

Guest Editorial: Sustainable, smart and inclusive growth within entrepreneurial and innovation knowledge-driven ecosystems

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Background

Industry, governments and societies are facing various interconnected and enormous challenges. These challenges encompass issues such as climate change, poverty, healthcare, food security, geopolitical fragmentation and technological disruption (McNutt, 2013; Ma *et al.*, 2022; Stefanidis *et al.*, 2024; Vinana *et al.*, 2022; Manikas *et al.*, 2023; Stahl *et al.*, 2023; Ghobakhloo *et al.*, 2022). National governments have responded to address these challenges through different means. One specific response has been through developing and implementing large scale publicly funded mission orientated research programmes that are designed mobilise a range of actors to address these significant challenges that are designed to deliver a range of benefits – economic, technological and societal (Mazzucato, 2018; Uyarra *et al.*, 2025) for industry and society. The pace of technological advancement and disruption is accelerating enabled by the advent of artificial intelligence, growth of deep-tech and continuing medical advancements that are targeting key diseases (Racela *et al.*, 2025; Kraemer *et al.*, 2025; Srinivasan and Sharma, 2025). These increasingly fast paced technology developments provide significant market opportunities for businesses but also pose significant challenges for governments. Smart growth is often the term used to articulate these potential opportunities and is now firmly rooted in the public policy lexicon. With these rapid changes come significant public policy challenges about how to ensure an appropriate equal distribution of growth opportunities that benefits industry and society. How can government and industry collaborate effectively to ensure inclusive and sustainable growth and navigate the tensions and dilemmas that emanate from smart growth. Moreover, a core challenge is how to manage and balance these tensions within entrepreneurial and innovation driven ecosystems designed to support blended – economic, societal – and multi-level – collective and individual – value creation (Martin *et al.*, 2018; Krueger and Gibbs, 2008; Dai *et al.*, 2024). Entrepreneurial and innovation ecosystems provide an effective means to explore these challenges through multi-level analysis – macro, meso and micro (Alvedalen and Boschma, 2017; Gregori *et al.*, 2025; Rawhouser *et al.*, 2025; Zhang *et al.*, 2025; Fritzsche *et al.*, 2025; Falcke *et al.*, 2024; Jütting, 2022). These challenges also present significant entrepreneurial and innovation opportunities for firms (Talebian *et al.*, 2025; Pereira *et al.*, 2024; Barrett and Dooley, 2025). The strategic consideration for firms is how best create and manage knowledge to address these opportunities that is aligned with blended, collective and individual value creation.

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This paper forms part of a special section “Sustainable, smart and inclusive growth within entrepreneurial and innovation knowledge-driven ecosystems”, guest edited by James A. Cunningham, Elias G. Carayannis, Kristel Miller, Conor O’Kane, Christina Theodoraki and João J. Ferreira.

Against this background there is a need to examine how entrepreneurial and innovation ecosystems can be developed to not only sustain accelerated technological development, knowledge development and management while also ensuring the achievement of inclusive societal outcomes.

Summary of the papers in the special edition.

This special issue brings together four studies that examine the challenges and opportunities of sustainable, smart and inclusive growth within entrepreneurial and knowledge-driven ecosystems from a knowledge management perspective. Collectively, the authors use a combination of qualitative and quantitative methods across multiple levels of analysis (see [Table 1](#)).

The first paper in this special issue authored by Jihye and Hwang (2026) using large language modelling – BERTopic explores knowledge management technologies, collaboration, sustainability and technostress. To address this in their study, they draw on papers and patents to explore the technological tools and key themes using a topic modelling framework. Their paper highlights an important issue about technostress for those involved in collaborative activities particularly as digital knowledge management tools continue to become more pervasive and their development continues to grow. It also affirms the importance of how knowledge management technologies support collaboration and sustainability. Furthermore, it provides a reminder of the role of individuals within organisations and how they participate to influence how such technologies are used to the optimum level to contribute to sustainability. Interestingly the authors argue that managers need to give greater attention to technostress among their workforce and to seek ways that they can support individuals in their engagement and use of knowledge management technologies.

