



SKILLS FOR INNOVATION

A Policy Brief from the Policy Learning Platform on Research and innovation

January 2021



**Interreg
Europe**



European Union | European Regional Development Fund



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Summary

This policy brief explores the importance of human capital and skills for innovation. Regional policymakers are designing regional skills policies to accelerate the innovation process, to reduce skills mismatch, and to contribute to transformative changes. In the European Union (EU), the **European Skills Agenda** will be central in driving the **Covid-19 economic recovery** and promoting the development of new skills for the **twin transition toward digital technology and climate neutrality**. The regional approach to find effective policy solutions for developing new skills to respond to European challenges makes Interreg Europe projects the ideal space for policy learning. This policy brief features five policy recommendations using the experience of Interreg Europe projects dealing with the development of skills for innovation to offer regions a path towards better regional innovation policymaking.

Acknowledgements: The authors would like to particularly thank our external contributors, Karen Maguire, Paulo Costa, Rima Dijkstra, Miroslav Poláček, Céline Quester, for their insightful contributions into some of the key issues currently facing skills policies.



Forewords

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People are at the core of the innovation process. Their skills—technical, creative, entrepreneurial—are the driver of innovations as well as the ability to put them to good use. The development of those skills is needed at all levels, from primary school to secondary level vocational and educational training to advanced scientific PhDs.

Skills are a “critical infrastructure” for innovation. However, skills policies are often disconnected from strategies and plans for innovation. The emphasis on technological innovation also neglects some of the other skills for much needed social innovation, as both are used to tackle economic, social and environmental challenges.

Place also matters for both skills and innovation. Regions are the spaces where much of these important interactions for innovation take place, particularly the tacit knowledge that must be shared between people. Local labour markets are the nexus where workers and firms meet. Top talent moves around globally, but many future innovators seek opportunities where they live.

Regional action is therefore critical to boost both skills and innovation. Regional and local governments are able to build the bridges between firms and the education and training offer relevant for their economies and the opportunities in smart specialisation. They also need good data to steer their efforts.

COVID-19 has further highlighted a number of critical issues for skills. The accelerated transitions within firms and across sectors will require even more adaptability, upskilling and reskilling. The transversal skills that make us human, along with digital skills, will increasingly be important. The stimulus packages to address the response to COVID-19 are also an opportunity to further invest in the skills side of that innovation infrastructure.

The future vitality of regions depends on the ability to anticipate and make the needed transitions through innovation, and the skills of the workforce to do so!



1. Skills and Human Capital in the Innovation Process

Introduction to Human Capital and Skills

Human capital can be broadly defined as the stock of knowledge, skills and other personal characteristics embodied in people that help them to be productive. Investments in human capital can be formal with schools, high-schools, vocational schools, higher education institutions or training programmes or **informal** with on-the-job learning and work experience ([OECD](#)). **Formal education** is a major engine for skills development, which can lead to innovation when companies and other organizations make appropriate use of these skills. Innovation leads to the process of ‘creative destruction’ and it requires people to be lifelong learners.

Human capital can be firm-specific, industry-specific or individual specific. Firm-specific human capital pertains to skills and knowledge that are valuable only within a specific firm. Industry-specific human capital pertains to knowledge derived from experience specific to an industry and technical know-how. Individual-specific human capital refers to knowledge that applies to a broad range of firms and industries; it includes general managerial and entrepreneurial experience ([Dakhli & De Clercq](#)).

The [Regional European innovation Scoreboard](#) uses proxy indicators to measure the quantity of and quality of human capital in European regions such as:

- **the percentage population aged 30-34 having completed tertiary education** offers a general indicator of the supply of advanced skills. The indicator focuses on a narrow share of the population aged 30 to 34 and will relatively quickly reflect changes in educational policies leading to more tertiary graduates.
- **Percentage population aged 25-64 participating in lifelong learning** to encompass all purposeful learning activity, whether formal, non-formal or informal, undertaken on an ongoing basis to improve knowledge, skills and competence.
- **R&D expenditures in the public sector as percentage of GDP** offers a qualitative proxy indicator on human capital. Trends in the R&D expenditure indicator provide key indications of the future competitiveness and wealth of a region.
- **Employment in medium-high/high tech manufacturing and knowledge-intensive services as percentage of total workforce** offers a qualitative proxy indicator on human capital and the continual innovation capacity of the manufacturing economy through creative and inventive activity.

