D1.2 PoliRural Framework: Concepts, Methods, Innovation

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Executive Summary

PoliRural has a simple, if ambitions, objective - to make rural places and professions more attractive for established rural populations and recent or potential newcomers. The emphasis on more means there is plenty of room for improvement. Indeed, although some rural areas represent the most prosperous and well performing areas in the country, others are experiencing depopulation, demographic ageing, high levels of poverty and land abandonment.

Opportunities and challenges that arise from increasing demand for food, feed, fuel and fibre ensure agriculture's place as a key enabler of the sustainable future we all want to have. But that does not mean agriculture should be the primary focus of rural development; far from it. To be effective, rural policies must address a wide range of issues that extend beyond agriculture, from barriers of access to land and biodiversity loss to limited services, poor infrastructure and new skills requirements.

PoliRural was created in response to the need for a more strategic approach to rural development. It is about rural development that encompasses the diversity of rural life, places and professions, about decision making that is based on evidence of how current policies are performing and what the impact of new measures might be, about sourcing policy intelligence from a wider range of sources, about making rural policy processes more participatory by giving voice to the concerns of less represented groups e.g. women, migrants, young people, new entrants.

The strategic, forward-looking policy framework is developed to provide a well-rounded understanding of change, of how it is happening in the world, how it will play out in the 12 study areas, and how local/regional policy decisions can leverage it for the benefit of grassroot communities.

Foresight occupies two-thirds of the overall framework, which can be visualised as a three-stage process on the present-future-present continuum. The project starts with an investigation of rural situation, or rurality (present), in the selected regions by identifying current needs, existing policy measures and stakeholder experiences with these measures (evaluation). It then proceeds to the second foresight stage, where the main goal is to understand how rural situations will develop in the future under different scenarios. PoliRural does not end here because its ambition is to test potential interventions based on desired futures while the project is still live, so we go back to the present to help regional stakeholders co-design effective place-based and citizen-centric missions for their areas.

As it's one of the early project deliverables, a good portion of the document is devoted to introducing the reader to the project, its overall concept and methodology. This information is intended primarily for people outside the PoliRural consortium who have not heard about the project before. The second intended audience is internal i.e. project partners, or task/work package leaders to be precise. For them, D1.2 will provide additional guidance that they can use to produce their own deliverables later in the project.

PoliRural will run for 36 months. Dispensing a very prescriptive set of actions in M3 would do a great disservice to the iterative, bottom-up nature of the project. For that reason, next steps presented in conclusion are merely suggestions that subject matter experts will be able to tweak as they see fit. This approach ensures that PoliRural becomes a living process whose core principles are determined at the outset but any future modifications are refined based on actual grassroot experiences as and when they happen.

Introduction

For a long time, the concept of rural development was synonymous with agriculture and farming activities such as crop production, fishery, animal husbandry, forestry. Agricultural subsidies were a key ingredient of rural policy, along with import barriers and export incentives.[1] But over the past few decades, rural development has witnessed a major paradigm shift. As the threat of widespread hunger and poverty receded, post-WW2 rural policy had to reorient itself to remain fit for purpose. The need for self-sufficiency in food production is still important. However, the emergence of new issues, from population ageing to climate change to land abandonment, exerts additional demands on policy makers, urging them to seek novel approaches to rural problems that go far beyond agriculture.

The role and nature of agriculture has changed over the years and this change is likely to accelerate in the near future. A list of factors driving this change include:[2]

- Climate change, which is changing weather patterns and seasons and questioning the wisdom of maintaining traditional varieties and practices across many rural communities,
- Short food supply chains and the emergence of urban agriculture is changing the relationship between rural and urban areas, especially as an increasing number of urban areas adopt explicit food policies.
- A consumer backlash against meat and dairy is being driven by popular concern for the planet and activism by representatives of food movements such as vegans, flexitarians and climatarians. The result is that many have reduced their intake of animal-based products in favor of consuming plant-based substitutes for meat, milk, and eggs.
- Progress towards a post carbon economy. The major food companies have announced ambitions to become climate neutral by a certain date. These include companies like Nestlé that have 500,000 farmers in its supply chain, as well as Unilever and Danone for which about 60% of their carbon footprint lies with the farmers.

Although the position of agriculture in rural development is still pre-eminent in many countries, the overall trend is that of a relative decline accompanied by some structural changes. The agricultural output mix has changed, becoming highly differentiated rather than just staples oriented. Its share in the economy declined, and there are generally less people working in the agricultural production now. In the EU, there are substantial differences across the member states when it comes to employment in the sector and its value added as a share of GDP. According to the 2015 data, employment in agriculture constituted more than 10 % of total employment in Romania (28.7 %), Bulgaria (18.2 %), Greece (11.1 %) and Poland (11.0 %).[3] The lowest share (around 1 %) is found in Belgium, Germany, Sweden and Luxembourg. As regards contribution to the economy, there is a broadly similar pattern country-wise, with the highest shares observed in Romania (4.1 %), Latvia (3.72 %), Greece (3.65 %) and Hungary (3.36%), the lowest in Germany (0.72 %), Malta (0.71 %), Belgium (0.63 %) and Luxembourg (0.23 %).[4]
The changing role and structure of agriculture necessitates new approaches to rural development, which includes broader concerns affecting rural areas and people, among them inequality and poverty, unemployment and diversification, environmental sustainability and technological innovation. Thus to be effective, rural policies of today must follow a paradigm shift where agriculture, for all its importance, is not the only priority on decision makers' agenda.

[1] Stratfor (2018) "Europe's Agriculture Sector Faces More Competition in the Future." worldview.stratfor.com
[2] Drives such these will be explored by PoliRural pilots as part of their local Foresight process using established frameworks, for example STEEPV or PESTEL.
[3] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Farmers_in_the_EU_-_statistics&oldid=357532
[4] https://www.theglobaleconomy.com/rankings/share_of_agriculture/European-union/

It is arguable that prosperous rural regions rely on diverse sources of alternative income for farming families. Traditionally a lot of trust was put in various forms of rural tourism as a key to diversification of rural economies. One of the pilot regions of the PoliRural project (Galilee) observed that many of the jobs created by tourism are low wage and or seasonal. So, in addition to developing the tourism sector, this region is pursuing a growth strategy based on investment in high tech sectors as well.

There is potential for developing new sources of income for farmers and farm families, based on the inclusion of agriculture in the carbon economy, using nature-based strategies for carbon capture and other services related the new biodiversity strategy. There is evidence in some areas, for a small but growing flow of entrepreneurs into nearby rural areas, in order to avoid what increasingly seems like the excessively high rents of urban areas. This is happening along with a relatively recent phenomenon of rural co-working spaces. This phenomenon may have been amplified by the growth of so-called zoom towns due to an increase in the number of people working from home. So it is clear that the concept of rural development is becoming richer and more complex and in some ways increasingly resembles that of urban environments.

The EU policy on rural development has evolved from being centered on problems of the agrarian sector to considering the multiple roles that agriculture plays in society nowadays (multifunctional agriculture). The hitherto strictly sectoral approach gave way to one that acknowledges the specificities of different localities, their needs and priorities, social and institutional characteristics.[5] The essence of a place-based approach is focused on developing and enhancing the assets of a local community. In other words, it is human, natural and cultural capital that hold the key to sustainable development. Top-down governance can play a role (exogenous model) – for example, by acting as a trigger for endogenous change and setting general conditions for local actors. But ultimately the latter are the ones best placed to initiate and manage development projects that have the best fit with local reality.

Today it is hard to imagine a place that would be completely insulated from the wider forces driving change globally. The idea that some local area in Europe can pursue sustainable development with a near complete autonomy, disregarding the influence of foreign trade, global capital and regulatory bodies, may exist in theory but not in practice. There is a multitude of relationships taking place (urban-rural, local-global) that shape rural areas, their socio-economic development or decline. It therefore makes sense to view rural areas through the prism of a globalised countryside. Such neo-endogenous view[6] posits that rural development may be locally rooted, but is not impervious to forces from above (e.g. national government, EU policies) and beyond.

In an era of increasing globalisation and urbanisation, rural areas can struggle to maintain their economic vitality. Many argue that this challenge can be addressed by improving rural competitiveness,[7] however achieving competitiveness is easier said than done. For one, the concept is relatively straightforward when applied to a firm i.e. ability to produce goods/services of the right quality, at the right price and time. But it becomes less clear and arguably less valid when applied to a specific locality. For example, an uncompetitive firm will go out of business sooner or later, however the same cannot be said of the economy, whether local, regional or national. The lack of agreement on what rural competitiveness should mean - is it about productivity, wellbeing, sustainability or something else? - did not lessen the concepts' importance in policy circles.[8] If anything, it allowed decision makers to view rural development from a

[5] Salvia, R. Quaranta, G. Place-Based Rural Development and Resilience: A Lesson from a Small Community. Sustainability 2017, 9, 889. https://doi.org/10.3390/su9060889

[6] Cejudo, Eugenio, and Francisco Navarro. 2020. Neoendogenous development in European rural areas: results and lessons. Cham, Switzerland: Springer.

[7] World Bank (2018) "Unlocking Competitiveness: Why Invest in Rural Vietnam?" blogs.worldbank.org

[8] For example, 'Smart and Competitive Rural Areas' is one of the broad themes of the European Network for Rural Development in the 2014-2020 programming period

much broader perspective, one where more emphasis is put on places rather than sectors, investment as opposed to subsidies, rural assets instead of agricultural activities.
If rural assets mean public goods (e.g. landscapes), they are important for rural and urban residents alike. Rural areas are valuable environments where biodiversity and natural heritage are safeguarded. From ski resorts to hiking trails, some of the best recreational facilities are in rural areas. Effective rural stewardship of natural resources should thus be a priority to all - policy makers, farmers, industry, citizens - not only because of their contribution to the quality of life, but also due to the potential for widespread harm that can occur through failure to appropriately deal with land, water, mountain and other natural systems. Public opinion shows that more could be done in this area. According to a recent Eurobarometer survey, 30% respondents think environment and landscape have improved, while 36% say they became worse.[9]

Notwithstanding this perception, the particular qualities of rural areas also make them attractive for many businesses, big and small, from traditional industries as well as new, IT oriented ones. Thanks to cheaper energy access, a lot of tech-savvy entrepreneurs have considered locations outside of cities for activities like bitcoin mining.[10] And despite closures and relocations, countryside per se is still a preferred place for many in the manufacturing industry as evidenced by the opening in 2018 of Jaguar Land Rover manufacturing plant in Nitra, Slovakia,[11] and Northvolt's plans to build a Gigafactory in Skellefteå, Sweden,[12] to name just two examples. For rural areas, reindustrialisation offers considerable growth potential, especially in light of ICT based innovations that make cities less of a necessity for some types of businesses/professions.

These and other developments (e.g. in the labour market, skills, service delivery, migration) challenge policy makers to take a proactive, less centralised stance on managing change. Rural development is no longer a pact between government and farmers but rather a corollary of multi stakeholder cooperation comprising public, private and third sector representatives from a wide range of disciplines. Designing rural development policy for different communities/territories requires the pooling of knowledge held by a wide variety of actors. The voices of marginalised, underrepresented groups, such as young people, women and migrants, are particularly important. It is equally important to listen to people who are new to rural life in general and agriculture in particular i.e. new entrants. Failing that, traditional hierarchical structures are likely to be inadequate for administering rural policies fit for the 21st century.

Managing change in a proactive manner also means setting a forward looking vision for rural policies, which in turn requires special methodological tools such as foresight. The application of foresight to the study of agriculture, food systems and rural development is not new. Countless outlook reports with varying time horizons opine on the way change will manifest itself in the near future under different scenarios. Business-as-usual scenarios typically conclude that future competition over land, water and biological resources will increase as a result of climate change, technological innovations, socio-economic and policy trends. Worst-case scenarios, having assumed the acceleration of some existing drivers of change, predict increased insecurity, inequality, conflicts and even collapse of the entire systems. Best-case scenarios, for their part, suggest that alternative sources of energy and production will be able to offset some of the negative effects resulting from dwindling resources, on the one hand, and increasing demand for consumables, on the other. While the flurry of foresight activity is undoubtedly a good thing, best results are obtained when foresight is a joint endeavour between research, policy and practice. Embedding foresight into a local policy making framework built on participatory principles is the surest way to achieve that.

[9] Eurobarometer (2017) "Public opinion on the common agricultural policy." https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/cap-glance/eurobarometer_en
[10] https://www.theguardian.com/world/2018/feb/13/how-iceland-became-the-bitcoin-miners-paradise
[11] https://media.jaguarlandrover.com/news/2018/10/jaguar-land-rover-opens-manufacturing-plant-slovakia
[12] https://www.electrive.com/2019/02/26/northvolt-to-build-32-gwh-battery-plant-in-sweden/

Foresight being a forward-looking exercise, needs to set an anchor in both the current state of play and preceding developments. This is where evaluation, another form of policy analysis with a more retrospective angle, comes in. To get the best policy intelligence, evaluation must be underpinned by a comprehensive analytical framework with appropriate sets of indicators. Living in the age of big data presents another requirement-cum-challenge to evaluators, namely how to access information that is largely off-limits to traditional data collection tools e.g. questionnaires, interviews. Only when the right framework, data and tools are at hand can we expect an evaluation to produce meaningful results with strong explanatory power i.e. how different measures are performing and why. This will allow to identify performance issues in existing policies and adjust next steps accordingly. So, although evaluation is typically a retrospective exercise, it also needs to have some future-oriented elements too. A strategic rural policy framework must therefore incorporate both of these dimensions because for decision makers it is crucial to make sense of the past and the present in order to prepare for the future.

