

JUST2CE

A Just Transition to Circular Economy



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CHAPTER 3

A Framework to Critically Understand the Multidimensional Social Justice Implications of a Circular Economy Transition

Chapter 3. A Framework to Critically Understand the Multidimensional Social Justice Implications of a Circular Economy Transition

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Abstract

Despite its growing popularity among politicians, business leaders, and academics, the concept of Circular Economy (CE) faces key criticism and challenges. Indeed, hegemonic visions of CE are narrowly focused on decoupling economic growth from environmental degradation through technological innovations. Yet these approaches lack reflection on the ethical, political, social, and cultural dimensions of the concept and especially the implications of CE for the most vulnerable citizens of the world, such as workers, farmers, and miners in the GS. As questions of social and environmental justice remain unanswered by the literature, CE policies might end up replicating current patterns of gender, racial and class discrimination and exploitation. Answering these challenges requires establishing a comprehensive conceptual framework to critically understand the multidimensional social justice implications of a CE transition. This chapter addresses this gap by building such a framework combining a multiplicity of different academic fields such as Science and Technology Studies, Feminist Ecological Economics, Political Ecology, Decolonial Studies, and Degrowth. The resulting multidimensional framework expands and builds on the 4 pillars of the concept of Technologies of Humility (framing, vulnerability, distribution, and learning). It thereby provides an epistemological, theoretical, and methodological scaffolding to help us address the ethical questions related to the future of CE and the societal implications of a CE transition.

Keywords: circular economy; conceptual framework; sustainability; environmental justice; technologies of humility.

This chapter develops a comprehensive conceptual framework to critically understand the multidimensional social justice implications of a circular economy transition. It does so by expanding and building on the idea of Technologies of Humility and combining it with a multiplicity of different academic fields such as Feminist Ecological Economics, Political Ecology, Decolonial Studies, Responsible Research and Innovation, and Degrowth.

3.1 Introduction

The CE has risen from a little-known concept to become a major pillar of the European Green Deal and EU policies related to sustainability. CE promises to replace the current linear economic model with a new one that is restorative and regenerative by intention and design. Yet, the CE concept has come under criticism for focusing on economic growth and technological innovation and disregarding social justice implications. This means that CE policies might replicate current patterns of injustice, discrimination and exploitation along class, gender, race, colonial, and ethnic lines. Yet, there is still insufficient literature providing a coherent conceptual framework to understand the full complexity of social and environmental justice implications of a CE transition. This chapter seeks to answer this challenge by developing such a framework. It does so by expanding and building on the idea of Technologies of Humility and combining it with a multiplicity of different academic fields and theoretical approaches such as Feminist Ecological Economics, Political Ecology, Decolonial Studies, Responsible Research and Innovation, and Degrowth.

The chapter starts by reviewing the core criticisms of the mainstream approach to CE. It then develops a novel framework that addresses these limitations and enables the construction of a just approach to CE. The resulting framework is a comprehensive and adaptable conceptual model that allows academics and practitioners to better understand the social justice implications of a CE transition. It can thereby be useful to both critically reflect on current CE approaches and to develop future CE projects and policies with a holistic social justice lens.

3.2 Main Criticisms of the Circular Economy

Critiques of the mainstream approach to CE have come from many different academic fields, including economics, ecology, political sciences, sociology, and anthropology (Corvellec, Stowell, and Johansson 2021; Mah 2021; Skene 2018; Valenzuela and Böhm 2017). Overall, critics claim that mainstream CE propositions often have questionable premises and assumptions, as well as exaggerated positive outcomes.

The first critique pertains to the concept of CE itself, which has been defined as a “mix of various ideas from different domains” (Reike, Vermeulen, and Witjes 2018), an “umbrella concept” (Homrich et al. 2018) and “an overhyped and ill-defined concept” (Prendeville, Cherim, and Bocken 2018). By being a conceptual umbrella that covers a wide range of related concepts, the CE allows a variety of actors to slip under it and frame it in a way that suits them (Pansera, Genovese, and Ripa 2021). This ambiguity and diversity has been a key factor explaining the rising expansion of the concept in recent years, as many social, private, and public actors began embracing the CE in ways that best suited their interests and visions (Lazarevic and Valve 2017). While this opens the door to a plurality of different ideas and conceptualisations that may be deeply transformative, in practice, the mainstream vision of circularity has instead tended to be apolitical, technocentric, and reformist, especially when used by corporate and government actors (Calisto Friant, Vermeulen, and Salomone 2020a; Walker et al. 2021). The concept has thus often become associated with “the less than radical neo-classic economic theory and ecological modernization paradigm” (Corvellec, Stowell, and Johansson 2021), and as “a re-emergence of the mantra of cornucopians” (Giampietro 2019).