In the [European Innovation Scoreboard](#) (EIS), additional proxy indicators that cannot be regionalised are used such as **doctorate graduates per 1000 population aged 25-34** and **foreign doctorate students as percentage of all doctorate students**.

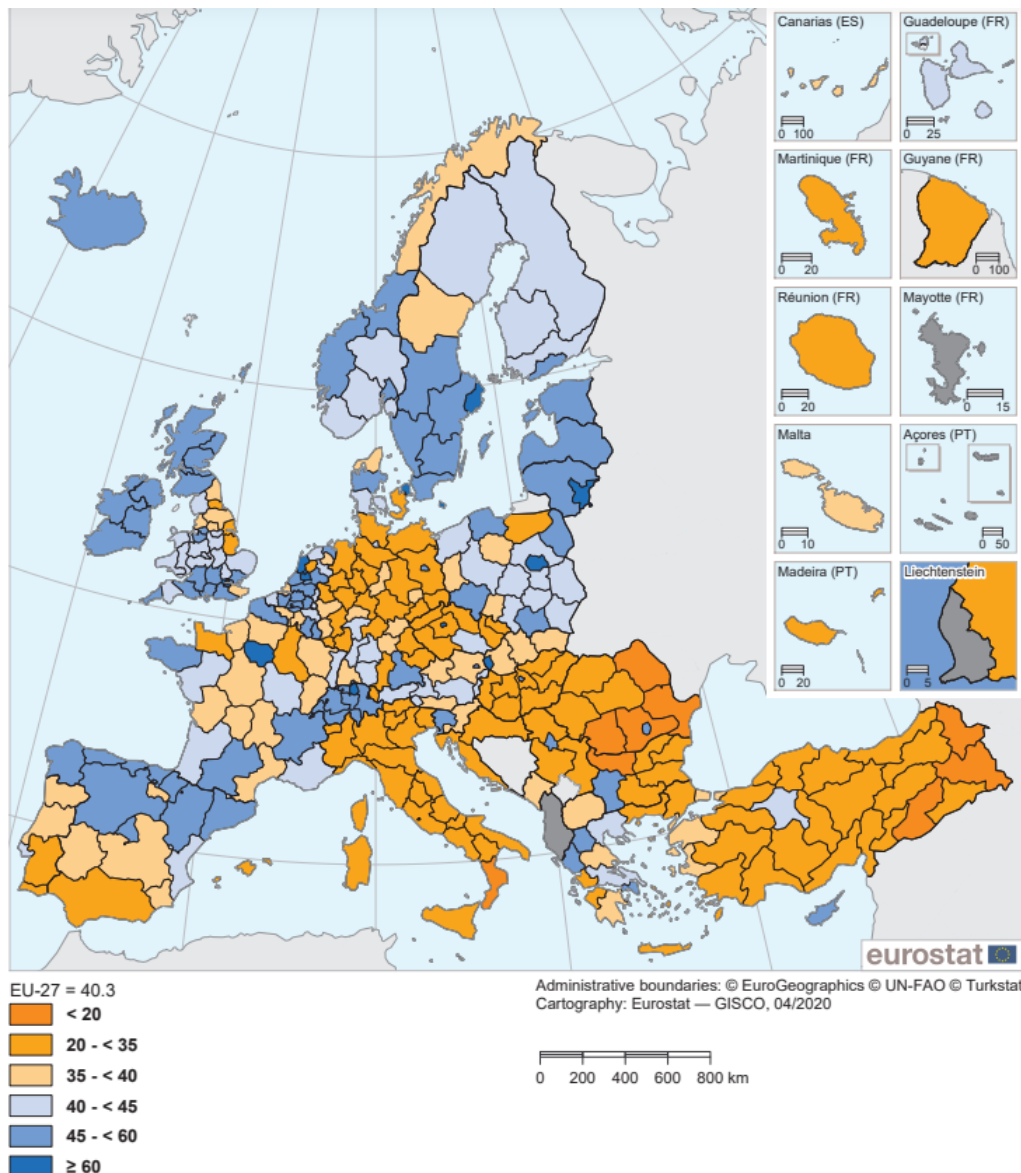


Figure 1. Tertiary educational attainment of people aged 30-34 years old in 2019 (% by NUTS 2).
Source: [Eurostat](#).

