8 POLICY CONSIDERATIONS FOR A CIRCULAR ECONOMY

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8.1 Introduction

A successful transition to a circular economy (CE) requires a fundamental transformation of current practices of production and consumption, making them operate in an ecologically and socially sustainable manner. In Chapter 1 we introduced the aim of the Cresting project, namely to provide a critical analysis of the sustainability implications and the spatial dimensions of the current approaches to the implementation of a CE. This has been pursued with sub-questions and projects regarding the implementation of a CE in policies and practices in various European countries, with a focus on the wider sustainability implications at various scales, its measurability and with a critical approach to the diverse conceptualisations of the aspirational agenda of the CE. The Cresting project has been inspired by principles of critical realism and transdisciplinary research, acknowledging the need for science with impact, while providing an understanding of the underlying factors producing the patterns observed. In doing this, various studies in the project have observed the impacts of existing and emerging policy approaches in different national and scalar contexts. With its ambition for an impactful role for science, the project has been engaged in various forms of policy outreach: we organised workshops, produced policy features, policy briefs, white papers, technical briefings, and so on. This chapter will guide the reader through the main outputs of various Cresting projects. Before we embark on this tour, we start with a few preliminary considerations.

First, Cresting was not designed as a formal policy or impact evaluation, taking neither an *ex ante* (predicting future impacts) nor an *ex post* (empirically assessing impacts after implementation) policy evaluation approach (Hanberger, 2001; Froeyman, 2012; Gertler et al., 2011; Smismans, 2015). Where such evaluations

generally take intended or established policy goals as a starting point, in our research we have taken various open perspectives regarding the formal goals and the conceptualisations of the CE by the actors engaged in these policies and practices. Thus, a wide variety of policies and practices of various crucial stakeholders have been analysed and evaluated, in some cases from an *ex ante* perspective (as in Chapter 3 in this volume), and in others with an *ex post* perspective (in Chapter 6), but also in various cases with a system-design approach (see Chapter 4). Understanding what is actually happening in these practices for the CE and why they have been successful (or not) has been the primary concern. In our view this provides valuable insights which are useful for policymakers at different levels and in different places.

Second, the concept of 'policy' (and thus also 'policy advice') is not reserved for government actors only, but is equally applicable to managers in private and social organisations. Lessons learnt in the Cresting project therefore can be translated to their implications for private actors as well as governments at various levels. The fundamental transformation to a CE requires a solid identification of the key stakeholders and their possible roles and need for collaboration. Table 8.1 provides a basic overview of the key actors required for this transformation. The fruits of the Cresting project address many of these actors and their relations, but not all. Table 8.1 shows what has been covered and what has been beyond of scope of the project. Crucial in the transformation will be the actual change in behaviours and practices of the value chain actors: this is where value retention in its various forms. namely the 10 Rs (Refuse, Reduce, Reuse/Resell, Repair, Refurbish, Remanufacture, Repurpose, Recycle, Recover, Re-mine), with a particular focus on R1–R3 (see Chapter 3.1) needs to be realised. These actors must do this jointly and may act voluntarily or only under regulatory or market pressures. Both governments and societal organisations can support this and put pressure on the value chain actors. Here we see the governance triangle, with governments and civil society engaging market actors with their diverse and hopefully mutually reinforcing interventions (Lemos and Agrawal, 2006; Driessen et al., 2012). Opportunities for such interventions differ between levels of government. Supranational governments apply both general frameworks (that still need to be transposed to national laws) and regulations directly affecting business conduct. National, regional and local governments have different powers and policy opportunities, while this distribution of power differs strongly between nations. At the same time, specific topics in creating a more circular society are often addressed simultaneously at various levels of government, which requires proper policy integration, coordination and fine tuning. Although the Cresting project has covered various European countries, such challenges of policy coherence has only been addressed in an 'impressionist' approach, looking at a variety of aspects that we as researchers saw as important. We will discuss examples at various government levels and for stakeholder groups addressed.

Third, the concept of governance levels does not equate to the concept of geographical scales. Although the different levels of governance (local, regional,

		Value chain actors				
		Sourcing (mining, agriculture)	Production steps	Wholesale/ retail	Consumers/users (incl. public services)	Recycling/ value retention
	Local	$\leftarrow \leftarrow \leftarrow \S \ 8.2.4 \ / \ 8.2.5 \rightarrow \rightarrow \rightarrow$				
Governance levels			§ 8.2.1		§ 8.2.1 § 8.2.3	§ 8.2.1 § 8.2.2
	Regional				1	
			§ 8.2.1 § 8.2.4		§ 8.2.3	§ 8.2.2 § 8.2.4
	National	$\leftarrow \leftarrow \leftarrow \S \ 8.3.3 \rightarrow \rightarrow \rightarrow$				
			§ 8.3.1 § 8.3.2 § 8.3.4		§ 8.3.4	§ 8.3.2
	Supranational (e.g.	$\leftarrow \leftarrow \leftarrow \S \ 8.4.1 \rightarrow \rightarrow \rightarrow$				
	European Union)		§ 8.4.2 § 8.4.3			§ 8.4.2
	Global (e.g. United Nations)		§ 8.5			§ 8.5
		 ↑	 ↑		^	^
Societal actors			ļ			
(Non-governmental organisations/knowledge providers)			§ 8.3.4		§ 8.3.4	§ 8.2.2 § 8.3.4

TABLE 8.1 Coverage of key stakeholder groups and levels in Chapter 8

national, supranational) have a scalar expression, policies apply to fixed territorial jurisdictions, whereas geographical studies of scale address the fluidity of boundaries and inter-scalar flows and influences. As considered in Chapter 6, value chains and their actors cross borders and consequently experience both similar and differing policy and political cultures and socio-economic cultures. Resource flows and with them (after the stage of consumption), the waste and to-be-recycled material flows increasingly have a global nature, which is often ignored in the discourse on the CE. We will show some implications of this knowledge and policy gap in section 8.5.

Fourth, taking stock of the research and acknowledging such differences in levels and scales, we also need to acknowledge differences in ambition, experience and conditions between industry sectors and product categories, and within stakeholder groups between frontrunners, start-ups, incumbent firms and resisters. In the course of our research, data have sometimes been collected explicitly from frontrunners to collect first-hand experiences of piloting actors, while in other cases research has been designed to paint the full picture. When translating this research into policy implications, the implications of the varying perspectives included has been considered. Differences in ambition, experience and conditions can also be the result of temporal disparities: some countries adopted recycling and industrial ecology approaches some time before others, which affects their strategies. By the 2020s CE policies had been developed in many countries and at all government levels (from supranational to local). They address key actors (economic actors in the value chain; consumers and users of products and services; and government agencies active in waste management and recycling) in diverse ways. Some of the policies have a longer history, initiated as waste management or recycling policies, but are now part of the wider CE agenda, while others were implemented recently (e.g. EC, 2015, 2020; see also Chapter 3 in this volume). Various authors have described at least three periods with specific interpretations thereof since the 1980s (Blomsma and Brennan, 2017; Calisto Friant et al., 2020; Reike et al., 2018; Schöggl et al., 2020). The current framings of the CE build on various interrelated aspects of waste management and product policy over the past four decades. However, this phasing has hardly considered the policy transfer and policy diffusion between nations with different speeds (Dolowitz and Marsh, 2000; Marsh and Sharman, 2009).

