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**STRATEGIES FOR DEVISING
PRACTICAL URBAN DEVELOPMENT
AND POLICY FRAMEWORKS TO
PROMOTE INNOVATION IN
LOW-GROWTH REGIONS**

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Strategies for Devising Practical Urban Development and Policy Frameworks to Promote Innovation in Low-Growth Regions

1. Understanding Divides in Technology and Development

Over the past decade, countries have shown significant geographical variation in innovative activities. Hidalgo et al. (2007) suggested that high-income countries with a great diversity of activities have greater potential to make new combinations and diversify into (related) activities than low-income countries with a narrow knowledge base. More complex activities and, especially, radical and disruptive innovations – those capable of redefining industries – are almost exclusively concentrated in large cities with a high density of activities, with their concentration in city cores growing over time (Balland et al., 2020; Mewes & Broekel, 2020; Balland & Rigby, 2017). At the same time, knowledge diffusion from cores to peripheries – or from more developed to less developed regions – faces significant barriers due to the absence of effective and well-functioning transmission channels (Boschma, 2005; D’Este, Guy, and Iammarino, 2013).

This suggests that income disparities across regions are more likely to be reinforced rather than reduced through innovation and diversification processes (Pinheiro et al., 2022). Innovation acts as an engine of economic growth; however, its benefits are unevenly distributed, with some regions flourishing as innovation hubs, while others struggle as “left-behind places” where technological progress feels distant or inaccessible. These disparities stem from more than just geography; they reflect deep-rooted inequalities in access to quality education, robust technological infrastructure, and institutional support, and are often marked by significant variations in GDP per capita and industrial capacities. However, as Rodríguez-Pose (2023) argues, these conventional factors alone cannot fully account for the persistent and growing regional divides. Instead, he emphasizes that differences in institutional quality, particularly at the subnational level, play a central role in shaping economic performance. Strong, adaptable institutions can foster innovation, entrepreneurship, and social inclusion, while institutional weaknesses can lock regions into prolonged stagnation.

1.1 Problem Statement: Current Challenges in Europe and the Balkans and Limitations in Innovation Policies

This situation may raise questions about the effectiveness of the current regional policies within the European Union, which aim to address the widening disparities in development across its regions. The lack of effective place-based strategies could undermine the EU's Cohesion Policy and its enlargement policy frameworks. While the Smart Specialization Strategy (S3) aims to guide regional innovation and diversification, it has struggled to provide effective solutions for regions facing diverse socio-economic and geographical challenges. Efficiency-driven approaches have not managed to lift most left-behind territories out of their disadvantaged state, resulting in persistent within-country inequalities in both advanced and emerging economies (Rodríguez-Pose et al. 2024). This has intensified polarization and fueled discontent, leaving many poorer regions or entire countries stuck in a low-income trap, unable to adapt to economic changes or transitions toward more integrated and open economies (Ezcurra and Rodríguez-Pose, 2014; Diemer et al., 2022).

These inequalities arise from a range of complex, **localized factors** that centralized policies often have difficulty addressing effectively. The emergence of “left-behind places” (or places perceived as insignificant) identified by several scholars is an inherently **territorial phenomenon** (Michael Storper, 1995). These tendencies are shaped and sustained by disparities in socio-economic infrastructure and other contextual factors, creating distinct geographies that exacerbate socioeconomic inequalities. As a result, over the last years, innovation policy has shifted toward a territorial and place-sensitive approach, emphasizing tailored policies to address these regional disparities and promote equitable economic growth. This initiative moves beyond agglomeration-focused strategies that have often exacerbated polarization and left-behindness (Rodríguez-Pose et al., 2024). Empirical research has previously identified common patterns in left-behind regions and countries, such as a **smaller manufacturing sector, higher dependency ratios, lower educational attainment, and weaker innovation capacity**, which are evident across regions with varying income levels (Diemer et al., 2022).

For example, in the Western Balkans (encompassing Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia), governments have been promoting digital transformation through initiatives such as broadband and 5G expansion and startup support programs as part of a broader effort to foster innovation (OECD, 2023). However, innovation output remains limited: research and development (R&D) spending is low, ranging from approximately 0.2% to 0.9% of GDP compared to about 2.4% in advanced economies, with few firms introducing new products due to resource constraints, particularly among small and medium-sized enterprises (OECD, 2023; EU Commission, 2023).