The second area of critique questions the achievability of the concept from a biophysical perspective. Several scholars argue that the promotion of the CE concept seemingly ignores that biophysical processes are subject to

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thermodynamic constraints and, therefore, no system can be 100% circular due to the laws of entropy (Giampietro and Funtowicz 2020). This means that recycling is not 100% efficient as materials and energy resources are inevitably lost in each use and recovery cycle (Korhonen, Honkasalo, and Seppälä 2018). Thus, despite advanced recycling and recovery technologies, the global share of recycled materials in total production of infrastructures, goods and services remains below 10% (Haas et al. 2020). Perfect circular loops are simply impossible, especially in an economic system that keeps growing, as recovered resources will not suffice to meet growing production demands (Skene 2018). The claim that we might be able to decouple economic growth from environmental degradation thanks to CE technologies and innovations is thus nothing short of a fairy tale (Giampietro and Funtowicz 2020). Indeed, over 50 years of evidence have demonstrated beyond any scientific doubt that we cannot decouple economic growth from environmental degradation on a scale and scope sufficient to prevent climate breakdown and biodiversity collapse (Haberl et al. 2020; Hickel and Kallis 2019; Wiedenhofer et al. 2020).

The third major criticism of the CE concept resides in the lack of consideration for socio-ethical issues (Suárez-Eiroa et al. 2019; Thapa 2023; Vanhuysse et al. 2021). Mainstream visions of CE are indeed narrowly focused on economic and technological dimensions, with a patent lack of reflection on political and socio-cultural implications as well as on the unintended consequences that a transition to circularity would entail on vulnerable people and communities (Suárez-Eiroa, Fernández, and Méndez 2021; Velenturf and Purnell 2021; Zwiers, Jaeger-Erben, and Hofmann 2020).

Transforming the linear economy, which has remained the dominant model since the onset of the industrial revolution, into a circular one is by no means an easy task. Such a radical change entails a major transformation of our current production and consumption patterns, which will significantly impact the economy, the environment and society. Any CE action, policy or practice is interwoven in social structures, political systems, as well as ideologies and imaginaries of socio-ecological change (Calisto Friant, Vermeulen, and Salomone 2023; Mah 2021; Zwiers, Jaeger-Erben, and Hofmann 2020). Alternative ways of thinking and organising society will result in different ways of redesigning our production and consumption systems, structures, and institutions. CE must be addressed in all this complexity, as a political and social concept, otherwise it might result in unintended social consequences that replicate or reinforce current patterns of discrimination, alienation, and exploitation along racial, class, gender, and other social lines (Millar, McLaughlin, and Börger 2019; Temesgen, Storsletten, and Jakobsen 2019).

The three above limitations can be evidenced in the implementation of CE in different arenas. The next section will showcase these limitations in the areas of governance (section 3.2.1), geopolitics (section 3.2.2), and labour and gender (section 3.2.3) to further explore the social, political, cultural, ecological, and ethical dimensions, complexities, and interdependencies of a CE transition.

3.2.1 The governance of CE

Many political actors at the local, national, and international levels have developed CE policies as a “win-win” solutions to resolve economic, social, and environmental challenges through green technologies and innovations (Petit-Boix and Leipold 2018). Yet this kind of technological optimism prevents a deeper understanding of the

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concept's possible social justice and environmental sustainability implications (Moreau et al. 2017). Policies that may reduce the potential impacts of CE actions on vulnerable peoples and better distribute the costs and benefits of CE solutions are thus often excluded from the policy debate (Calisto Friant et al. 2023).

