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Repoliticising the CE: Sen's Theory of Justice and the Ideologies Shaping Circular Transitions

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Abstract

The circular economy has emerged as a dominant sustainability framework, yet its rapid institutionalisation obscures critical questions about power, equity, and justice in industrial transitions. This article challenges the technocratic framing prevalent in circular economy discourse by developing an integrative framework that centres distributional, procedural, and recognitional justice alongside environmental performance. We synthesise critical scholarship on circular economy depoliticisation with Sen's theory of justice to reveal how ostensibly neutral technical choices embody political commitments with differential impacts across social groups and geographies. Our framework illuminates how different ideological orientations, from green anarchism to environmental authoritarianism, shape circular transitions and generate distinct justice outcomes. We argue that industrial ecology must expand beyond material flow analysis to incorporate justice assessment, moving from win-win assumptions toward honest engagement with the conflicts and trade-offs inherent in economic transformation. This shift is essential for the circular economy to deliver genuine sustainability rather than optimising existing inequalities within circular loops.

1 Introduction

The Circular Economy (CE) has achieved a remarkable ascent. In less than two decades, it has transformed from a niche concept into official policy across the European Union, China, and dozens of other nations (Kirchherr et al., 2023). Yet this success conceals a troubling paradox: the more CE becomes embedded as the dominant sustainability narrative, the more it forecloses critical engagement with questions that may be most essential to its success. Who benefits from circular transitions? Who bears the costs? Whose voices shape how circularity unfolds? As Corvellec et al. (2022: 421) observe, CE has become "approbatory, uncritical, descriptive and deeply normative"—a policy consensus that promises win-win outcomes whilst systematically obscuring conflicts, power asymmetries, and justice implications inherent in economic transformation.

This depoliticisation matters profoundly. Theoretically, it represents a failure to learn from decades of environmental justice scholarship demonstrating that ostensibly green initiatives reproduce inequalities when power relations are ignored (Martinez-Alier, 2021). By framing circularity as a technical optimisation challenge, CE discourse renders distributional conflicts invisible, transforming what should be democratic deliberation into managerial problem-solving (Pansera et al., 2021). Practically, this risks CE replicating previous sustainability paradigms that concentrated advantages among privileged actors whilst displacing burdens to marginalised communities (Gregson et al., 2015; Valenzuela & Böhm, 2017).

Industrial ecology faces a particular challenge here. The field's analytical strengths—systems thinking, material flow analysis, life cycle assessment—have been instrumental in demonstrating CE's environmental potential (Fröhling et al., 2024). Yet these may inadvertently reinforce technocratic framings that marginalise social and political dimensions (Leipold et al., 2023). When industrial

ecologists optimise material loops, they make choices that are inherently political, yet these often remain implicit, cloaked in technical rationality (Bozeman et al., 2024).

Scholars have increasingly problematized CE's depoliticised framing. Valenzuela and Böhm (2017) argue CE functions as sophisticated greenwashing embedded within growth-capitalist rhetoric. Gregson et al. (2015) reveal how EU resource recovery operates as a "moral economy" distinguishing legitimate circularity within European borders from illegitimate practices beyond them, masking geopolitical dimensions. Pansera and colleagues contend CE's technocratic orientation constitutes its most significant limitation, assuming automatic market-driven transitions whilst overlooking class relations and democratic governance (Genovese & Pansera, 2020; Pansera et al., 2021).

These critiques converge on a fundamental inadequacy: CE scholarship has developed sophisticated methods for tracking material flows and environmental impacts, yet social consequences—including labour displacement, spatial inequalities, and global North-South asymmetries—remain dramatically undertheorised (Leipold et al., 2023; Pansera et al., 2024). This gap is striking compared to adjacent fields where justice is a core analytical category. Analysis of 1,181 pages of US CE reports found "justice" appearing only four times, and then only through neoliberal framings rather than substantive distributional concerns (Berry et al., 2022).

This article addresses these concerns by shifting the consensus on how CE should be analysed. Rather than treating depoliticisation as an unfortunate side effect, we argue it is a constitutive feature requiring explicit analytical attention. Our contribution is threefold. First, we synthesise critical perspectives on CE depoliticisation with Sen's theory of justice to develop an integrative framework making visible the power relations, distributional conflicts, and procedural exclusions embedded within circular transitions. Second, we demonstrate how this framework reveals justice implications hidden within ostensibly neutral technical choices, showing these embody political commitments with differential impacts. Third, we map ideological orientations shaping CE—from green anarchism to environmental authoritarianism—revealing how different political visions generate distinct justice outcomes.

Our approach challenges the tacit assumption that rigorous environmental assessment can proceed independently from analysis of social equity and power relations. Material flows are always embedded within social architectures—labour relations, property regimes, governance structures—that shape who controls resources and who is exposed to harms (Gregson et al., 2015). By foregrounding justice, we move beyond CE's win-win assumptions toward honest engagement with conflicts and trade-offs characterising economic transformation (Kirchherr & Hartley, 2025).

The article proceeds as follows. Section 2 reviews literature on CE's rise, critiques of depoliticisation, and justice frameworks. Section 3 presents our theoretical framework integrating Sen's justice theory with political ideology mapping. Section 4 synthesises these elements analytically. Section 5 discusses implications for policy and industrial ecology. Section 6 concludes with reflections on pathways toward a just CE.

2 Background and Literature Review

2.1 CE as a Dominant Sustainability Narrative

Over the past decade, the CE has emerged as one of the most influential frameworks in sustainability policy, business strategy, and industrial ecology discourse. The concept has gained widespread traction among policymakers, businesses, and academia, with the European Union and China spearheading global implementation efforts (Fröhling et al., 2024). Drawing on a heterogeneous collection of concepts from ecological economics, industrial ecology, cradle-to-cradle design, biomimicry, and cleaner production, CE presents a systems-oriented approach to transforming industrial metabolism away from the linear "take-make-dispose" model (Corvellec et al., 2022; Kirchherr et al., 2023; Korhonen et al., 2018).

