3 National, regional and local policy framework conditions for rural innovation in Switzerland

This chapter starts with an overview of the policy landscape for rural innovation and identifies drivers and barriers to innovation in rural Switzerland. Specifically, it investigates if local, regional and national framework conditions are conducive to and account for the specific characteristics of rural innovation using evidence from the case study areas around the regional innovation systems (RIS) in Basel-Jura, Central Switzerland and Western Switzerland. It also makes suggestions to address bottlenecks in the delivery of innovation support, broaden the concept of innovation, create a culture of experimentation, strengthen rural-urban linkages and improve skills shortages for rural innovation.

Innovation in rural areas is more incremental, making use of locally available knowledge and taking time to experiment (see Chapter 1). This is a result of both limited accessibility of knowledge, finance and other resources in the countryside and the size of firms and their focus on sectors that do not lose value as quickly, including natural resources. As such, rural innovation is less time-dependent and characterised by high levels of meaningfulness to the community while still competing successfully in the market economy. Rural entrepreneurs often bridge knowledge gaps strategically, building networks with partners such as suppliers and higher education institutions when looking to steadily improve their products. A key element of rural innovation is also passing down knowledge through inter-generational links. In times of demographical change and increasing numbers of younger people leaving for the cities, this can become an increasing challenge, not only in terms of succession but also because young people are more likely to be innovative and use newer products and processes.

This chapter makes recommendations to enhance rural innovation in Switzerland. It starts with an overview of the policy landscape and its stakeholders for rural innovation and identifies drivers and barriers to innovation in rural Switzerland. It draws on evidence provided by the federal administration on the Swiss decentralised innovation policy approach as well as three regional innovation systems, notably, RIS Basel-Jura, RIS Central Switzerland and RIS Western Switzerland (ARI-SO). Considering the vast innovation potential in rural Switzerland, it investigates if local framework conditions are conducive to and account for the specific characteristics of rural innovation. Specifically, it focuses on broadening the concept of innovation, future-proofing innovation agendas, building a culture of experimentation and simplifying access to services, and developing rural-urban linkages to increase the flow of knowledge and people. Overall, the chapter shows that for rural innovation, policy makers should focus on adjusting innovation support to focus on the comparative advantages of rural regions, while enhancing enabling conditions in currently lagging behind rural areas, adjusting for the variety of rural places in their programming.

Switzerland's decentralised innovation system

Switzerland has no overall innovation policy but follows a decentralised approach through several independent policy areas that are co-ordinated through mechanisms involving federal, cantonal and regional (cross-cantonal) actors. This organisation grants individual agents a high degree of autonomy and scope for action. It also allows for tailor-made answers to new emerging challenges. The binding element of this decentralised approach are principles shared by the main agents in the system. They include federal actors (e.g. Innosuisse), public education and research organisations, cantonal actors and programmes (e.g. Living Labs, projects), RIS and private programmes for start-ups. They form the basis of the structure of the Swiss innovation system and comprise subsidiarity, the autonomy of agents, co-operation, competitiveness and quality awareness. They are embodied in framework conditions, including democracy, federalism, liberal economy, social partnership and bottom-up institutions. This results in three other characteristics of the Swiss innovation system: diversity, stability and ability to adapt. The most important principles and framework conditions are presented graphically below (Figure 3.1).

Within the structure, both institutionalised and informal processes enable collaboration. Formal processes for instance include internal administrative procedures such as consultations and co-reporting procedures. This ensures that individual actors are informed about the activities of the others, insofar as they are affected by them. More informal or ad hoc processes also exist. They include steering groups, monitoring groups or other ad hoc bodies formed to contribute to individual projects. Co-ordination generally ensures that relationships between individual stakeholders are maintained and activities co-ordinates – especially if several actors are pursuing similar projects at the same time. Such co-ordination processes, which initially take place infrequently, can, if necessary, be institutionalised over time.

Figure 3.1. Swiss Principles, structures and processes of the decentralised Innovation System
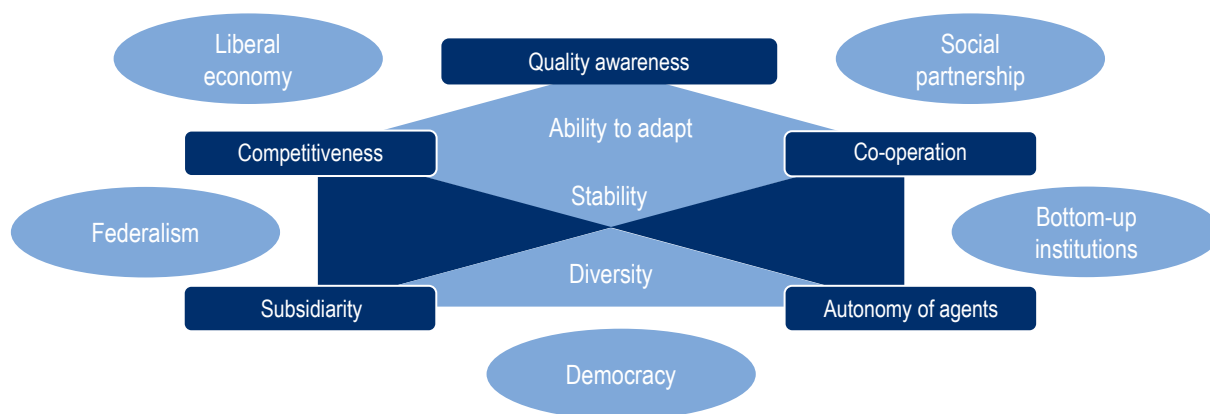

Note: Central principles of the Swiss Innovation system are depicted by the darker rectangular shapes, and the lighter oval shapes represent the framework conditions.
Source: Adapted from Swiss Federal Council (2018[1]), *Overview of Innovation Policy*, https://www.sbfi.admin.ch/sbfi/en/home/services/publications/data-base-publications/innovation-policy.html.

Institutional context

Because of its decentralised nature, the Swiss innovation system functions as a complex ecosystem. Figure 3.2 depicts the main elements of the decentralised regional innovation system in Switzerland, focusing on small- and medium-sized enterprises (SMEs) and entrepreneurs as the benefactors. A study by the State Secretariat for Education, Research and Innovation (SERI) in 2016 recorded 138 innovation promotion offerings at the national, cantonal and regional levels, which can sometimes be perceived as complex (SERI, 2016[2]).

Figure 3.2. Simplified representation of the Swiss decentralised innovation system
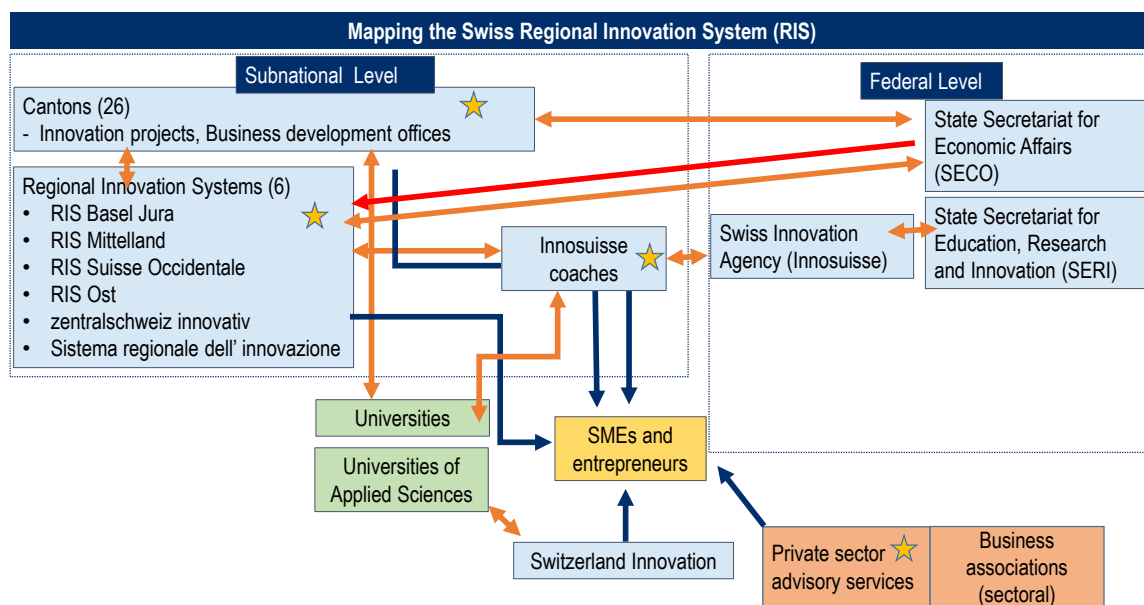
Note: Orange arrows show the flow of information, and blue errors show a service provided. Yellow fields describe the target groups (SMEs and entrepreneurs), blue fields show public actors and institutions, green fields depict public education and research organisations, stars signify advisory services or components, and red arrows describe framework settings and regulations.

Federal level

From a legal perspective, public research and innovation funding is the responsibility of the federal government. The promotion of innovation is regulated by Federal Act on the Promotion of Research and Innovation (RIPA). RIPA is a framework law that governs the objectives and funding of research and innovation by the federal government. It includes legally enshrined principles such as freedom of research, the scientific quality of research and innovation, the diversity of scientific opinions and methods as well as scientific integrity, and good scientific practice principles of research that define federal innovation funding (see RIPA, Article 6, Paragraph 1, Fedlex (2012[3])).

RIPA (see Article 6, Paragraph 3) also establishes overarching goals including the sustainable development of society, economy and environment and the (national and international) co-operation of the actors. The instruments of the innovation promotion policy according to RIPA primarily cover knowledge-based innovation. They support processes by which scientific knowledge can be developed into marketable products. As part of the business-oriented approach to innovation, instruments of economic policy are also added, specifically location promotion policy, growth policy, SME policy and intellectual property protection (Swiss Federal Council, 2018[1]).

The responsibilities in research and innovation (R&I) funding at the federal level are primarily shared among the Federal Department of Economic Affairs, Education and Research (EAER), SERI, the State Secretariat for Economic Affairs (SECO), the Swiss Innovation Agency Innosuisse, as well as the council of the Swiss Federal Institutes of Technology (ETH Board) on behalf of the institutions of the ETH Domain. Other departments such as the Federal Department of the Environment, Transport, Energy and Communications (DETEC) are also directly or indirectly involved in R&I funding. The Swiss Science Council (SSC) is the advisory body of the Federal Council for issues related to science, higher education and R&I policy.

Furthermore, there are additional innovation activities within various sectoral policy areas. These activities seek to achieve specific political goals, such as nationally and internationally set goals for environmental protection and reduction of energy consumption. The primary purpose of these programmes is therefore to reach the respective policy objectives, while innovations are the means to achieve these goals.

In terms of funding, the Federal Council submits a request to parliament on the promotion of education, research and innovation (ERI) every four years. As part of this, it formulates the guidelines and measures of its policy for ERI for which the Swiss Confederation has primary responsibility. These include the ETH, vocational education and training, R&I promotion and international co-operation in education and research. The request also formulates the confederation's commitment to those parts of the system that are primarily the responsibility of the regions (cantons), such as universities, universities of applied sciences, implementation of vocational education and training and the scholarship system. Based on this request, the parliament then decides on the funding framework.

Innovative entrepreneurship is largely executed by cantons, cities, municipalities and private actors, as well as the RIS. These will be discussed in more detail below. The federal level mostly tries to complement activities led by lower government levels and actors, for instance through its innovation agency Innosuisse. The role of the agency is to promote science-based innovation in the interest of the economy and society in Switzerland. To this end, Innosuisse promotes partnerships between academia and businesses and seeks to accelerate the transfer of knowledge from research to industry. It also helps innovators and start-ups to achieve a breakthrough in the market. The core of Innosuisse funding is the support of innovation projects. In these projects, innovative organisations such as companies, start-ups, administrative bodies and non-governmental organisations (NGOs) develop new services and products together with research institutions. Some projects also involve international partners. Further, the agency supports networking, training and coaching, with the goal of providing the foundation for successful Swiss start-ups as well as innovative products and services (Innosuisse, 2022[4]).

Box 3.1. Innosuisse Innovation Booster

The Innovation Booster programme powered by Innosuisse is designed to specifically support radical ideas in a culture of open innovation. Supporting the primary stage of an open innovation process, they provide the impulses for innovative ideas and help them to get off the ground into the market.

The main mission of the programme includes:

- Bringing together all interested players from research, business and society on various innovation topics.
- Promoting knowledge transfer and encouraging co-operation with partners along the entire value chain of a topic. Each booster has its own organisation and Leading House.
- Using design thinking methods and other user-centred methods. The Innovation Boosters support companies, start-ups and other organisations to identify and explore problems in interdisciplinary teams and develop new and radical solutions from scratch.
- Providing an apt funding amount to finance and support the testing and verification of promising ideas and assisting teams to get follow-up support to further develop or implement their idea.
- Fostering a culture of open innovation, to create sustainable competitive advantages for innovative Swiss organisations and SMEs.

Innosuisse selects Innovation Boosters with regular calls for proposals for a four-year period. The selection is based on a range of criteria which include:

- The current and future importance of the innovation topic.
- The likelihood that it will give rise to future innovation projects.
- The appropriateness of the methods and mechanisms used to promote the transfer of knowledge and technology.
- The competency to address the innovation topic and involve the relevant actors on a national scale.
- The plausibility of the budget and cost-benefit ratio, the degree of own-funding and the contribution of third-party funds.
- The contribution to the sustainable development of society, the economy and the environment.
- Measures to ensure appropriate gender representation in the organisation and at activities.

Key performance indicators (KPIs) on gender are supposed to motivate initiatives to proactively increase the percentage of women on their boards as well as among their speakers and participants. This is especially interesting in some fields which are historically unbalanced with respect to the participation of men and women.

Innovation Boosters are selected under a complementarity principle: Innosuisse supports initiatives that would not easily be supported by the private sector only, because of inherent risk, lack of resources or private investments or unclear economic return. They should all have the potential to involve actors from all over the national territory.

The above criteria should allow Innosuisse to select Innovation Boosters that will create an impact in Switzerland. This includes societal impacts such as an increase in quality of life, addressing major societal challenges, better population health or economic impacts such as job creation, increase in revenues, etc.

Source: Innosuisse (2022[5]), "Innovation boosters", Swiss Innovation Agency.

Subnational level

The vast majority of cantons engage in innovation and economic development activities. The range of services includes support for company start-ups or the promotion of regional networks or clusters in close contact with companies and sometimes specific coaching. Cantons generally have their own business development offices. They inform companies about location advantages, maintain contacts with investors, organise support for investors and handle customer care on site. Various cantons use tax breaks to promote businesses. Cantons also use their universities, universities of applied sciences and pedagogical universities to promote regional development and R&I. Cities and towns likewise are important in establishing technology or innovation parks (Swiss Federal Council, 2018[1]).

The federal government's New Regional Policy (NRP) (for an in-depth description, see the following section) is important in financially supporting these subnational innovation projects and has allowed regional and cross-cantonal innovation initiatives to be established in most of Switzerland. Overall, the NRP has the objective to "enhance the competitiveness and added-value creation of individual regions and thus contribute to the creation of jobs to preserve decentralized settlement and to reduce disparities between regions". The federal level is responsible for determining strategic objectives and spatial priorities as well as for ensuring legal conformity, while the cantons are in charge of policy implementation. They have maximum scope to define for their region how objectives are achieved, including project selection. The NRP is funded through the local promotion activities of the federal government (SECO, 2020[6]).

Part of the NRP is the regional innovation system (RIS). There are six RIS covering significant parts of the country (Figure 3.3). The RIS relate to functional (generally inter-cantonal and in some cases cross-border) economic zones. Complementary to the focus of the national research-driven innovation activities, their focus is on demand- and need-driven services, and a broader understanding of innovation that specifically targets SMEs. The RIS promote competitiveness and innovative capacity of SMEs by offering co-ordinated support and services in the areas of information, consulting, networking, infrastructure and financing. Following the principle of "no wrong door", the RIS are meant to consolidate innovation and support activities from different governance levels and actors and connect SMEs with other sources of funding and assistance if necessary. Overall, the central tasks of the RIS can be summarised as follows:

- Co-ordination of innovation promotion activities.
- Coaching on the topic of innovation for start-up companies and SMEs.
- Organisation of networking events.
- Point of entry, referring individual companies to the right innovation funding agency (including universities and federal funding agencies) (SECO, 2017[7]; B,S,S Volkswirtschaftliche Beratung AG, 2018[8]).

This study specifically focuses on the NRP and its RIS structures because they, within the overall innovation ecosystem, have a specific territorial and rural focus. Understanding and analysing how they deliver for rural SMEs is thus crucial to understanding what works and what does not with regard to rural innovation in Switzerland and how policies to foster rural innovation can be improved. At the same time, these geographically focused policies are only small and financially limited mechanisms that need to complement and work in synergy with the more general policy tools and mechanisms described in this section.

## Figure 3.3. Map of Regional Innovation System in Switzerland
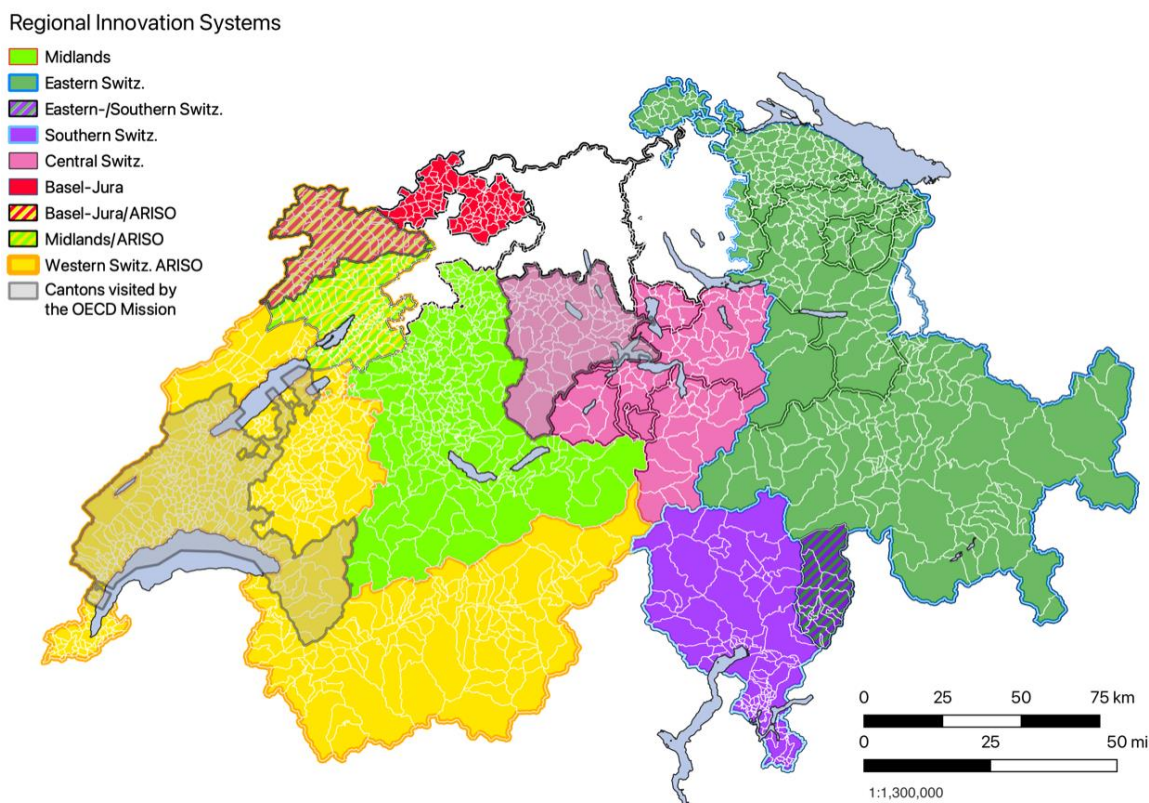
Source: OECD elaboration in consultation with local partners.

