European Journal of Sustainable Development (2025), **14**, 3, 44-64 ISSN: 2239-5938
Doi: 10.14207/ejsd.2025.v14n3p44

Spatial Diversity and the Dynamics of Entrepreneurial Ecosystems. The Perspective of Sustainable Development

By Katarzyna Miszczak[1], Anna Mempel-Śnieżyk[2]

ABSTRACT:
Among the several theoretical streams that cover local development through entrepreneurial action, the Entrepreneurial Ecosystem (EE) approach has gained prominence for conceiving an articulated system of various actors that influence the environment for the generation of high-impact ventures (Brown & Mason, 2017; Mack & Mayer, 2016). The EEs approach seeks to analyse, from the interaction between various actors, the development of enterprises at local, regional or national levels, taking the entrepreneur as the key actor in the process (Brown & Mason, 2017; Spigel & Harrison, 2018). EE are dynamic systems influenced by spatial diversity and socio-economic interactions. This article proposes a theoretical framework to analyse the multidimensional dynamics of entrepreneurial ecosystems in the context of sustainable development. Spatial diversity as a factor shaping the structure, efficiency, and adaptability of entrepreneurial ecosystems means that geographic, social, economic, cultural, and institutional diversity plays a key role in shaping the functioning of these ecosystems.
The study considers the interdependence between spatial configurations and the systemic components of entrepreneurial ecosystems. By conceptualising interactions, the research advances theoretical insights into the spatial and dynamic nature of entrepreneurial ecosystems, addressing gaps in the existing literature and proposing a novel approach to understanding their complexity.

Keywords: entrepreneurial ecosystem, sustainable development, local and regional development

1. Introduction

The current state of the EE concept (Acs et al. 2017; Spigel & Harrison 2018; Malecki 2018; Stam & Spigel 2016; Mason & Brown 2014) confirms the growing interest in this topic and indicates the interest of the researchers (Rong et al., 2015; Erina et al., 2017; Stam 2015). This concept has not yet fully exploited the knowledge of network theory, which remains a challenge for institutions (Alvedalen & Boschma, 2017) and their sustainable aspects (Grigore & Dragan, 2020). Moreover, an adequate explanation should distinguish between an EE's necessary and contingent conditions and clearly define the role of the government and other institutions (Stam & van de Ven, 2019). The researchers have also discussed the level of EE that should be investigated. The conditions of EE for

[1]Associate Professor Katarzyna Miszczak; Doctor of Economic Science, Professor of Wroclaw University of Economics and Business, ORCID ID (0000-0001-6158-9339), Department of Spatial Economy and Local Government Administration, Wroclaw University of Economics and Business, Wroclaw, Poland.
[2]Associate Professor Anna Mempel-Śnieżyk; Doctor of Economic Science, Professor of Wroclaw University of Economics and Business, ORCID ID (0000-0001-7704-4923), Department of Spatial Economy and Local Government Administration, Wroclaw University of Economics and Business, Wroclaw, Poland.

economic development, spatial aspects, and key components are continuously analysed and debated (Asmit et al., 2024; Hoffecker et al., 2023; Pasha, 2019; Schäfer et al., 2024).

Previous research indicates that entrepreneurial ecosystems (EEs) play a crucial role in creating jobs, energising local economies, and boosting the flexibility of regional economies through enhanced production diversification. This diversification builds resistance against economic recessions and structural changes and promotes continuous long-term productivity gains, thereby driving overall GDP growth (Hoffecker et al., 2023; Isenberg, 2010; Spigel et al., 2020).

As an approach to economic development, reinforcing EE offers a resource-efficient, grassroots alternative to conventional top-down models like cluster development or innovation districts (Hoffecker et al., 2023). This quality makes ecosystem-oriented policies attractive to policymakers and strategists seeking more flexible and inclusive growth methods (Spigel et al., 2020). Moreover, as these ecosystems mature, they tend to produce public goods - such as shared infrastructure, common resources that bolster business expansion, and a local culture that actively nurtures innovation and entrepreneurship - further enhancing their sustainability and appeal. In addition, a well-structured EE helps create a more supportive institutional and policy framework for innovation-driven entrepreneurship by lowering entry barriers and establishing a conducive regulatory environment. Collectively, these factors increase the attractiveness of these areas not only to existing entrepreneurs and innovators but also to potential new entrants from other regions, thereby reinforcing the ecosystem's self-sustaining growth dynamics (Feld, 2012; Hoffecker, 2014; Mack & Mayer, 2016).

To address the research gap regarding EEs from the sustainability perspective, it should be noted that previous studies have rarely examined the specific interplay between spatial diversity and sustainable development. This research fills that gap by investigating how spatial and institutional mechanisms uniquely contribute to sustainable outcomes within EEs. From an economic standpoint, this topic is essential and timely for several reasons:

- Driving Local and Regional Growth

EEs have been shown to stimulate job creation, foster innovation, and enhance overall economic dynamism (Acs et al., 2017). By examining the role of spatial diversity within these ecosystems, the research provides insights into how localised socio-economic and institutional conditions shape entrepreneurial outcomes, thus offering a more nuanced understanding of economic growth at the regional and local levels.

- Addressing Heterogeneity and Policy Tailoring

Traditional economic models often assume a level of homogeneity that overlooks the unique characteristics of different geographic regions. The integration of spatial diversity highlights how cultural, institutional, and geographical factors critically influence entrepreneurial activity (Zahra, 2007; Zahra et al., 2014; Dodd & Anderson, 2007). This insight is crucial for designing targeted, context-specific economic policies that cater to the diverse needs of various regions (Adner, 2017).

- Integrating Sustainability into Economic Development

With increasing concerns about environmental degradation and social inequality, sustainable development has become a core objective for modern economies. By linking

EEs with sustainable development goals, the research addresses the dual challenge of achieving economic growth while ensuring environmental protection and social well-being (Haskel et al. 2007; Hill & Mudambi 2010). This approach aligns with the growing emphasis on green innovation and corporate social responsibility, making the study particularly relevant for current economic policy debates (Volkmann et al., 2021).

- Enhancing Resilience in the Face of Economic Shocks

Recent global events, such as economic recessions and the COVID-19 pandemic, have underscored the importance of economic resilience. Local EEs, enriched by spatial diversity, offer a bottom-up mechanism for building resilient economies. They enable localised responses to external shocks by fostering strong, interconnected networks that adapt to changing conditions, thereby reducing dependency on centralised, top-down interventions.

- Advancing Theoretical and Empirical Understanding

The topic bridges multiple streams of economic thought - including innovation systems, regional development, and sustainability economics - thereby contributing to a more comprehensive theoretical framework. This integrated approach enhances our theoretical understanding of economic dynamics and has practical implications for policymakers and economic strategists aiming to foster inclusive, sustainable growth.

This article aims to develop a theoretical framework for the spatial dynamics of EEs and their role in sustainable development. The above raises the question: What spatial and institutional mechanisms influence EE outcomes in the context of sustainability? The spatial dynamism of EE is shaped by and inherently rooted in the local context. This article is structured as follows: the first section provides a theoretical foundation by exploring the spatial and institutional dimensions of EEs and their role in sustainable development. The next part presents the conceptual framework, detailing the key mechanisms linking local EEs. Finally, the study discusses the implications of these findings, highlighting how local EE dynamics contribute to the sustainable context of outcomes. In summary, studying the interplay between spatial diversity and the dynamics of EEs within the sustainable development context provides critical insights into the mechanisms driving economic growth, regional resilience, and sustainable progress. This makes the topic highly relevant for addressing contemporary economic challenges and guiding effective, locally adapted policy interventions.

2. Theoretical Background

2.1 Entrepreneurial Ecosystem - Key Aspects

The authors identified connections between the EE concept and established theories (Spigel & Harrison, 2018) like bottom-up development theories and approaches, industrial cluster concept (Bagnasco 1977; Becattini 1992; Pressman 1991), regional innovation systems, national innovation system and the triple helix (Freeman 1995; Lundvall 1988; Nelson 1993; Etzkowitz & Leydesdorff 1995). The researchers have shown that different regional dimensions influence the promotion of entrepreneurship (García-Rodríguez et al., 2017).