The second study set in the wine ecosystem and focused on family-owned businesses authored by [Bagnato et al. \(2026\)](#) examines sustainable innovation challenges using a systematic literature review and expert interviews. The utilisation of best worst methods provides insights pre and post COVID-19 of the wine ecosystem's sustainable innovation challenges. Interestingly the authors found a shift in the treatment of knowledge management systems and practices reflecting their strategic importance for firms in this sectoral context. What this study's findings affirm is the need for firms and other ecosystem actors to consider how best to design and develop knowledge management systems that enable effective collaboration and to consistently and confidently deal with sustainability challenges in a responsive and resilient manner. Similar to one of the themes that emerged from Jihye and Hwang's (2026) contribution to this special issue, [Bagnato et al. \(2026\)](#) highlight the importance of developing firm/organisational level culture that enables, empowers and equips individuals/employees to fully participate in knowledge exchange activities when addressing sustainability and the wider issue of firm level growth. Furthermore, in reflecting on the practical implications of their study, [Bagnato et al. \(2026\)](#) suggest very specific activities that could be implemented that address some of the financial (and other) challenges that family-own winemakers face regarding sustainable innovation. Moreover, the study highlights the importance of human capital dimension to support knowledge management.

The third study set in a Chinese context authored by [Liu and Yan \(2026\)](#) also highlights the human element focusing on sustainable innovation and *quanxi* – “who knows what” using a mixed-methods approach of social networks and ethnography. To address sustainable innovation the authors, suggest the need for individual employees to invest in developing their knowledge management capabilities through deepening their understanding of the expertise of other firm employees that support truly effective knowledge sharing. Furthermore, the authors highlight the value and role of individuals or “integrators” in addressing structural holes that can impede knowledge management for sustainable

Table 1 Overview of papers in this special issue

<i>Authors</i>	<i>Objectives</i>	<i>Theory/framework</i>	<i>Findings</i>	<i>Contributions</i>
Lim and Hwang (2026)	To identify digital KM innovations enabling collaborative knowledge practices that advance organizational sustainability while countering technology-induced employee stress	–Technostress –Knowledge collaboration framework	–Diverse knowledge management technology landscape –Knowledge management's expansion from traditional knowledge bases into finance, multimedia, and technical infrastructure –Technologies strategically matched to practical domains enabling immediate sustainability implementation	–Advanced analysis uncovers knowledge management's wide reach – Identified expertise platforms and shared laboratory systems as immediate innovations for cross-organizational knowledge sharing –Advanced analysis connects technologies to practical uses
Bagnato <i>et al.</i> (2026)	To identify and prioritize major sustainable innovation obstacles for family wineries within the wine ecosystem, examining changes in their importance before and after COVID-19	–Triple bottom line theory	–Limited financial resources remained the top sustainable innovation challenge for family wineries both pre- and post-COVID-19 –Knowledge sharing ranked as the least critical challenge in both periods despite its strategic importance –Overall challenge rankings showed stability across time, with no major shifts in criticality post-pandemic	–Pioneering triple bottom line application to family winery ecosystems –Combine systematic literature review with best-worst method to create a validated decision framework that guides family winery managers in targeting the most critical sustainable innovation barriers first –Sustainable innovation challenges stayed stable pre/post-COVID-19, enabling confident medium/long-term planning despite global disruption
Liu and Yan (2026)	How team members use epistemic objects and relational networks (guanxi) to enhance meta-knowledge about expertise distribution ("who knows what") during sustainable innovation processes	–Theory of epistemic objects –Structural hole theory –Guanxi network theory –Transactive memory system –Process view of knowledge management	–Epistemic objects promote knowledge integration of "who knows what" by eliciting expertise and fostering trust among coworkers –Structural holes in networks impede this integration through communication barriers and heightened heterogeneity –Guanxi moderates structural holes, turning them into facilitators via collectivism, renqing, and mianzi	–Epistemic objects elicit knowledge and create employee identity while coordinating heterogeneity, complementing knowledge management studies by showing how they trigger affective/cognitive trust for "who knows what" integration –Coworkers fill structural holes in collaborative innovation, revealing resource-need connections for social capital integration; brokers shift from controllers to fillers under guanxi influence, advancing structural hole and culture management theories –Provide a full picture of leveraging "who knows what" knowledge in sustainable innovation, identifying key stimulants; emphasizes object-control interplay with human-control in innovation work