The appeal of CE lies in its promise to reconcile economic growth with environmental sustainability through resource efficiency, waste reduction, and closed-loop material flows. Industrial ecology, as the disciplinary home for much CE research, emphasises systems thinking and the optimisation of material cycles from virgin extraction to end-of-life recovery (Fröhling et al., 2024). The Journal of Industrial Ecology has played a pivotal role in developing CE scholarship, with CE-related publications proliferating rapidly since the mid-2010s, establishing itself as one of the field's leading journals (Kirchherr et al., 2023). CE frameworks advocate for business model innovation, technological solutions, and policy interventions designed to decouple resource use from economic growth whilst promoting value retention and sustainable development (Kirchherr et al., 2023).

However, despite its conceptual popularity, CE has been characterised by definitional ambiguity, with over a hundred definitions inventoried, meaning different things to different actors (Kirchherr et al., 2017). This conceptual vagueness has contributed to CE functioning as what some scholars describe as a "floating signifier" or "empty signifier," adaptable to diverse contexts but lacking substantive specificity (Corvellec et al., 2022; Valenzuela & Böhm, 2017). The concept's development has been predominantly practitioner-driven, shaped by policymakers, businesses, consultants, and foundations rather than emerging from robust theoretical foundations (Kirchherr et al., 2023; Korhonen et al., 2018).

Proponents emphasise CE's strengths in promoting systems thinking, fostering innovation, and creating business opportunities for enhanced resource productivity. The promise of a "win-win" outcome—simultaneously achieving environmental protection and economic competitiveness—has made CE particularly attractive to policymakers seeking to avoid difficult trade-offs (Völker et al., 2020). This reformist agenda shifts attention from constraints and conflicts toward synergies and opportunities, circularising policy buzzwords such as "circular business," "circular innovation," and "circular entrepreneurship" (Cullen, 2017; Völker et al., 2020).

2.2 Critiques of Depoliticisation

Despite its widespread adoption, CE has faced substantial scholarly critique, particularly regarding its technocentric orientation and depoliticising effects. In a comprehensive review published in the Journal

of Industrial Ecology, Corvellec et al. (2022) synthesised critiques that characterise CE policy advocacy as "approbatory, uncritical, descriptive and deeply normative" (Gregson et al., 2015, p. 223), lacking the critical reflexivity necessary for genuine systemic transformation. These critiques, scattered across ecological economics, management, and human geography, converge on several key concerns about CE's theoretical foundations, practical limitations, and ideological underpinnings. Research demonstrates growing disillusionment with CE's implementation, particularly around conceptual ambiguity and the gap between ambitious rhetoric and modest results (Kirchherr & Hartley, 2025).

Central to the depoliticisation critique is the argument that CE discourse obscures conflict, power relations, and distributional consequences through a technocratic and managerial framing (Corvellec et al., 2022; Niskanen et al., 2020). Valenzuela and Böhm (2017) argue that CE is mythologised as circular, waste-free, and sustainable, yet this idealistic vision conceals the political economy of waste production under capitalism. Their analysis demonstrates how CE can serve as a sophisticated form of greenwashing embedded within growth-capitalist rhetoric, diverting attention from fundamental questions about production, consumption, and planned obsolescence (Valenzuela & Böhm, 2017). This framing transforms CE into what they term a "post-political" agenda that stabilises existing institutions by depoliticising sustainability debates.

Pansera and colleagues extend this critique, contending that CE's apolitical and technocratic framing represents its most significant shortcoming (Genovese & Pansera, 2020; Pansera et al., 2021). Their work highlights how CE discourse typically assumes that given appropriate economic incentives, transitions can occur automatically within Western market economies, thereby overlooking the roles of class relations, power asymmetries, local communities, and democratic governance (Pansera et al., 2021). The vagueness surrounding how circular revolutions in production and consumption would actually unfold is, they suggest, potentially intentional, allowing economic imperatives to override the inevitable frictions of democratic decision-making (Pansera et al., 2021).

Gregson et al. (2015) ground these critiques empirically through their analysis of resource recovery in the EU, revealing how CE operates as a "moral economy" that distinguishes between legitimate circularity practices within EU borders and illegitimate ones beyond them. Their work demonstrates that CE enactments remain "limited and fragile," shaped by politically created markets, material properties, and morally defined material circuits rather than the neutral, technical processes often portrayed in policy discourse (Gregson et al., 2015). This moral framing masks the geopolitical dimensions of circularity, potentially reinforcing neo-colonial dynamics by sidelining developing countries or failing to engage with informal sectors (Corvellec et al., 2022; Genovese & Pansera, 2020).

The technocentric orientation of CE contributes to what Hobson and Lynch (2016) identify as a failure to disrupt the status quo in terms of power, norms, and politics. Despite revolutionary language, CE implementation remains focused on eco-modernist and eco-efficiency agendas that exclude solutions challenging the current capitalist order (Corvellec et al., 2022; Gregson et al., 2015). This technocratic representation reinforces problem displacement across time and space rather than addressing root

causes of unsustainability (Calisto Friant et al., 2021). EU CE policies, for instance, express clear material ambitions whilst maintaining more diffuse commitments to social justice and environmental protection, revealing a gap between holistic discourse and end-of-pipe policies prioritising growth and competitiveness (Corvellec et al., 2022; Flynn & Hacking, 2019).

Furthermore, the win-win framing conceals the reality that circular transitions inevitably involve winners and losers. As scholars note, the risk exists that CE becomes a policy "nexus" combining environmental urgency with the ideological mandate of pursuing economic growth, thereby normalising myths that reduce space for critical reflection (Kovacic et al., 2019; Lazarevic & Valve, 2017). Examples include risks of increased polarisation between urban and rural areas, insufficient attention to global inequalities, and the perpetuation of neo-colonial resource extraction patterns (Corvellec et al., 2022; Hagbert et al., 2018).