The NRP and its role in supporting rural innovation in Switzerland

Throughout the mid-1990s, the scope of Swiss regional policy shifted away from redistribution towards a new focus on impact orientation, competitiveness and the creation of value-added in rural areas. This shift was formalised with the introduction of the New Regional Policy (NRP) in 2008, which encourages an endogenous "growth-oriented" approach emphasising open markets, export capacity and competitiveness. The policy specifically targets rural and mountainous areas, which incorporate the vast majority of Swiss territory but excludes the large agglomerations of Basel, Bern, Geneva, Lausanne and Zurich and the urban cantons of Aargau, Basel-Landschaft, Basel City, Geneva, Solothurn, Zug and Zurich. Exceptionally, cantons may request that NRP funds be used for excluded areas (Figure 3.4). The seven urban cantons may also apply for NRP funds if they can demonstrate that the areas to be supported present the same structural challenges as the traditional target areas of NRP.

The NRP is a joint task of the federal government and the cantons. The Swiss Confederation is responsible for strategic management and orientation, while the operational responsibility for implementation and the decision as to whether a project can be supported with NRP funds lies with the cantons (OECD, 2011[9]). At the cantonal level, the NRP provides direct financial assistance (federal and cantonal) in order to enable the implementation of suitable projects and programmes. It also acts at a supra-cantonal level in order to enhance geographic coherence and economic functionality. This includes funding for Switzerland's participation in cross-border EU programmes, in particular Interreg, and funding for inter-cantonal RIS (OECD, 2019[10]).

Figure 3.4. Geographical range of the NRP, 2020-23
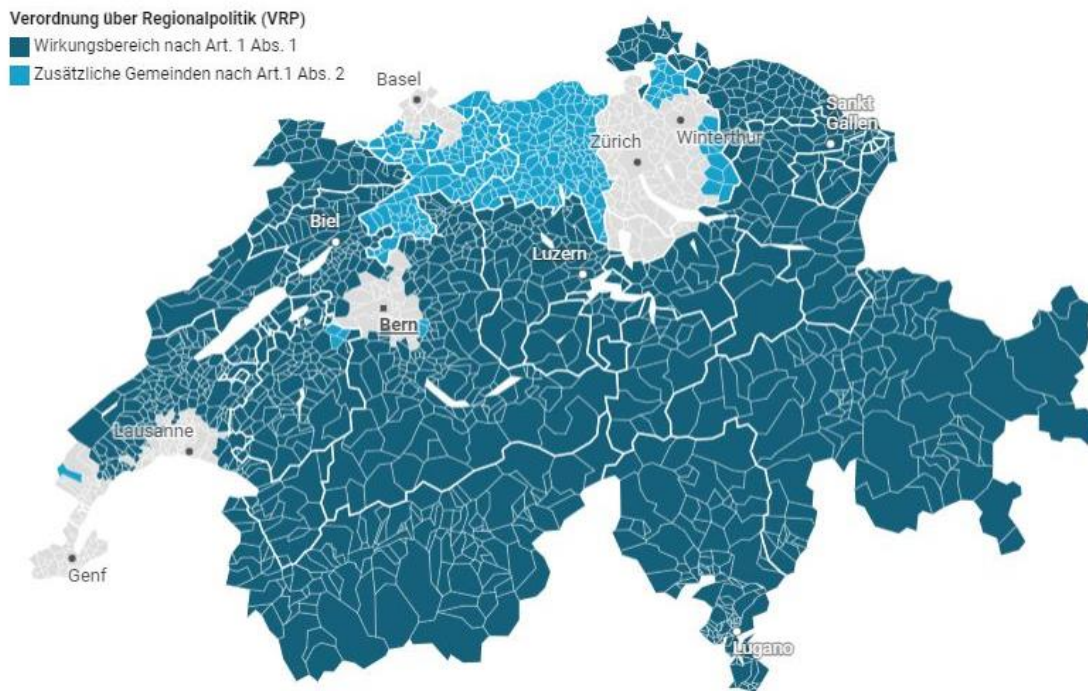
Note: The geographical range of the NRP defines the area in which the majority of specific development problems and development opportunities for mountainous and rural areas are the biggest. Only projects that have a majority impact in this area can be supported by the NRP. The geographical range of the NRP in dark blue (Regional Policy Ordinance, Article 1, Paragraph 1) and additional communities in light blue (Regional Policy Ordinance, Article 1, Paragraph 2).
Source: Regiosuisse (n.d.[11]), *Financial Instruments and Measures within the Framework of the NRP*, https://regiosuisse.ch/index.php/en/financial-instruments-and-measures-within-framework-nrp.

In 2016, the NRP multiyear programme started for a second eight-year period. The focus continues to be to "enhance the competitiveness and added-value creation of individual regions and thus to contribute to the creation and safeguarding of jobs in the regions, to the safeguarding of a decentralised settlement pattern, and to the reduction of regional disparities". Its three pillars address: i) an increase in the economic strengths and competitiveness of regions (85% of total funding); ii) co-operation and synergies between the NRP and other sectoral policies (5-10% of total funding); and iii) capacity building in the knowledge system of regional policy (5-10% of total funding). The NRP also offers tax breaks to industrial companies and service providers whose business is closely linked to industrial production. With this, the government hopes to support the creation of new types of jobs in innovative fields in structurally weak regional centres (OECD, 2019[10]).

The latest additions to the NRP 2020 include support for pilot programmes for mountainous regions to provide additional stimulus where it is needed. The pilot measurements offer more flexible eligibility criteria for support for example, small, less profitable infrastructure initiatives can be co-financed with à-fonds-perdu contributions. Another new feature is the support of project preparations and the development of Living Labs for the development and implementation of unconventional ideas (SECO, 2020[12]).

The implementation period 2016-23 has a stronger focus on innovation and tourism. The emphasis is on innovation in SMEs. One part of the promotion is the aforementioned RIS that provide coaching and networking for innovation. The federal government supports these networks provided they have a functional area orientation, i.e. if they extend beyond cantonal or even national borders and are adapted to the needs of the defined target groups. Second, the multiannual programme 2016-23 sets a specific

focus on promoting tourism in the regions, a sector that was exposed to strong challenges in recent years due to foreign exchange rates and that is increasingly exposed to the effects of climate change. Digitalisation is considered an overarching goal for economic development activities and needs to be transversally addressed.

The emphasis on competitiveness mirrors the early shift observed in other member countries from a sectoral focus which was codified by the OECD New Rural Paradigm[1] in 2006. The OECD's most recent Rural Well-being Policy Framework published in 2020 (OECD, 2020[13]) builds on the paradigm and calls for an even more robust model for rural development, one that considers the economy, society and the environment (see Table 3.1). It also stresses the importance of innovation for rural places to be able to deal with structural change and identifies important policy measures to enhance innovation capacity (OECD, 2020[13]). Some of these include strengthening rural-urban links, addressing the rural-urban digital divide in connectivity, as well as enhancing education and skills. This comes at a time when recovery from COVID-19 is starting, while the impacts of the megatrends of globalisation, digitalisation, climate change and demographic change continue to shape the economic landscape of rural economies.

Table 3.1. Stages of Rural Well-being: Geography of Opportunities

	Old paradigm	New Rural Paradigm (2006)	Rural Well-being: Geography Of Opportunities
Objectives	Equalisation	Competitiveness	Well-being considering multiple dimensions of: i) the economy; ii) society; and iii) the environment
Policy focus	Support for a single dominant resource sector	Support for multiple sectors based on their competitiveness	Low-density economies differentiated by type of rural area
Tools	Subsidies for firms	Investments in qualified firms and communities	Integrated rural development approach – spectrum of support to the public sector, firms and third sector
Key actors and stakeholders	Farm organisations and national governments	All levels of government and all relevant departments plus local stakeholders	Involvement of: i) public sector – multi-level governance; ii) private sector – for-profit firms and social enterprise; and iii) third sector – non-governmental organisations and civil society
Policy approach	Uniformly applied top-down policy	Bottom-up policy, local strategies	Integrated approach with multiple policy domains
Rural definition	Not urban	Rural as a variety of distinct types of place	Three types of rural: i) within a functional urban area; ii) close to a functional urban area; and iii) far from a functional urban area

Source: OECD (2020[13]), *Rural Well-being: Geography of Opportunities*, https://doi.org/10.1787/d25cef80-en.

While the NRP is rural and peri-urban focused, the RIS can improve in delivering for all rural areas

In 2011, the OECD's territorial review (2011[9]) found that there were no explicit regional innovation policies in Switzerland. The report recommended that existing cantonal initiatives needed to be better co-ordinated and more effectively implemented, especially highlighting the potential of inter-cantonal initiatives (OECD, 2011[9]). Generally, RIS refer to functional economic spaces – usually cross-cantonal and sometimes cross-border – where networks of important actors for innovation processes, such as companies, research and education establishments, as well as public authorities work together in a network and contribute to the innovation processes of a region. In Switzerland specifically, the term is also used to describe the organisation that acts on the development and management of RIS. Overall, these RIS promote the competitiveness and innovative capacity of SMEs by offering co-ordinated support and services in the areas of information, consulting, networking, infrastructure and financing. In addition, they bundle other already existing support offers and refer SMEs to other funding bodies if required.

The concept of regional innovation systems (RIS) was introduced in its current form with the adoption of the federal government's multiyear programme for the implementation of the NRP 2016-23. It thus became the prerequisite for the further support of innovation promotion offers within the framework of the NRP. The cantons, in co-operation with the State Secretariat for Economic Affairs (SECO), have created RIS structures in six major regions of Switzerland (see also Figure 3.3).

The first RIS structures in the sense of an innovation promotion initiative motivated by regional policy date back to the activities in Central and Western Switzerland in the context of the 6th European Union (EU) Research Framework Programme. Building on already existing regional initiatives, the first RIS structure was created in Central and Western Switzerland until a federal regional innovation strategy was developed in a collaboration between SECO and the cantons in 2016. The introduction of RIS within the framework of the NRP established the RIS organisations as a central link between the federal government and the cantons in the operational implementation of an innovation-based regional policy (B,S,S Volkswirtschaftliche Beratung AG, 2018[8]). The system is also meant to provide complementary support to the national innovation promotion of Innosuisse, the Swiss Innovation Agency, focusing on knowledge absorption and more incremental innovation support.

The aim of the RIS created within the framework of the NRP is to simplify and harmonise innovation promotion for SMEs and start-ups. Thus, the innovation activity of companies in the NRP impact area is to be strengthened and the long-term economic development in these areas is to be supported. A central aspect of the funding activities to support innovation activity is the so-called "no wrong door" policy which is designed to ensure that a company's request is always forwarded to the right place, depending on its specific needs.

In order to assure that RIS support fits with diverse local needs, it is important to consider that innovation in more rural areas functions differently than in the regional centres or the larger agglomerations. It seems like the support currently provided does not sufficiently take all geographic specificities and the corresponding needs into account. While research is limited, evidence suggests that rural innovators take a different approach (Table 3.2). They are experimental and strategic in that they take the time to steadily improve products and processes without pressure and acquire information to fill knowledge gaps. In this process, the meaningfulness of the work to the community and passing down knowledge through generations is also important as it ensures holistically following projects through from beginning to end (Mayer, 2020[14]).

The current Concept RIS 2020+ recognises the specific challenges of rural SMEs in the innovation process. It also notes that rural SMEs are often smaller and have less access to other innovation actors. It includes a call for stronger efforts to facilitate access to innovation support for rural SMEs (SECO, 2018[15]). To ensure this, funding from the NRP for the RIS programme areas "Point of entry-Function of RIS" and "Coaching" requires that 50% of all supported firms fall within the NRP geographic range (see Figure 3.1). The strategy exempts the programme areas "Control and development of the RIS" and "Intercompany platforms (cluster, networking events)" from this rule.

Still, RIS impact within the NRP perimeter is uneven. Evidence shows that SMEs and entrepreneurs in regional centres benefit more from RIS support than those in more remote regions and mountainous areas (Egli, 2020[16]; SECO, 2020[17]). In view of this, some stakeholders would like to see a redefining and reconsideration of the scale of policy intervention of the NRP. While the success of the NRP is acknowledged in regional centres, more targeted support for very rural regions and a reduction of the NRP perimeter have been part of the political discussion. In opposition, other opinions consider it crucial to include larger agglomerations in the NRP to facilitate knowledge transfer and make use of synergies in spaces that work closer with each other for progressing digitalisation and increased mobility (SECO, 2020[17]).

Table 3.2. Characteristics and bottlenecks of rural innovation

Characteristics	Incremental and slower – less dynamic and short-lived, use of local knowledge for steady improvement
	Experimental – utilising space available to test until a solution is found
	Based on customer or client contacts
	Smaller firms requiring local leadership and dedication
	Natural resource focus (tourism, energy, agriculture, forestry)
	Strong use of social and human capital in innovation
	Community-driven – meaningfulness as an objective
	Targeting local markets
	Use rural-urban links to leverage knowledge outside their location for more radical innovations
Bottlenecks	Dependency on young generations – need for business succession and interest/ability to work on new products and processes
	Reduced accessibility of networks, knowledge and support readily available (missing links to universities or research institutions)
	Lack of digital connectivity and skills

Source: Mayer, H., A. Habersetzer and R. Meili (2016[18]), "Rural-urban linkages and sustainable regional development: The role of entrepreneurs in linking peripheries and centers", https://doi.org/10.3390/su8080745; (OECD, 2020[13]; Freshwater et al., 2019[19]; Lee and Rodriguez-Pose, 2012[20]; Jungsberg et al., 2020[21]; Mahroum et al., 2007[22]; Shearmur, Carrincazeaux and Doloreux, 2016[23]; Wojan and Parker, 2017[24])

Box 3.2. Outlook into the RIS 2024+ strategy

In preparation of the new RIS strategic framework for the 2024-31 multiyear programme period, the State Secretariat for Economic Affairs (SECO) prepared a consultation process to elaborate on this new strategy and identified a couple of key aspects specific to innovation and rural areas. The following points summarise the key elements mentioned by stakeholders taking part in the consultation. Many of them are very much in line with the wider findings of the Rural Well-being Policy Framework and suggest that there is significant potential for the NRP24+ to benefit from the learnings of other OECD countries.

- **Redefine and reconsider the scale of policy intervention of the NRP**. Different geographies have different needs, the biggest differentiations exist between the large agglomerations, regional centres and peripheral regions in Switzerland. Large agglomerations have their own policy and the current NRP policy, and thus its innovation support mechanisms focus on regional centres and peripheral regions. While the success of the NRP is acknowledged in regional centres, it seems to fail to take into consideration that innovation works differently in more rural areas. Some voices demand more targeted support for very rural regions and a reduction of the NRP perimeter. In opposition, other opinions consider it crucial to include larger agglomerations in the NRP to facilitate knowledge transfer and make use of synergies in economic and physical spaces that are growing closer to each other through progressing digitalisation and increased mobility.

- **Enlarge the concept of innovation present in the NRP**. Innovation support has a strong technical focus, while organisational and social innovation is a less prominent part of the NRP. Policies seeking to support innovation at the regional level need to recognise this and adjust their mechanisms accordingly. Suggestions are made to enlarge programmes to include non-technical sectors and work with a broader range of stakeholders on a variety of challenges and solutions, with proposals for a more agile, less risk averse innovation support and increased experimentation potential, for instance through Living Labs testing solutions for the future at the local level.

> - **Complement economic policy objectives in the NRP with social and environmental ones**. Economic development can no longer be a single measure of success in times of climate change and demographic challenges. Rural economies are disproportionally affected by demographic decline and ageing and are highly sensitive to climate change effects. Regional policy needs to acknowledge its role in tackling these challenges and opportunities by including new objectives, such as the increased promotion of a circular economy, and better aligning with objectives of other sectoral policies such as climate policy, agricultural policy, social and labour policy.
> - **Further promote digitalisation and digital skills in the NRP**. Digitalisation allows firms and entrepreneurs to innovate and bring products to the market no matter where they are. Remote working and flexible work hours further increase the potential for decentralised value creation. Digital ecosystems are suggested as a tool to foster and promote regional transformation processes and already exist in some cantons.
>
> Source: SECO (2020[17]), *Weissbuch Regionalpolitik*, https://regiosuisse.ch/sites/default/files/2020-07/SECO%20%282020%29%20%C2%ABWeissbuch%20Regionalpolitik%C2%BB.pdf.

Shaping a future-proof vision for innovation that works for Swiss territories, including rural areas

Broadening the concept of innovation

Switzerland's federal system values cantonal independence, self-determination and local opportunities. In rural regions, there are smaller firms, higher shares of the agricultural, manufacturing and hospitality sectors and a growing services sector (see Chapter 1). While the current agenda for RIS includes a focus on SMEs, the relatively strong institutional focus is on research and development (R&D)-driven innovation. While there is already the possibility of coaching support in the tourism sector and further opportunity to widen the focus, support may be passing by some of the opportunities for innovation in other service sectors.

Despite a focus on bottom-up governance, innovation lacks diversity and is strongly focused on high-technology (high-tech) sectors, even if programmes are open to non-tech firms. The pharmaceutical and precision manufacturing industries are often the targets of innovation policies and programmes.

A large part of the offer of support that the RIS deliver is focused on coaching activities and providing space for SMEs and start-ups to work. RIS Basel-Jura provides different incubator and accelerator programmes that include support in: business plan development, funding, product development, communications, marketing, pricing and intellectual property. It also helps with business' needs for more than just RIS tasks. It supports and establishes contacts, for example specialists, research institutions or potential co-operation partners, and offer start-ups the opportunity to have their project or business idea reviewed by established industry experts, entrepreneurs and investors. These programmes are accompanied by three co-working spaces in Allschwil, Basel and Delémont (Jura). An overview of the innovation support provided can be found in Table 3.3 below. In addition to these services, digitalisation is seen as a key enabling condition for innovation in businesses (Regio Basiliensis, n.d.[25]).

Similarly, RIS Central Switzerland also offers individual coaching and business support as well as workspaces. Overall, the support is largely technology-focused and seeks to: support the generation of new ideas for products, and sometimes process innovations; provide feedback and insights from experts; help assess technological feasibility, regulatory barriers and market potential; help provide information on access to finance; provide special support and advice on patents and the patent landscape; and implement specific digitalisation programmes in mountainous regions. For example, a programme called Idea Check

assesses projects from SMEs that have a maximum of 50 employees and are either based in mountainous regions or have a significant impact in those regions. The projects are assessed by a jury, the winners receive the support of CHF 15 000 (Zentralschweiz innovativ, 2020[26]).