Many scholars have also questioned the type of governance and political regime that CE implies (Colombo, Pansera, and Owen 2019; Fratini, Georg, and Jørgensen 2019; Repo et al. 2018). The mainstream implementation of CE rests on a market-based governance approach focused on public-private-partnerships, voluntary agreements, market nudges and incentives instead of strict regulatory measures and constraints (Calisto Friant, Vermeulen, and Salomone 2021; Campbell-Johnston et al. 2020). This approach may increase recovery percentages for certain materials and incentivise the growth of new recycling businesses, but it will not fundamentally disrupt unsustainable industries nor reduce current patterns of over-consumption and over-production. The lack of democratic deliberation and meaningful citizen participation in the creation of CE policies and visions may be a critical reason for such a technocentric market-based governance. Research has found that CE policies are often developed by policymakers in coordination with industrial sectors, with little democratic citizen engagement and avenues for civil society participation (Arai, Calisto Friant, and Vermeulen 2023; Calisto Friant, Lakerveld, et al. 2022; Calisto Friant et al. 2023). This leads to a lack of pluralism in the debate and the imposition of a technocentric approach to CE, which does not align with citizen ideas and visions of CE (Calisto Friant, Vermeulen, et al. 2022; Lazarevic and Valve 2017; Repo et al. 2018).

3.2.2 The Geopolitics of CE

The dissemination and implementation of the CE concept has mainly taken place in the GN, and only a few studies have explored its implementation and interpretation in the GS7 (Schröder, Anantharaman, Anggraeni, and Foxon 2019). This exclusion is inherently paradoxical as, in our globalised world, value chains and waste cycles are inherently international. Moreover, the global flows of resources from the GS to consumption centres in the GN and

the subsequent export of wastes from the GN to the GS is a key linear, unjust and unsustainable structure of the global economic order, which remains unproblematized (Martinez-Alier 2021a). Indeed, the major driver for the overshoot of planetary boundaries today is the over-consumption of resources by the 10% of the global population that mostly live in the GN (Chancel 2021). The GS is thus used as both "resource extraction frontier" and a "waste disposal frontier" (Martinez-Alier 2021b) to allow the GN to perpetuate what Ulrich Brand calls an "imperial mode of living" (Brand 2022). In this context, the technocentric circularity and sustainability transitions in the GN are

⁷ By GN and South, we mean both a country-level distinction and a more nuanced socio-cultural distinction. In the country level distinction GN defines countries classified as "high-income economies" by the World Bank, while GS defined all other countries. In the socio-cultural distinction, we use the definition from Francis, who expands the idea of GS "to include not only nation states but also the people and spaces that racial capitalism positions as expendable in both the geographic North and South" (Francis 2021, p693). In this socio-cultural divide, the GN represents the 10% of elites, from any country, that consume over 50% of global resources and have a position of power over the global economy, while the GS, is the majority world, the 90% of the human population that are discriminated, exploited and alienated on class, gender, ethnic and racial grounds.

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mostly about switching to renewable energy sources, which still require massive extraction of raw materials from the GS and perpetuate colonial relations of geopolitical power (Marín-Beltrán et al. 2022; Velasco-Herrejón, Bauwens, and Calisto Friant 2022). The scale of over-consumption and resource demand caused by the richest 10% of the global population is thus never challenged. Yet, under these conditions, circularity and sustainability will become a luxury only available to a few people in the GN who can access essential natural and technological resources (Schröder, Anantharaman, Anggraeni, Foxon, et al. 2019). Circularity must thus also consider the distribution of wealth, technologies and resources amongst countries around the globe and reduce the over-consumption of the richest inhabitants of the Earth, so that the rest of humanity may access the resources to meet their needs (Calisto Friant 2022).

Another important geopolitical consideration is that current CE approaches focus on interpretations of the concept from the GN. Yet, circularity, as an idea to live in harmony with the natural cycles of the Earth, has existed for millennia in the GS (Calisto Friant, Vermeulen, and Salomone 2020b). The current GN-centred ways of imagining the CE inevitably silence indigenous discourses on circularity, which may bring inspiring ways of understanding and implementing CE in a transformative manner.

