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POSITION ARTICLE

Innovation for the green transition: challenges and future perspectives

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Abstract
This paper explores eco-innovations as the key enabler of green transition and the main response to the climate change risks that firms increasingly face in all sectors. Taking a systems perspective and focusing on the barriers to eco-innovation, we discuss the most promising economic levers that could be engaged to accelerate eco-innovations and the green transition. We emphasise the complex and crucial roles in green transition played by policy-making and firm governance practices, firms' sustainability-oriented and digitalisation capabilities as well as the need for extensive collaborations within and across firms. We bridge the literatures around climate change risks, firm capabilities and environmental policy to present a holistic reflection of what eco-innovations need to encompass in order to serve the green transition.

Keywords Green transition · Climate change risks · Eco-innovation · Firm capabilities · Green skills

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1 Introduction

Climate change increasingly affects business operations and outcomes as it introduces significant risk exposures that were previously non-existent, negligible, or poorly understood. Climate change risks include *physical risks* (i.e. threats from extreme weather events to physical business infrastructure and operations), *market risks* (i.e. losing competitive advantage as a polluter in the market), *reputational risks* (i.e. consumers perceiving the business as a polluter and stopping purchases) as well as *liability risks* (i.e. losing business and profits due to environmental sanctions, fines and taxes) (Nyberg & Wright, 2016; Sautner, 2023). To grow and thrive, firms need to better understand the specific climate risks they face, account for them and devise effective strategies to mitigate their exposure to these risks (Alam et al., 2022; Bui & De Villiers, 2017; Weinhofer & Busch, 2013). This position paper focuses on firms' innovation strategies and actions to adapt to and mitigate these climate change risks. While being essential for the survival and success of firms in the face of climate change, these climate risk mitigation and adaptation actions also hold the potential to pave the path to green transition- an economic and policy agenda that has risen in response to the visible effects of climate change.

Eco-innovations are essential to mitigate all types of climate change risks as they transform business products, processes, organisational practices and stakeholder relationships to reduce or eliminate environmental impact and regenerate natural resources (Kiefer et al., 2021; OECD, 2009). While environmental regulation has long been in place with an aim to promote eco-innovations, these have changed shape in the last decade as several countries adopted net-zero emissions targets in legislation, often with a due date between 2030 and 2050 (Stern & Valero, 2021). Despite the slow uptake of the net-zero transition processes in the industry (Pinkse et al., 2024), this legally binding element of the green transition has led organisations to note their growing liability climate change exposures. Proving the growing liability exposures, major consumer goods companies, including Coca-Cola, PepsiCo and Procter and Gamble, have recently faced court cases led by environmental and civil organisations due to their contributions to plastic waste, affecting clean water resources and other natural habitats (Guardian, 2024). Such litigations affect the firm's reputation, weakening its relationships with stakeholders and eventually resulting in financial losses (Lins et al., 2017). Hence, firms increasingly choose eco-innovation as an insurance-like response to tackle the implications of climate change. This is in the form of reducing the environmental impact of products/services as well as the processes used to generate these products/services (Hojnik and Rujjier, 2016).

The natural-resource-based view (NRBV) of the firm that incorporates the interactions between the firm and its natural environment has shaped much of the literature on the economics and management of the green transition (Hart, 1995; Hart & Dowell, 2011). NRBV reveals that eco-innovation capabilities are important enablers of firms' ability to future-proof their businesses against climate change risks, and turn these risks into opportunities by reducing waste and cost, growing business reputation and aligning with the environmental regulations and broader policy priorities (Cabaleiro-Cerviño & Mendi, 2024; Lins et al., 2017; Ozkan et al., 2023). Yet, the differences in the eco-innovation capabilities are vast across firms (Bag et al., 2022;

Mady et al., 2023; Demirel & Kesidou, 2019), sectors and regions (Corradini, 2019; Del Rio et al., 2016; Faggian et al., 2025; Galliano et al., 2023; Montresor & Quatraro, 2020). An in-depth understanding of these underlying differences in eco-innovation capabilities is necessary to untangle the complex implications of climate change for the industry and to envision effective strategies for green transition. In this paper, we focus on some of the capability-based variations across firms, regions and sectors to reflect on the current state of green transition and what holds back a faster transition.

