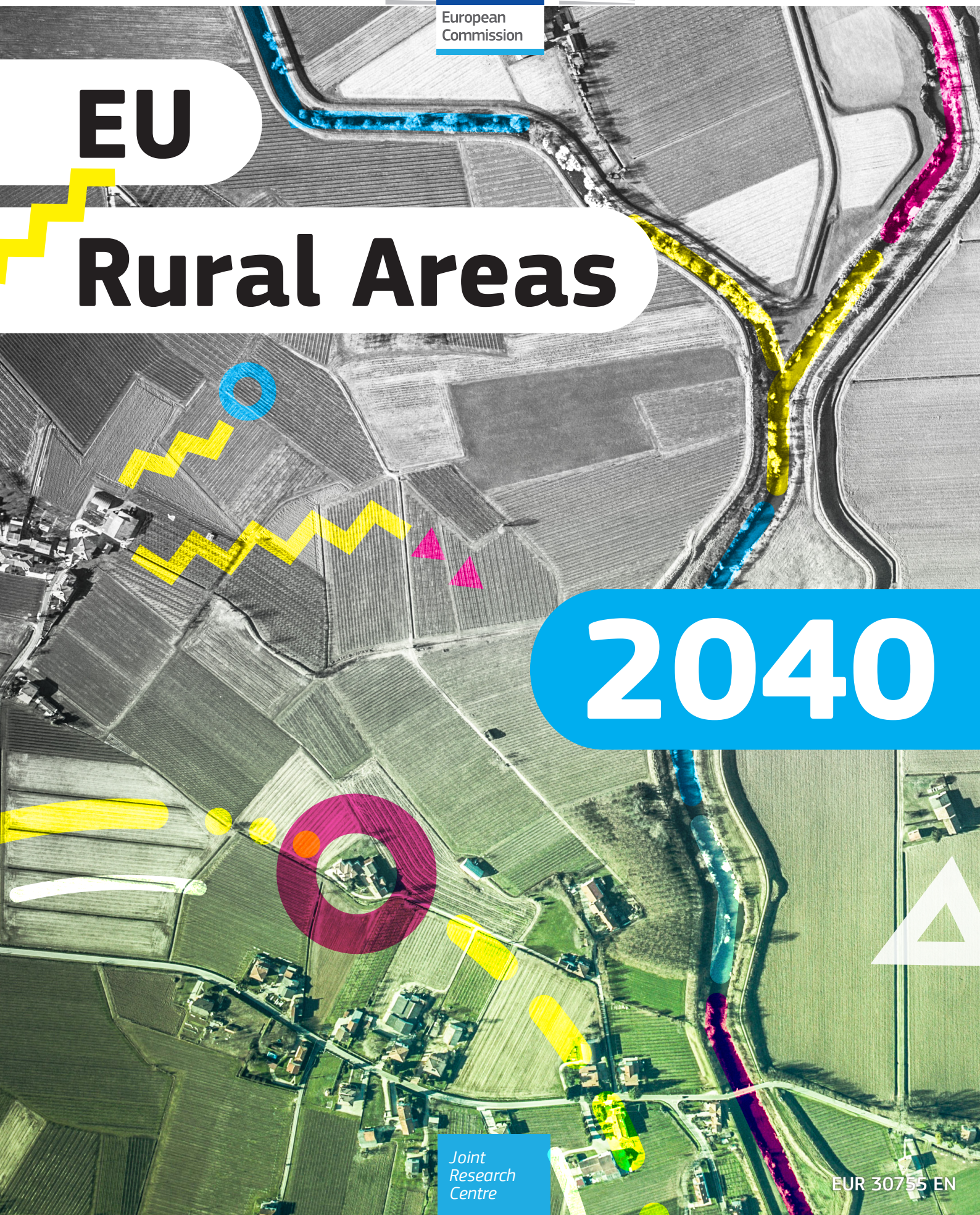
European Commission

EU Rural Areas 2040



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SCENARIOS FOR

EU Rural Areas 2040

Contribution to European Commission's long-term vision for rural areas

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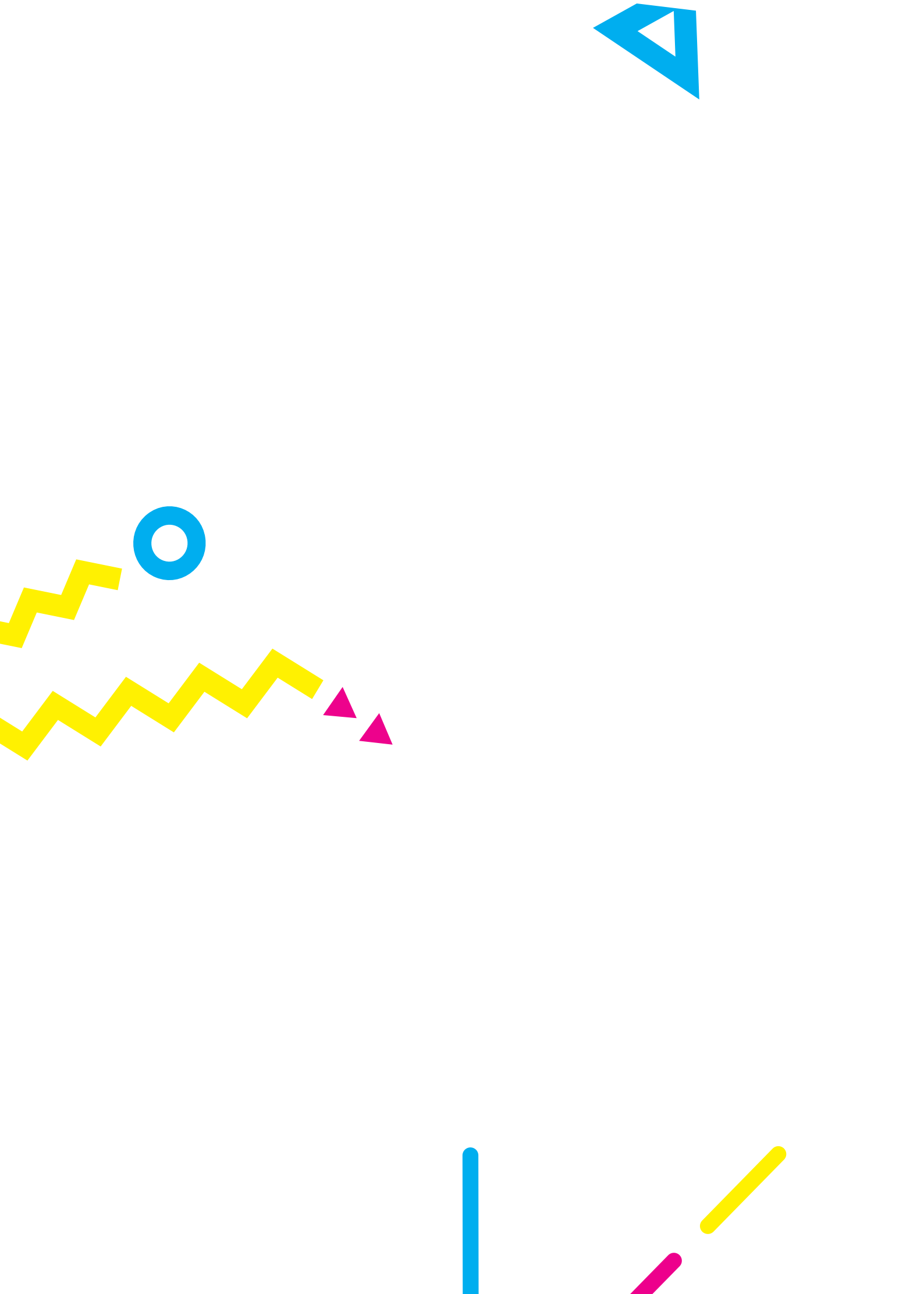

Contents

Abstract

This report summarises the results of a foresight study on the future of EU rural areas 2040. A set of four scenarios were developed in a participatory process with the European Network for Rural Development (ENRD) Thematic Group on the Long Term Rural Vision between September and December 2020. The scenarios describe possible alternative futures for rural areas in the EU, ranging from pronounced depopulation and land use specialisation to diversified and expanding rural areas. The exercise contributes to the discussions and the development of the long-term vision for EU rural areas put forward by the European Commission in 2021.

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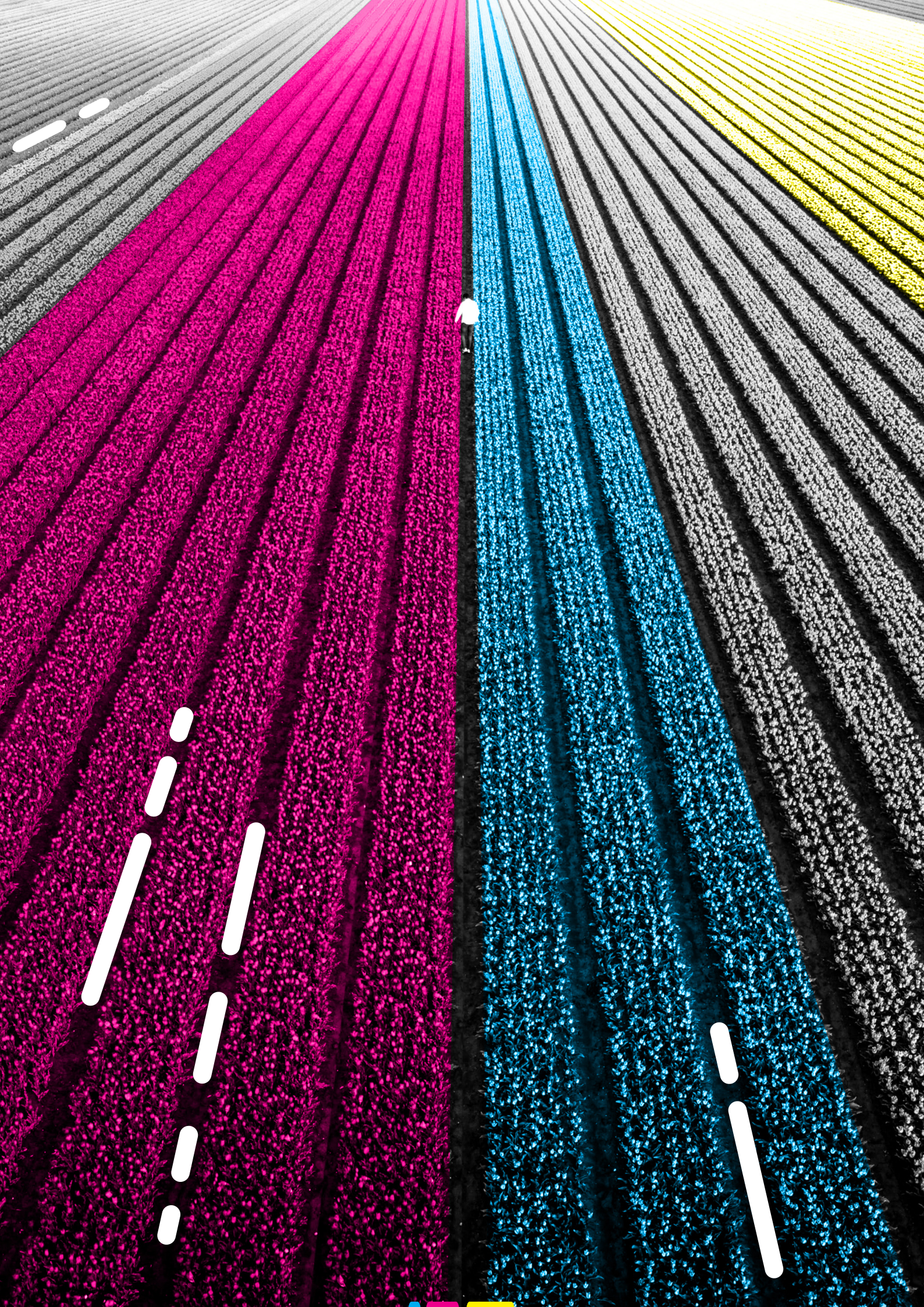

Executive summary

Rural areas in the EU are relevant for several reasons. They represent a large proportion of EU territory and are the home to about 60 % of the EU population. These people's well-being needs to be ensured. Rural areas are also considered to be critical for the EU's transition towards an environmentally sustainable society and food security. The European Commission has developed a long-term vision for rural areas to enable them to make the most of their potential and support them in their own unique set of issues, from demographic change to connectivity, the risk of poverty and limited access to services.