Key obstacles include chronic funding gaps, with limited public R&D investment and underdeveloped venture capital ecosystems (EU Commission, 2023), restrictive regulations and infrastructure challenges such as delays in broadband or power network deployment (OECD, 2023), and weaknesses in education and skills alignment, including low numbers of PhD holders and

insufficient digital training (EU Commission, 2023). Furthermore, brain drain remains a significant limitation, as a large number of highly educated young people emigrate, reducing the available talent pool (OECD, 2023). As a result, innovation performance in the region remains well below EU levels, with Serbia achieving around 63% of the EU average, while other Western Balkan economies achieve below 50% (EU Commission, 2023).

2. Unlocking Potential with Territorial, Place-Based Innovation Policy Frameworks

In this context, we see that top-down economic development strategies are increasingly being replaced by place-based approaches that correspond with the needs and preferences of local actors (Smoke, 2001; Rodríguez-Pose and Gill, 2003), as local policies can more effectively facilitate innovation efforts. Place-based economic development essentially involves identifying, mobilizing, and utilizing the unique potential of a locality (Vazquez-Barquero, 1999). It aims to leverage local potential by promoting economic activities that are aligned with and depend on the unique economic conditions and comparative advantages of the regions (Pike Andy, Rodríguez-Pose Andrés, and Tomaney John 2006), while aligning innovation policies from national and regional levels to reflect socioeconomic and institutional characteristics, prioritizing more immediate or localized conditions and realities (Rodríguez-Pose and Wilkie, 2017).

Scholars highlight the importance of leaders developing place-specific interventions, which requires shifting away from rigid, traditional governance models toward more flexible, context-driven strategies that enable regions to chart their own course toward resilient development (Nijkamp et al., 2024; Iammarino, Rodríguez-Pose, and Storper, 2019). This “place-sensitive distributed development policy” focuses on new frameworks for understanding the dynamics of particular places and directly supporting them.

In recent years, EU innovation policy has shifted from mainly centralized, region-led programs toward initiatives that directly empower local actors within regional ecosystems. Earlier frame-

works, such as the **Smart Specialization Strategies (S3)** and the use of **European Regional Development Fund (ERDF)** resources, placed regional and national authorities at the heart of designing strategies, setting priorities, and channeling funding to innovation stakeholders. These programs employed a top-down approach, with regional governments serving as the main coordinators of innovation investments, in order to strengthen cohesion and reduce regional disparities across the EU.

Today, there is a clear trend toward programs that actively engage **local hubs, clusters, SMEs, startups, universities, and research centers** as direct participants. Initiatives such as the **European Innovation Ecosystems (EIE)** work programs, **Regional Innovation Valleys (RIVs)**, **Interregional Innovation Investments (I3)**, and **EIT Regional Innovation Scheme (RIS)** are all designed to connect local actors across borders, promote bottom-up collaboration, and address key European challenges such as the green and digital transitions. While these programs still require alignment with regional strategies, such as S3, their focus is on enabling local innovation ecosystems to take the lead in developing solutions, attracting investment, and strengthening Europe's overall competitiveness and resilience. They directly target hubs, clusters, local authorities, and other local actors, empowering them to collaborate across borders, strengthen local innovation ecosystems, and co-develop solutions to Europe's key challenges. This way, less innovative regions are connected with more innovative regions across Europe to build strong, interconnected innovation ecosystems that tackle major EU challenges, such as **the green and digital transitions**, while boosting **regional competitiveness**, cohesion, and resilience.

2.1 Research approach and method to bridge the innovation gap

In support of this effort, this study advocates for a reoriented approach to EU Cohesion & Enlargement Policies, emphasizing the importance of place-based urban development strategies and resilience-building. By highlighting the critical role of local context and adaptive governance, it seeks to bridge the gap between the best global practices and localized needs in regions

with lower growth rates, in order to foster sustainable, inclusive growth and promote innovation strategies that consider territorial uniqueness. More specifically, it examines a **framework** with both **practical** and **policy implications** at the local level, supporting the identified need for place-based monitoring of local innovation activities across high, moderate, and low-growth ecosystems. The research aims to draw valuable insights from high-performing innovation ecosystems across the globe, leveraging these lessons to provide recommendations for low-performing innovation ecosystems on how to achieve their full potential. More specifically, this study:

- Develops a framework that coordinates **regional and local levels** for **implementing place-sensitive development policies**.
- Introduces an **evolutionary perspective to EU Cohesion Policy**, incorporating governance models that enable cities to adopt technological innovation, adapt to current shocks, and redefine their growth trajectory based on the **actual strengths and needs of their localities**.
- Supports **innovation adoption solutions** that are affordable, implementable by local actors, and grounded in **neighborhood and place** constraints and needs.