2.3 Justice in Sustainability Transitions

Scholarship on sustainability transitions increasingly emphasises that transformative change must attend to justice considerations across multiple dimensions. The justice framework typically distinguishes between three core pillars: distributive justice (the allocation of costs and benefits), procedural justice (who participates in decision-making), and recognitional justice (respect for and fair consideration of diverse cultures and perspectives) (Schlosberg, 2007). In climate and environmental contexts, restorative justice—addressing past and present harms to people, species, and ecosystems—also features prominently (European Environment Agency, 2024). Recent work in the Journal of Industrial Ecology emphasises the importance of embedding systemic equity considerations throughout industrial ecology applications, including attention to potential biases and unfairness in emerging analytical tools (Bozeman et al., 2024).

Distributive justice addresses how circular strategies allocate costs and benefits across different groups, examining whether circular jobs provide fair wages, safety, and social security, or whether circular infrastructures displace marginalised communities (Van Opstal et al., 2025). This dimension asks fundamental questions about what is lost or gained, by whom, and in what quantities (Schlosberg, 2007). In circular transitions, distributional concerns encompass access to quality goods, availability of repair tools and spare parts, spatial distribution of circular initiatives, and financial barriers such as membership fees that may exclude vulnerable populations (Van Opstal et al., 2025).

Procedural justice emphasises the importance of equitable and inclusive processes guiding transitions, ensuring that those affected by circularity have genuine opportunities to influence outcomes (Van Opstal et al., 2025). This extends beyond mere consultation to encompass empowerment, enabling communities to shape decisions affecting jobs, health, and cultural practices. Procedural justice is considered key to achieving distributive justice, as only through democratic processes can complex trade-offs between different futures be adequately addressed (Just Transitions Framework, 2020). However, CEdiscourse frequently overlooks questions of democratic governance, failing to address who decides where and how closed-loop systems are implemented (Pansera et al., 2021).

Recognitional justice requires validation of the knowledge, experiences, and rights of all groups, particularly those traditionally marginalised in economic development. This dimension emphasises awareness of how transition effects manifest across local and global scales, recognising different cultural understandings, values, and priorities concerning resource use and environmental change (Schlosberg, 2007). Systemic exclusion based on cultural, social, ethnic, or racial identity must be avoided to ensure circular transitions reach all communities appropriately (Van Opstal et al., 2025). Recognitional justice also encompasses epistemic justice—taking seriously all forms of knowledge and experience regardless of social position or status, not privileging only academic or expert knowledge (Van Opstal et al., 2025).

Despite growing attention to just transitions in energy, climate, and development contexts, CE scholarship has been notably slow to integrate justice frameworks. Research demonstrates that CE literature addresses environmental aspects to limited extents whilst marginalising social dimensions (Leipold et al., 2023; Schöggl et al., 2020). Leipold et al. (2023) identify three distinct narratives within CE scholarship—optimist, reformist, and skeptical—each offering different perspectives on CE's potential and limitations, yet all highlighting the need for CE research to better integrate technical, managerial, socio-economic, environmental, and political dimensions. Their analysis emphasises the importance of identifying societal and political strategies that ensure adequate distribution of costs and benefits, particularly across geographical and cultural differences. When justice appears in US-based CE reports, it manifests implicitly through neoliberal framings emphasising free pursuit of self-interest, property protection, and consumer choice rather than distributive, procedural, or compensatory justice (Berry et al., 2022). Analysis of 1,181 pages of CE reports yielded only four instances of the word "justice" (Berry et al., 2022), indicating how justice remains peripheral to mainstream CE discourse.

This gap is particularly concerning given CE's potential to perpetuate environmental inequalities and unequal distribution of socio-ecological costs. Environmental justice scholarship has long documented how industrial activities concentrate toxicity and hazards in "sacrifice zones" inhabited by marginalised populations (Martinez-Alier, 2021). Without explicit attention to justice, CE risks replicating these patterns, displacing burdens to vulnerable communities whilst benefits accrue to already privileged groups. The current linear economy's legacy of distributing burdens disproportionately across the Global South, ethnic minorities, and lower-income communities requires that circular transitions actively redress rather than reinforce such inequities (Isenhour et al., 2019; Mathai et al., 2021).

Recent scholarship has begun addressing this lacuna. Schröder and Barrie (2022) argue that environmental justice and just transition principles must become key elements for an inclusive CE, whilst Kirchherr (2021) proposes "circular justice" as a framework integrating distributional, procedural, and recognitional dimensions into CE implementation. Research increasingly recognises that CE transitions affect labour conditions, community well-being, and global supply chains in ways requiring careful justice analysis (Pansera et al., 2024). However, as Corvellec et al. (2022) observe, CE stands as a discourse that "focuses on the economy, excludes social dimensions, and simplifies its environmental consequences," suggesting substantial work remains to centre justice in CEtheory and practice. The

newly formed Sustainable CEsection of the International Society for Industrial Ecology explicitly aims to foster research addressing all dimensions of sustainability—environmental, economic, and social—acknowledging that previous CE research has been criticised for focusing solely on the physical side (Fröhling et al., 2024).

The tension between CE's technocratic, growth-oriented framing and justice imperatives raises fundamental questions about whether circularity can deliver equitable outcomes within existing capitalist structures, or whether more radical reimagining of economic relations is necessary. As Pansera et al. (2021) note, unless CE confronts issues of justice and power relations, the societal implications—including levels of freedom, democracy, and equity—remain profoundly uncertain.

3 Theoretical Framework

3.1 Why Politicise the CE?

A growing body of scholarship argues that the CE has come to be framed through a technocentric and often depoliticised narrative, centred on efficiency gains, innovation, and market-led implementation (Bækgaard et al., 2024; Corvellec et al., 2022b). This narrative tends to obscure questions of power, conflict, and distributive justice by positioning circularity as a consensual “win–win” solution rather than a site of political contestation (Giampietro & Funtowicz, 2020; Valenzuela & Böhm, 2017). In this sense, CE can be understood as an essentially contested concept, where divergent interpretations reflect deeper ideological commitments (Calisto Friant et al., 2020). Repoliticisation is therefore not an optional enhancement but a necessary corrective. Bringing political convictions to the foreground enables CE scholarship to engage more directly with how transitions are shaped by competing judgments about what and who is valued (Pansera et al., 2021). A framework that accommodates ideological diversity makes possible a more rigorous assessment of justice in CE transitions, moving beyond the sanitised framing of social dimensions often reduced to procedural participation or stakeholder dialogue (Mies & Gold, 2021).

