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Reconciling Circular Economy and Net Zero: Firm Capabilities to Resolve Sustainability Tensions

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Achieving net zero has become a key concern for firms to address climate change, yet growing evidence suggests that reducing reliance on fossil fuels for energy generation alone is insufficient. As material use is increasingly recognized as a significant source of greenhouse gas emissions, the circular economy has emerged as a potential pathway to support decarbonization. Despite the intuitive appeal of aligning circularity with net zero, their relationship remains conceptually underexplored and empirically ambiguous. To address this complexity, this article develops a framework conceptualizing the interaction between circular economy and net zero as a dynamic interplay of virtuous and vicious cycles. Drawing on paradox and capability perspectives, it explains when circular practices reinforce decarbonization and when they generate capability traps that undermine environmental performance. The framework contributes to corporate sustainability scholarship by identifying the capabilities that enable firms and their ecosystems to transform tensions into synergies, thereby supporting more coherent strategies and policy interventions at the intersection of circularity and net zero.

Introduction

In 2023, Lego quietly abandoned one of its most ambitious sustainability projects. The firm had spent years developing bricks made from recycled plastic bottles – a seemingly perfect marriage of circular economy principles and environmental responsibility. The problem? Manufacturing these oil-free bricks actually produced more carbon emissions than the traditional petroleum-based process they were meant to replace.[1] The greener choice, it turned out, was not greener at all. Lego's dilemma exposes a fault line running through contemporary sustainability strategy. As firms race towards net zero greenhouse gas (GHG) emissions, they have traditionally focused on transitioning to renewable energy, improving efficiency and purchasing carbon offsets (Pinkse and Kolk, 2009). But there is growing recognition that burning fossil fuels is only part of the problem. Many materials carry their own 'embodied emissions' which are generated during extraction, processing, transportation and disposal (Ibn-Mohammed *et al.*, 2013). This recognition has thrust the circular economy, long championed for reducing waste and extending product lifecycles, into the spotlight as a potential pathway to decarbonization (Basu, Jamasb and Sen, 2024; Hertwich *et al.*, 2019). The convergence seems intuitive. Reuse more, waste less, emit less. Yet the relationship between circularity and net zero is far more fraught than this logic suggests (Goodall, 2024).

Consider the contradictions. Biodegradable materials often require energy-intensive production or trigger land-use changes that generate significant upstream emissions. Recycling, the cornerstone of circular thinking, can itself be highly carbon-intensive, especially

[1]https://www.ft.com/content/6cad1883-f87a-471d-9688-c1a3c5a0b7dc.

when powered by fossil fuels. And wind turbines and solar panels, essential hardware for the net zero transition, create end-of-life disposal challenges that demand circular solutions dependent on the very carbon-intensive systems they aim to replace. These are not edge cases. They reveal a fundamental misalignment between two sustainability agendas that policymakers and business executives have assumed work hand in hand. The circular economy is a material concept, focused on eliminating waste by keeping resources in continuous use through slowing, narrowing and closing material loops (Bocken and Ritala, 2022). Net zero is an atmospheric concept, focused on balancing greenhouse gas emissions with removals through measurement, management and reduction (Fankhauser *et al.*, 2022), often by transforming energy and mobility systems towards renewables and green innovation (Geels, Kern and Clark, 2023; Pinkse, Demirel and Marino, 2024; Stern and Valero, 2021). Both represent system transitions, but they involve transforming different systems: material supply chains versus energy infrastructures. This distinction carries significant strategic implications. Implementing circularity almost always requires coordination across a firm's ecosystem including suppliers, customers, recyclers, regulators (Panwar and Niesten, 2022; Parida *et al.*, 2019). Net zero initiatives, by contrast, can often be pursued within organizational boundaries (Kolk and Pinkse, 2004). Firms designing for recyclability may simply outsource end-of-life responsibilities, externalizing emissions to other actors in the supply chain. The carbon does not disappear; it just moves.

Our understanding of the extent to which the circular economy and net zero reinforce each other remains limited. This lack of clarity about their interdependence has led to fragmented policies and disconnected corporate strategies. At the core lies the implicit assumption that these two agendas generate mutual benefits and that the circular economy is a pathway into the net zero transition. These assumptions have yet to be scrutinized and substantiated conceptually and empirically. Aligning circular economy with net zero is not only a technical and operational challenge, but also a strategic and organizational one. Firms must reconcile different temporalities, value creation logics and performance objectives. They must do so within a shifting policy landscape, rising stakeholder expectations and often with limited resources and measurement tools. This raises important questions: How do corporate initiatives aimed at advancing the circular economy contribute to achieving net zero goals and what conditions and capabilities are most conducive to fostering positive synergies between the two?

To clarify the relationship between the circular economy and net zero, we develop the circular economy–net zero alignment framework. We draw on paradox theory to identify what tensions emerge when firms pursue both agendas simultaneously, and on dynamic capabilities to explain how they can navigate these tensions productively (Arranz *et al.*, 2020; Demirel and Kesidou, 2019; Hahn *et al.*, 2018; Smith and Lewis, 2011; Teece, 2007). Tensions refer to contradictory demands that appear logical when viewed independently, but become inconsistent or incompatible when enacted together (Lewis, 2000). In corporate sustainability, such tensions emerge as competing objectives that pull firms in opposing directions and require ongoing management rather than either/or choices (Hahn *et al.*, 2018; Slawinski and Bansal, 2015). Bringing these perspectives together allows us to conceptualize the interaction between circular economy and net zero as a set of virtuous and vicious cycles.

A virtuous cycle arises when circular economy practices, such as reuse or modular design, reduce material demand and the related embodied emissions, thereby supporting progress towards net zero. By contrast, a vicious cycle emerges when firms fall into capability traps, for example by pursuing misaligned routines or failing to coordinate ecosystems. This results in circular economy initiatives that paradoxically increase energy consumption, shift emissions elsewhere in the supply chain, or fail to deliver economic value. The framework investigates how firms can transform tensions into synergies by developing capabilities tailored to addressing these tensions, thereby turning vicious into virtuous cycles. While tensions in corporate sustainability have been widely studied, most research has focused on conflicts between economic and environmental dimensions (Hahn *et al.*, 2018). In line with recent applications of paradox theory to circular practices aimed at tackling climate change (Colucci and Vecchi, 2024), we redirect attention to tensions that arise among different types of environmental initiatives. Unless these intra-environmental tensions are identified and addressed, they risk undermining both environmental outcomes and business performance.