PoliRural was created in response to the need for a more strategic approach to rural development. The primary focus is on policy making as the main instrument for advancing rural attractiveness (see D1.1 PoliRural Vision for Attractive Rural Places & Professions). Changes in rural areas, such as depopulation, land abandonment and the loss of biodiversity, may proceed very slowly yet they can become irreversible unless policy makers act promptly using the right tools/interventions. They can steer the unfolding developments toward a desired direction - and in so doing reduce their negative impacts - but this requires knowing whether current policy instruments are effective, who is benefiting from them and in what measure, what driving forces will be most influential and how are they going to affect people, planet, profits and land use? To be truly useful, this knowledge must transcend siloed thinking and be the corollary of a joint effort uniting different actors under a common cause. PoliRural will provide this knowledge by combining several key activities needed to design effective place-based, human-centric and forward-looking rural policies. These include actionable research that takes place within an inclusive learning environment where rural populations, researchers and policymakers come together to address common problems; an evaluation exercise that uses text mining to assess the perceived effectiveness of current interventions; and a foresight study that tries to glean the development trajectory of rural regions until 2040 under several scenarios. As a result of these activities, PoliRural will leave i) decision makers at different scales and levels of governance better equipped to tackle existing and emerging rural challenges, ii) rural populations more empowered and iii) rural areas more resilient to megatrends shaping the future.

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- Set an overall context for PoliRural by reviewing key challenges facing rural areas, policies and people
- Succinctly explain the main concepts and how they are used in the project
- Enable external readers to get a good grasp of the main project stages, what will happen in each one and how they are linked in terms of results
- Provide a birds-eye view of the methodology detailed enough to give work package leaders, task leaders, pilot leaders, other pilot partners and the wider consortium some clarity as to what lies ahead, at the same time leaving enough wiggle room for subject matter experts to shape the content and direction of tasks/outputs for which they are responsible
- Explain what must happen in the immediate future to set PoliRural pilot operations on a solid footing

1 Rural Challenges

PoliRural has a simple, if ambitions, objective - to make rural places and professions more attractive for established rural populations and recent or potential newcomers. The emphasis on *more* means there is plenty of room for improvement. Indeed, a lot of challenges facing rural areas are well documented. Some rural areas represent the most prosperous and well performing areas in the country (e.g. UK's Berkshire, Belgium's Dinant), but others are experiencing depopulation, demographic ageing, high levels of poverty and land abandonment.[13] Statistics show that the lowest proportions of those aged 15-65 (working age) are primarily found in rural areas. Although the gap narrowed considerably over time, rural dwellers remain at greater risk of poverty and social exclusion than people living in cities.[14,15] They also tend to have worse access to services e.g. transport, broadband, healthcare.[16]

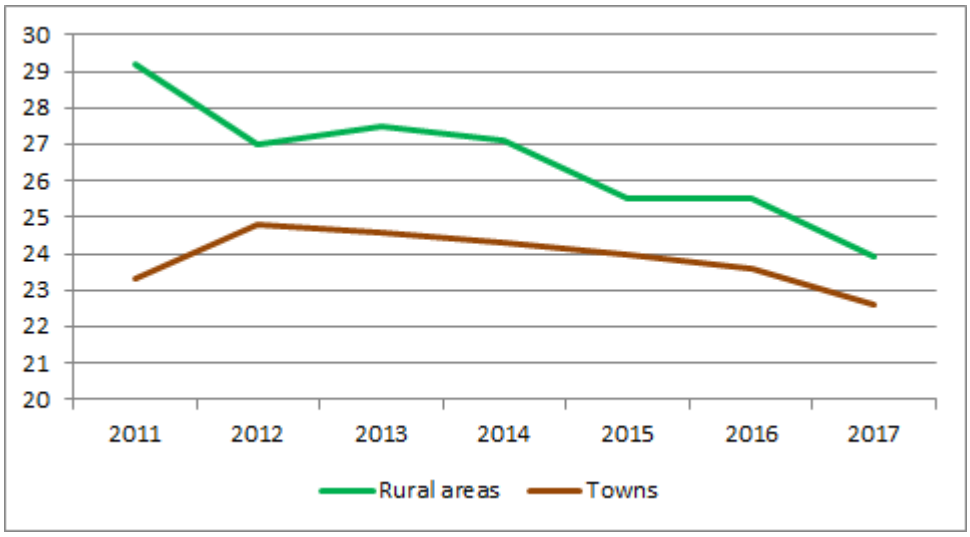


Figure 1. Share of people at risk of poverty or social exclusion[17]

Although there was a gradual increase in the number of people living in rural areas during 2010-2015,[18] not all areas benefitted equally from the population inflows. Demographic gains have generally been observed in rural areas that are closer to cities and/or urban centres,[19] whereas more remote areas tend to suffer from population decline. In fact, many of the predominantly rural NUTS 3 regions saw their population decline by 4% or more in recent years.[20,21] The outflows were particularly pronounced among younger cohorts who moved to metropolitan areas lured by better employment and education prospects. As more and more people leave the countryside, opportunities to socialise dwindle. As a consequence, rural areas tend to have higher proportions of single people than cities.[22] Loneliness rates are also high,

[13] ESPON (2017) "Shrinking rural regions in Europe. Towards smart and innovative approaches to regional development challenges in depopulating rural regions." Policy Brief. www.espon.eu
[14] https://epthinktank.eu/2016/12/16/rural-areas-and-poverty/
[15] Countries with the highest poverty rates in rural areas were Romania, Bulgaria and Malta
[16] Eurofound (2014) "Foundation Findings – Quality of life in rural Europe." eurofound.link/ef1451
[17] http://ec.europa.eu/eurostat/product?code=ilc_peps13&language=en&mode=view
[18] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:Statistics_on_rural_areas_in_the_EU
[19] Although cities still attract people, high living costs force many Europeans to leave inner city areas in search of more affordable space in suburbs, twons or countryside
[20] Member states most affected were Spain, Portugal, Italy, the Baltic States, Romania and Greece
[21] https://ec.europa.eu/eurostat/statistics-explained/index.php/Population_statistics_at_regional_level
[22] http://assembly.coe.int/nw/xml/XRef/X2H-Xref-ViewHTML.asp?FileID=9322&lang=EN

particularly among the elderly.[23] The impact of this change on farm demographics has been equally profound: only 5.6% of all European farms are now run by people younger than 35 while more than a third of all farmers are older than 65.[24] This imbalance creates difficulties for generational renewal and raises concerns about the loss of valuable skills and knowledge as older, more experienced workers leave the sector.

Migrants

As well as providing a solution to unfavourable demographic changes (e.g. depopulation, ageing), migrants can help fill the gaps in the labour market left by national populations. The restructuring of agriculture has resulted in fewer farms of bigger size (consolidation) where hired workers from within the EU and beyond are doing an ever increasing share of farm work.[25]

Additionally, the countryside has attracted a wide range of non-agricultural activities (e.g. manufacturing, tourism, housing development) that further increased demand for labour. But meeting this demand with domestic labour alone has proven to be problematic. Discouraged by low wages and poor working conditions, national populations often lack the motivation and mobility for such work.

In light of this, migrants have provided a highly flexible labour force for rural regions. In sectors such as construction and hospitality, they have helped fill the labour shortages by doing the work shunned by locals. In places with a significant share of agriculture in local economy, migrant labour has helped to preserve farms, and in some cases even to expand and modernise them.

Migrants have an important role as providers of seasonal labor. Usually, they return to their place of origin once the season is over. Restrictions on movement can have an impact on migrant labor and cases exist where this has resulted in harvests being left in the field.

In more remote areas, migrants have provided rural households with the labour necessary to maintain their traditional way of life. In regions with a “bachelor’s problem,” migrant women have offered a solution as spouses, improving fertility rates and keeping young people in rural areas.[26]
Although the work of migrants is becoming increasingly important, the full potential of this resource has yet to be realised. In particular, member states need better policies to attract, admit and benefit systematically and equitably from this untapped resource.

Evidence from Brexit suggests that migrant labor is not easily replaced by local labor. These issues are too recent to have not been explored in depth, but the intention is that they will be addressed in the project via mechanisms of the Foresight approach such as the deep dives.

New entrants

Clearly, rural areas with high poverty rates, low employment, poor infrastructure, limited public services and few bachelors/bachelorette to choose from will struggle to command much loyalty from existing populations, nor will they succeed in attracting new entrants who are increasingly seen as one of potential solutions to Europe’s ailing rural regions. Typically, new entrants to agriculture become farmers by means of inheritance, early retirement or transfer from other, non-agriculture related sectors (ex-novo entrants).

[23] MobileAge (2018) “Policy Brief: Digital strategies to address loneliness and social isolation amongst older adults in rural districts.” joinup.ec.europa.eu

[24] EC (2017) “Young farmers in the EU – structural and economic characteristics.” https://ec.europa.eu/agriculture/sites/agriculture/files/rural-area-economics/briefs/pdf/015_en.pdf

[25] Marie-Laure Augere-Granier (2021) "Migrant seasonal workers in the European Agricultural sector." European Parliament Think Tank. https://www.europarl.europa.eu/thinktank/en/home.html

[26] Charalambos Kasimis (2010) "Demographic trends in rural Europe and international migration to rural areas." https://agriregionieuropa.univpm.it

Although direct succession is by far the most common route, the number of entrants without a prior farming experience is starting to rise. Transferable skills/competences that these people possess can improve the functioning of farming systems, with a positive knock-on effect on rural competitiveness. The skill's aspect is especially apt given that today's farming activities differ substantially from the traditional manual labour of decades past. Robot repair, drone operation, data driven marketing, business modelling are just some examples of new types of skills that farmers nowadays need to possess in order to be successful. By supporting generational renewal, new entrants not only reduce the average age of farmers, they also bring the full benefits of technology to bear on agricultural practices, ultimately making them more efficient, sustainable and profitable.

However, many barriers affect new entrants' chances to deliver this change. First, rising land prices and leasing rates make it difficult to start and sustain a new business. The problem is further exacerbated by tough competition from property developers, from existing farmers looking to achieve economies of scale, from financial planners keen to diversify their mixed asset portfolios with farmland investments. Second, because land is often needed to secure a loan, new entrants can struggle to obtain credit for their start-ups. The problem is particularly acute among young people. Third, rural communities usually have established informal networks where exclusive opportunities are advertised, often by word of mouth. Without the right contacts or access to open data, newcomers could miss out on information about e.g. what land is being sold, where, for how much.

Newcomers

Although the terms new entrants to agriculture and rural newcomers are often used interchangeably, they are not the same. The former typically includes people who are engaged in farming either full-time or part-time, whereas newcomers are those who choose to live and work in a rural area, though not necessarily in the agricultural sector.[27] Newcomers can be interpreted in a broad sense as newcomers to rural economy, not just farming. These newcomers can be individuals, companies or organisations engaged in activities such as a tourism and leisure, energy, manufacturing, carbon farming and circular economy activities which share their supply chains with urban areas. These newcomers can be representing new behavioural trends (e.g. telecommuting, co-ops, entrepreneurs seeking lower rents) which could have an impact on the structure of working and living in rural areas.

Newcomers are not just individuals but can also be institutional actors. The latter are important to consider because they may have a transformational effect on rural society and economy, good or bad. For instance, Private Equity has used every crisis to buy-up distressed assets on behalf of the big-food, energy and tourism players. One example of such practice is land grabbing that sees land being used in harmful ways for exclusive purposes.

Environment

Besides issues with access to land, credit and information, there are wider developments that new entrants, rural newcomers and existing producers must keep abreast of. Climate change and environmental degradation increase our responsibility for conservation of natural resources. For farmers in particular it is imperative to implement sustainable intensification in their everyday practice, for example by managing pesticide and other chemical use, reducing carbon dioxide emissions, using renewable energy and effectively managing water resources. Shifting consumer preferences require farmers to understand organic production methods and have an up-to-date knowledge of relevant regulations about what can and cannot be supplied to the market. Without due consideration of agriculture's impact on ecology and landscapes, valorisation of local assets may be hampered and things like tourism, on which many rural areas depend economically, will suffer as a result.[28]

[27] https://ruralization.eu/wp-content/uploads/2021/02/RURALIZARION_D5.1_UNICAL_V1.0-Final.pdf

[28] The role of tourism in rural economy has been growing in many EU regions, generating new jobs and extra revenue for farmers. In the Alpine region, for example, it is even more important than farming production.

By acting as countryside managers, farmers shape landscapes that serve as public goods beneficial to all. As a reward for this work, special type of direct payment was introduced with the 2013 reform of the Common Agricultural Policy (CAP). The green direct payment, or "greening," supports farmers who adopt/maintain farming practices that help the EU meet its environmental and climate goals. Member states must allocate 30% of their income support to greening measures, such as crop diversification, maintenance of permanent grassland and Ecological Focus Areas that safeguard biodiversity on farms.

However, the effectiveness of these measures was questioned by recent evaluations. A 2017 study by independent consultants found that, overall, the greening measures have led to only small changes in management practices, except in a few specific locations. As a result, their environmental and climate impacts have been limited, making a rather small contribution towards promoting more sustainable farming practices.[29] The conclusion was echoed by the European Court of Auditors, who stated that greening, as currently implemented, is unlikely to significantly enhance the CAP's environmental and climate performance.[30] The measure was found to lack a complete intervention logic and a set of clear, sufficiently ambitious targets. Take the Farmland Bird Index (FBI), for example. Most of the information available on farmland fauna concerns birds, which are quickly affected by changes in ecosystems and so can act as a barometer of environmental health. Between 1990 and 2014, the FBI declined by 31.5%. And although the FBI has been adopted as one of CAP's impact indicators, the Commission has not set a target FBI score, nor any other target regarding the biodiversity status of farmland fauna, to be achieved by the policy.