Showing the main outputs of various Cresting projects in this chapter entailed making a choice in how to display the resulting advice and recommendations. One could present them in a global-to-local sequence. However, that would assume that there is a logical hierarchy of globally designed polices to be implemented at lower levels, which is not the case. For environmental policies one can argue that the centre point of policy development is at the national level, whereas for the European Union EU) the policy interaction between the EU level and the national policies are dominant: the policies in reality are the result of a member state's inputs in the EU's regulatory process, while EU frameworks need to be transposed into the national policies, leaving room for national adaptations. That would suggest starting at the national level and then show the connection to both the higher

and lower government levels. However, for reasons of clarity, we chose to present the policy recommendations going from the local and regional (section 8.2) to the national (section 8.3) and the EU level (section 8.4) and finally the global level (section 8.5). One reason to start at the local level is that local authorities are the most closely connected to the specific value chain and societal actors in their territory, even though the local level policies need to fit into the (country-specific) power distributions between the national, regional and local authorities. Many circularity initiatives have been established independently or to compensate for the shortcomings of policies of higher-level authorities.

The various researchers in the Cresting project have taken different theoretical, disciplinary and geographical perspectives for their studies. These affect the scope and orientation of their policy advice. This chapter takes stock of this by discussing the main lessons and implications for future policies. The final section will present general observations and conclusions.

8.2 CE policies at the local and regional scale

Many circularity initiatives have been established at the local or regional level. Local authorities historically have played a crucial role in waste collection and in organising recycling. Also, non-governmental organisations (NGOs) have been active in promoting recycling and in setting up second-hand shops and sharing initiatives. Local authorities have a long history of supporting these bottom-up initiatives. But CE policies also link to local policy fields other than waste management, such as housing, industry and social security. Local-level authorities need to fit their activities into the power distribution between national, regional and local authorities, which greatly differ between countries. In this section we will discuss some of the research outcomes, first discussing examples of the local support of repairing and sharing networks (section 8.2.1), followed by the support of social enterprises (8.2.2) and an example of local multi-stakeholder collaboration (8.2.3). Next, various policy reviews of local and regional CE approaches will be discussed (sections 8.2.4 and 8.2.5).

8.2.1 Local and regional policies supporting repair and product service systems (Graz, Austria)

An example of local policy support for promoting the short-loop Rs in the R-hierarchy (R3, Repair, extension of the life span) is the success story of the case of GRAZ-repariert, a local repair network managed by the city of Graz in Austria, operating under a local financial incentive scheme (Lechner et al., 2021). Following a steady decline in repair activities over the past few decades, it is common for EU countries to deploy national policy instruments to support such incentives (i.e. value-added tax reductions for repair services and sales of second-hand goods, tax reductions to incentivise repair, and tax reductions to encourage the donation of used goods to social enterprises, etc.). In addition to national repair incentives,

the citizens of Graz are entitled to apply for the direct reimbursement of 50% of repair costs (totalling a maximum of €100 per household per year). This policy instrument is meant to stimulate demand for repair services within the city boundaries. At the same time, the supply has also been regulated through the creation of a network of repair service providers. The network is managed centrally, and the cross-member collaboration results in a greater service quality because service provider companies are able to exchange tools and know-how. The combination of the local funding scheme and the management of the network yields positive results. In 2019, network members reported a 33% increase in the demand for repair services within the city boundaries, while demand outside the city decreased by 7%. Cultural connotations around repair activities have also been improved from both sides, since new customer profiles engage in repair and the unifying effect of creating a well-regarded brand also increases a feeling of identity among network members. This is an example of the benefits obtained from assuring policy consistency between different levels and the effects of increasing the territorial embeddedness of value retention.

Another local example is the policy support for product service systems. Sustainable product service systems (PSS) have been one of the key units of analysis within Cresting (see Chapter 4 in this volume), as they exemplify the dematerialisation of a CE through the principle of 'access over ownership'. PSS approach value delivery through the combination of material artefacts and service add-ons aimed at stimulating collaborative production and consumption networks yielding sustainability benefits. It helps consumers, or users, to refrain from excessive individual use and early disposal. Others have shown that local- and regional-level policies are a key enabler of PSS in a circular economy (Delgadillo et al., 2021a) as they drive 'political embeddedness', the distribution of power among all actors included in the PSS networks, and the influence of policies and NGOs over corporate activities (Zukin and DiMaggio, 1990).

This is further depicted through the case of sustainable packaging in the EU, where the number of consumers demanding reusable options has been growing, as well as the EU-level policy pressures to reduce the production of single-use packaging (Foschi and Bonoli, 2019). The lack of a territorial policy approach confronts these trends with a very constrained reverse logistic infrastructure at the ground level, missing the opportunity to implement reusable packaging systems and harness its values locally. Thus, we conclude that there is a need to strengthen the coherence between national- and local-level policy agendas to effectuate a circular economy (Delgadillo et al., 2021b).

8.2.2 Local support for social enterprises and social-circular public procurement

Another role local authorities can take is supporting social enterprises. In line with the call for a more inclusive and Transformational Circular Society (TCS; see

Chapter 3 in this volume), social enterprises can stimulate local development of a socially inclusive approach in particular places by engaging vulnerable individuals in activities such as reuse, upcycling, refurbishing or repair at the local, community, city and neighbourhood level (Lekan et al., 2021; Lekan and Rogers, 2020; Pusz et al., 2023). Social enterprises reinvest funding and profits from a trading arm to fulfil their social and environmental mission rather than merely distributing them among shareholders (Longhurst et al., 2016). Such activities tend to involve symptomatic support to aid the poor and satisfy basic social needs and systemic support to address individual and social/environmental challenges (e.g. they may run social and work integration schemes, and improve human health by promoting environmental stewardship) (Certo and Miller, 2008; Kay et al., 2016). As such, the social outcomes of social enterprise-driven CE are of short-term benefit, but are decidedly not transformational because the underlying causes of deprivation are not tackled, as discussed by Deutz et al. (2024) in a synthesis of the Hull-based Cresting case studies.

Nonetheless, research findings from Małgorzata Pusz (née Lekan) reveal that social enterprises should be recognised as important reuse operators, which have an untapped potential to assist private companies in helping them to take responsibility for their products at the end of their life. This could further be supported through extended producer responsibility (EPR) schemes (Lekan et al., 2021; Lekan and Rogers, 2020; Pusz et al., 2023). The example of the multi-collaborator arrangement between public bodies in Hull, a well-established and prominent local social enterprise (Dove House Hospice) and private companies indicates the kind of mutually beneficial arrangements that can be made. Pusz (2023) terms this social-circular public procurement. Social procurement differs from conventional procurement in that the buyer ensures that procured goods and services create benefits for people, stakeholders, and society as a whole (see the United Kingdom's Public Services (Social Value) Act 2012; Legislation.gov.uk, 2012). The arrangement between Dove House Hospice, Hull City Council, East Riding of Yorkshire Council and FFC Environment (a large international private waste management company) is illustrated in Figure 8.1. The partnership exemplifies how the third sector can capture potentially reusable items from the local authority owned household waste recycling centre (HWRC), ultimately diverting waste from landfill and reducing municipal waste disposal costs. Although the local authority provides Dove House with a free disposal access to HWRC, the charity must meet any transportation costs incurred to return unusable items from its reuse shops. Moreover, the local authority resists procuring items for its own use in public offices (e.g. upcycled furniture) through these routes, ironically citing the need to minimise costs by procuring from commercial enterprises. Consistent with Morgan (2008), local authorities find it less risky to enter into large-scale contracts with regional or national companies rather than local providers. It is also challenging to assess social returns of particular social enterprise (SE)-led services and reconciling social value with financial returns. Local authorities likewise have no power over private

