

# Towards a Place-based Approach to Circular Innovation

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## Abstract

This Letter proposes a place-based approach to circular innovation. The original concept, as discussed by Cherrington et al. (2023), views 'circular innovation' as a strategy for sustainable development, focusing on resource efficiency and the regeneration of natural systems. However, we argue that it overlooks the significance of 'place.' This Letter argues that local conditions and contexts are crucial for effectively implementing circular innovations and maximizing their benefits. It advocates for tailoring circular strategies to local dynamics, leveraging local resources, and fostering community involvement. We identify five 'loops' that define a place-based approach to circular innovation, namely resource loops, social loops, economic loops, ecological loops, and policy loops. We argue that such a place-based approach supports the creation of localized, circular economies, emphasizing the importance of understanding and integrating the unique attributes of different locales into circular economy practices and policies.

**Keywords:** Place-based; Innovation; Circular Economy; Sustainability.

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## 1 Introduction

In a recent contribution by Cherrington et al. (2023), circular innovation is put forward as a key strategy for achieving sustainable development. The authors articulate circular innovation as a multi-stage process, from ideation to diffusion, encompassing strategies like narrowing resource use, slowing product lifecycles, closing material loops, regenerating natural systems, and leveraging data for innovation. While they highlight the socioeconomic and environmental benefits of such an approach, such as enhanced sustainability, social cohesion, and economic value, it leaves an important aspect unexplored: the significance of place. This Letter aims to extend their argument by demonstrating that the geographical context in which circular innovation is applied greatly influences its success. A place-based approach, considering local resource loops and social, economic, policy, technology, and ecological dynamics, is crucial for the practical implementation of circular innovation and maximizing its benefits across diverse communities and ecosystems.

## 2 The notion of place: A brief literature review

The concept of 'place' has received significant attention across various academic fields, serving as a key lens through which the complex interplay between human societies and their environments is understood.

In environmental studies and geography, 'place' transcends the notion of mere physical space to embody a rich interplay of natural, social, and cultural dynamics (Cresswell, 2014). This conception of place as a multifaceted entity acknowledges that locations are defined not just by their geographical coordinates but by the complex interrelations between their ecosystems, the economic activities they host, and the communities that inhabit them (Guthey et al., 2014). Places possess unique ecological characteristics, economic structures, and social contexts that collectively shape their identities and capabilities (Convery et al., 2012).

The policy and planning literature argues that governmental regulation and planning need to include an understanding of the specific attributes of a place (Madanipour & Hull, 2017). That is, policies and development strategies need to be designed with a deep understanding of local conditions, including environmental constraints, socioeconomic structures, and cultural values, thereby ensuring that interventions are both effective and aligned with the community's needs and aspirations (Roseland, 2000). Emphasis on place, viewed from a political perspective, notes variance over time between more place-based regional strategies and more centralized and place-agnostic modes (Gash et al., 2014). The innovation management literature suggests that the success of technological and social innovations is deeply rooted in understanding local contexts (Baker & Mehmood, 2015). Historically, this mirrors a shift in the expectations from fifth-generation models of intra-connected networks of innovations (Rothwell, 1994) to more nationalized systems of innovation, exploring the roles that individual actors and organizations play in these complex interoperative systems (Freeman, 1987). The notion of 'place-based' innovation emphasizes that change strategies need to leverage local strengths and address specific challenges in locations, arguing that a one-size-fits-all, or national systems-level, top-down approach often falls short in addressing the nuanced demands of different communities and ecosystems (Moulaert, 2016). This is particularly important in economically deprived peripheral regions and remote territories that often are inhabited by disadvantaged communities (Peredo et al., 2019).

The concept of 'embeddedness' plays an important role in understanding how economic activities and institutions are not merely transactional or isolated phenomena, but are deeply rooted in networks of personal relationships and fabrics of local cultures (McKeever et al., 2014). While traditional scholars (e.g., Rothwell, 1974; Cooper & Kleinschmidt, 1987) argue that market access and market context are critical factors in determining the success of innovations, Rutten & Boekema suggest that the success of innovations relies significantly on their compatibility with the local context, including the social norms, cultural values, and existing relational networks within a community (2007). This means that innovations that align with these local characteristics are more likely to be embraced and integrated into a place's social and economic systems, leading to more effective diffusion and adoption (Lashitew & van Tulder, 2020).

