

# JUST2CE

A Just Transition to Circular Economy



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**Authors** Martin Calisto Friant, Tess Doezema, and Mario Pansera

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# CROSS-CASE COMPARISON REPORT



The JUST2CE project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101003491

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## D.2.3 – Cross-case Comparison Report

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Just2ce will assess the current state of transition towards the circular economy in relevant economic sectors and analyse possible transition scenarios, as well as their outcomes and impacts. It will identify the key factors that can stimulate or hinder this transition. Natural resources are extracted and transformed into products, which are eventually discarded. As many natural resources are finite, it is important to keep materials in circulation for as long as possible. This makes the transition to circular economy more vital than ever but is a responsible, inclusive, and socially just transition to a circular economy possible or even desirable? What technical, political, and social factors can enable or hamper such transformation? The EU-funded JUST2CE project will answer these questions. It will explore the economic, societal, gender and policy implications of the circular economy paradigm. The project's findings will shed light on how to ensure democratic and participatory mechanisms when designing and managing such technology.

### History Chart

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## Executive Summary

The circular economy (CE) has become a key element in many government policies, social organisation strategies, and business models related to social and environmental sustainability. Nevertheless, the actual implementation forms and possible impacts of CE strategies, policies, and actions still need to be better understood. Moreover, the concept is still in development, with many competing visions proposed by different actors, likely leading to completely different outcomes and impacts. In this context, this JUST2CE report aims to improve our understanding regarding the enablers and barriers to an inclusive, sustainable, and socially just transition to a CE. While previous research on CE barriers and enablers exists, it has either been carried out only in specific contexts or in specific sectors and hasn't used a social justice lens to analyse the topic. This research thus fills an important research gap by analysing CE enablers and barriers in a wide range of different contexts and sectors with a critical social justice and sustainability lens. The research question addressed by this report is thus: *what are the enablers and barriers to a just and sustainable circularity transition in diverse industries, settings, and socio-political, economic, and cultural contexts?*<sup>1</sup>

To answer this question, this report uses ten in-depth qualitative case studies of CE implementation in the Global North and South (D2.2 of the JUST2CE project) and analyses them using an inductive research approach (Gioia et al., 2012) based on the coding of key themes in the data. It then complements the results of this analysis with a co-production workshop organised within the JUST2CE consortium, where participants were asked to reflect on the key enablers and barriers to a just and sustainable circularity transition.

The results of this process led to the identification of a set of 12 enablers and 12 barriers (see table I). These barriers and enablers were developed as pairs, whereby each barrier to a just CE transition relates to an enabler that can address and resolve it. This set of 12 enablers and barriers can thus help academics and practitioners better understand both the systemic issues impeding a just circularity transition and how each issue could be overcome.

Table I: Summary of main barriers and enablers to a just and sustainable circularity transition evidenced in the 10 case studies and the co-production workshop.

Barriers	Enablers
Unequal consumption patterns, trade relations, and power dynamics that favour the Global North at the expense of the Global South.	Providing access to technology and financial resources for the Global South (e.g. open-source technologies, low-interest loans, and reparations).
Globalized economies and neoliberal trade relations that create excessive competitive pressure on firms.	Collaborative ecosystems of SSE actors that cooperate to move up the value chain and diversify their production. Protectionist policies to support sustainable practices.
Lack of employment and economic opportunities, systemic poverty, and inequalities.	Redistributive policies and progressive taxation to provide key public services, create jobs in sustainable sectors, and reskill, re-train, and re-educate the workforce.
Migration of people from depopulating, impoverished, and ageing rural areas to large cities, within or outside their countries.	Fostering re-localisation of economies and re-vitalising rural areas through CE initiatives such as regenerative agriculture and support for local cooperatives and social enterprises.

<sup>1</sup> Our report defines barrier and enabler as follows: Barrier: a problem, rule, or situation that prevents a transition a fair and sustainable circular economy and society. Enabler: something that positively contributes to and makes possible a transition a fair and sustainable circular economy and society.

Exploitation, poor working conditions, and discrimination (based on gender, class, education, race, ethnicity, origin, belief, age, ability etc...).

Enhancing social empowerment and worker rights by supporting worker-owned cooperatives, unions, and CSO and fostering horizontal management practices. Ensuring high wages and good working conditions by strengthening labour laws and regulations.

Business focus on profits and economic growth.

Transparently accounting for the social and environmental performance of businesses and organisations.

Environmental and health impacts of industry, which often disproportionately affect the most vulnerable workers and local populations.

Fostering sustainable and clean business models with no or low pollution (repair, reuse, regenerative agriculture etc.). When pollution occurs, creating a democratic dialogue with local populations and providing adequate remediation.

Power of large unsustainable linear industries and government support towards them.

Creating democratic and transparent governance from the bottom-up that empowers citizens and prevents lobbying and co-optation by powerful actors and industries.

Bad governance and regulation of CE and lack of funds, controls, and enforcement of CE policies.

Good government regulation to support CE and sufficient funding for effective enforcement and implementation of CE policies.

Imposition of a single hegemonic technocentric CE discourse focused on green growth, decoupling, resource efficiency, and productivism.

Governance process that democratically includes all citizens accounting for the plurality of alternative circularity discourses, including degrowth-oriented visions that focus on improving socio-ecological well-being within the biophysical boundaries of the Earth.

Lack of education and awareness on circularity and holistic understanding of socio-ecological systems.