The impact of CAP's other payments, such as Basic Payment Scheme, on the environment has also been questioned.[31] In Britain, for instance, farmers cannot receive basic payments for land featuring ponds, wide hedges, salt marsh or regenerating woodland as such land is not suitable for production.[32] This led some critics to claim that the prospect of public money creates perverse incentives to destroy elements critical to biodiversity e.g. woods, scrubland, reed beds and bogs, to name just a few.

Subsidies

Besides the environmental concerns, CAP has been widely criticised on equity grounds. Since money is paid by the hectare, the more land you own, the more you get paid. This arrangement greatly disadvantages smallholder farmers. In 2017, there were 6.5 million farmers entitled to CAP subsidies. Together they received more than €41 billion (see table). A quarter of all farmers, or 1.6 million, received almost 85 % of the agricultural subsidy. These were large landowners whose payments exceeded €5,000 per farmer. In other words, the largest farmers received 85 % of total income support, whereas the smallest ones only 1.3%.[33] Some also find it scandalous that royals, aristocrats and politicians, including Eurosceptics, often feature among the recipients of EU farm subsidies.[34]

[29] Alliance Environment and Thünen Institut – Evaluation of the CAP Greening Measures

[30] European Court of Auditors (2017) "Greening: a more complex income support scheme, not yet environmentally effective." Special Report http://publications.europa.eu/webpub/eca/special-reports/greening-21-2017/en/#B18

[31] George Monbiot (2017) "Of course farmers ear Brexit, but it could save the British countryside." Opinion, Farming, theguardian.com

[32] Only land suitable for agricultural production is considered agricultural. So forests are in principle ineligible. Agricultural areas include arable land, permanent crops and permanent grassland. Farmers must show that this land is either used for some form of agricultural activities or maintained in good agricultural condition

[33] EU Factcheck (2019) "True: "80 percent of the European money for agriculture goes to the 20 percent largest farmers" eufactcheck.eu

[34] The Guardian (2016) "The Queen, aristocrats and Saudi prince among recipients of EU farm subsidies."

Payment per farmer (€)	Share of total farmers	Total support received (€)	Share of total support
	25.0 %	531,000	1.3%
500 - 1,250	24.1 %	1,273,432,000	3.1 %
1,250 - 5,000	26.9 %	4,236,238,000	10.9%
> 5,000	24.0 %	35,216,169,000	84.7%

Table 1. Distribution of income support for farmers[35]

Thanks to subsidies, farmland has become increasingly attractive to financiers. These non-farming landowners can benefit from their investments in different ways, for example by renting out land while retaining the basic payment, or by incorporating the value of payments into rent charged to a tenant farmer, which makes access to land even more problematic. It's not surprising that after prices per hectare were introduced, land became significantly more expensive, and therefore out of reach for most small farmers, particularly in Western Europe where price per hectare can reach tens of thousands of euros e.g. nearly €63,000 in the Netherlands.[36]

Looking at subsidies more generally, a picture that emerges is that of many pros and cons.[37] True, they have helped stabilise farm income[38] and kept people in agriculture when food security was an acute problem for Europe. But direct payments can also create subsidy dependence and, because of influence on production decisions, the overall farm efficiency can suffer.[39] Moreover, subsidies target a small segment of rural population, usually farmers or those involved in agricultural enterprises, instead of focusing on rural places as a whole. And this is despite the fact that only a small share of labour force in rural areas is engaged in primary production. In EU-28, for example, only 13% of rural employment is in agriculture, while in EU-15 that share is lower still: 7.6%.[40] Almost all rural land-use is agricultural, but despite considerable increases in productivity, agriculture's share of gross value added (GVA) remains low. According to Eurostat data for 2010, the GVA attributed to agriculture, fisheries and forestry in rural regions was just 4.4%, with 7.1% coming from construction, 23.8% industry, 64.7% services.[41] In OECD countries, the picture is even more striking; the GVA of agriculture as a percentage of total GDP has been steadily declining and reached 2% already in 2001. At less than 10% of rural workforce, agricultural employment across OECD countries is also lower than that of the EU.[42]

In conclusion, opportunities and challenges that arise from increasing demand for food, feed, fuel and fibre ensure agriculture's place as a key enabler of the sustainable future we all want to have. But that does not mean agriculture should be the primary focus of rural development; far from it. In order to make rural areas and professions more attractive, policies must address a wide range of issues that extend

[35] https://ec.europa.eu/agriculture/sites/agriculture/files/statistics/factsheets/pdf/eu_en.pdf
[36] Financial Observer (2018) "Arable land in Europe is becoming increasingly expensive." https://financialobserver.eu/poland/arable-land-in-europe-is-becoming-increasingly-expensive/
[37] Aldona Zawojska (2018) "The Pros and Cons of the EU Common Agricultural Policy." Proceedings of the 8th International Scientific Conference Rural Development 2017. http://doi.org/10.15544/RD.2017.158
[38] Aymone Lamborelle and Samuel White (2017) "Beyond the CAP: Complementarity in EU rural development funding." www.euractiv.com
[39] Rizov M. et al (2013) "CAP Subsidies and Productivity of the EU Farms." Journal of Agricultural Economics 64(3): 537-557
[40] CAP Context Indicators 2014-2020: C.11 Structure of employment https://ec.europa.eu/agriculture/cap-indicators/context/2018_en
[41] Eurostat (2013) "Agriculture - rural development statistics." https://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:Agriculture_-_rural_development_statistics
[42] OECD (2006) "Reinventing Rural Policy." http://www.oecd.org/regional/regional-policy/37556607.pdf

beyond agriculture, from barriers of access to land and biodiversity loss to limited services, poor infrastructure and new skills requirements. Effective policies must also clearly separate targeted measures that provide income support to farmers in need from interventions that support increased farm productivity, sustainability, resilience and overall competitiveness.

The history of EU agricultural policy has many successes as well as failures and underachievements. In an attempt to prop up dairy prices, government interventions led to overproduction so eloquently captured in the proverbial milk lakes and butter mountains. By seeking to stabilise farm income, direct payments created a 'subsidies trap' which can limit incentives for productivity development. By offering payments per hectare, the policy inadvertently skewed the subsidy system toward the rich and powerful. And despite providing regulatory backing to greening measures, the latter's effect on wildlife/biodiversity has been minimal according to some evaluation studies.

We know a lot about CAP because of its prominence and history, but there are many other measures, especially at local level, that are equally important for rural development yet their effectiveness is less well understood. Without knowing how good or bad different existing interventions are, who benefits from them and in what measure, which trade-offs are involved in policy decisions, and what the consequences of (in)action may be, decision makers will find it challenging to implement new measures to make rural renaissance a reality. PoliRural was created to enable decision makers to obtain such knowledge by developing a multidisciplinary framework for strategic, future-proof rural policy making. Next chapter will define the framework's conceptual foundation in more detail.

2 PoliRural Contribution

The contours of PoliRural solution could already be gleaned from the previous sections: it is about rural development that encompasses the diversity of rural life, places and professions, about decision making that is based on evidence of how current policies are performing and what the impact of new measures might be, about sourcing policy intelligence from a wider range of sources (research participants, social media, policy documents, online forums etc.), about making rural policy processes more participatory by giving voice to the concerns of less represented groups e.g. women, migrants, young people, new entrants. The strategic, forward-looking policy framework is developed to provide a well-rounded understanding of change, of how it is happening in the world, how it will play out in the 12 study areas,[43] and how local/regional policy decisions can leverage it for the benefit of grassroot communities. It is about understanding not predicting, and so should not be confused with forecasting. It provides a basis for exploring alternative futures based on scenarios using a bottom-up approach that supports high levels of stakeholder engagement.

Foresight has been used in many industries. In public policy, the tool can help decision makers evaluate current policy priorities and potential new policy options. Policy makers can use foresight to identify future directions, emerging technologies, new societal demands and challenges. Also, using foresight, they can better anticipate future developments, disruptive events, risks and opportunities.

European Commission has used foresight for many years and now aims to mainstream it in different fields of policy making, from rural development to healthcare. Pivot towards foresight is expected to foster participatory, forward-looking governance within the block, serving as an example for other polities.

For the reasons outlined above, PoliRural's policy framework is steeply grounded in foresight. For us, foresight is powerful combination of strategic anticipatory intelligence, sense-making, visioning, scenario development, systems modelling all coupled with deep stakeholder engagement that is not limited to the expert community. When foresight activity is implemented in a truly participatory way, the result becomes a process of collective learning among participants, leading to a stronger commitment to final results. PoliRural will achieve that by creating a space for problem identification, knowledge discovery and solution development in 11 European countries plus Israel, bringing together policy makers, researchers, innovators, rural community organisations and their representatives, as well as recent or potential new entrants to agriculture.

Foresight occupies two-thirds of the overall framework, which can be visualised as a three-stage process on the present-future-present continuum. The project starts with an investigation of rural situation, or rurality (**present**), in the selected regions by identifying current needs, existing policy measures and stakeholder experiences with these measures (evaluation). It then proceeds to the second foresight stage, where the main goal is to understand how rural situations will develop in the **future** under different scenarios. PoliRural does not end here because its ambition is to test potential interventions based on desired futures while the project is still live, so we go back to the **present** to help regional stakeholders co-design effective place-based and citizen-centric missions for their areas.

[43] Flanders (BE), Monaghan (IE), Galicia (ES), Vidzeme (LV), Mazowieckie (PL), Central Bohemia (CZ), Nitra (SK), Hame (FI), Sterea Ellada (GR), Apulia (IT), Gevgelija-Strumica (FYROM), Galilee (IL)

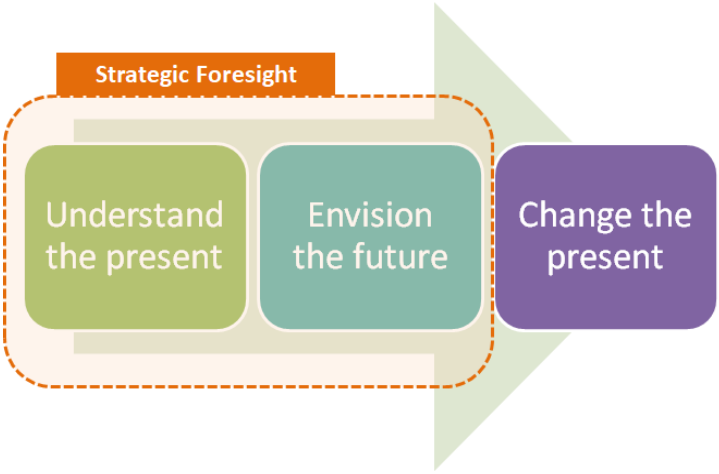


Figure 2. Foresight place in the high-level framework

Stage 1: Understanding the present

PoliRural uses text mining to obtain policy intelligence that may be hard to get using traditional data collection tools, therefore enhancing the validity of evaluation results with the views, thoughts and opinions expressed by a wide range of stakeholders on the internet.

Each of the framework components includes a number of specific tasks. The ones belonging to the **current situation** culminate in the evaluation exercise whose purpose is to capture the perceived effectiveness of existing rural policies/measures. The term 'perceived' implies that rather than focusing on economic data (e.g. expenditure on income support), the evaluation will assess current interventions based on rural stakeholders' experience with them. PoliRural's innovation is the way in which evaluation data will be collected. Much information that policymakers need to make informed decisions is hidden in large amounts of textual data. Reportedly, only about 20% of the data available online is numerical, with the rest stored as text.[44] So structured and unstructured texts remain the largest, readily available source of information. But the sheer volume of this data makes it practically impossible for any public policy team to perform a meaningful analysis based on human effort alone. All policy fields, from agriculture to transport, are affected by the so-called data tsunami. Fortunately, text mining offers timely access to policy intelligence which would otherwise be practically impossible to extract using conventional tools like interviews and questionnaires. Text mining helps process vast amounts of information from structured and unstructured sources, enabling the discovery of new knowledge at a low cost. By saving time on data collection and information processing, decision makers can focus on more important tasks, for example service delivery. Arguably, the greatest benefit of text mining, when viewed through the prism of participatory foresight,[45] is that it enhances policy deliberation among citizens. Indeed, by targeting online content found on forums or social media, text mining increases the chances of citizens' voices being heard by decision makers.[46,47]

[44] Jessika Giraldi (2017) "Text Mining for assessing and monitoring environmental risks." Concept paper

[45] Kayser, V., Blind, K., (2017) "Extending the knowledge base of foresight: The contribution of text mining." Technological Forecasting & Social
Change 116, pp. 208–215

[46] Chun et al (2010) "Government 2.0: Making connections between citizens, data & government." Information Polity 15(1), pp. 1-9

[47] Ahn & Bretschneider (2011) "Politics of E-Government: E-Government and the Political Control of Bureaucracy." Public Administration Review 71(3), pp. 414-424

The tool to be built by PoliRural – Semantic Explore (Semex) will be an open-source web application based on the cutting edge text mining technology capable of extracting information from unstructured data and displaying the results in various forms e.g. bar charts, tree diagrams. The tool will be based on NLP (Natural Language Processing) functions including Topic Extraction, Named Entity Recognition and Sentiment Analysis. All these tasks require more basic NLP tasks such as Word and Sentence Tokenization, Dependency Parsing, Part of Speech Tagging, Lemmatization, Semantic Comparisons et cetera. In general, NLP breaks down language into shorter, more basic pieces called tokens, and attempts to improve the understanding of relationships between them through clear graphical representations. For more information on Semex, readers are invited to check text mining reports stored in the project's document library.[48]