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Table 1

Authors	Objectives	Theory/framework	Findings	Contributions
Shalik <i>et al.</i> (2026)	To explore how the combination of knowledge management practices, intellectual property protection, and management innovation shapes entrepreneurial leadership, enabling small and medium-sized enterprises to reach sustainable growth	-Knowledge-based view theory –Transformational leadership theory	-Knowledge management practices, intellectual property protection, and management innovation positively impact entrepreneurial leadership, driving SME sustainable growth –Management innovation, knowledge management practices and intellectual property protection act as mediators in the relationship between entrepreneurial leadership and sustainable growth –Absorptive capacity moderates management innovation and knowledge practices' effects on sustainable growth	-Combine knowledge-based view theory and transformational leadership theory to explain how knowledge, leadership and innovation drive sustainable growth in SMEs –The critical role of absorptive capacity in enhancing the impact of management innovation and knowledge management practices on sustainable growth –Provide actionable strategies for SMEs and policymakers to invest in knowledge management, intellectual property protection and management innovation to foster entrepreneurial leadership and achieve long-term growth

innovation. Moreover, the authors raise the highly relevant issue of the relationship between individual and tools that are designed to support knowledge management. This has implications for how firms are organised to support knowledge management, what tools are used and how employees are managed to support sustainable innovation.

The final paper in this special issue authored by Shalik *et al.*, (2026) using a study of small and medium-sized enterprises (SMEs) in the US explores how knowledge management practices impact entrepreneurial leadership and sustainable growth. The study addresses intellectual property protection and management innovation using the theoretical lens of transformation leadership theory. Like the other studies in this special issue, the authors further affirm the need for employees to be actively engaged in knowledge management activities and the role leaders and managers of organisations play in ensuring this is a lived daily reality from them to support sustainable growth. They also suggest that SMEs harness knowledge management and management innovation, afford greater consideration to the use intellectual property management and reflect on absorptive capacity in their pursuit of sustainable growth.

Future research directions

In the face of escalating global crises such as climate change, persistent poverty, unequal healthcare access, threats to food security and rapid technological disruption (Malerba, 2002; Ma *et al.*, 2022; Shahzard *et al.*, 2025) entrepreneurial ecosystems powered by knowledge creation and sharing have become central to shaping pathways towards sustainable, smart and inclusive growth (Stahl *et al.*, 2023). These dynamic ecosystems bring together actors from industry, academia, government and civil society who can harness innovation potential whilst responding to complex, interconnected societal needs.

While the four papers in this special issue offer important empirical and conceptual insights into these challenges from a knowledge management perspective, they also highlight the need for a broader research agenda that can further advance understanding of how entrepreneurial ecosystems can be governed, sustained, and mobilised to address grand

Table 2 Theoretical perspectives and related avenues for future research on sustainable and inclusive growth in entrepreneurial ecosystems