In the context of the development of the long-term vision for EU rural areas by the Commission, this foresight exercise 'EU Rural Areas 2040' was initiated in 2020 to develop a set of future scenarios describing different pathways for rural areas towards 2040. The exercise was intended to enrich the discussions on potential developments and policy responses. Foresight, characterised by its participatory and systemic approach, is well suited to supporting the 'visioning' processes by enlarging the scope of imagined futures. Scenarios illustrate visions of possible futures and are a useful way of trying to understand the complexity, uncertainty and implications of different futures.

The scenarios were developed in close collaboration with the European Network for Rural Development (ENRD) Thematic Group on the Long Term Rural Vision. Three online workshops were organised between September and December 2020, to identify relevant drivers of change (internal or external pressures or factors that cause change to a system) for EU rural areas, to outline the scenarios, and to further develop and explore them.

The resulting set of four scenarios combines different future developments ranging from demography and multilevel governance to climate change, economic development and digitalisation.

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In the 2040 **Rurbanities scenario**, there is limited coordination between different governance levels. People started to turn to rural areas looking for a higher quality of life in terms of lower costs, less pollution and more security. Rural areas in 2040 subsequently benefit from a diversity of economic activities. The demand for services and goods by residents provides job opportunities. However, as social cohesion declined, in 2040, the diverse population in rural areas has developed little sense for local community. A 'not-in-my-backyard' attitude is widespread and contributes to tensions between residents, and between residents and policymakers.

In the 2040 **Rural renewal scenario**, there is a focus on more sustainable living and the disadvantages of high-density cities have strengthened the counter-urbanisation movement with increasing numbers of people moving to the rural areas. The coordination of the 'green transition' is one of the overarching aims of the governance systems. Nature-based solutions, circular economy and sustainable pathways have been easier to implement in the villages and smaller towns than cities, due to their smaller scale, access to natural resources and lower population density. The diversity of rural society is much higher in this scenario's 2040, but there is also a permanent conscious effort in building and maintaining communities.

In the 2040 **Rural connections scenario**, as population numbers and economic activity decline in rural areas, local budgets decrease. It becomes increasingly difficult to maintain smaller villages, so people start to concentrate around rural hubs. Recognising the trend of a shrinking rural population early on, a strategy has been jointly developed to manage and facilitate the transition. As part of the rural strategy, priority has been given to digital infrastructure, with the view to facilitate connection and networking, the provision of

e-services (for e.g. administration, health, education, finance, culture), and to enable the digitalisation of agriculture and the bioeconomy (e.g. precision farming, automation).

In the 2040 **Rural specialisation scenario**, restructuring, revival and rebounding are the overarching policy aims, but fragmentation of efforts and funding has created many frictions and incoherencies in implementation. Most people have moved to urban centres due to the lower economic and social opportunities and minimal public support in rural areas. As the process of depopulation accelerated, the dissolution of the social fabric and diminishing quality of life pushed others to join their families and friends who had left earlier. The consolidation of land has left the practical management of the resources in the hands of few large actors, building large-scale, automated facilities (farms, renewable energy installations, smart factories), or managing vast land parcels for other uses (forestry, wilderness, recreation parks).

The participants of this foresight process engaged in a brainstorming exercise to identify key elements that they considered important for a long-term vision for rural areas. Broad themes that emerged include: diversity and inclusivity; collaborative approaches and engagement; technological and social innovation; resilience and pride and recognition of its contribution to global societal challenges.

Scenarios are tools for structuring the exploration of the future and for imaging alternative futures. The scenarios created in this exercise do not represent preferred development paths for rural areas, but showcase how rural areas might develop in the future given different constellations of influencing factors. Both the scenarios and the process of building them are a good starting point for discussions and for considering what elements a shared vision for the future should include.

Introduction

Rural areas in the EU are relevant for several reasons. They represent a large proportion of EU territory (about 45% is predominantly rural) and are home to about 60% of the EU population (21% live in predominantly rural areas, 39% in intermediate areas)[1]. These people's well-being needs to be ensured. Rural areas are also considered to be critical for the EU's transition towards an environmentally sustainable society.

Rural areas will play an increasing role dealing with huge societal challenges, such as:

- environmental pollution,
- biodiversity loss,
- climate change,
- food security through agriculture and forestry-related carbon services,
- biomass and food production,
- nature reserves, and
- the production of renewable energy.

The European Green Deal[2], adopted in 2019, established the framework and objectives for a truly sustainable transformation of the EU economy and society. In particular, it refers to rural areas in the context of the circular and bio-economy, and the related potential for local economies.

However, rural areas and their inhabitants currently face many challenges. They include declining and ageing populations, lack of digital infrastructure, difficult access to services (e.g. quality education, healthcare, leisure), decreasing quality of public transport, as well as fewer employment opportunities, often linked to structural changes in the local economy. As rural areas across the EU are very diverse, these challenges differ from one region to another, and some areas face more severe issues than others.

In the context of the development of a long-term vision for EU rural areas, European Commission's Competence Centre on Foresight, a part of the Joint Research Centre, was asked by the Directorate-General for Agriculture and Rural Development to develop a set of future scenarios describing different pathways for rural areas towards 2040. The exercise was intended to enrich the discussions on potential developments and policy responses. Foresight, characterised by its participatory and systemic approach, is very well suited to support the visioning processes by enlarging the scope of imagined futures.

Several (previous and ongoing) research projects funded by the EU through the EU Framework Programme for Research and Innovation, and dealing with rural areas, have included a foresight component, and in some cases also the development of future scenarios[3]. They have often focused on specific aspects and/or specific issues relating to rural areas, such as agriculture, generational renewal, territorial inequalities, rural-urban interlinkages, or digitalisation[4]. The scenarios developed in this exercise aim to complement those more detailed sectoral scenarios and to provide a holistic and rather general view on the possible future developments of all rural areas. The scenarios here focus on issues of mutual interest with an EU-wide perspective, while recognising the diversity of existing rural areas.

Chapter 2 describes the methodological approach and the process applied to this study. In Chapter 3, information about the relevant 'drivers of change' is provided and Chapter 4 presents the scenario narratives. Chapter 5 summarises a brainstorming exercise on the elements for the vision, and conclusions are presented in Chapter 6.

1 European Commission 2020, Report from the commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the impact of demographic change COM(2020) 241 final; European Commission 2020 Roadmap for Long term vision for rural areas

2 European Commission 2019 Communication from the commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions The European Deal COM(2019) 640 final

3 Brunori, G., Chartier, O., Mazzocchi, B., Miller, D., Salle, E., Overview of a sample of existing foresight and scenario studies carried out at EU and global levels, July 2020, SHERPA project https://rural-interfaces.eu/wp-content/uploads/2020/11/SHERPA-Overview-foresight-document_compressed.pdf

4 For example Ruralization https://ruralization.eu/, POLIRURAL https://polirural.eu/, IMAJINE http://imajine-project.eu/, ROBUST https://rural-urban.eu/, VOLANTE https://efi.int/projects/volante-visions-land-use-transitions-europe

The foresight process

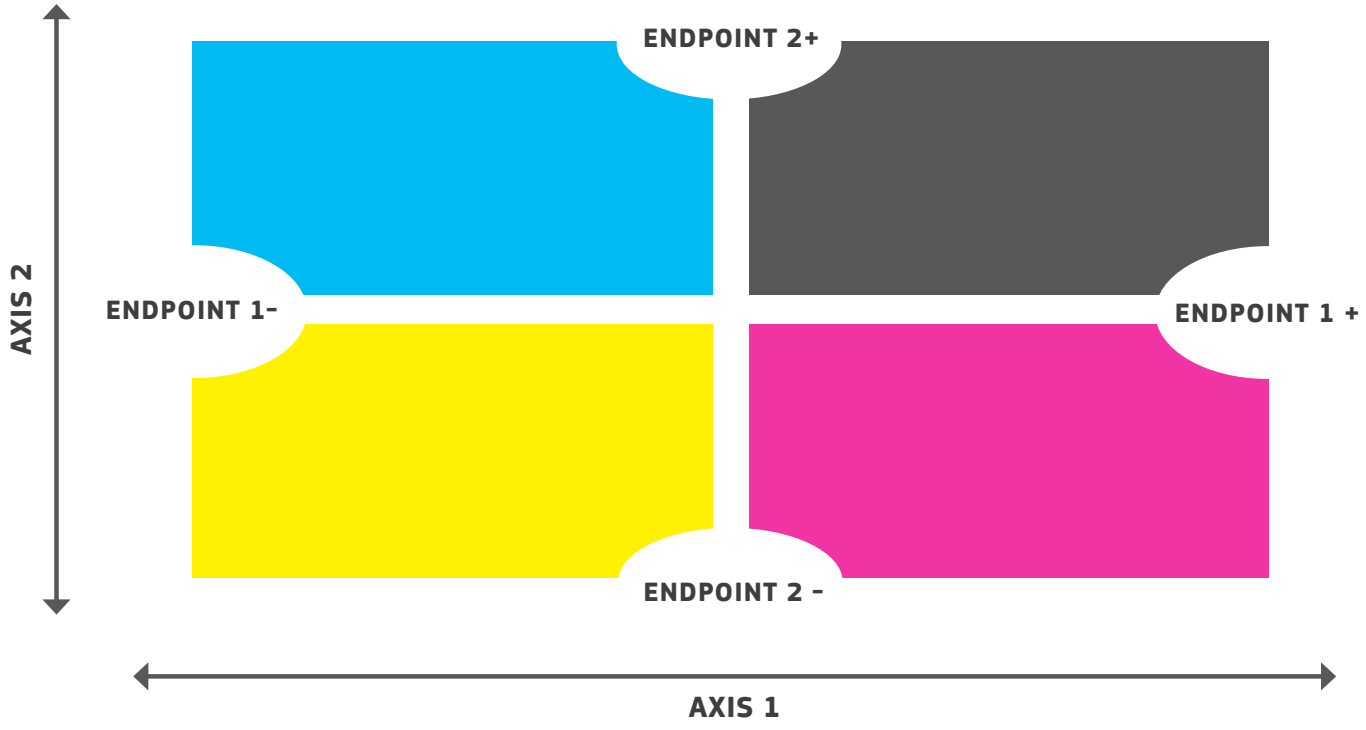
Policymaking often involves making decisions that have mid- to long-term implications, without having the necessary evidence, nor predictions on how the world will develop in the future to inform the decision-making process. Foresight is a discipline for generating collective intelligence about the future in a structured, systemic way, and it offers a way to gain useful insights about possible mid- to long-term future developments. Building on a participatory and inclusive process, foresight helps to imagine alternative and preferred futures and to create a shared understanding of the possible consequences of current trends, influencing factors and incremental and disruptive changes[5]. It supports actors and stakeholders to actively shape the future.

Scenario building is a well-established foresight method. It identifies key drivers of change for the field of interest and allows a systemic understanding of the changing conditions and their potential impacts. 'Drivers of change' are developments happening in certain groups in society and/or pressures that induce change to a system.

By identifying the drivers and creating alternative futures, scenarios support strategic reflections. They can also inform the development of a shared vision and have been used in this study to support the development of a long-term vison for rural areas. More concretely, the 2x2 scenario matrix method was used as it produces a clear and comprehensible structure, and can be easily communicated and can be used by people who did not participate in the process. In this method, the two most uncertain and important drivers are selected as axis with two dimensions of uncertainties. The resulting four combinations of uncertainties create the essence of the scenario[6].