While technological eco-innovations are essential drivers in the green transition, their environmental value is only realised if firms undertake organisational cognitive shifts to transition to sustainable business models (Geissdoerfer et al., 2018). In other words, a holistic transformation of firms and sectors is essential for a true green transition. Innovative and sustainable business models offering viable alternatives to existing fossil-fuel-based business models must leverage collaborative inter and intra-industry relationships, digital technologies and elements of behavioural change to deliver a holistic green transition (Chen et al., 2020; Freire, 2018; Montresor & Vezzani, 2023; Stadtler et al., 2024). Hence, the paper also explores the complementary conditions (e.g. firm processes, policies and technologies) needed to enable the green transition within the broader economic systems.

In what follows, the paper explores the role and importance of technologies for green transition (Sect. 2), followed by a discussion on green skills and capabilities (Sect. 3) and government policies (Sect. 4) required to complement these technologies. The final section presents a research agenda for an ambitious green transition (Sect. 5).

2 Technologies for green transition

Utilising existing technologies in service of green transition is an essential component of the green transition process. New digital technologies and recombining technologies across different domains (e.g. digital and materials) to address climate change offer important opportunities for firms to eco-innovate. Therefore, this section addresses the role of digital technologies and the necessity of recombining different knowledge domains for climate resilience.

2.1 Twin transition

The convergence of the green and digital technological change, the so-called twin transition, has recently enriched the literature about the innovation-driven green transition (Demirel et al., 2025; Diodato et al., 2023; Faggian et al., 2025; Montresor & Vezzani, 2023). Existing studies have stressed that the interplay between these two trajectories can shape and transform eco-innovations with respect to their adoption and development, thereby paving the path to a green and digital economy (Bianchini et al., 2023; Damioli et al., 2024; Fusillo et al., 2025a, 2025b).

On the one hand, it has been argued that the adoption of digital technologies can directly help meet sustainability goals through a wide array of technological solutions (Van Wynsberghe, 2021). For example, artificial intelligence (AI) can be leveraged to improve the sustainability of agricultural ecosystems by optimizing water use through smart water management systems, or by preserving ecosystems through the development of algorithms able to timely diagnose plant diseases (Goralski & Tan, 2020). Guenat et al. (2022) underline the environmental benefits associated with the implementation of robot and automation systems, while Vinuesa et al. (2020) identify several possible positive impacts of AI on the environment, for example, driven by enhanced modelling of climate change simulations or by monitoring and predicting resources depletion and substitution. Yet, these studies also point to possible rebound effects emerging from the environmental footprints of such technologies, mitigating the overall net benefit (Bianchini et al., 2023). Moreover, the adoption of digital technologies can help firms implement eco-innovative strategies based on organisational change and knowledge management practices. By adopting digital technologies broadly, and specifically the AI which should be understood as a method of inventions, firms empower their capacity to reorient processes and products towards efficiency and better environmental performance (Agrawal et al., 2024; Ardito et al., 2021; Cattani et al., 2025; De Marchi & Di Maria, 2020; Montresor & Vezzani, 2023).

On the other hand, the literature on the twin transition has focused on the relevance of digital technologies for developing green technologies. The framework to understand these dynamics is based on the well-known recombinant knowledge approach, according to which new ideas and inventions stem from recombining existing knowledge components in new ways or from integrating new components in existing combinations (Fleming, 2001; Weitzman, 1998). Following this stream of literature, it has been shown that the development of green inventions follows specific recombination paths based on the hybridization of knowledge from heterogeneous and loosely related domains (Fusillo, 2023; Zeppini & van der Bergh, 2011). The implementation of innovation strategies aiming at developing green technologies hence requires the command not only of domain-specific capabilities but also of recombinant creation capabilities, which are defined as an individual's capacity to master and integrate knowledge inputs from previously unconnected technological domains (Carnabuci & Operti, 2013; Orsatti et al., 2020, 2024). This calls for extensive trans-disciplinarity and collaboration within organisations.

