



EoRPA

European regional policy
research consortium

CLOSING THE INNOVATION GAP

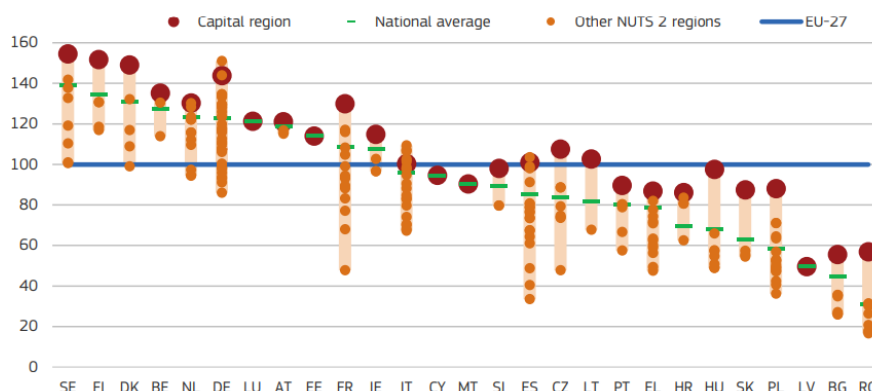
Background Paper for the MEZ Policy Dialogue

13 November 2023

1 EU COMPETITIVENESS AND REGIONAL INNOVATION

The focus of European Union (EU) policy objectives in recent years has been the strengthening of EU competitiveness and resilience. These goals underlie the priorities in the MFF 2021-27 and NextGeneration, with their focus on the green and digital transitions, and reiterated in the European Commission's proposals for the Mid-Term Revision (MTR) of the Multiannual Financial Framework (MFF) (European Commission, 2023). A key challenge is the innovation gap between EU regions. While innovation plays a pivotal role in driving long-term economic growth, there is an enduring and widening innovation divide among European regions. Even within more developed Member States there are prevalent differences in regional innovation (Figure 1) (European Commission, 2021). Capital regions are outperforming other regions, and some middle-income regions appear to be in 'development traps' (Boschma, 2023).

Figure 1: Innovation performance of EU regions, 2021. Source: European Commission, 2021, p.22.



Research and development (R&D) investment and innovative capabilities remain heavily concentrated in certain areas, perpetuating thriving centres of innovation, while other regions





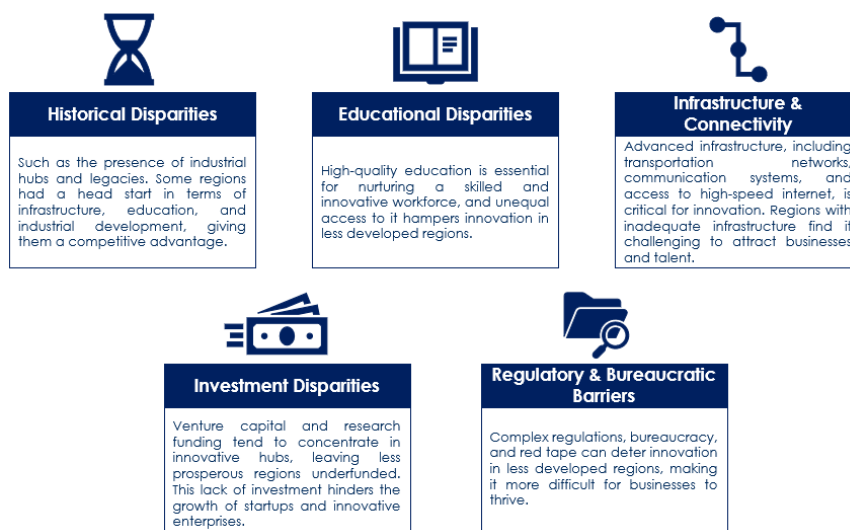
struggle to keep pace (Rodríguez-Pose, 2020; Iammarino et al., 2019; OECD, 2023). Most innovative regions, many in North-Western Europe, display higher levels of economic growth, job opportunities, and improved living standards. Conversely, less innovative regions, primarily in Eastern and Southern Europe, face slower economic development, brain drain, unemployment, social inequality, and limited access to (quality) services. This is partly explained by R&D expenditure rates (Table 1). Member States with the lowest relative R&D expenditure in 2001 have seen the least growth in spending from 2001 to 2019, suggesting a widening gap (European Commission, 2021).

Table 1: Total R&D expenditure and the distance to the Europe 2020 target, 2019. Source: European Commission, 2021, p. 47.

