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**Future-oriented green and just regional industrial path development:
Towards a critical examination**

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Abstract

The Economic Geography literature and beyond has witnessed a growing interest in developing new green regional industrial paths and an increased emphasis on future-oriented green and just regional industrial path development. In this article, we raise new and critical questions about the notion of green and just regional industrial path development regarding who eventually benefits from it and whether the needs of the most vulnerable and marginalized actors are met. From this base, we provide an overview of two burgeoning research themes in this area: (1) the politics and agency of regional future-making narratives and practices and (2) developing new policy capabilities to build transformative resilience and navigate toward socially desirable futures. Finally, the article concludes with future research opportunities related to these promising themes and uncovers the complexities linked to future-oriented green and just regional industrial path development.

Keywords: path development, green, just, resilience, future, narratives, politics

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1. Introduction

Amidst the global push for sustainability and social equity, regions are increasingly called upon to chart new industrial paths that are both green and just. Yet this task is unfolding not only under conditions of deep uncertainty—driven by rapid technological change, evolving policy frameworks, and contested societal priorities—but also within a broader context of *polycrisis*, where interconnected economic, environmental, geopolitical, and social disruptions amplify each other. This article contributes to ongoing debates in Economic Geography and regional economic development studies by identifying two emerging research themes for future-oriented inquiry into how regions navigate these compounded challenges. Building on earlier work (Asheim & Dunford, 1997) that underscored the importance of studying regional futures (Levenda et al., 2019) to foster localized learning, tackle social exclusion, and promote endogenous development, we shift the focus toward the tensions and contradictions that underpin current efforts at green and just industrial transformation. While recent scholarship has laid out broad agendas for researching regional futures (Gong, 2024), our contribution sharpens the analytical lens on how stakeholders' debate and negotiate future prospects amidst competing priorities, value conflicts, and institutional constraints. In doing so, the article opens new avenues for theorizing the role of agency, contestation, and uncertainty in regional transformation processes.

Recent debates within the Economic Geography literature and beyond have emphasized addressing challenges such as negative value capture, regional inequalities and environmental degradation (Morales & Atienza, 2022; Bez & Virgillito, 2024; Rodríguez-Pose & Bartalucci, 2024), rethinking the shareholder maximization and growth-oriented model (Giuliani, 2024) and looking at the notion of human well-being and social inclusion (Binz & Castaldi, 2024), foundational economy (Coenen & Morgan, 2020; Hansen, 2022), and operating within planetary boundaries instead of sustained economic growth (Braun, 2015; Chlebna et al., 2024). Related to these emerging debates are the discussions regarding green and just (e.g. Tripl et al., 2020; Gong et al., 2022; Eadson & Van Veelen, 2023) and inclusive regional industrial path development processes (Benner, 2023a; Tartaruga et al., 2024). However, there remains a significant gap in the literature regarding the trade-offs and tensions between these dimensions and finding new ways to integrate them.

This is an important question for scholarship as well as for policy and practice. Not paying attention to justice within green economic change risks further entrenching social and economic inequalities, in turn heightening conditions for a green backlash among some societal groups, putting the green transition at risk while also creating fertile ground for populist political groups seeking to foment division and unrest (Rodríguez-Pose & Bartalucci, 2024).

Next, building upon earlier studies (Asheim & Herstad, 2021; Grillitsch & Asheim, 2023), we are interested in studying how regions transform into a new green and just future while enhancing their preparedness for unexpected future disruptions. There is a need to improve understanding of how regions can better deal with future crisis events (e.g. pandemics like COVID-19, economic and financial crises, oil and energy crises, wars, natural climate hazards, and terrorist attacks) and develop the necessary resilience and capabilities to bounce back from the future shocks and support long term inclusive regional transformation (Hassink, 2010; Gong et al., 2020; Gong & Hassink, 2024; Tripl et al., 2024). Despite these promising discussions, there are limited insights regarding how regions develop the necessary adaptive capabilities (Labory & Bianchi, 2021; Rao, 2024) after facing shocks and leverage such crises for green and just development (Jakobsen et al., 2025). This brings us to the second research question we ask in the paper: How can we think about actions toward green and just path development while ensuring that the regions develop the necessary resilience and capabilities to adapt to future shocks and crises?