Human Capital in the Innovation Process

On the macro-level, countries or regions with a more educated population tend to have higher productivity and competitiveness ([OECD](#)). The same is true at the micro-level for individuals, those with more education and experience tend to earn higher salaries.

Human capital affects innovation and economic growth. Indeed, past regional human capital is a key factor explaining current regional disparities in innovation and economic development ([Diebolt & Hippe](#)). An increase in human capital may induce a rise in the number of innovative entrepreneurs and products, thus indirectly spurring economic development through the channel of innovation. **Innovation combined with skill formation** (meaning all components associated with the development and accumulation of skills) **can act as the ‘twin engines of growth’** ([Jones & Grimshaw](#)). As a result, a skilled workforce is essential for the creation, transfer and diffusion of knowledge and provides a foundation for innovation.

Human capital is even more important in post-industrial economies that rely on knowledge. Technological capability is ultimately embodied in people, not machinery. The [OECD](#) defines



knowledge-based industries as ‘**industries that use technology and/or human capital intensively.**’ The knowledge-based industries include not only R&D intensive industries but also communications, finance, insurance, real estate, business services, community, social and personal services industries.

Human capital plays a fundamental role to acquire, assimilate, transform, exploit, and ultimately absorb external knowledge. [Crescenzi](#) shows that in the European Union, regional innovative activities play a significant role in determining differential regional growth patterns. In peripheral regions, the investment in innovative activities must be complemented with investment in human capital to be efficient. However, **human capital investments do not always benefit peripheral regions where it was funded due to labour mobility and ‘brain-drain’** ([Coniglio & Prota](#)).

Box 1. [8 essential skills to succeed in a post-COVID-19 world.](#)

The COVID-19 pandemic is accelerating the needs for certain skills, 8 skills will be more important than ever in the post-COVID-19 world. They are:

- **Leadership:** with the advent of remote working, team leaders and managers need to be able to inspire and motivate their colleagues and encourage collaboration from a distance.
- **Emotional intelligence:** with the increased uncertainty and challenges, leaders need to develop their emotional intelligence to help their workers navigate through these difficult times.
- **Technology skills:** the pandemic has accelerated the use of robotics, augmented reality, the Internet of things and artificial intelligence. The labour market will increasingly require workers with adequate technology skills.
- **Digital and coding skills:** the pandemic has accelerated the digital transformation—e-commerce, virtual meetings, and online conferences—digital skills are now basic skills for knowledge workers.
- **Adaptability:** lockdowns and constraints have brought unexpected changes in our lives. The way we work will undoubtedly change and workers who can adapt quickly to changes will be of great value to their employers.
- **Creativity and innovation:** businesses that have been able to come up with ways to deliver services online or quickly shift their production have served as role models to many. In a post-COVID-19 world, human creativity will be essential.
- **Data literacy:** companies will increasingly need to understand business trends and assess risk and uncertainty making data analytics and literacy increasingly important.
- **Critical thinking:** due to the rise of fake news and disinformation, workers and businesses will need to be able to critically read news and make informed decisions on evidence-based approaches

Source : [EURES](#).

2. Research and Innovation Skill Policies

Rationale for policy intervention

The main rationale to design and implement human capital and skill policies is due to **skill mismatch**. Indeed, skills for innovation are complex and require multi-level (national, regional, local) and multi-actor (individual, educational institutions, businesses) **coordination that are prone to failures** ([Jones & Grimshaw](#)).

The imbalance between the demand and supply of skills represents a societal challenge. For instance, in the European Union, **40% of employers cannot find people with the right skills to fill**



their vacancies ([European Commission](#)). The concept of skills mismatch not only comprises the **difficulties that employers have to find the right skills despite unemployment but also skills gaps and qualification mismatch** ([Nordregio](#)). Skills gaps refer to the lack of required skills in the working population and qualification mismatch refers to when employees are over- or underqualified for the job they are performing. Skills mismatch contributes to a loss in efficiency and effectiveness, not only for individuals but also for the private, public sector and the economy.