3.2 Sen’s Theory of Justice

Amartya Sen’s work provides a productive entry point for examining justice within CE discourse, particularly through his distinction between *niti*—idealised institutional arrangements—and *nyaya*—justice as realised in lived social conditions (Sen, 2010). Sen argues that institutional design is an insufficient basis for assessing justice: what ultimately matters is the extent to which people are able to expand their capabilities and avoid manifest injustices. A central feature of this approach is the recognition of value pluralism. Sen insists that reasonable disagreement about what constitutes justice is inevitable in heterogeneous societies (Sen, 2007). Justice must therefore be evaluated through public reasoning and democratic deliberation—processes that allow competing perspectives to be articulated, scrutinised, and negotiated. His anti-perfectionist stance also rejects the idea that any single conception of the good, whether institutional or ideological, can claim universal authority. These features are well-suited to the CE, where ideal models of systemic circularity often diverge sharply from the lived realities of

implementation. Sen's focus on realised outcomes offers a means of examining CE initiatives according to their actual effects on people's capabilities, equity, and well-being, rather than their alignment with an abstract circular ideal.

3.3 Political Spectrum of CE Ideologies

To surface the ideological tensions embedded in CE, we propose a spectrum of four typical CE ideologies, illustrated in Fig. 1. Although presented analytically, these positions reflect established traditions within ecological politics, the social and solidarity economy, market-led environmentalism, and authoritarian environmental governance (Clark, 1983; Miller, 2010; Anderson & Leal, 2015; Gilley, 2012).

The first position, Green Anarchy, is rooted in ecological anarchism and strongly associated with Social Ecology and Ecological Humanism (Bookchin, 1991; Morris, 2017). It advocates decentralised governance, direct democracy, and active popular participation in ecological restoration. Circularity, in this framing, is inseparable from dismantling hierarchical political and economic structures. Ecological transition is understood as a conscious revolutionary process in which communities reclaim autonomy from capitalist and statist institutions.

The second position aligns with the Social and Solidarity Economy (SSE). Unlike Green Anarchy, SSE does not reject central economic organisation outright but instead emphasises a popular economy operating alongside and beyond both the public and corporate private sectors (Morais & Bacic, 2020). Collective action remains central, though often coordinated within more structured institutional arrangements (Villalba-Eguiluz et al., 2023; Utting et al., 2014).

Core SSE values include reciprocity, social bonds, social capital, and trust, including the importance of group membership and participatory governance. Economic activity is oriented toward social utility rather than profit maximisation. Importantly, SSE scholarship foregrounds questions of distribution, explicitly interrogating who bears the social and environmental costs of economic activity while recognising that central economic functions remain integral to societal organisation (Leipold et al., 2021; Putnam, 2000).

A third position reflects Free Market Circular Economy thinking. Free-Market Environmentalism frames CE as an innovation-driven agenda that relies on entrepreneurial dynamism, competitive markets, and efficiency optimisation (Anderson & Leal, 2015). Collective action is largely mediated through markets rather than occurring outside of them. Technological innovation and entrepreneurial dynamism are viewed as the primary drivers of circular transition.

In this framing, consumers exercise political agency through market participation, effectively "voting" daily via purchasing decisions. Circularity is therefore pursued through competitive markets, property rights, and efficiency optimisation, while maintaining the broader structures of capitalism and neoliberalism (Cardoso, 2018; Kębłowski et al., 2020; Khan et al., 2021).

Finally, the spectrum extends to Ecofascism and Green Fascism, characterised by high degrees of government centralisation combined with ecological preservation framed as a civilisational imperative. Although there is comparatively limited scholarship directly linking ecofascism to CE discourse, emerging literature highlights how ecological narratives can be appropriated into authoritarian projects.

These ideologies often fuse notions of “the people” and “the land,” deploying exclusionary and nationalist rhetoric structured around an “us versus them” logic (Forchtner, 2023; Guerra, 2025; Olsen, 2024). This position favours top-down regulation and coercive governance mechanisms in pursuit of large-scale in such contexts, may be instrumentalised to justify coercive governance and ethnically or culturally exclusionary environmental policies.

These ideological perspectives are neither exhaustive nor mutually exclusive, yet they illustrate the diverse political imaginaries that underpin CE narratives. Making these orientations explicit helps illuminate the value judgments already embedded within competing circularity visions.

3.4 How Sen’s Framework Interacts with Political Ideologies

Sen’s understanding of justice offers a conceptual bridge across these ideological differences. By emphasising *nyaya*—justice as realised rather than merely designed—Sen provides a means of evaluating CE pathways according to their actual effects on human well-being and social equity. This moves analysis away from institutional promises and towards lived implications, thereby placing different ideological visions of CE on a shared evaluative terrain. His emphasis on public reasoning also challenges depoliticised conceptions of CE by encouraging open contestation between value frameworks and demanding justification of the trade-offs embedded within each approach (Hay, 2014; Mouffe, 2000). Rather than assuming consensus, Sen invites a form of deliberation that foregrounds disagreement and acknowledges irreducible pluralism.

Taken together, Sen’s insights support a more politically attuned and justice-oriented reading of CE transitions. They clarify how different ideologies attribute meaning to justice, highlight the distributional and recognitional implications of circular strategies, and offer a pluralistic method for evaluating CE pathways without presupposing convergence around a single normative vision.