Based on a critical review, the article first aims to rethink the different ways in which the notion of green and just industrial path development (Eadson & Van Veelen, 2023) has been conceptualized to date and, raising critical questions about whose interests are prioritized and marginalized while advocating for green and just regional industrial path development. Second, the article explores how regional actors create just green regional futures by developing new policy capabilities to manage future crises and shocks. We suggest that future research within the regional industrial path development literature should focus on these two interesting directions outlined in the paper.

The remainder of this article is structured as follows. Section two provides a critical lens on green and just regional industrial path development, followed by a brief presentation of two burgeoning research themes in section three. These themes include (1) politics and agency of regional future-making narratives and practices and (2) developing new policy capabilities to build transformative resilience and navigate toward socially desirable futures. Finally, section four summarizes the debates emphasized in section three and provides new insights regarding the methodological approaches required to study future-oriented green and just regional industrial path development.

2. Green and just regional industrial path development: a critical review

In the past decade, a growing body of work in economic geography has analyzed green regional industrial development from various perspectives (Essletzbichler, 2012; Grillitsch & Hansen, 2019; Matti et al., 2017; Sotarauta et al., 2021; Steen & Hansen, 2018; Hassink et al., 2019; Trippel et al., 2020; Bråten et al., 2025). These contributions have brought an improved understanding of green economic restructuring, further strengthening industrial path development studies. For instance, Trippel et al.'s (2020) focus on asset modification advances the understanding of how regional restructuring takes place across multiple domains; and several of these contributions have also drawn from socio-technical transitions studies to develop a more sophisticated systemic understanding of regional change. Many of these studies have though paid less attention to the role of narrative and discourse in path development, which are essential to understanding how new pathways are conceived, legitimated, and mobilized (Fløysand & Jakobsen, 2016; Njøs et al., 2020; Sjøtun, 2020; Benner & Shilo, 2024; Roessler et al., 2025).

Based on recent literature on inclusive innovation in regions and cities (Bramwell, 2021; Doussard & Clark, 2021; Schrock & Lowe, 2021; Lee, 2023, 2024; Parsons et al., 2024), the inclusiveness of path development has been analysed (Benner, 2023a). Investigating the inclusiveness of new innovation-driven paths is relevant because the benefits to the population of regions and countries where they emerge and grow are very unequal (Feldman et al., 2021; Heilbrunn, 2023; Kwon & Sorensen, 2023).

Concern for justice within green path development has also arisen through scholarship drawing together literature from just transitions with recent interest in green path development. For Eadson and van Veelen (2023) this requires taking stock of path development logics and narratives to ask, "who or what is path development for?". This approach foregrounds normative dimensions in relation to logics of development and consideration of justice in processes and outcomes. In common with related just transition literature (Heffron & McCauley, 2018; Stevis & Felli, 2020; Cha & Pastor, 2022) the use of polyvalent justice frameworks supports a move away from only considering distribution outcomes to also considering inclusivity in path development negotiations and recognition of different identities and future narratives. More broadly, these views share with geographic political economy contributions to path development (MacKinnon et al, 2019) a concern for path development as a political process.

