



Bringing the circular economy home – Insights from socio-technical perspectives on everyday consumption

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ABSTRACT

Transitions toward a circular economy require a nuanced understanding of how change plays out in households in relation to the role of consumers and daily consumption practices. However, little policy and research attention has been paid to the complexities of achieving necessary transformations in everyday cultures of consumption and the possible challenges faced by citizens and householders in achieving a circular economy. As a result, we know little about how circular consumption practices are already emerging in everyday life and can be scaled up across society. Additionally, critical gaps in understanding exist concerning how rebound and spillover effects occur in daily practices and the role of social and material contexts in configuring possibilities for circular consumption. Addressing these gaps, we develop an agenda for attending to the social embeddedness and complexity of participating in the circular economy. This agenda includes several critical elements, including the examination of routine and habitual aspects of social life, dynamics of rebound and spillover effects within interconnected practices, and the impact of institutional-material arrangements and provisioning systems on how consumers use services and products in the performance of social practices. In discussing these elements we outline research gaps and recommendations for future CE policy and research that better appreciates the social and material dynamics of everyday life, with the aim of addressing critical scientific and societal knowledge gaps concerning circular consumption transformations.

1. Introduction

In their 2023 ‘Circularity Gap’ report, the Circle Economy Foundation (CEF) provides clear evidence that the goal of moving the global economy away from the prevailing ‘take-make-waste’ use of resources is becoming less and less achievable. CEF’s circularity index, which tracks and measures the use of non-virgin material as a percentage of global resource use, has decreased from 9.1% in 2018 to 7.2% in 2023. According to the CEF, this concerning decline is attributed to rising levels of resource extraction and the increased allocation of materials to durable goods such as roads and homes, effectively limiting material recirculation. This means, as CEF pithily put it, ‘we cannot recycle our way out of this one’ (CEF, 2023: 8).

This revelation runs contrary to the ambitions of Circular Economy (CE) proponents. Here, governments and institutions, including the MacArthur Foundation and CEF, have been vocal in promoting policies supporting the closure of global material loops and advocating for

increased resource reduction, reuse and recycling. Such policy efforts aim to transform production-consumption systems towards enhanced material circularity. This agenda has garnered international momentum, with countries like the Netherlands, Canada, China, South Korea, as well as the European Commission, whose Circular Economy Action Plan ‘is one of the main building blocks of the European Green Deal’ (European Commission no date), promoting circular economy policies and actions.

This movement has sparked a growing interest in critical CE research (e.g., Fitch-Roy et al., 2021; Friant et al., 2021). A key insight emerging from this work highlights the indispensable role of ‘consumer-users’ in realising the CE agenda to which the success of the CE hinges on a fundamental reorientation of everyday consumption (Camacho-Otero et al., 2018); for the CE agenda to have any chance of being effective, consumer-users’ active involvement is vital, given how many facets of the CE rely on citizens purchasing and behaving very differently from today’s mainstream practices (Hobson et al., 2021; Rabiou and Jaeger-Erben, 2023). We, as consumer-users, are expected to actively

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engage in a range of both existing and innovative practices, transitioning away from linear ‘take and waste’ actions to include sharing, leasing, reusing, repairing, refurbishing, caring for and recycling goods and materials. Indeed, the vision of the circular economy depicted by the Ellen MacArthur Foundation’s “Butterfly Diagram” positions the user-consumer as the central node within a circular system - the entity from which all arrows point, and around which all loops circle (See Fig. 1).

However, current policies and research initiatives often overlook the critical role of consumption, with much research and policy in this field remaining technical and production oriented. Analysis by Kirchherr et al. (2017) shows that only 19% of over 100 CE definitions explicitly include the ‘consumer’ or ‘consumption’ as core components (Kirchherr et al., 2017). When consumer involvement is addressed, it is frequently reduced to a question of ‘acceptance’, portraying the creation of ‘circular consumers’ as a primary obstacle, and measures such as information campaigns and eco-labelling as key mechanisms for encouraging their involvement. Yet, dominant quantitative methodologies, such as decision modelling, cost-benefit analysis and psychological surveys, perpetuate a narrow, individualistic-rationalistic perspective of consumer behaviour (Camacho-Otero et al., 2018; Suski et al., 2023). In response, researchers have argued for a more nuanced understanding that incorporates socio-cultural contexts and norms shaping consumption in everyday life (Mylan et al., 2016; Georgantzis Garcia et al., 2021). This call for a sociological approach to consumption and household behaviour should be an ‘essential component’ of any framework seeking to catalyse transformative and sustainable change (Dubois et al., 2019: 145; IPCC, 2022).

This paper contributes to this evolving discourse by building on a small but emerging body of social and critical research (e.g., Fitch-Roy et al., 2021; Friant et al., 2021) that emphasises the critical role of social and material relations of consumption in the success of the CE agenda (e.g.; Camacho-Otero et al., 2018; Kirchherr et al., 2018; Georgantzis Garcia et al., 2021; Rabiú and Jaeger-Erben, 2022, Suski et al., 2023). We contend that the prevailing focus on technical, economic and psychological perspectives in CE research and policy provides a narrow view of the complex landscape of consumption practices that emerges from a sociological perspective.¹ This constrained approach results in suboptimal approaches to behaviour change (Hobson, 2021), often repeating the shortcomings seen in past sustainability agendas (Georgantzis Garcia et al., 2021).

The growing call for ‘strong sustainability’ within CE circles (Schröder et al., 2019; Velenturf and Purnell, 2021) necessitates significant socio-cultural shifts as a crucial component of any successful transformation. We argue that this shift requires a critical examination of how theories of change underpinning our understanding of behaviour play a pivotal role in shaping our perception of individual citizens as consumers within the context of Circular Economy (CE) transformations. The prevailing individualistic-behaviourist perspectives on consumer behaviour in CE policy and research has have led to inadequate acknowledgement of the social and material dimensions of life that are critical for the emergence and scaling up of circular consumption practices in society. This oversight in recognising the complex interaction between social contexts and technical-material factors, which extends well beyond individual consumers’ roles as mere users of circular products and services, poses a significant risk to the effectiveness of the entire CE agenda. Without recognition of socio-material dimensions of everyday demand, strategies towards circularity might only lead to “circular additions”, that increase the amount of products and services, instead of a “circular transition” that decreases the overall

¹ Reference to ‘sociological’ in this paper also includes a focus on the rich body of human geographical research that has played an equally significant role in developing research within socio-technical perspectives on (un)sustainable consumption.

consumption of resource.