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FIGURE 8.1 Partnership between Dove House, Hull City Council, FFC Environment and East Riding of Yorkshire Council and key actors associated with the CE in Dove House

Source: compiled by the authors based on Pusz (2023).

companies when it comes to encouraging them to procure goods and services from local SEs. This can occur so long as they can maintain a strong social ethic and work in partnership with those companies. While there is the potential for local authorities to implement social-circular procurement strategies, this subsection has thus highlighted significant challenges requiring responses at multiple scales.

Collaborative EPR schemes including third sector organisations should shift their focus from recycling to reuse. However, some of the interviewees from the UK expect private companies to resist the implementation of mandatory EPR schemes for fear of incurring additional costs. It is hence important to ensure that SEs play a major role in discussions/negotiations on new or to-be-adjusted EPR schemes, which could boost private companies' corporate social responsibility and lower their waste management fees. In this regard, national support infrastructure organisations offering advocacy and/or lobbying in favour of implementing sustainable EPR schemes, e.g. Charity Retail Association (UK), WRAP (UK) or Triciclos (Chile), are going to play an important role.

8.2.3 Regional CE policies: the case of North Humberside (UK)

Local authorities do not always play an active role as they do in the above cases. Local and regional authorities' direct involvement in CE activities in North Humberside (Hull and East Riding of Yorkshire) has been relatively limited to date in practice, with a current strong reliance on traditional heavy industries. There is some evidence of a shift towards more sustainable practices, for example, the formation of the industry-led Humber Waste Alliance group in Hull. However, there is little evidence in terms of collaborative regional CE connections coming to fruition from these networks (see Chapter 6 in this volume and Newsholme, 2023). In North Humberside, the region is rarely considered by companies as a key driver for the implementation of CE activities. Instead, historically CE discussions have remained an internal company matter and are discussed with company value chain partners (Chapter 4). This is likely to raise concerns for regional-level authorities and their ability to capture potential CE benefits in economic and environmental terms locally. Additionally, in Hull policy that is solely focused on the CE acts as a 'business as usual' approach to environmental concerns, while still aiming for economic growth (Newsholme et al., 2022).

Local authorities often envision the CE as a way to promote their region as a place to conduct business in order to attract new firms to the area and build an economy based on circular-based production systems. However, in Hull there is a lack of awareness of the skills needed for a CE to flourish (Rogers et al., 2021), this was also evident amongst business and policymakers (see Chapter 7 in this volume). Our research suggests that increased devolution over developing regionally sensitive and tailored CE strategies based on local needs in their region would be beneficial in the UK, where the policy system in practice is highly centralised (Farrelly, 2010). Currently there is a lack of ability to make regional changes to CE strategies locally, as regional agencies must follow the regulations set by national and international policymakers (Farrelly, 2010). Nationally in the UK, there is some recognition of the potential for business and public bodies to work together to foster regional CE activities, but a concomitant lack of comprehension of the diverging interests that would need to be overcome. The business world has overlooked the role that policy can play in acting as a facilitator for CE activities locally, while policymakers called on business to act. However, businesses were evidently connected to and dependent on global value chain partners, which were the focus of their CE aspirations (Chapter 4). This points to a fundamental conflict of interest between spatially defined public bodies and companies with a CE based in the territory, which has not previously been acknowledged in CE research (Newsholme et al., 2022). Policies will need to counteract the tendency of companies to focus on company-oriented collaborations at a potentially global scale.

Local authorities in Hull also faced logistical challenges in terms of waste management and were reliant on economies of scales when attempting to manage waste in a cost-effective manner. This results in waste being collected by local authorities before being segregated, distributed and managed at the international/national level due to commercial viability concerns. These findings also build on the work of Llanquileo-Melgarejo and Molinos-Senante (2021) in the Chilean municipal context, who found that local authorities struggle to manage waste at the regional level due to cost concerns with small quantities of waste, in turn raising important questions for the practical potential to keep resources in circulation at the regional level (Newsholme et al., 2022).

8.2.4 City-level CE policies: Amsterdam, Copenhagen and Glasgow

In the section above we discussed various examples of specific CE activities at the local and regional level. City-based local authorities are increasingly engaged in defining an integrated local CE policy, connecting the various relevant policy areas in one policy plan. One of the Cresting researchers designed a framework for ex ante evaluation of such integrated CE policies. It builds on the conceptual framework presented in Chapter 3 in this volume. The challenge of this project was to see if the disconnect between words and actions with policy narratives, found at other levels and sectors (as shown in Chapter 3), would also be found at the local level. This analysis was applied to examples of cities often portraved as 'pioneers' at the forefront of the CE transition: Amsterdam, Netherlands, Glasgow, UK, and Copenhagen, Denmark (Calisto Friant et al., 2023a). All three cities have developed or updated their CE actions plans recently (between 2019 and 2020). Their approaches to the CE are rather different. Amsterdam uses Kate Raworth's doughnut economics as the foundation for its CE policy (Raworth, 2017). Consequently, it has a quite inclusive discourse that seeks to achieve societal wellbeing within the ecological boundaries of the Earth (Municipality of Amsterdam, 2020). Glasgow has a similar discourse, inspired by the cradle-to-cradle approach to circularity, referring to its inclusion of environmental, social and economic sustainability criteria in their certification (Glasgow City Council, 2020). Copenhagen, on the other hand, takes an ecomodernist approach to the CE, but also includes social justice considerations and focuses on business innovations, economic competitiveness and green technologies as avenues for environmental sustainability (Municipality of Copenhagen, 2019). However, one point in common throughout all case studies is a growth optimist approach to the CE. That is, all the case studies seek to decouple economic growth from environmental degradation by using new circular technologies and innovations that increase the city's eco-efficiency and competitiveness. Current policies focus much more heavily on generating new circular businesses and innovative circular practices, without affecting or shrinking current unsustainable industries nor disrupting unsustainable overconsumption trends in these powerful cities of the Global North. The possible environmental benefits from increased eco-efficiency and new circular business models thus risk being overshadowed by the continuation of unsustainable consumption and production practices and overall economic growth (Calisto Friant et al., 2023b).

This analysis also reveals that all the case studies have surprisingly given very little attention to some key policy areas relevant to circular cities (see also Chapter 6 in this volume). Policies in the areas of renewable energy, transportation, water management, ecosystems and urban form and territorial planning are weakly or not explicitly connected to the CE policies in these cities. This is a key omission

from their strategies as research on urban planning and sustainability has evidence that action in those areas can have substantial sustainability and circularity benefits (see, for more details, Calisto Friant et al., 2023a).

