional inhibiting factors include lack of user-friendliness, geographical reach and the long-term viability of project funding and financial models.

This leads to the second question: How can the operation of multimodal complementary systems be sustained over a longer-term perspective? A first factor is the necessity of improving the operability of systems in order to increase user-friendliness and the utilisation rate. These aspects can be achieved by densifying the network of multimodal mobility opportunities; increasing visibility of transport options to the local population by marketing strategies and information campaigns; and creating incentives, such as bundled price ticket packages, reduced prices for regular users, and so on. Further, ongoing innovations in software systems can increase efficiency and provide real-time travel information, efficient routing, ride pooling and automated journey reminders, and integrate multimodal complementary systems in the existing public transport network.

[7]These are the results of the comparison of six mobility examples in the LLs Ljubljana, Metropolitan Area of Styria and Mid Wales (Bauchinger et al. 2021a; b).

Another important aspect is that small-scale mobility services need to be combined with other mobility modes and routes and thus integrated in a broader transport system. Isolated projects rapidly become expensive and are only matched to a small user group. Within interlinked mobility systems not only the small, comprehensive services receive advantages. Multimodal nodes can help to put public transport in a more attractive spotlight and, coupled with these complementary services such as sharing offers, make it possible to reduce private car journeys while maintaining flexibility. This points to future directions in Mobility as a Service (MaaS). The complementary systems might serve as pieces that, in innovative combination and interaction with other services, can enable a new level of flexible multimodality. MaaS can push the transition from isolated project-based concepts to an integrated sustainable approach.

Thirdly, well-established governance arrangements play an essential role in implementing and sustaining multimodal complementary systems. Legal foundations and well-functioning cooperation can support long-term financing. We have also learned from the case studies that financing such services in the long term is hardly possible without corresponding subsidies and the commitment of public bodies. However, like public transport, multimodal complementary services must be seen as an important investment to improve social and environmental outcomes. In this respect, there is often a need to raise awareness that, for example, micro-public transport can also be a perfect feeder to a car-sharing vehicle, or that a bus stop complemented by a safe bicycle infrastructure can increase the quality of both modes. The most important factors and arguments for the mobility sector are to offer a sustainable quality of supply and to promote functionality and connectivity in rural areas. The modern technologies enable a wide range of possibilities within the mobility sector. Nevertheless, the introduction of flexible and sustainable mobility concepts needs, above all, a representation of interests, openness on the part of the responsible stakeholders and supporting structures that coordinate the development and implementation process.

Key lesson III – Service Hubs[8]

A service hub is the co-location of multiple services in a single space. Hub-type models are often described as ‘multi-purpose village centres’, ‘multi-service outlets’, ‘multi-functional centres’, or particularly in terms of government services as ‘one stop shops’. Hubs are not a new idea but hub models have now been proposed within rural development for almost two decades, mirroring trends towards consolidation and integration in the public sector (Goodwin-Hawkins et al. 2020).

Service hubs bring together a range of services, which may or may not be related and can be integrated in different ways. The relationships between co-located services can be distinguished from the ways in which the services are integrated. Relatedness concerns which services share a space, and whether they are similar or different: (i) related services are very similar, for example a food shop and café, (ii) complementary services differ but are interlinked, for example a shop and ATM and (iii) diverse services are not directly related, for example a food shop and post office. Together, relatedness and integration shape the synergies between services, and affect the facilities required and the users attracted. Each individual hub’s combination of relatedness and integration depends on how the hub is designed, and the provision and access needs that the hub addresses. There is no single, optimum model. However, different combinations of relatedness and integration may create different opportunities and challenges (Goodwin-Hawkins et al. 2020).

Lessons for rural service hubs

[8]These are the results of the comparison of good practices of the LLs Tukums, Helsinki, Metropolitan Area of Styria, Mid-Wales and Valencia in the Short Report on rural service hubs (Goodwin-Hawkins et al. 2020).

- Innovative hubs link existing services and infrastructures in new ways.
- Synergies and efficiencies can be created by combining different services and expertise.
- New hub developments need expert knowledge, support and project funding.
- Hubs are best developed in convenient locations where people are likely to use them.
- Local users need to participate in decisions about their service access needs.
- Hub projects do not need to be large-scale – small ambitions can have large local impacts.
- Effective hubs require cooperation between many organisations and providers.
- Governments can foster hub development through funding and project management.
- Unless fully government-supported, hubs need a sustainable business model.
- Workers, commuters, seasonal residents and tourists can be as well target groups for hubs.

The CoP "Public Infrastructure and Social Services" can draw from work of very different LL which might be seen as a particular strength to derive generalizations relevant for different contexts of rural-urban spaces. Concluding from the contents and procedural aspects of our CoP organizational and scale aspects are pivotal. The first is related to the creation and continuous support through appropriate institutional frameworks, sustained by "anchor institutions" or similar arrangements that shape and regulate involvement of different institutions and actors. The second is the consideration of cooperation of large administrative entities (usually the "city") with a large number of small and often very small municipalities and communities. It is particularly important to not neglect or oversee their specificities and particular demands, in our context in relation to public infrastructures and social services, but with tight linkages to all other aspects of rural-urban interaction.

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