3.2.3 Labour, and gender

Social and ecological benefits from CE are often wrongly conceived as by-products of the transition and assumed to be achievable by simply decoupling economic growth from environmental impacts. Most empirical studies that assess social effects only underline the positive economic growth and employment effects in the EU and its respective Member States (Repp, Hekkert, and Kirchherr 2021). Beyond these uncertain estimates on employment, there is no further questioning of mainstream conceptualisations of work, including care work, or time use, nor mention of alternative patterns of consumption and production beyond the market rationale, e.g. experiences of sufficiency, de-/post-growth and communing (Hobson and Lynch 2016). High uncertainty surrounds the job market in the newly emerging CE. Broader patterns of globalisation, and demographic and technological changes will entail profound structural shifts in employment. This will fundamentally transform the type of work that is done, where it is done, and who it is done by.

Moreover, the gender dimension, and specifically reproductive and care work (conducted mostly by women and people of colour), has been widely neglected by CE studies. Since social reproduction and care are fundamental dimensions of the economy and key drivers of ecological transformation, there is also a need to understand how the social actors performing this work can contribute to the design and implementation of CE (Morrow and Davies 2021; Pla-Julián and Guevara 2019). Indeed, essential CE activities such as repair cafés, community composting, reuse networks, tool libraries, household maintenance, and urban agriculture are part of the under-valued and under-recognised care economy, in which women and people of colour bear the largest work burden.

3.3 Towards a Just Circular Economy based on humility

To respond to the criticisms explored in the previous sections, we offer a novel multidimensional framework that seeks to assess the social justice implications of a circularity transition. The framework embraces a “humble”

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approach to knowledge. Humility is associated with uncertainty and pluralism. The higher the uncertainty, the more humility we ought to apply to it. Based on this humble approach, we recognise that knowledge of the world is

always interpreted, structured, and filtered by the observer. We thus call for other ways of 'knowing' beyond Western epistemologies and worldviews.

Specifically, we draw on the STS (Science and Technology Studies) concept of Technologies of Humility (Jasanoff 2003). This concept helps us pose “the questions we should ask of almost every human enterprise that intends to alter society: what is the purpose; who will be hurt; who benefits; and how can we know?” (Jasanoff 2003, p240). Technologies of humility are presented as a counterbalance to what Jasanoff refers to as the modern reliance on “technologies of hubris”—a command and control approach to science and technology that seeks to clear the way for science-driven innovation (Jasanoff 2003). “These technologies compel us to reflect on the sources of ambiguity, indeterminacy and complexity. Humility instructs us to think harder about how to reframe problems so that their ethical dimensions are brought to light, which new facts to seek and when to resist asking science for clarification. Humility directs us to alleviate known causes of people’s vulnerability to harm, to pay attention to the distribution of risks and benefits, and to reflect on the social factors that promote or discourage learning” (Jasanoff 2007, p33).

To this end, Jasanoff proposes four pillars for realising Technologies of Humility: framing, vulnerability, distribution, and learning. Together, these provide a scaffolding for the ethical questions we should be asking about the future of CE and are the basis of our multidimensional framework (**Table 3.1**).

The four dimensions encompassed by Technologies of Humility must not be conceived as silos. As made explicit by the partial overlapping of leading questions, these dimensions are not disjointed and compartmentalised. Instead, they reflect the collaborative and transdisciplinary exercise of recognising interdependencies among issues and research fields.

Table 3.1 Multidimensional Framework to Critically Understand the Social Justice Implications of a Circular Economy Transition

Humility Pillars	Leading Questions	Research Approach and Fields
Framing	What kinds of broader understandings of the world shape how CE is understood and mobilised?	Science & Technology Studies (STS) Organisation Studies (OS) Institutional Theory (IT)
Vulnerability	Whose voices and interests are heard, and whose voices and interests are neglected?	Decolonial Studies (DS) Feminist Ecological Economics (FEE) Feminist Political Ecology (FPE)

Distribution	How are the costs, benefits and opportunities of CE distributed at different scales and among different social realities?	Environmental Justice (EJ) Political Ecology (PE) Ecologically Unequal Exchange (EUE) Degrowth
Learning	Are people mobilising alternative imaginaries in their desirable transition?	Responsible Research and Innovation (RII) Post-normal Science (P-NS) Future studies (FS) Transdisciplinary and Participatory Action Research (TPAR)

3.3.1 Multidimensional Framework on the Social Justice Implications of a Circular Economy Transition

Following Jasanoff’s Technologies of humility, Framing comes first.

