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The future of entrepreneurial ecosystems research: Toward a policy-oriented research agenda

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ABSTRACT

Entrepreneurial ecosystem (EE) research has contributed to reshaping entrepreneurial policy and practice. Despite significant translational efforts, the gap between theory and actionable policy seems to be widening. This paper adopts a collaborative approach and critically reflects on the alignment of EE research with practical policy needs, structured around an interactive round-robin brainstorming with 58 EE scholars (i.e., 12 authors and 46 additional experts). We examine policy adoption in the context of EE, discussing the challenges and evolution of research methods, data, and theory. We propose a future policy-oriented research agenda, validated and prioritized by European policymakers, to ensure that EE research effectively informs entrepreneurship policy.

Okay, so you've done some research? That don't impress me much

One of the most discouraging reactions when we joyfully share our research insights with a policymaker is hearing some version of: *"That don't impress me much"* (yes, Shania Twain style). Despite our best efforts, the response often reveals a gap between what we think is valuable and what actually resonates in practice.

Entrepreneurial ecosystem (EE) research started with the promise of generating practical impact, but somewhere along the way, it got stuck. While scholars refined definitions and debated frameworks, policymakers moved ahead—designing programs, allocating resources, and making decisions without the clarity research was supposed to provide. This growing disconnect is what this paper addresses. Rather than offering abstract ideas, we brought researchers and policymakers together to co-create a research agenda grounded in policy-relevant issues. The result is both a roadmap for future EE research and a toolkit for producing research questions

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with policy impact. We encourage you to explore three functions of our paper.

1. Use this paper as a *diagnostic tool*—bring it to a policymaker or entrepreneurship support organization in your region and use the framework to start a conversation within the next month. Let the framework be your excuse to get a meeting and start listening—ask what challenges they face, what matters to them, and how your research might contribute, instead of pushing your own ideas.
2. Use it as a *dialogue tool*—organize an exchange that brings together researchers from different streams and a few unexpected guests, like policymakers or ecosystem builders. Take inspiration from our round-robin process to mix expertise, challenge assumptions, and co-develop ideas that require more research attention.
3. Use it as a *design tool*—now that you can see the widening gap between research and policy, take 15 min during your next break to reflect on your current project(s): how might your new understanding of how policymakers leverage research insights reshape your research design or questions to contribute to one or more of the policy process steps and better address policy-relevant issues?

Doing so will not just dress your research to impress, it will dramatically raise the potential impact of your research, your proposed solutions, and how you contribute to entrepreneurial practice.

1. Introduction

Over the past decade, the entrepreneurial ecosystem (EE) research field has emerged as a transdisciplinary promise to address entrepreneurship practice and policy challenges – but has it fulfilled its potential? Originating from practical questions (Isenberg, 2010; World Economic, 2013; Mason and Brown, 2014; Feld, 2020), EE research has started to permeate policymaking, produced practical insights to enhance entrepreneurs' capacity to leverage their EEs, broadened entrepreneurship concepts, and influenced our understanding of related phenomena. Concurrently, some of the most influential papers in entrepreneurship research have focused on EEs (García-Lillo et al., 2023), encompassing empirical (Stam and Van de Ven, 2021; Leendertse et al., 2022; Muñoz et al., 2022) and conceptual articles (Spigel and Harrison, 2017; Nicotra et al., 2018; Johnson et al., 2022) that investigated EE configurations and the link between EEs and entrepreneurial outputs, i.e., productive entrepreneurship and economic development.

Given the rapid evolution of the EE concept and its quick adoption by governments and non-governmental organizations (Wurth et al., 2023), the actual policies often outpaced their research foundations (Stam, 2015; Spigel, 2017; Autio et al., 2018) and have not led to significant changes in economic development practices (Qian and Acs, 2023). Following its mission, the *Journal of Business Venturing Insights (JBVI)* has been closing the gap between EE research and policy by nurturing conversations on translational efforts (e.g., Muñoz and Dimov, 2023). Contributions in this journal span various dimensions, including the evolutionary dynamics of EEs (Haarhaus et al., 2020; Stephens et al., 2022), governance and leadership within EEs (Kuckertz, 2019; Roundy, 2019; Roundy and Evans, 2024), EE microfoundations (Merguei and Costa, 2022; Cosenz et al., 2023; Wurth and Mawson, 2024), and the resilience and inclusiveness of EEs (Roundy et al., 2017; Barki et al., 2020; Kuckertz et al., 2020; McDaniel et al., 2021; Birdthistle et al., 2022; Roundy and Lyons, 2022). However, to what extent has the burgeoning EE research field generated impactful insights to inform and/or transform entrepreneurship policy? This leads us to inquire *how we can foster EE research that makes a contribution to knowledge and has an impact on policymaking*.