The scenarios described in this report have been developed in close collaboration with the European Network for Rural Development (ENRD)[7]. A Thematic Group on the Long Term Rural Vision was established following a call for expression of interest launched in early summer 2020[8]. The group consisted of 55 members, participating in a personal capacity, coming from National Rural Networks, Managing Authorities, European organisations, Local Action Groups (LAGs), stakeholder organisations and researchers, from across the EU.

Figure 1. The two axes (Axes 1 and 2) that form the scenario logic



5 Stoermer E. (et al.) *Foresight – Using Science and Evidence to Anticipate and Shape the Future* in: V. Sucha, M. Sienkiewicz (ed.), Science for Policy Handbook, Elsevier, 2020
6 UNDP, *Foresight Manual. Empowered Futures for the 2030 Agenda,* Singapore, January 2018
7 https://enrd.ec.europa.eu/
8 https://enrd.ec.europa.eu/enrd-thematic-work/long-term-rural-vision_en

Three online workshops were organised between September and December 2020.

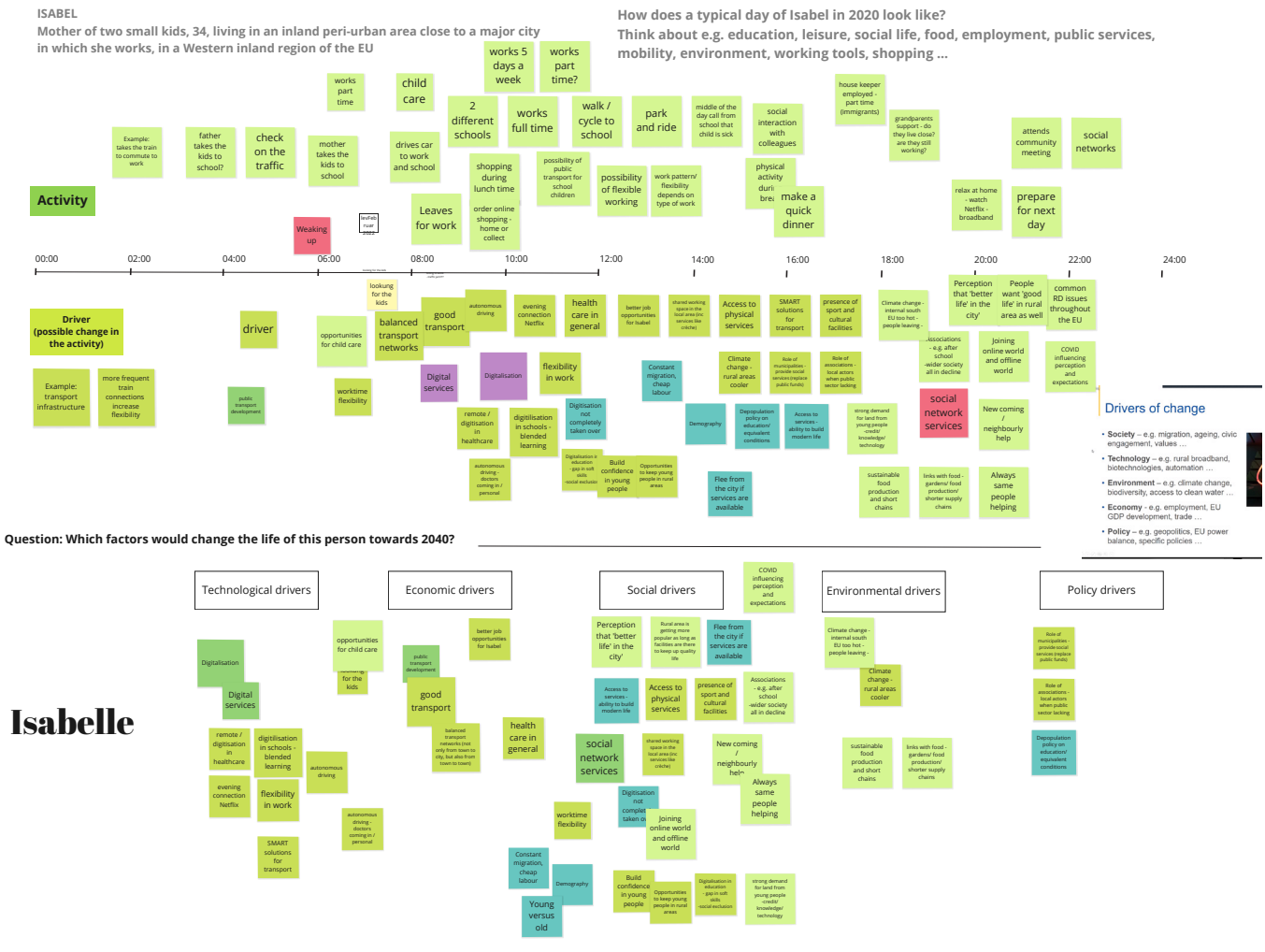
Workshop 1: The first workshop took place in September 2020, and its main aim was to identify the relevant drivers of change for EU rural areas. This brainstorming exercise started with imagining a day in the life of five people - actors of different ages and occupations and living in different types of rural areas today:

- Christian, 16 years, at school, deep rural, Northern EU region
- Isabel, 34, 2 kids, commutes, peri-urban area, west-inland region
- Anna, 57, doctor, deep rural, alpine region
- Toni, 48, owner of food processing company, rural area, coastal Mediterranean region
- Zuzana, 29, farmer, rural area, Central or Eastern EU region

In sub-groups, participants were invited to imagine a typical day and its activities for these people, i.e. linked to for e.g. their education, employment, social life, mobility, public services, shopping etc. This created a concrete starting point to then reflect on the factors which could influence their way of living, learning and working in the coming 20 years, answering the question '*Which factors would change the life of this person towards 2040*'?

The different factors discussed were collected and consolidated by the JRC team. 20 drivers of change were identified. They were ranked in a voting exercise according to A) their perceived importance by attendees (*Which drivers will have the most impact on rural areas?*) and B) their uncertainty (*Which are the drivers for which we know the least about the direction they will take?*). The two most important and uncertain drivers were selected and used to form the axes of the scenario matrix, i.e. they constitute 'the scenario logic' (Figure

Figure 2. "Day in the life of..." exercise – online board summarising the participants' views



2). These drivers were identified to be 'rural demography/demographic developments' and 'multilevel governance/governance approaches' (more on these to follow in Chapter three).

Workshop 2: At the second workshop in October 2020, the scenario logic and its axes were reviewed and further developed jointly. Further scoping and refining of language and wording was performed. The axes of the scenario logic combined different demographic developments with different governance approaches: 'Multilevel governance' and 'Rural demography'. This scenario logic became the basis for outlining the four scenarios. The participants elaborated on the ideas in sub-groups and developed the details of the scenarios - thereby illustrating 'potential futures'. These deliberations included reflections on the other relevant drivers that had been identified in the first workshop.

Foresight is a discipline for generating collective intelligence about the future in a structured, systemic way, and it offers a way to gain useful insights about possible mid- to long-term future developments

Workshop 3: The scenario outlines were further developed by the JRC in-house following workshop two. At workshop three, which took place in December 2020, the revised versions were discussed and complemented by the wider group. Discussions focused on consistency, plausibility, clarity, and on any possible missing elements in the scenario narratives. In a second step, participants were invited to more deeply explore specific aspects of the scenarios, such as climate change adaptation and mitigation actions, rural-urban relations, the level of resilience. The results of the third workshop were used to further develop the scenario narratives (the final versions of which can be found in Chapter 4).

As a last step, and after having explored two contrasting scenarios, participants discussed the positive and negative aspects of each of the scenarios, as preparation to help identify possible elements for the long-term vision (a summary of these discussions can be found in Chapter 5: Towards the vision – contributions from the scenario process)[9].

9 'Meeting highlights' of the different Thematic Group meetings can be found here: https://enrd.ec.europa.eu/enrd-thematic-work/long-term-rural-vision_en

Drivers of change for EU rural areas

Drivers of change are internal and external pressures, or factors that cause change to a system. Relevant drivers of change were identified by the participants of this foresight process and were used as the building blocks in the scenario development process. Among the drivers (listed below), two drivers which were selected as the most impactful and uncertain in shaping rural realities across Europe in the future, are 'the nature of multi-level governance' and 'demographic developments'. Together they form the scenario logic (see Figure 1 and as described in Chapter 2 on methods).

Multilevel governance: describes the way policies are developed and implemented in terms of participation of different types of actors (i.e. interested public and private groups) through formal and informal means[10]. It is a driver of change and has been selected as one of the axes of the scenario logic. The axis extremes are defined as:

- 'fragmented multilevel governance' – where there is limited coordination and no collaboration between the different types of actors, resulting in low policy coherence. There is a poor direct participation of citizens in the decision making processes.
- 'networked multilevel governance' – describes a dominance of well-coordinated, collaborative and often collective decision making processes, with high levels of direct citizen participation.

The governance systems will shape the responses to various challenges and changes that different rural areas will face (i.e. contributing to the response action's success or failure) and therefore have been considered to be one of the most important drivers for the future of rural areas. There is scope for many variations of governance, reflecting the uncertainty of the future development. A broad distinction has been made between multilevel governance of type 1: with dispersed decision-making across territorial and communal jurisdictions in a system-wide, durable architecture, and type 2: with task-specific decision making, in interconnected jurisdictions and with flexible designs[11].

Multilevel governance systems will differ in how they:

- deal with complexity (ignore, or manage different capacities, interests and willingness of actors, competition for power);
- develop strategies (top-down, or negotiated, emergent);
- understand the context-specificity (importing good practice, or creating local collective knowledge to develop or transfer solutions); and
- create reciprocity and complementarity (finding actors' unique roles in the system, top-down strategy, or strategic thinking at every level) [12].

How the multilevel governance system addresses these four issues will affect how strategies are formulated and actions implemented at the local level. They also have a strong impact on policy coherence and the concept of rural proofing (i.e. making sure that the impact of policies on rural areas is considered at all levels of multilevel governance).

Rural demography: The driver describes the demographic development in rural areas in terms of changing population numbers and categories. It represents the second axis of the scenario logic. The axis extremes are defined as:

- 'expanding rural areas' – the rural population increases due to in-migration primarily from urban centres, and reduced out-migration.
- 'shrinking rural areas' – The rural population declines due to an ageing population and continued out-migration to urban centres.

In the context of broad demographic changes in Europe – which indicate depopulation and an ageing society in the rural areas overall – a closer look at the more granular level shows a much more nuanced situation with different pathways of socio-economic development. The ESPON ESCAPE project indicates that across Europe, 59% of predominantly rural or intermediate regions are shrinking (NUTS 3 level[13]; covering almost 40% of the area of the EU and almost one third of its population), while 41% (of the rural or intermediate regions) are experiencing growth[14]. Similarly, with respect to aging, the JRC report 'The Demographic Landscape of EU territories' shows that towards 2050, the share of elderly in rural (30%), town (29%) and urban (27%)

10 Larrea Miren, Estensoro Miren, Pertoldi Martina, Multilevel governance for Smart Specialisation: basic pillars for its construction, EUR 29736 EN, Luxembourg: Publications Office of the European Union, 2019, ISBN 978-92-76-02922-9, doi:10.2760/425579, JRC116076

11 Lisbet Hooghe, Gary Marks, Types of multi-level governance. (in) Handbook on Multi-level Governance, Henrik Enderlein, Sonja Wälti, Michael Zürn (ed.) Edward Elgar, 2010

12 Larrea Miren, Estensoro Miren, Pertoldi Martina, op. cit.

13 NUTS - Nomenclature of territorial units for statistics. NUTS 3 level: small regions for specific diagnoses; https://ec.europa.eu/eurostat/web/nuts/backgroun

14 ESPON 2020 European Shrinking Rural Areas - Challenges, Actions and Perspectives for Territorial Governance (ESCAPE) Main Final report https://www.espon.eu/sites/default/files/attachments/ESPON%20ESCAPE%20Main%20Final%20Report.pdf

populations will be converging (against 19%, 17% and 15% respectively in 2020)[15]. Both reports point to the impact of in- and out-migration as a potential game changer. Taking expanding and shrinking rural areas as the axis extremes in the scenario logic allows to explore this dimension and imagine what factors could be influencing these processes in the future, either in a positive or negative way.