While these different ramifications of the path development literature (Benner, 2023b) share some common ground and overlapping interests in questioning the normative underpinning of innovation-based regional development (Binz & Castaldi, 2024; Gong, 2024; Martin, 2021), they raise the question of how these attributes (green, inclusive, just) relate to each other. In a simplified attempt for definition and delimitation, “green” refers to industrial paths that contribute to low-carbon or other sustainability transitions and can either be new paths or transformed old paths (Tripl et al., 2020; Sotarauta et al., 2021). “Inclusive” refers to industrial paths that make economic opportunities (comparatively) accessible to people from different socio-economic strata (e.g., in terms of income, education, ethnic group) (Benner, 2023a; Lee, 2024). Finally, “just” refers to paths that, in addition to being green and inclusive, alleviate (or at least, do not entrench) inequalities within the wider community, between generations, or across spatial scales (Heffron & McCauley, 2018; Eadson & van Veelen, 2023). A critical difference between these seemingly synonymous terms is that inclusive path development is more focused on outcomes whereas justice frameworks place more attention to broad-based participation in policymaking and implementation processes, as well as in the diversity of “ideational” processes (Benner, 2024a), that is, the visions and narratives underpinning path development. Therefore, for the perspective followed in this paper, we adopt the broader notion of justice, in line with the growing literature on just transitions at the regional scale (e.g., Beer et al., 2024; Hearne et al., 2025; Weller et al., 2024).

Green paths do not have to be just (While and Eadson, 2022), as renewable energy pathways with their gender imbalance (Baruah, 2017) or difficult working conditions (Mette et al., 2017) show. What is more, notwithstanding open questions on its employment impacts (Silva et al., 2023), the production of electric vehicles can create or maintain manufacturing work in a decarbonizing industry (Weng et al., 2011) but possibly at the cost of unequal struggles about regional futures (Mercante Thierauf, 2024) and global inequalities in sourcing materials such as cobalt or lithium (Sovacool, 2019; Bustos-Gallardo et al., 2021). For example, recent work on the creation of a green regional path in Namibia offers an illustrative case of injustices, both locally and globally, behind such efforts to facilitate industrial decarbonization in the Global North with large-scale investments in the Global South (DeBoom, 2025; Klagge et al., 2025; Tunn et al., 2025). This example highlights the difficult questions that arise for reconciling decarbonization imperatives with justice, which it itself multidimensional (Heffron & McCauley, 2018), and in preventing the emergence of new regional “sacrifice zones” in the name of greening the economy (Brock et al., 2021). These tensions are summarized in detail by Ciplet and Harrison (2020) who show that in many cases of regional and local transitions, environmental sustainability is not easily reconciled with procedural inclusiveness, recognition of diverse rights and values, and distributive equity.

A further central challenge about justice relates to the tension between different narratives of change and their legitimation. This draws attention to power dynamics in path development. As Calignano and Nilsen (2024a, p.73) argue, “regional development is not a dinner party” but instead is negotiated and contested. Focusing on justice in such negotiations brings attention to whose narratives are privileged in path development processes and whose are excluded or marginalized and, hence, whose visions for the future have higher or lower chances of being realized. Normative calls for justice place more emphasis on a future-oriented approach to path development as they draw attention to on-going negotiation over different desires.

These considerations lead us to three critical questions. First, what constitutes a green and just regional industrial development path? Do such paths genuinely exist, or are they merely idealized visions for the future? Second, among the (potentially multiple) visions of green and just industrial path development within regions, which ones are realized, by whom, through what processes, and

with what outcomes? Third, how do actors balance and navigate trade-offs when the goals of green and just development diverge? Which goals should they prioritize, and how do they determine their priorities? We consider these questions as future-oriented challenges in the next section.

3. Future-oriented green and just regional industrial path development: two burgeoning research themes

3.1 Politics and agency of regional future-making narratives and practices

Regional development is far from a frictionless process governed solely by economic or technical mechanisms. Rather, it involved negotiating power relations and divergent or even conflicting ideas, opinions, and aspirations (Eadson & van Veelen, 2023; Calignano & Nilsen, 2024a). Although this political dimension of regional development has been discussed in some critical strands of the literature examining socioeconomic and political dynamics at various geographic levels (see, among others, Sotarauta, 2009; Coe & Yeung, 2015; Kano et al., 2020), it has remained somewhat at the margins of other approaches that have dominated the discourse in economic geography (Martin & Sunley, 2022; Kogler et al., 2023) and regional innovation systems literature over the past two or three decades (Tödtling et al., 2018; Asheim et al., 2019).