To reduce skills mismatch, the [OECD](#) recommends for countries to **conduct skills assessment and anticipation (SAA)**, which allow to provide knowledge about current and future skills needs of the labour market, and the availability of current skills. Skills assessments provide knowledge to policymakers, state authorities, labour market actors, or educational providers to re-adapt the provision of training to meet the current and future needs of the labour market.

Societal and Technological Challenges facing European Regions

European regions are faced with multiple challenges that require them to intervene to reduce skills mismatch in their labour market. Many European regions are facing major demographic challenges such as a **declining population, an ageing population, and higher level of immigration**. At the same time, European regions are slowly adapting to the 4th industrial revolution which involves the diffusion of new technologies such as **automatization and digitalisation** restructuring the economy (see **our policy brief on [Industry 4.0](#)**). Many jobs are in the process of automation, posing the risk of high structural unemployment. In their study, [Frey and Osborne \(2013\)](#) found that **as high as 47% of US jobs are at high risk of automation**.

Regional policies for Skills for innovation

Regional policymakers have an essential role to play to address human capital development policies. Indeed, regional stakeholders can better assess and identify skills' demands and for innovation and can be more inventive in finding place-based solutions to address skills' mismatches. According to [Nordregio](#) and [Innovation Policy Platform](#), regional policymakers have a role to play to:

- analyse and monitor regional labour markets in terms of jobs and skills' needs,
- inform and orient career choices for students,
- promote lifelong learning policies for unemployed people and the working population,
- support small and medium enterprises in finding adequate training and mentoring opportunities for promoting innovation,
- encourage private companies and human resources management policies to favour skills for innovation,
- promote labour mobility and high-skilled migration policies since labour is the main carrier of knowledge, employees moving from one firm to another will also transfer their knowledge.
- promote entrepreneurship to develop an entrepreneurial culture based on continuous learning among students and workers,
- promote university disciplines with adapted pedagogies (problem-based learning, cooperative learning, and metacognitive learning) to meet specific regional skills needs and develop skills that matter for innovation such as technical skills, skills in thinking and creativity, and behavioural and social skills.
- and promote close university-industry relationships to increase the employability of future graduates.

However, **skills development policies for innovation are confronted with multiple challenges** such as:

- **Demographic and socio-economic factors:** skills development policies must capture demographic and socio-economic changes.
- **Institutional factors:** skills development policies are part of an international, national and regional socio-economic framework in which regions have little room for manoeuvre.



- **Governance:** skills development policies are characterised by multi-level and cross-sectoral governance, which implies important governance challenges as regards coordination, possible conflicts of goals, efficiency, and accountability ([Nordregio](#)).
- **Private companies are reticent to train workers** due to: (1) the difficulty to assess in advance the quality of training, (2) the risk of the employee to take up new jobs or be poached, (3) being an uncertain investment that is intangible, and (4) the uncertainty for the employers and the employees of receiving an adequate return on investment in human capital owing to market imperfections.
- **Policy failures:** innovation skills development policies are at great risk of policy failure **due to high level of uncertainty and complexity**. For instance, public investments in leading-edge scientific and engineering endeavours risk of generating a deficit in the stock of essential technical and intermediate-level skills and knowledge. Moreover, fast-changing technologies, much-shortened product life cycles across multiple markets, and intensified global competition disincentivise organisations and governments to finance new skills because of heightened uncertainty about returns to investment.

Box 2. How can the Policy Learning Platform support?

The [Interreg Europe Policy Learning Platform](#) can help project regional policymakers to better design policies to support human capital and skills development by facilitating the exchange of experience from different institutional contexts and showcasing success stories via the [Policy Learning Platform good practice database](#). In addition to the good practice database, the [Policy Learning Platform](#) can provide a forum for direct discussions among partners from different projects – either in thematic workshops, peer review learning, or in webinar and online discussions, and provide expert advice through our on-demand [policy helpdesk service](#).

3. European Initiatives for Human Capital

On July 2020, the European Commission presented the [European Skills Agenda](#), a five-year plan that drives **Covid-19 economic recovery** focusing on human capital, employment and social policies to help individuals and businesses develop new skills for the **twin transition toward digital technology and climate neutrality**. The necessity of **telework and virtual-learning due to Covid-19 pandemic is currently accelerating the process of digital transition**. On the other hand, **it is accentuating the gap related to digital skills, creating new inequalities for accessing job and education and compromising career opportunities for many people** ([European Commission](#)).