Transdisciplinarity and co-creation of circularity knowledge and visions by citizens and vulnerable peoples. Revision of the educational curricula from kindergarten to tertiary education and vocation training in line with the above need for transdisciplinary learning and co-creation.

Focus on paid labour and disregard for the role of care work.

Encouraging non-commodified circular loops and forms of care and exchange in the SSE, such as repair cafés, tool sharing, and community composting.

Amongst these findings, a critical result was that CE has been implemented without enough democratic participation, transparency, and citizen engagement across virtually all case studies. This was a significant barrier leading to the imposition of a hegemonic technocentric path to circularity with negative sustainability implications. Indeed, our case studies evidenced that circularity projects and initiatives that were implemented from the top-down with a focus on technical solutions such as plastic recycling Zimbabwe and Morocco, steel production in Taranto, eWaste recovery in Italy and Ghana, advanced manufacturing districts in Sheffield, or waste valorisation and biotechnology in Spain, led to many socio-ecological impacts such as poor working conditions, social discrimination and the pollution of nearby ecosystems and communities.

The most crucial enabler that resulted from our research was the introduction of a diverse range of techniques advancing the democratisation of political and economic spheres. By democratisation we understand a variety of institutional, social, economic, cultural, political, educational, and organizational tools, innovations, and approaches that enable the inclusion and empowerment of citizens and workers to decide on the shape and form of their society and the much-needed circularity transition. This includes, for example, horizontal management practices and worker-owned cooperative production structures, where economic decisions about what and how to produce are taken inclusively and democratically, as well as bottom-up democratic governance and decision-making processes at all government levels, from the local to the national scale.

For example, the Lowerland and Minga cases evidenced how a social enterprise and a cooperative can establish democratic management structures that enabled them to empower their workers, improve working conditions, and regenerate local communities. They can thereby address the type of discrimination, exploitation, and socio-ecological impacts faced by workers and communities in virtually all other analyzed

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case studies. Moreover, the Minga cooperative and Lowerland farm were able to cooperate with other social enterprises and cooperatives, building collaborative business ecosystems that allowed them to be economically resilient despite highly competitive market conditions. Our research thus suggests that social, environmental, and economic sustainability and resilience can be built through greater democratic empowerment of workers and support for alternative local economies.

In addition to being valuable for academics and policymakers seeking to understand and develop CE policies for a just transition, our results will also contribute to the core outputs of work packages 4 and 5 of the JUST2CE project. Work package 4 is building an interactive decision-support tool to explore the socio-ecological implications of a just CE transition and how they may be addressed, and work package 5 is developing a macroeconomic model to better understand the impacts of different circularity transition policies and scenarios. Our identification and analysis of key enablers and barriers can feed into the impact categories, policies, scenarios, alternative solutions, and opportunities included and modeled in their work.

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## List of abbreviations

<b>CE</b>	<i>Circular Economy</i>
<b>EPR</b>	<i>Extended producer responsibility</i>
<b>GHG</b>	<i>Greenhouse gas</i>
<b>CSO</b>	<i>Community-based organisation</i>
<b>NGO</b>	<i>Non-governmental organisation</i>
<b>EU</b>	<i>European Union</i>
<b>SSE</b>	<i>Social and Solidarity Economy</i>
<b>AI</b>	<i>Artificial intelligence</i>
<b>WP</b>	<i>Work Package</i>



## 1. Introduction

The circular economy (CE) has become a crucial topic in the sustainability agenda within the last decade. It is now essential to many government policies, social organisation strategies, and business models seeking to improve social and environmental well-being. Nevertheless, the actual forms of implementation and possible impacts of CE strategies, policies, and actions remain poorly understood. Moreover, the concept is still in development, with many competing visions proposed by different actors, likely leading to completely different outcomes and impacts. Many academics have criticised the mainstream CE approach for lacking a social justice lens and imposing a technocentric CE vision without sufficient democratic consultation with citizens and vulnerable people (Calisto Friant, 2022; Hobson & Lynch, 2016; Moreau et al., 2017; Pansera et al., 2021; Suárez-Eiroa et al., 2021; Temesgen et al., 2019). Moreover, academics have also criticised the possibility of a growth-oriented CE that aims to decouple economic growth from environmental degradation as it fails to recognise the laws of thermodynamics and the inevitability of entropy (Giampietro & Funtowicz, 2020; Millar et al., 2019; Skene, 2018; Zink & Geyer, 2017).

In this context, the JUST2CE project aims to improve our understanding regarding how we may foster an inclusive, sustainable, and socially just transition to a CE. Following this objective, this report seeks to identify enablers and barriers to a just and sustainable circularity transition. While previous research on CE barriers and enablers exists, it has either been carried out only in specific contexts like, for example, the cities of Amsterdam and Rotterdam (Campbell-Johnston et al., 2019; Russell et al., 2020) or in specific sectors like food (Tseng et al., 2019), construction (Ababio & Lu, 2023), fashion (Dissanayake & Weerasinghe, 2022) or small and medium-size enterprises (Rizos et al., 2016; Scipioni et al., 2021). Moreover, the few studies that have looked at CE enablers and barriers in a broader context did not have a specific social justice lens and often took mainstream technocentric visions of CE for granted (de Jesus & Mendonça, 2018; Kirzherr et al., 2018).

