9

CONCLUSIONS

Emerging understandings of circular economy realities

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9.1 Reflections on our research questions

In this concluding chapter we pull together the key ideas emerging from the themes presented in the book to address our research questions as well as reflecting on the limitations of the research and recommend areas for further research.

9.1.1 To what extent and in what form are CE practices occurring in public, private and third sector policy and practice?

Circular economy (CE) practices, defined as the ten Rs (Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, Recover; Reike et al., 2018), are well known and have been widely adopted across the private, public and third sectors.

Public sector organisations can have a dual role. Like any (often large) organisation they need to consider their own practices, but they are also responsible for setting rules (primarily at the national scale) and more directly trying to facilitate or encourage CE activity (at the subnational scale). While variations reflect spatial priorities (e.g. reflecting the current industrial base), there is a consistent pattern of taking a 'reformist technocentric' approach (Calisto Friant et al., 2020) with the CE firmly entrenched in an agenda of economic growth (from the European Union (EU) scale down to the cities under study, and firmly including the United Kingdom). A CE can be seen specifically as part of a strategy to generate local to regional growth, reflecting the spatial competition for investment (Deutz, 2014). A policy-driven CE builds on well-established practices (e.g. extended producer responsibility – EPR – or recycling). Expansion to EPR is a significant element of CE policy in the EU and the UK but a close examination reveals shortcomings in

DOI: 10.4324/9781003295631-9

practice (Campbell-Johnston et al., 2020), focusing on the lowest cost options, for example. Governmental bodies do not aspire to more transformative or 'diverse' approaches associated with the shorter R loops (sharing, reuse, resale – including some not explicitly in the hierarchy). Such practices may be referred to at the city scale, but without strong policies to implement. Indeed, a significant shift away from a growth-oriented outlook is beyond the authority and resource capability of local government bodies.

Public sector organisations also face organisational issues in improving their own implementation of a CE. The focus for the case study organisation (the Portuguese national government) was on waste/recycling practices (Klein et al., 2022), notwithstanding the Portuguese government's front-runner position in CE implementation. Challenges of implementation arise around unfamiliar practices (purchasing, disposing, sharing between departments, requisite IT, among others). There are challenges to overcome including organisation and organisational culture, not unlike those to be addressed by companies, notwithstanding the particular hierarchical issues of public sector bodies having strict chains of command and the predominance of desk-work skills over technical training (Klein et al., 2022). The Portuguese government has made a marked effort to promote the CE in its own activities. Comparisons are needed to see how far the findings of this research apply elsewhere.

Companies surveyed for the Cresting project across several different countries typically viewed the CE as primarily an initiative relating to waste (reflecting and responding to regulations) and a largely internal matter or otherwise relating to their supply chain partners. Some questioned the value of what is seen as a new term for sustainability, others view the CE more specifically as a route to decarbonisation or to improving environmental efficiencies (reflecting national/regional as well as company priorities). Examples can certainly be found of companies interested in taking more ambitious approaches to the CE than improvements to managing end of product life. Researchers worked with companies to devise approaches to business models, product development (see Chapter 4 in this volume), sustainability assessments (Chapter 5 and below). The research indicates that (in the case of existing firms) the most relevant practices that can determine the success of a process of business model innovation for the CE are adopting a life cycle perspective, employing sustainability-oriented instruments, conceiving sustainable value propositions, developing a sustainability strategy and culture, and engaging and coordinating with stakeholders in the business ecosystem (Santa-Maria et al., 2022). Even these forward-thinking companies face numerous obstacles to implementation relating to the economic context (persuading shareholders, uncertainty of markets, legal barriers and internal competences) and furthermore sometimes lack the technical know-how to incorporate CE principles in design, for example (Diaz et al., 2022). Similar to public sector bodies, companies need organisational cultures open to vertical (cross-level), horizontal (cross-functional) and external

(cross-stakeholder) communication exchanges to become effective; and a strong digital infrastructure (enabling fast, traceable, standardised exchanges of information) to support circular innovations. Further research should examine a wider range of examples, including investigations of companies that are struggling to develop circular projects.

In addition to the public and private sectors, the third sector and more specifically social enterprises (SEs) ('mission-driven' organisations) emerge as deeply involved in CE-related activity (see Chapters 6 and 8). These organisations, based in Hull, UK, Graz, Austria, and Santiago, Chile, engage in practices such as (re)distribution (e.g. food donated by retailers), reuse (e.g. via charity shops), recycling, repair services, upcycling and repurposing. They rely on donations from the public and/or companies as well as support in the form of local and/or national government grants (or tax benefits). Typically, these organisations are using the CE as a means to raise funds to support services for people in deprived circumstances or to provide economic access to goods. The practices undertaken by third sector organisations include for example, reuse and sharing, short-loop activities that are less well represented in city-scale policy or implementation for the CE. CE-practising organisations may be contracted to cities as part of service provision, while typically beyond the scope of CE planning.