<i>Perspective</i>	<i>Illustrative authors</i>	<i>Future research questions</i>
<i>Mission-oriented ecosystems</i>	Mazzucato (2018) ; Etzkowitz and Leydesdorff (2000) ; Jarrahi et al. (2022) ; Liefner and Brueck (2025) ; Elzing et al. (2023)	How do mission-oriented policies spread across entrepreneurial ecosystems at regional versus national levels? What knowledge governance mechanisms facilitate the spread of missions in cross-border ecosystems? How do public-private knowledge-sharing platforms tailor their missions to local entrepreneurial environments? What knowledge infrastructures enable mission continuity across political cycles and institutional change?
<i>Digital transformation and smart growth</i>	Bresnahan and Trajtenberg (1995) ; McCann and Ortega-Argilés (2015) . Tarafdar et al. (2023) ; Liu et al. (2025) ; Papagiannidis (2025) ; Hunter (2005)	Which knowledge management configurations reduce technostress while maximizing AI-enabled sustainability benefits? How do AI-enabled decision systems reshape ecosystem governance and knowledge legitimacy? What digital knowledge architectures support responsible innovation while accelerating smart regional growth? How do general-purpose technologies reshape knowledge flows and productivity patterns across entrepreneurial ecosystems to enable smart, sustainable regional growth? How are information technology tools being used to capture, disseminate and ultimately preserve indigenous knowledge relevant to endangered or marginalised cultures?
<i>Inclusive sustainability</i>	Carayannis and Campbell (2009) ; Holling (1973) ; Veldhuizen (2020) ; Norström et al. (2020) ; Doersch and Huchzermeier (2024)	How do n-helix ecosystems sustain resilience during cascading sustainability shocks? What inclusive knowledge-sharing protocols integrate civil society into sustainability initiatives? What regional smart specialization strategies and supply chain resilience frameworks enable entrepreneurial ecosystems to balance planetary boundaries with inclusive social-economic growth? How do marginalised communities co-produce sustainability knowledge within entrepreneurial ecosystems?
<i>Knowledge governance and transfer</i>	Chesbrough et al. (2014a, 2014b) ; Teece (1986) ; Corsino and Torrisi (2023) ; Foss et al. (2010) ; Marinova and Raven (2006) ; Orozco and Poonamallee (2014)	What hybrid intellectual property regimes optimise university-industry knowledge exchange for mission goals? How do open innovation hubs govern knowledge transfer in hybrid meso-levels institutions? What role do intermediaries play in translating mission knowledge across public, private, and civic actors? Which metrics best assess appropriability strategies in ecosystems focused on public goods? How do intellectual property right processes in inclusive and sustainable entrepreneurial ecosystems account for indigenous rights to indigenous knowledge?
<i>Sectoral and SME dynamics</i>	Malerba (2002) ; Sarasvathy (2001) ; Dolfsma and van der Steen (2024) ; Hafeez et al. (2025)	How do sectoral innovation systems adapt effectuation principles for net-zero transitions? What SME-specific knowledge tools support sectoral resilience after disruption?

(continued)

Table 2

<i>Perspective</i>	<i>Illustrative authors</i>	<i>Future research questions</i>
<i>Human capital and networks</i>	Acs et al. (2009) ; Nahapiet and Ghoshal (1998) ; Burt (2004) ; Paul (2016) ; Marin and Wellman (2023) ; Audretsch and Fiedler (2024) ; Soda et al. (2021)	<p>How do family-owned businesses combine effectuation with digital knowledge management to achieve sustainability?</p> <p>What sector-specific institutional logics constrain or enable sustainability-oriented entrepreneurship?</p> <p>Which network brokerage patterns most effectively address knowledge gaps in sustainability missions?</p> <p>How does guanxi facilitate the flow of human capital within high-context entrepreneurial networks?</p> <p>Which training interventions develop brokerage skills for sustainability integrators?</p> <p>What forms of social capital enable trust-based knowledge sharing in sustainability domains?</p> <p>How do network governance structures support or hinder cross-sector mission collaboration?</p>
<i>Individual and organizational knowledge management</i>	Lubatkin et al. (2006) ; Foss et al. (2010) ; Gond et al. (2017) ; Xue et al. (2024) ; Olsen et al. (2016)	<p>How does transformational leadership influence the impact of technostress on knowledge processes?</p> <p>Which micro-level knowledge management practices empower employees in mission-driven organisations?</p> <p>How do task-technology fit models forecast individual contributions to ecosystem sustainability?</p> <p>What role does organisational identity play in shaping sustainability-oriented knowledge behaviours?</p> <p>How are knowledge management practices coordinated and legitimised across diverse stakeholder groups, including marginalised communities and specialist advocacy groups?</p>
<i>Absorptive and leadership capacity</i>	Cohen and Levinthal (1990) ; Teece (2007) ; McLaren and Kattel (2025) ; Tortoriello (2015) ; Todorova and Durisin (2023) ; Stettler et al. (2025) ; Donate and de Pablo (2015)	<p>What dynamic capabilities influence ecosystem-level absorptive capacity for mission innovation?</p> <p>How do ecosystems build collective absorptive capacity when actors have uneven digital and innovation capabilities?</p> <p>How do leadership styles improve absorptive capacity in ecosystems dominated by SMEs?</p> <p>What contextual factors influence absorptive capacity during grand challenge shocks?</p> <p>How do KM based leadership and management practices impact the innovation performance of firms within inclusive and sustainable entrepreneurial ecosystems?</p>

challenges. [Table 2](#) synthesises eight theoretical perspectives that can advance understanding of how knowledge-driven entrepreneurial ecosystems address grand challenges through mission-oriented innovation, digital transformation and multi-level coordination. These perspectives span:

- mission-oriented ecosystems;
- digital transformation and smart growth;
- inclusive sustainability;
- knowledge governance and transfer;
- sectoral and SME dynamics;
- human capital and networks;
- individual and organisational knowledge management; and
- absorptive and leadership capacity.