These two drivers, multilevel governance and rural demography, were used to create the backbone of the four scenarios on the future of rural areas. Each of the four scenarios was built considering developments of other relevant drivers alongside these two, which were selected by workshop participants. Those other drivers were the environmental drivers (climate change and availability and quality of natural resources), socio-economic (sense of community, availability and access to services, globalisation), technological (digitalisation, new mobility) drivers, and drivers related to land use and the future of the agricultural sector.

Considering environmental drivers, **climate change** is expected to increase global average temperatures by at least 1.5 °C above pre-industrial levels by 2040[16]. The Peseta IV study explores the diverse impact categories of this for the EU (i.e. human mortality from heat and cold waves, windstorms, water resources, droughts, river and coastal flooding, wildfires, habitat loss, forest ecosystems, agriculture, and energy supply) and shows that the consequences will be severe and varied across the regions and that mitigation and adaptation policies can reduce them significantly[17]. Effective policies could reduce welfare losses by 75% compared to unmitigated climate change, and could reduce the inevitable impacts in a cost-efficient way. Natural resources such as water, soil, land, biodiversity, air but also minerals, are important for many economic activities and in particular for the bioeconomy, including food production. Linked to the increase of consumption world-wide and unsustainable practices and potentially aggravated by climate change itself, the Earth Overshoot Day is reached earlier in the year every year. Earth Overshoot Day refers to the date on which humanity's demand for ecological resources and services in a year, exceeds what the Earth can regenerate in that year. For example in 2021, it falls on July 29[18].

Availability and quality of natural resources: As the world's population is projected to grow by almost one third, to 10 billion by 2050, resource use could double globally by 2060, with water demand increasing 55% by 2050 and energy demand growing 30 % by 2040[19]. At the same time, the quality of natural resources is deteriorating (e.g. global wildlife populations have declined by 68% over the last 40 years[20], soil degradation is widespread and diverse in the EU[21]). The driver refers to the availability and quality of natural resources in the EU, with a particular focus on bioeconomy-related natural resources including biodiversity, and their management.

In terms of socio-economic factors, the trends contributing to a **sense of community** were considered particularly relevant. Eurofound's European Quality of Life Survey finds that although a higher share of people in rural areas than in urban areas agree or strongly agree with the statement that they feel close to people in the area where they live, there has been a significant drop in the share of people in more remote rural areas who strongly feel a sense of belonging. This has dropped from 36% in 2011 to 27% in 2016. At the same time, the share of younger people who agreed with the statement also decreased between 2011 and 2016[22]. Another important consideration is the **availability and quality of services** such as education, healthcare, banking, or retail: these are important elements contributing to the quality of life. The average distance per person to the nearest facility in rural areas is estimated to be 8 km for local, 18 km for sub-regional and 48 km for regional facilities (2 km, 4 km and 12 km respectively in cities)[23]. This has an implication for future mobility and service design.

15 Aurambout, J.P., Batista E Silva, F., Bosco, C., Conte, A., Ghio, D., Kalantaryan, S., Kompil, M., Perpiña Castillo, C., Proietti, P., Scipioni, M., Sulis, P. and Tintori, G., The Demographic Landscape of EU Territories, Goujon, A., Jacobs, C., Natale, F. and Lavalle, C. editor(s), EUR 30498 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-27239-7 (online), doi:10.2760/658945 (online), JRC123046

16 IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.

17 Feyen L., Ciscar J.C., Gosling S., Ibarreta D., Soria A. (ed) (2020). Climate change impacts and adaptation in Europe. JRC PESETA IV final report. EUR 30180EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-18123-1, doi:10.2760/171121, JRC119178.

18 Source: https://www.overshootday.org/home/

19 EEA 2020 The European environment —state and outlook 2020

20 WWF (2020) Living Planet Report 2020 - Bending the curve of biodiversity loss. Almond, R.E.A., Grooten M. and Petersen, T. (Eds). WWF, Gland, Switzerland.

21 EEA 2020 The European environment —state and outlook 2020

22 Eurofound (2019), Is rural Europe being left behind?, European Quality of Life Survey 2016,Publications Office of the European Union, Luxembourg.

23 Mert Kompil, Chris Jacobs-Crisioni, Lewis Dijkstra, Carlo Lavalle, Mapping accessibility to generic services in Europe: A market-potential based approach, Sustainable Cities and Society, Volume 47, 2019,

In terms of **economic development**, the recovery from the 2008 crisis has been much slower for rural economies in OECD countries. While before the crisis most rural regions experienced growth in income per capita and convergence, in the subsequent period, the variability in growth performance increased. These pathways will in turn depend on future productivity and innovation, participation in global value chains and better retaining of value in rural areas[24].

In terms of technological drivers, **digitalisation connected with artificial intelligence (AI), big data, Internet of Things and automation** are set to reshape the economy – which will represent a threat as well as an opportunity for rural areas. Those relying more on the extractive and manufacturing sectors and small numbers of employers and industries will feel the pressure on jobs and wages due to automation and the use of AI. On the other hand, the technology can be a way of overcoming economic disadvantages. New communication technologies (augmented reality, telepresence) can limit the effect of distance. 3D printing can make small-scale local production more cost-effective. **New forms of transport and mobility**, such as autonomous vehicles, mobility-as-a-service solutions and drones, will increase both economic opportunities (logistics costs and efficiency) and services (transportation, delivery)[25]. The concept of smart villages, aiming to discover and implement new innovative solutions to address local challenges and improve citizen's lives, focuses on the opportunities that ICT (information communications) technologies can offer, with the important caveat that digitalisation is a tool, but not a goal in itself[26].

Regarding **land use**, between 2000 and 2018, 0.6% of the surface area (2.87 million ha) in the EU changed its function, and urbanization accounted for almost half of this change (1.26 million ha), with over eight times more land being converted to urban use, than that reverted back. The trends are quite varied across Europe: agricultural intensification in some parts and land abandonment in others; strong urban growth versus slower development and even de-urbanization in other regions; sharp rises in infrastructural land-use in some areas; monocentric cities with contiguous or clustered development or profound urban diffusion; shifting from one urban type to the other as the urban composition changes in European countries[27].

Drivers of change are internal and external pressures, or factors that cause change to a system.

Between 2015 and 2030 the EU agricultural land is projected to shrink by 1.1%. While no drastic changes are expected at country level, noticeable (>15%) expansions of agricultural land are projected for a number of regions in Southern and South-Eastern Europe, but also for those of Sweden, Finland, Estonia and Latvia. However, in the same period, about 11% (more than 20 million ha) of agricultural land in the EU will be under high potential risk of abandonment[28]. **Agriculture** itself is changing as well. Climate change, together with environmental degradation, is expected to make it increasingly difficult to farm. Also, agroecological practices (i.e. the application of ecological principles to agricultural production systems) are expected to become mainstream, with an increasing role of alternative production methods such as cell farming, or controlled-environment agriculture. Consumers are becoming more demanding and more conscious (i.e. more mindful and aware of the consequences of their choices) with healthiness of diets gaining in importance, in parallel to the environmental and ethical considerations. The digitalisation of agriculture, including precision farming and automation of processes, is expected to profoundly shape the way farmers are involved in the production process[29].

24 OECD (2020), Rural Well-being: Geography of Opportunities, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/d25cef80-en
25 OECD (2019), OECD Regional Outlook 2019: Leveraging Megatrends for Cities and Rural Areas, OECD Publishing, Paris. https://doi.org/10.1787/9789264312838-en
26 European Commission, Pilot Project on Smart eco-social villages - final report, 2020
27 ESPON SUPER – Sustainable Urbanization and land-use Practices in European Regions Main Report, ESPON, November 2020
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FOUR SCENARIOS

The future of rural areas in 2040

The scenarios were developed based on the scenario logic (see Figure 1 and Chapter 2 methods) and different combinations of possible future developments of the relevant drivers identified by the workshop participants (Chapter 3).

The scenarios present a subset of possible futures of rural areas in 2040. They do not aim to fully reflect the diverse realities across all EU rural areas in each scenario, but instead they seek a common denominator by describing possible developments in a generalised way, with a focus on issues of mutual interest with an EU-wide perspective. They are not meant to be read as projections either, but rather an exploration of alternative pathways focusing on the main drivers of change. To illustrate this range of alternatives, contrasts between scenarios may appear exaggerated. While particular scenarios may seem more relevant for specific rural situations, they should be read as a group or set, with the four scenarios together providing images of possible futures for different rural areas. They cannot be considered, in themselves, visions (they are not aspirational futures), but can help to understand what developments and objectives would characterise a preferred future.