Significantly, the research indicates the importance of the relationship between sectors. The public sector constitutes a market for private sector goods and services, as well as (directly or indirectly) collecting and sometimes recycling the residues; both sectors have connections to SEs. The goods traded by SEs have their origins in the mainstream economy (in both the European and South American case studies), and in some cases are offered for sale back into it. SE activity is not necessarily acknowledged in formal plans for a CE by authorities, despite that they engage with the same SEs as part of their social service provision. More attention should be given to these organisations in the context of CE, which could include involving them in formal EPR arrangements and the adoption of social circular procurement practices (Chapter 8).

Thus, although the CE has become a dominant 'sustainability economy', in reality adoption thereof remains at an incipient level, focusing on technocentric resource recovery approaches and incremental rather than transformative practices. The more holistic, systematic approaches that should come with the conceptualisation of a CE (e.g. design for repair and alignment of public infrastructure) are not widely in evidence. While imaginative ideas are necessary to drive innovation, they are not sufficient to overcome the structural constraints on (potential) CE stakeholders, i.e. the causal mechanisms favouring the prioritisation of economic motivation. Or to put this differently, the CE is firmly embedded in the (global capitalist) economy and it is not just subject to the market pressures (Siderius and Zink, 2022) but market priorities are influencing how stakeholders understand a CE and therefore constrains their vision.

9.1.2 What are the sustainability (environmental, social and economic) implications of developing a CE?

As the policy instruments and the exponentially expanding body of academic literature increase the momentum towards at least the widespread discussion of the idea of a CE, a major aspect of this project has been to consider whether the CE may be seen as necessarily sustainable (i.e. favourably balancing social and environmental considerations alongside economic ones). We have taken a qualitative approach to this (assessing implications, constraints, possibilities, including assessment methodologies) rather than directly quantifying impacts.

A common area of interest around social aspects of a CE relates to employment (Chapter 7 in this volume). Companies asked about their social CE activities suggested employment (if anything) (Walker et al., 2021). This plays to a wider sentiment that having employment is both the minimum and pinnacle of an individual's expectations of sustainability (perhaps to be challenged by recent interest in quality of life; Valencia et al., 2023) but generally viewed from the employer or governmental perspective rather than that of employees. Importantly, while the CE may offer multiple routes for individuals to earn (part of a broader shift towards net zero that needs to be happening), these opportunities might not involve long-term employment. A CE job could entail self-employment (either as a sole trader or setting up a company with ambitions for growth), voluntary or paid work in the third sector. These roles can be simultaneously satisfying on a personal level, but associated with long hours, low income and high levels of insecurity (Rogers et al., 2024). People within employment, or aspiring to existing roles (e.g. as a product designer) will need additional training and not just for specifically circular technicalities (e.g. methods of disassembly) but also for wider skills of communication, collaboration, finance and negotiation (according to the management level of the role). A further route to CE-related employment would be with a consultancy company, i.e. providing skills that organisations do not have in-house (this could be Life Cycle Assessment (LCA) associated with design, for example, or assessment more broadly, or advice to public authorities around economic development options). Work in consultancy could be vulnerable to short-term employment.

In the European context, the EU emerges as a major driving force for the implementation of a certain (economically driven, growth-oriented) vision of a CE. There is an explicit assumption that economic and environmental benefits are favourable for the European economy as a whole. This does not equate to an even distribution of benefits at a smaller scale, where countries and regions are competing for investments (e.g. if being a 'circular' city becomes a necessity, its potential as a geographic competitive advantage is reduced). Moreover, while governmental and industry organisations may all be seeking economic benefits from CE activity, their interests are not necessarily well aligned. Although there is tentative evidence that there is better multi-scalar policy alignment in France than in the UK or Austria (Perez et al., 2020), we note a divergence of interest between public

bodies seeking to favour their territory and that of companies located therein whose scalar focus comprises their supply chain and customer base (Newsholme et al., accepted). Close stakeholder collaboration, focusing on local resources and demand, may offer CE business opportunities related to product service systems (Delgadillo et al., 2021), but geographic upscaling of such activities implies entering into competition with others.