Table 3.3. Basel Area Business & Innovation types of innovation support

Focus industries	Focus area	Initiatives
Biotechnology	Ecosystem activation and start-up support	Basel Launch Accelerator and Incubator - Participants have access to funding, expert coaching and infrastructure
Digital health	Ecosystem activation, start-up support and collaborative projects	Day One* - Participants have access to funding, expert coaching and infrastructure, fora on topics of value-based healthcare, health data, hospital innovation
Manufacturing and industry	Ecosystem activation, start-up support and collaborative projects	i4Challange* - Participants have access to funding, expert coaching and infrastructure, fora and projects on topics including artificial intelligence, robotics, digital transformation

Note: Further industries can be added in the future. Entrepreneurs, innovators and SMEs are supported in the best way possible according to existing possibilities and competencies. The programmes marked with * are available in Jura.
Source: Regio Basiliensis (n.d.[25]), *Interkantonales Umsetzungsprogramm zur Regionalpolitik 2020-2023 der Region Basel-Jura*, https://www.regbas.ch/de/assets/File/UP-Basel-Jura_NRP_2020-2023_24_6_2020.pdf.

In Western Switzerland, the RIS also support innovation in a broad sense focusing on business and technological innovation for SMEs and start-ups. The support is carried out by two agencies, Platinn and Alliance. Platinn seeks to develop companies' business innovation capacity by mobilising them and facilitating their access to innovation and providing coaching in different areas, while Alliance is a knowledge transfer programme whose mission is to develop synergies and set up technological projects between companies and universities or research centres in Western Switzerland, in order to enhance know-how and technology transfer. In addition, they also provide sectoral networking and knowledge exchange platforms in the life sciences (BioAlps), information and digital technologies (Alp ICT), micro-nanotechnologies (Micronarc) and clean technologies (CleantechAlps).

The support programmes of the RIS largely reflect the economic structure of the cantons as well as their different business fabric. Yet, in particular, rural innovation needs are often only partially reflected, leaving possibilities for improvement. Gaps can be found in catering for established but small businesses that are looking to innovate aside from the technological realm or in opportunities for services that go beyond traditional sectors.

Most RIS seem to conceptualise innovation mainly in technological and product innovation terms. For instance, many programmes are often specific to the high value-added industry within manufacturing industries such as precision watchmaking and pharmaceuticals. Continuously and sustainably growing the manufacturing industry may be a challenge. The Swiss manufacturing industry lost 30 000 jobs and 1 000 firms between 2012 and 2017, equivalent to 2% to 6% of manufacturing jobs in rural, peri-urban and metropolitan areas (see Chapter 1). Furthermore, even though an increasing amount of R&D funding is being spent in the manufacturing sector in metropolitan areas, it did not result in an increase in jobs associated with innovation in 2017, as observed in Chapter 1. In rural and peri-urban areas, there is both a drop in spending and jobs in the manufacturing sector.[2]

While local ties to precision manufacturing and expertise in the pharmaceutical industry may be an important determinant of current well-being and the logic of choosing high-value sectors is sound for attaining high levels of productivity, it underestimates the rate of change in the economy and overlooks opportunities for the future of industrial arrangements that include new sectors of activities and the importance of adapting traditional economies. For adaptions to pre-existing ways of working, traditional

firms can benefit from the "fresh blood" of innovative SMEs through value chain links and strategic partnerships. For the development of diversified sectors, this can include supporting industries with services or encouraging the development of new industries. For example, in rural areas, we observe that increasing expenditures on R&D in the trade and services sector are also coinciding with increasing average jobs in research and expenditure. It is also notable that when R&D firms in rural areas spend funds on innovation, they are more likely to spend them within their own firms. Conversely, a higher share of average R&D spending in firms in metropolitan areas is spent outside the firm, either in other companies in Switzerland or outside Switzerland.

The wish to enlarge the concept of innovation present in the NRP and hence the RIS strategy also comes up in consultations for the new RIS strategy. Stakeholders perceive it as having a strong technical focus while organisational and social innovation are a less prominent part of the NRP. Public consultations have made suggestions to enlarge programmes to further include non-technical sectors and work with a broader range of stakeholders on a variety of challenges and solutions. A more agile, less risk averse innovation support and increased experimentation potential are recommended, for instance through Living Labs testing solutions for the future at the local level (SECO, 2020[17]).

Going forward, the RIS strategy and its implementation need to better recognise that, especially in rural regions, social, process and business model innovations can have positive effects and are needed to secure local well-being and prosperity. Therefore, to better reflect and enhance economic diversity, SECO, in collaboration with other national and regional actors, could lead to developing mechanisms that assure better reflection on needs in different geographies. One option would be to develop a high-level national innovation vision that incorporates experiences in the regional innovation system's trials, successes and errors, using consultation and agenda-setting with local partners to enlarge the concept of innovation beyond high-tech sectors, to include agriculture and tourism for example.

Future-proofing the innovation agendas

A future-looking approach for rural regions and areas often starts by understanding how current trends are changing society and transforming policy implementation. Future-proofing policy agendas anticipate how economies are changing, often before local entities have the time to react. While governments and individuals cannot anticipate all change, establishing observatories for change and benchmarking institutional performance and financial indicators to carry out projections across regions can help ensure that the government does not inadvertently block change by not reacting fast enough. Subsequently, once trends are identified, innovation support needs to accommodate them and help businesses and societies successfully manage these transformations.

Currently, detecting change and implementing the needs of different geographies happens through a report on territorial megatrends, which is published every four years by the council for spatial planning. The report makes 18 recommendations to the confederation, cantons and municipalities. Findings for 2019 specifically highlight:

- Automatising the agricultural industry.
- Safeguarding national capital, biodiversity and landscapes.
- Digitalisation as a basis for Industry 4.0, autonomous mobility and new modes of work and business.
- Service delivery for elderly people especially in rural areas.
- Reducing the use of resources and specifically enhancing renewable energy (Council for Spatial Planning, 2019[27]).

However, it is currently unclear how these findings are used to structure the RIS strategy and other innovation support given across territories. It seems that, within the RIS, identified megatrends are largely acted upon under the leadership of individual people or entities but not in a strategic way.

To address this gap, SECO could provide a regional lens for other national innovation outlooks and could, in collaboration with other government departments responsible for innovation at the federal and cantonal levels, reinforce existing monitoring practices, such as the existing regional development monitoring by *regiosuisse*. It could also contribute to establishing a cross-agency observatory to monitor trends that signal structural change and projected trends within rural regions. An example of a pan-government task force to monitor and anticipate change is available in Box 3.3. This entity should:

- Provide guidance for national and regional innovation strategies and agendas.
- Be composed of partners from regional and local authorities, academic institutes, the private sector and social partners.
- Anticipate change and develop strategies for supporting the transition of current firms in rural areas into new business models.
- Encourage adaptability to new market conditions or other global factors such as climate and demographic change, while avoiding over-dependence on traditional industries.
- Monitor challenges for women, youth and older workers.
- Consider extending and building a rural lens for the current Swiss Perspective 2030 described in Box 3.3.
- Promote innovation inside the policy-making process. This can include the adoption of new policy tools (e.g. open government) and re-enforcing the consultation process with non-government actors.

Box 3.3. Strategic foresight and initiatives to anticipate demographic change

Strategic foresight in policy making

Strategic foresight is a thought-driven, planning-oriented process for looking beyond the expected future to inform decision-making. It aims to redirect attention from knowing about the past to exercising prospective judgement about events that have not yet happened. For example, strategic foresight does not claim predictive power but maintains that the future is open to human influence and creativity, with an emphasis – during the thinking and preparation process – on the existence of different alternative possible futures (Wilkinson, 2017[28]). This generates an explicit, contestable and flexible sense of the future, where insight into different possible futures allows the identification of new policy challenges and opportunities and the development of strategies that are robust in the face of change. Some governments have conducted such exercises to define possible future scenarios and adapt public policies.

MetaScan 3, Canada

A possible-scenarios assessment (MetaScan 3: Emerging Technologies) was used by the Canadian government in 2013 to explore how emerging technologies will shape the economy and society, and the challenges and opportunities they will create. The study involved research, consultations and interviews with more than 90 experts. The key findings include some of the following policy challenges:

- The next decade could be a period of jobless growth, as new technologies increase productivity with fewer workers.
- All economic sectors will be under pressure to adapt or exploit new technologies, in which case having workers with the right skills will be essential.
- New technologies are likely to significantly alter infrastructures, forcing governments to decide whether to maintain old infrastructures or switch and invest in new, more efficient ones.

Megatrends analysis and scenario planning, United Kingdom (UK)

In 2013, the UK Government Office for Science launched a plausible scenarios-led foresight assessment (Futures of Cities). The goal of the project was to develop an evidence base for the future of UK cities (challenges and opportunities towards 2065) and to inform national- and city-level policy makers. The office commissioned working papers and essays and conducted interactive workshops, with over 25 UK cities participating. By combining megatrends analysis and scenarios planning, the study imagined a plausible future consisting of considerable climate shocks presenting key urban challenges by 2065 – e.g. drier summers and heatwaves affecting the UK's southern cities and higher levels of precipitation affecting western cities during the winter.

Perspective 2030, Switzerland

The first step of the *Perspective 2030* report by the Federal Chancellery used online questionnaires submitted to experts and think tanks to identify influencing factors, changing trends and megatrends that will impact Switzerland in the next 15 years. During the second step, the surveyed experts assessed the influencing factors and trends by assigning them a value between 1 (low impact/low degree of uncertainty) and 10 (high impact/high degree of uncertainty). Third, the report integrated influencing factors and trends into four different plausible world scenarios that analysed the interaction between the Swiss and international influencing factors as well as the resulting potential "winners" and "losers" for each scenario.

A long-term vision for rural areas, European Commission (EC)

The EC (2021[29]) elaborated its long-term vision for rural areas in the EU up to 2040 following a series of consultations with the public and experts. The long-term vision is accompanied by a Rural Pact and EU Rural Action Plan. The vision identifies: the importance of innovative solutions for service provision and social innovation; the importance of physical and digital infrastructure; resilience to climate change, natural hazards and economic crises; and bringing prosperity through attractivity to companies and digital skills. The EU Rural Action Plan focuses on rural proofing and building a rural observatory for monitoring and supporting the development of the rural action plan.

Science and Technology Foresight Centre, National Institute of Science and Technology Policy (NISTEP), MEXT, Japan

Looking beyond the next 20 years, the Japanese government is carrying out foresight activities through regional consultations looking into the impact of science and technology on regions in Japan. Involving policy makers across several government ministries, from universities and public research institutes, the business sector, civil society organisations, citizens and international participants, the initiative practices horizon scanning, trend analysis, scenario planning, the Delphi method, visioning and back-casting among other exercises.

The initiative started with a survey to identify trends in science, technology and society by horizon scanning and then created multiple future visions of society (desirable future visions to be realised by 2040) by visioning. Concurrently, 7 disciplinary committees identified 702 medium- to long-term R&D agendas (as "science and technology topics").

After consulting with more than 5 000 experts to evaluate each topic through the Delphi method, the initiative attempted to extract 8 cross-cutting areas and 8 areas based on 1 or 2 areas (as "close-up science and technology areas") using mechanical methods and experts' judgements. Finally, it created 4 conceptual scenarios based on the 50 social visions and 702 science and technology topics. From these, the initiative extracted 16 "close-up" science and technology areas from 702 topics, based on a mechanical process using artificial intelligence-related technology (analysing similarities and clustering topics through natural language processing) and experts' judgements. Eight areas are considered with

high potential for multi/inter-disciplinary and the other eight areas are based on one or two specific fields. These areas are expected to have a possible high impact in solving social issues and/or also serve as common fundamental technologies and systems.

Before the next round, expected in 2024, the initiative plans to conduct several in-depth scenario analyses for several "close-up science and technology areas" defined in the 2019 exercise. It also plans to experiment with new methodologies and outreach by holding several regional workshops.

Anticipating demographic change through a pan-government approach, Population Policy Task Force, Korea

Demographic change has been a major consideration for the Korean government over the past decades, but anticipation and foresight on measures to address how change would impact society started to take a more central role in co-ordination of several related government institutions only towards the end of the 2010s. The initiative to address changes started with a cross-agency commission to measure, plan and take actions to ensure the well-being of individuals across territories.

The Korean Presidential Committee on Ageing Society and Population policy was launched in 2019 to address demographic challenges. As a pan-government initiative, the task force helped provide evidence to promote a co-ordinated approach to strengthen the entire society's adaptive capacity to the change.

The previous two task forces worked successively, addressing issues related to how projected demographic change would impact policies from April 2019 and July 2020 until January 2021. The first round prepared the government to discuss an extension of the legal retirement age in 2022 from 60 upwards in preparation for the projected 20% of the population that would be 65 and over in the near future. It also resulted in adjusting the supply/demand model for teachers and schools and reforming the military structure and personnel. The second round of consultations targeted initiatives to counteract the hollowing-out of small- and mid-sized regions and included plans for vacant housing and more elderly transport policies.

The issues in the current task force, starting in January 2021, address four major strategies around demographic change and sustainability. They include initiatives on: i) absorbing labour shortage shocks caused by demographic change; ii) responding to the shrinking society; iii) taking pre-emptive action against possible local extinction; and iv) improving the sustainability of the entire society. The strategies target improving opportunities for populations such as women, the elderly, as well as local citizens and the wider public, as defined in Table 3.4.

Table 3.4. Korean Population Task Force goals

How will Korean society change through population policy measures?

Women	Measures to provide more childcare services for families with children in elementary school.
	More hours of education for elementary school students; expanded one-stop services for all-day care; better management and supervision for private childcare services.
	Measures to promote the market for domestic services.
	Establishment of plans to boost the domestic service market.
	Measures to reduce the gender gap in the labour market.
	More aggressive action to improve employment conditions; better disclosure system for indication of gender equality; more incentives for women's entry to science, technology, engineering, and mathematics (STEM) areas.

Elderly	Measures to support more opportunities for older individuals to be economically active.
	Promotion of discussion on the reform of employment and wage system for the elderly.
	Measures to increase access to healthcare services to provide the elderly with a healthier life after retirement.
	Introduction of at-home medical centres; better medical services for patients in vulnerable areas using information and communication technology (ICT); development of non-face-to-face diagnosis/treatment services for the elderly.
	Measures to extend care services to all individuals for specific needs.
	Introduction of an integrated assessment system for healthcare, nursing and general care; more supply of care service workers and better service quality.
Local citizens	Measures to incentivise local talent to work in regions for regional development.
	Innovation of universities as a regional hub; lifelong vocational education in colleges linked to regional strategic industries; region-specific pilot visa projects to attract skilled foreign nationals.
	Measures to improve regional hub cities to increase competitiveness up to the level of the capital region.
	Review of reorganisation of local administrative systems, including the establishment of plans for supra-metropolitan areas and the integration of administrative functions at the regional level.
	Measures to increase the resilience of regions at risk of depopulation.
	Joint use of community infrastructure between regions; promotion of specialised regional projects.
General public	Measures to increase opportunities for adult skill upgrading.
	Interconnection between lifelong learning services and platforms; operation of various academic programmes and courses for adults at universities.
	Measures to secure a high degree of protection for platform workers.
	Promotion of the enactment of the Platform Workers Protection Act and the amendment of the Employment Security Act, the Framework Act on Employment Policy, and Framework Act on Labour Welfare; consideration of a comprehensive protection system.
	Measures to protect all families without discrimination.
	Expansion of concept for a family under the Framework Act on Healthy Families; greater support for single-person households; elimination of discrimination in laws and systems.
	Measures to support the development of skilled workers.
	Establishment of digital education centres; database setup and transfer of skills and expertise.
	Measures to support the evidence base for a broad range of other policies.
	Improvement of demographic statistics infrastructure; composition and operation of a research team for demographic policies.

Source: Author's elaboration based on information provided by the Korean Ministry of Land, Infrastructure and Transport and OECD Territorial Review of Korea; Strategic Foresight from OECD (2020[13]), *Rural Well-being: Geography of Opportunities*, https://doi.org/10.1787/d25cef80-en, adapted from OECD (2019[10]), *OECD Regional Outlook 2019: Leveraging Megatrends for Cities and Rural Areas*, https://doi.org/10.1787/9789264312838-en, using methodology from Wilkinson, A. (2017[28]), *Strategic Foresight Primer*, European Political Strategy Centre; EC (2021[29]), "Long-term vision for rural areas: For stronger, connected, resilient, prosperous EU rural areas", https://ec.europa.eu/regional_policy/en/newsroom/news/2021/06/30-06-2021-long-term-vision-for-rural-areas-for-stronger-connected-resilient-prosperous-eu-rural-areas.

Future-proofing the innovation agendas: Focus on demography

A forward-looking and inclusive innovation policy also needs to address barriers to participation in the labour market and entrepreneurship for under-represented populations, including women, youth and

migrants. Increasing diversity, for example by activating female, young and migrant entrepreneurs increases positive outcomes for innovation and has the potential to solve challenges that may impact women and men unequally. For example, one Swiss start-up driven by a young female migrant, studying at the Swiss Federal Institute of Technology Lausanne (EPFL) has built a business based on a circular economy model that breaks down polyethylene terephthalate (PET) plastic (of which only 9% is recycled every year) at landfills and sells it back to industry. Another example is the start-up Kokoro Lingua, whose female migrant founder provides virtual English language classes for over 100 000 children taught by other children whose native tongue is English. Having started prior to COVID, this start-up was well-positioned to grow when education during lockdowns was transitioned on line.

As observed in Chapter 2, there is a lower rate of females participating in the workforce, where there are two men employed to every woman in low-density peri-urban areas. While the rate is still high in metropolitan regions, it is lower than in most non-metropolitan regions. Rural and peri-urban regions suffer from a loss of opportunities for a competitive and diverse labour market through a lower activation of the female workforce. Thus, there seems to be significant potential for supporting rural women in entrepreneurship by addressing the systemic barriers that many rural women face in growing their businesses. There is a growing understanding that gender-neutral business support measures do not assist women's enterprise development to the extent that they assist its male equivalent. Yet, no specific objectives for encouraging entrepreneurship and opportunities for women and other harder-to-reach communities are included in the government's NRP.

Young entrepreneurs have a high potential to innovate. However, given the relatively low share of youth in rural regions, in part due to the pursuit of higher education in denser areas, enjoying the benefits of innovation through young entrepreneurship is limited. According to recent work by the EC and OECD (2020[30]), young people between the ages of 18-30 consider entrepreneurship as a desirable outcome and have a higher potential to be innovative. In European OECD countries, in 23 out of 27 countries for which data is available, young entrepreneurs tend to offer products or services that their customers find to be new and unfamiliar. However, they also tend to report having the knowledge and skills to start a business and have difficulties accessing finance and entering networks, have few role models and low levels of awareness of programmes to support business ventures. The findings are similar to the analysis of characteristics of young start-up entrepreneurs from the upcoming report on *Understanding Innovation in Rural Regions* (forthcoming[31]).