Figure 3. Scenario logic

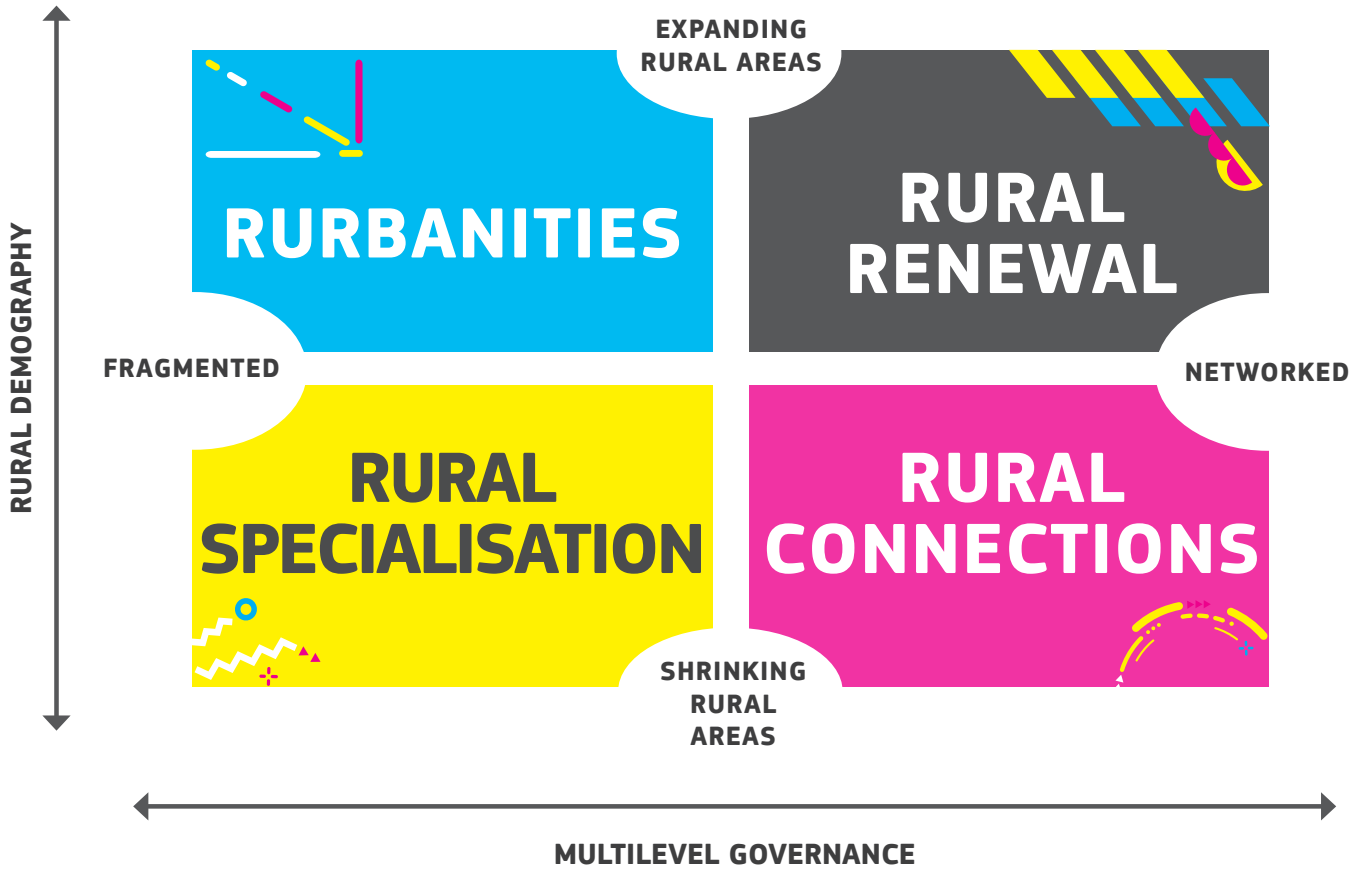


Table 1. Overview of scenario characteristics with respect to drivers of change

	 RURBANITIES	 RURAL RENEWAL
Multilevel governance	Common objectives but uncoordinated initiatives and investments	Closely networked and integrated transition management
Rural demography	Migration to rural areas for a higher quality of life	Migration to rural areas for a change in lifestyle, counter-urbanisation movement
Diversity of rural economy	Very diverse, opportunities for entrepreneurs and small and medium enterprises	Very diverse, circular and local, short supply chains
Rural-urban relationships	Close links and competition	Rural-rural relationships gain importance
Access to public services	Complex regulatory and social e-service systems, fragmentation	Close, frequent interaction and integration
Digital infrastructure and services	Well-developed access, but higher quality services more costly	Well-developed access, community-owned local networks
Civic engagement	Private-interest-driven engagement, volatile and temporary pressure groups	Deliberative democracy, collective decision-making
Rural communities	Individualised society, local-oriented communities, weak social cohesion	Strong community spirit, consciously building and maintaining local communities
Land management and agriculture	Multifunctional land-use focused on production and living functions (rural sprawl). Diverse agriculture but increased tensions.	Multifunctional land-use focused on living and ecological functions. Smaller scale farming, diversified with focus on agro-ecology.
Climate change policies	Reactive and technology-driven, using economic incentives and voluntary approaches. Slow sustainability transition	Proactive with regulatory approaches and focus on behaviour and lifestyle changes
Transport & mobility	Primarily road transport, advanced individual transport prevails	Distributed and varied mobility networks, community-owned

 RURAL CONNECTIONS	 RURAL SPECIALISATION
Strong coordination and collaboration at local and regional level, including cross-border	Competing, disconnected initiatives for specific interests
Migration from rural areas to urban economic centres, convergence in rural hubs	Migration from rural areas to urban economic centres, depopulation of rural areas
Importance of agriculture as part of a circular bioeconomy	Specialised, consolidated large-scale bioeconomy
Rural-rural-urban networks, interdependence recognised	Urban-centric perspective
Lean services, fully digitalised	Seamless, customer-oriented online service delivery
Well-developed access, priority for managed transition	Well-developed access - enabling economic activities
Liquid, deliberative democracy	Disengaged citizens
Strong local community spirit and bottom-up do-it-yourself engagement	Largely urban society, dispersed, unorganised rural population
Specialised land use – compromise between regional and local needs. Large scale agriculture plus few smaller local initiatives	Specialised land use, zoned and optimised for benefits of the city. Large scale farming focused on sustainable intensification.
Proactive combining focus on environmental standards, local, short supply chains, encouraging sufficiency with climate diplomacy	Proactive with focus on few large corporate actors (regulations, economic incentives), large-scale technological interventions
Collaborative and collective approaches to mobility	Centralised, geared towards needs of industry and urban tourists


RURBANITIES

Rurbanities

Expanding rural areas – Fragmented multilevel governance

The EU in 2040

A sluggish recovery after the worst years of the COVID-19 pandemic in the early 2020s increased frictions in the EU. Citizens were keen to go back to their pre-COVID lifestyles in relation to their mobility and consumption patterns. Emphasis was put on research and development and large funding programmes, launched both at EU and national levels to help rebound to pre-crisis GDP growth levels and strengthen global competiveness compared to the faster growth of emerging economies, in particular in Asia. Public-private partnerships were encouraged, in the context of creating an overall 'business friendly' environment, which would favour employment and economic growth.

Governance

In 2040, the authorities at EU and national levels see a need to openly share visions and strategies with society to show strategic leadership, yet there is limited coordination between the various authorities. This is reflected also at regional and local levels - with limited efforts to coordinate across sectorial policy fields and across territories. Rural proofing of national policies is not implemented. Instead, regions and their municipalities compete for EU and national funding and to attract entrepreneurs, industry and investments, also from countries outside the EU (third countries). As policymakers prioritise the provision of economic opportunities, business lobbies find open doors. The proliferation of programmes, strategic guidance documents and measures and instruments make it difficult to create integrated and systemic approaches at local level.

The post-COVID economic crisis increased economic inequalities and further eroded the social cohesion and solidarity in the EU. Apart from sporadic initiatives to involve citizens via citizen assemblies on controversial policy questions, there is limited direct structured involvement of citizens in regional or national policymaking, and citizens are not pushing for it. Thanks to social media platforms, it is very easy and common to temporarily form *ad hoc* pressure groups on major, as well as very specific issues, and - often successfully - influence policies in this way.

People

The years 2020 and 2021 saw a substantial increase in teleworking due to the COVID-19 pandemic. This opened the possibility for many people to decide on their place of living independent from the location of their working place, or clients. Looking for a higher quality of life in terms of lower costs, less pollution and more security, people started to turn to rural areas. The first to move were those who had the possibility to work remotely and could afford to move. As digital infrastructure improved and virtual reality applications substituted for physical presence even better, more people followed. The population trend in many rural areas turned around and many rural areas saw their population numbers increase in a dynamic and substantial way. Favourable conditions for businesses contributed to the creation of jobs and kept young people in particular from leaving. Migrants from across the EU and third countries added to the number of people wanting to live in attractive rural environments.

As social cohesion has declined, in 2040, the diverse population in rural areas has a little developed sense for its local community. Part of the attraction of rural areas was the more private space and fewer human interactions and an escape from the perceived surveillance and constraints of city life (housing, landscape, urban access regulations). Wanting to keep the individualised urban lifestyle in the comfort of the rural areas, people only care about their own family and friends. Cooperation and collaborations tend to be interest-driven and volatile and there is limited trust in others beyond one's closest social circle.

A 'not-in-my-backyard' attitude is widespread and contributes to tensions between residents, and between residents and policymakers. While newcomers add to rural life with new ideas and initiatives, tensions also emerge when interests and attitudes of newcomers differ too strongly from those of the initial rural population.

In addition, increasing land and house prices in combination with growing inequalities have led to the creation of closed communities and gated villages, followed by segmentation of services and infrastructures.

In 2040, rural areas have close links with several urban centres – many rural residents have personal and work relations in the cities, and although more people are living in rural areas, many of the rural companies' customers are located in urban centres. As rural areas have become more prosperous and are successfully competing for budget, infrastructure, companies' headquarters and production sites, urban centres start feeling the competition.

In 2040, the diverse population in rural areas has a little developed sense for its local community. A 'not-in-my-backyard' attitude is widespread

Rural areas which are able to attract new populations and business activity are those that have specific amenities (natural or other – coastal, cultural etc.). This has increased the divergence between the most prosperous and other rural areas. The more remote and less attractive areas have felt the negative spill-over effects. Rural gentrification drove part of the local populations, especially those involved in agriculture, to those more remote areas. Alongside, a more radical counter-urban movement promoted eco-villages in the more remote areas.

Infrastructure

Rural areas in 2040 benefit from a diversity of economic activities. The demand for goods and services by residents provides for job opportunities. Favourable conditions in terms of financing, tax reductions and access to facilities has attracted entrepreneurs and small businesses. In 2040, due to the increasing demand and economies of scale, digital infrastructure is in place to accommodate the needs of citizens and businesses from their leisure to shopping needs, and work, to automation and production. The widespread availability of the internet and telecommunication infrastructure permits access for everyone, but higher bandwidth priority for specialised services, can be reserved at a higher price, only by those who are willing and able to pay more.

Road transportation plays a large role, and citizens favour individual over public transport for its immediate availability and independence. Advanced transport technology is readily taken up - autonomous cars allow a relaxed and fuel-efficient travel outside denser areas, drones deliver goods to smaller villages from for e.g. the local additive manufacturing shop, or distribution centre, etc. Public transport infrastructure, accordingly, is not very well developed.

Administrative e-services are the norm in 2040, but it is difficult to find one's way among the different local and regional and national government agencies and responsible parties. AI-based systems and digital personal assistants help people navigate the complex regulatory and social service systems. Calls for a better coordination are erupting once in a while, but citizens are largely used to the status quo. E-healthcare is accepted, digital health assistants and monitoring devices support citizens in managing their health and allow seamless medical support remotely, or in a clinic in one of the rural centres.

Rural centres provide the needed local infrastructures from shops and leisure facilities, to bars and restaurants. Online retail and delivery services complement the offer. Smaller villages have their specialised restaurants or other leisure facilities, attracting customers from elsewhere.

Education in 2040 is highly individualised, and follows a hybrid online/physical presence concept. Project-dependent online courses can be booked from any public school in the region, but also from private providers for a fee. Facilities for face-to-face lessons are located in the rural centres.

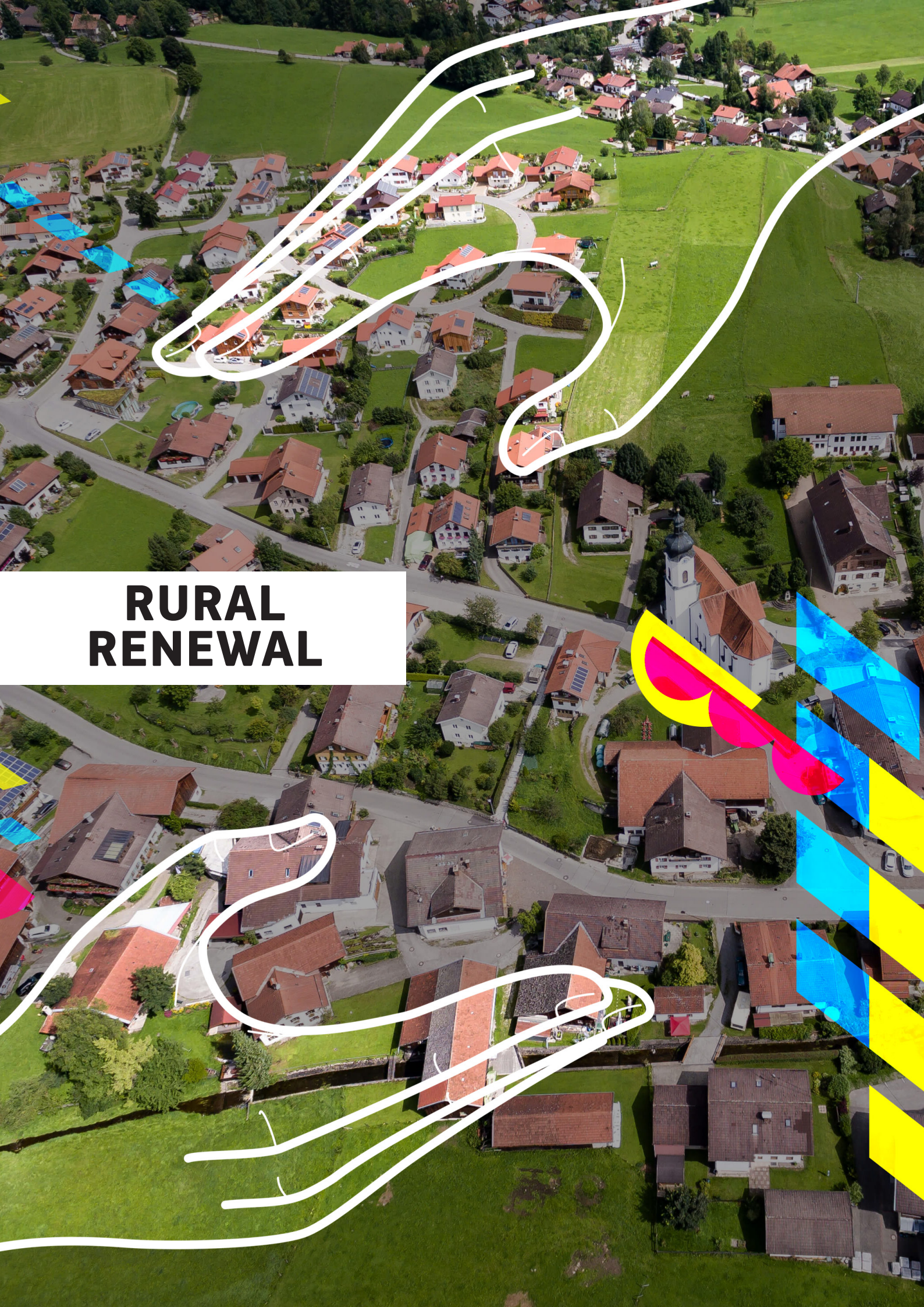
Land use, agriculture, environment and climate change