Our framework contributes to the corporate sustainability literature by explaining how firms can transform intra-environmental tensions into synergies and identifying the capabilities that enable them to leverage circular practices in support of net zero. Rather than assuming that circularity naturally leads to decarbonization, we develop a conceptual account of the capabilities required to align these two agendas. We define alignment as the extent to which circular economy practices measurably support net zero outcomes through reductions in embodied and operational emissions. The framework unpacks how, when and under what conditions circular economy initiatives actually contribute to net zero, and which capabilities make these contributions possible. Our focus is explicitly one–directional: we examine the pathways through which circular practices advance net zero, while acknowledging that the reverse relationship

Table 1. Circular economy and net zero: Mismatch in scale, scope and measurement

Dimension	Circular economy	Net zero
Primary focus	Resource efficiency, waste elimination	Carbon emissions reduction
Level of action	Systems-level; multi-stakeholder ecosystems	Firm-level; organizational boundaries
Geographic orientation	Local/regional in implementation	Global targets and national regulation
Performance metrics	Difficult to quantify; focus on material flows and design	Highly codified (e.g. Scopes 1–3 emissions; science-based targets)
Temporal horizon	Long-term resource cycles, product life extension	Target-driven timeframes (e.g. 2030, 2050 goals)

– how net zero initiatives can facilitate circularity – remains an important area for future research that lies beyond the scope of this paper.

Our framework is timely because firms face regulatory pressure and stakeholder expectations to address both circularity and decarbonization. Yet an integrated framework to allow them to reconcile these demands, that could at times be at odds with each other, is missing. Understanding how vicious cycles can be turned into virtuous cycles is important for firms, because it allows avoiding unintended environmental trade-offs and develop capabilities that help them align both approaches to sustainability. For managers, the framework clarifies when circular initiatives reduce emissions, and when they risk doing the opposite. For policymakers, our framework offers insights into how capability development can be coordinated and supported to foster the alignment of both sustainability agendas.

The relationship between the circular economy and net zero

The circular economy, rooted in industrial ecology and systems thinking, aims to eliminate waste and retain material value through strategies such as reduction, reuse, repair, remanufacturing and recycling (Geissdoerfer *et al.*, 2017; Kirchherr, Reike and Hekkert, 2017). Its guiding principle is to slow, narrow or close resource loops, with an emphasis on material efficiency and the preservation of embedded value (Arranz and Arroyabe, 2023; Bocken and Ritala, 2022). Net zero, in contrast, has emerged primarily from climate science and international policy frameworks (e.g. IPCC, the Paris Agreement) and focuses on achieving a balance between GHG emissions and removals (Fankhauser *et al.*, 2022). It prioritizes decarbonizing energy systems, developing low-carbon technologies and enhancing carbon accounting and measurement capabilities (Pinkse and Kolk, 2009). While both agendas contribute to long-term environmental sustainability, they do so through different entry points: the circular economy addresses materials usage, whereas net zero targets decarbonization. The result is a partial overlap, but not full convergence (see Table 1). These differences can produce strategic decoupling within firms. One team may be tasked with developing circular business models, while another focuses on reducing emissions, with little integration or communication between them. Such separation can also create capability traps, where firms pursue one sustainability agenda at the expense of the other, or fail to realize potential synergies.

Despite these differences, practical intersections between the circular economy and net zero are increasingly visible, prompting growing calls for alignment in both policy and business discourse (Basu, Jamasb and Sen, 2024). In high-emissions sectors such as construction, automotive and chemicals, circular strategies like material reuse, remanufacturing and modular design can significantly reduce embodied carbon – synergies that are particularly relevant in industries where raw material extraction and processing represent a major share of lifecycle emissions (Pinkse, Demirel and Marino, 2024). Circular practices also offer potential to address Scope 3 emissions – those occurring in the value chain beyond a firm's direct control – by improving end-of-life management, facilitating reverse logistics and extending product lifespans (Molinaro, Orzes and Sarkis, 2025). More broadly, lifecycle thinking, a foundational element of the circular economy, is increasingly central to carbon footprinting and emissions accounting, offering firms tools to better understand the full climate impact of their products and services (Truant *et al.*, 2025). At the policy level, the circular economy is also being positioned as a tool for carbon mitigation. The European Green Deal and the UK's Circular Economy Package both explicitly frame the circular economy as a mechanism to support decarbonization and industrial resilience. Together, these developments reflect a broader shift towards integrating material and carbon strategies in regulation and corporate sustainability.

Yet the assumption that circularity automatically contributes to decarbonization does not always hold (Goodall, 2024). Circular initiatives can, in practice, risk leading to increased emissions (e.g. through energy-intensive recycling), displacing environmental burdens (e.g. outsourcing end-of-life processing) or creating blind spots when carbon performance is not systematically integrated into circular economy planning. In short, alignment between the circular economy and net

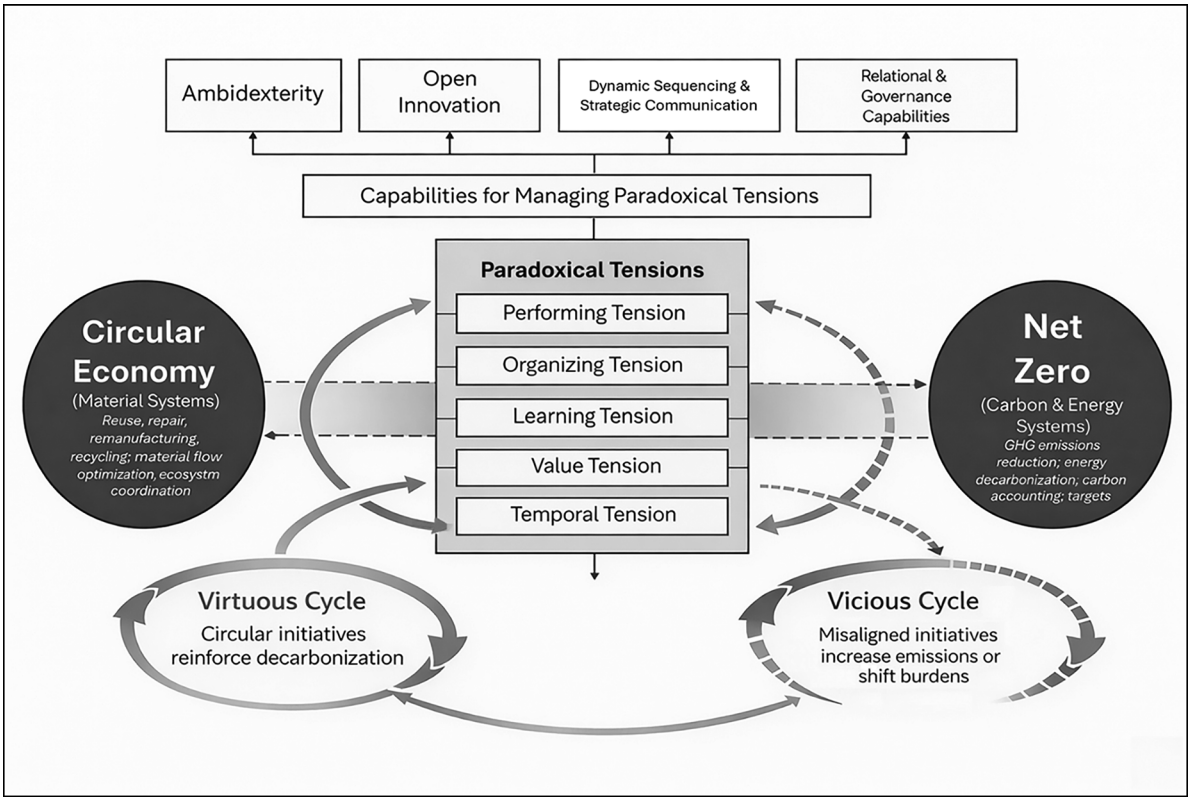

Figure 1. Circular economy–net zero alignment framework

zero is not guaranteed and can even backfire when misaligned incentives or unintended consequences arise. There is, therefore, a need for a deeper understanding of these tensions and how they can be addressed, a topic to which we now turn.