Our paper specifically highlights a crucial yet critically under-represented field of sociological work in CE research and policy. This established but yet untapped body of sociology of (un)sustainable consumption (SC) research offers vital insights into the interplay between social, cultural and material factors – commonly referred to as socio-technical – and their role in shaping everyday consumption behaviours and resource demand. Within this work, everyday behaviour is viewed as sets of diverse and interconnected practices, inseparable from social and cultural norms, material and provisioning cultures, and the habitual and mundane aspects of social life (see also Mylan et al., 2016). Despite SC being an established field, the relevance of this body of work for the CE agenda has only been marginally explored, despite some recent noteworthy exceptions (Mylan et al., 2016; Georgantzis Garcia et al., 2021; Suski et al., 2023; Rabiú and Jaeger-Erben, 2023).

In response, our paper draws upon a small and burgeoning, but yet fragmented, stream of sociological research that explicitly engages with the concept of the CE from the perspective of everyday consumption. Recent efforts in this domain have started to address critical gaps in understanding by applying a sociological perspective to the consideration of circular consumption in areas such as plastics (Rabiú and Jaeger-Erben, 2023), clothing (Camacho-Otero et al., 2020), circular business models (Borrello et al., 2020), food (Mylan et al., 2016; Borrello et al., 2020), repair (Bradley and Persson, 2022) and sufficiency (Suski et al., Georgantzis Garcia et al., 2021). This nascent work is clearly demonstrating the untapped potential of sociological approaches in understanding enablers and barriers to the development of circular consumption practices. However, yet an emerging field, it remains scattered and lacks a cohesive framework.

Our papers aims to consolidate and expand upon these initial forays, seeking to enrich and redirect CE research and policy by infusing it with insights from the wider field of SC research. This paper is not intended as a comprehensive literature review, but rather as an exploration of how this cross-fertilisation can enhance CE’s theoretical and policy frameworks as well as expand (un)sustainable consumption research into new areas, such as the sociological study of rebound effects. In doing so, we offer novel perspectives on complex sociological factors pivotal to the success of the CE, arguing that these insights are critical for achieving material circularity and reversing concerning global trends in resource use. It is our firm contention that understanding the sociological dynamics of everyday demand is essential to overcoming obstacles to achieving circular transformation goals.

To this end, our paper holds significant relevance for CE policy-makers and researchers seeking to understand and address the social dimensions of CE transformation, as well as SC researchers who are looking to broaden and apply their theoretical concepts, tools and perspectives to the critical examination and empirical study of the CE. Our paper highlights the importance of advancing a nuanced sociological understanding of the development and execution of CE strategies, making it a useful resource for both fields.

In advancing this argument, the remainder of this paper outlines the limitations of current approaches to the CE consumer and develops a research and action agenda to address the social embeddedness and complexity of consumption in the CE. This agenda comprises five key interrelated elements, which are discussed in the following sections:

1. Sufficiency and higher ‘R’ strategies.
2. Consumption as routine and coordinated social practice.
3. Rebound and spillovers at the nexus of practices.
4. Consumption work and uneven capabilities.
5. Institutional-material arrangements and ‘systems of provision’.

The paper concludes by reflecting on the potential synergies between CE policy and research and the extensive, rich and dynamic body of work encapsulated within the field of socio-technical perspectives on consumption.

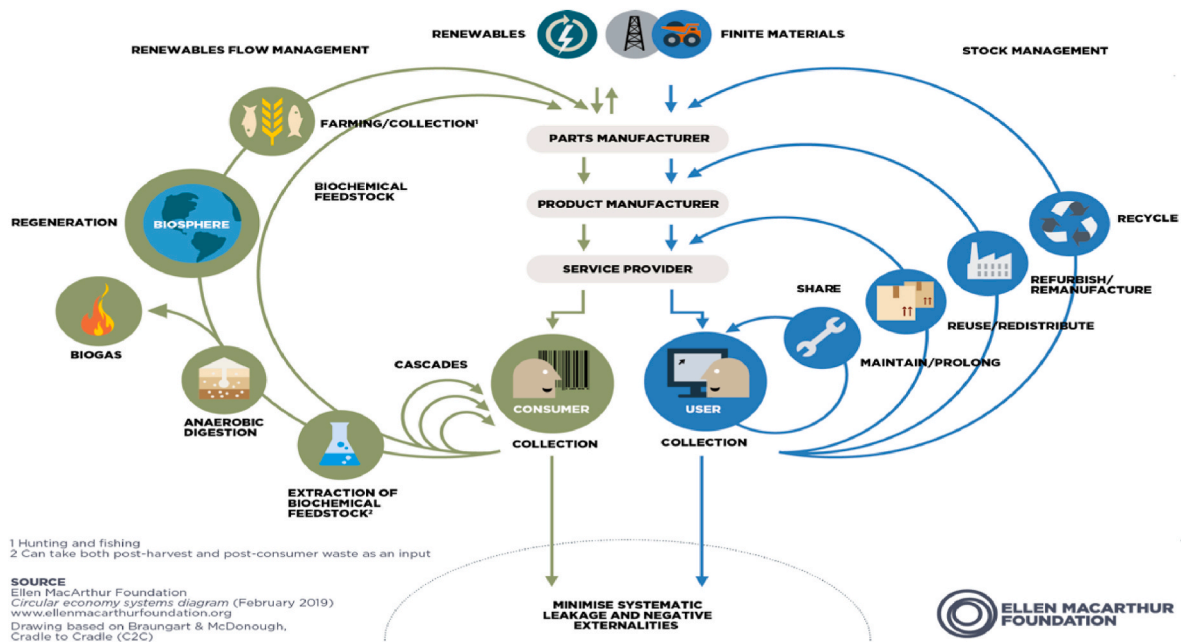


Fig. 1. The 'butterfly diagram' of the circular economy (source: <https://ellenmacarthurfoundation.org/circular-economy-diagram>).

2. Sufficiency and higher R strategies

In March 2020, the European Commission (EC) unveiled its updated Circular Economy Action Plan (CEAP), a key component of its strategy to achieve climate neutrality by 2050. The plan, building on its 2015 successor, sets ambitious goals to decouple economic growth from resource consumption while aiming for the EU's 'long term competitiveness' (European Commission, 2020: 1). Among its 35 comprehensive actions, many focus on optimising specific production processes and materials, particularly in areas like plastics and batteries. However, the plan also extends a new focus to end-users and consumers, emphasising the 'empowerment' of consumers to make informed sustainable choices through labelling and provision of more efficient and circular products (European Commission, 2022: 2).