We reflect on these questions to revitalize the alignment between EE research and policy formulation. To this end, we systematize the state of EE research, building on insights from 58 experts (12 authors and 46 additional experts) who, in 2024, gathered for a three-day EE Research Spring School in Stuttgart, Germany. Drawing on a dedicated workshop and broader discussions, the twelve authors collaborated to evaluate the development of the EE research field from a policy and practice standpoint. In this paper, we reflect on the evolution of EE research, review the theories incorporated into EE research while identifying pathways for future theorizing, and discuss established and unexplored methods and datasets. This approach forms the basis of a policy-oriented agenda for EE research.

2. Method

Starting in February 2024, we adopted a guided collaborative approach including three stages: 1) conceptualization and preparation of preliminary sections of this paper by the authors, 2) a collaborative workshop session, and 3) co-creative writing and validation. All authors equally shared responsibility for the co-creation process, discussing content organization and interdependencies.

In the first stage, the authors prepared initial inputs for each planned paper section based on their domain knowledge. In order to build further confidence in the associated individual perspectives, the initial inputs were validated and expanded in a second stage via a 90-min round-robin brainstorming session. This session involved 46 EE Research Spring School participants from 21 countries. The researchers were selected based on the rigor and potential contribution of their conference abstracts and their active engagement in the field, ensuring a diverse group of EE scholars. Most researchers (93 %) were European, predominantly affiliated with research institutions in Germany, the Netherlands, and the United Kingdom. The round-robin brainstorming technique is a collaborative method used for ideation workshops where participants take turns contributing ideas systematically and sequentially (Knight et al., 2019). The Spring School participants rotated among nine key authors, while the other three authors facilitated and moderated the process. This procedure allowed every participant to contribute ideas while ensuring no single voice dominates. The collaborative exercise involved four sequential iterations, where section authors engaged with four different groups of Spring School participants. Despite their varied disciplinary backgrounds, all EE Research Spring School participants are deeply involved in EE research, creating a unique environment and expertise for collaborative paper development.

Finally, we validated the policy-oriented research agenda with policymakers in different European countries and across various political jurisdictions from local, regional, and national levels; we also involved policy agencies to ensure a sufficient involvement of key stakeholders from various levels and functions in the process (Candeias and Sarkar, 2022). The policymakers and agencies were identified through the authors' policy networks. Policymakers have also helped to prioritize elements of the agenda so that EE Research can focus on the most pressing challenges. The collaborative approach allowed us to balance different perspectives rather than imposing one dominant logic. While this paper specifically adopts a co-creation approach with academics and policymakers, EE scholars may also explore co-creating impact with other EE actors, such as entrepreneurs, investors, or support organizations, using methods like visual imagery (Wurth and Mawson, 2024). Table 1 presents a detailed overview of the process and timeline.

3. Reflecting on the path walked

3.1. Looking backward on the emergence of the research field

The evolution of EE research has been closely intertwined with policy challenges and objectives. Initially presented as a straightforward policy tool (Isenberg, 2010; World Economic, 2013; Feld, 2020), the concept gained traction among practitioners and policymakers for its intuitive appeal and promise of actionable insights. However, as academic research on EEs has progressed, attempts to reverse-theorize and add complexity to the concept may have inadvertently reduced its clarity and actionability for policymakers (Wurth et al., 2022). This tension between academic rigor and practical applicability highlights a key challenge in the field's development.