Unpacking the impact of circular initiatives for net zero: A framework

To shed light on how tensions between the circular economy and net zero can be managed effectively, we build on paradox and dynamic capability perspectives (Arranz *et al.*, 2020; Demirel and Kesidou, 2019; Hahn *et al.*, 2018; Smith and Lewis, 2011; Teece, 2007).

The paradox perspective provides a lens to understand the relationship between the circular economy and net zero not as a natural alignment, but as a set of persistent interrelated yet competing demands (Hahn *et al.*, 2018; Smith and Lewis, 2011). From this view, long-term environmental sustainability depends not on resolving tensions, but on the ability to continually engage with these two interdependent yet sometimes conflicting environmental objectives. Although not all tensions constitute a paradox, the relationship between the circular economy and net zero exhibits paradoxical features: both are essential to sustainability, yet they involve competing demands. If managed poorly, these tensions can devolve into zero-sum trade-offs; understood as a paradox, however, they can stimulate innovation, integration and strategic renewal, provided firms develop the capabilities to navigate these demands simultaneously.

To understand how organizations navigate paradoxical tensions, we draw on the dynamic capabilities perspective. Capabilities are bundles of knowledge, routines, skills and decision-making heuristics that enable firms to adapt to changing environments (Teece, 2007). Dynamic capabilities focus specifically on the organizational and strategic routines by which managers alter and reconfigure their resource base to generate new value-creating strategies in changing environments (Eisenhardt and Martin, 2000; Teece, 2007). In a sustainability context, dynamic capabilities capture how organizations manage sustainability-related paradoxical tensions (Arranz *et al.*, 2020; Demirel and Kesidou, 2019). Combining paradox and dynamic capabilities perspectives therefore clarifies not only why tensions between circularity and net zero arise, but also how firms can respond constructively.

Building on these insights, we propose the circular economy–net zero alignment framework which identifies the conditions and capabilities under which the circular economy can serve as a meaningful pathway to net zero (see Figure 1). The framework identifies five core tensions – performing, organizing, learning, value and temporal (Smith and Lewis, 2011) – that structure

Table 2. Tensions and capabilities between the circular economy and net zero

Tensions	Dimensions	Circular economy	Net zero	Capabilities
Performing tension	Materials efficiency vs technology optimization	Material flow optimization; reuse, repair, recycling; design for circularity	Energy decarbonization technologies; carbon accounting	Ambidextrous capabilities to balance circularity and energy decarbonization
Organizing tension	System-level coordination vs organizational boundaries	Ecosystem coordination; multi-firm and supply chain interdependence	Firm-level carbon targets; boundary-based disclosures	Open innovation capabilities to bridge firm-level objectives and system-level coordination
Learning tension	System innovation vs technology optimization	Exploratory Redesigning material systems	Renewable technology; measuring emissions	Ambidextrous capabilities to integrate system and technology innovation
Value tension	Collective value creation vs private value capture	Distributed value across ecosystems	Internal value capture via cost savings, compliance and reputation	Relational and governance capabilities to align value creation and capture
Temporal tension	Long-term transformation vs short-term targets	Long investment horizons; infrastructure redesign	Short-term pressure for measurable emission reductions	Dynamic sequencing and strategic communication capabilities to align investment horizons and stakeholder expectations

how the two agendas interact and frames them as a confluence of virtuous and vicious cycles. Whether a circular initiative results in positive environmental and business outcomes depends on how firms navigate the tensions they face and the dynamic capabilities they deploy (see Table 2). We highlight four capabilities that are especially critical: ambidexterity, open innovation and dynamic sequencing and strategic communication, and relational and governance capabilities (Gibson and Birkinshaw, 2004; Hahn *et al.*, 2015; Vurro *et al.*, 2024).

In sum, central to our framework is the recognition that the circular economy and net zero should neither be treated as interchangeable nor as automatically aligned. Effective sustainability management requires acknowledging the complex, and at times contradictory, ways in which the two agendas intersect and deploying the capabilities that allow firms to manage this complexity productively. The framework allows addressing several key questions. Firstly, how do firms navigate the tensions between material circularity and GHG emissions reductions, especially when environmental and business goals are not easily aligned? Secondly, what kinds of capabilities enable the formation of virtuous cycles, and under what conditions do capability traps, institutional fragmentation, or vicious cycles emerge instead? Thirdly, which capabilities are required not only within firms, but also across ecosystems and institutional environments, to support the alignment of circular economy and net zero agendas? In sum, the framework identifies a set of interrelated tensions that determine whether circular economy capabilities lead towards – or away from net zero goals – tensions that reflects concrete dilemmas faced by managers, engineers, designers and policymakers.

Paradoxical tensions shaping the circular economy–net zero relationship

Our framework identifies the following paradoxical tensions shaping the circular economy–net zero relationship. While we present these tensions separately, they tend to be closely interrelated, creating a set of knotted tensions (Sheep, Fairhurst and Khazanchi, 2017) that complicate the interaction between the two approaches to sustainability.

Performing tensions: Materials efficiency vs energy reduction

Paradoxes of performing capture the tensions that emerge when firms pursue multiple, and often competing, goals while responding to divergent stakeholder expectations (Hahn *et al.*, 2018; Smith and Lewis, 2011). In the context of sustainability, the circular economy and net zero have different environmental goals.

At the heart of the circular economy is a drive to retain material value by slowing, narrowing, or closing resource loops (Bocken and Ritala, 2022), for example through reuse, repair, remanufacturing and recycling (Kirchherr, Reike and Hekkert, 2017). In principle, these strategies reduce the need for virgin material extraction and avoid waste. However, the processes required to keep materials in use often demand significant energy inputs (Björklund and Finnveden, 2005). For example, high-temperature recycling of metals, plastics, or glass can be energy-intensive, especially when powered by fossil fuel-based grids. In such cases, the emissions associated with circular processing may offset or even exceed the benefits of avoided material extraction.