This research thus fills an important research gap by analysing CE enablers and barriers in a wide range of different contexts and sectors with a critical social justice and sustainability lens. The research question addressed by this report is thus: *what are the enablers and barriers to a just and sustainable circularity transition in diverse industries, settings, and socio-political, economic, and cultural contexts?*<sup>2</sup>

To answer this question, this report uses ten in-depth qualitative case studies of CE implementation in the Global North and South and analyses them using an inductive research approach (Gioia et al., 2012). It then complements the results of this analysis with a co-production workshop organised within the JUST2CE consortium, where participants were asked to reflect on the key enablers and barriers to a just and sustainable circularity transition.

Results identify 12 enablers and 12 barriers that can help academics and practitioners better understand the systemic issues impeding a just circularity transition and how they can be overcome. Amongst these findings, a critical result was that CE has been implemented without enough democratic participation, transparency, and citizen engagement across virtually all case studies. This was a significant barrier leading to the imposition of a hegemonic technocentric path to circularity with substantial social and environmental impacts and implications. The most crucial enabler that resulted from our research was the introduction of a diverse range of techniques advancing the democratisation of political and economic spheres, which could address the major limitations of current CE approaches. By democratisation we understand a variety of institutional, social, economic, cultural, political, educational, and organizational tools, innovations, and approaches that enable the inclusion and empowerment of citizens and workers to decide on the shape and

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<sup>2</sup> Our report defines barrier and enabler as follows: Barrier: a problem, rule, or situation that prevents a transition a fair and sustainable circular economy and society. Enabler: something that positively contributes to and makes possible a transition a fair and sustainable circular economy and society.

form of their society and the much-needed circularity transition. This includes, for example, horizontal management practices and worker-owned cooperative production structures, where economic decisions about what and how to produce are taken inclusively and democratically, as well as bottom-up democratic governance and decision-making processes at all government levels, from the local to the national scale.

This report is structured as follows. Section 2 presents the methods, section 3 the results of both the inductive coding process and the co-production workshop. Section 4 discusses the results and summarises key findings and their sustainability implications, as well as their relevance for the outputs of other work packages of the JUST2CE project. The report ends with concluding remarks in section 5, highlighting how policymakers, practitioners, and academics may use our results.

## 2. Methods

This section describes the research design and methodology adopted in this report. It first explains the case study selection process (section 2.1) and then describes the methods used for the in-depth qualitative single case study research (section 2.2). Finally, it explains how the cross-case study analysis was conducted through a qualitative coding process and a co-production workshop.

### 2.1. Case study selection

Case studies were chosen following the original proposal for the JUST2CE project. These case studies were sought for their ability to uncover key enablers and barriers to a just CE transition (this report's main objective and research question). Moreover, our cases focus on strategic sectors indicated by the 2020 EU Circular Economy Action Plan, such as food production & waste, critical raw materials, complexities of value chains, and dependence on imported materials. Furthermore, we sought cases representing essential elements of circularity in its various socio-ecological and technical dimensions, such as industrial symbiosis, regenerative agriculture, biotechnology, informal waste recovery, and social and solidarity economies.

The included case studies thus combine different geographical and cultural contexts, circularity approaches, industries, governance modes, and levels of institutionalization to showcase a wide diversity of approaches and degrees of implementation of CE. It is also worth noting that the selection of case studies was partly shaped by our research team's social and academic networks, relations, and geographical locations. This led to the inclusion of the 10 case studies presented in Table 1. For each case study, one of the JUST2CE partner institutions carried out the investigation (please see annex 3 for further details on each case study).

Table 1: Description of 10 case studies and their responsible partner institution

Case study name and country	Description	Responsible partner
<b>AlgaEnergy, Spain</b>	Case study of an award-winning Spanish circular bioeconomy start-up.	Universitat Autònoma De Barcelona (UAB)
<b>Jealsa, Spain</b>	Case study of CE practices of a large fishing and canned product industry in Galicia, Spain.	Universidad De Vigo (UVigo)
<b>Sheffield Advanced Manufacturing District, UK</b>	Case study of one of Europe's largest research-led Advanced Manufacturing clusters in Sheffield, UK.	University Of Sheffield (USFD)

<b>E-waste in Campania Region, Italy</b>	Case study of the system for managing electronic waste (E-waste) in the Campania region of Italy.	Universita Degli Studi Di Napoli Parthenope (UPN)
<b>Minga Montermor Coop, Portugal</b>	Case study of a production and consumption cooperative proposing an alternative social and solidarity economy.	Centro De Estudos Sociais (CES)
<b>Morocco Plastics Recycling Value Chain</b>	Case study of Moroccan plastic waste recycling plans and their implementation at the municipal level.	Universidad De Vigo (UVigo)
<b>E-waste scrap yards and markets in Ghana</b>	Case study of Agbogbloshie, one of the largest informal E-waste scrap yards and markets in the world, located in the city of Accra, as well as Aboabo, another smaller informal E-waste scrap yard and market in the city of Kumasi.	Kumasi Hive
<b>Lowerland, South Africa</b>	Case study of a farm applying regenerative CE practices in a socially inclusive manner.	University Of Cape Town (UCP)
<b>PetrescoZim &amp; ZimPhos, Zimbabwe</b>	Case study of advanced recovery of PET plastics & industrial symbiosis between fertiliser and construction industries, in Zimbabwe.	Scientific And Industrial Research And Development Centre (SIRDC)
<b>Ilva Taranto, Italy</b>	Case study of the proposed citizen-lead CE strategy (Plan Taranto) for the transition of the entire city of Taranto (Italy) away from its dedication to a polluting steel-making industry.	Centro De Estudos Sociais (CES)