An examination of the evolution of EE models reveals that they were initially perceived as unchanging structures. However, there has been a noticeable shift toward

more dynamic perspectives, particularly in analysing the interplay of causes and effects among their various elements and the degree to which these elements integrate (Spigel & Harrison, 2018). Conceptualising EE as an evolving economic system highlights the interconnected relationships among its diverse stakeholders (Erina et al., 2017). The components of EE are regarded both as key coordinators of the system and as distinct yet mutually dependent dimensions that collectively shape its functionality (Godley et al., 2021).

EEs comprise multiple interconnected elements that collectively shape their structure, efficiency, and long-term sustainability. These elements, as identified by key scholars, include, next to the enterprises, human capital, networks, policy frameworks, financial resources, culture, infrastructure, leadership, and institutional support. Each component fosters an environment where entrepreneurship can thrive and contribute to regional economic development.

One of the fundamental pillars of EEs is human capital, which encompasses the skills, knowledge, and experience of entrepreneurs and the workforce. High levels of human capital enhance innovation capacity, improve business decision-making, and increase the likelihood of entrepreneurial success (Isenberg, 2011). A well-educated and highly skilled workforce is essential for both opportunity-driven entrepreneurship and the adaptability of businesses in response to market shifts. Furthermore, educational institutions and training programs play a crucial role in nurturing entrepreneurial talent, ensuring that new ventures have access to competent professionals capable of driving business growth.

Another critical component is networks, which refer to the relationships and connections among entrepreneurs, investors, mentors, and supporting institutions. Networks facilitate knowledge sharing, collaboration, and access to essential resources such as funding and business expertise (Feld, 2012). Strong entrepreneurial networks foster an ecosystem of trust and cooperation (Miszczak, 2022), enabling faster problem-solving and sharing of best practices. Moreover, networking events and incubator programs strengthen these ties, ensuring emerging entrepreneurs can integrate into a broader business community that provides support and opportunities.

The policy and regulatory environment are other essential elements, as government policies significantly influence the ease of doing business, market access, and the level of support available to entrepreneurs. A favourable policy environment includes streamlined business registration processes, tax incentives, intellectual property protection, and legal frameworks that reduce bureaucratic barriers to entrepreneurship (Stam & van de Ven, 2019; Miszczak et al., 2024). Policies that promote innovation and provide financial incentives for startups can stimulate entrepreneurial activity and attract investment, while excessive regulation and administrative inefficiencies can stifle business development (Mempel-Śnieżyk et al., 2022).

Financial capital is indispensable for EEs, as access to funding determines the scalability and sustainability of startups. Entrepreneurs require various financing options, including venture capital, angel investors, bank loans, and government grants, to launch and grow their businesses (Nicotra et al., 2017). A well-functioning financial ecosystem ensures that startups at different stages of growth - whether in early ideation, product development, or expansion - can access appropriate funding mechanisms. Additionally,

financial capital plays a critical role in risk mitigation, allowing businesses to invest in innovation, talent acquisition, and market expansion.

Culture is a foundational element that influences a region's entrepreneurial mindset. A strong entrepreneurial culture encourages risk-taking, innovation, and resilience in the face of failure (Brown & Mason, 2017). In ecosystems where entrepreneurship is culturally valued, individuals are more likely to engage in business ventures, experiment with new ideas, and pursue opportunities despite uncertainties. Social attitudes toward entrepreneurship, including the perception of success and failure, significantly impact the willingness of individuals to start their businesses. In regions where failure is stigmatised, potential entrepreneurs may be discouraged from taking risks, whereas a culture that views failure as a learning experience fosters more significant entrepreneurial activity.

Infrastructure - including physical spaces, technological resources, and transportation systems - is another key factor in EE success. High-quality infrastructure, such as co-working spaces, research laboratories, and high-speed internet, facilitates business operations and innovation (Stam & van de Ven, 2019). Moreover, efficient transportation networks enable businesses to access suppliers, customers, and global markets easily. Digital infrastructure, particularly in the growing digital economy, is becoming increasingly important in supporting startups in e-commerce, fintech, and remote work solutions.

Leadership within EEs serves as a guiding force that shapes vision, fosters collaboration, and drives ecosystem-wide initiatives. Strong leadership, whether from successful entrepreneurs, government officials, or industry experts, provides inspiration, mentorship, and policy advocacy (Feld, 2012). Leadership also plays a crucial role in maintaining ecosystem stability and continuity, ensuring that resources, policies, and strategic initiatives align with long-term development goals. Ecosystems with proactive leadership often exhibit higher coordination, innovation, and resilience against economic disruptions.

Finally, institutional support, including intermediary organisations such as business incubators, accelerators, and research institutions, is a backbone for EEs. These institutions provide crucial services such as business development support, legal assistance, and access to mentorship networks (Nicotra et al., 2017). Universities and research centres also contribute to knowledge generation and technology transfer, ensuring startups benefit from cutting-edge research and innovation. The presence of strong institutional support structures enhances the overall efficiency of EEs by bridging gaps between entrepreneurs, policymakers, and investors.

In conclusion, each element—human capital, networks, policy frameworks, financial resources, culture, infrastructure, leadership, and institutional support—plays a distinct yet interdependent role in shaping EE. Notably, institutional interactions can both enable and constrain entrepreneurship. Local policymakers often convene stakeholders, set priorities, and streamline formal requirements to lower entry barriers (Spigel, 2017), but policy frameworks also impose limitations: overly rigid laws or misaligned mandates can stifle innovation. For example, entrepreneurs in rural Appalachia reported that state and federal regulations - more than local support - were their primary obstacles to starting and scaling ventures, whereas in a Midwestern city, inconsistent zoning and permitting

across city and county jurisdictions significantly impeded new business activity. Such fragmentation and institutional capacity gaps often require universities, incubators, or municipal agencies to assume coordination roles, highlighting the critical importance of policy design and inter-agency alignment. Scholars therefore caution against one-size-fits-all, top-down regulations, advocating instead for flexible, place-sensitive frameworks and stronger inter-jurisdictional cooperation to foster inclusive and sustainable ecosystems (Audretsch & Belitski, 2021; Bjørnskov & Foss, 2016). It is worth emphasizing that the integration and effective functioning of these components create an environment conducive to business creation, innovation, and sustainable economic growth. By understanding the significance of each element, policymakers and stakeholders can design targeted interventions to strengthen EEs and enhance their contributions to regional and national economies (Figure 1).

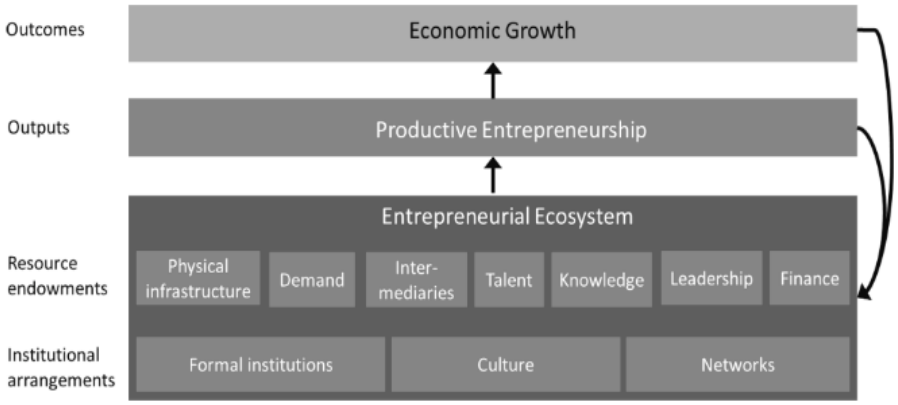

Figure 1: *The Structure and Dynamics of Entrepreneurial Ecosystems: From Resource Endowments to Economic Growth*
Source: (Leendertse et al., 2021)

The figure effectively highlights the self-reinforcing nature of EEs. Substantial resource endowments and institutional frameworks lead to high entrepreneurship levels, fueling economic growth. Economic growth generates further investment in infrastructure, talent, and knowledge, creating a positive feedback loop that perpetuates ecosystem vitality and resilience. This model underscores the importance of strategic interventions by policymakers, investors, and business leaders to ensure that the foundational elements of the ecosystem remain robust, inclusive, and adaptive to changing market conditions. By doing so, regions can cultivate an enduring entrepreneurial culture that sustains innovation and economic prosperity in the long run.