From our perspective, regional development takes place in a constantly negotiated reality, where views on current issues and visions of possible futures result from (often asymmetrical) power relations and conflicting narratives. For example, Nilsen et al. (2024) discussed emerging tensions between conservative and progressive narratives about what the lumber industry should look like in the future in the peripheral region of Inland Norway (i.e., what they term the “low skilled/no change narrative” and the “innovative narrative”). This empirical evidence shows how divergent narratives emerge not only when local actors live in the same area, but also when they operate in the same industry or economic sector. Grillitsch and Asheim (2023) also discuss the contrasting narratives regarding the future of the maritime industry in Sunnmøre in Western Norway. They highlight two contrasting rationales for future development that include (1) an emphasis on cost efficiency and a traditional neoliberal view of globalization and (2) a focus on combining responsible value chains and regenerative regional development. In the latter, they emphasize the development of new innovation capabilities, local value creation, and reduced GHG emissions.

Within this framework, it seems necessary to further study decision-making mechanisms and how, at some point, hegemonic visions emerge as an effect of conflicting narratives and asymmetrical power relations. As Eadson and van Veelen (2023) point out, scholars interested in regional development pathways, especially when they adopt an evolutionary perspective (e.g., Boschma and Frenken, 2006; Martin, 2010; Boschma et al., 2017), have traditionally been more interested in the structural and economic characteristics of places and how these specific contexts enable a certain kind of sectoral diversification or retraining of local labour. In this regard, a growing strand of literature on human agency can help move beyond established structural perspectives by looking simultaneously at the processes and mechanisms (agency) as well as at the individuals or groups (agents) that make change possible in regions possessing certain characteristics (Grillitsch & Sotarauta, 2020; Sotarauta & Grillitsch, 2023a).

However, despite conceptual foundations and insights (Steen, 2016; Grillitsch & Sotarauta, 2020), recent empirical advances (Grillitsch et al., 2022; Grillitsch & Asheim, 2023; Beer et al., 2023; Dinmore et al., 2023; Calignano & Nilsen, 2024b), and notable exceptions (on the concepts of “reproductive” and “maintenance” agency, see Bækkelund, 2021; Jolly et al., 2020), the study of human agency has privileged the actors that make change possible and the mechanisms that can

lead to a transformed socioeconomic and institutional context (i.e., what is called “change agency,” see, e.g., Grillitsch and Sotarauta, 2020; Sotarauta & Grillitsch, 2023b). In other words, if we consider human agency in relation to local and regional narratives, scholars have focussed on how a certain development path emerges, as well as on the actors actively participating in the negotiations and confrontations that lead to critical decisions (see, e.g., Sotarauta et al., 2021; Benner, 2024b).

Although it is already complicated to disentangle the multiple and multifaceted narratives that emerge in contested regional dynamics, the scenario becomes even more complex when considering the voices that remain unheard or have no chance to come to the surface. Eadson and van Veelen (2023) refer to the existence of an “inclusion bias” (Rainnie, 2021) or “denied agency” when they highlight the tendency to privilege “participation” rather than “non-participation” in networks and decision-making processes. This political question leads us to ask who the possible new development paths are for and how neglected narratives can emerge and lead to more just regional futures (Eadson and van Veelen, 2023).

Further, we need not only to consider the construction of narratives or visions but also their performance, which itself is a power-laden process. Narratives and visions are performed to legitimate future regional paths (see, e.g., Benner, 2022; Glückler & Eckhardt, 2022), specifically through texts such as strategy documents which often combine narrative and calculative devices to legitimate particular economic trajectories or investments.

The act of visioning and representing narratives often airbrushes conflict (Lapsley et al., 2010) and social inequalities (Fraser, 2017), presenting textual modalities in forms designed to lock in specific logics and solutions. Examples include performance through calculation of economic benefits of a particular course of action, or regional visions that tie economic gains with perceived regional identities (Eadson & While, 2021; Lai & Devine-Wright, 2024). The performative power of future narratives therefore comes to the fore: how arguments are presented, how information is chosen, which audience is targeted, and who is consulted in both their construction and presentation to the world.