4 Repoliticising the CE: Analytical Synthesis

4.1 CE as an Ideologically Contested Space

The CE cannot be understood solely as a technical project of material optimisation; it is also an ideologically mediated space in which divergent political convictions shape competing visions of circularity (Calisto Friant et al., 2020). Each ideological orientation foregrounds different narratives, priorities, and policy preferences, reflecting underlying commitments to autonomy, equality, efficiency, or control. Green Anarchist perspectives emphasise decentralised, sufficiency-oriented approaches and

critique CE models that reinforce capitalist production systems or centralised authority (Bookchin, 1995; Hall, 2011). Social and Solidarity Economy approaches foreground equity, cooperative governance, and community resilience, positioning circularity as a vehicle for democratising economic relations rather than merely improving resource efficiency (Utting et al., 2014; Villalba-Eguiluz et al., 2023). Free-Market Environmentalist perspectives, by contrast, treat CE primarily as a market-led opportunity for innovation and competitiveness, reinforcing narratives of eco-modernisation and "win–win" synergies (Anderson & Leal, 2015; Völker et al., 2020). Finally, Environmental Authoritarian orientations privilege top-down regulatory control, sometimes invoking national strategic interests to justify coercive governance arrangements (Gilley, 2012; Chen & Lees, 2018).

These orientations are not simply abstract political categories—they actively shape how justice is interpreted within CE discourse. Where some views prioritise autonomy or community self-determination, others emphasise efficiency, economic growth, or technocratic control. Recognising CE as an ideologically contested space therefore makes visible the political diversity already embedded in circularity debates, challenging the post-political discourse that presents CE as a consensual, apolitical solution (Valenzuela & Böhm, 2017; Corvellec et al., 2022).

4.2 Applying Sen's Nyaya Perspective

Sen's distinction between *nyaya*—justice as realised in lived experiences—and *niti*—ideal institutional arrangements—provides a powerful analytical tool for navigating this ideological diversity (Sen, 2010). Applying a *nyaya* perspective to the CE reorients analysis away from idealised circular visions and towards the concrete, context-specific outcomes of circular initiatives: who gains, who loses, and which capabilities are expanded or constrained. This is particularly relevant given the persistent gap between CE's ambitious rhetoric and its modest real-world effects (Kirchherr & Hartley, 2025).

By foregrounding realised outcomes, Sen's framework enables a more empirical assessment of justice impacts, complementing and extending existing justice-focused work in sustainability transitions (Schlosberg, 2007; Van Opstal et al., 2025). It draws attention to whether circular practices improve labour conditions, expand access to durable and repairable goods, reduce toxic exposures, or instead reproduce socio-economic inequalities and environmental harms—concerns well documented in environmental justice scholarship (Martinez-Alier, 2021). In this way, Sen's approach challenges CE scholarship to move beyond justificatory narratives centred on technological promise or institutional design, and to instead interrogate how circularity shapes lived realities across diverse communities.

4.3 Tensions, Conflicts, and Trade-Offs

Foregrounding ideological diversity also clarifies why CE transitions generate tensions and trade-offs. Different ideological commitments yield conflicting governance models, ownership structures, technological pathways, and distributive outcomes. For example, Green Anarchist or solidarity-oriented approaches may advocate for decentralised repair infrastructures, community-led reuse systems, or localised material loops that resist market consolidation. In contrast, market-led CE agendas often favour large-scale digital tracking systems, proprietary design standards, and resource-efficient

production processes that reinforce incumbent corporate power (Gregson et al., 2015; Cullen, 2017). Environmental Authoritarian logics may support mandated recycling quotas, surveillance-based monitoring of material flows, or state-coordinated industrial restructuring, even when such measures curtail democratic participation (Gilley, 2012).

These tensions are visible in contemporary CE debates. Efforts to expand digital product passports, for instance, raise questions about data ownership, surveillance risk, and the exclusion of informal and community-based repair actors (Pansera et al., 2021). Waste infrastructure planning often reflects geopolitical inequalities, with circularity ambitions in the Global North relying on labour- and resource-intensive recycling practices in the Global South, echoing long-standing critiques of neo-colonial resource flows (Gregson et al., 2015; Isenhour et al., 2019). Similarly, circular business models may generate new forms of dependency through subscription-based access systems or restrictive repair policies that limit user autonomy and exacerbate socio-economic inequalities (Van Opstal et al., 2025).

Recognising these tensions underscores that CE transitions are not frictionless, consensus-driven processes but contested socio-political transformations shaped by power, competing values, and material constraints (Kovacic et al., 2019; Pansera et al., 2021).

4.4 Avoiding Dominance of Any One Ideology

A core challenge for repoliticising the CE lies in avoiding the dominance of any single ideological perspective. Overreliance on technocratic and market-led orientations risks narrowing CE to eco-efficiency and innovation agendas, downplaying justice considerations and reinforcing existing inequalities (Corvellec et al., 2022; Mies & Gold, 2021). Similarly, authoritarian or coercive interpretations may suppress democratic participation, undermine procedural or recognitional justice, and reduce public legitimacy (Chen & Lees, 2018). Even solidarity-oriented approaches may inadvertently impose particular value frameworks that do not resonate across all contexts.

Sen's emphasis on public reasoning offers a safeguard against such dominance. By insisting that legitimate claims to justice must be subject to open, inclusive, and pluralistic deliberation, Sen provides a mechanism for navigating conflicting values and ensuring no single ideology monopolises the meaning of circularity (Sen, 2010; Mouffe, 2000). Public reasoning also encourages reflexivity and transparency regarding trade-offs, enabling CE strategies to be co-developed with affected communities rather than imposed through expert-driven or market-centric logics.

In this sense, repoliticising the CE is not about elevating one ideological position above others but about cultivating a deliberative space where multiple visions of justice can meaningfully interact. This orientation strengthens CE's capacity to deliver equitable and socially grounded outcomes, moving the discourse beyond its post-political tendencies towards a more democratic and pluralistic transition.

5 Implications for CE Policy and Practice

5.1 A Justice-Oriented CE Framework

Repoliticising CE through Sen's justice framework has direct implications for practice. A justice-oriented CE framework must foreground expansion of human capabilities as a central evaluative criterion. Rather than focusing exclusively on material flow efficiency, CE initiatives should be assessed by the extent to which they enhance people's substantive freedoms—their ability to live valued lives (Sen, 2010). This aligns with emergent scholarship urging greater attention to social dimensions in CE transitions (Van Opstal et al., 2025).

