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LEVERAGING THE INNOVATION INDEX AS A STRATEGIC POLICY TOOL: INSIGHTS INTO LATVIA'S INNOVATION PERFORMANCE AND PATHWAYS TOWARDS EU CLIMATE AND SUSTAINABILITY GOALS

| Abstract

- ▶ *Goal* – The aim of this article is to demonstrate how the transition towards implementing the European Green Deal has influenced Latvia's level of innovative development, as reflected in its innovation performance indicators.
- ▶ *Research methodology* – The study is based on an analysis of the Republic of Latvia's regulations and strategic guidelines, supported by a comprehensive review of relevant literature, including national and international reports and scientific publications.
- ▶ *Score/results* – The findings underscore that innovation is playing an increasingly pivotal role in Latvia's economic development. It acts as a catalyst for fostering a greener, more sustainable society and enhancing the EU's global competitiveness. The article highlights how the European Green Deal has influenced Latvia's innovation ecosystem, revealing progress alongside persistent structural challenges that limit advancement beyond the emerging innovator status.
- ▶ *Originality/value* – This article uniquely examines Latvia's Green Deal initiatives within the framework of its position on the EU Innovation Scoreboard, offering insights into the country's pathways toward sustainable innovation and its evolving innovation ecosystem.

| **Keywords:** Green Deal, EU Innovation Scoreboard, innovation ecosystem, legislation, sustainability

1. Introduction

The experience of countries with developed market economies demonstrates that addressing socio-economic challenges is closely tied to the development of small and medium-sized enterprises (SMEs). In Latvia, the growth of business activity aligns with the country's long-term economic strategy and priorities. National competitiveness is driven by the success of competitive enterprises, which in turn depends on the quality of the overall business environment. SMEs play a vital role in maintaining a healthy, dynamic market economy [Hillary, 2004: 561–569]. Innovation and the broader innovation environment are influenced by a variety of factors within the business ecosystem. This environment is shaped by the prevailing economic and political conditions, as well as by legal, socio-cultural, technological, geographical, ecological, institutional, and informational contexts. In recent years, the Latvian government has prioritised innovation and skills development, creating opportunities for SMEs to access funding for new products and services, to enhance workforce skills, and to facilitate knowledge and technology transfer from research institutions to businesses. Furthermore, the European Union's Green Deal has introduced new dimensions to SME development, emphasising sustainability and the green transition.

The Green Deal supports SMEs in adopting environmentally friendly practices and technologies, offering financial instruments and policy frameworks aimed at fostering innovation while reducing environmental impact [www 1].

Latvia's pursuit of sustainable economic growth and alignment with the European Green Deal requires a more strategic application of innovation performance metrics. This paper examines the Innovation Index, specifically the Global Innovation Index and the European Innovation Scoreboard, as a policy tool to inform and guide national strategies in entrepreneurship and green transition. As of the European Innovation Scoreboard (EIS) 2024, Latvia is classified as an "Emerging Innovator" (53.6% of the EU average), and with a performance level below 70% of the EU average. This classification places Latvia among countries that are still developing their innovation capabilities compared to the EU average.

By using the Innovation Index not only as a benchmarking framework but as a strategic policy guide, Latvia can enhance its innovation ecosystem, improve SME competitiveness, and accelerate progress toward EU climate and sustainability goals.

2. Innovation ecosystems in the context of sustainability

According to Daniel Isenberg, entrepreneurship functions as an ecosystem – a dynamic and interdependent network of environmental factors and elements connected through complex relationships. These ecosystem components are intertwined in cause-and-effect chains, in which the influence of one factor often depends on and impacts others. Entrepreneurial activity within a region both shapes and is shaped by these interactions. Given this complexity, the effective functioning of an entrepreneurial ecosystem requires the alignment of various supportive elements, including policy frameworks, access to markets and capital, human capital and skills, a strong entrepreneurial culture, and enabling infrastructure and tools. Each of these elements plays a critical role in fostering entrepreneurship. Sustainable entrepreneurial growth can only be achieved through the synergy of all these components. Because the conditions influencing entrepreneurship are unique to each country and region, it is essential to analyse the specific factors that contribute to creating a favorable business environment as a cohesive ecosystem [Isenberg, 2011: 6]. Mason and Brown define an entrepreneurial ecosystem as a set of interconnected entrepreneurial actors (e.g., entrepreneurs, advisors, investors), organisations (e.g., firms, universities, support organisations), institutions (e.g., regulatory bodies), and processes which formally and informally coalesce to connect, mediate, and govern the performance of local entrepreneurial environments [Mason, Brown, 2014]. Their definition highlights the role of both formal structures and informal networks.