This creates a core performing tension: circularity strategies that enhance material efficiency may, paradoxically, increase emissions unless paired with clean energy systems. The production of biodegradable materials is a case in point. Though circular in logic, such alternatives may require more land, water or embodied energy, and contribute to emissions-intensive supply chains, especially when produced at scale or transported over long distances.

A virtuous cycle emerges when the circular economy and net zero goals are jointly achieved. For example, through modular product design that enables both material recovery and lower energy use, or through remanufacturing systems powered by renewables. In contrast, a vicious cycle arises when energy-intensive circular processes are implemented without consideration of their carbon footprint. This is not merely a technical issue, it is a strategic one: it requires firms to develop integrated capabilities for carbon and material accounting, lifecycle assessment and system-level optimization.

Organizing tensions: Organizational optimization vs systemic transformation

Paradoxes of organizing arise from organizational structures and leadership arrangements, manifesting as tensions between collaboration and competition, empowerment and control, and flexibility and direction (Hahn *et al.*, 2018; Smith and Lewis, 2011). The circular economy is organized in a very different way from achieving net zero. The former requires system-level coordination, whereas the latter is mainly organized within the boundaries of the firm.

The circular economy demands systems thinking. Implementation involves multi-actor coordination across supply chains, reverse logistics systems, material tracking infrastructures and product-service platforms (Parida *et al.*, 2019). In contrast, net zero strategies are usually implemented at the firm level, where carbon targets, reporting structures and compliance processes remain largely internally focused (Pinkse and Kolk, 2009). This mismatch in scope can lead to fragmented or misaligned efforts. As prior research on scaling sustainability warns, when attempting to network multiple initiatives across such different operational scales, managers can easily lose sight of local contexts and create disjointed responses (Goworek *et al.*, 2018). A firm may meet its internal net zero targets by shifting emissions-intensive processes downstream, effectively externalizing carbon while preserving internal performance metrics (Kolk and Pinkse, 2004). Likewise, circular initiatives may be developed in isolation from net zero planning, with no clear assessment of their carbon implications or long-term environmental trade-offs.

This creates an organizing tension: treating the integration of the circular economy and net zero as a firm-level organizational optimization task conflicts directly with the need to orchestrate a multi-actor, systemic transformation. Organizational optimization is often more easily manageable for firms but will limit the impact on achieving environmental goals through system transformation because that requires ecosystem capabilities for long-term alignment, including collaboration, trust-building, data-sharing and joint governance (Parida *et al.*, 2019).

A virtuous cycle emerges when firms align their internal net zero goals with the way they organize the implementation of circular economy initiatives. This means ensuring that implementation partners adhere to the same low-carbon principles for instance, by fully relying on renewable energy sources for recycling. Conversely, a vicious cycle arises when sustainability efforts remain siloed or narrowly framed. Due to the inherent interdependencies, optimizing one area in isolation can adversely affect the other if not managed in concert, thereby missing opportunities for systemic decarbonization.

Learning tensions: System innovation vs technology innovation

Paradoxes of learning refer to the tensions that arise between established practices and new initiatives in the course of organizational renewal, change and innovation (Smith and Lewis, 2011). In the context of circular economy and net zero, firms encounter different and complex learning paths that diverge in scope, pace and coordination requirements.

Circular economy transitions emphasize material system innovation such as redesigning products for reuse or remanufacture, developing new material compositions and reconfiguring product-service systems and reverse logistics networks. These forms of learning are exploratory, systemic and interdependent, and typically require experimentation, collaboration and changes in organizational mental models and business models. In contrast, net zero transformations primarily focus on technological innovations that can be implemented and managed within organizational boundaries. Examples include adopting renewable energy technologies, improving process efficiency, pursuing electrification, deploying carbon capture solutions and developing increasingly sophisticated carbon measurement and accounting tools. This learning tends to be incremental and performance-driven, oriented towards measurable emissions reductions within existing operational structures.

This creates a learning tension: redesigning underlying material systems for the circular economy initiates system-wide exploratory learning, whereas the

regulatory and market pressures surrounding net zero often push firms towards the exploitative learning needed to optimize existing low-carbon technologies and carbon accounting processes (March, 1991). Navigating these divergent learning paths requires distinct cognitive efforts; as Zeng *et al.* (2026) show, making sense of such ambiguous sustainability tensions demands open-ended, flexible sensemaking strategies from decision-makers. When firms prioritize one learning pathway over the other, a misalignment emerges in outcomes. A firm may, for example, streamline energy performance in existing product systems without addressing underlying linear material flows, thereby locking in carbon-intensive consumption. Conversely, firms investing in circular redesign may neglect to integrate renewable energy or carbon management, thus limiting climate benefits even when material circularity improves.

A virtuous cycle occurs when firms develop ambidextrous learning capabilities that enable them to explore new circular material systems while simultaneously exploiting and refining low-carbon technologies and carbon measurement practices. Such ambidextrous learning capabilities facilitate organizations to iteratively integrate material and carbon knowledge, thereby aligning the circular economy and net zero trajectories. A vicious cycle arises when learning pathways become siloed, resulting either in incremental decarbonization without structural circular transformation, or in system-oriented circular innovation that fails to reduce emissions in practice.

Value tensions: Creation vs capture

Paradoxes of value refer to the tensions between value creation and value capture (Bowman and Ambrosini, 2000). These are tensions particularly prevalent in the context of sustainability (van Bommel, 2018). They occur when a business model for sustainability creates environmental value that is difficult for stakeholders to capture in monetary terms.

Circular economy business models often involve distributed value creation across multiple actors, including suppliers, manufacturers, service providers, consumers and waste processors. In the context of the circular economy, value is created through extended product lifespans, recovered materials and avoided environmental costs, but capturing that value in competitive markets remains challenging (Lüdeke-Freund, Gold and Bocken, 2019). Firms might invest in circular design or take-back schemes but struggle to monetize these efforts if customers prioritize price over sustainability, or if competitors free-ride on circularity infrastructure without contributing. While net zero strategies face similar challenges, the cost savings derived from energy efficiency or avoided carbon taxes do facilitate internal value capture, often within relatively short time frames.

This creates a value tension: firms or stakeholders involved in the value creation for circular economy or net zero cannot always capture the value created (van Bommel, 2018), and it might flow to others instead (Lepak, Smith and Taylor, 2007). This tension typically manifests as disputes over ownership and the allocation of benefits from emission reductions across the supply chain derived from circular economy initiatives. Circular economy practices typically reduce embodied emissions that occur throughout the lifecycle of producing, transporting and distributing goods. For a focal firm, reducing such Scope 3 emissions contributes to achieving net zero; however, it often requires suppliers to make costly investments to lower embodied emissions without receiving financial compensation for their efforts. Due to power asymmetries within supply chains, a focal firm can simply pressure suppliers to make these investments or risk losing their contracts.