However, the focus on efficiency and consumer empowerment, primarily at the point of purchase, while important, is limited. As has been discussed widely in social research, such ideas around consumer choice are rooted in rational-economic and psychological models of behaviour change that assume that provision of information, and psychological variables such as intentions, are key drivers of action (Shove, 2010). The CE policies of the EC and those at national levels across Europe often operate under the assumption that providing sustainable or more efficient goods and services will inherently lead to consumers 'buying better'. Across the EU and further afield, CE policies are largely technocratic and when consumer engagement is considered it is widely framed in relation to encouraging more circular product choices (Calisto Friant et al., 2021, 2023). Yet, such policies often overlook the significant impacts of consumer behaviour post-purchase, such as usage and disposal, which are critical according to life cycle analyses (Cooper, 2020; Suckling and Lee, 2015) and influenced by prior experiences and complex domestic and social factors, as revealed by studies on consumer practices (Hipp and Jaeger-Erben, 2021).

Furthermore, the CEAP's strategy does not adequately address the need for overall consumption reduction, a key element of a sufficiency-based circular economy. Strategies that focus on 'greener' purchasing can often lead to rebound effects, undermining sustainability efforts (Zink and Geyer, 2017; Makov and Font Vivanco, 2018; Castro et al., 2022). In CE policy, including the CEAP, there is a lack of emphasis on prevention-focused strategies, such as the higher R's - 'Refuse, Rethink, and Reduce' (see Fig. 2 for an illustration of circular R strategies where

strategies aimed at prevention are ranked higher than those like recycling). Even in agendas where higher R strategies such as reduce are mentioned, as in the Dutch Circular Economy Knowledge and Innovation Agenda (KIA), these are only in the context of production and business practices, leaving their application in everyday consumer behaviour largely unexplored.

The European Commission's 'eco-labelling' initiative is limited in its capacity to promote significant consumer behaviour changes, such as reducing consumption or reconsidering the need for purchases. While labelling policies may prompt consumers to reconsider the brand or type of product they buy, despite their potential to raise awareness and intentions, they often fail to translate into substantial changes in consumer purchasing behaviours. Research indicates that labelling schemes have limited effectiveness in driving behavioural change at the scale and pace needed for substantial societal and environmental impact (Meis-Harris et al., 2021: 13). This reflects the so-called 'value-action' gap, where mainly survey based research repeatedly finds a gap between self-reported individual attitudes or intentions and behaviour, hindered by various personal and contextual factors (e.g., Barr, 2006; Tölkes, 2020).

Despite the recognised limitations of information provision in transforming consumer cultures, some of the new initiatives at the European level offer promising potential, including establishing a new 'right to repair' for consumers and combating "greenwashing" and premature obsolescence (European Commission, 2022). These steps indeed hold promise. However, they tend to overlook the considerable challenges associated with consumers adopting repair and reuse practices in their daily lives. Despite the growth of Repair Cafes and platforms for second-hand goods like Vinted, engagement in Circular Economy practices such as repairing and sharing remain consistently low across Europe (Europe et al., 2018; Jaeger-Erben et al., 2021; Koch and Vringer, 2023; Moalem and Mosgaard, 2021). Contrary to initial expectations that the Covid-19 pandemic might promote sustainable living (Cohen, 2020), a 'rapid rebound' in greenhouse emissions has been observed instead (Tollefson, 2021: 1). The 'green,' 'circular,' or 'eco' consumer, responsive to green labelling and efficient products, remains a largely theoretical concept, with little manifestation among the majority of consumers and consumer practices.

Thus, current CE policies often inadequately address higher R strategies, tending to reinforce rather than challenge the prevailing growth-