In EEs, entrepreneurs and related actors are locally interconnected through both formal and informal networks, influencing one another's outcomes (Reidolf et al., 2019) with a more facilitative role of the public sector (Spigel & Harrison, 2018). EEs encompass a network of enterprises, organizations, institutions, and processes that, through formal and informal interactions, come together to facilitate, coordinate, and regulate entrepreneurial performance within a local context (Mason & Brown, 2014). Reidolf et al.

(2019) present a similar point of view and define EEs as a set of interconnected entrepreneurial actors and organisations giving them financial and advisory support. EEs operate at regional or, in rare cases, national levels (Mason & Brown, 2014; Stam 2015). Various geographical levels are researched, and the authors believe that it depends on individual countries or broader territorial divisions (e.g. the last studies of the Balkan countries (Andonova et al., 2019), of the Netherlands (Stam & van de Ven, 2019) and Ethiopia (Biru et al., 2020), of the Reading region near London (Godley et al., 2021), of Estonia (Reidolf et al., 2019). The EE at the local level (e.g., at the city level) is also investigated (Chowdhury et al., 2019; Stam 2018). This multi-scalar perspective underscores the adaptability of EEs, demonstrating how their structure and function vary depending on regional and institutional contexts. A deeper understanding of these spatial diversities is crucial for designing policies that effectively support entrepreneurship and foster sustainable economic growth.

2.2 Entrepreneurial Ecosystems and Sustainability Toward an Integrated Approach

This study explores how the concept of EEs can be applied to creating a "sustainable valley," where a community transforms into a hub for entrepreneurial innovation. In particular, it examines the role of formal and informal networks, physical infrastructure, and cultural factors in fostering a sustainable EE (SEE) (Cohen, 2006).

While the theory of EE is now a prominent topic and an essential stream in entrepreneurship research, the question of how ecosystems can specifically promote *sustainable* entrepreneurship and contribute to the Sustainable Development Goals (SDGs) set by the United Nations is a neglected issue. With the papers in this special issue, we address this research gap, which sparks more research at the nexus of contextualisation of entrepreneurship and sustainability. This research has, since the 1990s, developed in three waves; the explicit linkage to SDGs and the investigation of impacts of entrepreneurship and EEs in achieving societal and environmental goals might be considered as the "fourth wave." First, relevant research streams and concepts for investigating SEE are introduced. Next, the rationale for regarding this special issue and its articles as constituting a fourth wave in entrepreneurial research ("sustainability") is outlined. This is followed by an overview of the papers included in the special issue, concluding with a brief discussion of future research needs (Volkmann et al., 2021).

Perspective on the formation of sustainable entrepreneurial ecosystems was provided by DiVito and Ingen-Housz (2021), who conducted a single case study of a sustainability innovation initiative in the denim industry in Amsterdam. Their findings highlight four key enablers of sustainable ecosystem development: individual sustainability orientation, resource recognition and mobilisation, innovative collaboration, and the presence of markets for sustainable products. While their research is grounded in a specific industry context, the mechanisms they identify resonate with broader ecosystem-level processes such as stakeholder alignment, knowledge exchange, and value co-creation. These insights support the argument that sustainable EE by the capacity of actors to collectively engage in sustainability-oriented innovation. In this research we pay attention on shaping EE by institutional and spatial structures in local context.

Considering the issues mentioned above, we conceptualise the local EE (**LEE)** as a driver of sustainability, operating at the intersection of two complementary dimensions: **local sustainable development** and **corporate sustainability through Corporate Social Responsibility (CSR)**. LEEs play a critical role in fostering socio-economic and environmental balance within communities. By promoting green economies and supporting local resource regeneration initiatives, these ecosystems contribute to sustainable local development. For instance, research indicates that the spatial features of EE are closely linked to socio-economic development, as they facilitate interactions among various stakeholders, including firms, institutions, and policymakers. Moreover, the strategic involvement of local communities in EE has been identified as a significant factor in sustainable development, as it encourages investment in socially responsible initiatives that benefit the broader community (Grujić, 2019). LEEs also facilitate the adoption of CSR principles and sustainable business strategies among enterprises. These ecosystems promote ethical business practices by enhancing access to eco-innovations and fostering collaboration among SMEs in environmental, social, and governance (ESG) initiatives. Studies have shown that integrating sustainability into business models enables companies to future-proof their operations and mitigate potential risks associated with environmental and social challenges. Furthermore, entrepreneurship education within these ecosystems can raise awareness about social and ecological responsibilities, strengthening the commitment to CSR among emerging entrepreneurs (Pizzi et al., 2022).

It is worth highlighting that recent advancements in the study of EEs have increasingly focused on integrating sustainability principles (Hart, 2024; Tonelli & Cristoni, 2018), leading to the emergence of SEEs. SEEs are defined as networks of interconnected stakeholders - including entrepreneurs, institutions, and support organisations - that collectively foster entrepreneurial activities aligned with SDGs (Cohen & Winn, 2007). This integration emphasises economic growth, environmental stewardship, and social well-being (Iansiti & Levien, 2004). SEEs consist of the following components:

- Cultural and social attributes - a robust SEE thrives on a culture that values sustainability and innovation (Welter, 2011). Communities with a history of successful sustainable ventures often exhibit a supportive environment for new entrepreneurs aiming to address environmental and social challenges (Budde, 2008; Camilieri, 2017). Social networks within these ecosystems facilitate the exchange of knowledge and resources, further strengthening the community's commitment to sustainability (Theodoraki et al., 2017).
- Material and institutional support -the presence of supportive institutions, such as universities and research centres, provides the necessary knowledge base and infrastructure for sustainable innovation. Government policies that encourage sustainable practices and provide incentives for green technologies play a crucial role in shaping the ecosystem (Wirtz & Volkmann, 2015; Ács et al., 2014). Access to finance, particularly from investors interested in sustainable ventures, is also essential for the growth of SEEs.
- Quadruple and quintuple helix models - building upon the traditional triple helix model of innovation - which involves interactions among university, industry, and government - the quadruple helix model incorporates civil society and media, emphasising the role of public engagement in innovation processes (Sunny & Shu, 2019). The quintuple

helix model further adds the natural environment as a key component, highlighting the importance of ecological considerations in knowledge production and innovation. These models underscore the complexity and interdependence of factors driving sustainable entrepreneurship (Pugh et al., 2021).

Despite the growing interest in SEEs, challenges remain in measuring their effectiveness and impact (Bruns et al., 2017). Standard metrics for entrepreneurial success may not fully capture the social and environmental benefits of sustainable ventures. Future research should focus on developing comprehensive evaluation frameworks that consider the triple bottom line - economic, social, and environmental outcomes. Additionally, there is a need to explore the role of cultural and regional contexts in shaping SEEs, as local values and norms significantly influence the adopting of sustainable practices.

In conclusion, the evolution of EEs towards sustainability reflects a broader shift in societal values and priorities. By fostering environments supporting sustainable innovation, SEEs contribute to economic development, well-being, and the planet's preservation. Continued research and policy support are essential to nurture these ecosystems and realise their full potential in achieving SDGs.

3. Conceptual Framework Proposition for Local-Scale Entrepreneurial Ecosystems

3.1 Rethinking Local Entrepreneurial Ecosystems in the Context of Spatial Diversity

Existing models of EEs have predominantly been developed from a macro-level perspective, often treating these systems as static and homogeneous entities. As a result, they tend to overlook the nuanced local dynamics that arise in different communities. Recent studies emphasise that many traditional EE models neglect the granular, localised factor – such as specific market conditions, community-level social networks, and institutional idiosyncrasies - that significantly shape entrepreneurial activity at the city or neighbourhood scale (Stam, 2018; Reidolf et al., 2019). This oversight limits the explanatory power of such models in understanding the micro-foundations of entrepreneurial behaviour and innovation, thus calling for an approach that captures local specificity.