A virtuous cycle occurs when governance mechanisms enable equitable value distribution, as this incentivizes multi-actor participation in both circular economy and net zero initiatives. This demands relational and contractual capabilities, including negotiation skills, trust-building and novel business model design. In contrast, a vicious cycle arises when competitive dynamics prevent collaboration, or when firms offload environmental burdens to their suppliers to capture short-term gains, undermining both circularity and decarbonization.

Temporal tensions: Short-term vs long-term

Paradoxes of time refer to tensions between short-term and long-term orientations in managing sustainability (Slawinski and Bansal, 2015). Firms often face pressure to reduce waste and emissions to comply with government regulations; however, short-term compliance does not necessarily lead to the long-term transformation required for a fundamental reorientation of the economy to remain within ecological thresholds.

Circular economy transformations often require substantial upfront investments in new infrastructure, redesigned products, reverse logistics networks and stakeholder coordination mechanisms. The benefits, both in terms of environmental impact and cost savings, typically accrue over extended time horizons, and the urgency to achieve circularity goals appears to be lacking (Bocken *et al.*, 2025). In contrast, due to global policy efforts to curb GHG emissions which culminated in the Paris Agreement, the urgency and regulatory pressure to tackle climate change is much higher (Fankhauser *et al.*, 2022). As a result, firms have set commitments for net zero which are often structured around interim targets (e.g. 2030, 2035, 2050) that create pressure for measurable, near-term emission reductions (Berger-Schmitz *et al.*, 2023).

This creates a temporal tension: firms may be hesitant to make the long-term investments needed for circular transformation when they encounter pressure for rapid progress on net zero action. Firms operating under quarterly earnings pressures or short-term investor expectations are likely to prioritize quick decarbonization wins (e.g. renewable energy procurement, offsetting) over deeper but slower reductions through circular redesign of products and materials. Conversely, firms investing in circular business models may defer carbon mitigation efforts, assuming that material efficiency will eventually deliver emissions reductions. This assumption may not hold, however, if energy systems remain carbon intensive.

A virtuous cycle emerges when firms align their time horizons – that is, they view investments in circularity as essential for long-term progress towards net zero while still taking supportive short-term actions. Achieving this alignment requires dynamic capabilities to strategically sequence initiatives, communicate long-term value to stakeholders and balance competing performance demands. Conversely, a vicious cycle arises when temporal misalignment leads to underinvestment in either agenda, or when short-term pressures push firms to pursue quick compliance wins that are ineffective or that even undermine a wholesale transformation towards a more sustainable business model which addresses both waste and emissions.

Capabilities for managing tensions between circular economy and net zero

Navigating the tensions between the circular economy and net zero is not simply a matter of technological choice or managerial will. It requires firms to have or develop capabilities to respond to competing demands, manage uncertainty and create value in complex, often ambiguous sustainability and innovation landscapes. Each of the capabilities we discuss below corresponds to one or more of the tensions identified earlier. Rather than generic sustainability capabilities, they represent specific responses to the paradoxes that firms face when attempting to align circular economy and net zero agendas. These tensions cannot be 'solved' by prioritizing one goal over the other; rather, they must be managed in dynamic equilibrium (Smith and Lewis, 2011). To understand how firms can effectively align their circular economy and net zero initiatives, we therefore adopt a dynamic capabilities-based view. Dynamic capabilities refer to the bundled knowledge, routines, systems and relational assets that allow firms to innovate, adapt and reconfigure their operations in response to environmental, technological and institutional change (Eisenhardt and Martin, 2000; Teece, 2007). A dynamic capabilities lens explains why some firms succeed in generating virtuous cycles between circular economy and net zero, while others fall into capability traps or stall instead. We propose that alignment depends on at least four sets of dynamic capabilities, each associated with one or more of the identified tensions (see Table 2): (1) ambidexterity, (2) open innovation, (3) relational and governance capabilities and (4) dynamic sequencing and strategic communication.

Ambidexterity refers to a firm's ability to simultaneously pursue both exploration (developing new knowledge, experimenting, redesigning systems) and exploitation (optimizing and refining current operations) (March, 1991). In practice, this dynamic capability enables firms to balance explorative learning to develop new knowledge and innovate with exploitative learning that focuses on refinement and increasing the efficiency of existing operations (O'Reilly and Tushman, 2013). In the circular economy and net zero context, ambidexterity is essential because the two agendas require different forms of learning and operational focus. This capability is critical for managing the performing and learning tensions that arise between material efficiency and energy reduction, and between system innovation and technology optimization. The circular economy demands system innovation while net zero initiatives typically foreground technology innovation and operational optimization, such as adopting renewable energy, improving process efficiency, or developing carbon measurement systems. Ambidexterity allows firms to manage paradoxical tensions between environmental objectives (Hahn *et al.*, 2015) and enhances their capacity to pursue circular innovation and systemic transformation while simultaneously optimizing existing low-carbon operations and processes. Through ambidexterity, firms can integrate competing goals, such as material efficiency and energy decarbonization, and balance learning across different learning paths. Firms that fail to develop ambidextrous capabilities risk falling into vicious cycles, where circular economy and net zero progress stalls due to fragmented learning, capability inertia or unintentionally increased emissions. Silos of learning and prioritization can lead either to incremental decarbonization that reinforces linear material systems, or to circular redesign efforts that unintentionally increase emissions due to insufficient integration with energy and carbon considerations.

Open innovation refers to a firm's capability to engage with external parties in order to acquire, integrate and co-create knowledge and technologies that extend beyond its organizational boundaries (Chesbrough, 2003; Lichtenthaler and Lichtenthaler, 2009; West and Bogers, 2014). In the circular economy and net zero context, open innovation capabilities can allow firms to manage the organizing tensions that arise from the mismatch between system-level coordination needs and firm-level implementation priorities. Achieving circular

economy objectives typically depends on collaboration across supply chains, ecosystems and institutional actors. By contrast, net zero objectives are typically designed, measured and governed within organizational boundaries. Open innovation capabilities hold the key to bridging the firm and system levels and alleviating organizational tensions by aligning sustainability incentives across different actors, thereby creating possibilities for eco-system level collaborations that serve both the circular economy and net zero agendas. Open innovation mechanisms such as joint experimentation, shared infrastructures, co-development of technologies and cross-organizational learning can allow firms to align sustainability objectives across multiple actors and coordinate actions that neither circular economy nor net zero initiatives can achieve independently (Adner, 2017; Chesbrough, 2003; Jacobides *et al.*, 2018). In this way, open innovation supports ecosystem-level collaboration that integrates material circularity with decarbonization goals. Open innovation capabilities can thus increase the likelihood of virtuous cycles in which system-wide circular solutions contribute meaningfully to net zero outcomes (Kaipainen *et al.*, 2025; Vurro *et al.*, 2024). In the absence of open innovation capabilities, firms risk a vicious cycle where circular economy and net zero objectives remain organizationally siloed, leading to fragmented efforts, misaligned incentives and limited system-level impact despite firm-level progress.