In this direction, the debate on the twin transition has been extended to account for the contribution of digital technologies to the recombinant creation dynamics underlying green technology development. It has been shown that ICTs and digital technologies, in view of their general purpose nature, favour the integration of diverse technological components in complex technology systems. Their inherent cross-cutting applicability represents a key channel for unrelated technological diversification and boundary-spanning search strategies, which lie at the heart of green technology development (Cicerone et al., 2023; Fusillo et al., 2025a, 2025b; Montresor & Quatraro, 2017, 2020; Montresor et al., 2023). For example, Biggi et al. (2025) explore the intersection of AI with green technologies using patent data covering 40 years. The authors focus on the application of AI algorithms to green technologies (referred to as Green Intelligence), underlining the general purpose nature of AI as a driver of eco-innovations. The authors demonstrate that the impact of Green Intelligence innovations for shaping future innovations in their fields is significantly higher as these patents display higher originality and generality. Interestingly, the authors show that the market returns to Green Intelligence patents are lower than those to AI patents. This sheds some concerns on the viability of a true twin transformation if markets penalise recombination of digital and ecological capabilities.

2.2 Recombinant knowledge creation

The importance of hybridisation and recombinant knowledge creation dynamics have fed a debate focusing on knowledge sourcing for eco-innovation and on the system, interactions underlying green technological change (Kim et al., 2024). The development of green technologies is grounded in collective invention dynamics, which favour knowledge exchanges and increase the likelihood of getting access to diversified knowledge inputs (Pinkse et al., 2024). Accordingly, it is necessary for firms to rely on heterogeneous teams of inventors to deepen and diversify the firm's internal knowledge base, while at the same time creating the conditions to access to external knowledge through linkages with environmentally oriented partners embedded in local innovation ecosystems (Ghisetti et al., 2015; Marino & Quatraro, 2023; Orsatti et al., 2020).

Given the reliance of green technologies on analytical knowledge, eco-innovators are found to be more likely to source knowledge from epistemic communities and inventors at scientific and academic institutions (Buyukyazici & Quatraro, 2025; Marzucchi & Montresor, 2017; Ocampo-Corrales et al., 2021). Accordingly, the collaboration between inventors and scientists has been found to increase the likelihood of developing comparative advantages in green technological domains (Quatraro & Scandura, 2019). The quality of the research and knowledge infrastructure of local innovation systems plays an important role in driving firms' capacity to develop green technologies. Important dimensions concern the establishment of connections and collaborations across different institutional actors, as well as the presence of scientific and technological comparative advantages in domains that enable and feed the hybridization and cross-fertilization of ideas that are necessary for the development of green technologies. In this context, firms' absorptive capacity is crucial to leverage external knowledge and exploit it in recombinant dynamics for eco-innovation. Eco-innovation capabilities, therefore, emerge as distinctive features of firms and regions and are based not only on the command of specific technological and scientific domains but also on the capacity to combine heterogeneous knowledge and to manage complex interactions with a variety of institutional actors. This local dependence of eco-innovations is also addressed in Lelli et al. (2025) as they establish a strong connection between the local demand for 'green' and the emergence of eco-innovating firms in that region. The authors show that besides the local knowledge networks that foster the regional eco-innovations, the regional culture and demand also plays an important role in the commercialisation and success of eco-innovations.

These findings on the relevance of regional knowledge ecosystems for eco-innovation tie in to the growing research and policy agendas on 'just transition', emphasizing the implications of a just and holistic transition that does not leave behind those regions and communities that may suffer losses or lack the strong knowledge ecosystems to participate the green transition (Newell & Mulvaney, 2013).

3 Skills and capabilities for the green transition

The adoption of green technologies towards a more sustainable economy needs to go hand-in-hand with incorporating green skills and capabilities within firms (IEMA and Deloitte, 2022). Organisations must transform their production processes and human resources to adapt better to the different needs of a green economy that doesn't rely on fossil fuels. Companies that deploy their resources and capabilities efficiently to undertake a transition towards environmentally responsible and socially sustainable business operations can more effectively deal with climate risks and gain a competitive advantage in the markets through eco-innovations (Chan, 2005). With an emphasis on natural resources, the natural resource-based view theory of the firm explores how companies can gain a sustainable competitive advantage through the management, use, and conservation of these resources (Hart, 1995; Hart & Dowell, 2011).