LEEs are inherently territorially embedded, meaning they are profoundly influenced by their immediate environment's socio-economic and institutional characteristics. The availability of local resources, the quality of municipal governance, and the prevailing cultural attitudes toward entrepreneurship all play a decisive role in shaping these ecosystems (Chowdhury et al., 2019). Scholars have noted that LEEs are not merely scaled-down versions of regional ecosystems; instead, they represent unique configurations where localised interactions and context-specific institutional frameworks determine the success and sustainability of entrepreneurial ventures (Andonova et al., 2019). This localised perspective is critical, as it allows for the identification of specific levers - such as community support mechanisms and targeted local policies - that can enhance the resilience and adaptability of EEs. Additionally, the success and sustainability of LEEs are increasingly dependent on the effective utilisation and dissemination of knowledge. Unlike traditional resource-driven economic models, knowledge-intensive activities foster innovation, drive economic diversification, and enhance the adaptability

of businesses in a rapidly changing global landscape (Mason & Brown, 2014). Knowledge, understood as codified expertise (e.g., scientific research, patents, and technical know-how) and tacit understanding (e.g., entrepreneurial experience and market insights), plays a pivotal role in shaping the dynamics of EEs.

The importance of knowledge within LEEs extends beyond individual firms – it is embedded in networks of universities, research institutions, industry associations, and business incubators that collectively create an environment conducive to innovation (Malecki, 2018). The degree to which an ecosystem can harness and apply knowledge directly influences its ability to generate high-growth ventures, attract investment, and maintain a competitive advantage in the global economy. Knowledge-intensive activities serve as the primary driver for innovation, competitive advantage, and sustainable economic growth in LEEs. The creation, dissemination, and application of knowledge enable entrepreneurs to transform innovative ideas into viable commercial ventures, reducing information asymmetries and increasing the efficiency of market interactions (Mason & Brown, 2014; Malecki, 2018). Academic institutions, research centres, and technology incubators play a pivotal role in this process by facilitating technology transfer and fostering continuous learning environments, accelerating the commercialisation of new technologies and scientific breakthroughs (Etzkowitz & Leydesdorff, 1995).

Moreover, knowledge spillovers within LEEs contribute to developing competitive clusters, where specialised expertise and advanced skills are concentrated in specific geographical areas. According to Porter (1998), such clusters enhance innovation by enabling more efficient resource allocation and promoting shared learning experiences among firms. Recent studies emphasise that localised knowledge exchange not only nurtures an entrepreneurial culture that is highly adaptive to market fluctuations but also reinforces the resilience and dynamism of these ecosystems (Stam & van de Ven, 2019). The advent of advanced digital technologies and communication platforms has significantly amplified these knowledge-sharing processes, ensuring that critical information is disseminated rapidly and effectively across the ecosystem.

Furthermore, LEEs that invest in knowledge-intensive activities benefit from stronger collaboration among various stakeholders, including public institutions, private enterprises, and non-governmental organisations. This interaction strengthens local and regional innovation systems, fostering a culture of continuous experimentation and entrepreneurship. Empirical evidence suggests that ecosystems with robust knowledge infrastructures - such as science parks, R&D hubs, and university spin-offs—demonstrate higher rates of new venture creation and innovation-led economic expansion (Fuentelsaz et al., 2018).

In essence, the synergistic relationship between knowledge creation and its application is indispensable for the health and vitality of LEE. By embedding robust knowledge-intensive practices, LEEs are better positioned to drive economic development, attract high-calibre talent and investment, and foster innovation that underpins sustainable regional growth. This central role of knowledge catalyses the transformation of local economies. It positions them as key players in the broader competitive landscape, highlighting the imperative for policymakers and stakeholders to prioritise investments in knowledge infrastructure and collaborative networks (Fuentelsaz et al., 2018).

The role of spatial diversity in shaping LEE is another essential dimension that has garnered increasing scholarly attention. Spatial diversity refers to the varied geographical, cultural, and political contexts influencing entrepreneurial activities unfold. For instance, regions with diverse geographic features, rich cultural traditions, and distinct political climates often exhibit different patterns of resource allocation, talent mobility, and innovation diffusion compared to more homogeneous areas (Schäfer et al., 2024). In local contexts, such diversity can manifest as differences in infrastructure quality, accessibility of local markets, and even community attitudes toward risk-taking. These spatial characteristics generate unique feedback loops that either stimulate or hinder entrepreneurial activity, underscoring the need to consider geography, culture, and policy frameworks as interrelated factors in developing LEEs (Stam & van de Ven, 2019).

As mentioned, EEs typically operate at the regional level due to the need for extensive business networks, investment opportunities, and institutional support. However, the lower scale EE are also identified and discussed (Muñoz et al., 2020; Alam et al., 2019; Bichler et al., 2021). They usually have a strong industrial or service specialisation, and a local business environment can function as a micro-ecosystem, fostering collaboration between firms, vocational training institutions, and local governance. This model is particularly relevant in sectors with geographically concentrated production, such as craft industries, agri-food production, or specialised manufacturing. It is worth underlying that EE exists when there is access to essential resources and a network of collaboration, enabling enterprises to grow, innovate, and sustain competitive advantage. Without these fundamental elements (presented in detail in the previous section) EE does not exist.

In comparing regional and LEEs, it becomes evident that each operates under distinct dynamics and fulfils different roles in economic development. Regional ecosystems benefit from extensive networks, abundant financial resources, and standardised institutional arrangements that support large-scale innovation. In contrast, LEEs are characterised by close-knit community interactions and context-specific dynamics that promote rapid adaptation to local market changes (Muñoz et al., 2020). While regional models often emphasise broad-based growth and long-term stability, local ecosystems tend to exhibit agility and a heightened sensitivity to immediate socio-economic conditions.

This distinction has important implications for policy-making: tailored interventions are necessary to address the unique challenges and opportunities at the local level, thereby ensuring that entrepreneurial systems can effectively contribute to sustainable economic development (Hoffecker et al., 2023).

3.2 Building Blocks and Collaborative Dynamics in Local Entrepreneurial Ecosystems

LEEs are complex networks that rely on many key components to function effectively. These components include entrepreneurs, suppliers, customers, and various institutional actors such as financial, educational, and regulatory bodies. Entrepreneurs act as the primary innovators and risk-takers, while suppliers provide essential inputs and services to sustain business operations. Customers, in turn, drive demand and validate market innovations. Financial institutions offer critical capital necessary for scaling

ventures, whereas educational institutions contribute by developing human capital and fostering a culture of continuous learning and innovation. Regulatory bodies set the legal and policy frameworks that facilitate or sometimes constrain, entrepreneurial activity. The interplay among these actors is characterised by both formal partnerships and informal networks, where cooperation, knowledge-sharing, and mutual support are vital to overcoming barriers such as limited access to finance, market entry challenges, and bureaucratic inefficiencies (Mason & Brown, 2014; Stam & van de Ven, 2019).

Local networks and institutional interdependencies play a pivotal role in co-creating LEEs. Local enterprises, civic organisations, and municipal governments actively collaborate to build a supportive environment that nurtures entrepreneurship. For example, many cities have established innovation districts where universities, startups, and local government initiatives converge to create hubs of entrepreneurial activity. Local governments often implement policies in these districts that incentivise innovation - such as tax breaks and streamlined permitting processes - while universities contribute through research partnerships and technology transfer programs. A notable example is the Reading region near London, where collaborative efforts among local authorities, academic institutions, and private enterprises have resulted in increased startup activity and a more vibrant local economy (Godley et al., 2021). These local networks facilitate the exchange of resources and information while cultivating an ecosystem-wide sense of trust and commitment essential for long-term sustainability.