Regions are diverse organisms, even when they seemingly belong to uniform ideal types. This is increasingly acknowledged and taken into account in economic geography (Calignano et al., 2024; Eder, 2019; Glückler et al., 2023; Nilsen et al., 2023). Nonetheless, the fact that regions are differently prepared for new (greener) socioeconomic pathways - depending on their structural preconditions, asymmetry of power relations, dependence on traditional or polluting industries, existing skills, quality of institutions, etc. - and how this can create tensions and discontent has probably not been fully theorized (for a recent exception, see Baumgartinger-Seiringer et al., 2024), and has been empirically tested in very few empirical contexts (e.g., Bourdin & Torre, 2022; Rodríguez-Pose & Bartalucci, 2024).

Thus, while discussing how to break with existing narratives of the past to create new ones and project into the future, we should also think about who is involved and how narratives of imagined possible futures might include actors who are marginally considered in decision-making processes or even have no voice at all (Fraser, 2017). This is what Lukes (2021) calls “silent domination,” that is, a form of invisible power that involves the placid acceptance of subordination, which suggests that excluded perspectives, underrepresented stories or “hidden transcripts” should be integrated into studies of regional development (Calignano & Nilsen, 2024a). Beginning to consider the neglected views of minorities or marginally involved actors when studying local and regional narratives (e.g., Nilsen and Njøs, 2022; Eadson & van Veelen, 2023; Calignano & Nilsen, 2024a), but especially taking them into account in decision-making processes and the political arena, cannot only help break with

existing narratives, but also help create more inclusive forums that could lead to unexpected, original, and, most importantly, just regional futures. We take this into the next section in considering how these questions can be navigated through developing new policy capabilities under conditions of uncertainty.

3.2 Developing new policy capabilities to build transformative resilience and navigate toward better futures

In a world characterized by cascading crises, growing uncertainty, and the entanglement of environmental, economic, geopolitical, and social disruptions, regions are increasingly confronted with the challenge of responding to the unexpected. These overlapping and mutually reinforcing dynamics—often described as a polycrisis—create a volatile context in which long-term planning becomes more difficult, yet more essential. Creating sustainable green and just regional futures requires regions to develop new policy capabilities to anticipate and manage the polycrisis that is to come. As rightly stated by Asheim & Herstad (2021), when discussing regional innovation policies in an era marked by various challenges and problems, a critical strategic question arises: should regions strive to bounce back to the old normal, or should they use this critical moment as a conjuncture to transform into a new future that is more innovative, sustainable, and just? In an age of polycrises and heightened uncertainties, it is vital for regions to enhance their preparedness for unexpected disruptions and guide the development of regional futures in more green and just directions.

Over the past few decades, significant progress has been made in understanding regional resilience (Sutton et al., 2023) and innovation policy. Concepts such as transformative resilience (Martin & Sunley, 2020; Trippel et al., 2024) and problem-oriented or challenge-oriented regional innovation systems and policy (Uyarra et al., 2019; Tödtling et al., 2022; Flanagan et al., 2023; Trippel et al., 2024) have provided special attention to embedding sustainability and justice into both the current development and future visioning of regions. In today's rapidly changing world, incorporating an additional layer of sensitivity and preparedness for crises and shocks (Baumgartinger-Seiringer et al., 2024) into regional innovation policy is no longer optional but essential. These events have the potential to fundamentally reshape the trajectory of regional futures, underscoring the need for proactive, adaptive, and resilient policy frameworks. However, there is relatively little evidence on how regional resilience (Lemke et al., 2023) that is transformative in nature (e.g., transformative resilience) can be fostered by the new generation of regional innovation policy and how the increasing frequency of shocks of all kinds requires new thinking in regional innovation policy.