Furthermore, our analysis finds that social justice policies are hardly integrated explicitly, even in Amsterdam and Glasgow, which have taken a socially progressive approach to the CE (see also Chapter 6 in this volume). Despite the inclusive and holistic CE discourse of these two cities, their social CE policies mostly focus on small pilot projects such as the promotion of sharing economies and urban agriculture. These do not substantially redistribute large inequalities in wealth and resource use from those that overshoot their fair share of planetary boundaries to those that undershoot their fair share. Nor do they address the many forms of urban and spatial injustice in access to housing, green areas, social services and education within their cities. If the TCS vision is pursued, these policy areas would need to be connected more explicitly. Finally, the CE policies in our three case studies lacked substantial and meaningful citizen engagement in their development. While Amsterdam was the only city to hold participatory workshops to create its CE strategy, these mostly has a consultative role as the final decision regarding the shape of the CE strategy remained in the hands of the municipal government (Municipality of Amsterdam, 2020).

There is thus a lack of more inclusive co-creation of these policies and this limits both their content and their transformative potential. For this study an extensive review of possible policy elements was made, enabling policy advice to municipalities based on what CE scholars have been suggesting so far in academic literature. One needs to note here that this policy research approach is highly led by what explicitly has been mentioned in policy documents on the CE. Policy documents in other local policies may very well have addressed issues discussed. Some additional pathways have been proposed by various authors. Described in more detail elsewhere (Calisto Friant et al., 2023a), these can be summarised as:

- 1 Cities can more explicitly foster a socio-cultural transformation away from hyper-consumerism and hyper-competitiveness and towards slower, healthier and more convivial ways of life through community-owned media sources, restrictions on street advertisements, environmental education and promotion of non-materialist values and care ethics.
- 2 Cities can explore how circularity may involve more than only material resource cycles (Calisto Friant et al., 2023b), by enabling the circulation of wealth, knowledge and power throughout the local economy in a redistributive manner. They can support local cooperatives, promote and finance ecologically sustainable initiatives such as repair cafés, tool libraries, community swap centres, community-owned renewable energy generation, and community-supported organic agriculture.
- 3 Cities can establish and facilitate participatory mechanisms for the development, governance and implementation of CE policies (such as participatory budgeting processes, citizen assemblies and deliberative councils).

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4 Finally, cities can implement post-growth urban planning approaches by creating compact multi-functional neighbourhoods (with access to urban infrastructure and services for everyone), linking housing and bio-diversity policies to the CE policy more explicitly.

Notably these practices would be difficult to instigate at the urban scale as cities do not necessarily have the authority or resources to carry out radical policies. They are confined within multiscalar policy frameworks and the stringencies of the global capitalist economic system (Deutz et al., 2024). Lekan et al. (2021) provide a heuristic device for tracing the 'circuits of value' in a local CE, that is transactions that are not based solely on financial considerations. As discussed above, though, the transformative potential is limited (Pusz et al., 2023).

8.3 CE policies at the national scale

We will now look at national-level policies. When reflecting on CE policies, we need to take note of the historical development of these policies and the different rates of take-up in various countries across the world. The current framings of the CE build on various interrelated aspects of national waste management and sustainable product policies over the previous four decades. These earlier policies (described as CE 1.0 and 2.0 (see Reike et al., 2022)) also addressed the (re-)design of products and the implementation of recycling infrastructures. In contrast, current approaches in science and policy regarding the circular economy strongly focus on business opportunities in which the value retention hierarchy of the 10 Rs is applied to new product design or alternative service provision (see Chapter 4 in this volume). During the earlier phases of the CE 1.0 and 2.0, more simplified waste hierarchies (of 3 Rs or 4 Rs) have been guiding waste management and recycling policies. 'Recycling' and 'useful application' have been described in general terms as requirements. However, the concept of the CE has evolved, creating a more inclusive perspective, and this has resulted in more attention for the middle-long and short loops as discussed in section 3.1. Waste management and recycling policies have also been closely linked to more general corporate sustainability policies, stimulating the business world to implement environmental and sustainability management systems and create transparency to society by demanding reporting on social responsibilities to society and business stakeholders, like financial institutions and customers (by means of standards like GRI, ISO 14001 and ISO 26000).

A number of Cresting research projects have analysed the experiences in earlier and current CE-related national policies and their impacts on business performance. This section on national policies first discusses theses policies' results in influencing business behaviour. Then it moves to lessons learnt about EPR, which has been one the major policy instruments in the 1990s during the phase of CE 2.0. Finally, it presents CE initiatives in national-level public organisations showing the government's role as an example of good practice, as a role model for other stakeholders (businesses and consumers/users) in the CE transition.

8.3.1 Producer-oriented CE policies at the EU scale

As discussed in section 3.1, the CE refers to the production of goods that need to be based as much as possible on the use of recovered materials and focus on making long-lasting repairable, modular and recyclable goods. This defines key roles for actors in the value chain. Designers and producers of consumer goods and commodities need to take this as a starting point. The micro-level CE transformation for businesses and public organisations is addressed in Chapters 4 and 5 in this volume. Consumers or users of products also have a key role by avoiding waste generating practices, over-consumption and early disposal, as well as participating and cooperating in a myriad of sharing and regenerative practices such as tool libraries, repair cafés, bike sharing, and community composting. This section looks at the wider policy scale and how it is incentivising producers in their transition to socio-ecologically sustainable CE practices. This is key as political-institutional environments will strongly determine the choices made by industrial and societal actors.

There is evidence of the impact of current CE policies on organisations aiming at achieving a CE. Case studies examined by Santa-Maria et al. (2022) have found that the development of legal frameworks that promote, and government initiatives that apply, sustainability-oriented tools (e.g. Life Cycle Assessment and ISO14001) and sustainability frameworks (such as EPR, ecolabel standards and carbon taxing) can spur sustainable innovations in firms. The use of sustainability key performance indicators, the establishment of clear and strict sustainability accounting standards, financial support for sustainable R&D and business experimentation, and improved knowledge sharing among society players can all be influenced in the private sector through public policy instruments.

When examining the organisational routines of companies, linked to the implementation of a CE, public policy activities are found to influence the prioritisation of corporate sustainability objectives and strategic decision-making (Diaz et al., 2021). Organisations are not only reactive to policy developments, but also routinely engage in stakeholder management activities targeted at influencing policies to support their own interests by connecting with market, political and regulatory actors (Diaz et al., 2022).

8.3.2 Reviewing extended producer responsibility implementation in the Netherlands

For this reflection on EPR we take a look at one of the EPR schemes that has been successful in achieving almost full collection after the use of the product (passenger car tyres), and one that has been far less successful in this, collecting only half of it (plastic packaging) (Vermeulen et al., 2021, p. 21). Similarly to other EU member states, the Netherlands structured its treatment of plastic packaging and end-of-life passenger car tyre management through an EPR system. This mechanism gives a lot of leeway to companies in terms of how these products should be recovered. The government maintains mostly an oversight role, setting specific recovery rates for the industry to accomplish, and allowing these private actors to reach those objectives in whatever way they see fit. This has resulted in relatively high recovery rates for these materials with very low rates of landfill and mismanaged waste. The plastic recycling rate is thus at 57% in the Netherlands, with the rest of plastic waste going to incineration (Calisto Friant et al., 2022). The tyre recycling and reuse rates are at around 90%, with the rest being incinerated (Campbell-Johnston *et al.*, 2020b).