Additionally, studies on regional innovation systems and clusters highlight how localized networks of firms, research institutions, and policy actors can drive innovation through close interaction and knowledge exchange, further illustrating the role of geographical proximity and place-based characteristics in fostering innovation ecosystems (Asheim et al., 2016).

In summary, this brief literature review grounds the pivotal role of the notion of 'place' in shaping and being shaped by innovation processes. It calls for a nuanced understanding of place-based dynamics in developing and implementing innovation strategies, suggesting that such an approach can lead to more sustainable, inclusive, and contextually appropriate outcomes.

### 3 The need for a place-based approach to circular innovation

The literature on the circular economy (CE) mainly emphasizes system-wide innovations and sustainability practices aimed at minimizing waste and promoting the reuse and recycling of resources (Lacovidou et al., 2021). Scholars evaluating CE adoption also note forms of industrial paralysis (Bocken et al., 2023), either in terms of inertia when starting or losing momentum (for example, when the dynamics of the surrounding system or the behavior in the markets fail to reward circularity). Indeed, CE discourses and practices are often dominated by either the design of one product or service or wider engineering approaches that focus on the design of efficient circular systems that ideally produce no waste (Borrello et al., 2020) but achieving a change to a product's design or even a change to one business model can be hard enough to achieve, mainly when these are part of a broader economic system (Parida et al., 2019). While a systems approach is vital to circular innovations, this has often come at the expense of overlooking the specificities of places and locales (Howard et al., 2022). This oversight means that while CE principles are universally applicable, their implementation frequently lacks consideration of the unique environmental, cultural, governance, and economic contexts of different regions and places (Prendeville et al., 2018). This lack of focus on 'place' can significantly hinder the effectiveness of CE initiatives, as strategies that are not adapted to local conditions may face challenges in terms of acceptance, feasibility, and impact (Gura et al., 2023), mainly if their success relies on anchoring in local markets and consumers, before broader adoption across more national and global markets. Place, therefore, offers the ability to experiment with and test circular products and services in local markets by assembling localized supply chains. Experimentation and treating exogenous environments as living laboratories for innovation is well-versed in traditional innovation management (Schiuma & Santarsiero, 2023) and is becoming recognized as a key approach in circularity transitions, too (Bocken et al., 2018). While not always offering the lowest unit costs or the fastest delivery times, place-based launches and slow rollout can demonstrate demand for 'proof of concept' and 'proof of market.'

Hence, we argue that a place-based approach to circular innovation is vital because it ensures that CE systems and strategies are grounded in specific locales' unique ecological, economic, and social contexts (De Jesus & Mendonça, 2018). We also offer place-based environments as learning or experimental spaces. By considering local resources, ecosystems, cultural norms, economic conditions, and policy environments, circular innovations can be tailored to effectively meet local needs and conditions, ensuring greater sustainability and impact (Petit-Boix & Leipold, 2018). This approach facilitates the creation of localized circular economies that are resilient, inclusive, and capable of addressing specific environmental challenges and opportunities, thereby enhancing the overall effectiveness and acceptance of circular innovation strategies.

### 4 Exploration of Place-Based Loops

Over the past 5 years the authors have led various circular innovation, circular economy and environmental growth projects<sup>1</sup> and it is from these project examples we now explore some of the concrete, virtuous cycles, or loops, that characterize a place-based approach to circular innovation.

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1. TEVI, Circular Revolution, ARCA, FanBEST, EUROSAC, Future Focus II & Grassroots Circular Innovation represent around £5.5M of investment from various European and UK funding sources (ESIF, ERDF, ESF, WEFO, Interreg & HM Govt.) that have created significant research engagement with 933 businesses, between 2018 to 2023, to enable transitions to circularity, NetZero and sustainability.

The list of loops below is not exhaustive but provides a starting point to consider the various dimensions of a place-based approach to circular innovation.