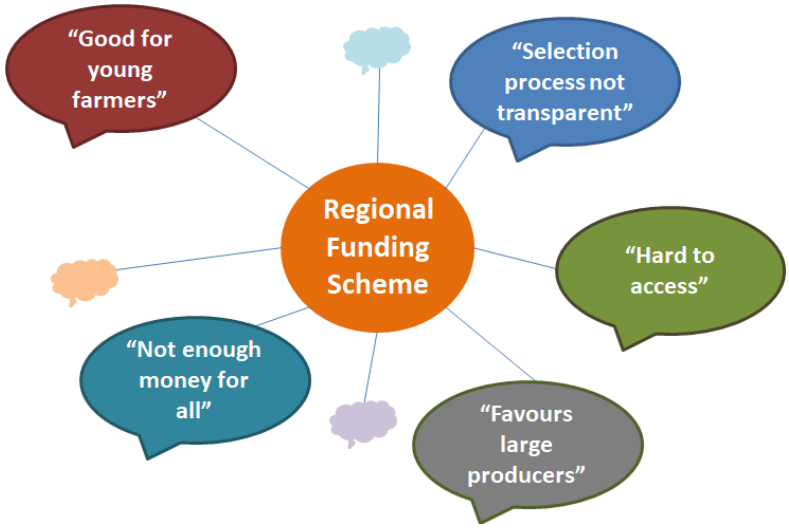


Figure 3. Hypothetical text mining output

In the context of policy evaluation, text mining can be used alongside more traditional approaches, such as surveys or interviews. Text mining can add value to the process in a number of ways. For instance, it can help

- Identify additional issues/benefits linked to a specific policy (i.e. things that people talk about on the internet) that weren't picked up by the survey, and thus paint a more complete picture of a policy under investigation
- Confirm/validate survey findings by revealing broadly positive or negative sentiment toward a policy
- Cast the same policy in a different light compared to survey, and therefore reach a more balanced conclusion about its performance

In the end, integrated evaluation results will show how well or how badly selected rural policies are performing, allowing decision makers to adapt their next steps accordingly. They may choose to update existing interventions (assuming it's in their power to do so) or introduce new, improved measures that better address rural needs. But before any steps can be taken, their potential impacts on rural places and people must be modelled, considering major external factors as well as key drivers of change. That is the task of the next foresight stage - **future outlook**.

Stage 2: Envisioning the future

[48] https://polirural.eu/resources/reports/

PoliRural blends quantitative and qualitative foresight approaches with advanced online technologies to create a powerful learning tool for rural stakeholders, allowing them to have a meaningful conversation about rural systems, including how and why the latter will change over time, what drivers will be most influential, and how to ensure that new policies fully address the needs and challenges of tomorrow (future-proof).

Foresight can be defined or described in many ways, but it is essentially a change-management process. It differentiates itself from other strategy processes by its emphasis on stakeholder engagement, the role of collective learning and the co-design of a desired future. Foresight is about understanding change, how it happens and what causes change. It is about designing the future based on a desired outcome using typical management tools such as vision, roadmap, implementation plan. Foresight requires those taking part to develop an about understanding of the change they want to see happen and how to make it happen. For example change that will add up to greater prosperity for a region as a whole. It requires those involved to understand how change happens, trends must be accepted and what trends can be broken or changed. The process must engage adequately with the agents of change e.g. CEOs, policy makers, innovators, start-ups. It must demonstrate the feasibility of the desired change and the existence of broad-based support for such change. Ultimately, foresight is a collective learning process. It must create a space and time for changing minds concerning issues that may have seemed irrelevant or undesirable at the outset, but which gain acceptance as the process moves from an early exploratory phase to a final phase in which concrete recommendations are laid down.

In futures research, a long-standing divide remains in place between strictly quantitative and more qualitative approaches.[49] PoliRural strongly believes it is high time to break the divide between the two schools. For one, the integrated approach can greatly enhance the robustness of system models, especially if the aim is to thoroughly explore a web of complex interactions within different rural contexts. In PoliRural, quantitative and qualitative methods are integrated in a complimentary fashion. The two reinforce each other to provide practical, evidence-based insights for better rural policy making. Specifically, the engagement of actors from different sectors (participatory approach) increases the amount of knowledge on local needs and priorities. Stakeholder knowledge and experience are used creatively to develop scenarios and possible future developments (planning approach). The impact of these developments on rural attractiveness of each region is modelled using real-world statistical data and dynamic rules governing the relationships between system variables (analytical approach).

Due to its combined value, the PoliRural solution will greatly improve decision-making under uncertainty which increasingly characterises today's politics (think Brexit or USA's withdrawal from the Paris agreement on climate change). To be truly useful for strategic planning, future outlook will be carried out in a transparent, participatory way. It will be developed for rural areas in close cooperation with rural experts and stakeholders. Government agencies, grassroot community organisations, academia, research institutes, rural residents and new entrants all will be able to take part in PoliRural foresight activities. The collaborative process will challenge assumptions, remove prejudices, stimulate debate and improve communication, ultimately helping everyone involved reach a consensus. This, in turn, would critically inform the formulation of new policies and priorities that can make rural areas more resilient, sustainable and competitive.

Any attempt to mirror rural systems in their entirety must consider a wide range of influencing factors and interactions between them. The quantitative part of PoliRural foresight will ensure that the underlying model accommodates a wide range of capitals, policies, demographic, socio-economic and governance mechanisms that might influence the territorial development in different rural and political contexts. The base model will serve as the conceptual framework for the construction of different regional, more

[49] Emilio Fontela (2000) "Bridging the gap between scenarios and models." Foresight 2(1), pp. 10-14

simplified models. The base model will comprise several interrelated modules (a preliminary list of potentially relevant datasets for each module is provided in Annex B. Datasets for System Dynamics Modelling, subject to the final level of detail of the model).

- The **population module** is based on the aging chain and considers migration to and from the different age cohorts into which the chain is divided. Depending on data availability, either fertility rate or population growth rate will be used as a source. In the initial base model, attractiveness is considered as having an effect on in/out migration. The precise composition of this variable will be defined in accordance with regional specificities
- The **education module** has a structure of a triple aging chain. Currently, the main output is conceived to be workforce specialisation, which in turn affects the economy module. The model is designed so that different education programs and policies can be easily plugged in and tested
- The **land use module** includes forest land, agricultural land, degraded land, settlements and various other activities. Land is the primary resource or capital affecting the supply of agricultural commodities. We assume a linear relationship between each production system and each land type required
- The **economy module** is based on a simplified version of the Cobb-Douglas production function. In an economic system, production and consumption move toward equilibrium at a rate which depends on the difference between demand and supply. Generally, the economy is not in equilibrium. Because of unexpected changes in demand, there are unplanned changes in inventories of sector commodities
- The **agriculture module** has at its base the production system and essentially considers the sector's importance for a given rural area. Each production system has different productivity ratios and exerts different impacts on the rest of the economy. Production systems are highly dependent on local practices and as such differ in social impact, relation with the rest of the economy, profitability and environmental impact, among other things
- The **quality of life and infrastructures module** considers access to basic services (education, health etc.) and infrastructures such as roads. The infrastructure's stock may be the number of people living within five minutes of a motorway, while the quality of life is defined as a function of access to services, the social and the natural capital and the per capita regional gross domestic product. The quality of life also defines area's attractiveness
- The **policies module** is introduced to capture the effects of old and new policies on the different elements within a rural system. Examples include regional budgets and the proportion of public money allocated to different programs. As a consequence of budget allocation, other modules are affected by changes in the policies module

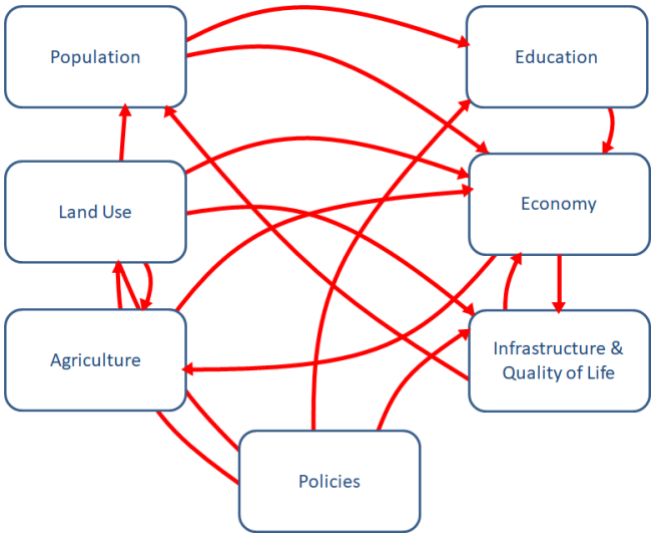


Figure 4. PoliRural dynamic system model

The model's structure is qualitative to an extent that it reflects local reality, its inherent characteristics and specificities, whereas statistical input fed into the model adds to its quantitative side. For the model to work as intended, deep domain expertise in system dynamics must interface with grassroot knowledge possessed by regional actors. This means that, on a technical level, the model is built by project experts with a background in SDM. But key inputs, including the rules governing the dynamics between the different model components, will come from the conversation with rural stakeholders engaged in a foresight pilot. The model views the present state of affairs as a product of interaction between different agents and subsystems and tests the impact of proposed policies on these interactions over time (until 2040) under different scenarios. Once the model's outputs have been validated, PoliRural will set out recommendations for every study area, explaining why a particular course of action is necessary and what it will help achieve. This task will herald the start of the final stage of PoliRural framework – **mission-oriented transformation**.

Stage 3: Changing the present to prepare for the future

PoliRural sets bold yet pragmatic missions to trigger widespread transformation of rural areas, leaving them better prepared to face the grand challenges in the decades to come.

Policy makers are constantly challenged to deliver growth that is smart, inclusive and sustainable. What's more, they are trying to achieve this in a context of major social and environmental challenges (e.g. population ageing, climate change, environmental degradation, rising demand for consumables), which further induces a sense of urgency. Mission oriented innovation policy offers a means to articulate ambitious, strategic decisions that can help address these grand challenges. Missions are developed to tackle concrete problems. They require different stakeholders to come together to usher in system-wider transformation across multiple sectors. Perhaps some of the best known examples are the Apollo mission and Germany's Energiewende policy, among many others.[50] In fact, a recent study[51] identified 137 ongoing initiatives globally that fit the framework of mission-oriented innovation - that is, there is a set of clearly defined targets to be achieved over a specific timeframe; initiatives mobilise significant levels of public and private investment; they are interdisciplinary, explorative and ground-breaking in nature; successful implementation is ensured through a mix of policy instruments and multi-stakeholder governance. Although no initiatives specific to rural areas were found, many of them cover related themes such as climate change, food, bio-economy, transport.

Being complex and multifaceted, rural challenges require a coordinated and targeted policy response. Existing measures that fail to deliver desired results should be replaced with a new approach, one that can actively contribute to rural change in a way that is favoured and shaped by rural communities. Mission-oriented policy, one of the central concepts of Horizon Europe,[52] offers such an approach. Policymakers and stakeholders in the 12 study areas will receive the support of wider PoliRural consortium to experiment with mission concepts and elaborate mission modalities geared towards their specific rural challenges/context. Essentially, pilots will attempt to change the present in order to prepare for the future that rural communities want and need. While foresight results will provide a suit of options from which the most desired future(s) will be selected, it is the role of mission-oriented innovation to articulate pathways and lay the foundation for the planned change. The duration of mission-oriented initiatives ranges between 3-15 years. So, although mission-oriented innovation is the final stage of PoliRural framework, its implementation will continue well after the project has officially ended.

[50] https://www.cleanenergywire.org/easyguide

[51] Türk Andreas et al. (2018) "Mission-oriented research and innovation. Inventory and characterisation of initiatives." https://cris.vtt.fi/en/publications/mission-oriented-research-and-innovation-inventory-and-characteri

[52] Horizon Europe - the next research and innovation framework programme https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme_en

To sum up, PoliRural's response to rural challenges is an interdisciplinary, multi-method framework that will be implemented and tested in three stages. In the 'current situation,' the aim is to i) get a well-rounded knowledge of what makes rural places and professions attractive for existing populations and recent or potential newcomers, ii) understand how these needs are addressed by current policies and iii) capture the perceived effectiveness of these measures using a hybrid evaluation approach that leverages big data through text mining. Armed with evaluation results, PoliRural pilots can now proceed to the second stage - future outlook - where a mix of quantitative and qualitative techniques are used to model the development trajectory of study regions under different scenarios until 2040. Strong participatory foundation ensures that all inputs, assumptions and variables are grounded in local realities of each pilot site. Moreover, all modelling outputs will be validated by end users before being included in a set of policy recommendations. The latter will highlight desired futures that best serve the interests of rural communities. To achieve these futures, PoliRural pilots will develop local action plans that meet the requirements of mission-oriented innovation, which is the third and final stage of the framework. A team of in-house experts with experience in mission-oriented R&I will support the pilots on their journey to deliver change for their regions. This chapter provided a general overview of the main framework elements. The aim of next one is to explain how they will be executed in the coming months.