The dynamic interactions within LEEs are driven by key factors that shape the overall performance and resilience of the ecosystem. Among these drivers are innovation spillovers, the quality of institutional governance, and cultural attitudes toward entrepreneurship. Innovation spillovers occur when new ideas and technologies diffuse rapidly among local firms, often accelerated by proximity and active collaboration within the ecosystem. Regions with high concentrations of research institutions tend to see faster technological innovation and entrepreneurial activity rates, as evidenced by several European case studies (Muñoz et al., 2020). Researchers emphasize the importance of systemic support mechanisms and appropriate institutional frameworks that support the development of sustainable enterprises (Volkmann, 2019). Moreover, effective institutional governance - characterised by transparent regulatory practices and proactive policy support - can significantly enhance operational efficiency within LEEs. Local governments that engage in regular dialogue with business communities and implement flexible regulatory frameworks tend to create environments more conducive to entrepreneurial success. Additionally, the cultural dimension, encompassing local attitudes toward risk and failure, significantly influences the ecosystem's adaptability and growth. Regions where entrepreneurship is culturally valorised exhibit a greater propensity for venture creation and sustained innovation. These drivers and their interactions collectively illustrate the complex, adaptive nature of LEEs and underscore the importance of tailored policies and support structures to meet local needs (Hoffecker et al., 2023). This framework underscores how a well-functioning LEE serves as a catalyst for sustainable transformation, linking spatial and institutional mechanisms to sustainability-driven economic activity.

A sustainable LEE is a complex and dynamic network of interdependent components that foster innovation, business development, and long-term socio-economic

resilience (Figure 2). This ecosystem is shaped by multiple stakeholders, including local government institutions, research and development (R&D) sectors, entrepreneurs, supportive institutions, and financial entities. These actors engage in a series of interactions that determine the system's overall functionality and its capacity to generate sustainable outcomes. The foundation of this ecosystem lies in the mechanisms employed by local governments, which influence entrepreneurship through regulatory frameworks, strategic investments, and targeted policy instruments. By shaping favourable local conditions - including infrastructure, taxation incentives, and business-friendly legal environments - local authorities create the groundwork for business formation and expansion. Their engagement with research and development institutions further strengthens this foundation, as academic and research entities generate knowledge, technological advancements, and skilled labour to foster regional innovation. The collaboration between these sectors results in knowledge spillovers that benefit local entrepreneurs and industrial clusters, ensuring that scientific discoveries translate into commercially viable innovations.

It is worth mentioning that previous studies, such as Pankov et al. (2021), have explored the sustainability dynamics of entrepreneurial activity within specific sectors, notably the sharing economy. Based on 37 in-depth interviews with founders and senior managers, their analysis distinguishes between enabling and constraining contextual factors that influence organizational sustainability. While their sectoral focus offers valuable insights into firm-level adaptation and market challenges, it does not account for the broader territorial and institutional diversity shaping entrepreneurial environments (Pankov, 2021). In contrast, this study adopts a spatial perspective, emphasising the role of geographic, institutional, and socio-economic diversity in shaping the structure and performance of LEEs. This approach enables a deeper understanding of how place-based conditions influence entrepreneurial dynamics, innovation diffusion, and the capacity of ecosystems to contribute to sustainable development outcomes. This spatially grounded perspective on LEEs aligns with emerging scholarship that underscores the value of sustainability frameworks. In particular, we align with the approach proposed by Theodoraki (2022), who argues that, given the nature and components of EEs which are oriented toward fostering new business creation and systematic economic development, applying the ESG framework to EEs can enable and support sustainable activities within the ecosystem (Theodoraki et al., 2022).

The following framework (Figure 2) conceptualises the dynamics of LEEs by integrating spatial and institutional mechanisms and examining their role in supporting sustainable development.

Entrepreneurs, in turn, serve as the driving force of the ecosystem, utilising these available resources to create and scale their businesses. However, their success highly depends on local supportive institutions, such as incubators, accelerators, business associations, and advisory organisations. These entities facilitate access to essential tools such as mentorship, networking opportunities, and tailored financial instruments, bridging the gap between nascent businesses and established markets. The availability of financial capital - whether through venture funding, microfinance, bank loans, or public grants - is crucial in determining the scale and longevity of entrepreneurial ventures. Financial institutions, therefore, act as both facilitators - providing crucial funding, resources, and advisory support - and gatekeepers - imposing lending criteria, compliance standards, and

risk controls - of business growth, exerting significant influence over which enterprises can thrive within the ecosystem.

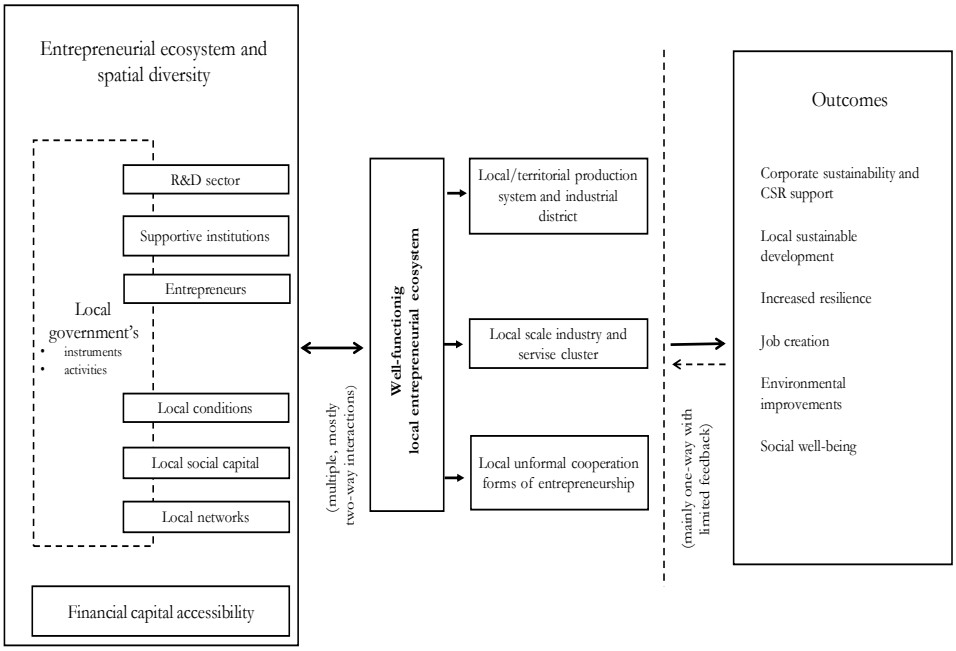

Figure 2: *Sustainable Local Entrepreneurial Ecosystem Framework*
Source: Own elaboration based on Acs et al., 2017; Stam, 2018; Malecki, 2018; Fuentelsaz et al., 2018; Audretsch et al., 2018; Leendertse et al., 2021; Muñoz et al., 2020, Hoffecker et al., 2023.

The interactions between these actors do not occur in isolation but within a broader framework of social and economic interdependencies. Social capital, which encompasses trust, shared norms, and reciprocal relationships, binds entrepreneurs, institutions, and investors into a cohesive network. High levels of social capital facilitate informal cooperation, knowledge-sharing, and collective problem-solving, allowing the ecosystem to self-regulate and adapt to external shocks. Similarly, local networks function as conduits for market intelligence, strategic partnerships, and resource-sharing, ensuring that enterprises - particularly small and medium-sized ones - benefit from economies of scale and industry-specific expertise.

When these foundational components interact effectively, the LEE matures into a well-functioning system, characterised by three primary structural elements: territorial production systems, industry clusters, and informal entrepreneurial cooperation. Territorial production systems refer to localised economic structures where businesses operate in synergy with the region's inherent competitive advantages, such as access to raw materials, skilled labour, or specialised knowledge hubs. Industry clusters emerge when enterprises within the same sector co-locate, benefiting from shared suppliers, concentrated talent pools, and improved logistics. These clusters strengthen regional competitiveness and drive innovation through competition and collaboration. Informal

entrepreneurial cooperation further reinforces the system by enabling businesses to exchange expertise, resources, and workforce flexibility without requiring rigid institutional agreements.

These studies offer evidence confirming that the outcomes identified in our framework—such as corporate sustainability and CSR support, increased resilience, job creation, environmental improvements, and social well-being—are not only conceptually relevant but also observable in real-world entrepreneurial ecosystems. Moreover, research highlights the importance of performance indicators such as the number of sustainable enterprises, the degree of environmental, social, and economic value creation, and alignment with the SDGs as key metrics of ecosystem effectiveness (e.g., Volkmann et al., 2021; Pizzi et al., 2022).