3.3.1.1. Framing

As stated by Sheila Jasanoff “If a problem is framed too narrowly, too broadly, or simply in the wrong terms, then the solution will suffer from the same defects” (Jasanoff 2018). Section 2 showcased how, depending on the case and context, CE is open to a variety of competing interpretations, interests, and governance regimes. The concept of framing has been articulated and developed by a wide range of academic disciplines (Cornelissen and Werner 2014). We draw on the definition of framing as “the processes through which actors seek to impose interpretations and order upon an ambiguous social world” (Hajer and Laws 2009).

Competing CE framings are embedded in larger institutional contexts and practices and influenced by different assumptions and visions of socio-ecological change (Calisto Friant 2022). It is thus important to scrutinise CE discourses regarding both their rationale and goals of the transition and the governance and technological configurations proposed to achieve them. The latter are particularly important as they can empower or silence certain actors depending on who is included and who has a voice and a vote.

Societal institutions and organisations are central in the basic framing of CE as they set the normative, contextual, cultural, and cognitive constraints around which CE is debated. Understanding institutions requires attending both to their internal structures and to the bidirectional nature of institutional processes as they influence and are

influenced by a wide range of societal actors, including other institutions (Purdy, Ansari, and Gray 2019). Borrowing from institutional theory, it is vital to analyse the three institutional pillars that shape CE framings (Scott 2010):

1. Regulatory: formal institutions that enable/hamper CE practices like national/international regulation, laws, rules, sanctions systems, etc.;

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2. Normative: socially accepted behaviour that favours or encumbers the implementation of CE practices, such as social and moral obligations, binding expectations, etc.;
3. Cognitive: institutions that are taken for granted, such as shared understandings, worldviews, and common beliefs (including gender bias and anthropocentrism).

Based on the above reflections, the key questions that guide the “framing” dimension of a just CE transition include:

- How are organisations and institutions framing CE?
- Who advocates for CE, which narratives are they using, and which factors do they consider supporting or hindering its successful adoption?
- How do different framings of CE shape different forms of implementation (i.e., governance)?
- How are different institutional pillars (regulative, normative, cognitive) shaping different framings of CE?
- How is the concept of CE re-appropriated and re-articulated in different contexts?

3.3.1.2. Vulnerability

Vulnerability is understood as a situation in which a person or a group of people are more likely to be harmed and/or not having her/his/their interests justly considered. Often, vulnerability is taken as an objective phenomenon that can be measured with specific indicators (Vardy and Smith 2017). However, it is probably more informative to pay attention to the processes of vulnerabilization, in which the other is made or kept vulnerable. Vulnerability is intimately interwoven with epistemic injustice, which refers to the silencing of voices, especially those most marginalised and disempowered from economic, social and political power (Fricker 2007). Silenced people become vulnerable in a CE transition if they cannot voice their concerns and have their needs heard and met. The deep societal transformations at play in a CE transition might end up worsening the discrimination, marginalisation, and exploitation of such silenced populations. Including vulnerability in this framework thus means giving a central place to values, understandings, practices, narratives, and actors at risk of being unnoticed, underplayed, unheard, or misrepresented by the CE transition.

It is important to give particular attention to the marginalisation of knowledge systems not aligned with the Western scientific canon, like indigenous worldviews from the GS. This has been at the core of decolonial and postcolonial scholarships (Escobar 2018; Jimenez and Roberts 2019; Velasco-Herrejón, Bauwens, and Calisto Friant 2022). Decolonial thinkers have argued that the universal imposition of Western knowledge has resulted in “epistemicide”, by which traditional cultures and worldviews in the GS have been destroyed, oppressed, and silenced to make way for “modernity” (Escobar 2008; Mignolo 2007; Rivera Cusicanqui 2012; Walsh 2007). It is thus crucial to contest and subvert the unquestioned universality and superiority of Western society, worldviews, and science by empowering and giving voice to marginalised peoples (Fals-Borda 1987).

