

Executive summary

A new vision for innovation in rural regions of Switzerland

With strong entrepreneurship rates, leading universities and research institutions, a competitive market and policies that enable the free flow of individuals and encourage firm linkages between territories, Switzerland is a leader of innovation among OECD countries, with an exemplary and advanced regional innovation strategy consisting of six regional innovation systems (RIS).

However, this strong innovation performance can be improved by addressing disparities across territories. The unequal diffusion of innovation across territories is in part due to the nature of innovation in rural places that focuses more on incremental innovation in processes, including in business models and less on product innovation in science and technology fields. In line with the publication on the OECD *report Rural Well-being: Geography of Opportunities* (2020^[1]), a new vision of innovation in rural areas calls for a place-based framework that offers analysis of innovation policies through a rural lens.

Switzerland has a competitive environment and is a leader in innovation, yet disparities between regions still exist

The economic structure of Switzerland lends itself to innovation through highly a competitive market structure and high levels of innovation, by many of the standard innovation indicators. In Switzerland, the Herfindahl-Hirschman Index (HHI) of market competition demonstrates high levels of competition, with an index of less than 0.25, in all major sector and territorial categories. Compared to other OECD regions, Swiss regions perform strongly in most indicators for innovation. Five out of the seven large (TL2) regions of Switzerland perform above the OECD in shares of co-publications while all regions have higher than OECD regional average shares of tertiary educated workforce.

Yet there are still disparities within Switzerland between rural and urban regions that impact innovation, such as unequal shares of older workers and women in the active workforce. These disparities reflect many factors including the structure of regional economies, skills gaps and, indeed, at least in part, place-blind innovation policies. Rural areas, for example, typically have a larger share of small-sized firms with relatively less propensity to engage in the types of innovation activities that are traditionally supported by government subsidies, such as those in high-technology research and development (R&D).

Simultaneously, productivity, as a measure of innovation adoption, is diverging across territories in Switzerland. From 2012 to 2019, labour productivity grew by only 1% per year on average, yet high-density peri-urban areas saw double that rate and rural remote areas and peri-urban low density saw productivity fall by 14% and 5% respectively over the period. Relatively low productivity growth has also been experienced in most OECD economies, giving rise to a new productivity paradox and a number of possible theories to explain the slowdown, including more marginal technological shifts (Gordon, 2016^[2]), less substantial impacts of technologies (Akcigit and Ates, 2019^[3]) and longer lags before the benefits of innovation can be realised (Brynjolfsson, Rock and Syverson, 2021^[4]). Rural areas are exposed to these

risks but they are also compounded by those of an ageing workforce (especially in manual occupations in sectors going through transition) and associated skills gaps, exacerbated by the movement of younger workers out of rural regions.

Policies for innovation in rural regions need to reflect their size and structure

On average, rural firms in Switzerland are small, accounting for a larger share of employment than those in metropolitan areas. Similar to other European OECD countries, a third of firms and a quarter of jobs are in rural and peri-urban areas of Switzerland, according to the national definitions of rural. Smaller firms typically have lower productivity than larger firms, in large part reflecting economies of scale. At the same time, young firms and firms with young founders and managers are often highly innovative and, in turn, productive (Acemoglu, Akcigit and Celik, 2020^[5]; Breschi, Lassébie and Menon, 2018^[6]). Policies for innovation in rural regions (including more broadly entrepreneurship policies) should therefore leverage the potential of new firms, whilst also looking to boost innovation in older small- and medium-sized enterprises (SMEs). Those policies also need to better target and nurture the types and modes of innovations that can be adopted by rural firms, which typically have less of a focus on standard product innovations and a comparative advantage in the development of original or incremental innovations (OECD, 2020^[7]; Freshwater et al., 2019^[8]; Lee and Rodriguez-Pose, 2012^[9]). Initiatives to support innovation and entrepreneurship beyond the technological realm and traditional manufacturing sectors are underexploited.

Policies for innovation also need to take into account the sectoral structure of the economy. While agriculture, professional services and manufacturing remain the most dominant sectors of activity in rural areas, the growth of the broader service sector, with typically higher salaries, also provides opportunities to boost innovation and productivity as well as increased female participation and scope for less labour-intensive older worker participation in rural economies.

Innovation has a larger potential for promoting productivity and well-being in rural regions of Switzerland...