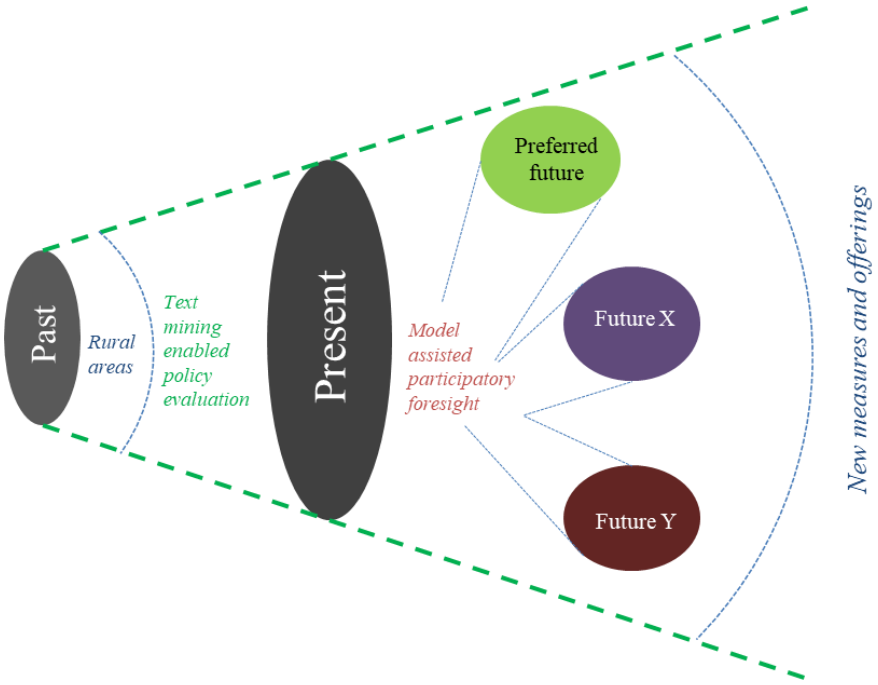


Figure 5. PoliRural master framework[53]

[53] Adapted based on the original model suggested by Hines & Bishop (2013) "Framework foresight: Exploring futures the Houston way." Futures 51, pp. 31-49

3 Overall Process

PoliRural is a complex multi-disciplinary project with many concepts and methods entangled in the framework: system dynamics, text mining, foresight, survey research, (policy) evaluation, co-creation, design thinking, mission-oriented innovation. If the project is to reach its ambitious objective - i.e. make rural areas and professions more attractive for existing populations and recent or potential newcomers - all elements must be executed in an orderly, systematic fashion. To that end, a thorough methodology which ties everything into one coherent framework has been developed. The adopted approach ensures strong cross-referencing between tasks, preventing the balkanisation of work streams whereby outputs serve no or little purpose beyond their delivery date.

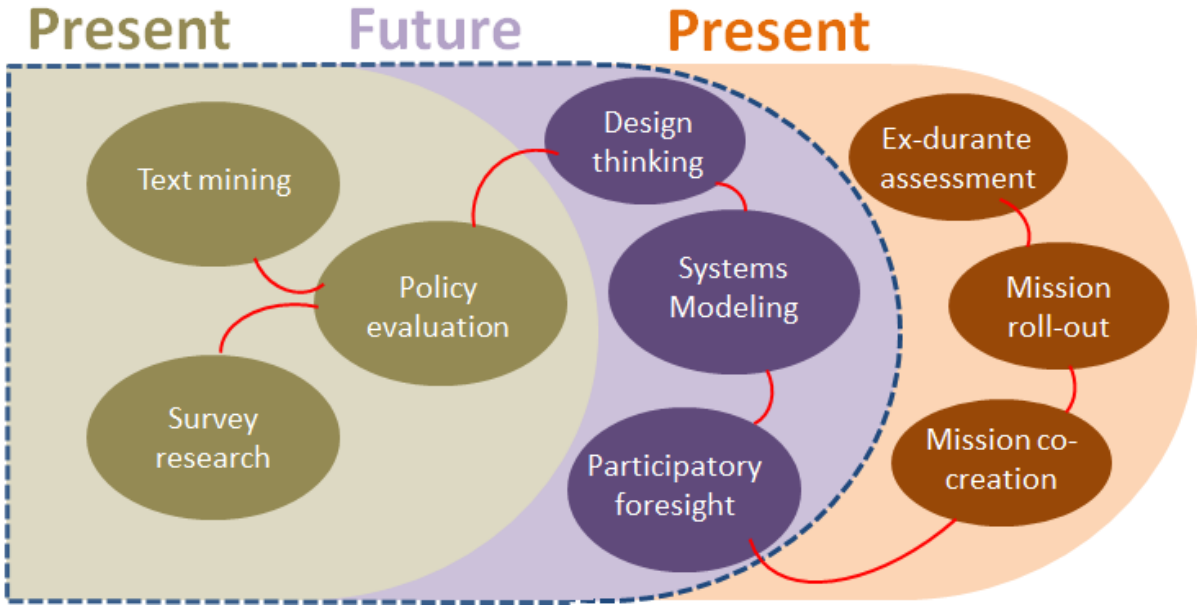


Figure 6. PoliRural conceptual canvas

A mapping of PoliRural conceptual and methodological elements onto the master framework provides a birds-eye view of the main activities to be undertaken in each of the three pilot stages. As mentioned before, the main goal of the first stage (current situation) is to gain an understanding of how well or badly existing rural interventions are performing. This will be achieved by combining traditional survey research with advanced text mining techniques that so far have found little application in rural policy making. Evaluation results will highlight areas for improvement on the basis of which improved measures can be co-developed. That is the aim of design thinking task which marks the start of stage two i.e. future outlook. The following tasks - systems modelling and participatory foresight - proceed iteratively to deliver insights into the evolution of 12 study regions under the proposed policies, different scenarios and drivers of change. After that, pilots will enter the third and final stage of the project that is mission-oriented innovation. The aim here is to use modelling outcomes to develop region-specific missions that are bold and ambitious but not to the point where they become near impossible to execute. In keeping with the spirit of mission-oriented approach, local action plans will be co-created by pilots in close consultation with rural stakeholders. As mission implementation can take a long time (in some cases up to 15 years), it is highly unlikely that mission outcomes will fully manifest themselves during the project's life time. For that reason, only ex-ante and ex-durante assessments are envisaged at the third stage, with the final measurement to be undertaken as soon as the missions end.

S1: Current Situation	S2: Future Outlook	S3: Mission Oriented Innovation
1.1 Needs gathering M7-9	2.1 Exploration M19-28	3.1 Mission co-design M29-31
1.2 Policy matching M10-12	2.2 Modelling M19-28	3.2 Mission roll-out M32-36
1.3 Policy evaluation M13-18	2.3 Validation M19-28	3.3 Ex-ante/durante evaluation M29-35

Table 2. PoliRural pilot stage and the underlying work streams

Current situation

1.1 Needs gathering

In this work stream, pilots seek to understand what makes rural areas and professions attractive or unattractive, for established populations and recent or potential newcomers. Key research questions to be addressed here are what factors would make one want to stay, leave or migrate to a rural area, to take up rural employment, or become an urban farmer, for example? The analysis will be based on recognised local challenges, as well as on the exploration of needs and challenges emerging elsewhere. The search to identify issues and needs should capture well-known or recognised needs that are already mentioned in policy documents and local development discourse, but it should anticipate future local needs based on needs that are known and recognised at a global level or in regions across Europe and beyond. This requires search and research relating to local and international sources of information, insight, opinion and social commentary. There is great scope for the application of text mining techniques to this kind of task, and for that reason stakeholder survey will be complemented with insights from big data analysis.

Exploration of issues and challenges would not be complete without an understanding of drivers of change. This can be achieved using a structured brainstorming approach supported by reading, research and inputs from local experts/stakeholders. To improve the exploration of drivers of change and how these will impact the region in question, PoliRural will focus its attention on concepts like

- Mega-trends: An overarching development that affects most areas globally
- Macro-trends: A development that affects a particular geographic world region or country
- Micro-trends: A development limited to a particular region within a country
- Nano-trends: A development that manifests itself locally
- Weak signals: Weak signals refer to events as opposed to trends. The events are too few and it is too early to say they form a trend, but they look interesting and if they were to become a they might have a significant impact, so they might be worth worth following or keeping an eye on.
- Fads: An activity that is popular for a brief period of time
- Trend breaks: Essentially a break or change in a trend
- Inflection points: An event that can be considered a turning point after which a dramatic change, with either positive or negative results, is expected to happen
- Game changers are really about the underlying dynamics, rather than the trend itself. Things that were corrrelated or coupled are no longer connected in this way. The point is that something fundamental has changed "the rules of the game" and new players suddenly take to the stage. Things will be done differently and this will have important ramifications throughout society and the economy

While these phenomena can be thought of as ‘drivers of change’ or ‘forces for change,’ they also “drive” change in something e.g. attractiveness of a region, or they can be the result of other forces bearing on society and the economy. For example, beautiful landscapes, a high number of retiring farmers and high urban rents could all be seen as forces driving a rise in the “attractiveness of a rural region.” The rise in attractiveness can itself be seen as a driver of increased rural rents and a flow of young people from the city to the countryside. Probably a better term would be to call them all “factors” of change and see them as “driving” or “driven” depending on the context.

This workstream will conclude with a reclustering of pilots based on common needs rather than geography. The practice of grouping pilots according to similarities other than physical location will be repeated in future stages, not least to make cross-fertilisation of knowledge more relevant for the importing region.

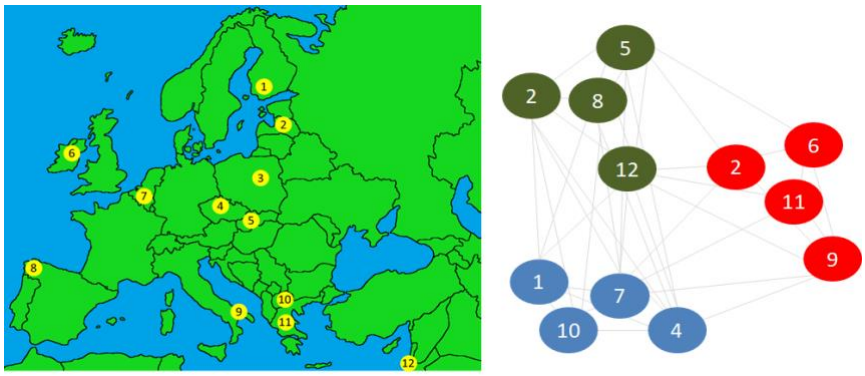


Figure 7. Pilot clustering: geography v future positions

1.2 Policy matching

In the second step, pilots match the identified needs against current policies and public or private strategies present in their region. The aim is to understand how the needs are being addressed and whether there is a corresponding measure for every need or barrier. PoliRural is particularly keen to know whether/how barriers specific to new entrants are addressed.

The matching process takes place in close collaboration with regional policy actors, who will be briefed on rural needs and their drivers during face-to-face meetings with the research team. Policy makers will be able to comment on the identified needs/barriers and alert the team to new ones that may have been missed in the previous task. Policy makers' main role, however, is to provide information on existing policy measures, first and foremost in the public sector. To identify private or third sector initiatives, pilots will crowdsource information from their stakeholder panels, and will undertake additional desk work if necessary. The matching task will culminate in the production of needs-policies canvases for each of the 12 study areas.

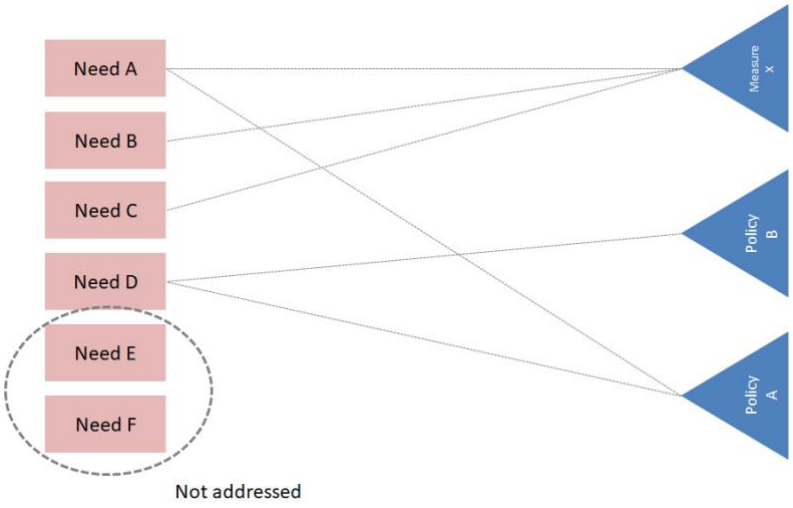


Figure 8. Policy matching logic

1.3 Policy evaluation

Given that policy matching is likely to yield a large number of measures (public and private, regional and local, national and EU-funded), the first question to address is which ones should be included for analysis and which ones ought to be left out. The following non-exhaustive list of considerations shall inform the selection process

- *Cross border comparison:* if the aim is to conduct a cross border comparison, it goes without saying that the same policy should be implemented in multiple countries at the time of analysis. This will be possible only for EU-level interventions e.g. CAP, LEADER. Evaluation team should bear in mind that while the majority of study areas are based in EU countries, two pilots are not in the EU (FYROM, Israel)
- *Target audience:* existing measures cater to many different stakeholders. For instance, young farmers get additional support in the form of 25% bonus on direct payments. New entrants are supported by local authorities through low cost rents, farming incubators, special grants and housing schemes. SMEs receive a rural rate relief if they operate in an area with low population density. Of course, some measures cater to more than one user group e.g. junior-senior partnerships. If selection is based on target audience, the range of possible options becomes extremely wide, starting at local-level and extending all the way to the supranational
- *Thematic focus:* as well as targeting different audiences, rural measures always pursue specific objectives e.g. protect the environment, stabilise farm income, improve public services, stem the outflow of people, boost economic growth, foster digital innovation. A single policy can have more than one objective, and many actors provide investment in these areas e.g. EU (through CAP, Structural Funds), national governments, private sector
- *Initiator:* in many countries, third sector organisations are very active locally. They enhance farmers' market power, articulate political interests of rural populations, promote the development of rural diversification, and improve the well-being of rural dwellers by other means. So when selecting policies for analysis, it is important to have a balanced policy mix where different actors-cum-initiators are represented, not only government organisations

The chosen measures will be evaluated against a set of attributes e.g. goal achievement, equity, openness, cost effectiveness, acceptability, coherence, stakeholder participation, extent to which they are future-proof. To draw accurate conclusions, researchers will first need to obtain/understand the intervention logic of a chosen measure. Intervention logic links a problem that needs to be tackled with the underlying drivers and available instruments to effect change. It sets out the chain of expected effects between what was implemented and what is to be achieved. These desired effects can be envisaged as links in a chain i.e. expected outputs → specific results → impacts on policy objectives. Each link, in turn, has a set of indicators that can be used to assess performance. A representative sample will then be constructed to produce generalisable findings. This concerns both human participants and secondary sources because evaluation data will be obtained in many ways: through social research; by studying statistical databases, official reports, etc.; by carrying out extensive desk research assisted by text mining i.e. big data analysis.