A significant cross-scalar impact of CE implementation is the export of 'used' (but effectively 'waste') electronic and electrical goods from the EU and other Global North countries for reuse (but effectively disposal) in the Global South (Thapa et al., 2023). These flows of secondary materials and goods are as much part of the global economy as flows of raw materials and new products. Environmental policies in the EU and other wealthy nations have brought about pollution reduction and an infrastructure for the collection of end-of-life products and materials from both pre- and post-consumer sources. These residues have to be managed within stringent regulations. However, the poor enforcement of aspects of those regulations compounds the effect of the EPR framework that incentivises low-cost options. Thus, there are market-driven disposal routes (of marginal legality at best) through which material is leaking out of the Global North for disposal in the Global South. Lack of adequate environmental and safety standards cause these materials (including electronics, textiles and plastics) to pose a significant threat to human and environmental health in the destination countries. These global-scale variations in environmental standards are well known; lack of adequate enforcement of export rules around used electronics indicates the limitations of ethics in CE, as other, policies. Reducing global-scale inequalities in social economic as well as environmental conditions would be a better solution.

To safeguard against unintended consequences of circular practices, or to aid the identification of the appropriate practice, sustainability assessment of some form is essential. Our research indicated the suitability of life cycle-based methods – possibly adapted – such as the more established Life Cycle Assessment (LCA), relating to environmental issues, or the more unusual Social LCA (S-LCA), which considers social aspects (Finkbeiner et al., 2010). Frameworks for CE assessment implementation were devised for companies (Roos Lindgreen, 2022; Roos Lindgreen et al., 2022) and public sector bodies (Droege *et al.*, 2021). Whether, how and by whom this (S-)LCA information is used remains an important area for policy and research. At present, there is limited engagement with the CE in international reporting requirements (Opferkuch et al., 2021). Further work is needed to consider additional contexts, such as social enterprises and other non-profits; to further incorporate social and other qualitative circular indicators (including non-financial values such as voluntary labour, donated goods and widening access; Lekan et al., 2021). However, there are also questions as to whether and how organisations might be compelled to audit their activities; transparency, i.e. access to product or company S-LCAs to aid consumer decision-making; how

these data could or should be included in formal company reporting and what use might be made of that information; and how and with what authority public bodies might undertake appraisals of activity in their territory. Importantly, sustainability impacts cross scales and impacts beyond the territorial extent of policies should not be ignored. However, useful as all this information could be, there is a bigger question of what impacts are acceptable and who takes responsibility for reducing them, or choosing between trade-offs (which may be geographic as well as environmental and social).

Our research confirms the prioritisation of economic benefits in decision-making relating to the CE. Companies unsurprisingly need this (the whole concept of a circular business model is how to run an economically viable enterprise with improved environmental performance); public sector bodies have financial restrictions and even third sector bodies need financial viability. The efficiency savings of the CE will require investment to achieve and as in other 'wicked' problems (Brown et al., 2010), the costs and benefits of that may not be aligned to the satisfaction of stakeholders. One could conclude that it is not so much the problems that are wicked as the circumstances (re)producing them. Social outcomes of a CE are not distinct from these (political economic) circumstances (both local and larger-scale influences and inequalities). The identification of benefits depends on the scale of analysis.

9.1.3 How can a CE be expanded and intensified?

While we note the contingent social (and economic) benefits of a CE, the environmental benefits it can offer are urgently needed as part of a drive to net zero carbon emissions. For all the rhetoric, in reality a CE 'transformation' does not appear imminent. A hesitant transition is in progress, comprising multiple interrelated but uncoordinated efforts. Our research provides multiple examples of good practice and frameworks for devising and implementing good practice, in certain contexts. Achieving a step-change in the implementation of a CE, however, involves an unprecedented level of coordination and commitment.

Policy drivers are important to the implementation of the CE, strongly influencing the attitudes and concerns of both public and private bodies. The level of ambition of these policies needs to be raised, to take a more holistic approach to the CE than the incremental steps on the progress of resource efficiencies over recent decades. We note, however, that policymakers have constraints on their options, reflecting economic priorities and multi-scalar dimensions. The CE is part of the global economy – all with the complexities of logistics, competition inequalities and variations in practices and challenges for enforcement.

A CE fully encompassing the resource efficiencies implied by concept would have transformative implications for society. Extensive uptake of options such as repair, reuse or resale have to imply a decrease in the purchase of new goods if any environmental benefits are to be realised. Decreased demand would presumably

impact on manufacturing, distribution, retail and indeed the waste industry. The question of how far we want to take CE practices is therefore a highly political one. It is not a matter of objectively responding to environmental signals, or the more constrained political issues of regulating resource efficiencies. Rather, there is a question of what sort of political economic structures are desired? Academics (and individuals according to our global survey) are more aspirational for the social benefits of a CE than policymakers and practitioners appear to be. It scarcely needs saying that greater level of social ambition for a CE resides with those without the authority for implementation, but this possibly points to a route for change.