Literature highlights the importance of sustainability-oriented dynamic capabilities for eco-innovations, reflecting the firm's ability to adapt to changes in the natural environment and innovate in using natural resources (Franco & Giannocarro, 2025). These capabilities are crucial for managing resources efficiently and anticipating regulatory changes or shifts in consumer preferences. A firm's dynamic capabilities, defined as its ability to achieve competitive advantage by dynamically renewing its competences to adapt to the competitive environment, are seen as crucial for acquiring the expertise required to innovate and transform the business models towards sustainability (Teece, 2018). These capabilities involve higher-level activities that differentiate firms in their ability to identify value-creating opportunities, recognize emerging threats from the business environment, seize new opportunities, and adapt the business models accordingly (Teece et al., 1997). Among the sustainability-oriented capabilities, the literature mentions a long list to cover technological capabilities (e.g. conducting environmental R&D, scanning for key green technologies, using eco-design and life cycle assessment), internal integrative capabilities (e.g. cross-functional integration within the firm, training of the workforce for sustainability), external integrative capabilities (e.g. collaborations with external partners to increase sustainability, supply chain integration) and marketing capabilities (e.g. competitor benchmarking and managing the company's green image and reputation) (Dangelico, 2016). Connecting with the broader firm capabilities, Caravella et al. (2025) focus on the firms' exporting capabilities as a strong complement to the sustainability-oriented capabilities. The authors establish that exporting is an important channel for firms to receive the financial returns to their standard innovations and eco-innovations. Interestingly, they also showcase the particularly important role of exporting capabilities for catalysing the returns to advanced and complex innovations such as efficiency enhancing eco-innovations. These findings underscore the importance of thinking of the complementary capabilities in ensuring that sustainability-oriented capabilities can be implemented and embedded in firms.

To integrate into the green transition of the economy, companies also have to consider how their workforce structure adapts to the transition, inside and outside the organisation. A holistic green transition within the company is rooted in the workforce, starting with the senior management who set the broader vision and structures for green transition, and the rest of the workforce that brings together the required green skills for technological and organisational transformation (Alvis et al., 2022; Arena et al., 2018; Orsatti et al., 2020). Depending on the type of green technology adopted, the skills and capabilities of workers may differ from those required by fossil fuel intensive businesses and fall short of meeting the needs of a green economy (Elliot et al., 2024; Cecere & Manzanti, 2017). Moreover, the organisational structures need to adopt to the requirements of a green economy where managers have to develop new forms to organise the firm, introducing new practices such as delegation, team building, flow of communication, flat structure as required by the distinct characteristics of the green transition that the firm and the sector are experiencing (Del Río et al., 2024). Molina-Garcia et al. (2025) emphasize that the employee skills and capabilities play an important role in innovations that promote sustainability. Focusing on the SME context in Italy, the authors examine the financial literacy of CEOs and showcase how the financial literacy at the top levels of the company drives process innovations that improve the sustainability of the firm. Likewise, a recent article from Zhan et al. (2024) provides evidence that the enhancement of employee skill structures can boost eco-innovations and firm performance.

4 Government policies and governance for the green transition

The role of effective government policies and instruments has long been central to the debate around ensuring firms' green transition, where government policies and infrastructural investment are essential to shift the economy from its existing fossil fuel-intensive trajectory towards net-zero emissions (Pinkse et al., 2024; Stern & Valero, 2021). Many firms, without effective regulations, could not invest in eco-innovations- even if they may be aware of the climate risks they face- due to the well-established double-externality problem[1] as well as cost, technology and market barriers (Costantini et al., 2017; Rennings, 2000; Uyarra et al., 2016). Indeed, Porter Hypothesis, in its strong and weak forms, has received significant support in empirical studies underlining the essential role that stringent government regulations play in stimulating firms' eco-innovations, resulting in stronger firm performance (Porter & van der Linde, 1995). Many different instruments have been proposed to lift the existing barriers and encourage the uptake of eco-innovations. In addition to single instruments such as command and control policies and environmental taxes, instrument mixes have been used around the world by different governments, working to determine the optimal level and balance of financial support for eco-innovations to tackle various competing and urgent economic and environmental policy goals (Mohnen & Röller, 2005).