Circularity strategies within the production chain, in order of priority

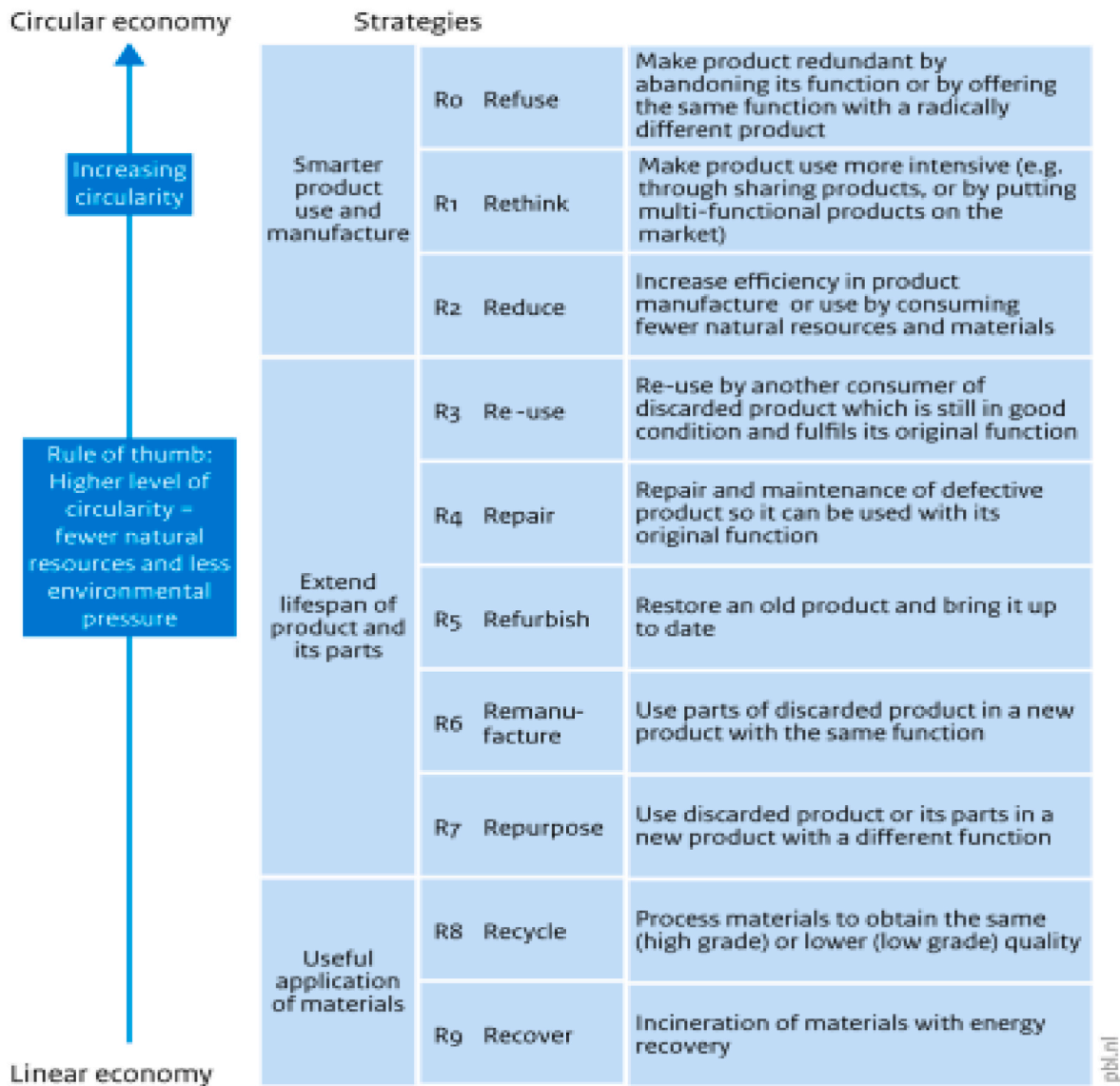


Fig. 2. Circular R strategies within the production-consumption chain, in order of priority (adapted from Potting et al., 2017).

based economic system that is perpetuating overconsumption (Calisto Friant et al., 2021; Georgantzis Garcia et al., 2021). When higher R strategies are considered, the focus is usually on production-related and business-to-business transactions, overlooking their application in everyday consumption of citizen-consumers. However, many higher R practices – like sharing, repairing, reducing, and reusing consumer goods - are crucial for realising the CE objectives and depend significantly on the active participation of citizen-consumers. Critical sustainability researchers have long emphasised the necessity of ‘sufficiency-based’ approaches, including higher R strategies, arguing that these are essential for achieving substantial reductions in consumption (e.g., Sachs, 1993), a view supported by accounts calling for their integration into CE policy and research (Georgantzis Garcia et al., 2021; Suski et al., 2023). Sufficiency involves not only individual efforts to reduce material consumption but also systemic changes toward cultures that prioritise reduced consumption as a political strategy (Verfurth et al., 2019: 374). This perspective has recently been endorsed by the IPCC (2022) and resonates with decades of work on the ‘degrowth’ imperative (Bauwens, 2021; Schultz and Piet, 2023).

In efforts to promote reduced consumption and achieve greater

sufficiency, researchers have developed concepts such as ‘consumption corridors’ (Fuchs et al., 2021) and ‘societal boundaries’ (Brand et al., 2021), which set parameters around upper limits and lower thresholds for consumption within planetary boundaries (see also Raworth, 2017). Sustainable consumption and post-growth researchers are drawing on these concepts in exploring ‘lifestyles of Enough’ (Kropfeld, 2022) and less consumptive cultures (Geels et al., 2015). Studies such as Bocken and Short (2016) emphasise that sufficiency is achieved through repair, reuse and sharing (see also Speck and Hasselkuss, 2015), while others focus on practices of ‘refusing’ and ‘reducing’ usage (e.g., Fischer and Griebhammer, 2013). Further research into sufficiency-oriented communities of practice and business models sheds light on previously overlooked caring practices, emphasising the need to better understand what is necessary to enable consumers to use fewer goods over longer periods (Hielscher and Jaeger-Erben, 2021; Meißner, 2021; Beyeler and Jaeger-Erben, 2022; Jaeger-Erben et al., 2023). Taken together, this research delves into how values, norms, practices, and social contexts can reshape logics of ‘uber availability’ towards notions of ‘enoughness’ in everyday consumption (Suski et al., 2023), and highlights pathways and challenges in transitioning to more sufficiency-based practices and

cultures of consumption.

Sufficiency-orientated work holds great potential for informing policy and research on consumption within the CE, offering insights for a ‘stronger’ CE framework (Lorek and Fuchs, 2013) compared to current approaches. The subsequent sections of this paper will draw on ‘socio-technical’ perspectives on consumption to propose such a strengthened framework.

3. Consumption as routinised and coordinated social practice

Current approaches to CE interventions, such as eco-labelling, often assume that consumption is a series of unrelated, semi-rational decisions driven by individual optimisation of variables like cost, convenience, and taste. This perspective is rooted in utilitarian perspectives on behaviour that regard consumers as passive and rational actors who will follow labels and production-side signals when making decisions (Camacho-Otero et al., 2018: 2). This view is echoed in the CEAP and national CE policies across Europe, in which economic instruments and information labelling are presented as the primary means of engaging consumers. However, social science research consistently tells us that consumption is a far more complex phenomenon, deeply intertwined with domestic and social life and embedded within routinised social practices.

The concept of ‘practices’ in social science research on consumption is vital here, as it extends beyond a focus on individualised ‘behaviour’. Rather, as has been well documented in SC literature, practices are much more broadly conceived, refocusing attention away from individuals’ decision-making toward the material, cultural and social elements that make up any act (Shove et al., 2012). That is, consumers do not just consume goods and services: rather, goods and services are one part of shared, mundane and routinised practices, which are made up of intangible and tangible components (Wrde, 2005). In thinking about how to alter practices it is thus critical to understand their material and non-material constituents, alongside overt and tacit cultural and social meanings and skills, and how all these ‘hang together’ in different spaces, such as the home, and change over space and time (Greene, 2018). The ways in which daily social practices, such as eating, moving around, caring, doing family, working and fulfilling other social roles, interconnect can create conditions of more or less complexity for consumers trying to change practices (Greene et al., 2022; Klitkou et al., 2022). Following this, using resources is ‘far more complex than securing the flow of the ‘right’ goods and disposing of the waste in the ‘right way’. Rather it is rooted in the performance of interconnecting practices that make up daily life, reflecting everyday negotiations, identity performances and expressions of care (Mylan et al., 2016: 5).