Equity and inclusion constitute a second foundational principle. CE policies must explicitly identify who stands to gain or lose through specific interventions (Schlosberg, 2007). This includes global justice issues—such as waste burden displacement to the Global South—and local inequities in access to repair infrastructures and circular employment opportunities.

A justice-oriented framework requires transparency regarding trade-offs. CE transitions are not inherently "win-win" processes; they involve contestation and can consolidate existing inequalities if left unexamined (Pansera et al., 2021). Making trade-offs explicit helps resist technocratic tendencies obscuring politically consequential decisions.

Finally, participatory governance is essential for procedural and recognitional justice. CE policies should move beyond consultative processes towards deeper democratic engagement enabling communities—especially historically marginalised ones—to shape decisions around infrastructure, resource flows, and industrial restructuring (Just Transitions Framework, 2020).

5.2 Implications for Industrial Ecology

Sen's outcomes-focused approach has significant implications for Industrial Ecology. IE's methodological toolkit—material flow analysis, life cycle assessment, scenario modelling—has historically privileged physical and economic parameters, often omitting justice considerations or treating them as peripheral (Fröhling et al., 2024). Integrating Sen's insights invites reorientation of these tools toward evaluating realised outcomes in terms of capabilities, equity, and distributional effects.

CE metrics could be redesigned to capture not only material efficiency but also social implications such as labour intensity, hazardous material exposure, or access to repair services (Bozeman et al., 2024). Scenario modelling could incorporate assumptions about governance models and ideological framings, revealing how different political configurations produce divergent justice outcomes. Material flow analysis could be extended to trace embedded social relations and global inequalities shaping resource recovery pathways (Gregson et al., 2015).

Embedding justice in IE methodologies requires shifting from evaluating circularity as purely technical to understanding it as a socio-political process with uneven consequences. This enriches analysis by situating material systems within broader questions of equity, governance, and lived experience (Leipold et al., 2023).

5.3 Implications for Policy

At the policy level, embracing ideological plurality and Sen's justice framework encourages more reflexive and transparent CE strategy development. Policymakers should explicitly acknowledge ideological assumptions underpinning CE policies—whether oriented towards market-led innovation, community empowerment, or state-driven control. Making these assumptions visible helps counter post-political framing presenting CE as neutral and universally beneficial (Corvellec et al., 2022).

Supporting public reasoning and deliberative processes is critical for ensuring CE pathways reflect diverse societal values rather than narrow technocratic priorities. Deliberation is not merely procedural but a substantive mechanism for identifying injustices, negotiating trade-offs, and building cross-ideological understanding (Sen, 2010). Policymaking should incorporate participatory methods granting communities meaningful influence over CE decisions, particularly regarding waste infrastructure placement, repair and reuse initiatives, and industrial redevelopment.

Finally, policymakers should identify risks and benefits associated with adopting specific ideological framings. Market-led approaches may spur innovation but risk exacerbating inequalities. Authoritarian framings may accelerate implementation but undermine democratic legitimacy. Solidarity-based approaches may foster inclusion but require institutional support to scale. Recognising these dynamics enables policymakers to design CE strategies that are materially effective, socially just, and politically robust.

6 Discussion

Repoliticising the CE offers several benefits for both scholarship and practice. First, it enhances the transparency, legitimacy, and accountability of CE transitions by making explicit the normative foundations and ideological assumptions that shape circular strategies (Corvellec et al., 2022; Pansera et al., 2021). By foregrounding contestation rather than assuming consensus, repoliticisation counters the post-political framing that often renders CE immune to critique, enabling more honest engagement with trade-offs, distributional effects, and structural inequalities.

Second, repoliticisation makes visible the distributive, recognitional, and procedural dimensions of circularity highlighted in justice scholarship (Schlosberg, 2007; Van Opstal et al., 2025). This visibility is critical because CE practices, even when framed as technical or efficiency-oriented, inevitably reshape socio-economic relations—affecting who benefits from circular infrastructures, who bears the burdens of waste management and labour, and whose knowledge and cultural practices are included or marginalised (Isenhour et al., 2019; Gregson et al., 2015). Repoliticisation thus enables a richer diagnostic of power relations and equity implications.

Finally, situating CE within a pluralistic justice framework strengthens its democratic legitimacy. Sen’s emphasis on public reasoning underscores that just outcomes emerge not from imposing a singular vision of circularity, but from inclusive deliberation among actors holding diverse values and interests

(Sen, 2010). Repoliticisation therefore supports more grounded, reflexive, and adaptive approaches to CE implementation.

Despite its value, the approach advanced in this paper carries several limitations. The first concerns its primarily conceptual nature. While the framework offers tools for interpreting the ideological and justice dimensions of CE, its robustness ultimately depends on empirical validation. Applying this framework to concrete CE cases—across sectors such as waste, repair, mobility, or industrial symbiosis—will be essential to assess its practical utility (Leipold et al., 2023).

Second, the classification of CE ideologies is inherently complex. Although the four ideal-typical orientations proposed here draw on established traditions in environmental political thought, real-world CE strategies often blend, hybridise, or defy these categories. Ideological boundaries may be porous, and actors may shift between positions depending on context, scale, or institutional pressures (Calisto Friant et al., 2020).

A third limitation lies in the risk of oversimplifying justice pluralism. Sen's framework intentionally rejects a singular model of justice in favour of open-ended deliberation; however, translating such pluralism into analytical categories may inadvertently obscure important nuances or reinforce binary distinctions. Further refinement is needed to ensure that complexity and contestation are not flattened in the process of conceptualisation.

Building on these limitations, several avenues for future research emerge. One promising direction involves empirical applications of the combined Sen–ideology mapping in diverse CE contexts. Such studies could examine how ideological orientations shape governance processes, labour conditions, waste infrastructures, or digital circularity systems, thereby testing the framework's explanatory power.

Second, comparative analyses across political and cultural settings would illuminate how CE strategies vary depending on institutional configurations, societal values, and power dynamics. These comparisons could clarify why some jurisdictions adopt market-led CE models while others emphasise solidarity, sufficiency, or state-driven control (Kovacic et al., 2019; Chen & Lees, 2018).