The EE concept evolved within a context of related theories in regional economic development, most notably industrial clusters, regional innovation systems, and innovation districts (Acs et al., 2017). While these concepts focus on the geographical concentration of economic activity and interconnections between actors, each offers distinct insights for policymakers (Qian and Acs, 2023). In contrast to the other economic development approaches, the EE approach emphasizes entrepreneurship in two ways (Mason and Brown, 2014; Stam, 2015): productive entrepreneurship as a key mechanism of economic development (building on Schumpeter, 1934; Baumol, 1990), but also entrepreneurs as key actors (leadership) in entrepreneurial ecosystem development (building on Feld, 2012). The entrepreneurial ecosystem approach thus not only sees entrepreneurship as a result of the system but also sees the importance of entrepreneurs as central players (leaders) in the creation of the system and in keeping the system healthy: indicating a 'privatization' of entrepreneurship policy (Stam, 2015), and emphasizing the potential of bottom-up policies.

One of the primary contributions of EE research to policy has been identifying core elements that characterize thriving ecosystems (Wurth et al., 2022, 2023). By emphasizing these elements, EE research has broadened the scope of entrepreneurship policy beyond purely economic measures to include educational, technological, and infrastructural strategies (Schrijvers et al., 2023). This holistic approach has provided policymakers with a more comprehensive toolkit for nurturing entrepreneurial activity.

However, there has been a tendency to press various issues and challenges into the EE framework, both in academic research and policymaking. Previously mentioned concepts such as clusters for strengthening particular industry sectors (Porter, 1998, 2000), regional innovation systems for enhancing overall regional innovativeness (Cooke et al., 1997; Ylinenpaa, 2009), and innovation districts for urban-focused innovation hubs (Clark et al., 2010; Katz and Wagner, 2014), might be more appropriate depending on specific policy goals, the existing economic landscape, and the stage of regional development. These concepts should, therefore, be recognized as complementary rather than mutually exclusive. In a broader sense, they can all be seen as part of the 'third-wave' economic development strategies (Qian and Acs, 2023).

A requirement for establishing the complementary perspective, and, by extension, the broader applicability of the EE concept in

Table 1
Overview collaborative process and timeline.

Task description	Duration
Stage 1: Preparation and Conceptualization, Start: February 14	
1. Initial conceptualization, including expert interviews and outline of the paper sections.	8 weeks
2. Expert briefing and coordination of expert inputs on the different pre-defined sections.	2 weeks
3. Cross-expert revision of the initial inputs.	2 weeks
Stage 2: Collaborative Workshop, May 15	
4. Round-robin brainstorming session at EE Research Spring School: a) random assignment of participants into pre-defined expert groups, b) participant feedback, c) iterative round-robin brainstorming, d) consolidation of results from the workshop to stimulate the writing process.	90 min
Stage 3: Co-creative Writing and Validation, Start: May 16	
5. Guided revision round and elaboration of core arguments for each expert group section.	4 weeks
6. Revision of section drafts by the organizing team and preparation of final proofs.	4 weeks
7. Final revision for coherence and alignment of sections; all co-authors are invited to review the manuscript.	4 weeks
8. Validation of policy-oriented research agenda with policy analysts and policymakers.	2 weeks
9. Final editing by the organizing team, synthesizing final edits by all co-authors, and aligning writing styles.	2 weeks
10. Finishing the article through professional language check, reference management, and submission.	1 week

policymaking, is the development of boundary conditions–which the field collectively currently lacks. The ambiguity surrounding what constitutes an ecosystem, who should be included, and at what spatial level it should be analysed has led to difficulties in empirical work and policy implementation (Leendertse et al., 2022; Wurth et al., 2022; Coad and Srhoj, 2023). The concept's roots in (complex) systems approaches, economic geography, and its inspiration from ecological metaphors have contributed to this ambiguity, leading to varied interpretations and applications across different contexts (O'Connor and Audretsch, 2023; Theodoraki, 2024).

Moreover, the administrative boundaries within which policies are typically formulated (city, region, or country level) often do not align neatly with the fluid boundaries and open systems nature of EEs. In addition, several variations of the EE concept have emerged in the literature. EE research has yet to fully address this challenge, leaving policymakers to grapple with the multi-level nature of EEs, how to translate insights into actionable policies at various scales, and unanswered questions about how to measure the quality of an EE further complicates policy evaluation and comparative analysis (Brown and Mawson, 2019; Brown et al., 2023; Wurth et al., 2022).