	Less developed	Transition	More developed	EU-27
R&D as % of GDP	1.0	1.4	2.5	2.2
Distance to EU target (pp difference)	2.0	1.6	0.5	0.8
% of population living in regions that have reached the EU target	0.0	2.9	20.1	11.9

Among other factors (Figure 2), **differences in regional institutional capacity play a key role** (Rodríguez-Pose, 2020; Boschma, 2023). Regional resilience research highlights local capabilities, like knowledge (notably access to external knowledge networks), skills, scientific and technological capabilities, and industry mix, as important factors in a region's ability to diversify and adapt to shocks (Boschma, 2023, p.18). **Proximity is key to knowledge exchange in research and innovation (R&I), favouring core regions**, for resource attraction and higher R&D returns, over peripheral areas (Rodríguez-Pose, 2020). These regional differences are evident in the Regional Innovation Scoreboard, with none of the less developed EU regions categorised as 'strong' or 'leader innovators' (European Commission, 2021, p.48). **Digitalisation exacerbates the gap**, with inadequate uptake of digital technologies, management practices, and industry 4.0 leaving regions ill-prepared for emerging opportunities and vulnerable to reshoring as value chains evolve (European Commission, 2021).

Figure 2: Factors contributing to the regional innovation divide. Source: European Commission, 2021; OECD, 2023.





The nature of **region-specific challenges implies the need for place-based policy responses** (European Commission, 2021; Boschma, 2023, p.18). Smart Specialisation Strategies (S3) have been advocated to leverage local strengths and strengthen regional innovation ecosystems, seen as they are adapted to local (and changing) contexts. Regional innovation policies are recommended to boost productivity growth through active innovation, innovation diffusion, and infrastructure investments, particularly in digital technologies. Crucially, bridging the regional innovation divide in Europe requires a multi-faceted approach, including (Boschma, 2023, p.18):

- Investing in education, particularly in science, technology, engineering, and mathematics subjects, and promoting digital literacy to boost technological uptake;
- Measured infrastructure development, including transportation, digital, and energy systems, to enhance regional attractiveness to both businesses and talent;
- Building regional innovative capacities, namely institutional and collaborative capacities, to promote knowledge diffusion, integration of new processes, and overall innovation capabilities;
- Increasing R&D funding in underprivileged areas to stimulate innovation and economic growth; and
- Streamlining regulations and reducing bureaucratic barriers to facilitate businesses' establishment in less innovative regions.

2 EU COHESION POLICY AND REGIONAL INNOVATION

Against the background of the above trends, **EU Cohesion Policy has increasingly prioritised innovation over successive programming periods to promote structural change and reduce development gaps** (Hassink, 2020). In the 2014-20 period, research, technological development and innovation (RTDI) was one of the eleven Thematic Objectives for Cohesion Policy.¹ Over €52 billion was allocated across different intervention fields to promote targeted R&I in enterprises, public research centres, higher education institutions, public R&I infrastructure, and technology transfers between universities and SMEs, with some focus on the low-carbon economy (European Commission, 2022a; Vironen et al., 2022).

The concept of Smart Specialisation (Foray et al., 2009) was applied in national and regional development programmes to take a more strategic and place-based approach to regional innovation (looking beyond technology-driven approaches) that builds on regional strengths and opportunities, including an 'entrepreneurial discovery process' (EDP) with wide stakeholder involvement (Table 2).

¹ Other TOs include interventions that are relevant to RTDI, but to a lesser extent.





Table 2: Key characteristics of the Smart Specialisation framework. Source: Fonseca, 2022.

	<p>Place-Based and Strategic Investment Approach: The framework has shifted the focus towards targeted and strategic investments, acknowledging the importance of place-based initiatives to drive innovation and economic development.</p>
	<p>Interconnection of Varied Domains: It promotes the interconnection of related but diverse domains, fostering the emergence of fresh ideas and economic pathways. This approach encourages cross-pollination of ideas and technologies.</p>
	<p>Ex-Ante Conditionality for Access to the European Fund for Regional Development (ERDF): The adoption of the framework as an 'ex-ante' condition for accessing ERDF funds has become a pivotal element, ensuring that regions align their strategies with the principles of Smart Specialisation. The ex-ante conditionality for National/Regional Research and Innovation Strategies for Smart Specialisation (RIS strategies) requires EU Member States and regions to identify the knowledge specialisations that best fit their innovation potential, based on their assets and capabilities.</p>
	<p>Enhanced Role of Higher Education Institutions: The framework has underscored the pivotal role of higher education institutions in regional economic governance, emphasising their contribution to innovation, research, and development. Associated with this, Smart Specialisation emphasises the importance of evidence-based policymaking.</p>
	<p>Promotion of Collaborative and Bottom-Up Approaches: Through its EDP, the S3 framework encourages collaborative and bottom-up methodologies. This process empowers diverse stakeholders to actively engage in shaping innovation strategies and priorities, fostering a more inclusive and dynamic approach to regional innovation.</p>