The 10 case studies in this research are unique and diverse in many respects: six are in Europe (in Italy, Spain, Portugal, United Kingdom), and four are in Africa (in Morocco, Ghana, Zimbabwe, South Africa<sup>3</sup>). The cases are thus in countries with different implementation modalities and institutional relations towards CE. Moreover, these case studies examine different industries (plastics, agriculture, fishing, fertilisers, electronics, steelworks, etc.), as well as different scales of analysis (from local to national initiatives) and different institutional structures (from informal recycling activities to large government megaprojects). Finally, the selection of cases includes well-recognized technological innovators (such as AlgaEnergy, and Sheffield Advanced Manufacturing District), important locations for global resource use, North-South geopolitics, recovery, and environmental (in)justice (such as Agbogbloshie and Taranto), and less familiar cases that show alternative approaches to circularity (such as Lowerland and Minga). The above selection thus has the kind of variation and exemplary status to allow us to uncover an analytically relevant selection of enablers and barriers to a just and sustainable circularity transition.

## 2.2. Case study research methods

In developing and carrying out the 10 case studies, the teams followed the methodological framework published in November 2021 by the JUST2CE project ([D2.1 Multidimensional Framework for the Case Studies](#)). This flexible and interdisciplinary framework draws upon empirical and conceptual elements from various fields, such as feminist ecological economics, political ecology, environmental justice, science & technology studies, and decolonial studies. In so doing, it develops a broad and holistic conceptual and methodological lens with which each research team responsible for a case study was able to research and

<sup>3</sup> An additional case study existed in Ethiopia, but we could not pursue the research there due to the civil war that erupted in the country in November 2020.

analyse the critical sustainability implications of the CE transition in a coherent and contextually appropriate manner.

The approach laid out in the framework and followed by the case studies departs from the initially proposed comparative approach outlined in the project proposal. This choice to open up our approaches to the case studies is based not only on the application of a process geared toward sensitizing the project to the relations of coloniality that shape research practice and theory but also emerges from the practices of anticipation, reflexivity, and responsiveness followed by the project from its inception. These practices were integrated into the project through training and workshops geared toward building practices of Responsible Research and Innovation (RRI) within all project activities, research sites, and research outputs (see D3.1). The process of developing the Multidimensional Framework included a series of workshops and group interventions targeted at decolonizing the project’s methodology, which elaborated and built on the principle of reflexivity. Through this process, we arrived at a shared methodology that allowed attention to the questions outlined in the project proposal while creating a space for building research practice and sharing expertise in a cross-culturally and cross-disciplinarily appropriate manner.

Based on the process by which we sought to decolonize our methods, the most important changes in the protocol emerged in response to the recognition that top-down, standardized visions of how the case studies should be conducted were inadequate for a number of reasons. These include the different disciplinary approaches and forms of expertise held by the different teams conducting the research. These changes also grew out of the necessity to create appropriate methods and questions tailored to the unique qualities of the individual cases. Finally, the Multidimensional Framework built on the shared commitment we arrived at to pursue research practice that would be responsive to local knowledge and practices, learning from these rather than engaging in extractive research practice that might uphold rather than help to dismantle the injustices and unequal power dynamics that are the project’s central analytic concerns.

Nonetheless, we actively sought to align the case studies with an eye to particular forms of intellectual coherence, even under conditions of diversity across numerous dimensions. As such, we held iterative sessions across the research design, implementation, and reporting activities to ensure sharing of experiences, insights, and knowledge to find and follow commonalities in the ongoing research activities. In line with the D2.1 Multidimensional Framework, all case studies broadly relied on qualitative methods, including structured or semi-structured interviews with key stakeholders on the studied subjects (see Table 2). Before data collection, each research group shared their interview protocols with the rest of the teams to gain feedback and ensure the consistency and coherence of each team’s methods with the overall project objectives. Interview protocols used across the case studies varied based on partner expertise and the particular socio-cultural context to allow greater adaptation to local conditions and provide space for the co-creation of knowledge with local actors in a decolonial manner. Nonetheless, all teams followed the same conceptual framework to maintain cross-case comparability. Following each case study analysis, all research teams developed a report using the same template, structure, and format.

Table 2: Number of interviews in each case study

Case study name	Responsible partner	Number of interviews
AlgaEnergy, Spain	UAB	11 interviews
Jealsa, Spain	UVigo	11 interviews
Sheffield Advanced Manufacturing District, UK	USFD	17 interviews
E-waste in Campania Region, Italy	UPN	9 interviews

<b>Minga Montermor Coop, Portugal</b>	CES	18 interviews
<b>Morocco Plastics Recycling Value Chain</b>	UVigo	21 interviews
<b>E-waste scrap yards and markets in Ghana</b>	Kumasi Hive	45 interviews
<b>Lowerland, South Africa</b>	UCP	10 interviews
<b>PetrescoZim &amp; ZimPhos, Zimbabwe</b>	SIRDC	32 interviews

Research on the 10 case studies was carried out from October 2021 to February 2023. Throughout these 16 months, we maintained a living dialogue among case studies through various workshops, trainings, and activities that ensured mutual understanding and learning (see Table 3). These activities reinforced the methodological coherence and coordination of the research, especially given the heterogeneity of the contexts and diversity of cases. In addition to the activities listed in Table 3, we held 1 to 2 webinars and side events per month in collaboration with the EU-funded [RETRACE](#) & [PROSPERA](#) projects. They gave further opportunities for all teams to share ideas, learn from one another, and discuss their progress and case studies. Each workshop and training session's recordings, notes, and outcomes were stored and shared with all project partners through a cloud service system to build on the knowledge accumulated throughout the project's implementation and foster continuous learning opportunities.