3.2. Theories used and theorizing opportunities

The key contributions of EE research that highlight their structures and mechanics have predominantly been based on social capital theory, network theory, and complex systems theory (Granovetter, 1973; Theodoraki et al., 2017; Daniel et al., 2022; Ancona et al., 2023). To deepen our understanding and expand EE theorizing, it is vital to find a balance between establishing tight conceptual boundaries and absorbing contextual idiosyncrasies (Audretsch et al., 2024). EEs around the globe exhibit several common features, such as the interdependence of actors and elements, their systemic and evolutionary nature, and the importance of physical and financial infrastructure (Leendertse et al., 2022; Kuckertz, 2019; Stam and Van de Ven, 2021; Candeias and Sarkar, 2024). However, each EE also possesses distinctive characteristics specific to its context, exhibiting meaningful contextual contingencies that are essential for proper theorizing (Schrijvers et al., 2023; Stam and Welter, 2020). From a context perspective, EEs in developed economies capture the influence of policies, support programs, and market dynamism. In contrast, EEs in less-developed economies make visible the strong reliance on informal structures and social networks (Roundy, 2017; Guerrero et al., 2021).

Scholars can follow several pathways to amalgamate the uniqueness of EE for theorizing. The propositional, configurational, and processual approaches to theorizing provide helpful templates (Spigel, 2017; Spigel and Harrison, 2017; Cornelissen and Kaandorp, 2023). The empirical investigations by Andrews et al. (2022) and Buratti et al. (2023) show the path from rich descriptive data to building theoretically grounded insights, illustrating the propositional approach option. The work of Spigel (2022), Schrijvers et al. (2023), and Ancona et al. (2023) on the multifaceted manifestations of EEs through a complex systems lens embodies the configurational approach. Conversely, the processual approach, which focuses on temporal perspective and evolutionary dynamics, is well exemplified in the EE emergence studies by Spigel and Harrison (2017), Roundy et al. (2018), Abootorabi et al. (2021), and Tabas et al. (2024).

To strengthen policy-oriented EE research, the theorizing process might have to move from importing and extending existing theories in entrepreneurship, innovation, economic development, and geography research (Leendertse et al., 2022) to embracing the complex (and non-linear) evolution of EEs (Mack and Mayer, 2016; Haarhaus et al., 2020; Buratti et al., 2023), fully considering their emerging and place-dependent nature (Johns, 2006) for theory development. In line with this, 'time' has to regain centrality in EE studies (Alvedalen and Boschma, 2017; Audretsch et al., 2021). Considering time opens several approaches, for instance: 1) studying how the timing of market entries, funding cycles, and product development phases align or misalign with broader economic cycles and cultural events; 2) the non-linear dynamics and emergence, such as how small, seemingly inconsequential actions and events can over time have large-scale impacts on the structure and function of EEs; and 3) the long-term dynamics and evolution of places, capturing the development and changes that we miss when relying on short-term references. Finally, only by incorporating time can we advance EE research with theories that help to understand the immediate and long-term impacts of EE dynamics on diversity, societal and regional inclusiveness, and persistent or emerging inequalities, taking intersectionality into account. This approach has the potential to make timely contributions to policy debates on whether EEs systematically may exclude certain (social) groups based on race, gender, or socioeconomic status (Berger and Kuckertz, 2016).

Theories and theorizing should help us to better understand how well certain policies address the specific needs of diverse populations and how they work to dismantle systemic barriers and persistent challenges. Equally important, these efforts can also provide a critical perspective on the prevailing myth that promotes entrepreneurship as an inherently positive force (Keim et al., 2024), questioning who benefits from entrepreneurial activities and who does not.

3.3. Explored and untouched data and methods

The complex and multi-level nature of EEs requires methodological pluralism (Roundy et al., 2018; Cavallo et al., 2019a,b; Rocha et al., 2022; Wurth et al., 2022). Methodologies are appropriate for particular research questions yet come with limitations. For example, most quantitative studies have been cross-sectional (Cho et al., 2022), with few exceptions (e.g., Abootorabi et al., 2021), and have leveraged traditional datasets, failing to capture the complexities of "relationships amongst diverse organizations across space" (Feldman and Lowe, 2015, p. 1793; Rocha et al., 2022). Additionally, qualitative case studies have limitations in the generalizability of results and partially fail to capture a truly systemic view (Cosenz et al., 2023).