2.2 Innovation enabling factors at the neighborhood level

– Lessons learnt for urban development processes in well-established ecosystems

The transformation of Boston's Seaport District over a decade (2010-2020)

Boston's Seaport District, located in Massachusetts, US, is used as a case study to illustrate how targeted urban development initiatives can foster innovation, providing lessons that might be useful for newer countries to the EU as well as Balkan countries, where governments are promoting similar efforts (OECD, 2023). Over the past decade, **Boston's Seaport District** has undergone a transformation from an underutilized industrial waterfront into a vibrant, mixed-use innovation hub. Unlike Kendall Square in Cambridge, Massachusetts, which has long been known as a center of technology and biotech activity, the Seaport repre-

sents a more recent development effort, providing a glimpse into how coordinated public and private initiatives can rapidly reshape an urban landscape.

- **Massive Infrastructure Investments:** The foundation for Seaport's evolution was laid through major infrastructure projects in the 1990s and early 2000s. The **Big Dig** removed the Central Artery highway, which once separated the waterfront from downtown Boston, and replaced it with underground tunnels and connectors, vastly improving access to the area. The addition of the Silver Line bus rapid transit connected the district to key transit nodes, including South Station and Logan Airport, further integrating the Seaport into the city's transportation network. These investments unlocked the potential for large-scale development.
- **City and State Planning:** Boston's leaders identified the Seaport as a **blank canvas**, post-industrial land that could be reimaged for the city's future. New zoning encouraged **mixed-use development**, blending residential, commercial, and retail uses to create a lively urban environment. In 2010, Mayor Tom Menino launched the "**Innovation District**" initiative, branding the Seaport as a destination for startups, technology companies, and creative industries. This vision positioned the Seaport as Boston's next frontier for innovation, separate yet complementary to older hubs.
- **Real Estate Development:** Compared to established innovation centers like Kendall Square, the Seaport offered **relatively affordable land** and ample space. These conditions attracted developers eager to build new office towers, housing, and amenities. Early commitments from **anchor tenants**, such as Vertex Pharmaceuticals, spurred additional investment, signaling the district's potential as a significant business destination.
- **Talent and Proximity:** The Seaport's proximity to **MIT, Harvard, and other leading universities** made it an attractive location for startups and venture-backed firms. The area has successfully tapped into Greater Boston's rich pool of tech and life sciences talent, helping it emerge as a vibrant node within the city's and region's innovation economy, a process that has largely evolved over a decade.

The key lesson from Boston's Seaport District is how the city recognized this neighborhood's unique qualities to drive innovation. Boston's Seaport District succeeded by leveraging its unique assets through strong public-private partnerships, modern infrastructure, and innovation clustering, showing that other regions need to adapt similar strategies to their own local context rather than replicating the model directly.



Fig. 1. The Development of Boston Seaport Innovation District between 2010 and 2020. Source: Google Maps.

3. Recommendations for enhancing technological uptake in low-innovation regions

Here, it is crucial to emphasize that the solution lies in learning from other well-established innovation ecosystems and adapting these strategies to local contexts. Regions that aim to create innovation ecosystems or enhance the innovation capacity and competitiveness of existing ones, but face lower budgets for infrastructure investment, could adopt the three following strategies identified. For low innovation regions, following the recommendations outlined can provide a roadmap for harnessing their strengths and supporting innovation development.

3.1 Supporting institutions and key actors in strengthening adoption capacity

We must acknowledge that for many low-innovation regions – whether rural areas, economically disadvantaged regions, or smaller countries – the challenge is not just creating new technologies but mainly adopting external technologies and effectively using them. In these regions, where groundbreaking technologies struggle to take root, their capacity to adopt – meaning their ability to absorb, adapt, and apply external innovations – becomes the key to progress. Strengthening this capacity means more than just importing technologies; it entails building the skills, institutions, and networks that allow regions to succeed in a rapidly evolving world. In a landscape where technological change is constant, the ability to adapt, absorb, and apply external knowledge is not just a competitive advantage – it is a necessity and priority, serving as the critical link between global advancements and local progress.