The [European Skills Agenda](#) includes 12 actions around 4 main pillars:

- **Join forces for collective action**—with a [Pact for Skills](#).
- **Right skills for jobs** with actions to strengthen skills intelligence, strategic national upskilling action, recommendation on vocational education and training, the [European Universities initiative](#) and upskilling scientists, skills to support the twin transitions, STEM graduates, and [entrepreneurship](#), and skills for life
- **Support people in lifelong learning process** with an initiative on individual learning account, approach on micro-credentials, and Europass platform.
- **Unlock investment in skills with innovative financial mechanisms**.

Under the pillar [Pact for Skills](#), which was officially launched on 10 November 2020, the Commission invites **public and private organisations to join forces and take concrete action to upskill and reskill people in Europe**. For research and innovation skills, there are concrete implications such as



the creation of [partnerships in European industrial ecosystems](#) with the automotive skills alliance, skills partnership for microelectronics, and the aerospace & defence skills partnership.

Under the pillar **right skills for jobs**, the European Commission provides tools such as for **skills intelligence** with the [EU Skills Panorama](#), which is an online tool that not only provides central access to data, information and intelligence on skill needs in occupations, sectors and countries but also trends for skills supply and demand and skill mismatches. **At the sectoral level**, the [Blueprint for Sectoral Cooperation on Skills](#) offers sectoral skills forecasting and specific measures to satisfy short and medium-term sectoral skills needs. [Platforms of Centres of Vocational Excellence](#) aims to develop "vocational skills ecosystems" that contribute to regional, economic and social development, innovation, and smart specialisation strategies.

Under the pillar **support people in lifelong learning process**, the [Upskilling Pathways](#) initiative, for instance, will help adults struggling with **basic skills** acquire a minimum level of literacy, numeracy, and digital skills.

Under the pillar **unlock investment in skills with innovative financial mechanism**, many [EU funding instruments are fully or partly dedicated to upskilling and reskilling](#) such as InvestEU, the Recovery and Resilience Facility (RRF), REACT-EU, ESF+, ERDF, Just Transition Fund, Digital Europe programme, ERASMUS+... (see [link](#) for complete list).

The European Commission will promote specific tools to develop new skills for the **twin transition toward digital technology and climate neutrality**. To support the green transition, [a competence framework on education for climate change and sustainable development](#) will be set up and will define a methodology to monitor progress in green skills development, based on [ESCO classification](#). To support digital transition, the EU Commission will alongside update the [Digital Education Action Plan](#), implement the [Digital Europe Programme](#)—focused on high-level digital skills, with the [European Digital Innovation Hubs \(EDIHs\)](#).

Box 3. Interreg Europe Policy Learning Platform webinar on Centres of Competence (CoCs)

On Friday 25 September 2020, the **Policy Learning Platform** hosted a webinar on [Centres of Competence \(CoCs\)](#). **Gabriel Rissola**, from the Joint Research Centre, presented the [Digital Innovation Hubs \(DIHs\) initiative](#). For the next programming period 2021-2027, the European Commission (EC) has launched the Digital Europe Programme (DEP) to respond to digital challenges and promote European digital sovereignty. One of the programme's key pillars is the creation of [European Digital Innovation Hubs \(EDIHs\)](#) that function as one-stop shops to support companies, namely SMEs, and the public sector in their digital transformation. [European Digital Innovation Hubs \(EDIHs\)](#) have a specific focus on training and fostering digital skills. **Juha Hirvonen**, principal lecturer of industrial digitalisation, presented an example of DIH with the [Industrial Internet Laboratory](#) at Seinäjoki University of Applied Sciences (SeAMK) and the development of digital skills for innovation.

4. Selected Interreg Europe Projects

Many Interreg Europe projects aim to develop and deliver better innovation **skills policies to respond in an integrated manner to their research and innovation challenges**. Indeed, policies to promote skills for innovation are pursued to fully utilise innovation and research infrastructures, to promote the adoption of new technologies like Key Enabling Technologies (KETs) or Industry 4.0, to promote the development of prioritised sectors, to promote entrepreneurial or creative mindsets, and to build digital innovation ecosystems.