Feminist Ecological Economics and Feminist Political Ecology scholarships have pointed out the problematic dualisms rooted in Western culture (and in capitalism), which present hierarchical ontological divisions such as

civilised vs savage, mind vs body, human vs nature, male vs female (Barca 2020; Plumwood 1993). Dualist thinking divides the world into bifurcated hierarchies and is inherent to all forms of oppression and domination. Following the binary logic, “humanity” comes to be identified with a white male subject of History, pertaining to the capitalistic sphere of science, technology and industry, while “nature”, “women” and “savage” are identified with a devalued

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and passive “reproductive” sphere (Barca 2020). The global socio-ecological crisis can be seen as the outcome of this dualist capitalist, anthropocentric, and patriarchal system of division that treats both women and nature as “resources” to be exploited (Dengler and Lang 2021).

Both women and people of colour are more likely than white men to provide unpaid care (reproductive and subsistence work) and communing work - e.g., transmitting care practices and responsibility for human and more-than-human ecosystems (Dengler and Seebacher 2019; Guilibert, Barca, and Leonardi 2022). These practices are

often crucial for CE as they enable non-commodified circular loops such as repair networks, tool libraries, community composting, local support groups, cooperative childcare, urban agriculture, ecosystem conservation and regeneration etc. (Morrow and Davies 2021; Pla-Julián and Guevara 2019). In short, it is key to recognise “the forces of reproduction” that sustain production, and the role of reproductive care work in the daily regeneration of human and more-than-human life (Barca 2020).

The key questions that guide the analysis and understanding of the “vulnerability” dimension of a just CE transition include:

- Whose voices and interests are heard, and whose voices and interests are neglected?
- How can we ensure that all voices are heard, especially the voices of marginalised and vulnerable people and those with non-Western perspectives and worldviews?
- How are relations within CE shaped by historical processes of dispossession (like colonialism, extractivism, and land grabbing) and by gendered divisions of labour?
- How do gender, class and racial relations shape work conditions, innovation, and organisational conditions in CE initiatives?
- What is the role of women (and reproductive care work more broadly) in the CE?
- How can we identify, name and value reproductive care work wherever it occurs in CE initiatives?

3.3.1.3. Distribution

When transitions towards more sustainable futures are envisioned, distributional aspects (who gets what environmental benefits and burdens) must be considered from a global, planetary-boundary perspective. Considering the harms and benefits of these transitions, critically examining who is (and who is not) part of these processes, who wins and who loses, and recognising the historical exclusion of peoples and worldviews is essential to ensuring that system transitions are not only more sustainable but also more just. In short, there is a need to understand “who defines what is just, and for whom” (Newell and Mulvaney 2013) and how these questions are related to existing power structures in different contexts.

The distribution of benefits and burdens of a CE transition has two key dimensions: geographical (i.e., distribution between different countries, regions, and cities) and social (i.e., distribution between different social groups).

The geographical dimension closely relates to the concept of Ecologically Unequal Exchange, developed in academia and particularly in Ecological Economics (Hornborg and Alf 1998; Muradian, O'Connor, and Martinez-Alier 2002) and Degrowth (Hickel et al. 2022) as a challenge to mainstream economic theories of trade. Ecologically Unequal Exchange claims that consumption and capital accumulation in the GN is based on environmental

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degradation and extraction in the peripheries (the GS). Geopolitical factors, especially the structure of international trade, shape the unequal distribution of environmental harms and economic benefits so that wealthier nations have a disproportionate access to both natural resources and sink capacity for waste in poorer nations (Dorninger et al. 2021; Frey, Gellert, and Dahms 2018; Givens, Huang, and Jorgenson 2019). By externalising environmentally damaging production and disposal activities to countries in the GS (burden-shifting), countries in the GN can enlarge their domestic carrying capacity (i.e., stocks of natural resources that yield important goods and services as well as its sink-capacity - waste assimilation properties of ecological systems) (Ripa, Di Felice, and Giampietro 2020). Environmental Justice and Degrowth scholars have described such displacements as a continued form of

colonialism and ecological debt (Hickel et al. 2022; Hornborg and Martinez-Alier 2016; Singh 2019). It is important to acknowledge these structural global asymmetries when analysing or developing any CE activity in the GN or South, and respond to these injustices in a holistic manner.