Stam expands the concept by introducing the idea of ecosystem performance, defining it as a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship, which contributes to economic development. His model includes framework conditions (like culture and infrastructure) and systemic conditions (such as networks and leadership). [Stam, 2015: 1761]. Researches show that the main drivers behind a successful innovation ecosystem are favourable administrative requirements, government incentives, available financial resources, academic-industry collaborations, research and development, commercialisation, market dynamics, entrepreneurial culture [Ratanova, Voroncuka, 2019: 1011].

The concept of the innovation ecosystem has emerged as a pivotal analytical framework for examining the processes through which innovation originates, evolves, and is sustained within the context of an increasingly complex and interconnected global economy. Grounded in systems theory, the innovation ecosystem

encapsulates the dynamic interrelations among a diverse array of actors, institutions, and contextual factors that collectively facilitate the generation, dissemination, and commercialisation of innovative outputs. Over time, this concept has been elaborated through various scholarly contributions, each offering distinct perspectives on the structural components, functional mechanisms, and contextual determinants that underpin the operation of innovation ecosystems.

As innovation ecosystems have evolved with advances in technology and globalisation, more recent scholars have refined the concept to reflect these shifts. Granstrand and Holgersson conducted a systematic review of 21 existing definitions and proposed a comprehensive one that captures the ecosystem's multidimensional nature: "an evolving set of actors, activities, and artifacts, and the institutions and relations, including complementary and substitute relations that are important for the innovative performance of an actor or a population of actors". This definition accounts for not only cooperation but also competition, recognising that innovation ecosystems include both supportive and rival elements. An innovation ecosystem is the evolving set of actors, activities, and artefacts, and the institutions and relations, including complementary and substitute relations, that are important for the innovative performance of an actor or a population of actors" [Granstrand, Holgersson, 2020: 102098].

Innovation ecosystems are increasingly shaped by sustainability imperatives, driven by the European Green Deal and ESG frameworks. This marks a shift from purely economic innovation towards the holistic value creation that supports environmental responsibility, social inclusion, and ethical governance. Rooted in systems theory, the innovation ecosystem framework highlights dynamic interactions among firms, universities, investors, public institutions, and civil society now expected to integrate sustainability into their strategies.

Policies such as the EU Taxonomy Regulation and the Corporate Sustainability Reporting Directive (CSRD) are reshaping innovation governance, promoting green technologies and sustainable transitions. ESG criteria are also transforming investment, directing capital toward climate-conscious ventures through instruments like green bonds and impact funds. This transition increases demand for green skills, reshaping education and workforce development around environmental literacy, ethical leadership, and inclusive practices. Innovation ecosystems now prioritise sustainable infrastructure, renewable energy, and low-impact digital systems. In this evolving context, sustainability is no longer a peripheral concern but a core driver of innovation, culture, and long-term economic and societal resilience (Table 1).

Table 1. Sustainability-Oriented Factors Shaping Innovation Ecosystems

Factor	Description	Contributors
1. Actors and Stakeholders	Diverse participants (firms, universities, investors, public agencies) enable innovation collaboration.	Jackson; Granstrand & Holgersson
2. Institutional Frameworks	Regulatory systems, IP laws, public policy incentives that shape innovation. Green Deal adds sustainability laws and ESG standards.	Autio & Thomas; European Commission
3. Financial Capital	Access to funding through public support, venture capital, green bonds, ESG-linked finance tools.	Adner
4. Human Capital	Skills, talent, and education systems supporting innovation. Green Deal emphasizes green skills.	Stam; EC Green Skills Agenda
5. Knowledge & Tech Flows	Formal and informal mechanisms for research and knowledge diffusion; increasingly focused on sustainability.	Jackson; Granstrand & Holgersson
6. Infrastructure	Physical and digital infrastructure (labs, broadband, transport); emphasis now on sustainability.	Autio & Thomas; European Commission
7. Cultural and Social Norms	Societal values that promote risk-taking, collaboration, ethics, and sustainability.	Mason & Brown
8. Market Dynamics	Demand-side drivers including circular economy, green markets, ESG consumer trends.	EC Circular Economy Plan; Granstrand & Holgersson