More inclusive policies might include specific support, for instance through empowering initiatives, knowledge-building activities as well as reforms to correct for market failures in access to government services for all parts of society, including women and youth. Furthermore, there are long argued gains in productivity through more inclusive policies. Improved knowledge of the specifics of women-led or youth-led innovation, more supportive innovation ecosystems and smart solutions coming from women, youth and migrant-led innovations will empower rural people to act for change and get rural communities prepared to achieve positive long-term prospects, including jobs for all, in particular women, youth and migrants. Further guidelines on engaging with youth and women in rural areas are available in Box 3.4.

To achieve this, SECO and the RIS should:

- Improve knowledge on women, youth innovation in rural areas and create a better understanding of why the proportion of women in established start-ups is low.
- Set objectives for encouraging entrepreneurship and opportunities for women and other harder-to-reach communities in the NRP and develop business support measures targeted to different population groups.
- Consider analysing the impact of policies on harder-to-reach populations such as women, older workers and younger workers in the monitoring and evaluation strategy.
- Establish a gender strategy within the RIS structure to evaluate how programme policies can better accommodate female entrepreneurs and workers in STEM.

- Establish a youth strategy within the RIS structure to evaluate how programme policies can better accommodate young entrepreneurs.

Box 3.4. Support for women and youth in rural regions

Women's entrepreneurship, South of Scotland Enterprise, Scotland (UK)

Building a new strategy for Scotland's newest regional development agency, South of Scotland Enterprise (SOSE), presents opportunities for new thinking and approaches to regional, place-based development. With no previous record of delivering programmes, much of the leg work is still in the works. It was particularly disabled by the challenges of starting a new agency during COVID. SOSE are nevertheless looking to the future, beyond recovery efforts, and acting now to deliver transformational change. One of the key components of their regional innovation strategy under the head of the innovation and entrepreneurship unit is establishing new programmes specifically to address the needs of female entrepreneurs and barriers they encounter in accessing business support. The process is currently underway.

Women Entrepreneurship Strategy (WES), Canada

The Canadian Department for Innovation, Science and Economic Development (ISED) estimates that by ensuring the full and equal participation of women in the economy, Canada could add up to CAD 150 billion in gross domestic product (GDP). With only 17% of Canadian small- and medium-sized businesses owned by women, the government of Canada developed a WES with CAD 6 billion in investments and commitments to encourage access to finance, talent, networks and expertise. It includes an Inclusive Women Venture Capital Initiative, a Women Entrepreneurship Loan Fund, an Ecosystem Fund and the Women Entrepreneurship Knowledge Hub. Other similar programmes exist in the form of a Women Entrepreneur programme administered by Farm Credit Canada, a Women in Technology Venture Fund, a Women Entrepreneurs programme administered by the Business Development Bank of Canada and a Women in Trade programme administered by Export Development Canada.

Regional development agencies (RDAs) in Canada, such as ACOA, FedDev Ontario, PrairiesCan, PacifiCan and provinces across Canada provide specific support, consulting and advisory services to women. They deliver two aspects of the WES:

1. The Women Entrepreneur Fund (WEF) provides non-repayable contributions of up to CAD 100 000 to support women-owned and women-led businesses to scale/grow and reach new markets (programme completed).

2. The WES Ecosystem Fund, a National and Regional fund, is a four-year programme that runs until March 2023. Notably, the fund:

   o Provides non-repayable contributions to non-for-profit partners that deliver business services and support programming to women entrepreneurs.

   o Included an additional top-up to support women entrepreneurs to navigate the COVID-19 crisis.

Through WES, the RDAs seek to increase the number of women-owned and -led businesses and strengthen capacity within the entrepreneurship ecosystem and close gaps in service for women entrepreneurs.

The Women's Enterprise Initiative is an example of a distinct Canadian regional programme that addresses the challenges that women entrepreneurs face. The initiative, in partnership with PrairiesCan and PacifiCan, helps women entrepreneurs start, scale up and grow their businesses. There is a

Women's Enterprise Initiative organisation in each of the four Canadian western provinces (Alberta, British Columbia, Manitoba, Saskatchewan). These non-profit organisations provide a variety of unique products for women entrepreneurs, including business advisory services, training, networking opportunities, loans and referrals to complementary services (Government of Canada, 2021[32]; 2021[33]).

Funding diversity, United States (US)

The regional offices of the US Department of Commerce engage and activate programmes specifically to support female-run and minority entrepreneurs, including Indigenous and black entrepreneurs.

In the US, programmes are developed through the Minority Business Development Agency (MBDA) to help provide access to working capital and gap financing for women and minority communities. The MBDA is a federal agency solely dedicated to the growth and global competitiveness of minority businesses. In addition, the Department of Commerce's Economic Development Administration provides revolving loan funds (RLFs) to help bring access to capital and gap financing for minority-run firms, in addition to community development financial institutions (CDFIs) that help find and sponsor funding for rural communities.

Guidelines for attracting and retaining skilled young population in rural areas, US

According to the US Rural Policy Research Institute (RUPRI) and the associated programme Energizing Young Entrepreneurs (EYE), rural communities can promote a series of actions to benefit from the full potential of their young population:

- Invest time and resources in youth priorities and make communities more attractive for young people to live, work and develop activities.
- Improve the school-to-job transition by strengthening interactions between regional higher education institutions and firms.
- Map the community's assets in order to match educational and training programmes with career opportunities.
- Promote the development of a good business framework able to offer small business ownership and high-level job opportunities to young people.
- Provide entrepreneurial education within the school systems or as an extracurricular training programme, in which students can meet local entrepreneurs and gain hands-on knowledge.
- Offer access to technical assistance and business coaching for young entrepreneurs.
- Consult and involve young people in every phase of the economic activities in the region, to develop a sense of ownership and vested interest in their communities.

Source: OECD (2012[34]), *OECD Territorial Reviews: Småland-Blekinge, Sweden 2012*, https://doi.org/10.1787/9789264169517-en; OECD (2012[35]), *OECD Reviews of Regional Innovation: Central and Southern Denmark 2012*, https://doi.org/10.1787/9789264178748-en; RUPRI Centre for Rural Entrepreneurship; e2 Entrepreneurial Ecosystems (n.d.[36]), *Homepage*, www.energizingentrepreneurs.org (accessed on 19 August 2022); U.S. Department of Commerce (2022[37]), "Women-Owned and Indigenous Small Businesses Thrive with EDA and MBDA Support", https://www.commerce.gov/news/blog/2022/03/women-owned-and-indigenous-small-businesses-thrive-eda-and-mbda-support; Government of Canada (2022[38]), *Women Entrepreneurship Strategy*, https://ised-isde.canada.ca/site/women-entrepreneurship-strategy/en.

Future-proofing the innovation agendas: Focus on climate change

Transitioning to a zero-carbon economy and adjusting to climate change implications is the task of this century. Switzerland has set itself the goal to become climate neutral by 2050. Overall, rural regions are pivotal in the transition to a net-zero-emission economy and building resilience to climate change because

of their natural endowments. Many rural economies (e.g. agriculture, forestry, tourism, energy, etc.) are already suffering from the increased frequency and intensity of extreme weather events such as storms, floods, torrents and landslides. In many rural regions across the world, increasing heat waves will contribute to water scarcity, with risks to food production. As nature loses its capacity to provide important services, rural economies will suffer significant losses as they rely on the direct extraction of resources from forests, agricultural land or the provision of ecosystem services such as healthy soils, clean water, pollination and a stable climate (OECD, 2021[39]).

Transitioning to net-zero will require a massive deployment of alternative energy technologies as well as new technologies that are not yet on the market or are currently in the demonstration or prototype phase. This means that significant innovation efforts must take place this decade in order to bring these new technologies to market (IEA, 2021[40]). Many of these innovations will need to occur in rural regions where their renewable energy can be generated from sun, wind and water and where there is massive potential to develop the circular economy and bioeconomy. Supporting innovation in these areas not only diversifies ongoing business activities, it can also create new businesses while contributing to environmental and climate protection.

The private sector, and particularly SMEs, are considered a potential driving force for the zero-emission transition – notably through innovation in their products and processes. Product innovations include design that replaces non-renewable materials and resources with renewable, recycled, permanent, biodegradable, non-hazardous and compostable materials and resources; and processes innovation involves the recreating processes, so that products are made to be more easily disassembled, recycled, modular (replacement of parts, recovery and reuse of systems and sub-systems) and repairable (OECD, 2020[41]).

In Switzerland, the circular economy has also gained in importance, especially through various parliamentary initiatives, interpellations and postulates that have been developed in recent years. Furthermore, at the federal level, a first National Research Programme (NRP 73) aims to combine research on all natural resources, all stages of the value chain and the integration of the environment, economy and society. A number of projects include a focus on the circular economy. Legal framework conditions for fostering a circular economy are still under discussion in the Swiss parliament[3] and the federal administration for the environment is in charge. More grassroots and private initiatives have also emerged. For example, in 2018, the initiative Circular Economy Switzerland was launched, supported by the MAVA Foundation and the Migros Group. The initiative aims to promote the circular economy in Switzerland with various projects and events such as a circular economy incubator, in which 27 Swiss start-ups are supported in building a more circular Switzerland (regiosuisse, n.d.[42]). At the regional scale, *regiosuisse* has developed a toolbox aiming to support regions, municipalities or cities in advancing on circular economy. The toolbox offers a methodological framework, inspiration, assistance and practical tips. The toolbox is set up in a modular structure or, depending on interests, consulted selectively (regiosuisse, n.d.[43]).

By providing the right support, RIS have the potential to become enablers of the net-zero transition and attaining climate objectives. Currently, climate change and the way businesses can move to more sustainable, less-emitting ways of doing business only marginally feature in the RIS programming (mostly events) and strategy.

There is great potential for the future NRP and RIS strategies to put greater emphasis on innovation that can advance climate change mitigation and adaptation. This can be done by:

- Adapting RIS coaching to feature business support on innovation for climate change: preparing businesses to assess possible climate risks (physical, price, product, regulation), improving energy and waste efficiency in their businesses and across value chains, and helping them to source power from renewable resources or minimising waste, saving energy, water and materials, recycling and reusing materials or waste, while offering green products and services.

- Facilitating connections and dialogue around innovation for climate change, fostering system thinking and collaboration amongst public, not-for-profit actors and businesses. In addition to workshops and events, RIS could also explore using tools and competitions for climate-friendly innovations similar to the ones organised by Glasgow, where businesses are asked to find a circular solution to local challenges.

- Ensuring the RIS strategically connects to other circular economy initiatives and measures being developed in Switzerland. In this context, the RIS could also further leverage learning from the circular economy toolbox under development through the NRP as well as establish a connection to the Innosuisse Innovation Booster "Applied Circular Sustainability", where appropriate, helping businesses to engage in this transition.

- Encouraging the development of any mechanisms related to innovation in line with net-zero-emission targets and contributions to climate change. Alternatively, requiring all businesses that receive support for innovations to demonstrate their compatibility with net-zero-emission targets and contributions to climate change. This way, the RIS and the businesses it supports function as a role model for other businesses and government agencies to climate-proof their work.

Box 3.5. Capacity building on the circular economy

The circular economy in Glasgow

Since 2015, the Glasgow Chamber of Commerce hosts Circular Glasgow and is responsible for delivering this initiative alongside Zero Waste Scotland, the Glasgow City Council (UK) and key stakeholders. Circular Glasgow aims to build best practices and capacity on the circular economy across Glasgow businesses, helping them identify opportunities to support and implement circular ideas. This is done through: workshops and events – a series of knowledge-sharing business-to-business networking events; Circle Assessment – a tool which helps businesses understand opportunities to become more circular; the Circle Lab – an online hackathon event to find a circular solution to local challenges. The Circle Lab sought solutions to make Glasgow's event industry more circular. From over 200 contributions, the 3 winning ideas include a deposit-based reuse system for food and drink containers, circular designs for event marketing and branding, and a scheme that will repurpose organic waste into energy and fertilisers. Ways to turn these ideas into pilot projects are now being explored. The city is currently developing a circular economy roadmap.

Source: OECD (2020[41]), *The Circular Economy in Cities and Regions: Synthesis Report*, https://doi.org/10.1787/10ac6ae4-en.

Building a culture for experimentation

Another way to prepare for and adapt to change is the use of experimental tools, such as regulatory sandboxes, Living Labs or other experimentation processes that can provide new public services to a changing economy. To develop and foster a culture of experimentation, Living Labs have provided good results across the globe (see Box 3.6). These mechanisms allow innovators to test solutions for the future

at the local level, mimicking real-life situations. Germany for instance has developed a federal strategy to systematically establish Living Labs as an economic and innovation policy instrument in the area of digitisation. Since May 2017, a ministerial project group Reallabore has been conducting a needs analysis, contributing to a comprehensive research agenda on the requirements for Living Labs in digital transformation, has established a wide range of stakeholder contacts and developed an implementation agenda. The aim is to systematically establish Living Labs in Germany and to make a significant contribution to the development of Living Labs in contributing to a new digital regulatory framework. These temporally and spatially limited test spaces for predominantly digital innovation and regulation are an instrument for gaining concrete experience in the interplay of innovation and regulation, aiming to improve regulation in a digital age. To that end, temporary modifications to the legal framework, e.g. in the form of experimentation clauses, will create the flexibility for innovations, can be tested in practice and regulation can quickly be adapted to new developments (BMWi, 2018[44]).

Rural places are often particularly suited for these types of experimentation. This is because they, in comparison to more urban counterparts, have the benefit of available space, function as a rather independent system and have lower living expenses. Consequently, by creating a regulatory environment that eases other pressures on firms, individuals in rural regions may experiment more easily than in high-income, high-turnover regions. Likewise, government public innovation service delivery cannot only benefit from learnings and experiences but must also involve businesses that have found the practice useful for building consensus and ownership.

In Switzerland, Living Labs are largely being initiated at the cantonal level and in the forms of accelerator or co-working paces. For instance, in Jura, the programme Day One Accelerator supports innovative ventures that solve problems across a broad range of healthcare. Another example is the Innovation Park Biel/Bienne, which offers an innovative environment for around 500 people that work on and seeking an exchange in the areas of digitalisation/industry 4.0, and all kinds of interdisciplinary innovation projects in the fields of medical technology and health technology or the area of energy storage. It offers workstation rental as well as digitalisation and electronics laboratories workshops and clean rooms where innovations in the form of prototypes and small production series can be established (SIPBB, n.d.[45]).

Other programmes such as so-called "model projects" are also supported by the federal level, for instance, between 2020 and 2021, 31, innovative projects in villages, regions, agglomerations and cantons from the perspective of spatial development. These projects are supported with a total of CHF 3.9 million and are divided into five themes including digitalisation, development of local development strategies, the usability of public space, improving rural areas and demographic change. While not all of these model projects have the more "open innovation" laboratory characteristic of Living Labs, some do. For example, in the mountainous region of Albula und Prättigau/Davos, actors from the public sector, the housing industry and civil society join forces in lab structures and develop approaches and measures to investigate how to adjust housing stock to demographic change and increase liveability for elderly people (ARE, n.d.[46]).

In addition to fostering a culture of experimentation for SMEs and entrepreneurs, RIS can also consider doing this for themselves, creating more diversity, experimentation and flexibility and their own way of working. This can allow them to adjust to changes in client needs or to pick up specific trends.

Unlocking the potential of innovation in rural regions thus implies a need for the RIS to become more agile and increase the level of experimentation in the innovation support they provide. This would include broadening and changing the RIS support portfolio and adding more experimental measures and approaches to their work to improve outcomes.

They can do this by:

- Experimenting in delivering and adjusting already existing mentoring and coaching services. Such experiments should incorporate:
  - Varying offers based on the needs of different target groups, based on gender, age and territory, drawing on behavioural insights.
  - In the selection of coaches, an increase in the number and variety of potential coaches to foster interlinkages between sectors and reduce existing silos, paying attention to the different qualifications and backgrounds of coaches, supplementing R&D coaches with those with a background in business development or other areas.
  - Experiments with setting up peer-to-peer engagements, for instance through mentors who have already started a business and have solved similar problems. Matches with firms with well-performing peers have offered promising results in research (McKenzie and Woodruff, 2021[47]), although the impacts depend on the type of peer and only certain information will diffuse this way.
  - New methods of impact evaluation and monitoring, for instance using rigorous measurement procedures that include counterfactuals or randomised control trials.
- In addition to standard support provided, engaging in collaborative initiatives in physical spaces, such as innovation sandboxes and Living Labs that allow innovators to test solutions for the future at the local level, mimicking real-life situations. This would require close co-ordination with other government bodies on the cantonal and municipal levels.
  - Innovation sandboxes can be narrow in focus and time-limited. Based on the outcomes of such experiments, governments can decide whether to adapt policies to encourage the upscaling of such experiments.
  - Living Labs are physical spaces where individuals may experiment with the development of new products and services, often accompanied by material and in-kind services.
- Supporting a culture of experimentation by providing specific grants through cantons that allow companies to access networks that help them to think outside the box or test porotypes or new services. Furthermore, adjusting programmes to integrate greater lead times, accepting incremental advances as programme outcomes, or encouraging learning from failures as advances should be considered in RIS support.
- Allowing for certain agility in the programme, giving entrepreneurs the opportunity to bring forward ideas and requests for what they would like to see and provide bespoke support if a good case is made.

Box 3.6. Innovation sandboxes and Living Labs

Regulatory innovation sandboxes

In 2016, the first regulatory innovation sandbox allowed experimentation in the financial technology (fintech) industry. According to a recent study, since then, 73 fintech sandboxes have been established in 57 countries, with more than half between 2018 and 2019 (World Bank, 2020[48]). An innovation sandbox is a type of regulatory sandbox that encourages innovation, holding several regulatory requirements on pause while innovators experiment on whether outcomes of innovations may develop useful innovations that may solve greater issues or prove whether regulations may be needed. Regulators across the globe are using regulatory sandboxes to provide a safe environment for emerging technologies to test regulatory boundaries.

A recent report showed that they tended to serve as a base to test the necessity of regulations, facilitate firm start-up entrepreneurship and foster new partnerships. A few examples include a fintech sandbox in Australia and a digital sandbox in the UK. Additionally, initiatives in the agri-tourism sector of the Jura region of Switzerland fit a similar definition.

Fintech sandbox in Australia

The Australian government established an Australian Licensing Exemption Scheme through the Australian Securities and Investments Commission (ASIC) that allowed exceptions for eligible fintech companies on certain products and services for up to 12 months without a license. This allowed firms to begin operating quickly, with low barriers to starting a new fintech company through lower compliance costs. The firm is required to notify ASIC of its plans but remains momentarily free to experiment with the product and services offered.

Digital sandboxes in the UK

Starting with the beginning of the global COVID-19 pandemic in May 2020, the Financial Conduct Agency in the UK began piloting a "digital sandbox". The initiative is currently in its initial stages, attempting to provide guided support for firms looking for a digital testing environment with the aim of addressing some of the challenges of the pandemic. The initiative has a specific goal and is administered through a call for applicants who are given the right to participate based on whether their aim to accomplish one of the goals of the administration includes preventing fraud, improving the financial resilience of consumers and access to finance for SMEs.

Regulatory exemptions in tourism in the Jura region, Switzerland

While not directly marketed as such, two examples of regulatory sandboxes with the specific target of developing the tourism sector are found in the mountainous region of the Jura in Switzerland. Both initiatives were driven from the bottom-up and included the co-ordination efforts of the regional innovation system agencies.