Finally, integrating this framework into Industrial Ecology modelling tools—such as material flow analysis, scenario modelling, and circularity indicators—offers substantial potential. Embedding justice variables, ideological assumptions, and deliberative principles in such tools could transform IE analyses, enabling a fuller understanding of how material systems intersect with social and political realities (Fröhling et al., 2024; Bozeman et al., 2024).

7 Conclusion

This paper has argued that the CE has become progressively depoliticised, with justice considerations remaining marginal despite growing recognition of CE's social and distributive implications (Corvellec et al., 2022; Valenzuela & Böhm, 2017). In response, the paper introduced a new conceptual framework that

integrates Sen's theory of justice with a political ideology mapping of CE visions. This framework reveals how circular transitions are shaped by competing values, interests, and political convictions, and why attention to plurality, conflict, and real-world outcomes is essential for understanding CE's societal implications.

Repoliticising the CE is crucial for supporting meaningful and equitable transitions. Sen's outcomes-focused conception of justice offers a pragmatic alternative to idealised circular visions that foreground institutional design or technological promise at the expense of lived experiences. Recognising ideological diversity—whether market-driven, solidarity-oriented, anarchic, or authoritarian—enables a more honest appraisal of the distributional, recognitional, and procedural dynamics embedded in CE strategies.

By embracing contestation rather than suppressing it, CE scholarship and policy can better navigate the tensions inherent in circular transitions. Doing so opens space for more democratic, reflexive, and context-sensitive circular futures—ones capable of addressing not only environmental challenges but also the social and political conditions that shape their realisation.

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References

1. Berry B, Farber B, Rios FC, Haedicke MA, Chakraborty S, Lowden SS, Bilec MM, Isenhour C (2022) Just by design: Exploring justice as a multidimensional concept in US circular economy discourse. Local Environ 27(10–11):1225–1241
2. Anderson TL, Leal DR (2015) Free Market Environmentalism for the Next Generation. Palgrave Macmillan
3. Bækgaard S, Diercks G, Larsen T (2024) Depoliticisation in circular economy policy: A critical review. J Clean Prod 443:140801
4. Bookchin M (1995) Social Anarchism or Lifestyle Anarchism: An Unbridgeable Chasm. AK
5. Bozeman B et al (2024) Fairness, equity, and systemic bias in industrial ecology tools. J Ind Ecol, 28(2), e1761
6. Calisto Friant M, Vermeulen WJV, Salomone R (2020) A typology of circular economy discourses. Resour Conserv Recycl 161:104917
7. Chen Y, Lees C (2018) Environmental authoritarianism? Environmental regulation and China's authoritarian governance. Environ Politics 27(5):874–898
8. Clark TN (1983) Ecological Politics in the 1980s: The Green Movement. Taylor & Francis
9. Corvellec H, Bouzon M, Stål HI, Zapata C (2022b) The circular economy and post-politics: A critical review. Sustainable Prod Consum 30:524–534
10. Corvellec H, Stowell AF, Johansson N (2022) Critiques of the circular economy. J Ind Ecol 26(2):421–432
11. Cullen JM (2017) Circular economy: Theoretical benchmark or perpetual motion machine? J Ind Ecol 21(3):483–486
12. European Environment Agency (2024) Delivering justice in sustainability transitions. EEA Briefing
13. Flynn A, Hacking N (2019) Setting standards for a circular economy: A challenge too far for neoliberal environmental governance? J Clean Prod 212:1256–1267
14. Fröhling M, Aoki-Suzuki C, Bakshi B, Leipold S, Tong X (2024) Unpacking the path toward a sustainable circular economy through industrial ecology. J Ind Ecol 28(6):1359–1361
15. Genovese A, Pansera M (2020) The circular economy at a crossroads: Technocratic eco-modernism or convivial technology for social revolution? Capitalism Nat Socialism 32(2):95–113
16. Giampietro M, Funtowicz S (2020) From elite folk science to the post-normal science of sustainability. Environ Innov Societal Transitions 34:1–3
17. Gilley B (2012) Authoritarian environmentalism and China's response to climate change. Environ Politics 21(2):287–307
18. Gregson N, Crang M, Fuller S, Holmes H (2015) Interrogating the circular economy: The moral economy of resource recovery in the EU. Econ Soc 44(2):218–243
19. Hagbert P, Mangold M, Femenías P (2018) Confronting prefabrication in contemporary Swedish housing: Implications for resource efficiency in urban development. Sustainability 10(3):632
20. Hall S (2011) The Impossible Future of Green Anarchism. J Political Ecol 18:157–175