The complexity of these challenges undermines the viability of seemingly ‘quick-fix’ solutions, such as offering ‘circular’ products or services, as well as relying solely on economic and informational measures to induce behaviour change. On one hand, everyday consumption often takes place with little conscious deliberation, becoming ingrained in habitual routine practices that require minimal consideration (Wrde, 2005). Effecting change in these practices necessitates bringing them into conscious deliberation or ‘discursive awareness’ (Giddens, 1984; Greene and Royston, 2021), even if only momentarily (Hobson, 2003). Yet, such moments of awareness are infrequent unless established routines are disrupted in some way or another (see Greene et al., 2022).

On the other hand, conscious processes come into play within shared households, where negotiations and decision-making are embedded in the context of ‘doing family’ and daily life (Jaeger-Erben and Offenberger, 2014). For example, research on ‘smart’ and circular energy systems highlights how issues like gender dynamics and power structures shape the adoption and management of new technologies in everyday practices (e.g., Aagaard and Madsen, 2022). It is, therefore, crucial to consider not only how and why new goods and services are acquired but also how they are ‘appropriated’ and ‘appreciated’ within domestic settings (Mylan, 2015). Thus, it becomes essential to

understand not just the acquisition of new goods and services but also their integration into the complex landscape of existing ideas, norms, materials, capabilities, and individuals that constitute daily life.

What this means for consumption in the CE is that, in order to engage consumers and establish the necessary higher R strategies in everyday lives, recommendations for action need to move beyond interventions that target isolated individual consumption behaviours. Instead, we must consider the complex and interconnected social practices in which resource use is embedded. For instance, research into hypothetical or actual ‘sustainable product service systems’ shows how adopting a new practice, such as moving from independently owning a car to car sharing, has ripple effects through adoptees’ lives. Such ripple effects influence the way everyday practices are coordinated and planned, including the timings of outings, shopping routines, and the spatial “spread” of daily life. These impacts can create new forms of competition and dependency between practices, some of which adoptees have the capacity and willingness to accommodate and others not (e.g. Mykkänen and Repo, 2021; Rabiou and Jaeger-Erben, 2022). Policy and scholarship have tended to advocate overcoming these issues through making offers more ‘convenient’ and affordable for the consumer (Hobson, 2021). However, this misses the ways in which ‘providers ought to take the consumer’s perspectives into account’ (Akbar and Hoffmann, 2018: 425), which social science researchers argue is about a new consumption practice finding ‘its place’ in daily life among the manifold practices that compete for individuals’ time and resources (Huber, 2017).

Thus, in-depth knowledge about how higher R practices, including reducing, sharing and repairing, can be performed in different everyday life contexts is needed to enable the widespread societal embedding of the CE. It is our firm contention that this requires a shift in policy and research focus away from a focus on individual consumer behaviors to recognise that reducing, reusing and repairing consumer goods will only be successful if they can become integral components of a multitude of daily practices, such as commuting, working, shopping, child care, home maintenance, and cleaning. Currently, there’s limited knowledge regarding changes in everyday behaviour within CE initiatives, specifically concerning how circular consumption practices are emerging and can become routinised and embedded in citizens daily lives. As a result, critical questions remain largely unanswered. For instance, what meanings, competencies and material arrangements are important components of sufficiency-based circular consumption practices? What adjustments to the temporal and spatial arrangement of daily routines are needed to facilitate the integration of sharing, repairing and reducing consumption? How do other practices and contexts, like family, work and governance arrangements, influence citizens capacities to engage with circular actions?

Employing a social practice framework to explore questions around sufficiency-based circular actions can deepen our understanding of the complexities involved in embedding these practices into daily life (refer to Speck and Hasselkuss, 2015; Suski et al., 2023 for further insights). Such an approach is crucial for effectively integrating circular consumption into the everyday routines of individuals, thereby encouraging the broader adoption of circular consumption practices across society. Furthermore, this perspective shifts the focus to the socio-spatial dimensions of daily life, offering valuable insights for policy development. Insights from research in this field can be used to create and enhance spaces conducive to circular consumption activities like sharing, repairing, donating, and upcycling, ensuring these practices align with the rhythm of everyday life.

In this respect CE policy efforts are likely to bring about more successful transformations by shifting from a focus on informing consumers to targeting the dynamics of social practices (Spurling and McMeekin, 2015). This involves crafting policies that move beyond individual choice to focus on interventions in practice elements and interconnections. It also involves focusing attention on social, material and institutional arrangements that can support the emergence and embedding of circular practices and the dying out of wasteful/linear

ones. Such a socially embedded policy agenda, when informed by deep qualitative and more aggregate practice-informed methodologies, can deepen understanding of differentiated circular “practice trajectories” by examining how circular practices develop in different everyday settings and can be scaled up in a way that considers how citizens adopt (take up) and integrate (embed) sharing and repairing into their daily routines. Critical here is the rich potential for studying and shaping how practices are interwoven, offering holistic and policy-relevant understanding of transformative dynamics, including the emergence of conflicting rebound effects and spillovers: issues explored more in the next section.

4. Understanding rebounds and spillovers at the nexus of daily practices

The critical role of interconnected practices becomes particularly evident in the context of rebound effects within circular consumption, a topic overlooked in policy and academic discourse. Notably, key policy documents like the EU CEAP scarcely mention rebound effects. Even where rebound effects are acknowledged, as in the Dutch government’s Knowledge and Innovation plan for the CE, the discussion is again primarily confined to production and business sectors. Similarly, within academic research, only a handful of studies have explored the complexities of rebound effects and trade-offs associated with circular practices from the perspective of everyday consumption (Merino-Saum et al., 2023; Andersson and Nässén, 2023). This gap leaves a limited understanding of the true environmental impacts of various circular consumption practices, including higher R activities such as sharing, reducing, and repairing (Ottelin et al., 2020). Where rebound effects are considered in everyday consumption, most studies predominantly apply economic or psychological lenses or focus narrowly on individual products (see Reimers et al., 2021). As a result there has been limited attention to household level rebound effects related to circular consumption through the lens of interconnected social practices.

This lack of consideration of situated and social dynamics of rebound effects is critically concerning, as understanding how and why rebounds occur is essential for ensuring that CE initiatives lead to actual reductions in resource use and for pre-empting potential indirect consequences that may hinder short and long-term transformation. Within the context of consumption and resource use, rebound effects are rooted in what has been called the Jevons paradox: the observation that improvements in energy and resource efficiency are often connected with rising, not falling, consumption (Ruzzenenti et al., 2019; York et al., 2022). Rebound effects can manifest in direct and indirect ways at national, sub-national, and household levels (Reimers et al., 2021; Rabiú and Jaeger Erben, 2022; York et al., 2022).