Relational and governance capabilities refer to a firm's ability to build, coordinate and sustain cooperative relationships across organizational and supply chain boundaries. Relational capabilities emphasize trust-building, joint problem-solving, knowledge sharing and the development of mutual commitment with external partners (Gulati, 1995). Such relationship-based business networks act as essential micro-foundations for achieving strong environmental performance (Akhtar *et al.*, 2018). Governance capabilities involve designing the contractual, institutional and organizational mechanisms that allocate responsibilities, distribute benefits and structure decision-making across collaborating actors (Dyer and Singh, 1998). In the circular economy and net zero context, these capabilities are essential because the two agendas differ in how value is created and captured. We argue that relational and governance capabilities can enable firms to manage the value tension by negotiating and formalizing agreements that recognize and share the environmental and economic benefits arising from circular-enabled emissions reductions. These capabilities also help firms to coordinate expectations, align incentives and prevent free-riding in shared systems. Relational and governance capabilities thus allow firms to navigate organizing and value tensions, coordinate system-level circularity and ensure that focal firms can recognize, appropriate and justify their contribution to net zero transitions. Without strong relational and governance capabilities, firms risk falling into a vicious cycle where value created through system-level circular objectives is unevenly captured. This undermines collaboration and discourages participation in the net zero transition.

Finally, dynamic sequencing and strategic communication refer to a firm's capability to orchestrate the timing, prioritization and pacing of sustainability initiatives, while also shaping stakeholder understanding and support for long-term transformation. These capabilities enable firms to sense and interpret environmental demands, make strategic investment decisions under uncertainty and reconfigure resources and organizational routines over time (Eisenhardt and Martin, 2000; Teece, 2007). Strategic communication further involves framing and articulating the long-term value of transformation to internal and external stakeholders, ensuring continuity of commitment (Kaplan and Orlikowski, 2013). In the circular economy and net zero context, these capabilities are essential to bridge the different temporal horizons on which these two agendas operate. We argue that dynamic sequencing and strategic communication together enable firms to manage temporal tensions by staging circular economy and net zero initiatives so that early decarbonization gains do not displace or delay investment in circular transformation. They also help leaders communicate the strategic rationale for longer-term circular economy investments, thereby maintaining stakeholder support in contexts of reporting pressure, fluctuating market expectations, or leadership turnover. In the absence of these capabilities, firms risk becoming trapped in a vicious cycle, whereby short-term net zero objectives dominate decision-making. This, in turn, leads to underinvestment in circular transformation and constrains the decarbonization of existing linear systems.

Contributions of the special issue

The articles in this special issue examine how firms confront and manage the tensions that arise when circular economy ambitions intersect with net zero goals. Across diverse sectors and settings, they show how different capabilities enable firms to navigate these tensions and shape environmental outcomes. Together, the contributions reveal when circular practices reinforce decarbonization, when they create unintended trade–offs, and how specific capability configurations determine whether virtuous or vicious cycles emerge. In what follows, we map each article onto one or more of the key tensions and capability domains outlined in our framework, demonstrating how the collection as a whole deepens understanding of the organizational challenges and strategic opportunities involved in aligning circular economy and net zero agendas (Table 3).

Table 3. Linking the special issue contributions to the framework

SI contribution	Focus and context	Tensions	Dynamic capabilities	Exemplifying the framework
Kaipainen *et al.* (2025)	Firm vs. ecosystem level alignment for circular/net zero activities	Organizing tensions	Open innovation capabilities	A lack of ecosystem-level open innovation traps firms in fragmented, firm-level compliance (a vicious cycle) rather than achieving system transformation
Fu (2025)	Community engagement driving absorptive capacity and circularity	Organizing tensions	Relational capabilities (community engagement)	Relational capabilities can help resolve value tensions and align corporate/community objectives into a virtuous cycle
Re, Magnani and Previtali (2025)	Market anticipation and collaboration to meet government net zero goals	Performing and Organizing tensions	Dynamic capabilities/open innovation	Resolving performing and organizing tensions requires dynamic capabilities to avoid operational misalignment
Chen *et al.* (2025)	Institutional pressures driving green innovation in supply chains	Performing and organizing tensions	Green innovation/open innovation	Regulatory enablers and innovation capabilities can resolve tensions, fostering virtuous cycles of combined waste minimization and decarbonization
Ishaq *et al.* (2025)	Transitioning from single-loop to double-loop learning for circularity	Learning tensions	Ambidextrous capabilities	Unmanaged learning tensions result in incremental 'single-loop' capability traps, but ambidexterity helps align mandates
Abadzhiev, Carlborg and Sukhov (2025)	Organizational mindset shifts, lean management and eco-design	Performing, learning and organizing tensions	Ambidextrous capabilities	Firms must flexibly and ambidextrously manage multiple internal capabilities to avoid prioritizing one agenda over the other
Zheng *et al.* (2025)	Progressive dynamic capability building (sensing, seizing, transforming) in SMEs	Learning and temporal tensions	Dynamic capability building	Continuous capability reconfiguration prevents firms from stalling in linear compliance traps
Sarja and Piila (2026)	Regulatory uncertainty and fragmented sustainability actions	Temporal tensions	Dynamic sequencing and strategic communication	Temporal tensions without strategic sequencing can result in early, circular actions that remain short-term and fragmented
Rovanto and Virtanen (2025)	Cross-country differences in emotional engagement and market interaction	Value and organizing tensions	Relational capabilities	The spatial and cultural dimensions of organizing and value tensions require tailored relational capabilities
Gavurova *et al.* (2026)	Coordination of responsibilities and incentives across waste systems	Value and organizing tensions	Relational and governance capabilities	Weak governance can lead to uneven value capture, triggering vicious cycles that undermine ecosystem collaboration

The first three articles examine how firms operate within, and depend on, broader systems when pursuing circular economy and net zero goals. Kaipainen *et al.* (2025) argue that management research has traditionally focused on sustainability capabilities at the firm level, while much less attention has been paid to the higher–level system capabilities needed across supply chains, sectors and ecosystems. This gap reflects organizing tensions: firms often optimize for net zero within organizational boundaries while circularity requires system–level coordination. The authors show that resolving this tension depends on the development of open innovation capabilities that enable collaboration across multiple levels of the economic system. At the ecosystem level in particular, they highlight the importance of coordination and scalability; capabilities that allow diverse organizations to align their activities and to build the shared structures, resources and momentum needed to support mutually reinforcing circular economy and net zero practices.

Fu (2025) argues that the circular economy literature primarily focuses on technological capabilities at the

firm level and overlooks the importance of community engagement capabilities as essential drivers of circularity that boost firms' absorptive capacity. By highlighting capabilities that exist beyond the firm boundary, the article also engages with organizing tensions: firms often treat circularity as an internal technological challenge, yet effective circular practices depend on relational engagement with external communities. Reaching beyond immediate firm boundaries, community engagement is particularly important for the development of circular economy capabilities because communities often hold context–specific knowledge, legitimacy and incentives for long–term environmental stewardship that firms cannot generate internally. The article illustrates how relational and governance capabilities help firms manage value tensions, particularly in natural–resource contexts where firms and communities must reconcile different expectations about benefits, access and environmental protection.