Each perspective identifies foundational contributions and proposes forward-looking research questions related to these to guide future research (see [Table 2](#)).

As outlined in [Table 2](#), the eight interconnected theoretical perspectives collectively highlight the multi-level knowledge processes, governance mechanisms and capability configurations through which ecosystems may generate innovation outcomes and broader public value that are sustainable, inclusive and smart.

Mission-oriented ecosystems provide an overarching framework that integrates these perspectives, as public missions targeting grand challenges – like climate change and healthcare – establish strategic priorities that flow through macro-level policy tools and multi-stakeholder coordination structures ([Mazzucato, 2018](#); [Etzkowitz and Leydesdorff, 2000](#)). This mission logic intersects with digital transformation dynamics, as AI and deep-tech advancements function as general purpose technologies that accelerate smart growth while introducing technostress through pervasive knowledge management tools, requiring careful governance to harness their potential without exacerbating exclusion ([Bresnahan and Trajtenberg, 1995](#); [Tarafdar et al., 2015](#)).

Central to these debates is the pursuit of inclusive and sustainable growth. Quadruple helix and n-tuple ecosystem configurations that embed civil society and community actors alongside universities, firms and government, strengthen ecosystem resilience during sustainability shocks by balancing social foundations with planetary boundaries ([Holling, 1973](#); [Carayannis and Campbell, 2009](#)). This perspective also highlights the importance of inclusive knowledge-sharing protocols and co-production processes that enable marginalised communities to contribute meaningfully to sustainability transitions.

Across these perspectives, knowledge governance and transfer emerges as critical connective mechanisms. Universities, intermediaries and research organisations play key roles in orchestrating technology transfer, open innovation processes and appropriability strategies that align private innovation incentives with wider public value and mission outcomes ([Etzkowitz and Leydesdorff, 2000](#); [Chesbrough et al., 2014a, 2014b](#); [Teece, 1986](#); [Blind et al., 2023](#); [Borrás et al, 2024](#); [Rådberg and Löfsten, 2024](#)). These governance challenges become particularly salient in ecosystems oriented towards public goods, where intellectual property regimes, data infrastructures and intermediary translation capacities shape the effectiveness of knowledge exchange. Sectoral and SME contexts adapt these flows through path-dependent innovation systems and effectual principles tailored to sustainability pressures, such as those in family-owned industries facing disruption ([Malerba, 2002](#); [Saravathy, 2001](#)). Human capital and network structures amplify this capacity, as knowledge spill-overs, guanxi relations and brokerage by integrators bridge structural holes to enable effective sharing ([Acs et al., 2009](#); [Nahapiet and Ghoshal, 1998](#); [Burt, 2004](#); [Audretsch and Fiedler, 2024](#)).

Finally, individual and organisational knowledge management practices and processes – shaped by job demands-resources dynamics, transformational leadership and task-technology fit – interact with absorptive and dynamic capabilities to ensure micro-level engagement translates into ecosystem-wide inclusive growth ([Cohen and Levinthal, 1990](#); [Teece, 1986](#)). Together, these interrelated elements create resilient knowledge-driven systems capable of sustainable, smart and equitable transformation.

In conclusion, the four papers in this special issue provide timely insights into how knowledge management processes shape sustainable, smart and inclusive growth within entrepreneurial ecosystems. Building on these contributions, a broader future research agenda is proposed, by identifying eight interconnected theoretical perspectives and key questions for further investigation. Together, this special issue highlights the importance of multi-level knowledge infrastructures, governance mechanisms and collaborative capacities in enabling entrepreneurial ecosystems to respond effectively to grand societal challenges.

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