A first example was built in collaboration with TalentisLab, which requested an exemption from environmental protection legislation that limited activities associated with ecotourism. After an application for exemption and a call for proposals, a new initiative to encourage eco-responsible tourism in the provision of campsite accommodation is being put into place.

A second example involves temporarily lowering prohibition from visiting publicly protected places while visiting local towns. The initiative provides access to a "secret route" (*circuit secret*) to groups of tourists that have acquired digital keys. The community of Porrentruy, in collaboration with the RIS agency services, worked on reducing regulations on access to public places that may be of interest to areas with an increase in tourism. This has allowed the town of Porrentruy, whose business was strongly impacted by the COVID-19 pandemic, to gain in visibility and attractiveness.

Innovation labs

Another increasingly popular way to encourage innovation are Living Labs, "fab labs" and similar initiatives to bring previously inaccessible tools to budding innovators. The Interreg Europe Policy Learning Platform (see note 1 below) is one of the agencies supporting the increased use of such tools that create a place to learn, experiment and enjoy the process of innovation. While the different labs vary, they generally provide a mix of services such as skills, materials and advanced tools to participants that can include university-industry collaborations and provide prototyping services for SMEs.

Living Labs, Portugal

The experience of implementing Living Labs in Portugal dates to the 1990s. Since then, they have been of crucial importance for the economic, social and business development of the country. To date, 18 projects have been developed, some of which are part of the European Network of Living Laboratories (ENoLL). There are diverse types – local, sectoral and thematic Living Labs – organised in regional, national and transnational networks. Sectoral and thematic Living Labs include labs for energy, well-being and health, e-government and digital participation, sustainable environment, mobility, rural and territorial development, and industry and logistics.

The Smart Rural Living Lab (SRLL) was founded at the end of 2007 and is located in Penela in central Portugal. It aims to develop new methods and technologies to identify the weaknesses and strengths of rural areas, find references for sustainable rural development, export the acquired knowledge to other rural areas and collaborate with citizens to promote rural areas. Key local issues are related to an ageing population and the weak development of the economic fabric. The goal of SRLL is to promote innovation and development in the exploration of innovative technologies, methods and applications to achieve better integration of rural areas into the global supply chain, create new services/systems/products and business opportunities, and promote citizen participation.

SRLL has established itself as a centre for innovation, best practices and sustainable development of rural areas where the agri-food and forestry sectors are strong. For example, for the problem of the lack of shepherds to take care of sheep needed for local Rabaçal cheese (protected designation of origin), a smart farm concept called FarmReal (see note 2 below) was tested. This involves investment in a community herd via crowdfunding and the adoption of individual animals by investors, who would then check their physical activity and milk production digitally via specific sensors. Users become "virtual shepherds" of real goats and can follow the day-to-day life of the adopted goats, monitoring their behaviour and socialisation through updated photos and videos, their GPS location, as well as the area and amount of vegetation used by the herd.

Living Lab e-Health and smart energy grids, Eindhoven, The Netherlands

As part of the Brainport Development Cluster, Eindhoven also houses an example of a Living Lab that focuses on the development of time-limited trial runs for new products and services. Brainport works with local stakeholders, higher education institutions, the government and a consortium of private sector parties, to focus on experimenting with new solutions to pre-existing issues. Through Living labs, individuals are given a license to test out a new initiative in a short time frame to get quick feedback and determine the feasibility, benefit and scalability of such a project. For example, Living Lab eHealth provides elderly people with the opportunity to try out new medical and healthcare services and a smart energy grids project provides new energy solutions for social housing.

The Center for Innovation and Entrepreneurship in California Polytechnic State University, US

As a service to students led by students, California Polytechnic State University has created a space for budding entrepreneurs to use materials involved in developing new products and services in a variety of sectors including but not limited to manufacturing, farming and services. This initiative provides some of the more advanced and often more expensive tools to experiment with innovative ideas. Some of the materials available for students to use include vinyl cutting, 3D printing, virtual reality, computer numerical control (CNC) routing and laser cutting resources.

The student-run organisation also offers workshops for learning engineering and artistic skills, as well as small grants that facilitate the development and starting of new student-run projects. Funds for grants are targeted toward bringing ideas from the innovation sandbox to entrepreneurial fruition.

> *Experimenting in the public sector*
>
> The use of "serious games" to support governments and make various options for courses of action visible through systems thinking and futurism has been increasing in the policy arena. This can be a good option to replace conventional brainstorming sessions with sticky notes and drawings on a board.
>
> The EC Joint Research Centre (JRC) has worked with experts in these types of games at the Hawaii Research Center for Futures Studies to create the Scenario Exploration System (SES). Participants explore their long-term objectives against scenarios and consider various stakeholders. By creating a realistic journey towards the future, SES generates a safe space to uncover perspectives and thinking, with a view to simulating possible responses linked to issues of interest to the participants.
>
> SES is available under a Creative Commons licence, which allows anyone to freely use and modify the game, as long as they share the results of their adaptation under the same conditions. The OECD has made freely downloadable details, instructions and templates available on https://oe.cd/ses.
>
> **Augmented reality (AR) in policy making**
>
> Governments are also realising the potential of AR and virtual reality (VR) for the public good. Similar to gamification, governments and their partners are using the technologies as tools to bring previously invisible insights.
>
> For example, in the US, the New York City suburb of New Rochelle was recently named city39 a 2018 Bloomberg Philanthropies' Mayors Challenge champion for its pioneering use of AR and VR to engage residents in plans for new buildings and public spaces in the city. Through this innovative project, residents can use AR applications on their smartphones to envision what a new park might look like, employ interactive software to design streets and use VR headsets to review different options for buildings and provide their opinions.
>
> Note 1: For more information, see https://www.interregeurope.eu/policylearning/news/11466/fablabs-and-makerspaces/.
> Note 2: For more information, see https://farmreal.pt/en.
> Source: Smart Rural 21 (n.d.[49]), Penela, https://www.smartrural21.eu/villages/penela_pt/; Farmreal (n.d.[50]), Homepage, https://farmreal.pt/en (accessed on 19 August 2022); Deutscher Bundestag (2018[51]), Reallabore, Living Labs und Citizen Science-Projekte in Europa, https://www.bundestag.de/resource/blob/563290/9d6da7676c82fe6777e6df85c7a7d573/wd-8-020-18-pdf-data.pdf.
> Source: OECD (2021[52]), *Embracing Innovation in Government*, https://trends.oecd-opsi.org/ (accessed on 19 August 2022).

Building more reactiveness and inclusiveness in monitoring and evaluation practices:
Improving evidence on support for rural SMEs and entrepreneurs

Monitoring and evaluation systems can be used as a tool to promote institutional dynamism. As well as regularly incorporating monitoring and evaluation outcomes into high-level statements. Quick and small experimentation followed by monitoring and evaluation can help inform scale-up potential for new initiatives.

In terms of network building and facilitating knowledge exchange, RIS are essential because they are fostering cross-cantonal links. Still, the RIS impact across different types of areas within the perimeter can be uneven. Several reports state that SMEs and entrepreneurs in regional centres benefit more from the provided support than the more remote regions and mountainous areas (Egli, 2020[16]; SECO, 2020[12]). The reasoning behind this is that innovation in the peripheral regions functions differently than in the regional centres or the larger agglomerations and that the support currently provided does not sufficiently take geographic specificities into account.

Consequently, better evidence is needed to help RIS evaluate and understand if their activities and programmes match and benefit the different needs existing within the perimeter. Developing a precise understanding of need as well as the current uptake of networking events, coaching opportunities and workspaces usage can help to identify mismatches, define future programming priorities, enhance

synergies with other offerings and limit ineffectiveness or cost. Given the important share of expenditure on networking and coaching services, it is important to take steps to collect data to monitor the effectiveness of the programmes offered specifically for rural entrepreneurs. Some guidelines for good practices are available in Box 3.7.

Box 3.7. Guidelines for monitoring and evaluating

Regional innovation policy from SCINNOPOLI

A set of 12 policy recommendations have been formulated as a result of the SCINNOPOLI "Scanning Innovation Policy Impact" project. The nine project partners exchanged numerous experiences in monitoring the impact of regional innovation policy. These policy recommendations are not a story-telling or philosophical approach to monitoring but a set of practical recommendations for the implementation of an effective monitoring system for regional innovation policy.

1. *SMART (Specific, Measurable, Attainable, Relevant and Timebound) policy objectives and SMART indicators*: Policy objectives, as well as monitoring indicators, need to be formulated.
2. *Monitor what you can **influence***: A lot of information is interesting to have but, for monitoring purposes, one should monitor only indicators that can be influenced by the downstream party.
3. *Integrate **feedback-loops** in the monitoring system*: Monitoring results should be used to improve the regional innovation policy. Monitoring is not the end of a process.
4. ***Process orientation***: A key step in the development of an evaluation culture is to recognise the evaluation process as part of a cyclical process of policy design, policy implementation and policy learning.
5. ***Consensus***: The concept of the monitoring system needs to be set up in consensus with all stakeholders (policy makers/practitioners/programme owners/project leaders) and existing monitoring systems need to be considered.
6. *Concise **communication** and promotion of results*: The message and language should be adapted to the targeted public (policy makers, companies, large public and innovation actors). Communication on the innovation policy monitoring process as a whole (objectives, targets, indicators, results) is an indispensable condition of a successful innovation policy.
7. *Monitoring is a **policy tool***: Monitoring innovation policies are only useful when the monitoring results are used by policy makers.
8. ***Embed** monitoring in the regional innovation system*: Monitoring should be embedded in the RIS from the start of its implementation. Adding a monitoring system as an add-on to the RIS will not lead to good results.
9. *Create a **win-win** situation*: All groups involved in the monitoring process should find a benefit in the monitoring system.
10. ***Resources** need to be budgeted*: Resources for the specific support actions defined in the framework of the regional innovation policy as well as resources for the monitoring system itself should be budgeted.
11. ***Long-term** perspective and continuity*: One should search for sustainable indicators, even if the regulatory environment is unstable.
12. ***Coherence***: An innovation policy monitoring system should be based on solid, transparent and clear logic. This logic must be maintained from the lowest level (individual innovation support actions) to the highest (innovation policy design).

Source: OECD (2012[35]), *OECD Reviews of Regional Innovation: Central and Southern Denmark 2012*, https://doi.org/10.1787/9789264178748-en; SCINNOPOLI (n.d.[53]), *Scanning Innovation Policy Impact*, www.scinnopoli.eu (accessed on 19 August, 2022).

At the time of this investigation, the effectiveness of RIS in reaching rural SMEs with their networking and coaching activities is difficult to assess with hard evidence. In 2018, an evaluation of the RIS Framework found that RIS do not hold data on the effectiveness of their interventions on the enterprises in rural regions or on the number of enterprises that were indeed located in rural areas and benefit from their programme (B,S,S Volkswirtschaftliche Beratung AG, 2018[8]). Following evaluations were introduced; now RIS carefully evaluate what they are doing based on an efficiency model and follow up with each SME in which they indicate the degree of satisfaction, as well as the percentage achieved within the NRP perimeter. Still, results are not shared systematically and reduced importance is given to geographical components. Especially, within the NRP perimeter, the goals do not specify different kinds of rural geographies or the level to be achieved at each scale. This also means that there is no analysis done to understand satisfaction differences between rural and non–rural SMEs or whether companies largely come from more regional centres than remote rural places. Consequently, there is also no additional funding to develop specific tools to address specific needs of rurality.

In line with the NRP, which specifically targets rural areas, RIS and SECO could help build more reactiveness and inclusiveness in monitoring and evaluation practices for rural innovation in Switzerland. Each RIS should systematically collect, structure and analyse data about the businesses benefitting from innovation support based on geography. In line with earlier assessments, impact measurements should be improved to assess the value added by the RIS to rural areas and rural SMEs, and to further strengthen geographic data collection. This can be done by setting up a more coherent system for monitoring and evaluation as well as encouraging data sharing on leading practices:

- Consider reinforcing good practices in regular monitoring and evaluation of initiatives within the NRP's mandate. For this, a central strategic unit of RIS in SECO could be set up that works in collaboration with the Federal Statistical Office (FSO) and regional offices based on access to shared data. These need to consider the unique needs of rural regions and underserved populations. Results on good practices should be shared with RIS as part of the regular co-ordination meetings.
- Consider piloting a unified customer relationship management (CRM) system, which would track individuals' access to different services across and between cantons and RIS and could provide the following information:
  - Account for the location (municipality/canton/RIS) of the companies, or the persons, who participate in coaching, information and networking events.
  - Account for the number of companies and location of companies referred by the RIS to other innovation promotion agencies (Innosuisse, etc.).
  - Account for the number and location of companies that are referred to coaches/funding agencies in other cantons of the RIS, as well as the number and location of companies referred to coaches/promotion in other RIS.
  - Account for the number and location of companies that used the individual cantonal antennas (points of entry) and the number of these that have then used: i) a service at the corresponding RIS; and ii) a service at another RIS or innovation promotion agency and the location of these services (B,S,S Volkswirtschaftliche Beratung AG, 2018[8]).
- Advance data sharing and open data practices, between RIS, cantons and the FSO. Include, if necessary, precautionary measures such as aggregation and confidentiality controls that can help provide information while still respecting privacy regulations.
- Consider monitoring trends in non-RIS areas to seek complementarities with RIS programmes.

Increasing and simplifying access to services offered by the RIS through the digitalisation of public services and an online "one-stop-shop" for entrepreneurship support

Despite significant improvements in terms of local contact points and the development of a "no wrong door" policy, SMEs in rural Switzerland face barriers to entry when trying to receive innovation support. In order to address gaps in the accessibility and clarity of services, many RIS have appointed local or regional representation to improve their presence and communication with cantons and sub-regions. Moreover, attempts have been made to reduce the number of service providers and clarify the roles of the different providers within the RIS and outside (Regio Basiliensis, n.d.[25]; 2019[54]; B,S,S Volkswirtschaftliche Beratung AG, 2018[8]). Still, barriers to entering the RIS innovation support seem high for rural SMEs.

Multiple entry barriers can be notified. First, businesses might lack knowledge about the support available and are not targeted with the right communication. Second, points of contact are not locally present or too difficult to access. Especially in rural regions, where the population is less dense, having personal contacts and establishing trust through a continuous exchange is essential. Talking regularly to local people can significantly improve awareness of services and tie them to other networks. Third, if the number of interfaces, offers and actors becomes too great, this can create hesitancy and can make picking the right one a barrier.

As an example of the existing complexity of the RIS system, Figure 3.5. depicts the offers provided within RIS Basel-Jura and the stakeholders involved. Several reports and evaluations observe that there are too many actors involved in innovation support in Switzerland and that roles need to be clarified and presence in rural regions improved (B,S,S Volkswirtschaftliche Beratung AG, 2018[8]; Regio Basiliensis, n.d.[25]; 2019[54]).

From the federal side, Innosuisse and the RIS are the central elements of innovation support and the innovation ecosystem. As a federal agency, the Swiss Innovation Agency, Innosuisse (formerly the Commission for Technology and Innovation), is very proficient at addressing the needs of the science- and technology-based innovators. Successfully linking regional and national innovation support is important to deliver on rural innovation. Companies with lower absorptive capacities, innovating without R&D or being involved in other forms of innovation (e.g. organisational innovation) are not a target of federal policy. In other words, within the "innovation triangle" of knowledge creation-diffusion-absorption, the federal policy addresses the first two elements: knowledge creation and diffusion (OECD, 2011[9]). At the regional level, RIS have successfully taken the role to address more knowledge absorption and diffusion bottlenecks targeting smaller companies innovating in a learning-by-doing and learning-by-interacting mode. It can thus be said that the OECD's recommendation from 2011 on a clearer division of multi-level innovation that delineates innovation promotion based on the innovation triangle has been largely achieved and implemented.

A successive step to further improve the existing innovation ecosystem is to ensure the different federal and regional innovation support systems integrate more smoothly. In particular for rural areas with their economic structures that depend more on exploiting natural resources, such integration needs to widen the scope for further sectoral (innovation) policies, in food and agriculture for example (see also Chapter 4). Regarding the integration of RIS and Innosuisse, co-ordination at the strategic level is ensured through regular meetings and local level integration is lagging. A 2018 evaluation of all RIS mentions that co-ordination still needs to improve with regards to implementation (B,S,S Volkswirtschaftliche Beratung AG, 2018[8]). It becomes especially clear that there is a need to better align the RIS coaching activities and the Innosuisse mentors. Both operate at the regional and local levels offering direct support, yet differentiation can be difficult for companies trying to find the right fit. It is often unclear that RIS offer more general business support while technological innovation is covered by Innosuisse. Furthermore, links to Innosuisse are often facilitated through universities or universities of applied sciences. Regions that do not have these are therefore strategically disadvantaged in providing access to national innovation support.

Figure 3.5. RIS Basel Jura: offers, stakeholders and governance
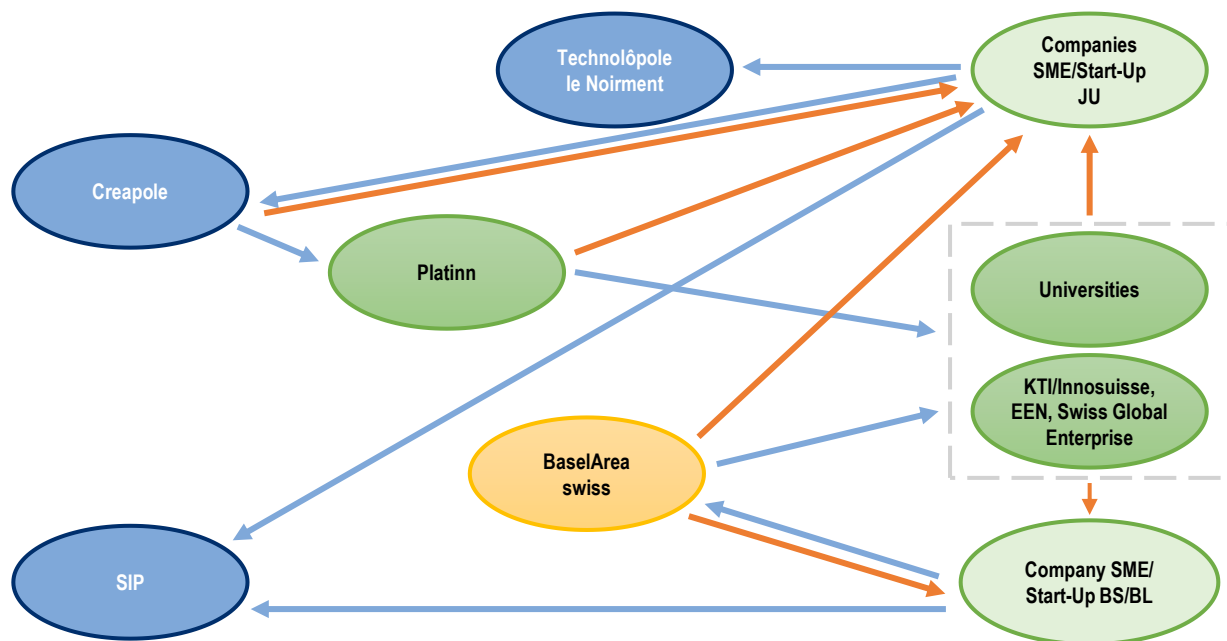
Note: The figure should be read from right to left. Blue arrows indicate to which bodies the SMEs turn to or to whom they are forwarded, orange arrows show the flow of information or the fulfilment of a consulting service of the respective company, light green fields describe the RIS (SMEs and start-ups) target groups, the yellow field BaselAreaswiss represents the RIS management organisations, blue fields show other actors within the RIS and dark green fields describe other important actors outside the RIS. SIP: Switzerland Innovation Park; éCreapole: incubator and accelerator in Delémont, technological Incubator in Noirmont.
Source: regiosuisse (2018[55]), *Regionale Innovationssysteme (RIS) : Evaluation und RIS-Konzept 2020+*, https://regiosuisse.ch/sites/default/fil es/2018-12/RIS%20Evaluation%20und%20RIS-Konzept%202020%2B%20DE.pdf.