Re, Magnani and Previtali (2025) highlight the importance of dynamic capabilities that enhance a firm's market anticipation, foster close collaboration with research institutes, support talent acquisition and enable broader collaboration for exchange of ideas, decision-making and leadership. These capabilities are identified as critical for aligning firms' actions with governmental net zero objectives. These findings can be interpreted as empirical evidence of how ambidextrous and open–innovation capabilities help firms address both performing tensions (balancing circularity and emissions reduction goals) and organizing tensions (coordinating across internal and external actors to meet net zero standards).

Turning to the role of innovation as an enabler of sustainability, Chen *et al.* (2025) identify green innovation capabilities as a key enabler of circularity across the supply chain. They home in on two distinct mechanisms through which green innovation capabilities boost supply chain circularity: (1) technical competencies that enhance waste minimization and (2) stakeholder alignment. Competitive pressures, firms' voluntary self-regulation efforts and government regulations all increase the importance of green innovation capabilities in achieving circularity across the supply chain. These institutional pressures surface performing and organizing tensions: firms must simultaneously reduce emissions and reconfigure material flows while coordinating with actors across the supply chain. The authors show that green innovation capabilities, as a form of ambidextrous capability that combines technological improvement with stakeholder alignment, help firms navigate these tensions by integrating circularity and decarbonization objectives. Government regulation, in particular, plays a leading role in strengthening the ecosystem–level coordination required to turn these tensions into virtuous cycles, enabling innovations that advance both net zero and circularity jointly.

Ishaq *et al.* (2025) focus on innovations for circularity and the learning tensions that firms face in the context of circular innovations. The authors highlight that corporate frameworks, which focus on costs and risks, incentivize single-loop learning patterns, which unavoidably results in incremental circular innovations. This reflects learning tensions: circularity requires exploratory, system–level redesign, whereas net zero pressures often reinforce exploitative, efficiency–oriented learning. They argue that it is essential to make an organizational cognitive shift to double-loop learning and to reevaluate the value proposition and business model in order to align the circular economy innovations with net zero objectives. This shift represents the development of ambidextrous capabilities, enabling firms to integrate exploratory and exploitative learning across circular and net zero agendas. The article provides concrete evidence for how ambidexterity helps resolve learning tensions and prevents firms from locking into incremental circularity trajectories that misalign with long–term decarbonization.

Moving the focus to firm boundaries, Abadzhiev, Carlborg and Sukhov (2025) emphasize that there are three dominant views of the circular economy in the strategy literature: the design perspective, where the focus is on conceptual tools that a firm can use to formulate strategies to transition to a circular economy; the innovation perspective, where the emphasis is on creating circular economy innovations; and the organizational perspective, where the emphasis is on shifting organizational structures and mindset towards circularity. These three views mirror the multiple domains across which tensions between circularity and net zero arise: performing (designing for materials vs emissions), learning (innovation vs optimization) and organizing (structural and cultural change). The specific capabilities the authors outline for the circular economy are lean management capabilities, technological capabilities (environmental R&D), environmental market sensing capabilities, collaborative capabilities, coordination capabilities, eco-design capabilities, self-regulation capabilities and mental model change capabilities. The article extends our framework by illustrating the breadth of firm–level capabilities needed to turn circularity–net zero tensions into complementary strategic pathways, rather than isolated initiatives.

Complementing this focus on firm-level capabilities, Zheng *et al.* (2025) investigate how manufacturing SMEs develop circular economy capabilities for net zero through a progressive dynamic capability model. Their study empirically maps this continuous process, progressing from cognitive realignment to structural reconfiguration and institutionalized evolution, and demonstrates how firms can systematically transition from a linear model to a closed-loop system. This staged progression illustrates how firms build the dynamic

capabilities needed to navigate learning and temporal tensions: moving from awareness to coordinated organizational change and routinized practices. Their findings highlight that building these capabilities is an iterative process that enables SMEs to move beyond incremental compliance to achieve the system transformation required to align circularity with decarbonization. By showing that capability development unfolds cumulatively over time, the article provides empirical support that virtuous cycles emerge when firms sequence circular and net zero initiatives dynamically rather than treating them as discrete, one–off interventions.

Sarja and Piila (2026) foreground the importance of dynamic sequencing and strategic communication capabilities in aligning circular economy initiatives with net zero objectives. Their analysis shows that firms often prioritize sensing and seizing circular opportunities but struggle to deliberately sequence these efforts towards deeper reconfiguration and regenerative change. This struggle reflects temporal tensions: firms frequently initiate circular actions but lack the capability to pace, prioritize and connect these actions over time in ways that support long–term decarbonization. This reflects difficulties in interpreting, prioritizing and communicating sustainability signals over time, particularly under regulatory uncertainty. As a result, early circular actions risk remaining fragmented and incremental, limiting their contribution to sustained net zero progress. The article offers a clear illustration of how dynamic sequencing and strategic communication capabilities help firms convert fragmented initiatives into cumulative, virtuous cycles that align circularity with net zero trajectories.

Focusing on cross-country differences in capabilities associated with circular economy and net zero, Rovanto and Virtanen (2025) emphasize emotional engagement, interaction with the market community and reinventing (the profession) as key capabilities that can enable a circular transition through slowing resource loops in China, Finland and Japan. These people–centred and community–embedded capabilities speak to value and organizing tensions, showing how firms must align diverse stakeholder expectations and value propositions when pursuing circularity and net zero across different cultural and institutional contexts. This contribution highlights common threads and challenges different geographies face in aligning the circular economy with net zero.

Building on this cross-country perspective, Gavurova *et al.* (2026) speak to the importance of relational and governance capabilities by showing that circular economy outcomes depend on how responsibilities, incentives and decision-making are coordinated across actors involved in waste and recycling systems. Their findings map onto the value and organizing tensions: while circular economy practices require system–level coordination, misaligned incentives and unclear governance structures can fragment efforts and impede decarbonization. The article emphasizes that without governance mechanisms that align incentives and structure cooperation, insufficient relational and governance capabilities lead to uneven value capture and fragmented implementation, triggering vicious cycles that undermine collaboration and limit the contribution of circular economy practices to net zero objectives.

Looking ahead: A research agenda

Where does this leave us? Corporate initiatives aimed at advancing the circular economy can contribute to achieving net zero goals, but whether they do so in practice depends on the specific conditions of their interaction and the capabilities firms deploy to create synergies. Our framework and the articles in this special issue illustrate the challenges firms face in achieving this, as well as the capabilities required to align the circular economy and net zero objectives. Research on this interaction is still nascent, but the special issue offers many promising directions for future inquiry. We specifically identify three priority areas: (1) trade-offs and prioritization in resource-constrained contexts, (2) governance mechanisms for aligning circular economy and net zero agendas, and (3) reciprocal effects of net zero strategies on circular economy capabilities (see Table 4 for a summary).