Most EE studies focus on macro-level input factors and associated (macro) outcomes. However, that could lead to missing the proximate causes of EE performance differences and limited insights (Vedula and Kim, 2019; Rocha et al., 2022). A way to complement and advance the EE debate involves shifting the locus of investigation, starting from the proximate causes and moving up to aggregate outcomes (Felin et al., 2015; Cosenz et al., 2023). EE research needs a deeper understanding of the microfoundations of EEs and further

investigation into value-generating paths across levels (Cosenz et al., 2023).

Furthermore, EE scholars have traditionally focused on economic impact to evaluate the productivity of an EE (Spigel and Harrison, 2017; Leendertse et al., 2022). However, relying solely on economic impact is insufficient as it ignores the broader effects of new ventures and non-economic consequences (Fini et al., 2018; Abootorabi et al., 2024). This approach marginalizes ventures with non-economic goals and risks compromising long-term prosperity as policy recommendations. However, using a more comprehensive range of outcome measures allows for developing policy recommendations for broader aggregate well-being (Wurth et al., 2022).

Advancing EE research also requires exploring and triangulating novel data sources at multiple levels of granularity. So far, EE scholars have long relied on conveniently accessible data (Stam and Van de Ven, 2021; Coad and Srhoj, 2023). This approach poses the problem that advancement in the field depends on data sources that do not fully capture the key concepts and mechanisms. Therefore, there is a need to integrate historical, archival, survey, and qualitative data, as well as what can be captured under the broader umbrella of big data.

Addressing this need will open up the possibility of broader adoption of (new) methods, such as (and not limited to) system dynamics (Cavallo et al., 2019a,b, p. 1310), agent-based modeling, social network analysis (Pittz et al., 2021; Rocha et al., 2022), artificial intelligence (including machine learning) as well as simulation and operation research techniques (Carayannis et al., 2016, 2022). In the true spirit of engaged scholarship (Van de Ven, 2007) and transdisciplinary research (Wurth et al., 2022), research initiatives could be even more part of policy (re)design processes, for instance, by observing interactions in 'EE-in-the-room' sessions that are guided via participatory design and learning approaches (Bason, 2016).

Moving forward, EE studies should integrate novel and triangulated data sources and employ diverse methods. These should be tailored to the problem at hand while being specific and transparent about which aspects of the EE phenomenon they do and do not capture. This approach can guide policymakers' decision processes and allow for targeted interventions at different levels of granularity, thereby avoiding attempts to find one-fits-all solutions and applying universal blueprints.

4. Looking ahead: a policy-oriented research agenda

The reflection on the evolution of EE research highlights both the field's rapid development and its progress while revealing areas for further improvement in theory, data, and methods to steer research towards impactful contributions to the literature and effective policymaking. Policymakers have embraced the EE framework as a powerful lens for a broader understanding of entrepreneurial activity and its context. However, the framework has also introduced additional challenges and complexities for policymakers (Autio and Levie, 2017; Stam, 2018). The multi-level nature of EEs (Spigel, 2022), the interdependencies between various actors and factors (Estrin et al., 2013), and the context specificity of each region (Mason and Brown, 2014; Stam and Welter, 2020; Candeias and Sarkar, 2024) open new questions that require attention. To fulfil the EE framework's potential for evidence-based policymaking, the EE research community needs to move from seeing policy impact as a posterior activity to incorporating policy perspectives into the research process, i.e., addressing a policy-oriented research agenda.

We juxtapose the policy process stages, i.e., design, implementation, monitoring, and evaluation (OECD, 2020; Wang et al., 2023), with the core analytical dimensions of the EE framework, i.e., 'content and structure' capturing the nestedness and connectivity of EEs and 'mechanisms and processes' comprising dynamic interactions between macro and micro levels, encompassing five key mechanisms that drive smaller processes and changes in the EE (Wurth et al., 2022, 2023), to outline the research opportunities. Introducing the policy process stages makes the expected beneficiary visible and increases alignment with the policymaking activities.