At the household level, psychological and economic perspectives have highlighted that direct rebound effects can occur when increased resource efficiency or cost savings in one domain result in increased consumption of the same resource or product. For example, if energy-efficient appliances reduce electricity bills, consumers might use those savings to use the appliance more often, negating the initial energy savings. Indirect rebound effects, on the other hand, occur when efficiency gains or cost reductions in one area of consumption spill over into other related consumption areas. For instance, someone upgrading to a more fuel-efficient car might decide to take a long-distance flight-based vacation or buy additional new clothes with the money saved on fuel costs. In this scenario, the efficiency gains from the new car indirectly lead to increased consumption of resources in air travel or consumer goods, demonstrating how changes in one aspect of consumption can trigger rebound effects in entirely different areas.

The significance of rebound effects in circular consumption cannot be overstated. The limited studies that do focus on household level rebound effects reveal, through economic and material Life Cycle Assessment methodologies, that they can completely undermine any environmental gains resulting from behavioural changes (Yu et al.,

2013; Hediger et al., 2018; Ottelin et al., 2020). For example, a study by Ottelin et al. (2020) found that due to rebound effects reinforced by a lack of favourable conditions in political-economic systems, circular consumption behaviours show a poor connection to reductions in material footprint. Other research substantiates this to reveal that efficiency improvements in households show less-than-expected energy savings due to direct and indirect rebounds (Hediger et al., 2018; Greening et al., 2000; Sorrell et al., 2020). Indeed researchers have reported rebound effects reaching up to 626% for everyday appliances, including air conditioners, microwave ovens, cars and clothes washers, due to ‘improper use’ and materialist values among consumers (Yu et al., 2013).

Despite these findings, a comprehensive understanding of the contexts, patterns and mechanisms that embed rebound effects in daily life is notably lacking. To date, the focus has largely been on direct rather than indirect rebounds, with economic and psychological mechanisms predominantly examined (Reimers et al., 2021). Such approaches often isolate specific target behaviours, failing to adequately consider their social embeddedness and interconnectedness within broader systems of practices, offering limited insights into the situated dynamics of rebound effects in everyday life. Consequently, there is a substantial gap in understanding how everyday practices, work hours, time use and socio-economic factors intertwine and contribute to environmental impacts. A social science research agenda that focuses on rebound effects in circular consumption and leverages a social practice approach is critically underexplored (Rabiú and Jaeger Erben, 2022). We argue that a comprehensive understanding of rebound effects requires a thorough examination of the complex interplay among social practices that shape and drive consumption patterns.

In calling for research that investigates rebound effects within the framework of social practices, we highlight the potential for advancing understanding of the varied contexts and mechanisms through which direct and indirect rebounds emerge and become entrenched in daily life. Through this lens, we can consider how changes in consumption patterns, resulting from the uptake and routinisation of circular practices, may trigger direct or indirect influences on connected practices, possibly counteracting or complicating the anticipated positive environmental outcomes of circular systems. For instance, avoiding single-use plastics might lead to increased driving to plastic-free markets or more frequent restaurant visits (Rabiú and Jaeger Erben, 2023), which, while not classically defined as rebound effects in terms of resource re-investment, still deserve attention for their interconnected impacts. A broader perspective that considers the interlocking of practices and their collective environmental implications is needed to understand how rebounds emerge in situated social life.

Furthermore, our current understanding of social heterogeneity in rebound effects is limited (Shojaeddini and Gilbert, 2023), particularly in terms of how varied everyday life contexts - including work arrangements, household size and composition, life stages, income, social status, and a range of daily practices - influence the manifestation and patterning of rebound effects among different societal groups. A situated practice analysis, focusing on the emergence and interconnection of circular practices with other daily activities (see Klitkou et al., 2022; Castelo et al., 2021), can shed light on the specific conditions and processes through which rebounds occur in everyday life. This approach can help to address critical questions about why and how changes in efficiency or consumption lead to increased energy and resource usage.

Future CE research and policy, then, should more effectively aim to understand and mitigate negative rebound effects associated with circular consumption practices. This involves systematically identifying and addressing unintended consequences to achieve true reductions in resource consumption. In this regard, we advocate for in-depth qualitative, practice-based analysis of daily practices and their interconnections, which can complement and enrich existing economic, psychological and environmental analyses of rebounds. Interdisciplinary work that blend practice-based inquiry with LCA analysis of

environmental impacts due to transformations in social practices holds significant promise (Niero et al., 2021; Suski et al., 2021). Integrating practice-based methodologies with Life Cycle Assessment (LCA) interdisciplinary and transdisciplinary research designs is crucial. Such integration is key to bridging existing gaps and gaining more nuanced understanding of the varied contexts that shape the environmental impact or rebound effects of circular practices.

5. Consumption work, care work and uneven capabilities

Within social science work on everyday domestic labour, the concept of ‘consumption work’, as the labour required to participate in sustainable practices on an everyday scale, is a critical but often overlooked component of citizen participation in the CE (Hobson et al., 2021, Wheeler and Glucksmann, 2015). ‘Consumption work’, as informal and unpaid labour regularly undertaken by consumers, plays an integral role in the consumption and production provision process (Wheeler and Glucksmann, 2015). For instance, it encompasses tasks like assembling flat-pack furniture or self-scanning groceries at the supermarket. Another example is the labour involved in recycling, which entails cleaning, sorting, and correctly disposing of items—everyday labour essential for the efficient functioning of contemporary waste management systems. While these practices have become commonplace in many industrialised countries, they required complex institutional and material interventions to be established and the correct execution of these practices by householders remains an ongoing challenge for the waste management industry (Wheeler and Glucksmann, 2015). Other relevant examples include the time and effort it takes to bring a product to be repaired or to exchange goods via a sharing platform.