Crises and shocks can create windows of opportunity for regions to explore alternative, and potentially better, futures (Kurikka & Grillitsch, 2021; Gong & Hassink, 2024). James et al. (2025) highlight that the path development related to tourism development in Nuuk, Greenland, was shaped by a critical juncture related to the COVID pandemic, leading to the regional actors actively negotiating future path development and alternative paths being proposed by other stakeholders. Furthermore, Jakobsen et al. (2025) also discuss how the greening processes in three regional industries (tourism, maritime and salmon farming) in Vestland, Western Norway, have been shaped by external shocks related to COVID-19. To increase regional transformative resilience over the long term, regional innovation policies should prioritize directionality and experimentation (Asheim & Herstad, 2021). This entails the creation of shared visions for change, coordination across governance levels and policy fields, and the establishment of policy experimentation spaces where failure is acceptable and becomes a source of learning (Gong, 2024). Moreover, policy integration across domains — industrial, innovation, science and technology, and social policies — is crucial to fostering long-term transformative resilience (Markard & Rosenbloom, 2020). However, regions' potential to bounce forward (long-term adaptability towards new, better futures) and beyond

(transformation towards greener and juster futures) are dependent on the relationship between agency and structure (Grillitsch & Asheim, 2023; Sotarauta & Grillitsch, 2023a).

Evolutionary Economic Geography (EEG), which has gained strong popularity in regional policy thinking in recent years, focuses on structures and lacks a social ontology, which implies that social agency is underdeveloped. This limits the scope for new policies toward just futures that go beyond what has worked in the past. Additionally, EEG does not prepare for mitigating or exploiting serendipities. EEG also limits the scope for more long-term imagination of potentials for promoting economic activities based on unrelated diversification that could lead to a juster, greener economy (Asheim & Herstad, 2021). This implies that the EEG literature must be complemented by a change agency and power dynamic perspective to deal with the challenges of how to secure a transformation to a just green future (Grillitsch & Sotarauta, 2020).

In developing new concepts and strategies to deal with the wicked problems of regional future-making, a focus on actors and agency is especially important in realizing transformative (innovation) policies. The achievement of a greener, juster society and economy is more dependent on the capacity of the political system and politicians to implement the necessary policies than on existing and new developed technologies. This implies that political will and policy decisions will be at least as important as technological path dependency and new technological trajectories. The change agency perspective opens for understanding the context-specific conditions that enable or hinder the engagement of actors and influence outcomes (Asheim & Grillitsch, 2025).

Yet, differences exist among scholars on which aspects of the two key concerns — greenness and justice — should be prioritized. The COVID-19 pandemic provides a compelling example. Markard and Rosenbloom (2020) for instance, suggested that governments should seize this critical moment to accelerate the phase-out of carbon-intensive industries, technologies, and practices, while simultaneously promoting low-carbon, cleantech innovations. While this approach aligns with an emphasis on destabilization and gradual phase out of incumbent industries (Turnheim, 2022) it tends to downplay the “just” dimension of regional transitions. The tradeoffs need to be carefully analyzed before phasing out carbon-intensive sectors (Afewerki & Karlsen, 2022) that might harm the livelihoods of many industrial workers, particularly in regions specialized in these brown industries. Others, in contrast, have pleaded for a progressive-melioristic turn in regional studies (Martin, 2021), and argued that to deal with the negative consequences of the pandemic, public policies need to focus on regional economic recovery, resilience planning, building healthy and just places, with the purpose to bring about more equitable and just regional outcomes (Bailey et al., 2021).

Thus, a more balanced and well-coordinated approach to discussing the regional futures through innovation and regional transformative policy becomes a critical challenge for modern policymakers. An important policy tool to deal with a transformation to a green and just future is strategic foresight, which makes it possible for actors to systematically investigate various future scenarios and proactively prepare long-term transformative policies and strategies to handle uncertainties and exploit potentials for creating a greener, juster economy and society (VINNOVA, 2024). All in all, achieving green and just regional futures will require policymakers to negotiate difficult tensions and contradictions in promoting bold, transformative changes to combine environmental sustainability goals, social equity and justice. While crises and shocks can serve as catalysts for experimentation and innovation for alternative futures, regional innovation policies must be thoughtfully designed to address the structural inequalities and vulnerabilities that such transitions often exacerbate. By fostering collaboration across policy domains, supporting local stakeholders, citizens, and

marginalized actors through transition processes, and embracing adaptability and learning, regions can build resilience and navigate toward futures that are not only green but also just.