As Nobel laureate Moses Abramovitz (1986) noted, being technologically “backward” can create catch-up opportunities; however, only if a region has sufficient “social competence,” including education, skilled labor, and strong institutions, can public research become an enabling factor of innovation adoption; especially in low-innovation regions, particularly newer EU member states and Balkan countries, where private sector R&D is minimal, public research institutions, such as universities and government-led labs, play a pivotal role in technology absorption. Studies show that in these regions, absorption capacity is embodied mainly in university labs and government-led research centers (Cohen and Levinthal, 1990; Abramovitz, 1986). These institutions serve as channels for the introduction, adaptation, and eventual diffusion of external knowledge. Strengthening public research infrastructure is thus essential for these regions to reap the benefits of global advancements.

Ultimately, enhancing adoption capacity involves more than simply accessing new technologies; it is about ensuring that regions have the skills, infrastructure, and institutional support to make those

technologies work for them. Policymakers play a vital role there. They need to provide practical urban development strategies that foster sustainable and inclusive innovation ecosystems with high absorptive capacity by prioritizing investment in education and skills development. This approach equips local populations with the knowledge and competencies needed to understand and apply new technologies, enhancing digitalization and ensuring that even remote regions have access to high-speed internet, digital tools, and modern communication platforms.

3.2 Strengthening networks to accelerate innovation diffusion

At the same time, regions should encourage cross-sector and cross-border collaborations to bring diverse perspectives and expertise into the regions. Another critical avenue for enhancing absorptive capacity is the establishment of interregional networks. Regions that actively participate in international collaborations, whether through global value chains, cross-border partnerships, or academic exchanges, have greater exposure to new ideas and technologies. Even participation in such partnerships may entail costs, as countries often have to contribute financially or commit other resources to be part of international fora and cooperative initiatives, the gained exposure helps spread external knowledge within the region, aiding its transition from an “innovation-averse” ecosystem to an “innovation-prone” one. Regions that embrace interregional linkages, especially those connecting regions with complementary knowledge bases, significantly enhance regional innovation and diversification (Boschma and Iammarino, 2009). Previous studies (e.g., Miguelez & Moreno, 2018; Balland & Boschma, 2021) demonstrate that access to non-local capabilities boosts a region’s capacity to innovate and enter new technological domains when the incoming knowledge complements local strengths.

3.3 Building an innovation monitoring system at the local level

The current study proposes a new system for monitoring local innovation activities. It builds upon previous research (Oikonomaki, Belivanis, 2023) that enhances current technologies to gain a

better understanding of the innovation dynamics at the local level. It employs a new methodological framework that enables the explicit investigation of a range of innovation indicators with a bottom-up approach. In doing so, it combines theoretical approaches and connects them to practical measures that can be captured at the neighborhood level. It proposes a framework that leverages geospatial analysis to assess how place-based factors influence innovation capacity and adoption.

The study also highlights the potential of data-driven strategies, such as big data analytics, to inform policy decisions, as well as proposes a location-based governance model that ensures effective design and implementation of innovation policies based on the dynamics and synergies of each place. This monitoring system accounts for the unique features of each place and provides valuable insights for their stakeholders and policymakers across four distinct categories (Oikonomaki, 2025).

4. Conclusions

Examining well-established ecosystems, this study offers tangible recommendations for policymakers in low-innovation regions. First, these regions and cities should prioritize the support of local actors and human capital with a strong adoption capacity to ensure effective technology absorption; second, they should focus on strengthening networks that facilitate collaboration and knowledge exchange across regions and sectors; third, they should create a monitoring system for local innovation activities, neighborhood characteristics, and synergies of startups and enterprises. By embracing these strategies, regions could support the creation of inclusive innovation ecosystems that drive sustainable growth and respond effectively to evolving economic and societal needs. Crucially, implementing an innovation monitoring system that captures both innovation capacity and adoption at the local level allows policymakers to gain valuable insights that inform strategic decisions. Such a system enables them to identify city neighborhoods with the greatest growth potential, as well as areas where targeted support is needed to overcome barriers to innovation adoption. By providing recently



updated data on local strengths, gaps, and emerging trends, the system would allow policymakers to prioritize investments that drive inclusive economic development, foster technological advancement, and enhance competitiveness based on their actual strengths. Ultimately, this evidence-based approach ensures that resources are allocated effectively to local actors, maximizing impact and promoting innovative activities.

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