The effectiveness of this system is ultimately reflected in the outcomes it produces. A well-functioning EE directly contributes to corporate sustainability by embedding environmental, social, and governance (ESG) principles into business operations. Firms operating within such an ecosystem are more likely to adopt corporate social responsibility (CSR) initiatives, not only as compliance measures but as strategic advantages that improve brand reputation and stakeholder relations. The cumulative effect of these developments fosters local sustainable development, characterised by inclusive economic growth, environmentally responsible industrial practices, and strengthened social cohesion.

Beyond corporate sustainability, the ecosystem generates additional tangible benefits, such as job creation and increased resilience against economic downturns. The expansion of local businesses leads to higher employment rates, reducing economic disparities and enhancing the overall quality of life. Moreover, the system's adaptability ensures that it can withstand disruptions - be they financial crises, supply chain breakdowns, or technological shifts - by leveraging its internal diversity and resource fluidity. Environmental improvements also emerge as a key outcome as businesses adopt cleaner production methods and circular economy principles to maintain regulatory compliance and societal approval.

These outcomes, though mainly resulting from the efficiency of the EE, also exert limited but significant feedback effects on its foundational components. For instance, the realisation of SDG influences local government policies, prompting further investment in green technologies and social entrepreneurship. Similarly, as businesses demonstrate the profitability of sustainable practices, financial institutions adjust their investment strategies to prioritise impact-driven ventures. This cyclical nature of interactions highlights the self-reinforcing quality of a SEE, where successes fuel further advancements in policy, finance, and innovation. Thus, the sustainable LEE framework illustrates a highly interdependent and evolving system where governmental actions, institutional support, entrepreneurial activities, financial accessibility, and social capital collectively determine long-term sustainability. The relationships within this system are not merely linear but constitute a network of mutual influence, where each component both shapes and is shaped by the others. The presence of robust feedback loops ensures that the ecosystem remains dynamic and capable of adapting to external pressures while continuously fostering regional economic resilience, innovation, and environmental responsibility.

Taking into account the above research results and proposals, this study presents a novel approach to LEEs by dissecting their key components and examining the dynamic, reciprocal interactions among them. Unlike traditional models, which often view EE through a static, macro-level lens and neglect the nuances of local specificity, this research emphasises spatial diversity and the complex interplay of local government, supportive institutions, financial access, social capital, and entrepreneurial actors. By incorporating robust feedback loops and real-world examples, the framework not only captures the multifaceted nature of LEEs but also demonstrates how these ecosystems drive sustainable outcomes such as job creation, corporate sustainability, environmental improvements, and overall regional resilience. This approach advances the current research by providing a more context-sensitive, dynamic model that better informs policy and strategic interventions aimed at fostering sustainable development.

4. Conclusion

This study set out to develop a comprehensive theoretical approach to understanding the spatial dynamics of EEs and their pivotal role in sustainable development. The primary aim was to fill a significant research gap: the lack of a context-sensitive model that accounts for local specificities and spatial diversity within EEs. Traditional EE models have predominantly offered a macro-level, static perspective that often neglects the unique interplay of local socio-economic, cultural, and institutional factors. In contrast, this research advances a novel, dynamic framework that integrates these local nuances and emphasises bidirectional interactions among key ecosystem components. Balancing the analytical richness of EE frameworks with the need for actionable guidance remains a fundamental challenge for regional and local policymakers. To preserve the complexity of dynamic, spatially diverse ecosystems while ensuring practical relevance, several decision-support tools can be employed. Spatial multi-criteria decision analysis (MCDA) and GIS-based assessment frameworks allow for the weighting of heterogeneous local indicators, such as socio-economic, institutional, and cultural variables, thus operationalising the framework's emphasis on spatial diversity (Kopczewska, 2023). Similarly, system dynamics and agent-based modeling can simulate feedback loops and evolving interactions among EE components, providing insight into the systemic consequences of specific interventions (Roundy et al., 2018). Complementary qualitative approaches, such as participatory planning and co-design processes, are essential to engage local stakeholders and ensure that strategies reflect lived experience and contextual specificity (Hassink & Klaerding, 2012). Regional foresight methods and policy labs-structured experimental spaces for prototyping solutions can further enhance adaptive governance, supporting iterative policy development aligned with LEE dynamics (Carayannis et al., 2018; Ansell & Bartenberger, 2016). These instruments correspond directly to the theoretical dimensions of the proposed EE framework: spatial analysis tools align with territorial diversity, simulation models reflect dynamic interdependencies, and collaborative governance methods embody the stakeholder-driven feedback loops. In this way, the framework retains its analytical integrity while offering a portfolio of applied tools that policymakers can use to support sustainable, locally grounded entrepreneurial development.

The proposed research approach is distinctive in its focus on the territorial embeddedness of LEEs. By delineating the roles of entrepreneurs, suppliers, customers, and institutional actors—financial, educational, and regulatory—the study provides a more granular analysis of how these elements interact within diverse local contexts. This framework not only highlights the importance of spatial diversity and dynamic interrelationships but also delineates specific feedback loops that underpin outcomes such as corporate sustainability, job creation, and environmental improvements.

The key scientific implications of this research are multifold. Firstly, it offers a more robust theoretical basis for future empirical studies by identifying critical drivers and interactions that shape LEE. Secondly, it informs policy development by elucidating how targeted local interventions can stimulate sustainable economic growth. Lastly, the framework provides practitioners with practical insights into optimising the support structures within their communities to enhance the resilience and adaptability of local entrepreneurial activities.

Notwithstanding these contributions, the study is not without limitations. A significant constraint is the lack of empirical verification; the framework remains theoretical and calls for extensive quantitative and qualitative testing. Moreover, the geographical specificity of the research suggests that the proposed model may not be universally applicable across all economic contexts. Different types of economies may require varying emphases on particular components, and testing in diverse environments is essential to ascertain the model's generalisability and practical efficacy.

In summary, this research advances our understanding of EEs by integrating spatial diversity and dynamic interactions into a context-sensitive model. While promising in its implications for theory and practice, further empirical validation is necessary to refine the framework and fully realise its potential in promoting sustainable local economic development.

References

Ács, Z.J., Autio, E., & Szerb, L. (2014). National systems of entrepreneurship: measurement issues and policy implications. *Research Policy*, *43*(3), 476-494. https://doi.org/10.1016/j.respol.2013.08.016.

Acs, Z.J., Stam, E., Audretsch, D. B., & O'Connor, A. (2017). The lineages of the entrepreneurial ecosystem approach. *Small Business Economics*, *49*(1). https://doi.org/10.1007/s11187-017-9864-8

Adner, R. (2017). Ecosystem as Structure: An Actionable Construct for Strategy. *Journal of Management*, *43*(1), 39-58. https://doi: 10.1177/0149206316678451

Alam, J., Ibn-Boamah, M., & Johnson, K. (2019). Exploring the entrepreneurial ecosystem: Some local Canadian perspectives. *Strategic Change*, *28*(4), 249–254. https://doi.org/10.1002/jsc.2266

Alvedalen, J., & Boschma, R. (2017). A critical review of entrepreneurial ecosystems research: towards a future research agenda. *European Planning Studies*, *25*(6), 887–903. https://doi.org/10.1080/09654313.2017.1299694

Andonova, V., Nikolova, M. S., & Dimitrov, D. (2019). *Entrepreneurial Ecosystem in Unexpected Places. Examining the Success factors of Regional Entrepreneurship*. Palgrave Macmillan, Cham.