Research has shown that co-operation largely works thanks to personal connections and professional links or if RIS coaches and Innosuisse mentors hold both positions at the same time. Further, better integrating processes for companies to flow along the support chains offered by both actors are mentioned. This means that RIS can still improve in putting SMEs and entrepreneurs that have reached a certain level of maturity in touch with Innosuisse support and mentors. Similarly, the other way around, those that are not yet ready for Innosuisse support need to be guided towards the RIS effectively (B,S,S Volkswirtschaftliche Beratung AG, 2018[8]). This is particularly relevant for rural SMEs that are often smaller and less likely to know their way around different innovation support actors and might not have been in touch with either actor yet.

In systems where a multitude of services are provided, the simplification and ease of access for users can be a challenge, in particular for countries in which there is a tailored approach to providing government services. In some countries, simplification of the provision of entrepreneurial services is complemented by physical presence with online services that allow easy navigation of business services according to particular needs. This can reduce complexity and help direct people to the "right" offer in their geographic location without having to actually relocate. In Scotland, UK, for instance, the main regional development agencies, Scottish Enterprise, Highlands and Islands Enterprise and the newest, South of Scotland Enterprise, work with Business Gateway and 32 local authority councils to deliver support to SMEs through a shared national website (https://findbusinesssupport.gov.scot/). The aim of the initiative is to help SMEs find business support wherever they may be in a single location. Behind this website is a business support partnership through which all of the agencies meet and share information to avoid confusion and duplication. In addition, the Enterprise agencies and Business Gateway share a CRM system for all

businesses engaging in the public sector, to give an overview of previous and current engagement. Further examples of simplification of the provision of services are available in Box 3.8.

Box 3.8. Encouraging simplification for the delivery of entrepreneurship and innovation support in rural areas

Business Pathfinder Tools, Canada

The Canadian federal government has set up a Business Benefits Finder (see note below), which aims to provide businesses with a list of tailored support. The tool is designed on the basis of questions and answers that help filter through hundreds of federal, provincial and territorial programmes. A key objective of the tool was to develop a site that is fun, interactive and as user-friendly as possible while providing the best results. It also aims to reach people who might not know what they are looking for and equip them with information on what the government can do for them. Importantly, the process does not collect or track individual information. The more questions are answered, the more customised and accurate the results will be. Behind the tool sits a team of four people working on keeping information up to date, summarising programmes and creating the right tags for the programmes. While the page was largely oriented toward business growth in the beginning, due to the COIVD-19 pandemic, it was expanded towards resilience to economic shocks. The tool currently provides information on 16 000 programme streams (some programmes have multiple sub-services) and is advertised through sustained marketing efforts.

Community Futures, Canada

In an effort to address the specific needs of rural entrepreneurs and bring funding for community support and innovation to rural areas, in 1985, the government of Canada established Community Futures. The programme is a community-driven economic development initiative designed to assist communities in Canada's rural areas to develop and implement strategies for dealing with a changing economic environment.

This programme works with 267 Community Futures Development Corporations (non-profits, whose operating funds are provided by federal regional development agencies) to provide services to entrepreneurs in their local communities including standards entrepreneurial and innovation support for example, such as: strategic community planning and socio-economic development; support for community-based projects; business financing, business plan consultation, business planning and business start-up assistance; and access to capital for SMEs and social entreprises.

Rural Partners Network, US

Set up by the Biden-Harris Administration, the Rural Partners Network is an alliance of federal agencies and civic partners working to expand rural prosperity through job creation, infrastructure development and community improvement. The networks bring "boots to the ground" by designating community liaisons to work to simplify access to information for rural communities. They are established as a collaboration of 27 agencies and the White House in an effort to improve access to government resources, staffing and tools, build awareness of rural issues and focus on building rural strategies. It is currently going through the second pilot programme in 14 counties and 10 states.

Business Support Simplification, UK

The Business Support Simplification Programme (BSSP) was initiated by the Department for Business Enterprise and Regulatory Reform (now the Department for Business, Innovation and Skills) for English regions. It aims to make it easier for companies and entrepreneurs to understand and access

---

government-funded grants, subsidies and advice with which to start and grow their businesses. With an estimated 3 000 or more publicly funded business support schemes, existing businesses reported that they were confused by the number of schemes, which discouraged them from applying. Streamlining helps save them time and money when looking for support. Better targeted schemes have more impact on businesses and provide the public sector with a greater value for money from a leaner system. The 3 000 schemes were reduced to 100 or less by 2010 and made available through the nationally sponsored and regionally administered Business Link gateway. With the new UK government in 2010, this process was consolidated into Solutions for Business. The portfolio will contain only 13 products and will no longer be supported by the administrative regions that ceased to exist on 31 March 2011 but rather offered through an Internet portal.

Note: For more information, see http://innovation.canada.ca/.
Source: OECD (2012[35]), *OECD Reviews of Regional Innovation: Central and Southern Denmark 2012*, https://doi.org/10.1787/9789264178748-en; BIS (n.d.[56]), *Solutions for Business: Simplified Business Support*, www.bis.gov.uk/policies/enterprise-andbusiness-support/solutions-for-business-simplified-business-support (accessed 1 September, 2022); Find Business Support (n.d.[57]), *Homepage*, https://findbusinesssupport.gov.scot/ (accessed 1 September, 2022); U.S. Government (n.d.[58]), *Rural Partners Network*, https://www.rural.gov/; CFNC (n.d.[59]), *Supporting Canada's 267 Community Futures Organizations*, https://communityfuturescanada.ca/ (accessed 1 September, 2022).

While the "no door" policy is a first step to simplification, in order to facilitate the provision of business services in rural areas RIS and Innosuisse need to:

- Complement physical entry points with a digital online one-stop-shop to reduce the complexity of the existing system, making support accessible from anywhere and allowing to integrate programmes and measures.

- Designate an outreach person that contacts rural SMEs directly and speaks to them to inform them about offers.

- Develop targeted communication and branding strategies and make sure information is shared in rural areas and through channels in the region, such as entrepreneurs who already live in remote places. This can also include developing specific entry events that inform about the offers of RIS.

- Improve integration of Innosuisse and RIS services by creating shared support roles where the same people take on RIS counselling and Innosuisse mentoring. This way processes for companies to flow along the support chains are offered by both regional and federal actors.

Box 3.9. Simplifying business support ecosystems across rural-urban areas

Entrepreneurial support available wherever you live

Southern Ontario is a cornerstone of the Canadian economy with the region accounting for more than a third of Canada's population, jobs and economic output. The province of Ontario generates nearly half of the country's business R&D spending, almost two-thirds of patent applications and over 40% of Canada's science, technology, engineering and mathematics-related workforce – all critical inputs to drive growth and innovation in the digital economy. The three cities, Ottawa, Toronto and Waterloo, have together been at the heart of Southern Ontario's technology cluster for many years now.

In each city, the sector is supported by a strong business accelerator organisation. These organisations work closely with local universities, researchers, investors, business strategists and mentors, as well as with the government, to provide entrepreneurs and SMEs with the tools, advice and access to finance their need to innovate, commercialise new ideas and technologies, and grow their companies.

Outside of these cities though, the picture is quite different. Rural areas in Southern Ontario have not shared in the recent success of the region's major cities. In the decade following the economic recession of 2008, Ontario saw the creation of 865 000 net jobs. However, 87% of this job growth was concentrated in Ottawa and Toronto, while rural communities experienced the loss of 76 000 jobs over the same period.

Relative to rural areas in other parts of Canada, rural areas in Southern Ontario are relatively close to cities and well connected by roads, rail and broadband services; however, rural entrepreneurs have not had access to the support available to their counterparts in the major cities. Recognising this issue, the Federal Economic Development Agency for Southern Ontario, which provides funding to the three major business accelerators, included a provision in recent funding negotiations to develop rural-urban linkages between the three major business accelerators and innovation centres serving smaller communities and rural areas across the region. The resulting Southern Ontario Scale-Up Platform brings together each major city's business accelerator organisation into a new partnership. A goal of the new platform is to make the programming, advisory services and other support offered by these organisations at their urban locations available to entrepreneurs and SMEs located outside the major cities, by partnering with local innovation centres.

In one example, Invest Ottawa provided funding support to Queen's University in Kingston (196 km from Ottawa) to develop their Launch Lab initiative, including a boot camp for early-stage start-ups, a pre-commercialisation pilot for intellectual property holders and a growth accelerator programme for SMEs. The boot camp has been offered in rural Lanark County and the town of Cornwall (45 723 inhabitants, 103 km from Ottawa) and is being adapted for virtual delivery. Invest Ottawa has also partnered with a local vocational college (St. Lawrence College), with three campuses across Eastern Ontario to develop a business ecosystem pathfinding tool to assist start-ups and scale-ups in connecting with available resources.

The tool called Switchboard (see note below) provides navigation support and visibility to all relevant public support activities in the area of Kingston. Results are clustered and displayed according to which stage of the business circle entrepreneurs are in, based on qualitative analysis. In case entrepreneurs are unsure of their best fit, the tool also provides assessment help and lets people research for support directed at specific needs, including for women and Indigenous people. The page is constantly updated through support providers, making it easily saleable to other regions and allowing for reporting on what kind of support was most searched for. This way it can also be used to assess where needs exist and if the demands are currently met.

By helping rural residents to fulfil business ambitions in their own communities, without having to move into the cities to find the help they need or to commute, the benefits of their efforts may be captured locally, supporting the development of rural communities. Linkages forged via the Scale-Up Platform are also expanding the capacity of the smaller innovation centres outside the major cities, while fostering a stronger network between these centres and the major platform members, creating new opportunities for knowledge sharing and idea development across a wider area.

Note: For more information, see www.myswitchboard.ca.

Promoting innovation through networks: Fostering rural-urban linkages

Rural-urban linkages exist across several dimensions including demographic, environmental and economic aspects (OECD, 2013[60]). Demographic linkages include commuters and migration patterns. This can include young people moving from rural to urban areas for educational or career opportunities, or urban retirees moving to rural areas to enjoy a slower pace of life, a greater sense of community and proximity to nature. Environmental linkages can include shared assets, such as water and amenities for public enjoyment, such as natural beauty spots. Economic linkages include a wide variety of relationships, including trade and supply chain links between firms across the rural-urban continuum, investments and relationships around R&I that support the development and commercialisation of new products and services.

Figure 3.6. Linkages between rural and urban areas within functional regions
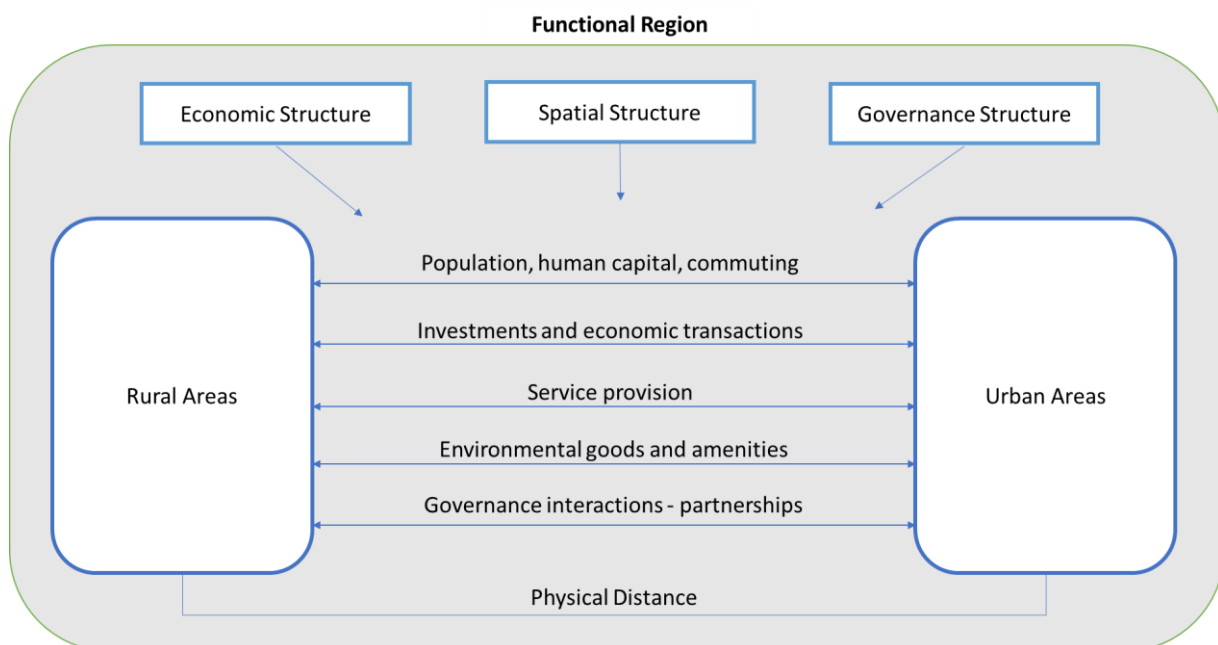
Source: OECD (2013[60]), *Rural-Urban Partnerships: An Integrated Approach to Economic Development*, https://doi.org/10.1787/9789264204812-en.

Linkages tend to be stronger in rural areas that are close to cities. Switzerland has five functional urban areas (FUAs) in which 55% of its population resides, yet only 40% of the population lives in its urban cores, the rest residing in commuting zones. The Swiss commuting zones are characterised by lower-density settlements with respect to the main urban centres. However, firms and workers in these areas benefit from good access to markets, services and agglomeration of talent present in the urban core, benefits often referred to as "borrowed" agglomeration effects. Rural areas close to cities often enjoy environmental amenities and lower land and housing costs than cities, making them both attractive places to live and in which businesses can invest. Overall, the commuting zones in Switzerland grew faster than the cores during the last decade (Veneri, 2018[61]). This also suggests the increased importance of interlinkages.

Entrepreneurs who actively develop rural-urban links and tap into urban clusters are needed to develop vital, competitive rural economies. Geographic proximity matters for innovation and agglomeration or clustering can permit locally concentrated labour markets, specialisation in production and the attraction of specialised buyers and sellers (OECD, 2015[62]). Research on rural innovation has shown that rural entrepreneurs utilise non-local knowledge for more radical innovations and they strategically engage in rural-urban linkages to leverage knowledge outside of their location. This includes urban innovation

networks, suppliers or higher education institutions (Mayer, Habersetzer and Meili, 2016[18]). Overall rural-urban links are beneficial to entrepreneurs in three ways:

> *"Rural-urban links help entrepreneurs create a sensibility for the core market demands and trends.*
>
> *Rural-urban linkages help entrepreneurs strategically utilise them to valuate rural assets that have traditionally been perceived as backwards, disadvantages, burdensome, etc.*
>
> *They can be used to combine rural and urban sources of knowledge for innovation, which, in turn, puts a competitive edge on rural businesses." (Mayer, Habersetzer and Meili, 2016[18])*

In light of such learnings, the importance of an open, competitive environment and of innovation systems that are conducive to knowledge flows have increased. This includes cross-border and rural-urban collaboration in innovation, fostering collaborative efforts in which businesses interact and exchange knowledge and information with other partners as part of broader innovation systems. While the shift towards an "open innovation" paradigm, facilitated by the digital transition, has made business innovation more accessible to SMEs, the businesses, especially rural ones, still often find it difficult to identify and connect to appropriate knowledge partners and networks at the local, national and global levels (Cusmano, Koreen and Pissareva, 2018[63]). If countries are already experiencing spatial disparities, there is a danger that rural economies drift further apart if their enterprises are not helped to sufficiently connect and link to agglomeration economies or wider national and global markets.

National co-ordination mechanisms for innovation promotion are built from the bottom up in Switzerland. They are strongly targeted to the sectors determined to be high value-added. Regions (cantons) co-ordinate across themselves in initiatives to support economic development, based on proximity and cultural (language) closeness. While the structure is organic and has merits in how well it adapts to local contexts, it does also mean that cantonal economies have a harder time adapting to change or opportunities outside of their neighbouring regions and less access to the full potential of Swiss resources.

Silos between agencies that perform critical work to develop the framework conditions for rural innovation create gaps in public service provision. Agencies relevant for innovation in rural areas include SECO's RIS, the Federal Office for Agriculture, Innosuisse and the education and labour market agencies. While the entire innovation ecosystem is not under the institutional responsibility of one sole agency, bridging the gaps between agencies and policies is a crucial step toward improving prospects for innovation in rural regions.

Ensuring policy coherence for rural-urban linkages

From a territorial perspective, two policies are dealing with rural-urban links in the broader sense. These are the agglomeration policy (AggloPol) and the policy for rural and mountain areas (P-LRB or PERM). Both policies are cross-cutting policies that work across a range of sectoral policies including aspects such as transport, energy and finance and try to bring a geographical component to them. The two policies are linked and share part of the goals and measures. In that context, the NRP is also considered a sectoral policy and overlaps in geographical terms with both policies (see also Figure 3.7). The agglomeration policy, for instance, covers a heterogeneous spectrum of urban areas ranging from the five main urban centres to other "agglomerations", which include towns in predominantly rural regions covered by NRP (OECD, 2011[9]).

Due to the short geographic distances between Swiss rural and urban areas, policy linkages are crucial. Yet, two different policies exist as tensions have sometimes plagued the relationship between more urban and more rural places and their representatives, as the two often compete for attracting credits and public funding. The split between the agglomeration policy and the policy for rural and mountainous areas, however, does too little to reduce institutional and policy fragmentation, in order to better support existing inter-dependencies among territories. Improved co-ordination between the agglomeration policy and the

policy for rural and mountain areas can have a beneficial effect on sectoral policies that function as an enabler to rural innovation. Currently, the Federal Network on Coherent Urban-Rural Spatial Development is facilitating the co-ordination between the policy areas on the federal level. Evaluation reports have stated that existing co-operation mechanisms are insufficiently used and that sectoral policies and topics for rural and mountainous areas are dominating. While, agglomeration programmes provide a large amount of funding to urban areas, there is no equivalent for rural areas. This inhibits making use of synergies between policies and possibly better integrating rural and urban linkages. Research has also stated that there is a need to better define which issues co-operation between the policies could bring added value to and how clarifying roles between the existing bodies can make processes efficient (Schweizerische Eidgenossenschaft, 2019[64]).