Rural sprawl, where more land is used for housing and infrastructure, has become an issue due to more people moving to rural areas. In many places the expansion of the settlement and commercial areas did not take place in a structured way, resulting in an inefficient use of land and difficulties with the existing infrastructure. As the built-up area increases at the expense of fertile land on the fringes of rural towns and villages - forests, protected areas and nature reserves are increasingly compromised due to competing commercial or leisure interests.

A diverse farming structure caters for the local demand and industry needs. However, the perceived nuisance of noise, water pollution and smell and increasing conflicts have driven most of the agriculture further out. Smaller farm businesses respond to local consumer demands for sustainable or specialised products and often sell directly to consumers, and provide educational and social services. Their business model focuses as much on production (mostly based on organic, regenerative practices) as on other services it provides – care and therapy; education; entertainment. Larger scale production of food and biomaterials in more remote areas is geared towards national and global markets and the regional biorefineries.

Although there are observable impacts in 2040, climate change policy is largely reactive. Most of the policy instruments are economic (investment, loans and grants, trading schemes) and rely on voluntary schemes, with a strong emphasis on technological innovations to adapt and reduce net emissions. The policy focus is on businesses increasing material and energy efficiency, including the use of alternative products (e.g. substituting concrete in construction) and closing resource loops. Energy and material consumption is also addressed through economic incentives (subsidies for electric cars and efficiency improvements, gamification, personal carbon trading). The advancement in 'green technology' for renewable energy generation is a major issue for this energy-hungry society, as is the advancement of carbon capture and storage technology to tackle carbon levels and climate change. The bioeconomy is developing and new products and technologies are being readily taken up, if they are economically and functionally competitive.

Businesses advance the environmental and climate performance of their products and services where they perceive business opportunities. Working within a patchwork of different national regulations, and regional variations of implementations, industry pushes for more harmonised rules and standards. EU commitments, local frameworks and the competition, allow the development of different solutions and tailored applications. But the lack of coordination and little sharing of experiences hinders the ability to collaborate effectively and pool resources, which slows down the sustainability transition.



RURAL RENEWAL

Rural Renewal

Expanding rural areas – Networked multilevel governance

The EU in 2040

In 2040, the EU focuses much of its efforts on the green transition, and is on its way to the goal of 'climate neutrality by 2050', i.e. balancing emissions of carbon dioxide by its removal, or elimination. The Green Deal and NextGenerationEU funds have invested in green and digital transition technologies and the Conference on the Future of EU has paved the way to support governance structures that are more networked and cooperative. They have managed to quickly align the ambitious headline goals with good implementation and monitoring in EU countries. Two decades of subdued economic growth have also refocused expectations of GDP, from growth to wellbeing and dematerialisation of consumption, with the degrowth movement gaining strength.

Growing geopolitical instability, and the increasing role of the global East and South has led to the EU focusing more inwards, limiting its efforts on global issues where it leads through example on matters such as: consistent green diplomacy, strengthening of democracy and international standards. The EU is one of the main actors in international trade of services, which has now surpassed trade of goods.

Governance

The coordination of the green transition is one of the overarching aims of the governance systems. The steady growth of deliberative democracy, citizen engagement and co-creation, reinforced by trends towards more transparency and accountability, have led to an open government where public institutions are centres of collective decision-making. Accordingly, the distinctions between governmental and non-governmental actors blur.

Multi-level governance consists of various institutions with overlapping goals and jurisdictions, at different geographical and functional levels, working together to achieve societal goals. Goals are set qualitatively in the context of the EU (or globally in some cases) and operationalised at other scales. Digital technologies, such as blockchain and telepresence allow immediate access to relevant information and facilitate participation in decision-making at all levels. Internet of things (IoT) and AI systems are responsible for preliminary analysis of the processes in the physical world and provide the evidence for decision-making. Decisions are made, to the greatest extent possible, through designing compromise solutions based on the various problem-solution framings.

The combination of large-scale EU funds, local taxes (and related public procurement expenditures) as well as concerted private and consumption spending support the transition.

As a result of the more distributed spatial developments, rural-rural partnerships have become at least as important as rural-urban and urban-urban area partnerships, in terms of innovation networks, people and material flows. Cities are initiating links to rural areas, to support their own green transition plans.

People

In 2040, the disadvantages of high-density cities and a focus on more sustainable living have strengthened the counter-urbanisation movement, with increasing numbers of people moving to the rural areas.

In the 2020s these were either determined professionals, often with families, intent on starting more sustainable and slower lifestyles, or retired people, leveraging their urban property values to move to a more pleasant environment. The post-COVID popularity of remote work, as well as the trend of maintaining several different paid activities at the same time and easier access to digitised services (education, healthcare) has removed some of the barriers and increased the speed of immigration from cities. Over time, increasing opportunities in green jobs, sustainable entrepreneurship and growth of the bioeconomy created next waves of newcomers, with more people moving between the different rural communities than between urban and rural areas.

The increased interest in moving to rural areas has allowed local communities to be more selective in who settles and where. At the same time, the policy and investment support for green transition has also reshaped rural planning. The next waves of newcomers would find themselves increasingly restrained in terms of permits for renovation of buildings, and types of activity with the aim to achieve the goals of sustainability. Special induction processes were created for newcomers with assigned mentors and specific courses and meetings. In 2040, the diversity of the rural society is much higher, but there is a per-

> The coordination of the green transition is one of the overarching aims of the governance systems. In 2040, the diversity of the rural society is much higher, but there is a permanent conscious effort in building and maintaining communities

manent conscious effort in building and maintaining communities.

Infrastructure

Nature-based solutions, circular economy (eliminating waste and keeping resources in use) and sustainable pathways have been easier to implement in villages and small towns than in cities, due to their smaller scale, access to natural resources and the lower population density. In addition, new settlements have been created in the form of 'regenerative eco-villages' that cater for particular niches (active retired people, creative arts, mountain lovers). Rural areas have become a space for experimentation with various sustainable living, lifestyle and working approaches.

The growing population and the direction of the green transition policies have offered a second opportunity to plan climate-neutral, net-zero settlements (with regards to waste, water and energy). A more circular economy and shorter supply chains (connecting local suppliers with local consumers more directly), together with the development of local micro-factories and small scale bio-refineries have also transformed the infrastructure.

For local transport in 2040, the new spatial planning system has limited the need for private car ownership and encourages community-owned shared alternatives for personal and group mobility (smart mobility pods, hyperscooters, and autonomous robo-vehicles). For longer journeys, autonomous vehicles can be rented. The energy system will be more distributed, with multiple sources of generating clean energy and various storage facilities.

The increased rural population has increased the local services on offer, in terms of catering and hospitality, customer and leisure services – cafes and restaurants, bars, beauty salons, hairdressers, fitness centres – are all greatly improving the quality of life and further consolidating the community. The retail sector has transformed from large supermarkets to smaller shops, as the owners usually connect it with other services and activities they provide, for e.g. retail activities are also run by micro-factories and 3D printing shops. At the same time, people tend to use various networks for repair, reuse and renting, limiting the needs for purchasing new products.

As public institutions play a large role in the transition management, citizen's interactions with public services are very frequent. Most of the time, this takes place through interactions in the wider communities and associations – public institutions are directly involved in most of the initiatives and communities in the area. Procedural and administrative arrangements are conducted digitally by connecting their personal data vault with the system of the service provider, where algorithms (i.e. well-defined, computer-implementable instructions) are used to negotiate a contract that is satisfactory to both sides. The contracts are then recorded in a public database.

The role of digitalisation has been mainly to support the transition and community building. Communities own, operate and govern the local wireless mesh networks using freely available computer software, connected to an ecosystem of other local and global networks.

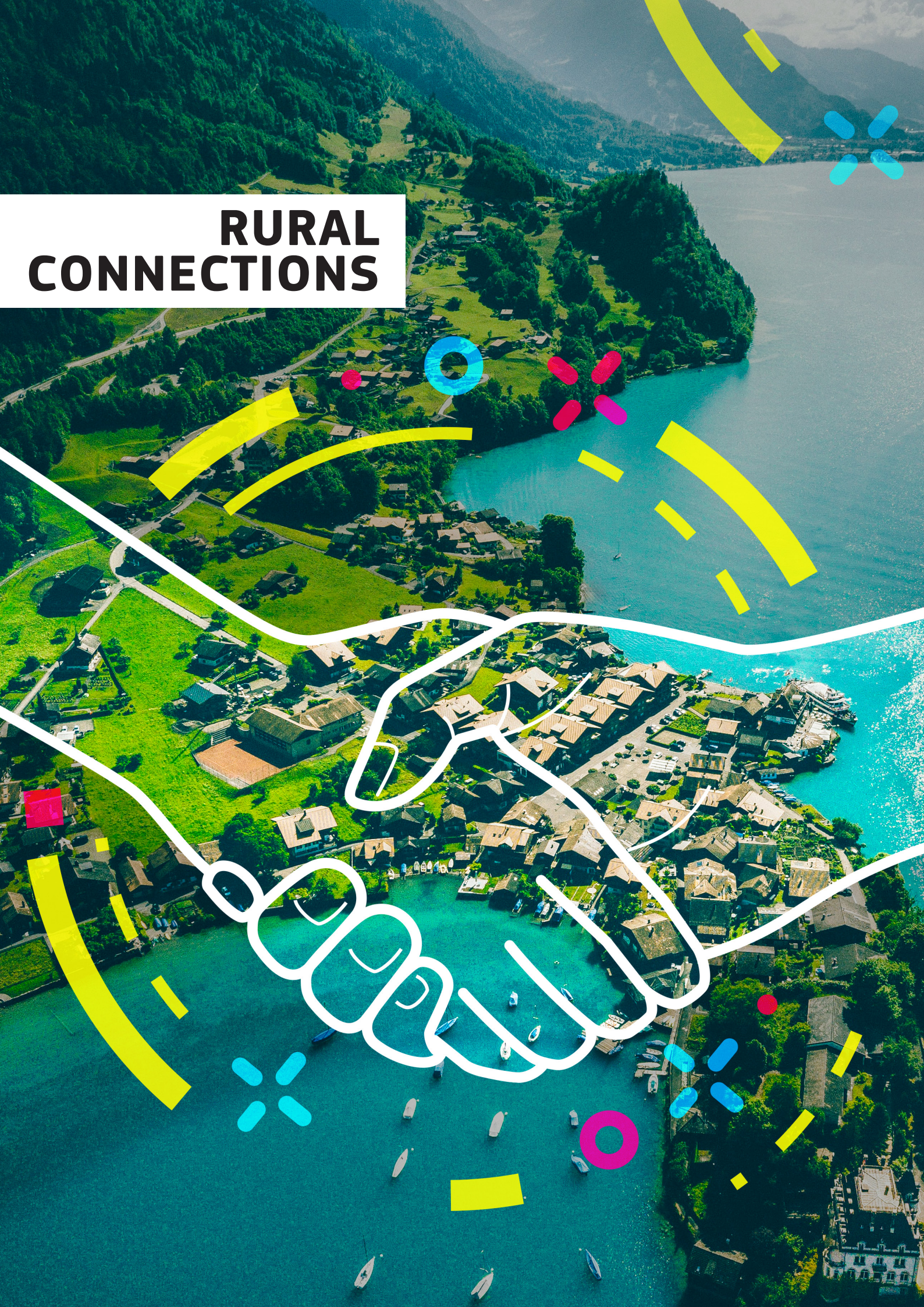
Land use, agriculture, environment, climate change

Along with developing local circular economy and regenerative approaches, land has become a multifunctional resource, focused on the region. The available resources are managed in collaborative governance systems that create synergies between formerly competing uses of land – combining food, energy, tourism and other demands.