Why consumption work matters for the CE is that the execution of many of the consumer practices integral to the CE outlined in Figs. 1 and 2 depend upon significant and often unrecognised embodied, physical and emotional labour among consumers. For example, research suggests that practices of sharing, renting, repairing, reusing, and borrowing involve significant time, planning, and logistical and emotional labour, that come into conflict with the demands of contemporary lives (see Fraanje and Spaargaren, 2019). The extent of this consumption work is closely linked to how accessible the essential resources, spaces, social networks, and institutional conditions required for enacting these practices are. To illustrate, as outlined above, recent discussions surrounding the “Right to Repair” within the European Commission have revolved around expanding consumer rights, including the ability to repair products independently. This would necessitate legal and institutional changes, such as manufacturers providing technical information and spare parts, which are currently not legally required (Šajin, 2022: 2). However, promoting widespread “repair cultures” also entails making the necessary time, space, and skills for repair available to the general population. This is a significant challenge, given the growing technical complexity of many essential products in our daily lives (as noted in Niskanen et al., 2021) and the time pressures inherent in contemporary work and daily routines within modern societies (as explored by Schor, 2005; Southerton, 2020).

Research has further shed light on emotional aspects of consumption work that have often been overlooked. In contrast to the prevailing notion that the CE liberates consumers from the responsibility of ownership (Hobson, 2021), empirical studies reveal reported anxieties and negative experiences linked to scheduling, coordinating, and navigating relationships with others when borrowing and sharing goods. The social dimensions of these activities can be emotionally burdensome and challenging to manage for some, with a preference for impersonal transactions (see Fraanje and Spaargaren, 2019; Huber, 2022). Additionally, research has uncovered ‘a sense of disquiet about the new relations of care that might be required when product ownership remained with service providers’ (Cherry and Pidgeon, 2018: 10). Among other things, this includes the need to clean or repair products more frequently than if they were privately owned. This ‘care work’ (Lucas-Healey et al.,

2022) is a critical yet underexplored aspect of consumer practices within the CE. Significant shifts are also needed in production and consumption systems regarding care work. Businesses striving to offer sufficient products and services frequently face the challenge that catering closely to consumer needs demands more time, interaction, and long-term commitment (Beyeler and Jaeger-Erben, 2022). These requirements are often at odds with the quick-profit, fast-paced nature of modern economies (see also section 5). Across these contexts, CE policy and research can benefit from extensive feminist sociological research on the politics of care and the need to overcome the marginalisation of care work in modern consumer societies (Meißner, 2021). Applied CE research should further explore strategies to enable practices of ‘prosumption’ (a hybrid term entailing production and consumption practices (Kotler, 2010)), as well as other forms of active, responsible and self-sufficient consumership, and the systems of provision supporting them, in circular sustainability (Blätzel-Mink, 2014).

Thus, consumption work—with all its emotional and physical components—plays a central role in supporting and enabling practices that can create the socio-technical system changes needed for a sufficiency-orientated CE. Critical here is exploring how the everyday labour involved in enabling the CE might reinforce established inequities and divisions of labour in different household settings. The skills, competencies, and resources required to participate in consumption work necessary for the CE are not likely to be evenly distributed within and across populations (Hobson et al., 2021). Differences between households in terms of life stage, household composition, and other categories of socio-economic variance are significant aspects of social and domestic life that pattern how engagement with the CE plays out. Furthermore, great variation exists between Global North and South countries in relation to everyday factors shaping consumption patterns and differentiated capacities for change (see Hayward and Roy, 2019; Schröder et al., 2019). However, the extent to which these inequities are reproduced or challenged by current CE agendas remains largely unexplored. As a result, there is an urgent need to explore everyday dynamics of the apparent ‘circularity divide’ (Barrie et al., 2022), including differentiated capabilities for change and dynamics of practice transformation across social and geographical contexts and scales.

6. Systems of provision and institutional-material arrangements

The prevalence of individualistic and utilitarian perspectives on consumption within the CE has led to critical oversights regarding the broader political and economic frameworks that shape the possibilities for meaningful change. Notably absent from discussions about CE consumers is an exploration of the underlying ‘structures, agencies, processes, relations, and institutions’ that underpin everyday consumption practices (Fine et al., 2018: 37). These structures have been described as “systems of provision” and deserve our attention, not only because they impact how goods are produced and consumed, but also due to their influence on power dynamics, and their cultural and historical significance (Fine and Bayliss, 2021: 1).

Adopting a socio-technical systems of provision perspective to circular consumption requires re-evaluating contemporary political-economic material cultures. These cultures are produced at the crossroads of an ever-expanding capitalist “productionism” driven by capitalist markets and the dynamics of contemporary consumer societies (Bauman, 2009). Current systems of provision, have transformed “system-neutral human needs, desires, and aspirations” into the central driving forces of society (Bauman, 2007: 41). Here, consumption extends beyond mere need satisfaction, actively shaping social order where consumer goods and services are primarily valued for their symbolic meanings, signifying belonging and adherence to societal norms (cf. Baudrillard, 1998). Consequently, a consumerist lifestyle becomes more than a set of consumption choices; it evolves into a “coherent life program” (Bauman, 2005: 204) and the dominant purpose of life (Bocock, 1997; Barber, 2007).

To analyse systems of provision with regard to their support for circular (sufficiency) practices, it is crucial to understand the institutional and material conditions that normalise and structurally enable affluent and consumerist ways of life. These conditions encompass material and social aspects, such as easy access to credit or convenience products (Schor, 1999), excessive emphasis on consumer sovereignty (Schwarzkopf, 2011), or the transformation of everyday spaces like train stations, airports, and city centres into “consumer cathedrals” (Ritzer, 2005). Additionally, it involves scrutinising individual and everyday manifestations of consumerism within the context of status consumption (cf. Veblen, 1994) and notions of normalcy associated with critical consumption domains such as domestic furnishings, everyday e-appliances and clothing (see Hand and Shove, 2007).

As a result, systems of provision are never neutral, and the transition towards circularity requires a fundamental examination and transformation of the underlying (capitalist) political-economic values and norms that drive “affluent societies” (Dubuisson-Quellier, 2022), and transform social practices (Hansen, 2023). Beyond exploring how various R practices such as recycling, repairing, and reusing, are influenced by specific conditions within systems of provision - like efficient recycling services or access to repair and second-hand markets - CE research should delve deeper into the political-economic, institutional, and social priorities that shape our economies and societies. These priorities often involve the simultaneous pursuit of sustaining “business as usual” economic growth while promoting circular economy practices (Åkerman et al., 2020), which can make higher R practices elusive and challenging to implement. Neglecting to account for these fundamental principles of capitalist economic growth significantly diminishes the prospects of successfully mitigating adverse rebound effects and realising comprehensive reductions in resource consumption (Schröder et al., 2019; Deutz, 2023).