Table 3: Activities carried out for cross-case-study coordination and dialogue.

<b>Activity</b>	<b>Date</b>	<b>Location</b>
<b>1st training session (hybrid) on gender dimension, just transition, environmental justice, and decolonisation by CES</b>	19-20th October 2021	Coimbra (and online)
<b>2nd training session (virtual) on "how to conduct an interview" (2h) by UVIGO</b>	25th January 2022 January	Online
<b>3rd training session (virtual) on "How to write a case study" (4h) by UCT</b>	30th March 2022	Online
<b>4th training session (virtual) on "The Basics of Qualitative Analysis" (2h) by Uvigo</b>	28th September 2022	Online
<b>WP2 plenary meetings (every 1-2 months: September-KOM, October, December, March, May, July-Partner meeting)</b>	October 2021 – June 2022	Online
<b>Publication of D2.1: Multidimensional Framework for Case studies</b>	November 2021	N/A
<b>Submission of interview protocol (by each case study)</b>	February 2022	N/A
<b>Presentation of the multidimensional framework and collection of feedback</b>	February 2022	N/A
<b>Interview protocol internal peer-review</b>	March 2022	N/A
<b>Launch of a survey to link cases (creation of clusters)</b>	April 2022	N/A
<b>Cluster meetings among 2-3 cases</b>	May-June 2022	Online
<b>Co-production workshop</b>	July 2022	Thessaloniki (Greece)
<b>Submission of a mid-term report by each single case-study</b>	July 2022	N/A

<b>Mid-term report peer-review (first round)</b>	September 2022	N/A
<b>Single case-study presentations and discussion</b>	September – December 2022	Online
<b>Single case-study final report submission</b>	December 2022	N/A
<b>Single case-study final report review (second round)</b>	January 2023	N/A
<b>Finalization of D2.2: 10 case study reports</b>	February 2023	N/A

In addition to the training sessions and workshops mentioned above, the case studies benefited from 3 rounds of internal peer review, where different teams revised draft versions of the case studies to provide valuable and constructive feedback (see Table 4 with review rounds and respective teams). The first round was a revision of each case study's interview protocol, the second was a peer review of each case study's mid-term report, and the last was a peer review of each case study's final report. For each round of revision, we had a comprehensive review template to facilitate constructive comments and coherence with the overall methodological framework, which guided all case studies.

Table 4: Internal peer-review rounds and reviewers

<b>Case Study and Institution</b>	<b>Reviewer of Interview Protocols (March 2022)</b>	<b>Reviewer of Midterm Case Study Reports (October 2022)</b>	<b>Reviewer of Final Case Study Reports (January 2023)</b>
<b>AlgaEnergy case by UAB</b>	USFD	UVIGO	UVIGO
<b>Jealsa case by UVIGO</b>	CES	SIRDC	CES
<b>Sheffield case by USFD</b>	UCT	CES	CES
<b>Campania case by UPN</b>	UVigo	KUMASI	CES
<b>Minga case by CES</b>	UPN	UCT	USFD
<b>Morocco case by UVIGO</b>	SIRDC	UAB	UAB
<b>Ghana case by Kumasi Hive</b>	CES	UPN	UPN
<b>Lowerland case by UCT</b>	UAB	CES	USFD
<b>Zimbabwe case by SIRDC</b>	UVigo	UAB	UAB
<b>Taranto case by CES</b>	KUMASI	USFD	USFD

## 2.3. Cross-case study analysis

The cross-case study analysis has on two main steps: first, a qualitative analysis of case study results, and second, a co-production workshop to complement and validate our findings. The following sections will describe both methodological steps.

## 2.3.1 Qualitative analysis

The qualitative analysis is based on a coding process inspired by an adapted version of the Gioia Methodology (Gioia et al., 2012) as applied by Pansera et al., (2022). Gioia Methodology is a well-recognised method for uncovering theoretical and conceptual knowledge from qualitative data through a series of coding and aggregating processes (Gioia et al., 2012). It has been applied by other researchers on similar topics related to CE, such as analysing business experimentation and capability for CE (Bocken & Konietzko, 2022), as well as examining practices of sustainable CE logistics (Jayarathna et al., 2023). However, the approach has been criticised for overly relying on empirical case-study data and lacking a better theoretical and contextual understanding and analysis of broader societal structures, systemic processes, and material conditions (Mees-Buss et al., 2022). We seek to address these shortcomings by following the approach of Pansera et al., (2022), which used a pre-developed theoretical framework to better and more systematically analyse the data. We thus developed a theoretical framework to help us analyse and make sense of our results while remaining open to the emergence of un-hypothesised concepts and explanations from case study results. Setting an initial theoretical and conceptual framework also allows us to evidence elements missing or absent from the collected empirical data, which might nonetheless be vital to understanding the studied topic.