Ansell, C., & Bartenberger, M. (2016). Varieties of experimentalism. *Ecological Economics*, *130*(C), 64-73. https://doi.org/10.1016/j.ecolecon.2016.05.016

Asmit, B., Simatupang, T. M., Rudito, B., & Novani, S. (2024). Uncovering the building blocks of rural entrepreneurship: A comprehensive framework for mapping the components of rural entrepreneurial ecosystems. *Heliyon*, *10*(1), e24139. https://doi.org/10.1016/j.heliyon.2024.e24139

Audretsch, D., Mason, C., Miles, M. P., & O'Connor, A. (2018). The dynamics of entrepreneurial ecosystems. *Entrepreneurship and Regional Development*, *30*(3–4), 471–474.

https://doi.org/10.1080/08985626.2018.1436035
Audretsch, D. B., & Belitski, M. (2021). Towards an entrepreneurial ecosystem typology for regional economic development: the role of creative class and entrepreneurship. *Regional Studies*, *55*(4), 735–756. https://doi.org/10.1080/00343404.2020.1854711
Bagnasco, A. (1977). *Tre Italie. La problematica territoriale dello sviluppo italiano*. Il Mulino.
Becattini, G. (1992). *Le district marshallien: une notion socio-économique* (G. Benco & A. Lipietz (Eds.)). PUF.
Bichler, B. F., Kallmuenzer, A., Peters, M., Petry, T., & Clauss, T. (2021). Regional entrepreneurial ecosystems: how family firm embeddedness triggers ecosystem development. *Review of Managerial Science*, *0123456789*. https://doi.org/10.1007/s11846-020-00434-9
Biru, A., Gilbert, D., & Arenius, P. (2020). Unhelpful help: The state of support programmes and the dynamics of entrepreneurship ecosystems in Ethiopia. *Entrepreneurship and Regional Development*, *00*(00), 1–23. https://doi.org/10.1080/08985626.2020.1734267
Brown, R., & Mason, C. (2017). Looking inside the spiky bits: A critical review and conceptualisation of entrepreneurial ecosystems. *Small Business Economics*, 49(1), 11-30. https://doi.org/10.1007/s11187-017-9865-7
Bjørnskov, C., & Foss, N. J. (2016). Institutions, Entrepreneurship, and Economic Growth: What Do We Know and What Do We Still Need to Know? *Academy of Management Perspectives*, *30*(3), 292-315. https://doi.org/10.5465/amp.2015.0135
Bruns, K., Bosma, N., Sanders, M., & Schramm, M. (2017). Searching for the existence of entrepreneurial ecosystems: a regional cross-section growth regression approach. *Small Business Economics*, *49*(1), 31–54.
Budde, J. S. (2008). *Compelling Returns A PRACTICAL GUIDE TO SOCIALLY*. New Yersey: Wiley.
Camilieri, M. (2017). Socially Responsible and Sustainable Investing. In *Corporate Sustainability, Social Responsability and Environmental Management* (pp. 61-77). University of Malta.
Carayannis, E. G., Grigoroudis, E., Campbell, D. F. J., Meissner, D., & Stamati, D. (2018). The ecosystem as helix: an exploratory theory-building study of regional co-opetitive entrepreneurial ecosystems as Quadruple/Quintuple Helix Innovation Models. *Technological Forecasting and Social Change*, 136, 215–226. https://doi.org/10.1111/radm.12300
Chowdhury, F., Audretsch, D. B., & Belitski, M. (2019). Institutions and Entrepreneurship Quality. *Entrepreneurship: Theory and Practice*, *43*(1), 51–81. https://doi.org/10.1177/1042258718780431
Cohen, B. (2006). Sustainable valley entrepreneurial ecosystems. *Business Strategy and the Environment*, *15*(1), 1–14. https://doi.org/10.1002/bse.428
Cohen, B., & Winn, M. (2007). Market imperfections, opportunity and sustainable entrepreneurship. *Journal of Business Venturing*, *22*(1), 29-49.
DiVito, L., Ingen-Housz, Z. (2021) From individual sustainability orientations to collective sustainability innovation and sustainable entrepreneurial ecosystems. *Small Business Economics,* 56, 1057–1072. https://doi.org/10.1007/s11187-019-00254-6
Dodd, S. D., & Anderson, A. R. (2007). Mumpsimus and the Mything of the Individualistic Entrepreneur. *International Small Business Journal*, *25*, 341-360.
Erina, I., Shatrevich, V., & Gaile-Sarkane, E. (2017). Impact of stakeholder groups on development of a regional entrepreneurial ecosystem,. *European Planning Studies, 25*(5), 755–771. https://doi.org/DOI: 10.1080/09654313.2017.1282077.
Etzkowitz, H., & Leydesdorff, L. (1995). The Triple Helix---University-Industry-Government Relations: A Laboratory for Knowledge-Based Economic Development. *EASST Review*, *14*, 14–19.
Feld, B. (2012). *Startup communities: Building an entrepreneurial ecosystem in your city*. John Wiley & Sons.
Freeman, C. (1995). The 'National System of Innovation' in historical perspective. *Cambridge Journal of Economics*, *19*(1), 5–24.
Fuentelsaz, L., Maicas, J. P., & Mata, P. (2018). Institutional dynamism in entrepreneurial ecosystem. In A. O'Connor, E. Stam, F. Sussan, & D. B. Audretsch (Eds.), *Entrepreneurial Ecosystem. International Studies in Entrepreneurship* (vol. 38, pp. 45–65). Springer.
García-Rodríguez, F. J., Gil-Soto, E., Ruiz-Rosa, I., & Gutiérrez-Taño, D. (2017). Entrepreneurial potential in less innovative regions: the impact of social and cultural environment. *European Journal of Management and Business Economics*, *26*(2), 163–179. https://doi.org/10.1108/EJMBE-07-2017-010
Godley, A., Morawetz, N., & Soga, L. (2021). The complementarity perspective to the entrepreneurial ecosystem taxonomy. *Small Business Economics*, 723–738. https://doi.org/10.1007/s11187-019-

00197-y
Grigore, A. M., & Dragan, I. M. (2020). Towards sustainable entrepreneurial ecosystems in a transitional economy: An analysis of two Romanian city-regions through the lens of entrepreneurs. *Sustainability (Switzerland)*, *12*(15). https://doi.org/10.3390/su12156061
Grujić, M. (2019). The Strategic Role of Local Community and Significance in Sustainable Entrepreneurial Ecosystem Development. *Economic Themes*, *57*(3), 365–379. https://doi.org/10.2478/ethemes-2019-0021
Hart, S. L. (2024). *Beyond Shareholder Primacy: Remaking Capitalism for a Sustainable Future*. Standford Business School.
Haskel, J. E., Pereira, S. C., & Slaughter, M. J. (2007). Does inward foreign direct investment boost the productivity of domestic firms? *The Review of Economics and Statistics*, *89*(3), 482–496.
Hassink, R., & Klaerding, C. (2012). The end of the learning region as we knew it: Towards learning in space. *Regional Studies*, *46*(8), 1055–1066. http://dx.doi.org/10.1080/00343404.2012.705823
Hill, T. L., & Mudambi, R. (2010). Far from Silicon Valley: how emerging economies are re-shaping our understanding of global entrepreneurship. *Journal of International Management*, *16*(4), 321–327.
Hirabayashi, S. (2021). Technical specifications of urban forests for air purification: A case study in Tokyo, Japan. *Trees, Forests and People*, *4*. https://doi.org/10.1016/j.tfp.2021.100078
Hoffecker, E., Ramos, F., Adomdza, G., & Frey, D. (2023). Strengthening Local Innovation and Entrepreneurial Ecosystems. *Journal of Entrepreneurship*, *32*(2_suppl), S89–S116. https://doi.org/10.1177/09713557231201179
Iansiti, M., & Levien, R. (2004). *The Keystone Advantage: What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation, and Sustainability*. Boston: Harvard Business School Press.
Isenberg, D. J. (2010). How to Start an Entrepreneurial Revolution. *Harvard Business Review*, *88*(6), 40–50.
Isenberg, D. J. (2011). The entrepreneurship ecosystem strategy as a new paradigm for economic policy: Principles for cultivating entrepreneurship. *Babson Entrepreneurship Ecosystem Project*.
Kopczewska, K. (2023). Spatial bootstrapped microeconometrics: Forecasting for out-of-sample geo-locations in big data. *Scandinavian Journal of Statistics*. *50*(3), 1391-1419. https://doi.org/10.1111/sjos.12636
Leendertse, J., Schrijvers, M., & Stam, E. (2021). Measure Twice, Cut Once: Entrepreneurial Ecosystem Metrics. *Research Policy*, *July*, 104336. https://doi.org/10.1016/j.respol.2021.104336
Lundvall, B.-Å. (1988). Innovation as an interactive process: from user-producer interaction to the national system of innovation. In G. Dosi, C. Freeman, & Nelson (Eds.), *Technical Change and Economic Theory*.
Malecki, E. J. (2018). Entrepreneurship and entrepreneurial ecosystems. *Geography Compass*, *12*(3), 1–21. https://doi.org/10.1111/gec3.12359
Mason, C., & Brown, R. (2014). *Entrepreneurial ecosystems and growth oriented entrepreneurship. Background paper prepared for the workshop organised by the OECD LEED Programme and the Dutch Ministry of Economic Affairs on*. The Hague, 7th November 2013. Final Version, January 2014.
Mempel-Śnieżyk, A., Derlukiewicz, N., Pilewicz, T., & Godlewska, M. (2022). Entrepreneurial Activities Performed by Local Governments in Poland – The Context of the Entrepreneurial Ecosystem Concept. *Lex Localis*, *20*(4), 859–888. https://doi.org/10.4335/20.4.859-888(2022)
Miszczak, K. (2022). Social Capital in Smart Development. *Biblioteka Regionalisty*, 22, 59-72. https://doi.org/10.15611/br.2022.1.06
Miszczak, K., Krivins, A., & Kaze, V. (2024). Challenges and drivers of green and sustainable spatial development: a case study of Lower Silesia and Latvia. *Entrepreneurship and Sustainability Issues*, *12*(2), 85–98. https://doi.org/10.9770/b7283449476
Muñoz, P., Kibler, E., Mandakovic, V., & Amorós, J. E. (2020). Local entrepreneurial ecosystems as configural narratives: A new way of seeing and evaluating antecedents and outcomes. *Research Policy*, *51*(9). 104065. https://doi.org/10.1016/j.respol.2020.104065
Nelson, R. R. (Ed.). (1993). *National innovation systems: a comparative analysis*. Oxford University Press on Demand.
Nicotra, M., Romano, M., Del Giudice, M., & Schillaci, C. E. (2017). The causal relation between entrepreneurial ecosystem and productive entrepreneurship: a measurement framework. *Journal of Technology Transfer*, *43*(1), 640-673. https://doi.org/10.1007/s10961-017-9628-2
Pankov, S., Velamuri, V. K., & Schneckenberg, D. (2021). Towards sustainable entrepreneurial ecosystems: Examining the effect of contextual factors on sustainable entrepreneurial activities in the sharing economy. Small Business Economics, 56(3), 1073–1095. https://doi.org/10.1007/s11187-019-00255-5