Innovation continues to be an integral part of Cohesion Policy in the 2021-27 programme period, although the policy focus has changed towards a market-orientation of R&I activities to support higher value-added and future-oriented activities. **The emphasis is on promoting applied research to tackle societal challenges, and the uptake of new technologies.** The dual green and digital transitions are also strongly emphasised as key drivers for EU growth and narrowing territorial and social disparities.

Cohesion Policy in the 2021-27 period has five Policy Objectives (PO), with minimum expenditure allocations, in a mechanism of “thematic concentrations”, to PO1 (“A Smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity”) and PO2 (“A Greener, low-carbon Europe investing in energy transition, renewables and the fight against climate change”). Smart Specialisation continues to be a core principle in the new period, albeit with changes to its strategic implementation (Table 3).





Table 3: Changes to the Smart Specialisation framework in 2021-27. Source: Vironen et al., 2022.

	<p>Deeper Analysis of Innovation Diffusion and Digitalization Bottlenecks: This entails a more thorough examination of obstacles that hinder the spread and adoption of innovations, particularly in the context of digitalisation. Identifying and addressing these bottlenecks is crucial for ensuring that innovative solutions reach a broader audience and have a meaningful impact. The new S3 guidelines call for an investigation of these bottlenecks and the development of targeted strategies to address them.</p>
	<p>Reinforced Focus on Governance: The effectiveness of S3 depends on strong multi-level governance and coordination between different stakeholders. The new guidelines emphasise the importance of designating a competent institution or body responsible for S3 management and ensuring that all relevant stakeholders are involved in the development and implementation of the S3 strategy. This also means paying closer attention to how the strategy is managed, coordinated, and governed at both regional and national levels to ensure its successful implementation and alignment with broader development goals.</p>
	<p>Emphasis on the Continuous and Iterative Nature of the EDP: Guidelines stress that innovation and entrepreneurship are not static but rather require continuous assessment, learning, and adaptation to changing circumstances. The EDP should therefore not be a one-off exercise, but instead ongoing process that allows regions to identify specialisation areas and adapt their strategies as needed.</p>
	<p>Creation of Cross-Border Value Chains and Enhanced Interregional Cooperation: This signifies a move towards fostering collaboration and synergy between regions, with S3 aiming to leverage complementary strengths and resources for mutual benefit, enhancing innovation and economic growth. Many Smart Specialisation areas are global in nature, and regions can benefit from collaborating with each other to develop and commercialise new products and services. Enhanced interregional cooperation can also help regions to learn from each other and share best practices.</p>

Moreover, **sustainability is a key consideration in the post-2020 era**, with the European Green Deal serving as a broader EU 'specialisation' on sustainability, decarbonisation, and the just transition agenda. The Smart Specialisation framework is evolving to incorporate Smart Specialisation Strategies for Sustainable and Inclusive Growth (S4) (McCann et al., 2020), emphasising challenge-oriented and mission-driven approaches, particularly in addressing societal challenges and just transitions (Harding et al., 2021). Although optional, S4 is expected to play a substantial role in regional development in the new period.

Besides changes to the S3 itself, a new funding instrument has been introduced that builds upon these experiences. Driven by the internationalisation of innovation and building on the experience with interregional pilots, the Commission has proposed the Interregional Innovation Investments (I3) instrument under the ERDF, specifically under article 13 (European Parliament & Council of the European Union, 2021; European Commission et al., 2022). A substantial allocation of €570 million has been made for this initiative, and the programme is executed under the direct management of the European Innovation Council and SME Executive Agency (EISMEA). I3 holds a pivotal role in fostering the development of European value chains





and facilitating the commercialisation and upscaling of interregional innovation projects within shared Smart Specialisation priority areas. Notably, it maintains a strong cohesion dimension by designating half of its budget to support less developed regions, thereby promoting regional equity and growth. Furthermore, I3 actively encourages synergies and coordination between various EU, national, and regional funding instruments, such as ESIF, Horizon Europe, and the Single Market program. While the I3 framework shows great promise for regional innovation through an integrated framework, there seem to be inherent complexities and demands in its implementation, given its strong focus on less developed regions and its reliance on innovation diffusion, an area of relative weakness for R&I in the EU.