Another key geographical aspect that is rarely discussed is the fact that the re-localisation and reduction of overproduction that CE entails might affect current production and waste disposal industries in the GS. If a truly sustainable CE approach succeeds in reducing the use of raw materials, it would also reduce the demand for raw materials from the GS. While the re-localisation of industries and the reduction of material extraction have positive impacts on society and the environment, they will have different consequences for different people. Therefore, alternative sources of income must be created for industries and people in the GS who risk losing their jobs. Technology transfer and financial aid may be key in this regard, as they can allow countries in the GS to re-direct their production capacity to make goods and services that are needed for their own socio-ecological well-being (Calisto Friant, Doezema, and Pansera 2023). These questions are crucial to better understand the distributional impacts of a CE transition in one country for other countries; and to help plan an inclusive CE that leaves no one behind.

The social justice dimension of distribution relates to questions of access to essential resources and opportunities for people in the GN and South alike. As CE transitions will require large-scale changes to infrastructure, technology, and socioeconomic frameworks, it is key to question the economic and social implications for businesses, local communities, and the millions of individuals directly or indirectly employed in the supply chains that the CE aims to transform. Miners, farmers, suppliers, informal waste collectors and other key actors and workers in the supply chain must radically change their practices towards sustainable and regenerative CE approaches (Guillibert, Barca, and Leonardi 2022). It is thus essential to be critical regarding the distribution of costs and benefits in this transition and to question who pays, and who profits from CE, and how can current injustices be redressed. Important considerations in this regard include the availability of sufficient quality jobs at all skill levels and the accessibility and affordability of CE products and services (Berry et al. 2021; Clube and Tennant 2023; Schröder, Lemille, and Desmond 2020). Ownership of CE industries and technologies is also crucial, as it can affect the distribution of benefits and the diffusion of new innovations (Calisto Friant, Vermeulen, and Salomone 2023). Cooperative and communal forms of ownership might provide unique opportunities to improve democratic decision-making on the CE transition for companies and ensure quality jobs and sufficient incomes.

Indeed, non-profit cooperatives may offer an alternative approach to CE, which places social and ecological well-being above profits and economic growth (Villalba-Eguiluz et al. 2023).

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The key questions that can guide the understanding and analysis of the “distribution” dimension of a just CE transition include:

- How are the costs, risks, benefits and opportunities of CE distributed at different scales and among different social classes and realities?
- What transformations will CE bring to different peoples/workers and social groups? How can this transformation be more socially just and inclusive?
- How can the CE benefit workers and communities whose livelihoods currently depend on linear industries (fossil fuels, fast fashion, industrial agriculture)?
- How do formal CE initiatives affect informal sector circularities, such as informal waste scavengers and waste pickers?
- What types of capacity-building, skills development, social protection, and inclusive, participatory processes can make a CE transition more just?
- Why does the CE occur in one place and not in another?
- Who has access to funds related to the promotion of CE, and who is excluded from this funding?
- Could CE disrupt geopolitical arrangements and trade relations? What new extraction, production, and recovery economies will be created by CE, and where will they take place?
- What could happen if the GN re-localises its production or reduces demand for raw materials? How can the GS redirect its production to meet local needs and demands?
- How can more fair and sustainable trade relations be established to foster a just CE transition in the GN and South alike?

3.3.1.4. Learning

Investigating the implications of CE is crucial, but it is also essential to question how this research and learning takes place. Scientific institutions have systematically failed to examine which values are important, and whether these can be universally applied across countries, continents and cultures (Macnaghten et al. 2014). This realisation has led to calls for new ways of doing science that actively engage with different types of knowledge in a participatory manner (Adelle et al. 2019; Funtowicz and Ravetz 1993; Pereira and Funtowicz 2015). Building upon this focus on (co-)learning, we refer to the importance of public dialogue to open up CE frameworks to the pluralism of visions on a CE transition and to better understand and explore associated ethical issues, dilemmas and possible impacts (intended or unintended). We acknowledge that communities that are impacted by a phenomenon have unique forms of expertise that should be integral to how the phenomenon is understood and ultimately addressed. Capturing different perspectives and ideas on CE in a participatory approach to knowledge production, assessment and governance is hence essential to co-create desirable CE futures (Guimarães Pereira and Saltelli 2017).