1. Policy *design*: This stage involves the conceptualization of policy interventions, including decisions about the policy type (top-down or bottom-up), the target (systemic or framework EE conditions), and the implementation strategy (holistic or decentralized).
2. Policy *implementation*: This adaptive process balances active interventions with EE self-governance, involving the management of tailored incentives and coordinating different stakeholders.
3. Policy *monitoring and evaluation*: It includes collecting data on inputs (e.g., budget, resources) and outputs (e.g., number of start-ups, participants in programs, jobs created, tax revenues), as well as assessing the impact of policies on new venture creation and broader economic and societal goals. Both are critical for guiding the design and implementation of effective policies.

At the same time, the EE framework's analytical dimensions provide a direction for EE researchers to position their policy-oriented work.

1. *Context and structure*: This category links the EE framework to the multi-level embeddedness and the context of entrepreneurship, such as variations in EE outputs and outcomes, social network structures (formal, informal), and inter- and intra-ecosystem connections (Wurth et al., 2022).
2. *Mechanisms and processes*: This category examines the interdependence of EE input factors, the causal relations explaining EE outputs and outcomes, and the continuous process of interaction between EEs and their outputs and outcomes that potentially shape the EE conditions for entrepreneurs in a virtuous or vicious cycle of EE development (Wurth et al., 2023; Roundy and Evans, 2024). This dimension is distinct yet intrinsically linked to the previous one.

The interaction between the policy process stages and the EE analytical dimensions reveals the structure for a policy-oriented research agenda (see Table 2).

The policy-oriented EE research questions are presented in Table 2. While we have carefully considered the placement of each

question in the table structure, we note that some of these questions may also apply to other stages and categories. To strengthen our claim of a policy-oriented research agenda, we collected and integrated feedback from policymakers. Among the twelve proposed research questions, the policymakers prioritized three crucial areas that deserve urgent attention.

1. Establishing EE *boundary conditions* for policy design to align multi-level governance structures across cities, regions, and countries. This includes addressing complex administrative boundaries and the roles of different political jurisdictions (Huggins et al., 2015; Lo and Theodoraki, 2022). Otherwise, there is a risk of misaligning capacities, capabilities, and funding structures, limiting the effective collaboration needed to support individuals and firms.
2. Understanding the effects of *intra-EE (within an EE) and inter-EE (between EEs) connectedness* in policy implementation. This requires coping with fragmented relationships among actorsto strengthen networks within and between EEs to integrate different territories and reduce competition among localities (e.g., neighborhood effects) (Arshed et al., 2016; Xu et al., 2023).
3. Expanding *data collection* and developing *targeted measures* for effective policy diagnostics, monitoring and evaluation. Using timely and granular data is particularly essential in the data collection process. Developing policy-oriented measures to justify investments in EE inputs includes the identification of meaningful metrics, such as employment (new jobs created and cost per new job created) or tax revenues (present and future), that allow policymakers to define the core target element of an initiative clearly and to measure its short- and long-term impacts (Brown et al., 2017; Candeias and Sarkar, 2022; Qian and Acs, 2023).

While the framework and process of policymaking can be applied to various contexts, we recognize that the prioritization of key areas is context-dependent. Our findings benefit from the rich policy and practice experiences in the European context; adaptations for other regions should account for specific local or regional socioeconomic characteristics. Ineffective policies often result from a disconnect between policy design and implementation, for example, due to conflicts of interest or lack of transparency (Arshed et al., 2014). Therefore, EE actors, including researchers, policymakers, and practitioners, should be more closely connected to the policy design process to avoid a mismatch between design and implementation. Scholars across contexts must translate their research insights into practice through translational research, and policymakers must be willing to experiment (Van de Ven, 2007). Moreover, the role of policy should extend beyond seeding money to entrepreneurship support organizations and shift towards coordinating diverse and inclusive support types, curating agents and resources, promoting networks and entrepreneurial culture, and creating enabling conditions while taking away context-specific constraints (Mason and Brown, 2014; Mack and Mayer, 2016; Candeias and Sarkar, 2022;

Table 2
A policy-oriented research agenda on entrepreneurial ecosystems.