In considering the interplay between provisioning contexts and circularity in daily life, research can productively distinguish between market and non-market activities that foster sufficiency-based circular economy practices. Market activities involve monetary transactions for goods and services, while non-market-based sufficiency activities encompass ‘activities which occur outside markets, such as DIY (e.g., repairing items), voluntary work, swapping, and refraining from buying (anti-consumption)’ (Persson and Klintman, 2022: 519). These “socially innovative” practices hold meanings that transcend monetary value, contributing to alternative economies characterised by care, longevity, and communality (Jaeger-Erben et al., 2015; Jaeger-Erben et al., 2022).

Within prevailing CE conceptions, the role of non-market activities is often assumed to be pivotal. For instance, both the Welsh and Irish governments CE agendas assign significant importance to civic and community actors and organisations, often reliant on competitive and short-term charitable funding, in driving forward ‘a universal culture of re-use, repair, and remanufacture within our communities and town centres’ (Welsh Government, 2021: 19). In contrast, in contexts like the Netherlands, market-based circular economy activities are more integrated into strategies as part of a broader polycentric public-private partnership governance framework. However, the interactions between these varying governance arrangements and systems of provision, and their impact on circularity within different household and everyday life settings, remains underexplored. Cross-context studies that link distinct governance approaches with everyday practices are essential for uncovering specific institutional-material arrangements, systems of provision, and governance conducive to circularity in daily life. Policy can consider various pathways for reinforcing and creating missing markets, institutional support and services required to drive the scaling of circular practices in society.

In critically examining the underlying principles of provisioning systems and studying production and consumption practices, the significant influence of institutional and social spaces in daily lives must be considered. Encouraging the adoption of practices like sharing and repairing necessitates strategies that are tailored to various societal

contexts. Urban social networks and institutional spaces, such as workplaces, schools, universities, neighbourhoods, and community groups, offer untapped opportunities for co-designing and scaling up circular consumption practices. Yet, currently these everyday spaces often pose challenges to circular consumption. For example, workplaces as “time-ordering institutions” can impact home consumption practices, making it challenging to adopt time-intensive circular or sustainable consumption practices (Greene et al., 2022: 226). To facilitate the widespread adoption of circular consumption practices, it is essential to understand and navigate the challenges and opportunities within these everyday spaces. Addressing questions about how temporal and spatial structures, as well as institutional rhythms of daily life (Southerton, 2020), can be adjusted to support citizens in incorporating circular consumption actions into their everyday routines is important in this regard.

Furthermore CE policy agendas, which are predominantly characterised by their top-down approach, could benefit significantly from a more pronounced focus on supporting bottom-up processes of change and grassroots innovations in transforming systems of provision. Across Europe, and beyond, a variety of community-scale and citizen-led circular innovations are emerging. These include a wide range of initiatives, from volunteer-driven repair cafes to business-led digital sharing platforms, workplace initiatives, and municipality Circular Craft Centres (Mont et al., 2020; Bradley and Persson, 2022). Recognising and supporting these initiatives as important sites where circular practices are emerging is vital for their expansion and success. Consequently, there is a urgent need for research focused on understanding how these bottom-up change processes unfold in society and identifying ways to support and amplify their impact.

In summary, shifting CE research from a focus on isolated consumer behaviours to a broader examination of the interconnected nexus of practices requires an in-depth look at the structures of provisioning systems and everyday institutional-material arrangements. Such a move is important for understanding the complex interplay between consumption and the socio-technical arrangements that perpetuate conventional consumerism, and for identifying ways to disrupt and transform these systems to better support everyday circularities. Understanding how prevailing political-economic capitalist values influence consumer societies and how they can be realigned with circular principles is vital. Research and policy should critically evaluate the implications of economic growth paradigms on possibilities for the societal integration of higher R circular strategies. Exploring how the CE agenda can embrace degrowth and post-growth strategies (see Schultz and Pies, 2023) will be instrumental in creating the right conditions necessary for embedding and expanding sufficiency-based CE practices in daily life. Furthermore, investigating the impact of various innovations, from institutional reforms like reduced working hours to alternative economic models, on driving circularity are important avenues for future inquiry.

6.1. The way forward

The Circular Economy (CE) agenda offers significant potential for reshaping society’s path towards sustainable and circular systems. However, while the emphasis on efficiency and production-oriented solutions is an essential part of the picture, so far the degree of attention to these aspects has led to a neglect of the complexities of development, consumption, and the multifaceted dynamics of daily life that shape resource use. Consumers, and the complex social and technical dimensions of consumption have not received the critical attention they require in policy and societal CE programmes. A growing body of work is emerging that seeks to address this gap by directing attention to social dynamics of circular consumption. However yet a nascent field it remains disjointed and scattered.

In this paper, we have highlighted the urgent need for a more profound dialogue and collaboration between CE policy and research and

the extensive body of work on the sociology and socio-technical dynamics of consumption. This engagement has the potential to considerably advance the CE agenda, ultimately leading to better understandings of everyday barriers and enablers to the societal embedding of circular practices in everyday domestic lives. Such insights are critical for reversing current resource use trends and bringing about substantial reductions in consumption, a prerequisite for realising a truly circular society.

Our research and action agenda outlines fundamental policy-relevant research pathways that can play a critical role in achieving this objective. By prioritising sufficiency goals and transcending limited efficiency and behaviour-centric views of the circular consumer, we provide a roadmap for understanding the social and material complexities of CE transformations from an everyday consumption perspective. This agenda encompasses a focus on the interplay of interconnected social practices, complex rebound and spillover effects, varied capacities for change, and the broader institutional-material contexts and political-economic provisioning systems that constitute and reinforce linear consumption. We argue that consideration of these dimensions is vital for driving the realisation of a circular economy.

The urgency of ushering in an interdisciplinary era of CE research that places the 'consumer-user' at the centre and acknowledges the multifaceted politics of everyday life as the arena where economic processes unfold, persist, and can be transformed has never been greater. Broadening the CE agenda to fully encompass the micro-politics and dynamics of everyday transformation is vital. By doing so we move closer to a vision and realisation of a circular economy that fully recognises the social and material complexities of consumption and everyday social practices as critical sites for transformative change.

Credit author statement

Melanie Jaeger-Erben: Writing – original draft, Writing – review & editing. Kersty Hobson: Conceptualization, Writing – original draft, Writing – review & editing. Mary Greene: Conceptualization, Funding acquisition, Investigation, Project administration, Writing – original draft, Writing – review & editing

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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