However, these figures do not show the full picture. Indeed, a large proportion of this waste is exported outside the Netherlands, as the country lacks sufficient recycling capacity (Gradus, 2020). Yet there is very little transparency and information regarding what happens to this waste once it leaves the Netherlands. Recent research has found that a large proportion of waste which is counted as 'reused' or 'recycled' in official statistics, is lost in the oceans or other ecosystems instead of being properly treated (Bishop et al., 2020). It is very difficult to track and discover the final destination of this waste, but it is known that it is often sent to countries in the Global South which lack sufficient infrastructure to handle it in a socially and environmentally safe manner (Barnes, 2019; Thapa et al., 2023). Another major problem with the abovementioned Dutch, but also other European EPR systems, that we have observed in our research, is that there is currently create no incentive to reduce countries' overall consumption of materials or to change the design of products so they can be more easily remanufactured, repaired, recycled or reused (Calisto Friant et al., 2022; Campbell-Johnston et al., 2020a).

The following policy recommendations can address the above-mentioned problems with the EPR systems in the Netherlands:

- 1 Introduce taxes on the use of virgin materials and reduce the taxes on recycled or recovered materials, reused goods and repair services. This is key because virgin materials are often still significantly cheaper than sustainable secondary materials (Cramer, 2018; Forrest et al., 2019).
- 2 Eco-modulation of EPR fees so that the EPR fees paid by consumers when they purchase a product are calculated based on the socio-ecological impact, reusability, recyclability, repairability and lifespan of the product. This can incentivise eco-design innovations and reduce the consumption of unsustainable products (Campbell-Johnston et al., 2021; Kunz et al., 2018).
- 3 Include civil society organisations and local and national government representatives in a participatory and inclusive manner so that decisions regarding waste processing and reuse are more transparent and inclusive. While EPR costs are borne by producers that pay EPR fees, which are ultimately included in the

product price, people currently have no say on how EPRs are managed. More importantly, actors that can provide solutions to increase waste recovery and circularity (repair shops, high-tech recyclers, second-hand shops, etc.) are not included in the organisations executing the ERP obligations. A more democratic and inclusive EPR system is thus needed by placing these actors on the boards of EPR organisations. This will increase transparency and accountability regarding what happens to collected waste and foster key improvements in the social and environmental performance of the EPR systems (Campbell-Johnston, Pruijsen et al., 2022; Vermeulen et al., 2021).

- 4 In the case of electronics, more rare and critical raw materials (CRMs) are lost due to practices that promote cost-efficient mass material recycling. Existing EPR schemes do not account for those materials embedded in products that are most critical, important for the energy transition, or likely to be exhausted the first in the future. Transforming waste policy to stimulate the recovery of critical materials is recommended (Campbell-Johnston et al., 2023; Campbell-Johnston et al., 2022a). Incentives need to be given to support the recovery of CRMs, where it is currently not economically feasible. Policymakers should adjust EPR targets and/or conditions, including treatment standards, to promote the monitoring and recovery of CRMs where economically and environmentally feasible (connected to long-term ambitions). Policymakers should adjust eco-design requirements to promote greater accessibility of CRMs in products. Where recovery of CRMs substitutions should be promoted, or accessibility enhanced at the product design stage.
- 5 Current EPR schemes, as a form of delegated public-private governance tend to rest on limited monitoring and reporting requirements of governments. In particular the routes of to-be-recycled products and materials are not properly documented. We observed this in various studies on tyres, e-waste, and plastic (Campbell-Johnston et al., 2020; Thapa et al., 2023). Also for CRMs producers need to provide information on the presence and quantities of CRMs in their products. This would help to improve treatment standards to promote CRM recovery (Campbell-Johnston et al., 2022).

Most of the above recommendations for national CE policies serve to upgrade the current national CE policies, helping them to promote the shortening and slowing of material loops. As such these can fit within the Reformist Circular Society (RCS) view of the CE. In the vision of a TCS, it is argued that more systemic and cultural changes are needed. While EPR policies have a key role to play in the transition to a circular society, they are not seen as sufficient enough to create a sustainable future by themselves. Proponents of the TCS argue that a major challenge is changing the materialist capitalist system focused on economic growth, which is at the core of current unsustainable overconsumption and overproduction practices. Plastics, synthetic rubber tyres and other problematic materials are not seen as the core problem. Rather, the problem resides in the materialist habits of mass consumption and production that use these valuable products in a throwaway and unsustainable manner. It has been extensively shown that the economy cannot grow forever in a finite planet and decoupling economic growth from environmental degradation is not likely to happen on a sufficient scale to prevent a widespread socio-ecological breakdown, societal transformation does not take place (Jackson, 2016; Haberl et al., 2017; Hickel and Kallis, 2019; Parrique et al., 2019; Wiedenhofer et al., 2020). The question is thus how to create a society that can operate beyond economic growth, and thereby how to create a post-materialist society where social wellbeing and economic stability does not depend on endless material consumption.

8.3.3 National CE policies: the case of the England

In EU member states, European policies have set the directions, boundaries and frameworks for the CE policy, which have resulted in a diversity of national implementation approaches. During the post-Brexit period in the UK new more independent approaches have been taken. The UK government refers to using the EU CE policies as a benchmark for developing CE activities post-Brexit, yet it also has its own specific policy approach. It should be noted that topics in relation to the CE are a devolved matter in the UK, so each national government is only responsible for developing waste-related policies for its own administrative jurisdiction (i.e., England, Scotland, Wales, Northern Ireland). As noted above, local policymakers have limited power in the UK compared to their European counterparts at the municipality level, who appear to have more regional empowerment when managing local issues (John, 2014).

In the UK, there are clear tensions between regional policymakers and nationallevel authorities, while regional-level authorities are calling for more empowerment locally to make nuanced decisions in relation to economic and environmental matters for their regional communities (Farrelly, 2010; Bulkeley et al., 2012; Jonas et al., 2017). There is a national expectation of regional-level CE engagement, but with local government identifying a shortfall in policy support from national government in the British context (Newsholme et al., 2022). Related to this, the region needs to ensure a specific benefit, whereas the policymakers operating at higher levels can be content with the expectation that overall there will be economic benefits assumed from a CE, without requiring those benefits to be evenly distributed. At the regional level in Hull the CE is not only discussed as a broad environmental and economic initiative but is envisioned as a mechanism to enable the region successfully transition from energy-intensive to cleaner forms of production, in turn gaining local environmental benefits and addressing climate targets. There is an assumption that the region should be one of the economic beneficiaries of a transition to a CE, despite the ambiguity of the spatial distribution of the impacts of that transition (Newsholme et al., 2022).

At the national level in the UK, policymakers see the CE as a tool to help to secure vital resources, in turn creating a competitive advantage for their administrative territory, although the role for particular regions is unclear. A CE is envisioned as a resource security mechanism for retaining rare and valuable material supply in the UK, which was not evident among regional policymaker concerns in Hull (Newsholme et al., 2022). This policy vision of securing post-consumer waste containing potentially valuable components is driven by economic motivations (e.g. retaining rare earth metals in their own jurisdiction) as opposed to environmental concerns, which raises questions for the overall policy agenda of a CE.