	Policy design	Policy implementation	Policy monitoring and evaluation
Context and Structure	*Reflecting EE **boundaries** across different policy contexts:* ● What is the role of different political jurisdictions (e.g., city, region, country) in the evolution of EEs? *Leveraging **context** diversity to expand the multi-level EE concept:* ● How do EE input elements manifest across multiple levels of geo-socio-political aggregation? What are the benefits or risks of neighborhood effects?	*Adjusting EE policies to increase **inclusiveness** considering contextual **diversity**:* ● What type of incentives can contribute to increasing the inclusiveness or reducing biases of existing EEs? How should they be adapted to local, regional, and national contexts? *Nurturing inter- and intra-ecosystem **connectedness** in the **implementation** of policy:* ● How do intra- and inter-ecosystem linkages influence the development of EEs?	*Positioning the EE phenomenon, its **functions**, and **impacts** in the border **socioeconomic policy** context:* ● What are the appropriate boundaries of an EE, and how do these boundaries evolve over time? What are the risks of fluid boundaries and the benefits of broad EE ambitions for policy evaluation? *Calibrating the EE policy expectations and **indicators**, considering differences in embeddedness and structural dependencies:* ● How do EEs with similar structures produce different EE outputs and outcomes over time?
Mechanisms and Processes	*Acknowledging the **leadership** effects on the EE development **processes**:* ● How does leadership in EEs manifest across individual, organizational, and government levels? *Improving the **theory-driven** predictive capabilities of policy **designs** on the EE **outputs** and **outcomes**:* ● What are the necessary considerations for estimating the effects (impact expectations) of different elements across distinct political jurisdictions (e.g., city, region, country) on EE outputs and outcomes?	*Aligning the EEs **dynamics** for new **purposes** and **societal goals**:* ● What roles and functions do EE outputs have for the sustainability or resilience of EEs? *Visualizing advantages and limitations of a **circular** view of **EEs**:* ● How do EEs absorb EE outputs and outcomes in constructive (feeding new inputs) or destructive (destroying each other) ways?	*Reinforcing the timeliness of EE policy but also the **lagged (direct and indirect) effects** of its mechanisms and processes:* ● What type of EE inputs impact the inclusiveness of EEs for different types of entrepreneurship? How do they evolve across time? *Expanding the **method** and **data** toolkits to support evidence-based EE policymaking:* ● How do novel methods and data enhance the capabilities for dynamic EE monitoring? What are the trade-offs between existing indicators and new measures?

Note. The research questions directed to EE researchers are listed in bullets and regular font, while the policy topics they should address are shown in *italics*.

Huggins et al., 2024; Leger et al., 2024).

5. Conclusion

While EEs possess self-organizing and emergent properties, policy interventions are a crucial part of a complex socioeconomic system and impact the development of EEs. EE research can and should place more emphasis on providing actionable insights and supporting the translation of EE research into policy. The present study, which leveraged the collective knowledge of a significant part of the EE research community, highlights the importance of research to support the development of multi-level and context-specific policies tailored to EEs' unique economic, cultural, and historical contexts. In doing so, a comprehensive toolkit for policymakers will include measures beyond purely economic ones and include educational, technological, and infrastructural components to allow societies to benefit from productive entrepreneurship. To this end, our proposed research agenda will serve as a helpful guide to structure both research and the resulting policy measures. In particular, we emphasize context and structure as well as the mechanism and processes to understand EEs, and consider the policy process from design to implementation, monitoring and evaluation. Only by accounting for these aspects throughout the research process and not as an afterthought will the field of EE research continue to generate impactful insights and realize its full transformational potential.

CRediT authorship contribution statement

Sophia Hess: Writing – original draft, Project administration, Conceptualization. **Bernd Wurth:** Writing – original draft, Conceptualization. **Erik Stam:** Writing – review & editing, Validation, Conceptualization. **Ferran Giones:** Writing – original draft, Conceptualization. **Riccardo Fini:** Writing – original draft. **Angelo Cavallo:** Writing – original draft. **Andreas Wahl:** Writing – original draft. **Niels Bosma:** Writing – original draft. **Christina Theodoraki:** Writing – original draft. **Didier Chabaud:** Writing – original draft. **Alexander Brem:** Writing – original draft. **Andreas Kuckertz:** Writing – original draft, Validation, Conceptualization.

Declaration of competing interest

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