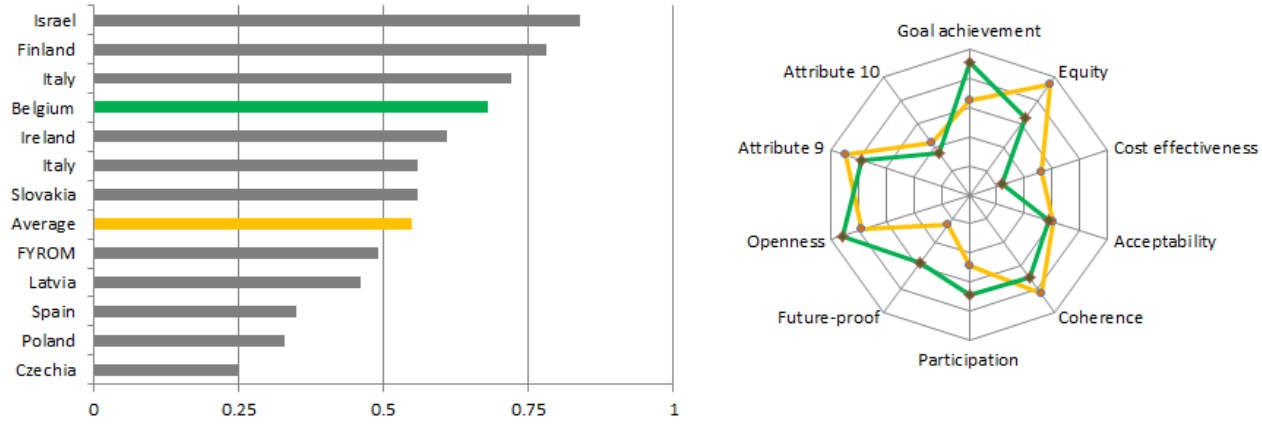


Figure 9. Hypothetical results of cross border evaluation

Future outlook

2.1 Exploration

Exploration sets in motion a series of activities (design thinking workshops, deep dives, participatory scenario planning and system modelling) that culminate in the production of a roadmap on the basis of which an ensemble of bold yet pragmatic missions required to realise the vision for the region in 2040 can be developed. These will be supported by both qualitative and quantitative goals, and a plan for monitoring progress based on a suitable set of indicators.

This phase builds upon the vision and its elaboration in terms of the normative or success scenarios, qualifying vignettes intended to describe what successful policy outcomes will look like to different stakeholder groups in 2040. Taken together these documents provide the basis on which to evaluate the suitability or relevance of measures subsequently taken in response to the shared vision and the "call to action" it implies.

A successful outcome of the work done in this phase will depend on the formal status eventually accorded to the shared vision and its supporting documentation. These will play a decisive role in the design and implementation of subsequent recommendations if and when the "vision" is endorsed by the main beneficiaries and organisations that represent them, and adopted at appropriate levels by actors in local government.

Without a formal endorsement, it is not very credible to say that the vision is shared. Given the way in which associations and similar bodies operate, in particular their need to consult with members, a formal endorsement may not be forthcoming until after the work of stage two has finished. The adoption of the vision cannot reasonably occur until after the endorsement, and even then, may not arise until a credible, actionable set of recommendations has emerged. This will be the ultimate goal of Future Outlook.

From a practical point of view, it will be hard to achieve either endorsement or adoption unless the corresponding stakeholders have been involved in the overall process from an early stage. This is needed to give them time to learn about new and emerging issues or policy options, which may diverge from "business as usual" and require time as well as internal reflection to reconcile with their overall mission, immediate objectives and possibilities to act. Good communication with the core team driving the foresight initiative is needed, as well as adequate time allowing them to i) understand the process and what it aims to achieve and ii) receive the outputs in a timely fashion, respecting the constraints of relevant policy and budgetary processes.

2.2 Modelling

The subject of change arises in two ways in a foresight action. The first is to understand how the world is changing. This uses the language of mega-trends, game changers etc. It enables one to understand how the world is changing, in particular the external forces that are large and inevitable and over which we have little or no control. The second concerns the dynamics of how we can make change happen. This concerns policies, laws, programs and other levers that will be the subject of specific recommendations. In principle, system dynamics can help foresight participants understand these two types of change and explore the dynamics of the impact of programs and policies with a view to supporting the creation of recommendations intended to help achieve a desirable future. The identification of trends and understanding the dynamics of change based on the analysis of drivers and enablers is important preparation for scenario-based activities that allow participants to play what-if games for example by asking

- "This trend is inevitable, how will it impact our region?"
- "That trend is bad, what can we do to reverse it or mitigate it effects?"
- "That trend is good, how can we benefit from it?"

Total time devoted to the dynamic system model development, testing, analysis and validation spans just over two years. In the early stages, pilot partners will meet with subject matter experts online and face-to-face to get accustomed to the principles of systems thinking. Regular, intense contact is needed to create a solution that satisfies all requirements yet is not so complicated that it becomes difficult to comprehend. The model will be built from theories, values and ideas proposed by dozens of people from different disciplinary, cultural, geographic and linguistic backgrounds. These differences need to be accommodated into the system dynamics framework along with quantitative and qualitative inputs coming from other work streams e.g. needs gathering, policy evaluation, scenario building.

In parallel, project partners will follow a pragmatic approach to systems development and modelling, one that minimises development effort, optimises the quality of output and allows for a flexible, long-term exploitation of project results. Open Source (OS) frameworks, despite offering unrivalled levels of flexibility and customisation, lack user-friendly authoring tools — and where they do exist, they are less feature-rich than their proprietary counterparts. Authoring the models using OS tools would therefore inflate the amount of technical development required, shifting the focus of the project away from the main objective. So Stella software was chosen as an authoring tool for several reasons

- It is a powerful yet relatively user-friendly modelling system, which is needed if the model is to be useful for policy makers. Stella's interactive front-end and ability to visualise conceptual links and model results as long-term trends enhance people's analytical thinking of complex interactions within a simulation environment
- It is ideal when one of the goals is to encourage systems thinking among stakeholders with little or no system dynamics background
- It is designed to help multidisciplinary teams work through complex problems where a large number of feedback loops, temporal lags and processes dominate It can accommodate systems that include qualitative and difficult-to-quantify data

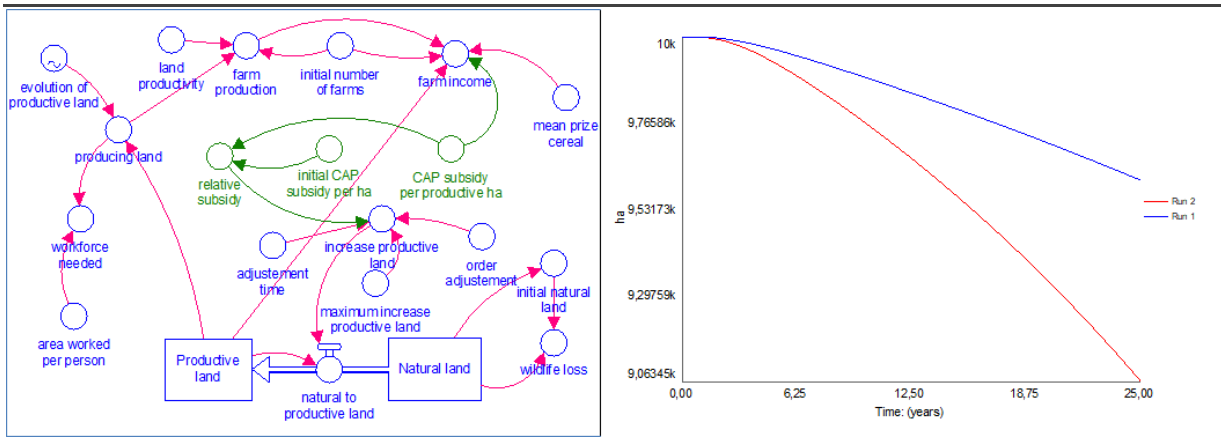


Figure 10. PoliRural test module and simulation implemented in Stella

2.3 Validation

In systems modelling, validation can apply to model's structure, inputs and outputs. The structure and inputs will have been validated by this point during the calibration process which involved regular interaction between subject matter experts and regional stakeholders. So the objective at this stage is to validate model's outputs. Typically, dynamic simulation models are output validated by comparing model's results with past trends for selected variables.[54] However, when dealing with multi-disciplinary models such as PoliRural's, output validation is difficult and rarely achieved.[55] The question of validation is then reduced to whether the model is credible or adequate for intended use.[56] In PoliRural, this will be measured by asking regional stakeholders to evaluate model's outputs using the following criteria. "The conceptual model, the interactive tool and simulation results…"

- Help policy actors make informed decisions
- Provide actionable insights
- Capture the extent of impact by external drivers
- Identify potential threats and opportunities
- Capture regional differences and specificities
- Support discussion and dialogue among participants
- Help stakeholders to better mitigate future risks
- Demonstrate the complexity of operating environment

Once the model's outputs have been validated, PoliRural will set out recommendations for every study area, explaining why a particular course of action is necessary and what it will help achieve. These will be presented at a high-profile workshop lead by government actors and key beneficiary organisations. The general idea of the meeting is to demonstrate the quality of the work done and of the close collaboration achieved (thanks to the foresight process) between the actors and the beneficiaries. If the results are of high quality, political personalities will be happy to show up and associate themselves with the process. Ideally, this will involve the local or national press and provide occasion for announcing the publication of a report for public consumption. This report (D1.10) will be quite different in nature from the policy documents which constitute the real deliverables of the process.

[54] Bennet et al. (2013) "Characterising performance of environmental models." Environmental Modelling & Software. Vol. 40, pp. 1-20

[55] Doole & Pannell (2012) "A process for the development and application of simulation models in applied economic." Agricultural and Resource Economics. Vol. 57(1), pp. 79-103

[56] Aumann (2011) "Constructing model credibility in the context of policy appraisal." Environmental Modelling & Software. Vol. 26(3), pp. 258-265

Mission oriented innovation

3.1 Mission co-design

The task heralds the start of an implementation phase during which regional authorities and community organisations with the mandate and wherewithal to act, together with regional stakeholders and citizens co-design, will develop and introduce tailored measures to boost rural development and attractiveness. A team of PoliRural experts with diverse and complementary profiles, including mission-oriented policy experts, will assist in selecting, designing and implementing mission-oriented policy approaches for rural change. Pilots can design their own missions while building on existing good practices and will actively exchange their mission perspectives and co-designs with other pilots (cross-border learning). Whereas missions are bold, inspirational and ambitious by nature, the policy instruments that support mission-oriented policy can be diverse, ranging from regulatory and support measures to research and innovation actions geared towards workable solutions. What's important is the goodness of fit between the solution and the context in which it will be applied.

3.2 Mission roll-out

Missions can run for many years and even decades. As such, they require strategic thinking to deliver long lasting change. Using foresight results as a starting point, policymakers and other stakeholders in the 12 study regions, with the support of PoliRural innovation experts, will elaborate mission modalities geared towards their specific context. They will apply mission-oriented framework to translate roadmap recommendations into actionable steps needed to achieve the 2040 vision. This will require establishing an appropriate policy mix, relevant governance structure and a strategy for continuous monitoring of results. The accompanying dissemination of the selected missions will ensure that all the 'whats' and 'whys' are well understood and embraced by all.

3.3 Ex-ante/durante evaluation

The chosen method for this task is ex ante/durante assessment. It means that pilots will collect data twice – before the start of their interventions (ex ante) and a few months later (ex durante) – using the same questions. As interventions will last at least several years, the full scale of their benefits may not manifest itself until well after the funding period ends. Still, the difference between ex ante and ex durante measurements will be calculated from the collected data. The difference represents change that may be attributed to PoliRural, while correcting for other changes in the economic and societal context.

4 Conclusion & Next Steps

Previous chapter showed how PoliRural pilots will apply the strategic policy framework to effect change in their regions. Much of the work required in the early stages is exploratory in nature. It can be described as research into rural needs/challenges, their change over time as well as drivers of change. Knowledge about past, present and future needs will be juxtaposed with existing measures to identify gaps in service delivery, as well as to determine whether current policy landscape is future-proof. The more emerging needs are left unaddressed, the less future-proof the policy landscape. A selection of measures will be further analysed to gain an understanding of their effectiveness, particularly as perceived by rural stakeholders. Both exercises - needs gathering and policy mapping - will leverage text mining to augment survey results with big data insights.