The theoretical framework used for the analysis of results is based on the [Multidimensional Framework mentioned above](#), as well as two other key deliverables of the Just2CE project: [D.1.2 Framing CE in the context of Global Environmental Justice](#); [D.1.3 Gender Justice and CE](#); and [D.1.4 Labour in the transition to the CE](#). It is hence based on the latest research on circularity from the fields of degrowth, sustainability, environmental justice, science and technology studies, political ecology, ecological economics, ecofeminism, decolonial studies, and post-development studies (Bauwens, 2021; Calisto Friant, 2022; Calzolari et al., 2022, 2022; Clube & Tennant, 2023; Genovese & Pansera, 2020; Hobson & Lynch, 2016; James, 2022; MahmoudGonbadi et al., 2021, 2021, 2021; Morrow & Davies, 2021; Pansera et al., 2021, 2021; Pla-Julián & Guevara, 2019; Schröder, Bengtsson, et al., 2019; Suárez-Eiroa et al., 2019, 2021, 2021, 2021; Velenturf & Purnell, 2021; Zwiers et al., 2020). These diverse theoretical foundations were the basis for the development of a preliminary codebook to help us analyse the data in a holistic and coherent manner (see Table 5). The codebook consists of a predetermined set of constructs and their associated definitions and characteristics, which were used as initial coding categories to analyse the 10 case studies.

As the analysis was carried out, these initial codes were adapted, refined, expanded, and regrouped into topics, themes, and aggregate dimensions based on the results emanating from the data (see Table 6 and Annex 1 for full coding results). While finding topics, themes, and aggregate dimensions in the data, we focused on uncovering the core enablers and barriers to a just and sustainable circularity transition (this deliverable's core research question). The coding was carried out on the ten final case study reports developed by the Just2CE project. The NVivo12 software was used for coding and data analysis. Once all reports were carefully reviewed and coded, we revised all resulting topics, themes, and aggregate dimensions to ensure consistency and prevent duplicate elements and codes.

In the analysis process, we went back and forth from the empirical evidence to our theoretical background and its initial set of codes following an iterative approach (Gioia et al., 2012). This process allowed us to make sense of the data by helping us build a comprehensive understanding of the specific context and empirical evidence found in each case study, as well as a broader comprehension of societal structures, theoretical approaches, and systemic conditions that may affect or explain the results in our case studies. This process led to the identification of 222 topics grouped in 27 themes and 5 aggregate dimensions (see Annex 1 for full coding results).



Table 5: Preliminary Codebook

<b>Codes</b>	<b>Description</b>
<b>Geopolitics</b>	North/South – Centre/Periphery relations (including southerners in the north and northerners in the south).
<b>Gender and sex</b>	Inequalities, care, discrimination, harassment, patriarchy, hierarchy, violence, etc.
<b>Labour and employment</b>	Job creation and job loss (in what industries and geographic regions), formality/informality, working conditions, skilling/reskilling
<b>Class</b>	Ownership of means of production; power of unions, cooperative and community-owned production structures vs. capitalist private poverty relations and forms of alienation, oppression, and exploitation
<b>Technologies</b>	Innovations and their benefits and risks; ownership and distribution of new technologies.
<b>Public policies and regulations</b>	Local (municipal), regional/provincial, national/federal, and international policies, strategies, plans, regulations, directives, ordinances, treaties, agreements, etc.
<b>Governance</b>	Forms of managing and organising socio-ecological systems (public-private partnerships, citizen engagement, direct-democracy, bureaucratic control, etc.).
<b>Business and markets</b>	Business models and market-based instruments (certifications and other voluntary multi-stakeholder initiatives and business practices).
<b>Knowledge, epistemology, and coloniality</b>	Ownership and production of knowledge (modernism, western universalism, and positivism vs radical pluralism, transdisciplinarity, and decoloniality).
<b>Alternative local economies</b>	Diverse forms of self-sufficiency, autonomy, and deglobalised value chains and production and consumption systems.
<b>Globalised supply chains and their impacts</b>	Waste disposal and raw material extraction in the Global South. Global trade relations and ecologically unequal exchange
<b>Social resistance, contestation, and social movements</b>	Protests, social unrest, strikes, occupations, civil disobedience, etc.
<b>Worldviews, ontologies, and discourses</b>	Different stories, futures, explanations, understandings, visions, assumptions, framing, and other contrasting discursive, ontological, and cultural elements.
<b>Discrimination, especially along racial and ethnic lines</b>	Historical and current forms of racism, ableism, ageism, and other relations of discrimination, alienation, and exploitation.
<b>Health and well-being</b>	Spiritual fulfillment and overall psychological and fiscal health and well-being.
<b>Social structures, harmony, and conviviality</b>	Social relations, cultural practices, and community bonds and networks.
<b>Resource limits</b>	Material and energy flows and availability of key resources.
<b>Climate Change</b>	Renewable energy, fossil fuels, GHG emissions, climate change mitigation, impacts, and adaptation.
<b>Water</b>	Water availability and quality, including droughts, floods, water pollution, etc.
<b>Air pollution</b>	Persistent organic pollutants, CFC, PM, NOx, SOx, CO, etc.
<b>Relations between human and non-human nature</b>	Rights of Mother Earth, management and respect for terrestrial and marine ecosystems and biodiversity