The term “co-production”, as well as the variety of related concepts and labels including science-policy interface, democratization of expertise, knowledge brokering, and responsible innovation, have gained traction in debates

about climate knowledge in general and climate adaptation more particularly (Lemos and Morehouse 2005; Visbeck 2007; Ziervogel, Archer Van Garderen, and Price 2016). In our interpretation of co-learning, citizens and stakeholders are not seen as passive users or beneficiaries of goods and/or services contributing to their success

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or failure (Sorrentino, Sicilia, and Howlett 2018). Rather, they are necessary active elements of a 'new participatory governance' aiming at democratic and critical deliberation. Co-learning is about social desirability and participation in defining the goals, purposes and motivations for a CE transition. By collaborating, researchers and practitioners can integrate different ways of knowing and developing actionable knowledge that contributes to effective, legitimate, and socially transformative solutions.

We propose an overall engagement strategy to understand how actors, at multiple geographical scales, conceive the benefits and challenges of CE in relation to community-based goals, and how they mobilize these imaginaries in their visions of the future. The approach of 'working with rather than on people' is central to Responsible Research and Innovation, which, among other things, emphasizes the need for bottom-up processes through mechanisms of deliberation and inclusion (Owen, Macnaghten, and Stilgoe 2012; Purvis, Celebi, and Pansera

2023). Similar approaches are proposed by academics in the fields of Transdisciplinary and Participatory Action Research, which call for inclusive and decolonial forms of knowledge-making that break disciplinary boundaries and place researchers and citizens as equal participants in the scientific process (Bauwens, Reike, and Calisto-Friant 2023; Elderink, Vervoort, and van Laerhoven 2020; Vermeulen and Witjes 2020; Witjes and Vermeulen 2020). Those co-learning and co-producing methods and approaches can help give voice to marginalized and vulnerable voices and ensure that academic research doesn't end up replicating current patterns of injustice, exploitation and discrimination.

Key questions that can guide the understanding and analysis of the "learning" dimension of a just CE transition include:

- What is hindering the realisation of epistemological pluralism in CE initiatives?
- Are people mobilising alternative imaginaries in their desirable CE transition?
- How can we foster and empower the co-creation of desirable CE futures?
- What values and practices remain constant across different contexts, and what elements emerge from localised engagement?
- How to ensure the active engagement and participation of citizens in the co-creation of knowledge on a CE transition?

3.4 Conclusions

In this chapter, we presented the key criticisms and limitations of mainstream approaches to CE, and we proposed a multidimensional framework that can be used to better understand the social justice implications of a CE

transition. The framework was successfully implemented by the JUST2CE project to analyse 10 diverse CE case studies in Europe and Africa (JUST2CE D2.2 2023) and to compare and contrast them (Calisto Friant, Doezema, and Pansera 2023). It can hence be used to analyse diverse cases of CE at different scales (from local to global initiatives), different institutional settings (formal/informal), different socio-cultural contexts (GN and South), and different industries and sectors.

When using the framework, it is essential to keep a decolonial and transdisciplinary focus. Indeed, the framework recognises that knowledge is always interpreted, structured, and filtered by the observer and calls for other ways

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of 'knowing' beyond Western epistemologies. We particularly call for its use through transdisciplinary and participatory co-production methods that subvert the silencing and misrepresentation of marginalised voices and perspectives and that assert the right of human beings to shape the knowledge about them, their communities, and their organisations.

Overall, this multidimensional framework could be valuable for practitioners and academics seeking to better understand the implications of CE implementation as well as to develop CE policies and approaches that are socially just and transformative. We particularly encourage its adaptation and use in different contexts in collaboration with local communities and diverse societal actors. This framework should be seen as a methodological and conceptual tool that can be discussed, criticised, improved, and continuously adapted to better reflect local socio-ecological conditions, realities, priorities, and aspirations.

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