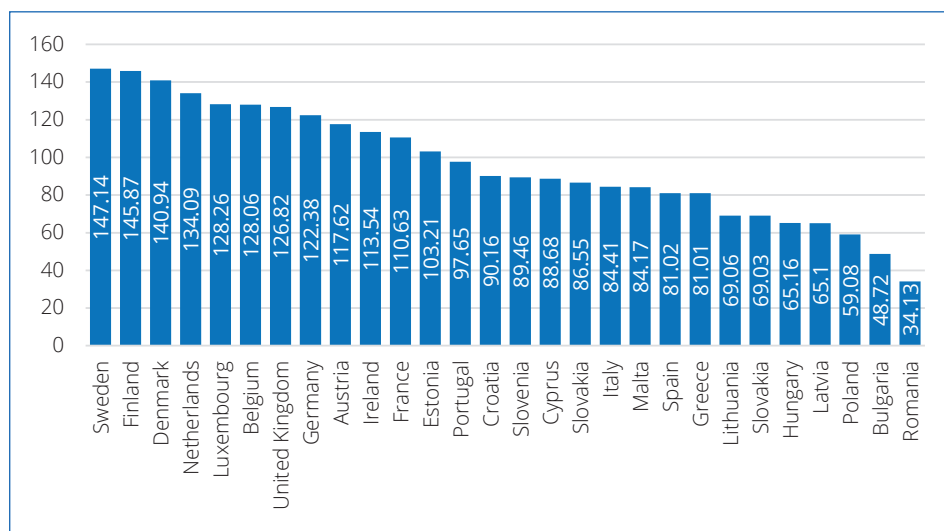
Source: the author's own work.

The innovation ecosystem is a multifaceted construct, shaped by a wide range of interdependent factors. In recent years, the integration of sustainability through the European Green Deal and ESG frameworks has fundamentally reshaped how these factors operate and interact. Innovation is increasingly expected to align with ecological responsibility, social inclusion, and good governance. Consequently, understanding and developing innovation ecosystems today requires not only attention to traditional elements such as capital, talent, and infrastructure but also to emerging imperatives of green growth, ethical practices, and systemic resilience. For innovation ecosystems to remain relevant and effective in the 21st century, they must internalise sustainability not as an external obligation, but as a core driver of long-term value creation and societal progress.

3. Latvia's progress towards achieving EU climate and sustainable development goals

To achieve a high level of innovation performance, countries need a balanced innovation system performing well across all dimensions. They need an appropriate level of public and private investment in education, research and skills development, effective innovation partnerships among companies and with academia, as well as an innovation-friendly business environment, including strong digital infrastructure. These key areas largely correspond to the dimensions and indicators used for the European Innovation Scoreboard. The Annual European Innovation Scoreboard offers a comparative evaluation of the research and innovation performance across EU Member States and selected third countries. It systematically identifies the relative strengths and weaknesses of national research and innovation systems, thereby supporting policymakers in recognising areas that require targeted efforts to enhance innovation outcomes. “Latvia has demonstrated notable progress in its innovation performance, transitioning from a ‘modest innovator’ in 2011 to a ‘moderate innovator’ by 2017, as classified by the European Innovation Scoreboard (EIS).” [www 2]. The Summary Innovation Index (SII) for 2019 (Chart 1) indicates the relative performance of EU Member States, where Latvia is among the group of moderate innovators.

Chart 1. Summary Innovation Index (EU 28), 2019



Source: European Innovation Scoreboard, 2019 [www 3].

Chart 1 presents the Summary Innovation Index scores for EU Member States [EU, 28], illustrating their relative innovation performance. Latvia is positioned among the moderate innovators, with a score of 65.10, reflecting a mid-range innovation capacity relative to other EU countries. The index highlights the disparities in innovation performance across the EU, with Romania and Bulgaria at the lower end, scoring 34.13 and 48.72 respectively. This distribution underscores the ongoing challenge of fostering innovation uniformly across the region. According to the data for the period up to 2024, Latvia has again returned to the category of emerging (modest) innovators by the data of SII is 59 [www 4]. In 2024, Latvia's innovation performance within the categories of Finance and Support and Innovation Activities exhibited mixed outcomes across key indicators. Notably, R&D expenditures in the public sector (59) and job-to-job mobility (87.5) demonstrated increases compared to previous years, reflecting enhanced public investment in research and a more dynamic labor market conducive to knowledge diffusion. Conversely, several other indicators declined or remained below the European Union average. These include venture capital expenditures (53.6), government support for business R&D (3.3), R&D expenditure in the business sector (16), non-R&D innovation expenditures (57.7), and environmental-related technologies (41.5). The downward trends in these areas point to persistent challenges in private sector engagement, innovation financing, and sustainable technological development.