## 2.3.2. Co-production workshop

In addition to the coding process, we held a co-production workshop on the enablers and barriers to a just and sustainable circularity transition with all the JUST2CE project partners on the 9th of June 2023 in Barcelona, Spain. The workshop had 21 participants, lasted 1 hour and 30 minutes, and was conducted in a hybrid format (both online and in person) to ensure all project partners could participate. During the workshop, participants were split into five groups representing the core aggregate dimensions emanating from the coding process. The five groups were asked to discuss enablers and barriers to a just and sustainable circularity transition as well as the interaction and interrelations between the enablers and barriers they found. Each group wrote down their results on a large sheet of paper and presented their findings to the other participants. After the presentations, each participant was given 10 points to vote on which barriers and enablers they found most important for a just and sustainable circularity transition (see Annex 2 for the full results of the workshop). The co-production workshop helped us complement and strengthen the outcomes of the coding process by showing what enablers and barriers our partners found most important and comparing this with the results of our coding. It thus helped us validate our findings and identify missing elements relevant to coherently answer our research question.

## 3. Results

As can be seen from Table 6, the 10 case studies covered a wide range of themes touching on very diverse issues. Social themes related to labour, social inclusiveness, governance, public policies, discursive visions of CE, and sustainable business practices received the most attention. On the other hand, themes related to environmental issues and benefits were less often discussed in the case studies. The following subsections will carefully examine the coding results for each of the five different aggregate dimensions and compare them with the outcomes of the co-production workshop.

Table 6: Summary of coding results with all themes and aggregate dimensions

Aggregate dimension	Themes	Code Count
<b>Social justice and inclusion</b>	Gender and sexual equity	51
	Labour opportunities and employment conditions	235
	Social and solidarity economies	107
	Health and well-being	45
	Social structures and relations	55
	Social inclusiveness and discrimination	128
	<b>Total</b>	<b>621</b>
<b>Politics and governance</b>	Public policy levels	85
	Governance problems	173
	Governance structures	122
	Public policies	139
	Geopolitics	38
	Global value chains and trade	42
	Social resistance, contestation, and social movements	64
	Criminality	22
<b>Total</b>	<b>685</b>	
	Education, knowledge, and epistemology	73

<b>Discourse, knowledge, and worldviews</b>	Crisis and risks	29
	Technocentric CE discourses	179
	Alternative CE discourses	133
	Discursive power and conflicts	123
	<b>Total</b>	<b>537</b>
<b>Ecological sustainability</b>	Climate Change	20
	Environmental impacts	101
	Environmental benefits	24
	<b>Total</b>	<b>145</b>
<b>Business models and value retention options</b>	Sustainable and circular business practices	198
	Unsustainable business practices	61
	General business practices	88
	Market structures	85
	Value retention options	88
	<b>Total</b>	<b>520</b>

## 3.1. Social justice and inclusion

The coding results for the aggregate dimension “social justice and inclusion” can be seen in Table 7. With 621 total codes, it is the second most discussed of the five aggregate dimensions. The theme with the greatest number of codes in all the results was “labour opportunities and employment conditions”. One key result across all case studies was thus the importance of accounting not only for the number of jobs created or lost by a CE transition but also acknowledging the quality of those jobs by including crucial social issues such as incomes, social benefits, work-life balance, skill training, maternity leave, gender equity, and non-discrimination. As an interviewee from the Taranto case mentioned:

*“without health there is no work, there is no income, and the family is destroyed. The close bond between workers and citizens lies precisely in this. The worker must be protected, dignified, and have all the security. Without this we cannot speak of work and industrialization” (JUST2CE D2.2, 2023 p185)*

The above quote evidences the importance of healthy and safe working conditions and dignified jobs for a just circularity transition. Moreover, it stresses the critical barriers posed by the health impacts of unsustainable industries on neighbouring populations and communities. Most of our case studies reported severe environmental consequences due to linear industrial activities that had not been properly remediated. This was especially prevalent in Taranto, where years of steel production have caused excessive exposure to PM10, SO2 and heavy metals, which are associated with many serious diseases such as neurological problems, cancer, cardiovascular diseases, kidney illnesses, and respiratory infections. Health impacts also resulted from CE activities such as in Zimbabwe, Morocco, and Ghana cases, where recycling and waste treatment industries brought about illnesses and health impacts for both workers and local communities. This shows the key importance of considering health impacts related to CE activities, as they are not necessarily “clean”, and their health impacts often disproportionately affect already marginalised and vulnerable sectors that have no choice but to work in those industries or live nearby.

Results also found that when CE activities create jobs, they don’t always create jobs for the most vulnerable and marginalized sectors, such as low-skilled and migrant workers. This is notably the case in Sheffield, where the Advanced Manufacturing Plant brought mostly high-skilled jobs while creating few opportunities for the working-class people who live in the area.