For instance, [INNO INFRA SHARE](#) and [INNOHEIS](#) highlight that the creation of new research and innovation infrastructures **must be accompanied with the development of specific skills for innovation. Specific skills for innovation must be prioritised** to accelerate the adoption of new technologies, such as **Industry 4.0** with [INNO INDUSTRY](#) or **Key Enabling Technologies (KETs)** with [STEPHANIE](#), or to promote the transformation of **certain sectors** such as chemistry with [S3CHEM](#) or textile with [RESET](#). The challenge of skills is also tackled in the thematic objective **SME Competitiveness** with [SKILLS+](#) to promote **digital skills for SMEs** in rural areas. **Soft skills for innovation** can be pursued to promote an entrepreneurial and **maker mindset** with [URBAN M](#) or a **creative mindset** [CREADIS3](#). Specific skills for innovation are needed to build **digital innovation ecosystems** such as with [CARPE DIGEM](#) or [ERUDITE](#).

Box 4. Interreg Europe projects bring policy changes.

In [INNOBRIDGE](#), Sofia Development Association, the Sofia municipal foundation for innovation in Bulgaria, introduced changes to its Hackathons, which are challenge-based competitions where teams have 24 hours to develop minimum viable products (MVP) before pitching it to a jury. 40,000 euros is awarded to develop MVP and prototypes. The Municipality of Sofia is involved to provide challenges, funds, and assist prototype development, and commercialisation. Learning from Interreg Europe partners, namely the good practices [Entrepreneurial Campus Contest](#) and [University-Business challenge contests](#) from Castilla y León, Spain, the Hackathon was refined to add an interregional dimension and a focus on S3 priorities. The new hackathon, “Breaking the Digital Borders”, focusing on Balkan countries offers an example of how Municipal Government can promote an [entrepreneurial mindset](#).

In [Urban M](#), the City of Zagreb, Croatia, brought changes to its programme for the **development of crafts and small and medium enterprises** to introduce specific measures such as: subsidies for entrepreneur infrastructures, co-working and maker spaces, and support to innovators who develop and promote innovation for entrepreneurship. The partner learnt from the good practices already successfully implemented in other European regions such as: [STEAMHouse](#), [FabLab Lisboa](#), and [FabLab Lazio](#). The new programme will develop new skills related to **digital modelling and fabrication technologies** in the population.



5. Policy recommendations

This policy brief provides five policy recommendations, from more general to more specific advice depending on the regional contexts. They are illustrated with good practices coming from Interreg Europe projects.

Policy recommendation 1. To form a regional task force for regional skills assessment and anticipation

The first policy recommendation is **to form a task force to assess existing regional skills and anticipate future regional skills**. The task force must be composed of quadruple helix organisations with different roles to carry out tasks that contribute to assessing and anticipating the skills needed in the future.



The task force would be responsible to produce forecasts and foresights based on the data obtained from the **private sector**, namely employers or workers surveys. The **public sector**, such as regional employment services, can use the results to adapt their policies towards jobseekers. **Higher educational institutions and vocational schools** can modify their educational offer to match with skills needed in the future.

Box 5. Conduct regional skills assessment and anticipation

In **INNO INDUSTRY**, the **National project Sector Driven Innovations (NP SRI)** is an initiative to monitor labour market needs, labour shortages, to identify how technologies will affect the labour market, to perform foresight exercises on the future of jobs up to 2030 and the impacts on job functions, employment levels and skills in Slovakia. The initiative is piloted by the Ministry of Labour, Social Affairs and Family of Slovak Republic and is managed by the private agency Trexima Bratislava Ltd. The initiative also strengthens **24 Sector Skills Councils (SSC) to enable them to identify and anticipate relevant skills and human resource strategies in specific sectors**. The good practice informs on a potential way forward to form task forces to make evidence-based decisions on concrete strategic measures and actions to upskill or reskill workers such as with higher education institutions and vocational schools.

Recommendations from the Interreg Europe community

Miroslav Poláček, Slovak Business Agency, points out that the **key success factor of the initiative is the collaboration among experts**, namely policymakers, public and private stakeholders, social partners, such as unions or employers' associations, and educational institutions. Moreover, it is important to recognise **Sector Skills Councils (SSC)** as key players within the established system for identification of skills mismatch and defining and forecasting skills needs. Together with educational institutions, they must be responsible for defining vocational qualification standards from employers' point of view to reflect the needs of the labour market.