Figure 3.7. Regional policy in the plan for coherent spatial development
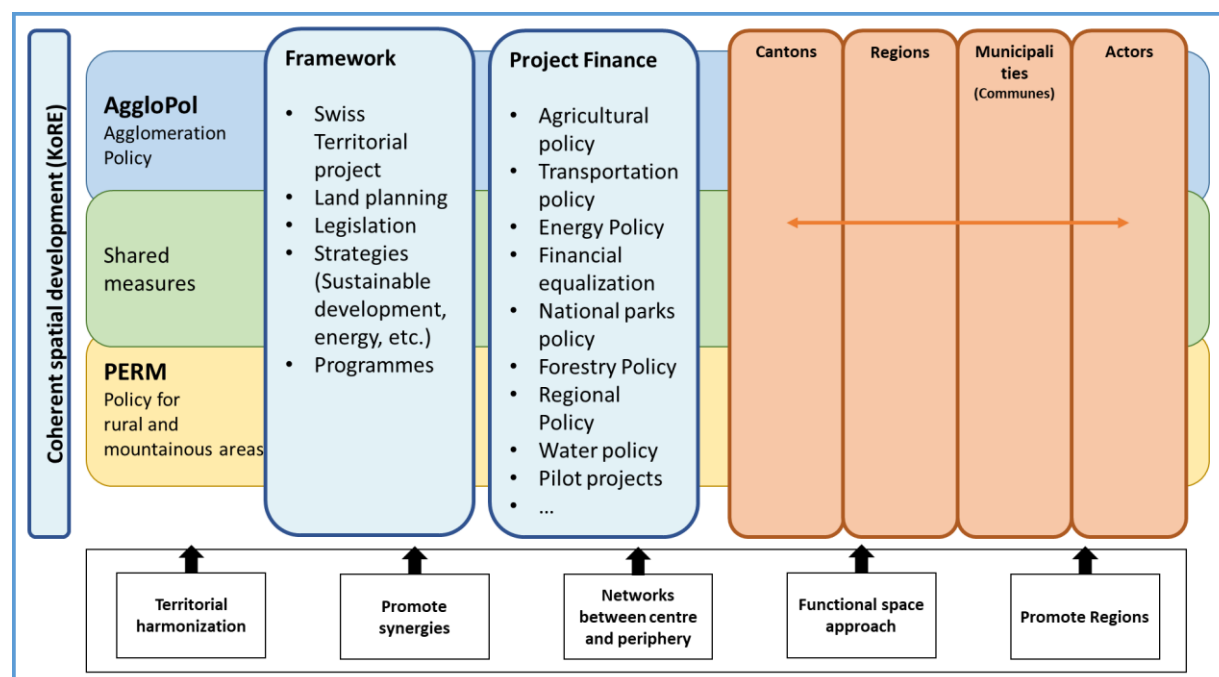
Note: AggloPol: Agglomeration policy; PERM: Policy for rural and mountainous areas; KoRE: Coherent spatial development.
Source: Provided by Federal Department of Economic Affairs, Education and Research EAER, State Secretariat for Economic Affairs SECO, Regional Policy and Spatial Planning DSRE, 2021.

In the context of rural-urban linkages for innovation, the Federal Network on Coherent Urban-Rural Spatial Development could provide added value in further investigating the topic of innovation. For instance, it could investigate and identify which sectoral policies could further strengthen rural-urban linkages and consequently benefit innovation. Furthermore, alignment and more effective co-ordination of the NRP and sectoral policies could also help increase the impact of the NRP, while not necessarily requiring additional funding. Some solutions for this are further explored in Chapter 4, with recommendations for different levels of co-operation between the Agri-Food Knowledge and Innovation System (AKIS) and the RIS.

Regionally, rural-urban coverage of innovation support is ensured through funding and programme conditionality that is agreed upon in ordinances to the NRP. The RIS has the purpose of providing support to regions with less access to resources than those of major urban centres. Their activities also seek to connect entrepreneurs with universities and other knowledge partners in urban centres to benefit innovation in rural areas as well. To address this, regional agencies are allowed to jointly apply for innovation funds for new initiatives through collaborations with metropolitan areas, with the condition that

at least 50% of the expenditure on programmes (point of entry and coaching) must be done in non-metropolitan areas. These areas are defined by the NRP perimeter (Figure 3.4). In practical terms, this means that in large cities such as Basel and Geneva, RIS services can only happen because of co-operation with more rural cantons through the RIS. Furthermore, some cantons (Aargau, Solothurn and Zurich) are not part of any NRP-RIS but have their own programmes. Little can be said about how far they contribute to establishing rural-urban links and cater to more rural entrepreneurs.

In 2011, the territorial review of Switzerland (OECD, 2011[9]) stated, that NRP would gain coherence if it covered all regions. It argued that extending the NRP's territorial coverage can reduce economic fragmentation and support polycentric development. Furthermore, it was said that the focus on rural, mountainous and border areas could be broadened to the whole Swiss territory, in order to better take into account existing or potential linkages across regions, especially in terms of urban-rural linkages (OECD, 2011[9]). To this date, the discussion on the enlargement of the perimeter could not be agreed upon, notably because mountainous cantons fear a decrease in assistance for structurally weak regions. Therefore, the above-mentioned 50% funding compromise was created. According to many stakeholders, this compromise does not hinder building linkages between rural and urban areas but continues to ensure financial support primarily targeting less urbanised regions. Yet, some demand a further limitation to the NRP perimeter, to ensure more money is spent on the least urban areas. Formalising this type of compromise further could help ensure stability and provide assurance for all actors involved.

To enhance rural-urban partnerships for rural innovation in Switzerland and reduce institutional and policy fragmentation. The role of the Federal Network on Coherent Urban-Rural Spatial Development as a facilitator could the strengthened. Specifically, the network should assess ongoing co-ordination needs between the agglomeration policy and the policy for rural and mountainous areas. Furthermore, it should also be used to identify synergies for sectoral policies (transport, education, energy, etc.) that have the power to improve innovation in rural areas through much-needed rural-urban links. Therefore, the network should discuss the role of innovation in all sectoral policies and improve alignment and synergies between the NRP and other sectoral policies by focusing on rural-urban links.

Fostering university-industry partnerships in rural regions

Informal co-ordination mechanisms are important to build networks in rural regions. Nevertheless, informal co-ordination mechanisms do not always have the capacity, nor the right information to address the challenges that impact rural regions.

Switzerland has initiatives to build connections between universities and industrial partners. They are established to help generate new innovations, diffuse pre-existing innovations across territories and support the development of SMEs. These successful triple-helix initiatives in Switzerland are mostly university-industry partnerships, which tend to be university-led and focused on high-tech innovation. Rural regions without higher education institutions or high-tech industries are disadvantaged in this setup. Initiatives for innovation co-operation driven by demand from entrepreneurs and the private sector in rural areas can bring more locally driven opportunities to rural regions.

However, often these initiatives occur in denser areas, are driven by the research arm of the partnership and are focused on high-tech innovation. In some cases, antenna campuses of universities have been successful at building projects with local partners, but in areas where no universities are located, there are lower opportunities for innovation through this mechanism. In sparsely populated areas, antennas or university consortia with local research centres have been important for innovation, economic development, education and training in regions without universities (OECD, 2017[65]). Switzerland can benefit from the following action point:

- Promote new initiatives and programmes to better link entrepreneurs to researchers in rural regions.

- Encourage the development of the demand for university linkages among entrepreneurs, such that all research initiatives are not only led by the university teams.

- Establish innovation initiatives that better promote co-operation between entrepreneurs in rural areas and cities. This can be done through regional development strategies, smart specialisation or university-industry linkages that consult with local entrepreneurs to determine the scope, activity and initiative supporting innovation in rural areas. Examples of such initiatives can be found in Boxes 3.10 and 3.11.

- Re-enforce existing initiatives to establish university consortia or research institutions with antennas in rural areas tied to the local economic opportunities.

Box 3.10. Using regional ambassadors and brokers for cluster development strategies

Brainport Development, Eindhoven and South Holland Region, Netherlands

Brainport Development is a cluster collaboration platform that is directly incorporated into a regional development agency. It carries several independent networks that specialise in different activities such as sports, high technology, health technology, automobile industry, food technology, safety programmes, and a designer programme, and currently increasing clusters to include the high-tech software cluster, augmented reality and virtual reality cluster and integrated photonics. Brainport Development focuses on stimulating new projects, investing in start-ups and scale-ups, attracting foreign companies, and helping local companies go abroad. In recent years, the initiative also includes a human capital programme, including a talent programme.

There are a few characteristics that make Brainport stand out among other cluster specialisation initiatives which include:

- Strong attachment to partnership in the public sector, private sector and universities, which includes a board that is composed of the mayor of Eindhoven (location of headquarters), mayors of other participating municipalities, private sector representatives from local businesses, and university members.

- A bottom-up approach and a lack of pre-determination when using existing regional assets, starting from companies that jointly partner up to determine priorities in requesting cluster initiatives, are then accommodated by a project-based approach.

- The use of regional ambassadors as brokers, or "match-makers" to attract activities from national and international resources to the region and to build local buy-in, which contributes to a large part of the annual budget, and annual business investment into start-ups on site.

- The financial participation of all partners (central, regional, local, universities and private sector) in the elaboration of the services offered for the cluster strategy.

A few years after the success of Brainport, a new initiative to bring a similar model to South Holland in the western part of the Netherlands, was initiated. This region is characterised as a region with two big cities, some smaller ones and rural surroundings. The structure of the model in South Holland included several similar characteristics to the original Brainport. It was directed by the Economic Board South Holland, a high-level council that brings together industry, institutions and governments, in combination with the regional development agency, InnnovationQuarter, and therefore had a strong engagement with the private sector, local partners and universities that builds trust and buy-in from local communities. However, it also faced different challenges and opportunities from the original Brainport. They included the following:

- A more diversified mix of chairpersons, industry leaders and local leaders on the board, as a result of a more diversified economic structure and a larger geographical area with more municipalities.
- Difficulties in formulating a joint strategy and common goals due to the diversified economic structure and lack of strong regional cohesion.
- More participation from regional development agencies creates opportunities to mobilise more executive power for regional strategy.
- Many hidden champions with a good market position, and a short and local supply chain that are initially not well connected to regional ecosystems.
- Less informal networks create barriers, with more transparent rules for entry into the market as compared to the Brainport region.

Source: Author interview; Brainport Eindhoven (n.d.[66]), *Brainport Eindhoven*, https://brainporteindhoven.com/int/ (accessed 1 September, 2022).

Box 3.11. University-industry linkages for regional innovation

Encouraging joint projects between universities and firms are one of the strongest drivers of regional innovation across OECD countries. Regions that contain an important share of research universities or laboratories often more easily build connections and generate benefits from spill-overs. Governments tend to support these types of linkages through a variety of tools that include subsidies for joint endeavours, networking events or other kinds of in-kind and programme support.

Evidence from a recent study in Norway found that many successful initiatives are often determined by the characteristics of firms, rather than initiatives from university researchers (Atta-Owusu, Fitjar and Rodríguez-Pose, 2021[67]). When firms are open to collaborations, they are more likely to collaborate with universities that are nearby. However, incentives for universities are not always aligned. Universities may not necessarily gain as much from collaboration and, as they grow in success, they tend to weaken links with local and national firms.

Institute for Systems and Computer Engineering, Technology and Science (INESC TEC), Portugal

As one of the most influential research centres in Portugal, INESC TEC brings academics and companies together to contribute to the competitiveness of the Portuguese economy, while improving local societal impacts. INESC TEC has 13 R&D centres in 5 locations around the northern region in Braga, Porto and Vila Real, and focuses on bringing university and academic knowledge to businesses. Presently, its main sites are in the three cities. The institute has four R&D clusters that include the Power and Energy Cluster; Industry and Innovation Cluster; the Networked Intelligent Systems Cluster; and the Computer Science Cluster. The institute provides management and organisational services, including: legal support and human resource management help; business development services, through industry partnerships, technology licensing, funding opportunities and international outreach; and technical support including communications and business informatics. In 2017, INESC TEC was composed of 725 researchers and received 33% of funding from international sources.

Interface, Scotland, UK

In Scotland, Interface is a regional knowledge connection hub that is the prime tool for businesses to connect with universities looking to participate in partnerships for R&D. The hub has eight associated centres specialising in different sectors. Unlike initiatives that focus on finding businesses for academics

who wish to explore areas of R&D, Interface is focused on helping to connect businesses to universities and finding matches that can support the firm's R&D competitively. The request for the linkage to occur comes from the initiative of the firm. Once an inquiry from a firm is received, dedicated staff works to match the firm with a university and find funding opportunities for their endeavours.

Academy for Smart Specialisation, Karlstad University and Region Värmland, Sweden

The regional government of Värmland, Sweden, leverages university-industry ties through its regional development and smart specialisation strategies, which now place the initiative within a local university (OECD, 2020[68]).

As part of a regional smart specialisation strategy, the regional government integrated the Academy for Smart Specialisation, an applied research facility with tailored training programmes and an interdisciplinary platform, into its region's Research and Innovation Strategy for Smart Specialisation 2015-2020. The initiative promotes new specialisation and skills in forest-based bioeconomy, ICT, healthcare, industry 4.0 and tourism with an approach reflecting the sustainability, inclusive growth and well-being goals of the regional development strategy.

While the success of smart specialisation in Värmland is attributed to the institutional "mobilisation" of regional actors, political agencies and place-based leadership, it also faced several challenges due to changes in regional governance, and a lack of funding and business engagement. To address some of these issues, the region of Värmland is now working on mainstreaming the academy within the local higher education institution at Karlstad University.

Source: Interface (n.d.[69]), *Interface: Homepage*, https://interface-online.org.uk/ (accessed on 1 September, 2022); INESC TEC (n.d.[70]), *INESC TEC: Homepage*, https://www.inesctec.pt/en (accessed on 1 September, 2022).

## Co-ordination for addressing shortages in labour skill supply

One of the key challenges for rural regions is shortages in skills, and in particular digital skills. In a 2021 survey of regional government officials in OECD countries, skills shortages were one of the top barriers to innovation in rural regions (OECD, 2020[71]). Often this is an outcome of demographic change due to an ageing population and inter-regional migration patterns that often result in a "brain drain" (OECD, 2021[72]; 2020[13]). Often rural areas suffer from a loss of new talent that may either migrate because of work or training opportunities elsewhere. Yet, a relatively high-skilled population is important for innovation and start-ups need a skilled workforce to bring innovations to the market. While R&D investments are often thought of as critical for innovation for some regions, investments in human capital, education and training can encourage innovation focused on the well-being of rural regions to the forefront (OECD, forthcoming[31]). In Switzerland, this issue goes outside of the scope of the RIS mandate but is nevertheless a critical barrier for cantonal and regional authorities.

Among active labour market policy expenditures, the Swiss federal and cantonal governments primarily spend public funds to support reskilling across territories. According to a report from 2010, the largest spending on skilling for the labour force is on supported employment and rehabilitation, training, temporary employment in the public sector and intermittent pay (Duell et al., 2010[73]). Recent statistics on expenditure on initiatives for training and entrepreneurship through the public employment services indicate that training initiatives are the major source of government expenditure in 2018 targeted at reskilling and encouraging more start-up activities (Figure 3.8). In Switzerland, active labour market policies delivered through the public employment services are focused only on training, at 0.16% of GDP.[4] Cantonal and regional governments also deliver programmes to support regional development based on local needs

and, as such, the offer for programmes to support labour market skilling is larger than just those provided by the public employment services.

Figure 3.8. Active labour market policies for skills and start-up support

Expenditure on programmes to support skills upgrading and new entrepreneurship, 2018
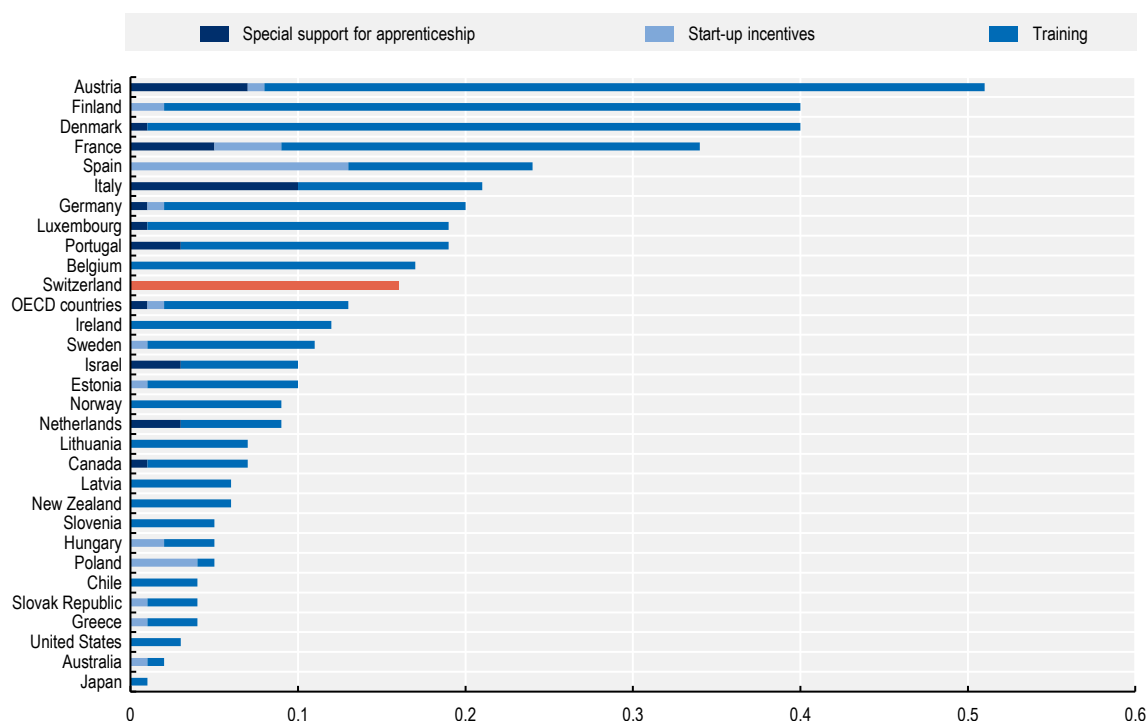
Note: All values are reported as expenditures as a share of GDP. Training expenditures include institutional training, integrated training and workplace training. The category for job rotation was excluded as only Finland and Spain included expenditures for such initiatives at 0.01% of GDP. The figure above excludes the Czech Republic and Mexico, which have no reported expenditure for such initiatives.
Source: OECD (2021[74]), *Active Labour Market Policies: Connecting People with Jobs*, https://www.oecd.org/employment/activation.htm (accessed on 15 June 2021).