The European Innovation Scoreboard (EIS) underwent a major revision in 2021 to align more closely with the evolving EU priorities, including the Green Deal and ESG objectives. This update expanded the innovation dimensions from 10 to 12 and the indicators from 27 to 32, incorporating digitalisation, environmental sustainability, and social responsibility. While retaining the core structure Framework Conditions, Investments, Innovation Activities, and Impacts the revised framework reflects a broader and more nuanced understanding of innovation. It marks a shift from traditional R&D-focused metrics toward a more comprehensive assessment of innovation systems in line with contemporary policy goals. The increase in both dimensions and indicators illustrates a more nuanced and comprehensive approach to evaluating innovation systems, aligned with evolving EU policy priorities, including the Green Deal and ESG frameworks.

How can Latvia strategically use innovation performance metrics not just for benchmarking but as active tools to guide national policy toward green and sustainable growth? This gets to the heart of turning passive measurement into

proactive policy management. In other words, using innovation indicators not just to assess performance, but to inform, guide, and prioritise policy decisions. This is especially relevant in the context of the European Innovation Scoreboard (EIS), which now integrates Green Deal and ESG metrics. These indicators can help identify where public investment can accelerate sustainability transitions, which sectors need targeted support (e.g. digital infrastructure, green tech), and how to align national innovation policy with EU-level climate and social goals. What are the key structural weaknesses in Latvia's innovation ecosystem, and which targeted reforms or investments could most effectively elevate its status beyond the "Emerging Innovator"? This invites discussion on the specific challenges Latvia faces and how they might be overcome to improve innovation capacity. In what ways can improved innovation performance contribute to Latvia's competitiveness in SMEs and its alignment with the European Green Deal and broader EU sustainability objectives? This links innovation outcome directly to economic and environmental policy goals, encouraging a holistic view.

The European Green Deal is deeply embedded in Latvia's National Development Plan (NDP) for 2021–2027, serving as a strategic foundation for steering the country toward climate neutrality, sustainable economic transformation, and enhanced social cohesion. This integration reflects Latvia's commitment to aligning its national development priorities with broader EU sustainability and climate policy goals, particularly those targeting decarbonisation, circular economy transition, and biodiversity preservation. The NDP outlines specific measures to promote green innovation, improve energy efficiency, expand renewable energy capacity, and support low-carbon mobility, all while safeguarding social equity through inclusive labour market policies and regional development strategies. Moreover, the plan emphasises digitalisation as a key enabler of sustainability, facilitating the deployment of smart technologies in sectors such as transport, energy, and public administration. Through this comprehensive approach, Latvia aims not only to meet EU climate targets but also to build a resilient, resource-efficient, and socially inclusive economy capable of withstanding future environmental and economic shocks. The primary legislative acts of Latvia concerning the European Green Deal and innovation are summarised in Table 2.

Table 2. Latvian Legislation on Green Deal and Innovation

Document	Description	Green Deal / Innovation Relevance
1. Strategy of Latvia for the Achievement of Climate Neutrality by 2050	Official government strategy [2019], aligned with EU Green Deal. Published and cited in international policy databases (e.g., UNEP, UNFCCC).	Use for long-term sustainability goals, climate-neutral policy framing, national commitment to Green Deal.
2. National Energy and Climate Plan (NECP) 2021–2030	Officially submitted to the EU; forms part of each member state's obligations under EU Regulation 2018/1999. Available on the European Commission website.	Use for sectoral targets (energy, transport, buildings), implementation of EU climate goals, investment priorities.
3. Environmental Policy Guidelines 2021–2027	Adopted by the Cabinet of Ministers. Cited in the national strategic planning documents.	Used to describe Latvia's mid-term environmental planning and alignment with EU biodiversity, waste, and circular economy policies.
4. Sustainability Reporting Law, 2024 (Ilgtspējas informācijas atklāšanas likums)	Official Latvian law (published in Latvijas Vēstnesis, No. 193, OP 2024/193.1). Implements EU CSRD directive.	Use for legal basis of ESG reporting, transparency obligations, corporate sustainability integration.
5. Guidelines for Science, Technology Development & Innovation 2021–2027	Strategic planning document endorsed by Cabinet. Supports EU R&I goals. Published on official Latvian government portals (likumi.lv).	Use for national innovation ecosystem planning, science-policy interface, green and digital innovation funding.
6. EU Taxonomy & Sustainable Finance Roadmap (Latvia)	Jointly developed with the European Commission (DG REFORM). Available on official EU site.	Use for aligning finance, banking, and SME policy with EU Taxonomy Regulation and ESG investment standards.
Support of Innovative Entrepreneurship Law (Green Corridor).	Currently, a draft law [Saeima Bill No. 625/Lp14].	Fast track strategic export oriented innovation. Promotes net-zero tech and sandboxes