Thus, in the UK there is a need for national support for local authorities to act as CE enablers, given they are well placed to develop local links between business in their region. National government could also play an important role in setting a regulatory context for companies, which encourages more transformative approaches to the CE, including incentivising the development of local connections. Policymakers have yet to move away from the end-of-life approach to resource management that has evolved in England over the past number of decades.

8.3.3.1 EPR in the UK

In 2023 the UK's Department for Environment, Food and Rural Affairs (Defra) has proposed introducing an EPR scheme for beverage packaging. On a related note, Defra has also been considering the implementation of a Deposit Return Scheme (DRS), which is being explored by Hull City Council. Such a scheme would involve the imposition of a deposit, of between 15 and 20 pence, on a single-use drinks container, which would reduce the number of drink containers entering residual waste bins and would ideally enable packaging producers to take greater responsibility for their products, ultimately removing some financial pressure from public authorities, if producers pay the full net costs (i.e. ensuring that DRSs do not divert material and income away from councils). Deposits could be donated to charitable social enterprises and community organisations, which could operate return points to reclaim deposits that might otherwise remain unredeemed (Defra, 2021).

Pusz (2023)'s research findings also reveal that EPR schemes could ideally oblige producers to pay financially constrained councils to (1) subsidise those social enterprises that are engaged in commercial clearances and cannot dispose remaining commercial waste in municipal recycling centres, and (2) capture some of their commercial waste (see also section 3.4). EPR schemes could thus remove some financial pressure not only from local authorities but also social enterprises that incur fees for disposing of non-reusable or unsaleable items from commercial companies. This would be in line with the practice in the Netherlands, where EPR schemes cover the cost of municipal collection of beverage packaging's (Vermeulen et al., 2021). EPR schemes could also possibly help councils to invest (using fees paid by private companies to Producer Responsibility Organisations) in a more diversified recycling infrastructure, which could in turn enable social enterprises to capture particular waste streams. Linked to this, social enterprises should be encouraged to negotiate contracts with large commercial waste management companies to enable social enterprises capture reusable items from waste recycling centres. Pusz (2023) further found that Community RePaint – a SE collecting leftover paint - currently receives corporate sponsorship from Dulux - a large company producing architectural paint. Community RePaint shops can, however, additionally obtain funds from private companies by charging them for collecting and receiving their paint. In doing so, they offer lower disposal rates than the commercial ones while reducing municipal waste management fees. Nonetheless, many of them do not have enough capacity to handle large volumes of paint as they struggle to boost demand for it. Another issue with paint concerns its packaging as 70% of cans are made of polypropylene plastic and only 30% of cans are made of various types of metal. In result, in the UK many plastic cans go to landfill, yet some producers of paint are increasingly keen to move away from polypropylene back to recyclable metal tins, some of which could be potentially recaptured and upcycled by social enterprises on ad hoc basis (although most likely on a small scale).

Finally, levies paid by producers on new products that are within EPR schemes could be also used to create a national fund that could further support costs associated with social enterprise-led reuse and recycling/upcycling activities, including (1) the collection of bulky items (e.g. textiles and bulky furniture are strong candidates for EPR schemes); (2) the introduction of new collection points and take-back schemes; (3) consumer campaigns to promote sustainable consumption; (4) incentives for producers to support circular SEs; and (4) the design of products that are more suited for reuse and contain quality label (cf. Pusz, 2023; Charity Retail Association, 2020).

8.3.4 CE practices in national public organisations in Portugal

In addition to striving to create favourable conditions for companies and organisations to implement circularity, another role of government is to pave the way in the transition towards a CE. Considering the economic and regulatory importance of governments, it is essential to ensure that public sector organisations (PSOs) are implementing CE policies and practices in their own strategic plans, operations and resource management (Klein et al., 2020). The public sector from an organisational perspective at the national level has been the focus of one of the Cresting projects. The Portuguese Central Public Administration (PCPA) was chosen as a case study. The PCPA corresponds to the direct and indirect state administration of the country which brings together all the ministries and their central services, public institutes, general directorates, and agencies (DGAEP, 2021).

The PCPA adopted a National Action Plan for Circular Economy (PAEC) between 2017 and 2020 to implement a CE in Portugal with an emphasis on inter-ministerial collaboration in the development of CE actions in Portugal. As an example of CE implementation in the public sector, the Portuguese Council of Ministers approved a resolution in 2018 with measures aiming at promoting the sustainable use of resources and the adoption of circular solutions in public administration, specifically promoting the reduction of paper consumption, other printing consumables and plastic products (PCM, 2018). The measures cover actions related to the dematerialisation of processes and procedures, more sustainable choices in the purchasing and use of products and services, and even the prohibition of singleuse plastic items and packaging (Klein et al. 2021b). These actions are promoting intra- and inter-organisational collaboration within the public sector in their pursuit of exemplarity but there is a need for more collaborative initiatives at larger scale, between the public sector and the other actors of the CE (Klein et al., 2021a).

As one of the key priorities of Portugal's PAEC, Circular Public Procurement (CPP) is an important instrument for the public sector to stimulate the development of innovative solutions and appropriate markets for a CE. For instance, prioritising the servitisation of products and equipment is referred to in the resolution. Favouring the purchase or lease of a service rather than the purchase of a product, such as for computer equipment or telecommunications equipment, requires a closer and continuous partnership with the suppliers of the services purchased by the PSOs. The ownership of the products stays with the supplier that can then repair and reuse products and extend their lifespan. Most of the CPP criteria brought up in interviews with public employees mainly mentioned the procurement of printers which seems to be the most prominent example so far in our case study (Klein et al., 2021b). In an online survey distributed in 2020 to all organisations of the PCPA, several comments pointed to the constrained reality of procurers being able to choose only from environmental or sustainability criteria predefined by central purchasing organisations (Klein et al., 2022). This shows that the specific context that PSOs have to navigate in and that promote CPP is impacted by top-down dynamics and needs leadership support to advance further CE initiatives.

There are indeed several barriers needing to be overcome that so far are hindering efforts towards more increased levels of circularity in the public sector and towards more collaboration and closer partnerships for the implementation of a CE (Klein et al., 2021a, 2021b, 2022). They include organisational cultures and governance structures that tend to be bureaucratic and hierarchical where tasks and procedures are compartmentalised and handled in silos, thus making it difficult to collaborate freely and in new, innovative ways. Finally, in the online survey, different barriers were listed, and the responding organisations were asked to evaluate the importance of each. The least valued barriers being the *lack of stakeholders input* and *interaction with suppliers* revealed that collaboration and stakeholder engagement are not considered as essential as other barriers such as access to sufficient financial resources and absence of leadership commitment (Klein et al., 2022).

8.4 EU- and supranational-level CE policies

In the introduction to this chapter we stated that in Europe supranational-level policymaking is essential. Supranational governments apply both indirect general frameworks and regulations directly affecting business conduct. EU framework

regulations need to be transposed into the national policies, leaving room for national adaptations. At the same time, these policies are the result of member states' inputs in the EU's regulatory process, making the policy interaction between the EU level and the national policies crucial for what happens both at the EU level and within the member states. The Cresting projects did not produce a systematic review of EU policies, but various projects delivered valuable insights. We first discuss the implications of our review of the EU strategies and then closely examine two of the longstanding CE-related policies, on EPR and on product design.