21. Hay C (2014) Depoliticisation as process, governance as practice. In: Fawcett P, Flinders M, Hay C, Wood M (eds) Anti-Politics, Depoliticisation, and Governance. Oxford University Press, pp 165–188
22. Hobson K, Lynch N (2016) Diversifying and de-growing the circular economy: Radical social transformation in a resource-scarce world. Futures 82:15–25
23. Isenhour C, Martiskainen M, Middlemiss L (2019) Power and politics in sustainable consumption research and practice. J Clean Prod 218:735–743
24. Kirchherr J (2021) Towards circular justice: A proposition. Resour Conserv Recycl 173:105712
25. Kirchherr J, Hartley K (2025) The rocky road to circularity: Resistance, disruption, and the politics of CE implementation. J Clean Prod 450:140992
26. Kirchherr J, Reike D, Hekkert M (2017) Conceptualizing the circular economy: An analysis of 114 definitions. Resources. Conserv Recycling 127:221–232
27. Kirchherr J, Urbinati A, Hartley K (2023) Circular economy: A new research field? J Ind Ecol 27(5):1239–1251
28. Korhonen J, Honkasalo A, Seppälä J (2018) Circular economy: The concept and its limitations. Resources, Conservation and Recycling, 135, 37–46
29. Kovacic Z, Strand R, Völker T (2019) The circular economy in Europe: Critical perspectives on policies and imaginaries. Routledge
30. Lazarevic D, Valve H (2017) Narrating expectations for the circular economy: Towards a common and contested European transition. Energy Res Social Sci 31:60–69
31. Leipold S et al (2023) Narratives of circularity in the CE literature. J Clean Prod 396:136388
32. Mathai MV, Isenhour C, Stevis D, Vergragt P, Bengtsson M, Lorek S, Mortensen LF et al (2021) The political economy of (un)sustainable production and consumption: A multidisciplinary synthesis for research and action. Resources, Conservation and Recycling, 167, 105265
33. Mies A, Gold S (2021) Mapping the social dimension of the circular economy. J Clean Prod 321:128960
34. Miller E (2010) Solidarity economy: Key concepts and issues. In: Kawano E, Masterson T, Teller-Elsberg J (eds) Solidarity Economy I: Building Alternatives for People and Planet. Center for Popular Economics, pp 25–41
35. Mouffe C (2000) The Democratic Paradox. Verso
36. Niskanen J, Anshelm J, McLaren D (2020) Local conflicts and national consensus: The strange case of circular economy in Sweden. J Clean Prod 261:121117
37. Pansera M, Galli F, Battistella C, De Marchi V (2024) Toward a just circular economy: Conceptualizing environmental labor and gender justice in circularity studies. Sustain Sci 19(3):1–15
38. Pansera M, Genovese A, Ripa M (2021) Politicising circular economy: What can we learn from responsible innovation? J Responsible Innov 8(3):471–477

39. Pansera M, Genus A, Owen R (2021) Re-thinking the circular economy through the political economy of technology. Environ Innov Societal Transitions 39:69–76
40. Schöggl JP, Stumpf L, Baumgartner RJ (2020) The narrative of sustainability and circular economy—A longitudinal review of two decades of research. Resources, Conservation and Recycling, 163, 105073
41. Sen A (2007) The Idea of Justice (Harvard Public Lectures). Harvard University Press
42. Sen A (2010) The Idea of Justice. Harvard University Press
43. Utting P, van Dijk N, Matheï MA (eds) (2014) Social and Solidarity Economy. Is There a New Economy in the Making? UNRISD
44. Valenzuela F, Böhm S (2017) Against wasted politics: A critique of the circular economy, vol 17. Theory & Politics in Organization, Ephemera, pp 23–60. 1
45. Villalba-Eguiluz U, Etxano I, Garmendia E (2023) Social and solidarity economy and the circular economy: Synergies for just transitions. J Clean Prod 394:136429

Figures

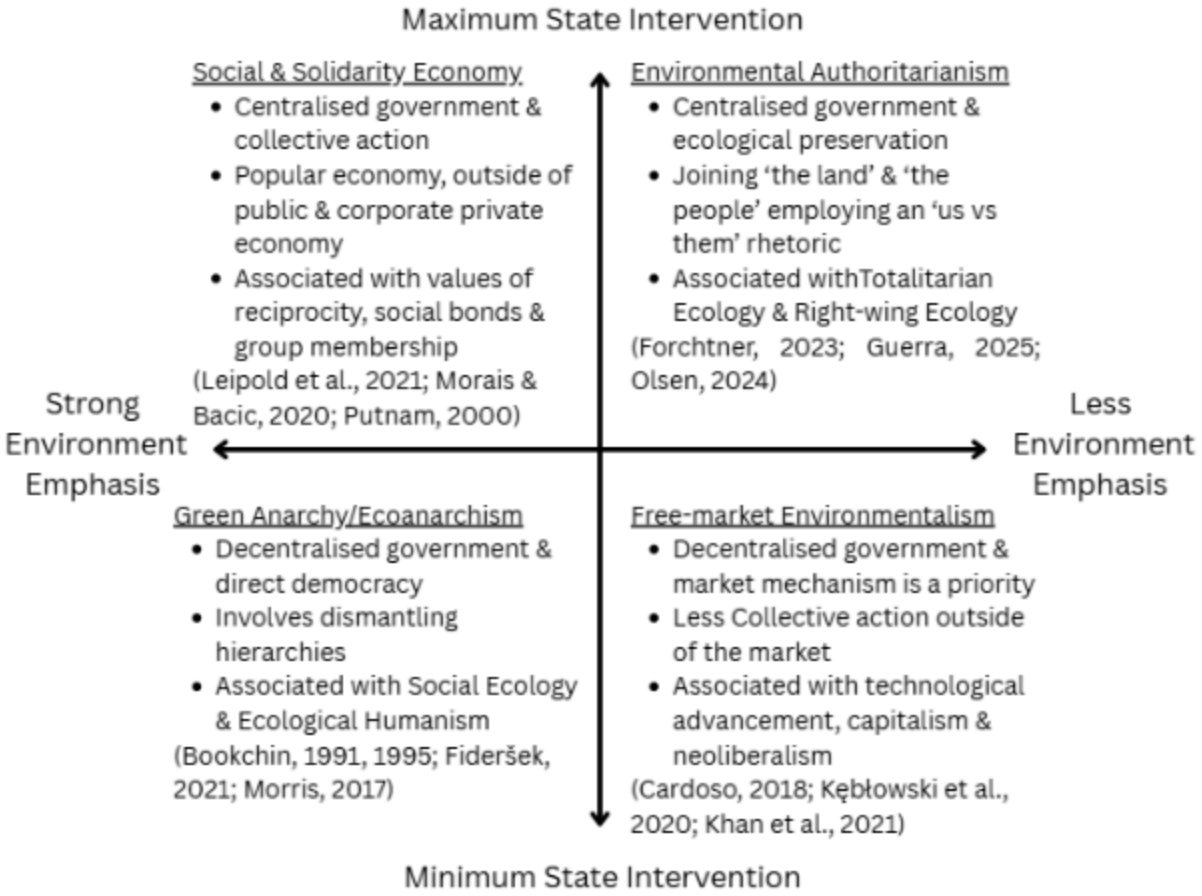


Figure 1

The four example ideologies across the political spectrum