In this 2040 scenario, smaller scale farming is dominant, with farm networks following regenerative practices, permaculture and agroforestry, often in community-supported farming models. To scale-up production and output, networks of such farms work together, sharing technologies and ecological practices. Participation in farming activities, whether commercial or for self-provisioning, is one of the many jobs on offer for most of the residents.

Climate change adaptation and mitigation measures are focused on behavioural and lifestyle changes (such as a strong reduction of consumption and energy use, changes in eating habits), as well as regulatory (better rural planning, a complex system of permits, climate audits) and collaborative, community solutions. Integrated strategies and climate budgeting make planning easier. Social economy businesses - whose main objective is to have a social impact - are centred on functionality, rather than ownership and profit, adopting a stewardship/supervisory role to resources and encouraging sufficiency.

RURAL CONNECTIONS



Rural connections

Shrinking rural areas – Networked multilevel governance

The EU in 2040

In 2040, territorial development is shaped by responses to economic and environmental crises. The high levels of debt of Member States following years focusing on the post-COVID economic recovery, required a large restructuring of government spending and cutting back on social policies and public services. Increasing climate change impacts and the continuing degradation of the environment has required communities to focus on resilience and crises responses. With its favourable geographic location, the EU still fares comparatively well, but impacts in other parts of the world cause more frequent harvest failures, resulting in trade interruptions and supply shortages in the EU.

Governance

Successfully overcoming the COVID-19 pandemic and its related economic difficulties has strengthened integration at the EU level and additional competencies have been shifted from the national to the EU level (e.g. health policies, fiscal policies). Regional governments, being closer to the citizens, have gained political weight at EU level.

The cuts in public service provisions have been compensated by increased digitalisation. Computer and AI-based decision-making has replaced civil servants in many public administration functions.

Digital applications facilitate citizen participation through virtual communication channels online, including across national borders where relevant. In parallel, system-based approaches have replaced sectorial policy structures, strengthening collaboration across all levels and at geographical scale.

There are fewer career politicians, as the 'liquid democracy' system allows the selection of representatives at any moment, for a broad or a narrow range of issues. Most people conduct these duties alongside other activities. While political decision making has become more transparent and deliberative, and decisions can count on broad support, deliberation and compromise between different competing interests takes time and can slow-down decision-making. This is true for some local climate change adaptation and mitigation measures, as well as more profound changes such as the reshaping of the fiscal system towards resource use taxation - which could not be realised due to a lack of broad agreement on it to date.

With the need to face the climate and environmental challenges and to secure supply of food and fibres, awareness of the importance of rural areas for these fundamental services has increased. In line with a strongly networked policy approach and citizen participation in the processes, integrated local and regional strategies have been developed, as well as strategies that cross national borders.

The shrinking rural population, though not perceived as a positive development, has provided the opportunity to effectively use rural spaces for the benefit of all citizens.

Participatory structures have been put in place to facilitate bottom-up strategy developments, as well as tailored local implementations. Despite being a time-intensive process, it has resulted in commonly agreed goals and principles for the necessary transitions. Based on the systems approach, local and regional strategies are developed, managed, linked to and coordinated with other European regions. The sharing of experiences contributes to a common learning process and subsequent improvements.

People

Following a short-lived boost in interest to live in rural areas during and right after the COVID-19 pandemic at the beginning of the 2020s, urban areas quickly regained their attractiveness as the centre of gravity of economic activities, innovation, opportunities and cultural life. Some people continued to move from rural areas to urban centres due to the channelling of most investment towards 'greening' the cities and improving quality of life for its citizens there, which has resulted in a continuous shrinking and ageing of the rural population. Sovereign debt burdens have decreased national budgets, and because population numbers and economic activity decline rurally, local budgets are decreasing. It has become increasingly difficult to maintain smaller villages and hamlets, so people are starting to concentrate around rural hubs.

While it was a difficult choice for some to abandon

Within rural hubs, inhabitants form a tightly-knit community that is able to self-organise in political processes, and can also step in where public and private services leave a gap

their villages to nature, or to convert them into tourist locations, the rural hubs have been attractive to newcomers to the rural areas, because the necessary services, including health services, are available, as well as jobs in local businesses linked to agriculture and the bioeconomy. In 2040, population numbers in rural areas have remained at a low level, with a mix of rural and neo-rural retirees, farmers, entrepreneurs, and employees (despite that some people move to the cities).

Within rural hubs, inhabitants form a tightly-knit community that is able to self-organise in political processes, and can also step in where public and private services leave a gap. With participatory structures in place (local councils, legal requirements to involve citizens via citizen panels at regional and local level, also EU level, and topic-related local working groups advising the process), inhabitants of the rural hubs are actively involved in shaping their community. Volunteering and time banks, in particular building on the expertise and free time of active retirees, caters for unmet needs and supports the bottom-up organisation of e.g. mobility services, cultural events, social services. A decentralised organisation structure provides for a certain autonomy of the rural hubs in terms of e.g. energy supply, and local decision-making on public budget use.

Rural hubs establish close links with other rural hubs and with urban centres, creating a network that facilitates joint actions, efficient use of infrastructures, shared learning and the creation of mutual benefits. The interdependence of rural and urban regions is recognised and provides the basis for a constructive and trustful cooperation. The decline of rural population numbers allowed for a lean restructuring of administrations and the fusion of municipalities.

Infrastructure

Recognising the trend of a shrinking rural population early on, a strategy was jointly developed to manage and facilitate it. As part of the rural strategy, priority has been given to digital infrastructure, with the view to facilitating connection and integration, the provision of e-services (for e.g. administration, health, education, finance, culture), and to enable the digitalisation of agriculture and the bioeconomy (e.g. precision farming, automation). A well-maintained road and rail system ensures efficient transport of goods to the cities. Public transport is provided through local on-demand mobility services, organised and co-funded by the rural inhabitants. Private initiatives such as ride-sharing complement the transport options on offer.

In 2040 digitalisation of public services is the norm. Be it a new identity card, or any other kind of administrative step, all can be done online and via virtual appointments. For healthcare in particular monitoring of patients is carried out remotely. E-health applications are wide-spread, but they are complemented by face-to-face conversations and examinations in the cases where 'in person' consultations are preferable. Depending on their size, rural hubs function as rural health centres, and several other hubs that are in the vicinity organise their health services in a collaborative way.

Rural hubs also collaborate on their education services. Since the COVID-19 pandemic, online schooling and tertiary education has been further developed and is now combined with physical presence in schooling facilities. These are only located in larger rural hubs, and pupils from other hubs need to commute. Higher education institutions are still only located in urban centres.

Products from rural hubs are linked to the global markets, but trade is limited due to sustainability considerations and the widespread preference for do-

mestic products in 2040. With a strong re-use and repair culture, rural hubs are part of the circular economy. 'Maker spaces' allow for the interaction, take-up, adaptation and further development of technologies. 3D-printing technology enables the timely production of many items locally, reducing transport needs. All of these elements support the sense of resilience and autonomy, and the Do-It-Yourself approach of the hub community.

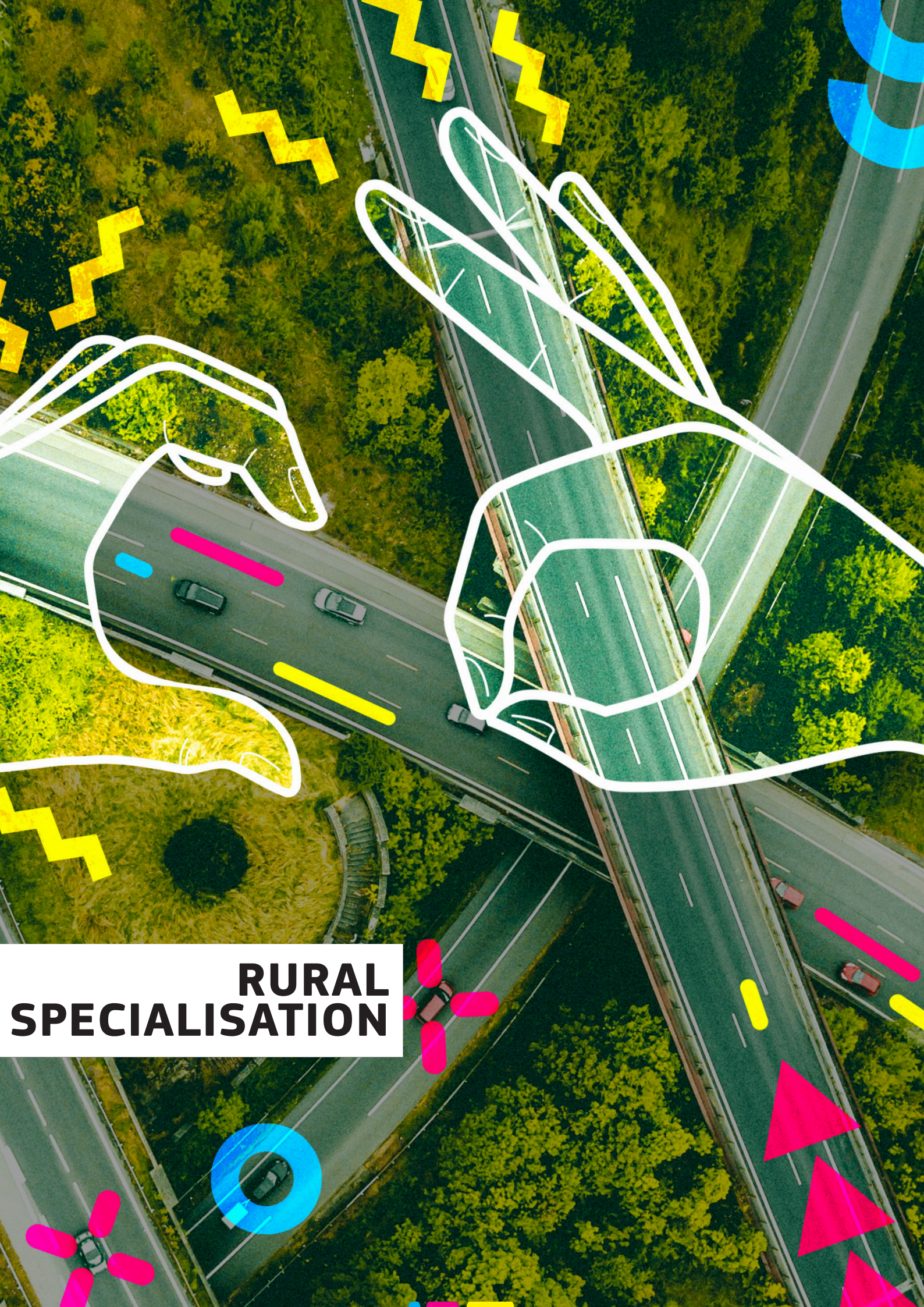
Land use, agriculture, environment and climate change

The consolidation trend in agriculture continued and in 2040 large farms determine the sector. They are geared towards sustainable intensification and have to comply with stricter environmental standards. Small scale agriculture has a minor share, but an important role in providing food for self-consumption and the local population. Remote areas and high value areas across Europe are protected by policies and systems dedicated to ecosystem care and carbon capture services. Scenic locations form part of a network of 'landscape care arrangements' through extensive agriculture and see a temporary population of tourists visiting during the holiday seasons.