3 EU RTDI POLICY AND REGIONAL INNOVATION

Policy thinking on the regional innovation gap is also reflected in the way that EU RTDI policies have evolved. In its nascent stages, EU RTDI policy was predominantly shaped by a national perspective, focusing on supporting key sectors, major corporations, and research institutions mainly located in the core regions. The conventional perspective of innovation as a linear process, moving from knowledge production to commercialisation, evolved into understanding innovation as a more dynamic and interactive process with important spatial, organisational, and institutional dimensions (Etzkowitz & Leydesdorff, 2000; Morgan & Nauwelaers, 2003).

Aside from industrial and innovation policies embedded in Cohesion Policy, EU RTDI policy more generally has also progressively given greater recognition to territorial competitiveness, with several initiatives established to address the regional innovation gap (Bachtler et al., 2005). In the 2014-20 period, the territorial dimension in EU RTDI policy included the European Innovation Partnerships (EIP) to promote cooperation between regions, industries, and stakeholders to address specific societal challenges through innovation, and aligned with regional innovation strategies (e.g., S3). Regionally focused initiatives have gone further in 2021-27 with the creation of Regional Innovation and Hydrogen 'Valleys', Partnerships for Regional Innovation (PRI), as well as regional innovation ecosystem support (Table 5) (European Commission, 2022b).

Table 4: RTDI instruments with a regional dimension in 2021-27. Source: European Commission, 2023a; European Commission, 2023b; EIT Manufacturing, 2023.

Regional Innovation Valleys (RIV)	<ul style="list-style-type: none">• Flagship initiative under the New European Innovation Agenda, funded by Horizon Europe (€100 million) and the I3 instrument under the ERDF (€70 million);• Aim to position Europe at the forefront of the new wave of deep-tech innovation and start-ups;• Valleys characterised by geographical proximity, specialisation and related variety, a strong entrepreneurial ecosystem, knowledge spillovers, and collaboration in key innovation domains; and• Cohesion dimension by mobilising regions with varying innovation levels.
Hydrogen Valleys	<ul style="list-style-type: none">• Part of the REPowerEU Plan, drawing on €200 million top-up from Horizon, and with funding under the Connecting Europe Facility;



	<ul style="list-style-type: none">• Aim to boost breakthrough innovation in renewable and low carbon hydrogen and decrease fossil fuel reliance;• Double the number of EU Hydrogen Valleys, with a goal of 50 by 2025; and• Promote an integrated regional ecosystem covering the entire value chain and connection between valleys, aligned to regional requirements.
Partnerships for Regional Innovation (PRI)	<ul style="list-style-type: none">• Pilot action developed by the European Commission and the Committee of the Regions for a strategic framework for innovation-driven territorial transformations, built on positive S3 experience;• Initiative by DG Research, consolidating Cohesion funding (ERDF and Cohesion Fund) with other funding streams (RRPs, Horizon, regional and national);• Seek to deliver effective solutions to pressing societal challenges within defined timeframes, and use resources to generate co-benefits for the economy, society and environment, following the just transition agenda;• Draw linkages across multiple stakeholders and policy domains to exploit synergies and address tensions; and• Revise policy and regulatory instruments to improve coordination and amplify impact.
Regional Innovation Scheme (RIS)	<ul style="list-style-type: none">• Funded by the European Institute of Innovation and Technology (EIT) and the European Innovation Ecosystems (EIE) under Horizon Europe's Pillar III "Innovative Europe";• Lay the groundwork for a pan-European Innovation Ecosystem intertwining regional innovation ecosystems across the EU;• Focus on developing innovation ecosystems in low-innovation performance regions across Europe and in linking these ecosystems to local and regional Smart Specialisation Strategies (S3); and• New set of projects will connect well-developed regional innovation ecosystems with less developed ones, ensuring cross-fertilisation.

Additionally, support to Member States and regions is provided through the Technical Support Instrument (TSI), for the design and implementation of better innovation policies. This can cover data gathering for informed policymaking, capacity building for public procurement personnel, the provision of regulatory advice and the use of regulatory sandboxes.

PRI are a particular case, as an experimental and non-mandatory approach that represents a significant advancement in enhancing transparency and accountability by transforming assessment and evaluation processes (Poikela et al., 2023; European Commission et al., 2022). It introduces new methodologies by consolidating Cohesion funding with other sources like RRP, Horizon Europe, and regional or national funds aimed at territorial objectives. Additionally, PRI transitions from S3's EDP to the Open Discovery Process (ODP), engaging a broader range of stakeholders across different levels. While PRI is currently considered a complementary initiative to Smart Specialisation, there are concerns about this potential transition from S3, underscoring the need for more empirical evidence to support it (Esparza-Masana, 2021). The success of the pilot phase relies on voluntary commitments from regions and Member States, which may affect the resulting data.