The differences in sectoral and regional challenges for the green transition requires careful considerations to ensure that government policies are effective and deliver results that benefit the economy, local communities and, most importantly the diverse

[1] The double-externality problem refers to an important peculiarity of eco-innovations; they produce positive spillovers in both the innovation and diffusion phase. Positive spillovers in the diffusion phase appear due to a smaller amount of external costs compared to competing goods and services on the market. This double-externality reduces the incentives to invest in eco-innovation, so environmental and innovation policies should be jointly organized.

sustainability agendas such as bioeconomy, hydrogen economy, circular economy or biodiversity (Tchorzewska et al., 2022). Choices around target beneficiaries and support conditions influence how public funding for eco-innovation aligns with other political and societal priorities (Rogge & Reichardt, 2016; Sorrell & Sijm, 2003). These choices are constrained by budgetary and administrative capacities as well as domestic priorities of governments. They influence policy design regarding the combination and sequencing of different instruments in policy mixes, generating different outcomes for eco-innovation. For example, Tchorzewska et al. (2025) find that the order in which different policy instruments are introduced (sequencing) affects the adoption of eco-innovation. In particular, using subsidies ("carrots") first and then using environmental taxes ("sticks") affects firms' environmental technology investments positively and significantly while no significant effects are observed when the ordering of the instruments is reversed. Hence, eco-innovation requires careful policy design, evaluation and iteration to ensure that green transition can accelerate.

In spite of calls for greater directionality for more directed innovation support, R&D tax incentives continue to be the dominant tool for business R&D support (OECD, 2023b). Over the past two decades, R&D tax incentives that lower the effective cost of R&D for companies have become the leading form of business R&D support. In 2021, tax incentives for R&D expenditures accounted on average for nearly 60% of total measured government support for business R&D across OECD and EU regions (OECD, 2024a). These trends have extended to the eco-innovation as an increasing number of countries adopt more favourable tax subsidy terms in order to help their industries become stronger in markets for green technologies by triggering innovation input and output innovation additionalities (Czarnitzki & Hussinger, 2018; Wu et al., 2020). In a recent study, Tchorzewska (2025) explores the implications of R&D tax credits for firms' expenditures on environmental protection. The author showcases that R&D tax credits have increased Spanish firms' environmental protection investments, particularly to reduce air pollution. She also underscores the large and indirect impact of the R&D tax credits on increasing employment dedicated to environmental protection. This indirect impact on the labour force composition of the firm to incorporate sustainability is particularly important for the green transition as skills is a foundational element for the transition. It is worth emphasising that the status of tax credits as the preferred instrument, as opposed to R&D grants or procurement of R&D services ("directed funding"), has endured through events such as the global financial crisis and the COVID-19 pandemic (OECD, 2024b). Additional tax incentives, like patent boxes that allow companies to benefit from lower tax rates on income from business R&D and innovation, have also gained popularity, despite international agreements aimed at limiting their potential for tax base erosion and profit shifting (OECD, 2023a).

Among the various policy instruments that have been proposed to improve the rates of eco-innovation is green public procurement as a complement to more traditional policy interventions (Rogge & Reichardt, 2016; Sorrell & Sijm, 2003; Tchorzewska et al., 2025). Green public procurement is a policy instrument for governments to signal to the private sector the importance of sustainability, and drive demand for low-carbon products and services (Czarnitski et al., 2020). Among the growing literature that explore the effectiveness of green procurement (Dimand et al., 2023), Fusillo et al. (2025b) examine how the US public procurement efforts have affected the eco-innovation rates originating from the US private sector. The authors identify the US public procurement efforts to help stimulate US eco-innovations, mostly in processes, and particularly in large and incumbent firms with significant knowledge that can be channelled into sustainability.

The interactions between different policy instruments can produce synergies to catalyse green innovations, where one instrument enhances the positive effects of another in a particular aspect, or complementarities, where one instrument contributes additional benefits in other areas. Therefore, the implications of newer policy instruments such as public procurement should be carefully evaluated in connection to other policy instruments. The policy mix literature identifies that conflicts may also arise when some policies are jointly applied, leading to redundancies or, in extreme cases, counterproductive outcomes that undermine the effectiveness or efficiency of promoting eco-innovation (Ramanathan & Li, 2024). Efforts need to concentrate on better understanding the policy interactions and coordinating innovation and environmental policies to ensure a coherent approach towards green transition.