The first priority area concerns resource constraints. Firms do not pursue circular economy and net zero goals apart from financial realities. Capital, managerial attention, organizational bandwidth and supply chain capacity are all limited resources – meaning circular economy and net zero initiatives often compete for investment. This raises important questions about prioritization and sequencing. Leadership teams may prioritize net zero actions that yield quantifiable near-term impact and reputational legitimacy, particularly when performance metrics are carbon-centric. By contrast, circular economy initiatives often require longer-term investment in product redesign, new business models and reconfiguration of supplier relationships, without guaranteed short-term returns. Firms, therefore, must decide whether to pursue decarbonization first, circularity first, or both simultaneously. These decisions are shaped by factors such as financial constraints and expected payback horizons, stakeholder pressures (e.g. investor expectations, customer demands, regulatory exposure), organizational identity and strategic orientation (efficiency-led vs innovation-led firms) or risk tolerance and learning orientation. These factors are intricately linked to, and often lie at the source of, the tensions that firms experience in their sustainability agendas. Future research should therefore explore how firms allocate resources across these competing agendas

Table 4. Future research agenda for aligning the circular economy and net zero

Priority area	Core focus	Key research questions and directions
Trade-offs and prioritization in resource-constrained contexts	Managing limited organizational resources (capital, managerial attention, bandwidth) between competing circular economy and net zero initiatives	• How do organizations allocate resources across these competing sustainability agendas? • How do firms sequence their investments (e.g. prioritizing net zero first, circular redesign first, or pursuing both simultaneously)? • How do different business models, sectoral contexts and regional/regulatory environments shape these prioritization and sequencing choices?
Governance mechanisms for aligning agendas	Designing mechanisms to align incentives and coordinate actions across organizational, supply chain, ecosystem and policy levels	• Under what conditions do multi-level governance mechanisms succeed or fail in aligning circular economy and net zero efforts? • How do factors such as power asymmetries, divergent regulations, information transparency and trust influence alignment efforts?
Reciprocal effects of net zero strategies on the circular economy	Understanding the bidirectional relationship, specifically how net zero commitments actively shape, reinforce, or constrain circular economy capabilities	• When and how do net zero governance structures reinforce or crowd out the development of circular capabilities? • How do firms effectively integrate carbon accounting with material flow and lifecycle assessment tools? • Does net zero-driven supplier engagement lead to deeper, relational forms of circular economy collaboration, or does it result primarily in transactional compliance?

– particularly how they sequence their investments (e.g. prioritizing net zero first to stabilize emissions, then circular redesign, or the reverse), how business models and sectoral contexts favour different pathways, and how regional and regulatory environments shape these choices.

The second priority area concerns governance. Advancing the integration of circular economy and net zero objectives requires governance mechanisms that align incentives and coordinate action across the organizational, supply chain and institutional levels. Because circularity requires system-level collaboration, but net zero is often managed through firm-level performance targets, governance becomes the pivotal link between the two. At the organizational level, this may involve integrated sustainability governance structures that prevent circular economy and net zero responsibilities from becoming siloed across teams. In particular, holistic performance metrics that track material circularity and carbon emissions together are essential to ensure that firms can map which of their decisions are aligned on these two objectives and which are subject to trade-offs. This visibility can promote increased awareness of the complex landscape of net zero and circular economy within the firm and encourage more informed decision-making that favours their alignment. At the supply chain and ecosystem level, governance might include joint investment mechanisms for shared material recovery or reverse logistics infrastructures, long-term relational contracts that share risks and rewards of circular-enabled decarbonization, or cross-industry alliances to set circular design standards with embedded carbon criteria. At the policy level, this might involve regulatory frameworks that reward both carbon reduction and resource circularity (e.g. carbon pricing and extended producer responsibility), public procurement standards that require products to meet combined circularity and emissions thresholds or multi-stakeholder platforms that coordinate decision-making across regions, sectors, or material systems. The effectiveness of such frameworks depends heavily on their underlying governance models; for instance, individual producer responsibility schemes have proven more effective than collective ones at incentivizing circular product design and driving firm performance (Zhang *et al.*, 2026). More broadly, moving to holistic sustainability metrics that require industry to track and comply with goals beyond carbon over longer time horizons is an essential step for alignment. Future research could productively examine the conditions under which multi-level governance mechanisms succeed or fail, including how power asymmetries, divergent regulations, information transparency and trust influence alignment efforts.

The third priority area – and perhaps the most underexplored – concerns the reverse pathway. While this special issue has focused on the pathway from circular economy to net zero, we acknowledge that the relationship is bidirectional. For example, addressing net zero can generate new material flows (e.g. decommissioned wind turbines, electric vehicle batteries, etc.) that demand circular economy solutions. Therefore, a key avenue for future research concerns how net zero commitments actively shape, reinforce, or constrain circular economy capabilities within firms. Net zero agendas often introduce new measurement routines

(e.g. Scopes 1–3 accounting), supplier engagement processes, target-setting frameworks and investment protocols. These developments cut both ways. On the one hand, these developments strengthen circular capabilities by expanding lifecycle thinking, increasing transparency across supply chains and encouraging collaboration with upstream and downstream partners. For example, science-based targets initiative trajectories that require firms to account for Scope 3 emissions may prompt them to rethink product design, material sourcing and end-of-life management, thereby enabling circular redesign. On the other hand, net zero commitments can create pressures for rapid, visible decarbonization such as purchasing renewable electricity, retrofitting equipment, or investing in offsets. These quick wins may divert managerial attention and capital away from longer-term, more transformative circular strategies that require experimentation, system redesign and ecosystem coordination. The risk is that firms 'decarbonize the status quo' rather than questioning the linear consumption models at the root of both material and carbon impacts. Future research could fruitfully investigate when and how net zero governance structures reinforce or crowd out circular capability development; how firms integrate (or fail to integrate) carbon accounting with material flow and lifecycle assessment tools; and whether net zero-driven supplier engagement leads to deeper, relational forms of circular economy collaboration or primarily transactional compliance.

To conclude, then, this special issue invites scholars to consider circular economy and net zero not as separate or interchangeable concepts, but as interdependent and occasionally conflicting agendas that require careful alignment. Their integration demands critical reflection, capability development, and, importantly, the design of pathways that enable them to operate synergistically rather than in competition. The Lego brick that opened this paper is a small object, but it crystallizes a large challenge – that is, building a sustainable future requires fitting together pieces that do not always naturally connect. Our hope is that this framework, and the contributions that accompany it, offer firms and scholars alike a clearer blueprint for doing so.

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