Policy recommendation 2. To promote an entrepreneurial mindset.

The second policy recommendation is **to promote an entrepreneurial mindset**. An important feature of the **European Skills Agenda**, an **entrepreneurial mindset**, based on continuous learning among students and workers, can allow more flexibility and resilience to economic shocks.



Rapid changes in the labour market and the introduction of new technologies will require employees to manage dynamic career thus requiring an entrepreneurial mindset. The **European Commission** has



developed [EntreComp: the European Entrepreneurship Competence Framework](#) as a reference framework that identifies core entrepreneurial competencies and to explain what is meant by an entrepreneurial mindset.

Box 6. Promote an entrepreneurial mindset.

In [RELOS3, sSTARTUp Day](#) is a festival organised in the city of Tartu, Estonia, **to celebrate entrepreneurial activities and innovative start-ups**. The purpose of the event is to connect start-ups, entrepreneurs, investors, innovators, and students, and create an attractive environment for entrepreneurial activities. The event brings together more than 3,000 visitors, 100 speakers, and investors from 65 countries.

In [Urban M, Donostia Innovation Campus](#) is a programme to diffuse an **innovation culture to the youth of the City of San Sebastián in Spain**. The programme involves a close collaboration between educational institutions and the business sector to find practical solutions and prototypes to challenges proposed by the business sector. Ultimately, the programme aims to generate positive social attitudes towards entrepreneurship and technological and scientific activities

Recommendations from Interreg Europe Thematic Experts in Research and Innovation

Initiatives, such as [sSTARTUp Day](#) or [Donostia Innovation Campus](#), offer the opportunity to policymakers to involve the wider civil society through dedicated events and can thus promote the inclusive appropriation of science, technology, and innovation to the entire civil society. For instance, some dedicated events could focus on **entrepreneurial mindset** to disadvantaged groups—unemployed persons, low-income groups—or high school students to generate positive social attitudes towards entrepreneurship.

Policy recommendation 3. To promote university-industry collaboration to reduce skills mismatch.

The third policy implication is to **promote university-industry collaboration to reduce skills mismatch**. The concept of skills mismatch not only comprises the difficulties that employers have to find the right skills despite unemployment, but also skills gaps and qualification mismatch.



Skills mismatch can be reduced when higher education institutions (HEIs) provide skills for innovation that are needed in the labour market. This can be done through higher coordination between the private sector and HEIs (see our policy brief on [university-industry collaboration](#) for more examples of university-industry collaboration).



Box 7. Promote university-industry collaboration to reduce skills mismatch.

In **INNOHEIS**, the **Digital Society Hub** promotes university-industry collaboration in the field of digitalisation at **Hanze University of applied Sciences**, Groningen, the Netherlands. The program fosters the creation of challenges-based learning communities where students can participate in multidisciplinary projects, focused on innovative digital solutions for private companies. In doing so, students learn to apply the acquired knowledge to practical work, meeting the different needs of companies and **strengthening their professional skills**. In **REGIONS4FOOD**, **the master's degree in agri-food innovation at the University of Sevilla** illustrates the importance to promote university-industry collaboration **for the development of new courses and skills**. The master's degree, with sponsorship from private companies, offers courses in digital and precision agriculture as well as in development of sensors and IoT or big data and machine learning. The master's degree participates in the transformation of the agri-food sector into a sector that is increasingly digitalised and using industry 4.0 technologies.

Recommendations from the Interreg Europe community

Rima Dijkstra, Hanze University of Applied Sciences, points out that it was crucial that Hanze University of Applied Sciences included the design of specific curriculum for innovation labs in all the university's schools and degrees in their strategic plan 2016-2020. In that way, we achieved the necessary critical mass of students, researchers and coaches that could work together and experiment with possible solutions for the private sector challenges regarding digitalisation. That was one of the key factors that contributed to the performance and impact of the **Digital Society Hub**.

Policy recommendation 4. Promote integrated regional development strategies.

The fourth policy recommendation is for regions to **promote integrated regional development strategies**. Policymakers must follow integrated strategies that address the hardware (infrastructures and urban amenities) with the software (skills and knowledge) and the orgware (learning and capacity-building).



Box 8. Promote integrated development strategies.