9.2 Further research

Notwithstanding the breadth and depth of the research reported here, there are of course limitations and further work needs to be done. We have shown the insights to be gained by combining different perspectives. The lessons around relationships across and between scales and sectors can be expanded and strengthened by adding further perspectives (e.g. defined spatially or by company, organisation or practice).

The spatial focus of Cresting was on Europe; future research needs to incorporate a different and/or wider geographic scope both to assess the different experiences of a CE and to better understand international dimensions of implementation (e.g. from different business and geographic points on the supply chain). Our comparative research was limited by COVID-19 travel restrictions. Formal comparative case studies would be instructive to improve the understanding of causal mechanisms and their implications in different contexts.

In terms of organisations, Cresting predominantly engaged with companies and public sector bodies that were already on a CE journey. This was necessary to gain a picture of CE implementation and the issues around it, but leaves a question over what is happening, why or why not in other organisations, and how can they be better informed and motivated.

Social aspects of the CE remain an elusive element. One issue maybe the challenge to define social aspects as against economic – moving perhaps from the comfort zone of those so far likely to be engaged in CE (or related) research on to issues such as individual experience (as distinct from studies of behaviour or attitudes), cultural, gender, age and class. Rather than be seen as demographic categories, these aspects need to be formulated into case studies to provide new windows on to the impacts of a CE. Furthermore, research needs to specifically consider 'the public', that is citizens, activists and voters – as well as consumers.

9.3 Digital recordings from end of project workshops

On day two of our conference we held a series of workshops coordinated by early stage researchers to follow up on issues raised in by our research. One of these

FIGURE 9.1 Assessment: how and what to measure for a sustainable circular economy?

Digital recorder: Bianca Gainus, beevisual.biz, 16 December 2021.

(relating to stakeholder perspectives on a CE) provides the image on the book cover. We present the other three here.

One workshop explored how adopting a circular business model impacts a company's sustainability assessment practices (Figure 9.1). In particular, we looked at what value the results of different sustainability and circularity assessments provide companies, especially when taking their decisions on corporate sustainability issues.

In another session we discussed international, national and local policies and actions addressing consumer electronics, automotive and food (Figure 9.2). The goal was to come up with a timeline of actions allocated to most relevant stakeholder groups. We reflected on how factors like geographical scale, industrial sector and the complexity of our systems affect the implementation of CE policies.

With the help of participatory exercises, we also discussed what a socially just CE looks like at different societal scales (from companies and communities to international organisations) (Figure 9.3). We also considered key actions and policies needed to create a socially just and sustainable circular future.

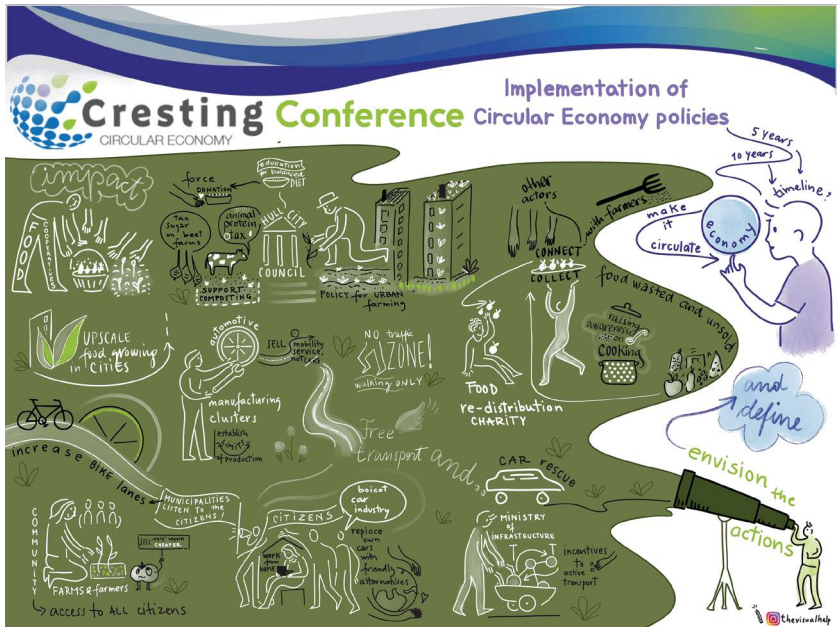

FIGURE 9.2 How can we design and implement effective circular economy policies?

Digital recorder: Bianca Gainus, beevisual.biz, 16 December 2021.

FIGURE 9.3 How do we achieve a socially just circular economy?

Digital recorder: Bianca Gainus, beevisual.biz, 16 December 2021.

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