Source: the author's own work.

These legal frameworks outline the national policy directions, regulatory instruments, and strategic priorities that guide the country's transition towards a green economy and its support for research, development, and innovation. They

serve as the foundation for aligning Latvia's environmental and innovation policies with broader EU objectives, including climate neutrality, resource efficiency, and technological advancement. According to financial commitment to the green transition Latvia is allocated a total of €4.6 billion in Cohesion Policy funding for the 2021–2027 period to support a green and equitable economy. Of this sum, €839 million will be invested in renewable energy and energy efficiency projects through the European Regional Development Fund (ERDF) and Cohesion Fund, thereby enhancing national energy resilience and climate mitigation efforts. In addition, €823 million has been earmarked for research, innovation, and digitalisation initiatives, underscoring Latvia's commitment to building a future-ready economy. The allocation also includes €1.2 billion dedicated to integrated territorial development and sustainable urban mobility encompassing public transport, cycling infrastructure, and electric vehicle charging networks. To ensure a just transition, €192 million from the Just Transition Fund (JTF) is being channeled towards phasing out peat-based energy and restoring peatlands, with associated support for affected regions and workers. Latvia's innovation ecosystem is shaped by a set of national policies aligned with the European Green Deal and EU innovation objectives. These frameworks provide regulatory and financial support for sustainable and digital transformation.

The Strategy for Climate Neutrality by 2050 and the National Energy and Climate Plan (2021–2030) define long-term and sectoral goals, guiding investments into low-carbon technologies and renewable energy. The Environmental Policy Guidelines (2021–2027) reinforce circular economy principles and sustainable resource use. Legislation such as the Sustainability Reporting Law [2024], which implements the EU's Corporate Sustainability Reporting Directive (CSRD), integrates ESG criteria into corporate governance and encourages sustainability-driven innovation. Meanwhile, the Guidelines for Science, Technology Development & Innovation (2021–2027) promote collaboration across academia, business, and government, strengthening Latvia's research-to-market capabilities. The EU Taxonomy & Sustainable Finance Roadmap enhances green investment channels, while the proposed Green Corridor Law aims to fast-track innovation in net-zero technologies through regulatory flexibility.

Together, these instruments form the backbone of Latvia's transition towards a more resilient, innovation-led economy, although their full impact depends on the effective implementation.

4. Conclusions

Latvia's innovation performance, as reflected in the 2024 European Innovation Scoreboard, continues to place the country within the “Emerging Innovator” category, with performance levels below 60% of the EU average. This indicates that, despite some progress, Latvia faces persistent structural and systemic challenges that hinder its innovation capacity. To address these obstacles and unlock the full potential of its innovation ecosystem, Latvia must adopt a more strategic approach to utilising innovation performance metrics such as the European Innovation Scoreboard not only as benchmarking tools but also as active instruments for policymaking. These tools can guide the country's transition toward sustainable economic growth aligned with the European Union's climate and sustainability objectives. A central priority in this process is the substantial increase of domestic investment in research and development, along with the enhancement of mechanisms for the effective commercialisation of scientific and technological outputs. At the same time, Latvia must strengthen its human capital base by improving education systems that cultivate talent in high-potential, innovation-driven sectors. Institutional reform is equally essential, particularly in promoting regulatory and administrative flexibility to facilitate greater collaboration among academia, industry, and government. Moreover, fostering a national culture that embraces risk-taking, experimentation, and the acceptance of failure as inherent aspects of innovation is critical.

A cohesive national innovation strategy supported by stable funding frameworks, the development of innovation labs, and robust digital and human capital infrastructures will be vital for Latvia to bridge the innovation gap with its Baltic counterparts and evolve into a mature, competitive innovator within the broader European innovation ecosystem.

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