4 POLICY CHALLENGES AND QUESTIONS

The trends in EU policies summarised above provide both opportunities and challenges for cohesion and specifically closing the regional innovation gap.

Disparities in regional economic development between so-called 'frontier regions' and 'intermediate' and lagging regions are long-standing and growing over time. A significant factor is innovation performance, particularly the pace at which innovations spread across the economy. Closing the gap requires policies at EU and national levels that collectively promote accelerated innovation, structural transformation, and inclusive and environmentally sustainable growth. Additionally, it requires more effective and efficient governance to ensure institutional and policy coordination (horizontally and vertically), structural reforms and investment in institutional capacity, and measures to address territorial and social inclusion (Bachtler et al., 2019).

Cohesion Policy plays a key role in addressing these challenges, but the tasks go well beyond the resources and capacity of Cohesion Policy alone. The challenge for the EU – which also applies to Member States – is how to achieve effective coherence and coordination across different policies with their own objectives, priorities, and institutional silos in governance. This challenge has been recognised by the EU for over a decade, with initiatives (with mixed success) to align regulatory frameworks, strategic coherence (especially via S3) in programming interventions, and exploitation of project-level synergies (Ferry et al, 2016).

Among the positive developments in this regard are: (1) the strengthening of the European Semester process to provide a more coordinated approach to EU economic governance, including recognition of cohesion issues in the formulation of Country-Specific Recommendations; (2) a common set of overarching policy objectives, notably the focus on the green and digital transitions, for all EU policies; and (3) the linkage of investment with reforms under the Recovery & Resilience Facility.

With respect to regional innovation, important steps are being taken to develop a European innovation ecosystem. This aims to link regional innovation systems across the EU, via the EIT and the European Innovation Ecosystems (under Horizon Europe's Pillar III "Innovative Europe), the European Cluster Collaboration Platform (ECCP) and the Common Mapping of Innovation Supporting Actors initiative. The new European Research Area (ERA) Policy Agenda includes industrial technology roadmaps that seek to align R&I investments at EU and national levels to foster the development and uptake of innovative technologies and ERA hubs.

The value of Regional Innovation Valleys and Hydrogen Valleys under EU RTDI policy is their focus on connecting regions and the development of networks in specific fields of innovation, especially between regional 'innovation leaders' and regions with 'moderate innovation' scores. The RIS also has potential in developing ecosystems in regions which have weaknesses in innovation performance, particularly by supporting synergies and cooperation between



leading companies, universities and research centres, and providing access to external knowledge.

Under Cohesion Policy, the Smart Specialisation concept has sought to strengthen innovation ecosystems within regions. In principle, they should nest within (and complement) overall EU and national RTDI policy, and – crucially - provide a place-based approach, operating at appropriate territorial scales. S3 has placed strong emphasis on aligning ESIF R&I funding with Horizon 2020/Europe through joint funding, greater harmonisation of conditions and eligibility criteria, and closer cooperation between authorities responsible for the two funding streams. The policy framework also provides support for platforms and partnerships to encourage connectivity within and beyond regions, through interregional innovation projects.

The main concerns are threefold. First, the plethora of initiatives outlined above inevitably creates new challenges in terms of awareness, understanding and coordination. It is also crucial to emphasise that research on policy coherence has demonstrated how difficult it is for regions with lower quality administrative capacity to exploit opportunities. It is questionable whether the regions most in need of improved innovation performance have the mix of resources, skills, systems, and leadership to manage the complexity of innovation ecosystems.

Second, there is a question of whether initiatives to promote regional and EU-level innovation eco-systems will benefit all regions, particularly those which have the greatest innovation deficits and institutional constraints. While the RIS is focused in supporting innovation hubs and ecosystems in less-developed EU countries and regions, the Valleys initiatives depend on voluntary commitments from regions to participate. The latest matchmaking data for the five Valleys 'policy challenges' shows variable commitment from regions, with much less willingness to participate among the 'innovation leaders' than those with poorer innovation scores (European Commission, 2023c).

Lastly, recent research has shown that the successes of regional convergence fostered with EU funding has often come at the expense of widening intra-regional disparities (Rodríguez-Pose, 2020; Boschma, 2023; European Commission, 2021). Developing innovation hubs and clusters within regions, may improve innovation performance in capital cities and other centres, but at the expense of regional and local development elsewhere within less developed regions.





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