4. Discussion: emerging research opportunities connected to the themes

In this article, we have reflected on the need to raise new questions regarding green and just industrial path development (Eadson & Veleen, 2023) and present new opportunities to rethink and renew prior research by presenting two promising research themes connected to the two research questions. Regarding the first research theme and the main research question, we suggest that future research opportunities exist in understanding how actors continuously shape and reshape the potential future regional trajectories collectively by translating distant futures into immediate courses of action in the short term to avoid getting stuck in unrealistic future narratives that might be difficult to realize in practice (Augustine et al., 2019; Feuls et al., 2024).

Building on these insights, there is a need to reexamine how future-oriented narratives that once seemed promising for green and just regional industrial path development can fail to materialize due to unforeseen global developments beyond regional actors' control or regional actors not developing enough capabilities and resilience to foresee and plan for an unforeseen future. For example, Jolly et al. (2024) document that the future narratives that once seemed promising concerning the development of a large sustainable battery manufacturing unit linked to Freyr in Helgeland, Nordland, Norway failed to materialize due to intense competition and better financial support from the United States that eventually led to scaling down of the planned activities in Helgeland. As scholars in economic geography argue, there is a need to examine multiple possible futures, including non-actualized possibilities, and understand how the actions of different actors can contribute to making these futures real, often with unintended effects and consequences (Patomäki, 2006). For example, Gong (2024) highlights the advantages of studying promising regional futures, emphasizing the importance of exploring causal mechanisms and configurations required to advocate for socially desirable regional futures.

Further, there are opportunities to explore the underlying tensions between individual and collective regional future-oriented narratives as individual regional actors might find it difficult to realize new opportunities if they fall outside the scope of the dominant and collective regional narratives supported by several actors (Grillitsch et al., 2024). Future research in this direction needs to better understand the struggles and negotiations between different actors with different normative goals (environmental, economic, and social) (Flanagan et al., 2023) in framing different visions of green and just industrial path development while prioritizing the needs and welfare of the most vulnerable and marginalized actors.

Concerning the second research theme and the research question, we suggest that thinking about future narratives and visions of change and power relations opens broader questions about the temporalities of path development (see Martin, 2010; Martin & Sunley, 2015; Henning et al., 2019; Martin & Sunley, 2022; Kogler et al., 2023). For example, doing so also helps us to highlight the dynamic relationship between histories, the present, and future (Gong, 2024). Changing contexts can lead to changing interpretations of history: history is often reshaped in the narrator's image in a particular context. This is important because it underlines the importance of history not as a linear determinant of path development but as a live element within the construction of futures. Power dynamics over "whose history" counts towards future narratives are an important aspect of narrating future pathways.

Future research opportunities in this theme can focus on understanding how regional actors construct future narratives (Wood et al., 2021) for green and just industrial path development, by drawing upon past glory (Hendriks, 2024), historically rooted regional identity, and the local and regional industrial culture (Eriksen et al., 2023; Görmär, 2023, 2024; Stihl et al., 2023; Benner & Shilo, 2024). As regional futures are also linked to historically rooted place-specific regional cultural identities (Bell & York, 2010), it is essential to ensure that regional futures align with broader regional political strategies (Friedrich & Hendriks, 2024) and not exclude vulnerable and marginalized regional actors (e.g. industrial workers living in segregated neighbourhoods, female workers, elderly, low-income residents, civil society, ethnic minorities, and citizens facing risks due to climate change). Greater sensitivity is also required towards understanding how these regional actors perceive future-oriented developments as a threat to the socio-cultural fabric they have preserved from the past (see, e.g., Cha and Pastor, 2022), as it might not align with their regional industrial heritage, culture, religious and ethnic values, and glorious memories of the past. To better understand the perceptions of the marginalized actors, there is also a need to dive deeper into their personal characteristics, including their belief systems, motivations, and personal capacity to act (Piša & Hruška, 2024), as well as their emotions (Hannemann et al., 2024) and psychologically rooted intentions and motivations (Huggins & Thompson, 2022).