Pasha, A. (2019). Role of Entrepreneurial Universities, Research Centers and Economic Zones in Driving Entrepreneurship and Innovation in Cluster Ecosystems. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3352301

Pizzi, S., Leopizzi, R., & Caputo, A. (2022). The enablers in the relationship between entrepreneurial ecosystems and the circular economy: the case of circularity.com. *Management of Environmental Quality: An International Journal*, *33*(1), 26–43. https://doi.org/10.1108/MEQ-01-2021-0011

Porter, M. E. (1998). *Competitive Strategy: Techniques for Analysing Industries and Competitors*. New York: Free Press.

Pressman, S. (1991). Book Review: The Competitive Advantage of Nations. *Journal of Management*, *17*(1), 213–215. https://doi.org/10.1177/014920639101700113

Pugh, R. E., Soetanto, D. P., Jack, S.L., & Hamilton, E. (2021). Developing local entrepreneurial ecosystems through integrated learning initiatives: the Lancaster case. *Small Business Economics,* 56, 833-847. https://doi.org/10.1007/s11187-019-00271-5

Reidolf, M., Küttim, M., Michelson, A., Rozeik, H., & Kallaste, M. (2019). Applying the concept of entrepreneurial ecosystems in Estonia. *Zeitschrift Für Wirtschaftsgeographie*, *63*(2–4), 134–145.

Rong, K., Hu, G., Lin, Y., Shi, Y., & Guo, L. (2015). Understanding business ecosystem using a 6C framework in Internet-of-Things-based sectors. *International Journal of Production Economics*, *159*(2015), 41–55. https://doi.org/10.1016/j.ijpe.2014.09.003

Roundy, P. T., Bradshaw, M., & Brockman, B. K. (2018). The emergence of entrepreneurial ecosystems: A complex adaptive systems approach. *Journal of Business Research,* 86, 1-10. https://doi.org/10.1016/j.jbusres.2018.01.032

Schäfer, S., Fischer, B., Rücker Schaeffer, P., & Balestrin, A. (2024). Beyond local boundaries: Unraveling the spatiality of entrepreneurial ecosystems. *Journal of Business Venturing Insights*, *22*(May), e00478. https://doi.org/10.1016/j.jbvi.2024.e00478

Spigel, B. (2017). The Relational Organization of Entrepreneurial Ecosystems. *Entrepreneurship Theory and Practice*, *41*(1), 49-72. https://doi.org/10.1111/etap.12167

Spigel, B., & Harrison, R. (2018). Toward a process theory of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, *12*(1), 151–168. https://doi.org/10.1002/sej.1268

Spigel, Ben, Kitagawa, F., & Mason, C. (2020). A manifesto for researching entrepreneurial ecosystems. *Local Economy*, *35*(5), 482–495. https://doi.org/10.1177/0269094220959052

Stam, E. (2015). Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique. *European Planning Studies*, *23*(9), 1759–1769. https://doi.org/https://doi.org/10.1080/09654313.2015.1061484

Stam, E. (2018). Measuring Entrepreneurial Ecosystems. In A. O'Connor, E. Stam, F. Sussa, & D. Audretsch (Eds.), *Entrepreneurial Ecosystems. International Studies in Entrepreneurship* (pp. 173–197). Springer. https://doi.org/https://doi.org/10.1007/978-3-319-63531-6_9

Stam, E., & Spigel, B. (2016). Entrepreneurial ecosystems. In *U. S. E. Discussion paper Series Nr: 16-13.*

Stam, E., & van de Ven, A. (2019). Entrepreneurial ecosystem elements. *Small Business Economics*, *June*, 809–832. https://doi.org/10.1007/s11187-019-00270-6

Sunny, S. A., & Shu, C. (2019). Investments, incentives, and innovation: geographical clustering dynamics as drivers of sustainable entrepreneurship. *Small Business Economics*, *52*(4), 905–927. https://doi.org/10.1007/s11187-017-9941-z

Theodoraki, C., Messeghem, K., & Rice, M. P. (2017). A social capital approach to the development of sustainable entrepreneurial ecosystems: an explorative study. *Small Business Economics*, 1–18. https://doi.org/10.1007/s11187-017-9924-0

Theodoraki, C., Dana, L. P., & Caputo, A. (2022). Building sustainable entrepreneurial ecosystems: A holistic approach. *Journal of Business Research,* 140(October 2021), 346–360. https://doi.org/10.1016/j.jbusres.2021.11.005

Tonelli, M., & Cristoni, N. (2018). *Strategic Management and the Circular Economy* (1st ed.). Routledge. https://doi.org/10.4324/9781315102641

Welter, F. (2011). Contextualising entrepreneurship-conceptual challenges and ways forward. *Entrepreneurship Theory and Practice*, *35*(1), 165–184. https://doi.org/10.1111/j.1540-6520.2010.00427.x.

Wirtz, M., & Volkmann, C. K. (2015). Social entrepreneurial ecosystems as a means for sustainable urban development. In J. Condy & A.M. Cooper (Eds.), *Dialogues of sustainable urbanisation*. https://isscbookofblogs.pressbooks.com/chapter/social-entrepreneurial-ecosystems-as-a-meansfor-creatingsustainable-urban-development/

Volkmann, C., Fichter, K., Klofsten, M., & Audretsch, D. B. (2021). Sustainable entrepreneurial ecosystems:

an emerging field of research. *Small Business Economics*, *56*(3), 1047–1055. https://doi.org/10.1007/s11187-019-00253-7

Zahra, S. A. (2007) Contextualising theory building in entrepreneurship research. Journal of Business Venturing, 22: 443-452.

Zahra, S. A., Wright, M., & Abdelgawad, S. G. (2014) Contextualisation and the advancement of entrepreneurship research. International Small Business Journal 32: 479-500.