One of the features of PoliRural foresight is that it starts out being open and exploratory in nature, looking at many possibilities. The process suspends judgement on issues until later; the aim being to help people expand their ideas about the world and how it works, or could work at regional level, often based on examples from elsewhere. For that reason, PoliRural will cluster and recluster its pilots several times during the project based on similarities other than geographic location. This cross-border learning processes can be conceptualised as follows. “Our region is here today. The other regions were in a similar situation 10 years ago. Let’s see what happened to them using time series data, case studies, research findings and other sources of information. Let’s explore the factors behind their evolution, the decisions they made, the policies they tried to implement.”

If text mining can help identify (hidden) perceptions, grievances and any significant parameters of change, for example those related to population dynamics, value creation, employment, cost of living, quality of life, system dynamic modelling can help people understand the ways in which system components interact and evolve over time, how they can be manipulated by policy intervention and community action. The idea is not to make predictions but to help people involved in the foresight exercise gain a deeper understanding of how the world works, what can happen and how they can influence the future. Stakeholder knowledge will remain a crucial source of information throughout system dynamic model development, analysis and validation.

Foresight concludes with recommendations in the form of shared vision (one per pilot) and a corresponding roadmap. The latter is used to construct mission-oriented R&I activities that, in the long run, will enable pilots to reach the envisaged future. In other words, regional stakeholders will attempt to change their present situation in order to prepare for the future, one that their communities want and need. Since missions take years to implement, their impacts, or lack thereof, will become evident only when the project has already ended. PoliRural will collect baseline data at the start of the process to enable before/after comparison as soon as missions come to a close.

Having discussed the main concepts and methods at length, this deliverable now turns to tasks that require immediate attention of pilot partners and those who will support them e.g. foresight, text mining, evaluation and other experts. The time horizon of next steps is the first 12 months of the project.

Identify regional stakeholders

The KPI target for the number of stakeholders to be engaged is 456. These stakeholders are defined as regional panel members, which means they must be associated with the project one way or another e.g. by registering on the Innovation Hub, signing the consent form. The target is further divided into subcategories as shown below. As there are 12 pilots, each regional panel should have at least 3 policy makers, 5 experts, 15 male farmers or rural dwellers, 5 female farmers or rural dwellers, 5 male new entrants and 5 female new entrants by the end of first year.

Policy	Experts[57]	Farmers or rural dwellers		New entrants[58]	
		Male	Female	Male	Female
36	60	180	60	60	60

Table 3. Overall stakeholder KPI for Y1

Policy makers are people with the ability to influence rural policy. They can be from partner organisations (beneficiary), external organisations that pledged voluntary support (stakeholders) or some other organisations not mentioned in DoA whose work is nonetheless relevant to PoliRural e.g. local development agencies, local statistical agencies, local (CAP) payment agencies. Policy makers that support the project on a voluntary basis can serve as influencers or advocates for specific policy changes.

Although policy makers are experts in their own right, a distinction is made between civil/public servants and those who work in research, academia, private or third sector, for example. Some diversity in terms of sectoral representation is preferred when recruiting the experts, and pilot leaders are free to decide how best to fill the initial five spots. As all study areas have partners with rural community links, getting access to farmers or rural residents is not seen as a challenge. Where pilots could face some difficulty is in identifying new entrants. Here the suggestion would be to use the typology flowchart developed by EIP-AGRI focus group on new entrants to distinguish between the latter and successors (see Annex A. New Entrant Typology).[59]
It is very difficult to make a complete list and the relevance of some actors may not emerge until later on in the process. Nevertheless, compiling a preliminary list gives the foresight team a feeling for the type and number of organisations it might need to engage with at certain stages in the process. Priority should be given to organisations that will be called upon to act in terms of policy, programming, financing and local legislation, needed to implement the recommendation of the foresight initiative. Priority should also be given to actors that have access to data and information related to the overall theme being addressed.

Make early contact with decision makers

It is useful for pilot teams to arrange informal meetings with priority actors from the policy category before the research and foresight activities start. In doing so, they should ask for feedback on

- Areas related to the general theme of the exercise that authorities consider important and actionable in terms of policy , programming or new legislation
- Opportunities to provide timely inputs to research, foresight and evaluation activities, on the one hand, and the budgeting or programming cycles, on the other
- Organisations and individuals that they think should be involved in the foresight process

This feedback should have an impact on the overall goals, design and timing of the foresight exercise. The extent to which it does, is a good measure for how credible and useful the process will appear in the perception of these key actors. In making these early contacts with the key actors, it is important to ask how best to follow-up and keep them informed. Contact should be maintained with the named person by email and by telephone. It is possible to ask if they might intervene in some of the meetings and if they

[57] To this group belong knowledgeable and experienced individuals from research, academia, private or third sector. They are distinguished from civil servants who can also be experts but belong to the first (policy) category
[58] The category includes people with a migrant background
[59] EIP-AGRI Focus Group New entrants: Final report https://ec.europa.eu/eip/agriculture/en/publications/eip-agri-focus-group-new-entrants-final-report

will work with the foresight team, to comment on or provide inputs to the overall work plan and timetable for the foresight initiative.

Towards the end of this phase, a picture should emerge of decision makers' preferences for the general themes to be addressed, the groups and their representative organisations that will benefit from the exercise, the agencies and other policy actors that will implement the recommendations in terms of new and appropriately adapted polices, programs, legislation and other measures as needed ('vertical' or 'horizontal' in the language of multi-level governance of regions and sectors).

Securing and maintaining stakeholder buy-in in the future will not be easy. People may treat foresight differently depending on their past experience with the process. Those critical of foresight will be hard to convince that PoliRural is different. This challenge means that our foresight experts must share clear and actionable guidance to the regional pilot teams on how to organise their activities so that stakeholders feel motivated to influence and be influenced by the results.

Although desirable, it will not be possible to engage everyone in every singly activity. Because of that, a more practical approach should be pursued whereby pilots differentiate stakeholders according to their impact and level of interest. The use of influence-interest matrix will help determine who should be satisfied (people with power) and who is ought to be kept informed (people with interest).

People with power are people that have the wherewithal to act i.e. implement policies. Ultimately they will be the ones responsible for implementing the foresight action plan. Given their importance to the overall success of the regional foresight pilot, the lion's share of pilot activities vis-à-vis "actors" must be devoted to meeting their requirements and managing their expectations with regard to quality of results, opportunity to provide feedback, frequency of interaction et cetera.

In all interactions between the project and the regions carrying out Foresight initiatives, it has been emphasized that the endorsement of the action plan by major local stakeholders is an essential requirement for the success of the overall Foresight exercise. Without such endorsement, the plan will have no credibility of standing in the eyes of public administration.

One of the challenges to be addressed by those who are responsible for stakeholder engagement in their regional Foresight initiative, is to ensure timely initial contact and ongoing involvement of those most likely to endorse the overall plan and act as its local champion through to fulfillment.

The advice given to the pilots on how to manage this task include the suggestion that the action plan should include an explicit task for monitoring and evaluation of the implementation of the action plan. This should include the appointment of a monitoring committee, which may be chaired or co-chaired by key actors who are expected to endorse the action plan and advocate for its implementation with appropriate actors in public administration.

The second main challenge for those responsible for stakeholder engagement, in this regard, is to ensure the timely involvement of those who will guide the various elements of the action plan, through whatever programming or policy process required to mobilize the funds needed to implement the measures that make up the action plan.
These issues will be elaborated the deliverable D1.8 on the Future Outlooks methodology, which will provide a more detailed prescription of the content the Foresight package, made up a vision, action pan and roadmap. The roadmap is an especially powerful tool in that for each measure making up the action plan, it identifies the source of funding and the local agents and representatives of local government that will need to accompany the measure on its journey from policy proposal to funding and implementation.

Compile regional libraries for text mining

The KPI for regional libraries is measured in terms of new sources that should be added to the master repository. These sources include but are not limited to online press, discussion forums, academic journals, blogs, social media. For instance, *In the Field* magazine[60] is a source, a BBC article on rural crime[61] isn't - this distinction is important to keep in mind when building regional libraries. A total of 1,800 sources should be added by May 2020, or 150 per pilot.

The KPI is further divided into two sub-libraries, one labelled as 'needs,' another as 'evaluation.' This corresponds to the two work streams comprising 'current situation' i.e. needs gathering and policy evaluation. It may prove difficult to find sources that talk exclusively about policies or those that focus predominantly on needs and challenges because the two are closely interrelated. Still, for the sake of KPI, pilots should annotate their library items as being mostly policy oriented, mostly needs oriented or both. For instance, capreform.eu is mostly policy oriented.

The KPI does not specify how many sources should be in English, but it does require all 12 languages to be involved. Given that text mining tools are able to support only a limited number of languages at the beginning, pilots are advised to start with English sources (that talk about their regional needs) first and then expand their collections as new language models are added to the text mining tool.

Develop a comprehensive needs assessment framework

As mentioned before, the needs gathering task seeks to understand what makes rural areas and professions attractive or unattractive. However, the concept of attractiveness begs the question - attractive to whom?

- Attractive to those who live in the region (also a function of age group)?
- Attractive to those who work in the region?
- Attractive to those who visit the region e.g. for shopping, a day, weekend or longer holiday?
- Attractive to those who might invest in the region?
- Attractive to those who wish to take up farming in a city (urban agriculture)?
- Attractive to those considering their higher education options?

These are very different concepts of attractiveness. Some may have higher levels of urgency as policy priorities. The underlying needs will ultimately determine how and whether policy makers will react, and what vision of attractiveness they may wish to advance in the end. For instance, an emerging need might be placed higher on the priority list than the one that is likely to become obsolete before long. How might these different needs be measured or represented - by lifespan, severity or user group? - will vary considerably. In each case, different stakeholders will need to be consulted and different actors may need to be involved to act upon the recommendations of foresight activity.

Address the issues of selection and coherence in policy evaluation

Officially, evaluation doesn't start until June 2020, but there are a number of things that must be addressed beforehand to ensure the whole process is smooth and consistent with other parts of the project. One is policy selection. Policy matching will yield a high number of measures that could be evaluated. But since it is neither feasible nor practical to analyse every single one of them, a method for selecting policies for further analysis should be developed before evaluation is due to begin. Important questions to address are

- Is the aim to have comparable cross border data showing how the same policy is performing/perceived in different countries?
- Given the grassroot level of some initiatives, how deep should we go in selecting rural measures? A door to door car service for rural residents over the age of 60 and people with a mobility

[60] https://www.inthefieldmagazine.com/
[61] https://www.bbc.com/news/uk-northern-ireland-47364011

problem who cannot access public transport - would that be a relevant measure? And does it matter if the service is run by volunteers, not local government?

- Who shall ultimately determine what to evaluate - PoliRural partners? End users? Policy makers? Perhaps it should be done collaboratively and/or using some kind of ranking system?
- What to do with measures that are deemed important by rural residents but for which critical things like intervention logic, targets, impacts and monitoring data are either missing or haven't been developed at all - to evaluate or to exclude?

Another thing to consider is the relationship between evaluation's research and technical tracks. Because PoliRural wants to enhance evaluation results with big data analysis, there are essentially two data collections streams, one generated by (social) research, another coming from text mining. To do justice to the planned evaluation approach, both streams should target the same object of investigation. If survey questions focus on a volunteer car sharing scheme but text mining is gaining intelligence on CAP, the outcome will be two sets of findings that have little in common.

Targeting the same measure in both tracks is important but not enough. There should also be a way to adjust values measured on different scales to a common scale in order to paint a bigger picture. Survey data may contain ordinal scales ("unsatisfied," "neutral," "satisfied"), interval scales (1-10) or qualitative responses. A typical text mining output, on the other hand, shows the polarity of collected opinions/arguments in relation to a given policy as being positive, negative or neutral. Without normalisation, the two datasets cannot be combined.

The process of text mining depends on the data obtained from pilots: a set of topics and keywords (i.e. defining policies and/or issues), URLs and geographical areas. Those become inputs for PoliRural's Semantic Explorer, while its outputs are the emerging topics (in our terms - subtopics), as well as sentiment polarity (individual in each post in Social Media, or averaged by topic in a certain area). It is possible to match semantically questions from surveys against the results of Semantic Explorer. If the probability of such similarity is high enough, and both contain values of sentiment, it is possible to compare their values.

A great deal of care should be paid to the selection of sources provided by pilots. The reason is that values from surveys would most probably be aggregated in some way - so, not only topic(s) should match, but also geo-tags: it can be several geo-names in a given text, so the end-user should double-check that it is geo-tagged correctly.