8.4.1 European CE policies

The local, regional and national policies discussed above are in practice linked to the discourses and policies at the supranational level, with a strong role for the EU. The EU has also taken a proactive role in pursuing CE policies, outlined in a 2015 Action Plan and updated in 2020. This includes updating and developing existing policies, and also pursuing new ones. Since the enaction of the first CE action plan in 2015 by the Junker Commission, the EU has been considered a global frontrunner on the CE transition (McDowall et al., 2017).

In one of the Cresting projects EU policies have been analysed with a particular focus on those that deal with the circularity and sustainability in the lifecycle of products. These policies addressed the design and production phase of the life cycle, as the end-of-life disposition phase. For policies that affect the design and production of products, the EU has implemented policies already in the phase of CE 2.0, including rules on eco-design (2009/125/CE), restrictions on the use of hazardous substances and chemical reporting requirements. For the end-of-life disposition phase, the EU has outlined a number of frameworks for the general management of waste and for specific waste categories, e.g. packaging, plastics, electronics, cars and batteries. The implementation of waste policy is organised at the level of member states.

In this review of the EU strategy for CE, an analysis of the ten communications, seven regulations and eight directives on CE enacted by the Junker Commission. This study, applying the typology of circularity concepts presented in Chapter 3 (see Table 3.1), reveals that the EU has taken a rather holistic discourse on the CE with some social justice and political participation elements, but that its concrete policy actions remain focused on end-of-pipe technological solutions such as low-cost recycling and incineration (Calisto Friant et al., 2021). There is thus a certain lack of coherence between a discourse of inclusive and just CE transition, and actions that focus on resource efficiency alone. Moreover, the EU has a strong green growth narrative, using the CE as a tool to increase the competitiveness of European businesses. This growth-optimist approach to CE has many limitations as technological solutions can create may rebound effects that increase overall environmental impacts in the long term (Schröder et al., 2019; Zink and Geyer, 2017). The EU's focus on decoupling economic growth from environmental degradation is misguided from a scientific point of view as there is no evidence that absolute decoupling is happening

or is likely to happen in the future. Based on these critical reflections we have recommended a long list of 32 additional policies which aim to address the limitations of the current EU policies on the CE and create a more TCS-oriented version of the policy. Among the policy recommendations we may highlight the following actions policy (for more details we refer to Calisto Friant et al., 2021):

- strengthen eco-design regulations to improve the durability, upgradeability, repairability, recyclability and modularity of fast-moving consumer electronics such as mobile phones, tablets and computers
- promoting open-source innovation (e.g. by mandating that all hardware and software from discontinued products becomes open source)
- banning the destruction of unsold stock
- · establishing mandatory circular public procurement targets
- · increasing mandatory guarantee periods

Nonetheless, the EU has taken some of the strongest measures on the CE anywhere in the world with high recycling targets for many waste streams, bans on some problematic single-use plastics, and resource efficiency criteria for the ecodesign of large electronic appliances that will make them easier to repair and recycle. It is regrettable that no measures to foster a fairer distribution of the many costs and benefits of a CE transition have been enacted thus far. The new EU Action Plan on a CE enacted by the Von der Leyen Commission in 2020 could lead to some much-needed social justice policies as it has a much stronger social focus. However, very few new directives and regulations have thus far been implemented in the scope of the new 2020 Action Plan.

8.4.2 Harmonising diverse EPR implementation across the EU

Other Cresting projects looked at more specific CE-related policies. In sections 8.3.2 and 8.3.3 we discuss national examples of applying EPR. The use of the EPR instrument is basically regulated in European law, and although member states transpose them according to their specific context, our recommendations address national and European policymakers. A higher level of coordination between the EU member states is essential, as markets of the regulated products are not national and the current confusing and burdensome diversity of national solutions is not helpful for producing the impacts needed. In section 8.3.2 we observed that the current EPR systems do not create sufficient financial incentives for product redesign. This is found in other EU countries as well. Also, the current design of EPR regulation results in promoting general recycling over specific quality and material outcomes. Many of the suggestions discussed in this section relate to applying a fully inclusive sustainability assessment of circularity options, which is the core of the principle of cascading. Campbell-Johnston et al. (2020) revived this concept. Circular economy policies need to account not only for the physical processes, e.g. repair and recycling and stimulating higher R-strategies,

but, importantly, the social contexts in which these processes materialise. In the context of recycling policy, this necessitates the integration of equitable labour practices for those working in recycling operations, applying the full sustainability assessment, also respecting the 17 United Nations (UN) Sustainable Development Goals (SDGs) (Campbell-Johnston, Vermeulen *et al.*, 2020). Such more inclusive assessment will be needed to enable development based on the TCS vision.

At the same time, it is clear that the implementation of EPR within EU member states is highly diverse. In a comparison of EPR implementation between France, Italy and the Netherlands we observed that none of these countries met the recent collection targets for waste electrical and electronic equipment recycling (WEEE), while very different governance models (including recycling fee visibility and modularity) were applied, which hampered its intended impact of promoting ecodesign. The policy brief resulting from this analysis gives suggestion for introducing fee modulation at the European level, broaden the engagement of relevant actors in the EPR governance, increase the focus on high-value recycling and better address the impact of export of to-be-recycled materials between EU countries (and beyond) (see Campbell-Johnston, Pruijsen et al., 2022). An example of the lack of high-value recycling is the absence of attention for distracting critical raw materials from WEEE. Suggestions for addressing this have been given in a policy brief addressing this (see Campbell-Johnston et al., 2022a).

8.4.3 EU regulations on eco-design

An example of EU policies more directly impacting manufacturing industries relates to the product development processes. For example, the Directive 2000/53/ EC on the End-of-Life of Vehicles has been found to directly impact the design of complete vehicles and vehicle components, emerging in the form of quantitative material and energy requirements, integrated into the set of design requirements for products. Similarly, the Directive 2009/125/EC establishing eco-design requirements for energy-related products was also found to determine criteria for evaluation design parameters. Although companies reported such policies had driven cultural changes in market players concerning sustainability-related issues, the wide range of compliance-related requirements represents a heavy burden for designers and engineers (Diaz et al., 2022). But for a large share of companies these influences will go as far as the policies prescribe. Only few corporate frontrunners tend to do more than required by public policies. Therefore, a critical assessment of the nature of current CE policies is essential.

8.5 Global contexts

In the previous sections we have discussed our findings for the CE at the local, regional and European level. This suggests that material and product cycles remain within these scopes. But this is far from the reality. We observed that the

rationale behind recycling, as in the design of EPR, implicitly limits the life cycle of a product to a single cycle, to be connected to of life cycles as recycled secondary resources. It ignores the practice of (re-)selling as second-hand multiple times, or as to-be-recycled products to next processers, while crossing borders within and outside the EU. One of the Cresting projects explored the fate of waste streams and to-be-recycled products from the EU to Africa and Asia in the context of the EU's ambitions for closing cycles. Such transboundary movement of all waste, not just hazardous waste, remains a societal challenge globally, frequently surfacing as an ethical question on the one hand and a story of resource management/trade on the other. This phenomenon has been studied across disciplines resulting in diverse, scattered and often contested understandings. Despite previous and ongoing efforts, waste production, management and transboundary movements are increasing and are predicted to grow significantly with global social, environmental and economic implications (Thapa et al., 2023). Despite the introduction of EPR for e-waste and for plastic packaging in all EU countries, substantial amounts of e-waste are still exported to Central Africa (Thapa et al., 2023a) and plastics to South-east Asia (Thapa, 2024 and Chapter 6 in this volume).