Besides government policies, firms' self-governance (or self-regulation) structures that promote sustainable activities and eco-innovations have gained pace in the recent decade as examples of self-regulation (Acemoglu et al., 2012, 2016; Aghion et al., 2016). Environmental governance structures such as environmental management systems and certifications are important in promoting a firm's green innovations (Garcia-Quevedo et al., 2022). Zhilei et al. (2025) examine how Chinese firms' self-governance activities affect their environmental innovations, revealing a strong correlation between firms' internal governance efforts and their green patenting capabilities. These results follow from prior research, which indicates that firms' eco-innovation capabilities are triggered by internal corporate governance structures and efforts (Long et al., 2023). At the same time, it is worth highlighting that the impact of these internal governance efforts is rarely as strong as that of government regulation in the context of stimulating eco-innovations, and firms need to undertake high levels of corporate social responsibility investments to see significant increase in eco-innovation (Kesidou & Demirel, 2012; Pan et al., 2021; Pérez-Cornejo et al., 2023). It is also worth mentioning the increase in the reporting of self-regulation activities (i.e. ESG reporting) as firms publish sustainability reports and media releases and/or participate in global sustainability reporting activities such as the Carbon Disclosure Project (Albarrak et al., 2023; Khan et al., 2021). The effectiveness of sustainability governance and reporting on eco-innovations remains to be better understood as researchers further investigate the data to identify which elements of corporate governance can complement government regulations to achieve increased and higher quality eco-innovations (Blind et al., 2023). Likewise, research on greenwashing indicates that ESG reporting can be associated with greenwashing, especially when government regulations are weak and market reactions are the main motivation for firms' self-regulation efforts (Treepongkaruna et al., 2024).

5 A research agenda for an ambitious green transition

The pursuit of a green transition is poised to significantly restructure technologies, sectors, geographies, communities and labor markets. This transition will likely entail a contraction of employment in carbon-intensive industries, concurrent with the emergence of novel technologies and employment opportunities in environmentally sustainable sectors. The large scale of this change, the political, economic and technological uncertainties that accompany it, and the existing deep lock-ins to fossil fuel technologies and infrastructures create major barriers to transition. At the same time, the exigencies of climate change itself- manifesting in phenomena such as escalating temperatures and the increased frequency of extreme weather events- will exert further risks on business operations, straining the bottom line as well as organisational capabilities in the next two decades. Hence, while world affairs such as trade wars and geopolitical tensions will occasionally move the emphasis from the climate crisis, we expect climate change to be a permanent pressure on firms, creating a constant pressure for economic change.

The green transition is complex and highly reliant on government coordination and support to accelerate and maintain its momentum. The shifting global political dynamics, major conflicts, the cost of living crises and several other pressures risk diversions from the trajectory of green transition as governments battle problems on other fronts. This presents a major risk for our economies, health and societies as a warming climate can disrupt them in unpredictable and unprecedented ways. Therefore, the first in our proposed research agenda for accelerating the green transition is to undertake more extensive and deeper analysis of policy innovations that can trigger radical eco-innovations to shift the fossil fuel intensive sectors towards net-zero emissions. Focusing on innovative policies and effective policy mixes from different contexts, future research should examine how best to stimulate environmentally responsible behaviour, eco-innovations and the growth of green knowledge in all sectors. We call on academic research to prioritise policy in every study where our work can directly inform policymaking. Additionally, we call on researchers to work directly with policymakers to co-design their studies in ways that can shed light on how best to stimulate the green transition through policies.

The second area of future research we recommend is at the intersection of digital and green technologies. The diffusion of sophisticated digital technologies such as AI, robotics and Internet of Things comes with a significant ecological footprint including increased energy and water consumption as well as the use of virgin materials with high environmental impact. Therefore, it is essential to better understand the circumstances under which these digital technologies can promote sustainability and eco-innovations; as well as exploring how different technologies and applications can reduce the environmental impact associated with digitalisation in companies.

The third future research area we recommend for further research is to better understand the green skills required in firms to better integrate into the green transition. While we have built an extensive understanding of organisational green capabilities at the firm level, we still do not know as much about the required green employee skills that form the foundation of important organisational green capabilities. While green skills shortages are commonly mentioned in policy documents or by industry leaders as a major barrier to green transition, it is poorly understood by firms and receives limited attention in academic work. We call for further research into green employee skills and how this map into the important sustainability-oriented capabilities at the firm level.

Finally, we call for all research into the green transition to assume a systems approach to position the green transition within the broader economic, social, technological and political systems it is connected to. Important questions are at the intersection of different systems with the green transition where intended as well as unintended consequences may arise. For example, policies that trigger eco-innovations in existing innovation ecosystems may benefit from existing infrastructures and networks and lead to successful outcomes, while they may also render other geographies less relevant to the green transition and contribute to growing economic inequalities as green transition gains pace.

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