Perform horizon scanning to better understand ongoing developments elsewhere

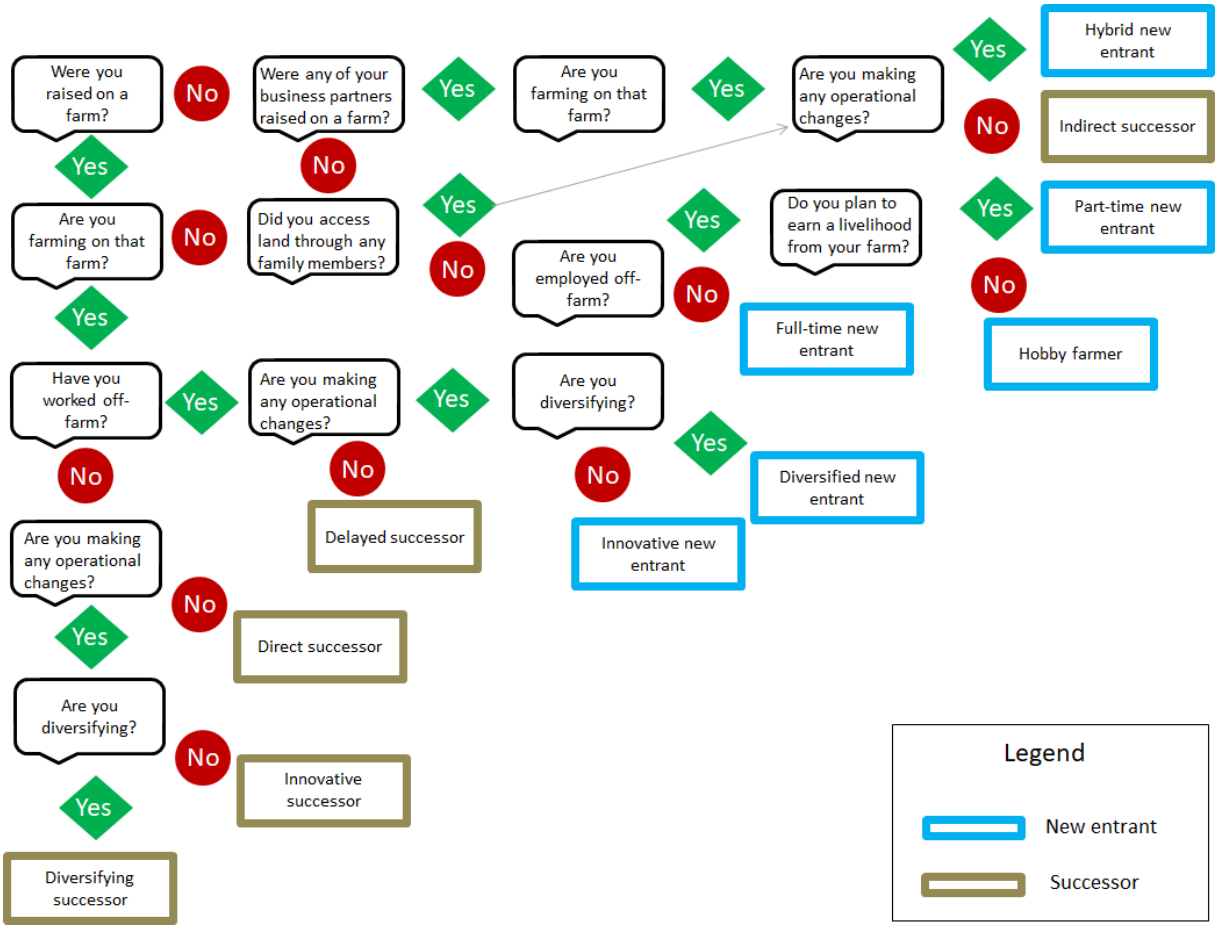
Horizon scanning is an open and exploratory activity intended to understand what is happening elsewhere, in society, in the world of business, in the world of technology, in the world of research and innovation. This is often done in waves, as the orientation and emphasis of the work of foresight evolves, as interaction with stakeholders reveals new ideas and concepts that were not adequately anticipated or explored at the start.

One way to organise the output of a horizon scanning exercise is to create a series of topical lists. It is recommended to carry out a preliminary scanning exercise at the earliest stage of each regional pilot, in order to identify relevant trends that may impact the region, the drivers and enablers that are reinforcing or mitigating those trends, and the issues and challenges that may arise as a result of those trends. Horizon scanning can also be applied to the search for new products or technologies, business practices or economic models, new questions worthy of scientific inquiry, new and emerging thinking about policies and how to address key challenges.

Many different tools can be employed to support horizon scanning, but it mainly boils down to reading and talking to people who are knowledgeable or experienced. An important tool is Google, or other more

specialised search engines. The role of the researcher is very important in selecting experts to talk to and material to read that might be relevant, even if the reason is not immediately obvious. The biggest risk in this work is the risk of missing out on something important. This has to be weighed against the risk of doing too much work and never finishing. Tools to help researchers ensure that their search is wide-enough include techniques based on mnemonics such as PEST or PESTLE. One can hope that the use of TM will reduce the con git vie load on the research helping them to search more material and identify what is interesting in an increasingly large corpus of available online content.

Annex A. New Entrant Typology[62]



[62] Adapted from the final report of EIP-AGRI Focus Group on New Entrants

Annex B. Datasets for System Dynamics Modelling

1. Population module

- Population (total persons)
- Population in age cohorts
    - [0-17]
    - [18-24]
    - [25-34]
    - [35-44]
    - [45-54]
    - [55-64]
    - [65+]
- Population by cohort and education (primary, secondary, higher)
- Net migration
- Births
- Death rate

2. Education module

- Number of students in primary, secondary, higher
- Not in Employment, Education, Training (NEETs)
- Early workers (people accessing labour market straight after school)
- EW to university
- VET students
- VET to university
- EW to VET

3. Land use module

3.1 Land cover (ha/sqm)

- Cropland
- Grassland
- Forest land
- Natural land e.g. national park
- Degraded land (urbanised land, abandoned land, brownfield land etc.)
- Settlement land
- Main flows (changes in land use, either foresee or those that already happened)

3.2 Other

- Livestock density (unit/ha)
- Chemical fertiliser (kg/ha/year)
- Organic fertiliser (kg/ha/year)

4. Economy module

4.1 Labour

- Labour force participation by cohort [0-19], [20-39], [40-64], [65+] and education level (primary, tertiary, secondary)
- Employment in agriculture, manufacturing, services
- Farm income

4.2 Market

- Production by sector (euros)
- Consumption by sector (euros)
- Production of commodity (euros)
- Consumption of commodity (euros)
- GVA of agriculture

4.3 Tourism

- Annual tourists (units)
- Accommodation: hotels, rooms, beds (units)
- Price per night (euros)
- Average spent by tourists (euros)
- Hotel occupancy (%)

5. Agriculture module

5.1 Commodities yields

- Cereals (tons)
- Pigs (units)
- Milk (tons)
- Beef (units)
- Sheep (units)
- Wood (tons)

5.2 Subsidies

- Subsidy per hectare of production system
- Livestock
- Forestry
- Agroforestry
- Crops
- Cereals
- Other
- Subsidies received by production system
- Subsidies for each commodity

5.3 Sectors

- Meat
- Food processing
- Textile
- Energy
- Chemicals
- Construction
- Metals
- Automobiles
- Furniture
- Trade
- Tourism

- Banking
- Public
- Recreational
- Other services

6. Quality of life and infrastructures module

- 6.1 Quality of life
- Healthcare accessibility (doctors/1000)
- Pollution (CO2/ha)

6.2 Infrastructures

- Road density

7. Policies module

7.1 Expenditure on (euros)

- Subsidies
- Education
- Infrastructure

Annex C. Responses to the monitors' comments

Comments made by the monitors	Explanation
The overview of rural challenges is interesting but does not show new or specific findings of PoliRural. It serves as an identification of key areas of concern. The idea was to give partners guidance on the future issues they will study in the in-depth analyses of the 12 study areas. It lacks more general perspective on population change - the exodus of young people is mentioned, less attention is directed to the untapped resource that exists among the migrant population within rural areas.	The deliverable was submitted in M3. As the project was in its infancy then, it was not possible to offer any new or specific findings. ***Population change set in context on p. 14*** ***Role of migrants explained on p. 15***
The Deliverable offers a critical insight into some of the difficulties and limitations of the CAP and this emphasises well the second focus outlined in the call topic 'attractiveness of farming'. This section on CAP is helpful for consortium partners that might have less knowledge about farming industries and farm businesses/enterprises. It should however be noted that the role of agriculture differs across the EU and is more important for some economies compared to others (could be better reflected on p. 5).	***The role of agriculture in the EU explained on p. 5.***
How is rural development understood? It's not fully clear from the preamble in this deliverable. Indeed the future work requires a common understanding of key words used by all consortium partners. For example Table 3 shows 'New entrants' but it is not clear if these are new entrants in farming or newcomers living in the rural areas?	***Evolution of the concept of rural development presented on pp 5-6*** ***Newcomers explained separately on p. 10***
Figure 2 shows the Strategic Foresight in the PoliRural framework. It is not clear why the top of the arrow is called 'change present'? Foresight cannot change the present since present will be the past by then.	The present-future-present continuum represents three of PoliRural's work packages: WP4 (current situation), WP5 (future outlook), and WP6 (mission oriented transformation). These work packages proceed in a sequential fashion and often overlap with one another. So, we're not talking about any significant time gaps here. Moreover, the idea of going back to the present simply means that, based on foresight results, we implement changes in current practices, policies or measures to help regions achieve smart and sustainable growth. ***No changes***

Page 23: "…time devoted to the dynamic system model development… dozens of people…" Will that still be feasible with the delay in WP4 in year1 for some study areas (Italy)? Corona and the involvement of large number of people discussing a very complex issue?	The project was extended by four months. This will allow pilots to complete all the steps in the SDM process: training, testing, validation, feedback. Some workshops may need to be run online. But this won't be a problem as all pilots have fully adapted to the new ways of working with their stakeholders. ***No changes.***
Migrants are not necessarily an 'excluded' group - they face particular inequalities and injustices. (p.13)	This group is now referred to as less represented, not excluded. ***Addressed on p. 4 and p. 14***
If migrants are one of the targeted groups, why are they (or their representative group) not one of the categories identified on page 26? Who are the experts? Given that there is an either or for farmers/ rural dwellers, why is this disproportionately directed towards males? Regional stakeholders: '15 male farmers or rural dwellers, 5 female farmers or rural dwellers, 5 male new entrants and 5 female new entrants by the end of first year.' Why so few female rural dwellers?	The targets and categories we have for various groups are set in stone i.e. listed as KPIs in the Grant Agreement. Migrants are subsumed by the new entrants category. Experts are people with relevant experience from business, academia, research. Women represent ⅓ of the male target because Eurostat data shows that, on average, women account for 35% of the agricultural workforce in Europe. In member states like Ireland (where we have one pilot), the share is even less - 12%. ***Brief explanation on p. 30 regarding experts and migrants***
Repetitive text p. 4 and 7.	Page 4 is executive summary. Page 7 is the end of introduction. It is normal that a piece of text in exec summary is featured in at least one other place in the report. ***No changes***
The rationale for the foresight activity is not clear provided (discussed on p. 13) nor are details provided on what text mining works. How usable are the findings from the text mining? What does the information look like?	***Rationale for foresight given on p. 18*** ***Elaboration of text mining on p. 16-17***
How this breaking the divide between strictly quantitative and more qualitative approaches (p.15)?	***Explained on p. 18***
How does the model interface with grassroot knowledge possessed by regional actors (p. 17)?	***Explained on p. 19***
Elaboration required on p. 20 as the narrative does not make clear what is meant e.g. nano-trends, fads, weak signals, game changers etc.	***Definitions provided on p. 22***
What of neo-endogenous approaches to rural development?	***Briefly introduced on pp. 5-6***

Voluntary organisations are not policymakers (p. 27).	While we totally agree with the comment made, the text in question actually refers to something else. In particular, it says “policy makers can come from external organisations that pledged voluntary support to the project." At the proposal stage, PoliRural collected Letters of Support from a large number of organisations, some of which were policy bodies that expressed interest in supporting the project on a voluntary basis. This is what the text is referring to. ***Small change on p. 31***
Comments made on p. 23 about formal endorsement and having buy-in from stakeholders from the outset are very pertinent and it would be good to have some more explanation on how this will be achieved.	***Elaboration provided on p. 31***
(Specific comments on SDM): Figure 4: Infrastructure affects attractiveness of farming and on land use significantly (as a highly relevant consumer of land). Policies drive access to land (exclusion of foreign investors, pre-purchase right and construction permit on farmland for farmers. Education affects quality and attractiveness of farming; farming impacts on education (farm as classroom, on-farm childcare, summer camps etc.). Does quality of live fit in one box, or is it rather an umbrella concept that does not need to fit in one box? Q of Life module on p 34 - why no reference to community (assets, social networks, civic engagement and participation, etc.)? The dynamic system model on p. 16 doesn’t seem to adequately consider social capital, networks, civic engagement and ‘bottom up’ rural development activities. What is meant within the economic model? Where are small businesses, rural entrepreneurship and diversification? Annex B, please check 5.Ag module with yields versus on-farm statistics; for example: pigs in Livestock Units (LU) versus pork in tons; milk in tons (not m3); cattle in LU versus beef in tons; sheep/goat in LU versus lamb/mutton in tons; logs in m3. What about other non-cereal crops such as wine, fruit, vegetable, potato, sugar beet? What about poultry (in LU or tons) or equids in LU? The list reveals a few gaps. Will	Quality of Life is not an easy concept to capture using available datasets. For that reason, it was merged with infrastructure. This module tries to capture access to basic services and infrastructures such as roads. References to community are included in Social Capital, which serves as an input to Quality of Life variable. However, measuring this kind of variable is always problematic. Finding proxies for them is something to be worked out with pilots. Agriculture had a predominant role in the first version of the model, but then gave way to the wider concept of rural employment. This allows us to introduce new sources of employment in the rural areas, as well as concepts such as entrepreneurship and social innovation. In Annex B, the list is indeed non-exhaustive, but we mentioned upfront (p. 23) that this is the case i.e. the list is preliminary and will be expanded on as needed basis in the future. Whether fruits, wine, vegetables or cereals are included in the regional agricultural module will depend on the needs of each particular pilot. This also applies to healthcare, education, training, broadband, airports etc. ***After checking Eurostat datasets, we made a small change in milk production (5. Agriculture Module): m3 → tons (p. 38)***

these affect the data collection and stakeholder involvement? For example, 5.3, the health and care sector is missing as a very relevant industry in many rural areas. 6, How will the access to education and training be covered? 6.2 Why does the report list only roads under infrastructure (trains, waterways, airports)? What about broadband and other telecommunication (4G, 5G). Electricity and transmission capacities?	