Based on these observations, also for addressing policies for waste and recycling exports from EU members states to low- and middle-income countries, various recommendations have been formulated on the same topics as above:

- Financing: EPR schemes are designed at the national level, ignoring the trickling down of multiple uses in Africa or Asia. In these contexts, the low- and middle-income countries do not have the financial resources to properly organise the CE. Acknowledging the existing regulations in the EU member states on EPR, proposals have been developed for creating a financial mechanism for the proper recycling of exported products in African countries (Thapa et al., 2023a; Thapa et al., 2022).
- Actor inclusion: in countries such as Nigeria and Vietnam, where the informal sector plays a crucial role in waste management, they should be included in the system. Existing EPR does not account for the reality of multiple use cycles which can be within a country or internationally. Thus, the producers who are responsible for waste management under the 'polluter pays' principle avoid the responsibility, when waste is shipped to other jurisdictions, while the interests of actors affected by this export are not represented (Thapa et al., 2023a; Thapa et al., 2022).
- Technology transfers: financial assistance and technology transfers from the Global North to the Global South to foster circularity, sustainability and recycling strategies. This is key as waste management technology is so expensive that it can be the single highest budget item for municipal governments in the Global South (Bishop et al., 2020). These funds can also help to finance clean-up activities in heavily polluted ecosystems such as oceans and beaches. Directly related to current EPR systems the concept of Ultimate Producer Responsibility

has been introduced. It proposes including a mechanism in existing EPR scheme to generate funds to organise recycling in low-income countries to the highest social and environmental standards (Thapa et al., 2022; Vermeulen et al., 2022).

- Waste shipments: instead of valorising waste and maintaining product use as long as possible within Europe, the shipment of waste and second-hand goods follows a very linear trajectory. The functionality and durability of second-hand goods remain questionable; thus such practices are only good for delaying the waste stage until they are outside of the EU, instead of promoting the aspirations of the circular economy. Implementing the EU's circularity ambitions leaves only two options: either fully ban the exports and organise value retention fully within the EU, or allow shipment for recycling, but under very strict requirements ensuring recycling at the level of European quality requirements and organising proper financial mechanisms for establishing such infrastructures in the targeted low- and middle-income countries (Thapa et al., 2022; Thapa et al., 2023a; Thapa et al., 2024).
- Transparency, monitoring and reporting: waste and used products should be traceable, not only in terms of quantity but also in terms of quality attributes and the fate of what happens to them. Transparency would make better sense of the phenomenon and come up with better interventions to transform the system. For transparency, monitoring and reporting is crucial (Thapa et al., 2023a).
- Just transition: linear practices, like shipping waste to destinations which might not have the capacity for the sound management of waste management might benefit a few actors at the cost of greater long-term social and ecological harm. Such harm is an example of 'unequal exchange' which exacerbates global inequality. Thus, the existing waste management practices do not take equity into consideration (Thapa et al., 2023a).

8.6 Conclusions

In this chapter we have presented an overview of policy recommendations for various levels of CE policymaking and their relatedness. The Cresting project has produced useful insights at all levels of policymaking as well as for producers. The researchers engaged have applied diverse perspectives, with respect to their disciplinary angle, the levels of analysis and the views on the concept of the CE itself. As a result, the nature of our observations and their implications range from more specific case studies (like the analysis of PSS in Graz, the EPR case studies in the Netherlands and the UK, and the multi-stakeholder collaboration in Hull), based on critical analysis of current practices, to ex ante evaluations, using the CE typology as a reference point for evaluation, resulting in suggestions for enabling a wider societal transformation (like the review of the EU policy and the three local policy case studies). This chapter presents these in a concise and 'impressionist' form. Readers are stimulated to continue reading in the articles, policy briefs and white papers that in elaborate in close detail the analysis and implications. During

the projects these outreach products have been discussed with policymakers at the national and regional level, ensuring take-up of the lessons learned.

Collectively, the Cresting studies produce useful insights into possible routes for further enhancement of the CE. Some specific cases can be seen as successful, such as the Graz case of local support for repair shops. Other case studies reveal some level of success when the original policy aims are taken as reference, but turn out to have major shortcomings, when assessed from the perspective of the current more far-reaching CE aspirations, as in the case of the tyre and plastic packaging EPR in the Netherlands. The presented diversity in results illustrates that both forms of policy evaluation are fruitful and highly needed. They complement each other. The critical evaluation based on the CE discourse typology may serve to inspire policymakers to broaden their perspectives on the CE. This type of research mostly applied discourse analysis, based on currently accepted policy documents. The recommendations in this type of work are based on what other scholars claim to be best pathways for more successful promotion of the CE or even the circular society. The case studies presented that analyse the CE in practice indicate the challenges of implementation and importance of context (for example, around the role of SEs in Hull). The literature-based recommendations require further empirical testing of their effectiveness in different contexts.

Comparing the case studies (for example on EPR) also shows that the practices differ strongly between European countries. Research and policy would benefit from further systematic comparison between countries and regions, which has only been possible in the Cresting project to a limited extent. Comparing different countries, the regional approach of Graz (section 8.2.1) is more oriented to engage citizens in one specific R strategy (Repair), while the local approaches of Hull (sections 8.2.2 and 8.2.3) are oriented to redevelop and regenerate local industrial networks. Wider research comparing such cases might serve to boost scientific knowledge and inspire authorities across countries to follow successful examples.

Assuring alignment between different policy levels (e.g. national and regional schemes) is a pre-condition for effective local approaches to value retention. This is not always the case in practice (as shown in the Hull case studies). In the British context, there is an assumption that Hull and the surrounding region should be one of the economic beneficiaries of a transition to a CE, despite the ambiguity of the spatial distribution of the impacts of a CE transition on regional stakeholders. Hence, in the UK further devolution may support local authorities to foster regionally inclusive CE strategies, which are tailored towards local stakeholders in a particular region.

The research shown here supports the awareness that CE-related policies effectively shape many elements of the structural contexts of private sector organisations, especially around operational tasks that involve the reporting of environmental and social impacts, as well as the opportunities and behaviour of societal organisations and consumers. The CE can be seen as an evolutionary concept, growing in time for the more limited perspectives of CE 1.0 and 2.0 towards more extended and inclusive perspectives of CE 3.0. The typology of the CE discourses suggests an evolution from the Technocentric Circular Economy view, via the RCS view towards the TCS view (see section 8.4.1). Whether this is supported by all relevant stakeholder groups in society remains to be seen, but it does connect to the growing attention to embedding and aligning the CE ambitions in the wider quest for sustainable development, as promoted by the SDGs. With the diversity of analysis of both potential future and actual developments the Cresting researchers have done their best to contribute to this highly needed development.

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