Finally, novel insights are required for a better conceptualization of regional policymaking that looks at the complex social, environmental, and economic trade-offs and the context-dependent nature of green and just regional industrial path development in socially desirable directions (Martin, 2021; Benner et al., 2024). Building on insights from prior scholarship on challenge-oriented regional transformative development and regional mission-oriented policies (Bugge et al., 2022; Priebe & Herberg, 2024), future regional policymaking needs a socially responsible and context-dependent approach as stimulating regional transformative development (Isaksen et al., 2022) in pre-decided socially desirable directions might lead to discontent and resistance from the most vulnerable and marginalized social groups. Furthermore, adequate care needs to be taken, as pushing for strong, regionally oriented, and mission-oriented policies without adequate investment, training, and education of the regional actors, and without developing their endogenous capabilities and well-being, can also be counterproductive.

5. Conclusion

In this paper, we draw attention towards important themes related to (1) politics and agency of regional future-making narratives and practices, and (2) developing new policy capabilities to build transformative resilience. The paper also suggests that scholars working within the field of economic geography and regional economic development studies focus on addressing questions related to the green and just regional futures that are considered socially more desirable (Gümüşay & Reinecke, 2022; Gong, 2024) from the perspective of the different actors. Here we propose that there is a need for understanding how regional actors continuously explore multiple socially desirable futures (Wenzel et al., 2025) by empowering vulnerable and marginalized actors, negotiating on which values (i.e. equality, human well-being, sustainability, economic growth, ecological justice, autonomy etc) should be prioritized, deliberating on a course of action to enact the desirable future and reflecting on their actions as they adapt themselves into the uncertain future.

Given the emerging concerns regarding the political and social backlash against green transition policies and certain societal groups considering them as unjust resulting in green discontent (Rodriguez Pose & Bartalucci, 2024), negative impact of regional industrial path development including social exclusion and inequality, job losses, greenhouse gas emissions, increased energy

consumption, land degradation, habitat loss, and pollution (Breul et al., 2025), and peripheral regions experiencing unfavourable regional structural preconditions (Braten et al., 2025; Kiviaho & Hyryläinen, 2025), we suggest that there is a need for more attention regarding the role of power and politics involved in the formation and eventual implementation of the regional futures.

It is crucial to examine the regional futures that are ultimately realised in practice and those that are not, as well as the voices that are prioritised in the process (Wenzel et al., 2025; Comi et al., 2025), depending on the power differences between the actors, including the conflicts and contestations between them. Furthermore, it is also important to look at why certain regional futures get envisioned, realized, and enacted while others are left out in the background due to the vested interests of the powerful regional actors. In this respect, it is relevant to empower voiceless, vulnerable, and marginalised actors (Comi et al., 2025) through a participatory and democratic process where their values are recognised, and the futures they envision and enact are institutionalised.

Another important point of consideration is to also emphasize the role of external influence of historical developments and legacies (e.g. regions with a colonial and communist past) and major political events and critical junctures (Mlilo et al., 2025), as well as external shocks such as global economic crises, natural disasters, unexpected events and other trigger events (Sanz-Ibáñez et al., 2017; Flood Chavez et al., 2023; James et al., 2025) in shaping future green and just regional industrial path development. Building upon prior research on developing regional capabilities (Labory & Bianchi, 2021; Laasonen, 2024; Rao, 2024) and recent studies on green industrial resilience (Jakobsen et al., 2025), future research can also aim at understanding how government policy and state funded programs can be targeted at helping regions reorient themselves from the negative impact of trigger events and external shocks in the future.

CRedit authorship contribution statement

Björn Asheim: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Maximilian Benner:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Giuseppe Calignano:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Will Eadson:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Huiwen Gong:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Trond Nilsen:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Suyash Jolly:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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