#### 4.1 Resource Loops

Leveraging the use and cycling of local resources can significantly contribute to environmental sustainability and economic resilience in a specific locale (Williams, 2019). By prioritizing local materials, communities and businesses can drastically reduce the environmental footprint associated with the transportation needed to source them (McKinnon et al., 2015). This conserves energy and supports local economies by keeping the value within the community (Phillips et al., 2013). Additionally, efficient resource utilization – where waste from one process becomes the input for another – minimizes the demand for raw materials and reduces overall waste, fostering self-sustaining and circular business ecosystems (Di Maio, Rem, Baldé & Polder, 2017). This approach not only bolsters local innovation by encouraging the development of products and services that are uniquely suited to local needs and resources but also strengthens community ties and collaboration (Dzhengiz & Patala, 2023) as place-based actors come together to create and maintain these resources loops (McCann & Soete, 2020). Through such practices, we see the emergence of a more resilient and adaptive local economy capable of responding dynamically to environmental and economic challenges, such as the frequent global price shocks of raw materials that impact businesses and communities.

For example, in the construction industry, local resource loops can involve the use of recycled materials from local demolition sites for new building projects (Ruiz et al., 2020). Concrete rubble can be processed and reused as aggregate in new concrete, significantly reducing the need for virgin materials and minimizing transportation emissions associated with sourcing these materials from afar (Christensen et al., 2022). Additionally, local wood from deconstructed buildings can be repurposed for new construction or interior design. These two examples embody the principle of keeping resources in use for as long as possible and reducing waste. Such local resource loops can be virtuous as they are not only good for the environment but also reduce costs and improve the social bonds of communities.

#### 4.2 Social Loops

A place-based approach to circular innovation also fosters social capital and strengthens community ties (McCann & Soete, 2020). By engaging local stakeholders in developing and implementing circular initiatives, such approaches leverage community knowledge and networks, enhancing social cohesion and trust (Martiskainen, 2017). This collaborative process ensures that circular solutions are culturally relevant and socially accepted and empowers communities, building a sense of ownership and shared responsibility for sustainability outcomes (Patnaik & Bhowmick, 2020). Too often, innovations are imposed onto communities by powerful state or corporate actors, leaving communities feeling vulnerable and powerless (Stiglitz, 2019). A place-based approach to circular innovation fosters virtuous social loops, facilitating knowledge sharing and local innovation approaches, as diverse community members bring unique perspectives and skills to the table, collectively contributing to more resilient and inclusive local economies.

For example, a circular, place-based food systems approach allows for the development of strong community ties, connecting consumers directly with food producers (Böhm et al., 2022). For instance, community gardens, urban farms, or community-supported agriculture schemes can utilize organic waste from local households and restaurants as compost, closing the loop on organic material (McSweeney, 2019). This reduces waste and provides fresh produce back to the community. The collaboration fosters a strong sense of community as individuals share

knowledge, resources, and labor. It strengthens social ties, increasing local food security and promoting healthy, sustainable eating habits (Cerrada-Serra et al., 2018).

### 4.3 Economic Loops

In a global economy characterized by long supply chains, economic value is often concentrated in the hands of a few powerful corporations (Gereffi, 2017), making it hard for communities and small and medium-sized enterprises (SMEs) to play a meaningful part in the economy. A place-based circular innovation approach acts as a catalyst for retaining and amplifying economic value within communities (Bartik, 2020). By focusing on localizing economic activities – such as prioritizing local supply chains, supporting SMEs, and investing in local circular initiatives like grassroots textile sharing networks or renewable energy generation and consumption consortia – environmental sustainability can be bolstered and local economies stimulated. Place-based economic loops ensure that the local financial capital generated remains within the community, reinforcing economic resilience and fostering a self-sustaining ecosystem of innovation and community growth (Ratner, 2019).

To stay with an agri-food example, farmers' markets or community-supported agriculture (CSA) schemes help consumers buy directly from local producers, ensuring that more economic value stays within the local area (Böhm et al., 2022). This model challenges the dominance of larger supermarkets by keeping supply chains short and transparent, fostering local economic resilience, reducing carbon footprints associated with long-distance food transportation, and promoting healthier, fresher food options for the community (Allen, 2010).