Interest in healthier diets grew with the ageing of the population and a higher share of diet-related diseases (e.g. overweight, obesity and diabetes), this development was accelerated by the inclusion of environmental and health criteria on food, through e.g. price incentives, clear labelling and easy-access information. Agriculture in the EU had to adapt and in addition to the stricter environmental standards linked with climate change, this contributed to a reduction of its environmental impact.

In 2040 the EU pushes for stronger international goals and collaborations with a renewed decisiveness and strong support by European citizens. These are based on renewed commitment and implementation of comprehensive environmental standards and climate change adaptation and mitigation measures at home (within the EU). The strategies adopted by particular rural hubs focus on maintaining an important share of local, short supply chains and encouraging sufficiency at the side of consumption. Social solutions, such as market gardens, micro-grids and community solar gardens, as well as pooling and sharing resources (reuse, repair, recycle) are popular approaches.

The circular bioeconomy is at the core of the sustainability efforts, relying on advanced technology (automation, biotechnologies and digitalisation). Dedicated and protected nature areas and reforestation and rewilding contribute to carbon capture and stopping a further decline of biodiversity in the EU.



RURAL SPECIALISATION

Rural specialisation

Shrinking rural areas – Fragmented multilevel governance

The EU in 2040

The EU in 2040 focuses much of its efforts on recovery from three decades of low economic growth. Most of the public budget is spent on restructuring the economies to benefit from the green and digital transition. The funds follow consumer demand to generate more economic activity, employment and economic optimism - which would lead to recovery and more prosperity. The decades of over-promising on targets have decreased levels of trust in existing public institutions further. Different levels of governance are increasingly competing for legitimacy, creating their own 'resilience and revitalisation' strategies, programs and tools.

The growing economic and political role of the global East and South is encouraging recovery efforts to increase Europe's international competitiveness and tightening trade ties with various international partners. At the same time, geopolitical instability and the declining role of Western institutions continues to stall efforts for political cooperation.

Governance

Restructuring, revival and rebounding are the overarching aims of the 2040 governance systems. Actors at European, national and local levels are putting a lot of effort into the analysis of the current situation, and the actions that need to be taken in their jurisdiction and functional areas. However fragmentation of the efforts and funding creates many frictions and incoherencies in implementation across the EU and within Member States. The diffuse political responsibility makes it easy to shift the blame on others and carry on.

The eroding legitimacy and trust in public institutions has lowered citizens' involvement in political decisions. Increasing public sector efficiency, seamless service delivery and customer-centric approaches have been considered key to regaining citizens' acceptance. Increased use of big data, AI algorithms and user-experience approaches have led to a proliferation of targeted (phone and computer) applications, social media plug-ins and automated bots which have become the main way of interaction with the government.

The decision-makers are a relatively small, professionalised group of career politicians, supported by strategists, data analysis experts, behavioural (and other) scientists, social empathisers, forecasters and system analysts. With growing public debt, governments have to be more frugal with public money, focusing instead on public-private partnerships and co-funding. The focus is on those areas, actors and sectors where interventions will be more cost-effective, scalable and with the highest success rates. Thus, much of the support goes to big cities and large 'champion companies' or 'unicorn start-ups', which are expected to kick-start the new prosperity.

People

In 2040, the overall EU population has started to decrease. This has reinforced the steep decline of the EU's rural population. With lower life expectancy, less economic and social opportunities for growth, and minimal public support, most of the rural people have moved to urban centres. As the process of depopulation accelerated, the breaking down of the rural area's social fabric and diminishing quality of life pushed others to follow and join their families and friends who had left earlier for the cities.

The few who remain in rural areas are dispersed. They are mostly people who lack alternatives, those who refuse to move out, or those who willingly want to live 'off the grid'. Most of the other people are either commuters from urban areas. These include those supervising the farms and other large energy and production facilities, or seasonal workers in the recreation, health and edutainment villages that provide services to tourists.

Societal demands for reducing environmental and climate impacts have meant that the availability of food and natural resources have become a prime concern. With a shrinking and unorganised rural population, the rural policies are now made in urban centres with regards to rural needs for food, natural resources, leisure etc. Facing increasing population numbers, the cities have had to transform too. Their strategy is to secure the availability of resources in the region, and to cooperate with private companies that could supply large populations.

Infrastructure

The consolidation of land through the purchases of large corporations, investment funds and trusts, has left the practical management of the land resources in the hands of private actors. They have mostly built large, automated facilities (farms, renewable energy installations, smart factories), or manage very large land areas for other uses (forestry, wilderness, recreation parks).

The infrastructure tends to be centralised, connecting the cities with particular facilities. There are two paral-

With a shrinking and unorganised rural population, the rural policies are now made in urban centres with regards to the needs for food, natural resources, leisure, etc...

lel communication and infrastructure systems – one for tourist and recreation movements, based on fast trains leading straight to leisure and recreation centres. Another, industry-focused system for resource extraction and processing, connects facilities, cities and major ports through freight trains. Occasional other travels (maintenance workers etc.) are usually done by air transport (e.g. passenger drones). The large renewable energy facilities (hydro, as well as solar and wind farms) are connected in a European smart grid, which optimises the supply and demand for energy.

Land use, agriculture, environment, climate change

Land tenure reforms and privatisation has led to consolidation of land and specialisation of land-use. There are competing interests for land-use. The growing cities look for resources in their broad surroundings to build regional circular economy activities, sustain food and energy networks and to try and increase the wellbeing of city-dwellers. National and European institutions want to optimise land-use to help reach particular climate, economic and environmental goals. In 2040 the corporations have a global outlook – looking for the best land for their activities anywhere in the world.

As most of the activities in rural areas are now large-scale, they permit considerable economies of scale, efficiency gains and quick adaptation and streamlining of production processes. Sustainable intensification in agriculture and forestry allows for increased production in a more resource-efficient way, using less environmentally harmful processes. Large, mostly automated farms are owned by corporations with integrated processing of food and bio-based products. Controlled-environment, vertical farming units – i.e. the farm factories – have been developing quickly in the peripheries of the cities. The conservation strategies focus on the preservation of specific ecosystems, creating increasing targets for areas that are protected, as well as re-wilding of areas that had been used for agriculture, but are now less productive land.

In terms of climate mitigation and adaptation, most of the solutions focus on regulatory and economic solutions, with many different binding targets and standards set at different levels of governance (from world-wide to local). Economic instruments focus on large companies that manage vast areas of land (infrastructure investments, feed-in tariffs for renewables, loans and trading schemes). Large-scale technology-based interventions are favoured, such as massive afforestation with bioengineered trees and carbon capture technologies, restoration and adaptation of natural habitats etc. In adaptation climate approaches, insurance and financial tools, such as weather derivatives, are being developed with more flexibility in land management. In mitigation, large-scale geoengineering ideas have been gaining ground as well (for e.g. sunshields, mirrors and so on).

Towards the vision: Contributions from the scenario process

At the end of the third workshop, the participants of the foresight process engaged in a brainstorming exercise to identify the key elements that they consider important for a long-term vision for rural areas. While this foresight exercise (and therefore this brainstorming) will be only one of many contributions on which the vision will be built, the elements put forward could be useful for other discussions about the vison and its implementation too.

The brainstorming elements were clustered according to the different aspects of a vision: what do we want rural areas to be; what functions or roles will rural areas have; which values and principles do we want to apply; what are the requirements and needs. The participants put the following elements forward:

WHAT DO WE WANT RURAL AREAS TO BE?

- Diverse and inclusive of all rural inhabitants; welcoming to newcomers
- Resilient in all dimensions and in line with the Sustainable Development Goals;
- Proud of and recognised as responding to global challenges – a global actor with regional identity;
- Innovative - finding new solutions through social and technological innovation;
- Socially dynamic with strong local participation, good governance and trust.

WHAT ROLES WILL RURAL AREAS HAVE?

- Responsibility for the territory (urban and rural areas) - provision of goods and services;
- Positive contribution to addressing climate change and biodiversity loss;
- Enhancement of the quality of life.

WHICH VALUES AND PRINCIPLES?

- Fairness, solidarity and cohesion - social and minority rights, reducing inequality;
- Collaborative approach - participatory civic engagement with bottom up approaches stimulated by the regulatory frameworks and keeping powers in balance;
- Focus on wellbeing rather than growth with collaborative circular economies and sustainable resource use.

WHAT ARE THE NEEDS AND REQUIREMENTS?

- Support engagement of people to help them find their place, their interest and networks to have a say in top level decision-making and smooth and efficient relationship between the community and the government;
- Support plurality of business models to reduce the risk of dependency on certain services e.g. tourism; develop entrepreneurship; balance the value chains
- Invest in technological and social innovation – developing solutions that support rather than replace people and focus on climate investments;
- Encourage proactivity of local communities to achieve their own goals and well-being and develop local strategies to strengthen long-term thinking.

Out of these contributions some broader themes emerge that are relevant for the future of rural areas: diversity and inclusivity; collaborative approaches and engagement; technological and social innovation; resilience; and pride and recognition of its contribution to global societal challenges.

Conclusions

Scenarios are tools for structuring the exploration of the future and for imaging alternative futures. They help to answer questions about the future now and to generate more clarity regarding possible options or consequences of certain ongoing developments. Thus, scenarios (and the process of building them) are a good starting point for developing a better grasp on how a preferred future would look and what elements a shared vision for the future should include. This helps to highlight ways forward.

In this study, contributing to the discussions and the development of the long-term vision for EU rural areas put forward by the European Commission in 2021, participants of the ENRD Thematic Group on the Long Term Rural Vision came together and discussed key drivers of change for rural areas. From these a scenario matrix was created within which four future scenarios for the rural areas 2040 were illustrated: Rurbanities, Rural renewal, Rural connections and Rural specialisation.

The scenarios created in this exercise do not represent different preferred development paths for rural areas. They showcase how rural areas might develop in the future given different constellations of influencing factors. In that way they offer the possibility to reflect on the elements, which would be important to capture in the long-term vision for rural areas, and help to identify issues that policy should address.

In that context several general observations across the four scenarios can be made:

- Independent of the direction of future development, the scenarios emphasise the central role that digital infrastructure and services have for any future activity in rural areas.
- In all scenarios rural areas continue to play an essential role for food and biomaterial and energy supply, environmental protection, services and leisure activities. The social importance of rural areas differs, depending on the future demographic developments. In 'Rural specialisation', social life largely transferred to urban environments, while in 'Rural renewal' new communities are being built.
- Demographic change in rural areas needs to be managed. Although a reversion of the depopulation trend in many rural areas is often the preferred option, in both scenarios with a population increase, possible tensions between different population groups were raised as a potential issue. Active rural community building might be needed to integrate a more diverse rural population.
- As climate change mitigation and adaptation will become more important, as well as the protection and regeneration of biodiversity, land use management will require more attention. Urban but also rural sprawl might become an issue, while in other areas land abandonment can increase, as indicated by the four scenarios. This highlights, indicating a possible need for considering rural land use development in a larger regional context.

Although the four scenarios have been developed to support policy-making at EU level, they could also be used in regional and local contexts, in the development of strategies for future-proofing particular policies and approaches. They can also be operationalised by selecting a set of relevant indicators that would signpost which scenarios are closest to the actual developments for a particular region or locality. This could help to shape and manage change towards dynamic and resilient rural areas.

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