Currently, Switzerland has regional and cantonal employment councils but it is unclear whether they are able to meet the needs of rural regions. More bold actions such as setting up an inter-agency co-ordination body at the centre of government that addresses skills and other cross-cutting issues, such as the one in the US described in Box 3.12, may be worth considering. For the most part, individuals are responsible for seeking retraining courses. Upskilling is often an initiative by the employee or contingent on the willingness of the employer. In other OECD countries, such as France, support for continuous training and upskilling is individualised and is provided as a benefit to workers rather than an offer through employers (Perez and Vourc'h, 2020[75]). Such an arrangement removes requirements to be employed or to direct skills towards current employment needs for gaining access to skills training. In its most recent version, the individual training accounts also allow for training certification across all fields. While some local employers provide ample opportunities for upskilling, it is not clear that individuals would always have the same preferences as employers for training needs. Furthermore, services focusing on upskilling workers through cantonal initiatives or the public employment system could further benefit from a regional perspective. This includes initiatives that target providing support for new entrants in the labour market (such as apprentices), start-up entrepreneurship training, continuous training and lifelong learning (Fazekas and Field, 2013[76]) as well as programmes that target regional integration of migrants into the labour market (Liebig, Kohls and Krause,

2012[77]; OECD, forthcoming[78]). In particular, training in formal management practices is important for innovation, in particular in small businesses. Similarly, the effective adoption of automation and digitalisation requires strong managerial skills in SMEs. In this regard, evidence suggests that targeted programmes that combine ICT solutions with management training and advisory services can be especially effective for innovation (Cusmano, Koreen and Pissareva, 2018[63]).

Box 3.12. High-level co-ordination on rural affairs in the US

The White House Rural Council, US

Under an executive order of the Obama-Biden Administration, the US undertook a mission to bring the concerns of rural areas into the centre of government. The initiative, in an attempt to improve the voice of rural constitutes in the policy-making process, worked to reinforce co-ordination on a wide range of issues across government at different levels and within different agencies. The objectives of the council were to focus on job creation and economic development by focusing on:

1. **Opportunity**: Increasing the flow of capital to rural areas, job creation and workforce development.
2. **Innovation**: Including the expansion of telecommunications, renewable energy and new markets for rural communities.
3. **Quality of life**: Including access to quality healthcare, education and housing, and particularly in persistent poverty counties and tribal areas.
4. **Conservation**: Including expansion of outdoor opportunities and economic growth.

The council carried this out through three core functions which included:

1. Streamlining and improving the effectiveness of federal programmes serving rural America.
2. Engaging stakeholders, including farmers, ranchers and local citizens, on issues and solutions in rural communities.
3. Promoting and co-ordinating private sector partnerships.

The Rural Council Members were chaired by the Secretary of Agriculture and included 30 government bodies including the Department of Commerce, the Department of Labor, the Department of Education, the Department of the Treasury, the Office of Science and Technology Policy, the Small Business Administration, the Council of Economic Advisers and regional authorities such as the Delta Regional Authority and the Appalachian Regional Commission.

Source: U.S. White House (2022[79]), *White House Rural Council*, https://obamawhitehouse.archives.gov/administration/eop/rural-council, (accessed on 1 September, 2022).

Key messages

- Co-ordination with agencies that target upskilling, lifelong learning and educational programmes that enable students to discover their creative and entrepreneurial potential are particularly important for these regions.
- Co-ordination with cantonal and public employment partners on regional skills development and digital skills strategies is an avenue for integration of concerns over the perceived limited level of skills in different regions.

References

ARE (n.d.), *Projets-modèles pour un développement territorial durable 2020-2024*, Office fédéral du dévelopment regional, https://www.are.admin.ch/are/fr/home/developpement-et-amenagement-du-territoire/programmes-et-projets/projets-modeles-pour-un-developpement-territorial-durable/2020-2024.html. [46]

Atta-Owusu, K., R. Fitjar and A. Rodríguez-Pose (2021), "What drives university-industry collaboration? Research excellence or firm collaboration strategy?", *Technological Forecasting and Social Change*, Vol. 173, p. 121084, https://doi.org/10.1016/j.techfore.2021.121084. [67]

B,S,S Volkswirtschaftliche Beratung AG (2018), *Regionale Innovationssysteme (RIS) Evaluation und RIS-Konzept 2020+*, https://regiosuisse.ch/sites/default/files/2018-12/RIS%20Evaluation%20und%20RIS-Konzept%202020%2B%20DE.pdf. [8]

BIS (n.d.), *Solutions for Business: Simplified Business Support*, Department for Business Innovation and Skills, London, http://www.bis.gov.uk/policies/enterprise-andbusiness-support/solutions-for-business-simplified-business-support (accessed on 1 September 2022). [56]

BMWi (2018), *Reallabore als Testräume für Innovation und Regulierung*, Bundesministerium für Wirtschaft und Energie, https://www.bmwi.de/Redaktion/DE/Downloads/S-T/strategiepapier-reallabore.pdf?__blob=publicationFile&v=16. [44]

Brainport Eindhoven (n.d.), *Brainport Eindhoven: Homepage*, https://brainporteindhoven.com/int/ (accessed on 1 September 2022). [66]

CFNC (n.d.), *Supporting Canada's 267 Community Futures Organizations*, Community Futures Network of Canada, https://communityfuturescanada.ca/ (accessed on 1 September 2022). [59]

Council for Spatial Planning (2019), *Megatrends und Raumentwicklung Schweiz*, https://regiosuisse.ch/sites/default/files/2019-07/megatrends_de.pdf. [27]

Cusmano, L., M. Koreen and L. Pissareva (2018), "2018 OECD Ministerial Conference on SMEs: Key Issues Paper", *OECD SME and Entrepreneurship Papers*, No. 7, OECD Publishing, Paris, https://doi.org/10.1787/90c8823c-en. [63]

Deutscher Bundestag (2018), *Reallabore, Living Labs und Citizen Science-Projekte in Europa*, https://www.bundestag.de/resource/blob/563290/9d6da7676c82fe6777e6df85c7a7d573/wd-8-020-18-pdf-data.pdf.   [51]

Duell, N. et al. (2010), "Activation Policies in Switzerland"*, OECD Social, Employment and Migration Working Papers*, No. 112, OECD Publishing, Paris, https://doi.org/10.1787/5km4hd7r28f6-en.   [73]

e2 Entrepreneurial Ecosystems (n.d.), *Homepage*, http://www.energizingentrepreneurs.org.   [36]

EC (2021), "Long-term vision for rural areas: For stronger, connected, resilient, prosperous EU rural areas", European Commission, https://ec.europa.eu/regional_policy/en/newsroom/news/2021/06/30-06-2021-long-term-vision-for-rural-areas-for-stronger-connected-resilient-prosperous-eu-rural-areas.   [29]

Egli, R. (2020), "Regionale Innovationssysteme (RIS) der Regionalpolitik (NRP) aus der Perspektive peripherer Regionen", https://regiosuisse.ch/sites/default/files/2020-04/Fachartikel%20regiosuisse%20Regionale%20Innovationssysteme%20%28RIS%29%20der%20Regionalpolitik%20%28NRP%29%20aus%20der%20Perspektive%20peripherer%20Regionen.pdf.   [16]

Farmreal (n.d.), *Homepage*, https://farmreal.pt/en (accessed on 19 August 2022).   [50]

Fazekas, M. and S. Field (2013), *A Skills beyond School Review of Switzerland*, OECD Reviews of Vocational Education and Training, OECD Publishing, Paris, https://doi.org/10.1787/9789264062665-en.   [76]

Fedlex (2012), *Federal Act on the Promotion of Research and Innovation*, https://www.fedlex.admin.ch/eli/cc/2013/786/en.   [3]

Find Business Support (n.d.), *Homepage*, https://findbusinesssupport.gov.scot/ (accessed on 1 September 2022).   [57]

Freshwater, D. et al. (2019), "Business development and the growth of rural SMEs"*, OECD Regional Development Working Papers*, No. 2019/07, OECD Publishing, Paris, https://doi.org/10.1787/74256611-en.   [19]

Government of Canada (2022), *Women Entrepreneurship Strategy*, https://ised-isde.canada.ca/site/women-entrepreneurship-strategy/en.   [38]

Government of Canada (2021), *Women's Enterprise Initiative in British Columbia*, https://www.canada.ca/en/pacific-economic-development/services/support/womens-enterprise.html (accessed on 19 August 2022).   [32]

Government of Canada (2021), *Women's Enterprise Initiative in the Prairie Provinces*, https://www.canada.ca/en/prairies-economic-development/services/support/womens-enterprise.html (accessed on 19 August 2022).   [33]

IEA (2021), *Net Zero by 2050*, International Energy Agency, https://www.iea.org/reports/net-zero-by-2050.   [40]

INESC TEC (n.d.), *INESC TEC: Homepage*, https://www.inesctec.pt/en (accessed on 1 September 2022).   [70]

Innosuisse (2022), "Innovation boosters", Swiss Innovation Agency.   [5]

Innosuisse (2022), *Mission*, Swiss Innovation Agency,   [4]
https://www.innosuisse.ch/inno/en/home/about-us/mission.html.

Interface (n.d.), *Interface: Homepage*, https://interface-online.org.uk/ (accessed on   [69]
1 September 2022).

Jungsberg, L. et al. (2020), "Key actors in community-driven social innovation in rural areas in   [21]
the Nordic countries", *Journal of Rural Studies*, Vol. 79, pp. 276-285,
https://doi.org/10.1016/j.jrurstud.2020.08.004.

Lee, N. and A. Rodriguez-Pose (2012), "Innovation and spatial inequality in Europe and USA",   [20]
Journal of Economic Geography, Vol. 13/1, pp. 1-22, https://doi.org/10.1093/jeg/lbs022.

Liebig, T., S. Kohls and K. Krause (2012), "The labour market integration of immigrants and their   [77]
children in Switzerland".

Mahroum, S. et al. (2007), *Rural innovation*.   [22]

Mayer, H. (2020), "Slow innovation in Europe's peripheral regions: Innovation beyond   [14]
acceleration", in Döringer, S. and J. Eder (eds.), *Schlüsselakteure der Regionalentwicklung -
welche Perspektiven bietet Entrepreneurship für ländliche Räume?*, Verlag der
Österreichischen Akademie der Wissenschaften.

Mayer, H., A. Habersetzer and R. Meili (2016), "Rural-urban linkages and sustainable regional   [18]
development: The role of entrepreneurs in linking peripheries and centers", *Sustainability*,
Vol. 8/745, https://doi.org/10.3390/su8080745.

McKenzie, D. and C. Woodruff (2021), "What works in training entrepreneurs?",   [47]
https://voxdev.org/topic/firms-trade/what-works-training-entrepreneurs.

OECD (2021), *Active Labour Market Policies: Connecting People with Jobs*, OECD, Paris,   [74]
https://www.oecd.org/employment/activation.htm (accessed on 15 June 2021).

OECD (2021), *Delivering Quality Education and Health Care to All: Preparing Regions for   [72]
Demographic Change*, OECD Rural Studies, OECD Publishing, Paris,
https://doi.org/10.1787/83025c02-en.

OECD (2021), *Embracing Innovation in Government*, https://trends.oecd-opsi.org/.   [52]

OECD (2021), *OECD Regional Outlook 2021: Addressing COVID-19 and Moving to Net Zero   [39]
Greenhouse Gas Emissions*, OECD Publishing, Paris, https://doi.org/10.1787/17017efe-en.

OECD (2020), *Questionnaire on Enhancing Innovation in Rural Regions*, OECD, Paris.   [71]

OECD (2020), *Rural Well-being: Geography of Opportunities*, OECD Rural Studies, OECD   [13]
Publishing, Paris, https://doi.org/10.1787/d25cef80-en.

OECD (2020), *The Circular Economy in Cities and Regions: Synthesis Report*, OECD Urban   [41]
Studies, OECD Publishing, Paris, https://doi.org/10.1787/10ac6ae4-en.

OECD (2020), *The Geography of Higher Education: Evaluation of the Academy for Smart   [68]
Specialisation*, OECD, Paris,
https://www.oecd.org/cfe/smes/Evaluation_Academy_Smart_Specialisation.pdf.

OECD (2019), *OECD Regional Outlook 2019: Leveraging Megatrends for Cities and Rural Areas*, OECD Publishing, Paris, https://doi.org/10.1787/9789264312838-en. [10]

OECD (2017), *OECD Territorial Reviews: Northern Sparsely Populated Areas*, OECD Territorial Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264268234-en. [65]

OECD (2015), *The Innovation Imperative: Contributing to Productivity, Growth and Well-Being*, OECD Publishing, Paris, https://doi.org/10.1787/9789264239814-en. [62]

OECD (2013), *Rural-Urban Partnerships: An Integrated Approach to Economic Development*, OECD Rural Policy Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264204812-en. [60]

OECD (2012), *OECD Reviews of Regional Innovation: Central and Southern Denmark 2012*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, https://doi.org/10.1787/9789264178748-en. [35]

OECD (2012), *OECD Territorial Reviews: Småland-Blekinge, Sweden 2012*, OECD Territorial Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264169517-en. [34]

OECD (2011), *OECD Territorial Reviews: Switzerland 2011*, OECD Publishing Paris, https://doi.org/10.1787/9789264092723-en. [9]

OECD (forthcoming), *Multi-level Governance Arrangements for Migrant Integration: A Policy Perspective*, OECD Publishing, Paris. [78]

OECD (forthcoming), *Understanding Innovation in Rural Regions*, OECD Publishing, Paris. [31]

OECD/EC (2020), "Policy brief on recent developments in youth entrepreneurship"*, OECD SME and Entrepreneurship Papers*, No. 19, OECD Publishing, Paris, https://doi.org/10.1787/5f5c9b4e-en. [30]

Perez, C. and A. Vourc'h (2020), "Individualising training access schemes: France – the Compte Personnel de Formation (Personal Training Account – CPF)"*, OECD Social, Employment and Migration Working Papers*, No. 245, OECD Publishing, Paris, https://doi.org/10.1787/301041f1-en. [75]

Regio Basiliensis (2019), *Audit RIS Region Basel-Jura*, https://www.regbas.ch/de/assets/File/downloads/Audit_RIS_Basel-Jura_Schlussbericht_def_DE.pdf. [54]

Regio Basiliensis (n.d.), *Interkantonales Umsetzungsprogramm zur Regionalpolitik 2020-2023 der Region Basel-Jura*, https://www.regbas.ch/de/assets/File/UP-Basel-Jura_NRP_2020-2023_24_6_2020.pdf. [25]

regiosuisse (2018), *Regionale Innovationssysteme (RIS) : Evaluation und RIS-Konzept 2020+*, https://regiosuisse.ch/sites/default/files/2018-12/RIS%20Evaluation%20und%20RIS-Konzept%202020%2B%20DE.pdf. [55]

regiosuisse (n.d.), *Eine Praxis-Toolbox zur Förderung der Kreislaufwirtschaft in Regionen, Gemeinden und Städten*, https://regiosuisse.ch/kreislaufwirtschaft. [43]

regiosuisse (n.d.), *Financial Instruments and Measures within the Framework of the NRP*, [11]
https://regiosuisse.ch/index.php/en/financial-instruments-and-measures-within-framework-nrp.

regiosuisse (n.d.), *Wissensgemeinschaft «Kreislaufwirtschaft und Regionalentwicklung»*, [42]
https://regiosuisse.ch/wissensgemeinschaft-kreislaufwirtschaft-und-regionalentwicklung.

Schweizerische Eidgenossenschaft (2019), *Agglomerationspolitik des Bundes 2016+*, [64]
https://www.are.admin.ch/are/de/home/staedte-und-agglomerationen/strategie-und-planung/agglomerationspolitik-des-bundes-2016-.html.

SCINNOPOLI (n.d.), *Scanning Innovation Policy Impact*, http://www.scinnopoli.eu. [53]

SECO (2020), *Botschaft über die Standortförderung des Bundes 2020-2023*, Staatssekretariat [6]
für Wirtschaft,
https://www.seco.admin.ch/seco/de/home/Standortfoerderung/botschaft_standortfoerderung/Botschaft_zur_Standortfoerderung2020-2023.html.

SECO (2020), "NRP-Pilotmassnahmen für die Berggebiete 2020-2023", Staatssekretariat für [12]
Wirtschaft, https://regiosuisse.ch/sites/default/files/2020-07/NRP_Pilotmassnahmen_DasWichtigsteInK%C3%BCrze_Juli2020_DE.pdf.

SECO (2020), *Weissbuch Regionalpolitik*, Staatssekretariat für Wirtschaft, [17]
https://regiosuisse.ch/sites/default/files/2020-07/SECO%20%282020%29%20%C2%ABWeissbuch%20Regionalpolitik%C2%BB.pdf.

SECO (2018), *Concept RIS 2020+*, Staatssekretariat für Wirtschaft, [15]
https://regiosuisse.ch/sites/default/files/2018-12/RIS%20Concept%20RIS%202020%2B%20FR.pdf.

SECO (2017), *The New Regional Policy of the Federal Government (brochure)*, State Secretariat [7]
for Economic Affairs.

SERI (2016), *Research and Innovation in Switzerland 2016*, State Secretariat for Education, [2]
Research and Innovation, https://www.sbfi.admin.ch/sbfi/en/home/services/publications/data-base-publications/research-and-innovation.html.

Shearmur, R., C. Carrincazeaux and D. Doloreux (2016), *The geographies of innovations:* [23]
beyond one-size-fits-all, Edward Elgar Publishing,
https://doi.org/10.4337/9781784710774.00006.

SIPBB (n.d.), *Swiss Smart Factory*, Switzerland Innovation Park Biel/Bienne AG, [45]
https://www.sipbb.ch/en/forschung/swiss-smart-factory/.

Smart Rural 21 (n.d.), *Penela*, Smart Rural Areas in the 21 Century, [49]
https://www.smartrural21.eu/villages/penela_pt/.

Swiss Federal Council (2018), *Overview of Innovation Policy*, [1]
https://www.sbfi.admin.ch/sbfi/en/home/services/publications/data-base-publications/innovation-policy.html.

U.S. Department of Commerce (2022), "Women-owned and Indigenous small businesses thrive [37]
with EDA and MBDA support", https://www.commerce.gov/news/blog/2022/03/women-owned-and-indigenous-small-businesses-thrive-eda-and-mbda-support.

U.S. Government (n.d.), *Rural Partners Network*, https://www.rural.gov/.   [58]

Veneri, P. (2018), "Urban spatial structure in OECD cities: Is urban population decentralising or clustering?", *Regional Science*, Vol. 97/4, pp. 1355-1374, https://doi.org/10.1111/pirs.12300.   [61]

White House (2022), *White House Rural Council*, https://obamawhitehouse.archives.gov/administration/eop/rural-council.   [79]

Wilkinson, A. (2017), *Strategic Foresight Primer*, European Political Strategy Centre.   [28]

Wojan, T. and T. Parker (2017), *Innovation in the rural nonfarm economy: its effect on job and earnings growth, 2010-2014*.   [24]

World Bank (2020), "Global experiences from regulatory sandboxes", World Bank, Washington, DC, https://openknowledge.worldbank.org/handle/10986/34789.   [48]

Zentralschweiz innovativ (2020), *Zinno-Ideencheck für Berggebiete*, https://www.zentralschweiz-innovativ.ch/innovationangebot/ideenscheck_berggebiete/.   [26]

Notes

[1] For more information, see https://www.oecd.org/regional/regional-policy/thenewruralparadigmpoliciesandgovernance.htm

[2] Anecdotally, this has been associated to a rise in exchange rates that crowded out R&D jobs in 2017. Early analysis with the 2019 updates in the R&D survey seems to suggest that R&D jobs increased from 2017 to 2019, but no knowledge of the distribution of jobs over territories or sectors is currently known.

[3] See Pa.Iv 20.433, https://www.parlament.ch/en/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20200433.

[4] Additional expenditure on active labour market policies and related programmes are administered by cantonal agencies, rather than specifically through public employment services.