### 4.4 Ecological Loops

Local economies exist within specific natural ecosystems that possess unique ecological characteristics (Holling, 2001). It is vital for a place-based circular innovation approach not just to be sustainable but regenerative, actively enhancing local ecosystems (Buckton et al., 2023). That is, it is not enough anymore to protect nature. Extractive ways of doing business have altered natural ecosystems for centuries. It is now time to regenerate what has been lost (Buchmann-Duck & Beazley, 2020). By aligning circular innovation strategies with the ecological realities of a place, we can ensure that these initiatives contribute positively to the health and resilience of local environments. This means designing systems that restore natural habitats, improve biodiversity, and support the natural cycles of the ecosystems they operate within, thus ensuring that circular innovation works in harmony with nature (ibid.).

For example, business and civil society actors can actively collaborate to restore native vegetation within urban or semi-urban environments, transforming underutilized spaces into biodiverse parks or green corridors (Modica & Solero, 2022). Tenants of an out-of-town business park – to use one location as an example – could engage in joint action with a local wildlife trust to clear waste around the site and enhance local biodiversity. This could have the added benefit of providing natural spaces for workers' well-being (Gilchrist et al., 2015), not to mention the contribution to climate mitigation efforts (Zhao et al., 2023). By reintegrating native flora, these projects reconnect urban areas with their natural heritage, fostering ecological resilience and providing a model for how circular innovation can regenerate and sustain local ecosystems.

### 4.5 Policy Loops

Amongst a range of local actors – from SMEs to communities – local policymakers can play a vital role in establishing the regulatory frameworks for place-based circular innovation systems (Grillitsch & Asheim, 2018). All of the above-outlined loops – whether they are resource-based,

social, economic, or ecological – can benefit from the direct involvement of local authorities. Private action by businesses and communities is vital in circular innovation but is often not enough. Local governments have the unique capacity to create environments that nurture circular innovation practices through targeted policy and regulatory measures (Howard et al., 2022). Local policymakers can significantly impact the acceleration of circular innovation by implementing policies that incentivize sustainable business practices, such as offering tax breaks for businesses adopting circular principles or providing funding for circular economy initiatives (Hartley et al., 2020).

For example, regulations can mandate the reuse of materials, which can create a more level playing field for businesses (Milios, 2018), regardless of their purchasing power or location/reach. A progressive tax system can incentivize the use and reuse of local materials, making materials that come from far away much more expensive (ibid.). Local governments can also provide public infrastructure that is accessible to all businesses and communities (Petit-Boix & Leipold, 2018). Repair stations could be set up to enable everyone to learn skills and have the necessary tools available to repair machinery and consumer goods. This highlights the importance of policy in encouraging stakeholder collaboration and establishing the necessary infrastructure for circular systems, demonstrating that well-crafted local policies are essential for creating supportive public infrastructures that enable place-based circular innovation to flourish.

## 5 Conclusion

From our focus on place and how a place can enable circular innovation, we conclude that by extending the notion of experimentation (which, as we know, is a critical enabler for innovation, particularly radical innovation), place and place-based localized systems of consumption can offer a minimum viable ‘space to experiment.’ Further, we conclude that by adopting place-based, or at least place-sensitive approaches to developing new products and services (innovations) that aim to create ‘meaning’ for their consumers and are ‘circular by design’, we can capitalize on the unique attributes of remote or peripheral regions, to our advantage. While this looks to reverse the trend of ‘apologizing for the liabilities of smallness’ or excusing the ‘limiting nature of peripherality’ in the context of radical circular innovations, we believe the place has an important role to play. We do assert, however, that this must go hand-in-hand with a localized enabling capability offered by regional and place-based policy and incentivization and must also pay close attention to the nuances and uniqueness of the social, community, and grassroots innovation networks and influencers located in these places. We recognize this may not play out in every place, nor is every place abundant in enabling characteristics for innovation. However, we feel that, as scholars, we must learn to recognize, energize, and embrace the opportunity offered by place-based circular innovation.

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