In **INNO INDUSTRY**, the **Business and Shared Services Centre** is an innovation infrastructure, a physical innovation space, to promote information and communication technologies (ICTs) in the City of Fundão, Portugal. It is an integrated strategy as it combines the **hardware (infrastructures and urban amenities)** with the **software (skills and knowledge)** and the **orgware (learning and capacity-building)**. The strategy came from a quadruple helix leadership to address the region's high unemployment rate and brain drain. The innovation infrastructure has attracted many international companies and private companies. Moreover, the good practice has allowed to position the City of Fundão as an innovation ecosystem. As physical innovation space must be complemented with initiatives to promote IT skills and training, and to promote an innovation culture among schoolchildren and citizens.

Recommendations from Interreg Europe community

Paulo Costa, CIEBI/BIC Beira Interior, points out that community involvement and the implementation of co-creation methodologies are essential in defining responses to concrete problems previously identified and well characterized. The strategy design process must be open, participatory and focused on a specific reality. Participation in collaborative networks is also relevant because it allows working closely with partners essential to the success of the strategy, giving it scale, agility and efficiency. On the other hand, without prejudice of seeking immediate results, the strategy must have a medium-long-term vision looking for a sustainable transformation of reality, which implies a strong commitment and political leadership.



Policy recommendation 5. To align regional strategic plans.

The fifth policy recommendation is to **align skills for innovation with other regional strategic plans**. Too often, policymakers design strategic plans in silos disconnected from one another. This recommendation suggests that regional policymakers must pay particular attention to align their regional strategic plans, namely regional educational and skills plans with other strategic plans, namely economic development and innovation plans.



Box 9. To align skills for innovation and S3.

In **CLUSTERIX2.0**, **academic sourcing** aims to align research activities with RIS priority sectors in the region Auvergne. The Regional Council created a policy tool to favour research activities and thus improve skills for innovation in the on RIS3 priority sectors. The policy tool offers working groups, which are composed of public and private stakeholders, in RIS3 priority sectors to define and outline a research project that will be then conducted by PhD and/or Postdoc researchers **thus building the skills for innovation to be competitive in S3 sectors**.

Recommendations from Interreg Europe community

Céline Quester, Conseil régional Auvergne-Rhône-Alpes, emphasises on the importance to closely work with regional scientific and economic entities. Each S3 domain must be granted a research project involving clusters and a minimum of 3 companies to ensure that the research project is aligned with the region's economic needs.



Sources of further information on skills for innovation

- Building Capacities for Innovative and Resilient Nordic Regions - [Nordregio](#)
- European Commission - [European Skills Agenda](#)
- European Regional Innovation Scoreboard - [Regional European innovation Scoreboard](#)
- Interreg Europe - policy brief on [university-industry collaboration](#)
- OECD – [Skills Strategy 2019](#)
- OECD – [Human Capital](#)
- OECD Innovation Policy Platform - [Innovation Policy Platform](#)

If you have any additional policy questions regarding Skills for Innovation, do not hesitate to contact us through our on-demand [policy helpdesk service](#).

Annexe 1: Selection of relevant Interreg Europe projects dealing with skills for innovation.

Project	Policy Objective
CARPE DIGEM	To develop inclusive digital innovation ecosystems in peripheral regions
CREADIS3	To promote Smart Specialisation Creative Districts
ERUDITE	To enhance rural and urban digital innovation territories.
INNOHEIS	To improve Research and Innovation Infrastructure Performance
INNO INDUSTRY	To improve innovation delivery of policies within 4.0 industry
INNO INFRA SHARE	To share strategies for European Research and Innovation Infrastructures
RELOS3	To implement regional Smart Specialisation Strategies (RIS3) in a local context.
S3CHEM	To promote Smart Chemistry Specialisation Strategy
SKILLS+ (TO3)	To promote digital skills among SMEs in rural areas
RESET	To foster the transformation of the textile sector
STEPHANIE	To develop space technology with photonics
URBAN M	To promote urban manufacturing through collaborative maker spaces

Cover image credit: Photo by Ivan Samkov from [Pexels](#)

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To cite this Policy Brief: Morisson, A. & Pattinson, M. (2021). *Skills for Innovation*. Lille: Interreg Europe Policy Learning Platform.



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