Firms in rural places innovate differently than those in urban areas. In addition, R&D activities in rural regions are still positively associated with increases in productivity in non-metropolitan regions of Switzerland. However, this link is not so clear in metropolitan regions of Switzerland. Rural firms tend to spend R&D investment differently than those in other areas. In 2019, close to 35 cents per Swiss franc spent on R&D was outsourced; in rural regions, only 4 cents per Swiss franc left the firm for R&D expenses. While R&D activities are stronger in metropolitan areas and, in general, in the manufacturing sector, there are increasing R&D investments in the trade and services sector in rural areas, which is also associated with increasing R&D jobs. This correlation suggests that there is also an opportunity to simultaneously support R&D innovation and employment-enhancing policies through place-based approaches to innovation policies.

Supporting policies for innovation should also include addressing challenges for non-metropolitan regions, such as accessing markets and boosting skills. Although the New Regional Policy (NRP), the Swiss multi-annual regional programme focusing on reducing regional inequality, tries to address territorial inequalities in many ways, more needs to be done to integrate rural and urban areas and align other federal policies to support rural innovation. This includes stronger co-ordination and collaboration between the State Secretariat for Economic Affairs (SECO), the Swiss Innovation Agency, Innosuisse, and the Federal Office for Agriculture (FOAG), as well as joint approaches to supporting entrepreneurs with cantonal offices.

Switzerland follows a strongly federal, decentralised approach to innovation policies through several independent policy areas that are co-ordinated as needed. Because of its decentralised nature, the Swiss

innovation system functions as a complex ecosystem. It includes federal actors (e.g. Innosuisse), public education and research organisations, cantonal actors and programmes (e.g. Living Labs, individual projects) and RIS as well as private programmes. Part of the NRP is RIS. Complementary to national research-driven innovation activities, their focus is on demand and need-driven services targeting SMEs. Yet, RIS impact is geographically uneven. Evidence shows, that SMEs and entrepreneurs in dense areas benefit more from RIS support than those in more remote regions and mountainous areas.

... with gains to be made through innovation, including in the agri-food sector

The Swiss agricultural innovation system (AIS) is highly sophisticated, efficient and advanced. Private sector and public-private initiatives have been crucial for the sector, building critical infrastructure and advisory boards for innovation. However, at the cantonal level, formal and systematic collaboration and interaction between the RIS and the cantonal agricultural offices is limited, in part because of the decentralised structure of Switzerland and cantonal independence. Building incentives to bring continued collaboration between the cantonal and regional agricultural advisory services, including at a multi-cantonal level such as the example of Star'Terre, an association of local agri-food enterprises, and the RIS and FOAG is important for ensuring that regional innovation initiatives in rural regions are able to take advantage of all resources including those that may be involved in industries and services that support the agri-food chain.

The FOAG has a well-developed knowledge and innovation system in the agricultural sector but is looking for ways to support entrepreneurial farmers to become more innovative. Co-ordinating and jointly generating programmes for agricultural and agri-food entrepreneurs in rural areas with SECO may help avoid administrative overlap and increase the efficiency of resources.

Many of the challenges for firms to innovate in rural regions are related to demographic change...

Demographic disparities, based on gender and ageing populations, are a sharper challenge for non-metropolitan areas (including rural and peri-urban) than metropolitan areas. There are two men employed for every employed woman in low-density peri-urban areas, according to an analysis of employed workers. As in other countries, there is also a higher rate of older workers as compared to metropolitan regions. The size and skills mix in the accessible labour market are issues that impact the ability of people and firms to innovate.

... to address these issues, regional innovation system partners must consider demographically targeted programmes for delivering entrepreneurship and innovation support services, including for women, youth and older workers

Rural regions have an ageing workforce and often suffer from youth flight to varying degrees across all OECD countries. Activating all of the skills force of the region is important if regions want to address the massive shortage of skills in rural regions. Regional governments need to work with national and local governments to activate the female workforce as well as older workers and engage early with youth. In addition to programmes targeted at getting these populations into quality training and vocational programmes, they can also mainstream gender and age diversity requirements into projects and programmes.

Last, though entrepreneurship rates are strong in Switzerland, female entrepreneurship rates lag behind those for men in rural areas. Targeted programmes to support women entrepreneurs in the initiation, development and scaling up of business could increase opportunities in rural regions.

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