Another critical issue related to jobs was the topic of formality and informality. Many case studies addressed informal workers in the Global South (including Ghana, Zimbabwe, and Morocco), providing essential recovery services such as e-waste and plastic waste sorting and preparation for recycling. In those cases, the lack of decent jobs and employment opportunities led many people to migrate from rural areas to large cities. In those cities, migrant workers often ended up working in the informal waste picking, collection, and recovery sector due to the lack of other economic opportunities. Informal workers in our case studies in Ghana, Zimbabwe, and Morocco reported unsafe and unhealthy working conditions and insufficient incomes due to the low prices paid for recovered wastes. They were also often the victims of social stigma and discrimination due to the negative socio-cultural perceptions of their work. The conditions of exploitation and discrimination faced by informal waste workers are clearly exemplified by this quote from the Moroccan case study:

*“They are called bouara, which means “garbage men”, as if they themselves were identified with the waste of society. They frequently lack basic protection equipment for their work and manipulate waste with their bare hands, a condition that reinforces their social exclusion. In addition to the labour risks they face daily, they are socially marginalized and often harassed by police or private security guards while doing their job in middle class neighbourhoods. On the other hand, they are responsible for most of the waste recycling that is done in Morocco –as in other countries from the Global South–, and formal companies from the recycling sector benefit from their work, which is carried out in unsafe conditions.” (JUST2CE D2.2, 2023 p389)*

The case studies found many other forms of discrimination that created severe barriers to a just CE transition, including age, gender, race, origin, ethnic, and class discrimination. Gender discrimination was found to be particularly problematic and often occurred due to the disproportional amount of unpaid care work that women perform in relation to waste and the reproduction of life, and due to the lower socio-economic position that women occupy in the labor market. This quote from the Zimbabwe report clearly illustrates how gender discrimination operates in relation to CE:

*“Because of their overrepresentation among vulnerable groups of the population, women are often severely affected by unsustainable production patterns through various channels. Women are dependent for subsistence on strained natural resources; women are affected by poor labour conditions in a “feminised” workforce; women provide a large amount of informal and sometimes unpaid work related to waste management; and women are involuntarily and without their knowledge exposed to harmful products and chemicals.” (JUST2CE D2.2, 2023 p91)*

Nevertheless, it is also worth noting that some forms of discrimination were not addressed or found throughout the results, such as discrimination due to sexual orientation, gender identity, family status, disability, religion, political opinion, and belief. Further research is thus needed on the topic of discrimination to better understand its nature and scope.

From the above results, it is clear that a significant barrier to a just CE transition is the lack of quality jobs and economic opportunities that provide decent incomes and working conditions. On the other hand, a strong enabler is the creation of quality employment through CE activities and the reskilling, training, and re-education of the workforce towards new sustainable sectors such as regenerative organic agriculture, repair, remanufacturing, and refurbishing.

Support for the informal sector is also vital. It can include providing financial resources, tools, technologies, skilling, and education, ensuring fair prices for recovered materials, and supporting local informal worker organisations and cooperatives. Formalising those workers is not necessarily the solution; our results show that government, businesses, and informal workers should rather collaborate as equals and create strong

democratic partnerships that ensure fair working conditions and incomes. The Morocco case study shows how this can be done as informal recyclers formed a cooperative called Attawafouk to improve their working conditions. The cooperative obtained the support of local and national government institutions to legally work in the local landfill and purchase machinery and protective equipment. This partnership ended up being highly effective at reconciling the needs of informal workers with those of government officials and industrial actors.

Another key enabler to addressing discrimination issues and empowering informal and formal workers is to support social and solidarity economy (SSE) actors and institutions<sup>4</sup>. This includes fostering CSOs, and NGOs that work towards socio-ecological goals and aspirations, such as local currencies, tool-sharing initiatives, repair cafés, urban agriculture projects, community composting, etc. Not only do these activities provide key social benefits, but they also maintain the value of scarce natural resources by circulating tools, organic waste, and other materials through sustainable loops of care, reuse, and recovery. This was evidenced in the Minga cooperative case study, which not only revitalized community economies by selling local products and services and promoting a local currency (the “Mor”) but also brought about sustainable circular practices such as packaging reuse, food waste reduction, and composting.

Supporting the social and solidarity economy also includes fostering worker unions, worker-owned cooperatives, and social enterprises that create more democratic workplaces and can significantly improve working conditions. Results from the Minga cooperative in Portugal, the Attawafouk cooperative in Morocco, and the Lowerland social enterprise show these alternative economic structures can help bring dignity to discriminated workers and break class barriers and relations of exploitation between employees and employers. Furthermore, by having horizontal and democratic decision-making processes, they can create equal power relations between all workers, which fosters equity and inclusiveness in terms of gender, origin, race, ethnicity, etc.

These democratic practices in the workplace are in stark contrast with the horizontal and top-down work relations that dominated in other case studies, such as in Jealsa, Taranto, and Zimbabwe. For instance, an interviewed worker from Petrecozim in Zimbabwe said:

*“We must be involved in those meetings where targets are set so that we will not be surprised by very high workload. We must be part of the planning and in those meetings we will be able to talk about poor workstations, inadequate tools, inadequate PPE and sanitation issues” (JUST2CE D2.2, 2023 p85)*

The above quote exemplifies the extent to which the lack of democracy and workers' participation in their organization's decision-making processes can lead to discrimination, exploitation, and health and safety issues. Good jobs, thereby, necessitate not only decent wages, benefits, and working conditions but also effective workplace democracy and inclusiveness.

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<sup>4</sup> The Social and Solidarity Economy (SSE) is defined by the ILO as a concept that “encompasses enterprises, organizations and other entities that are engaged in economic, social, and environmental activities to serve the collective and/or general interest, which are based on the principles of voluntary cooperation and mutual aid, democratic and/or participatory governance, autonomy and independence, and the primacy of people and social purpose over capital in the distribution and use of surpluses and/or profits as well as assets. [...] According to national circumstances, the SSE includes cooperatives, associations, mutual societies, foundations, social enterprises, self-help groups and other entities operating in accordance with the values and principles of the SSE.” (ILO, 2022)

Table 7: Results of the coding process for the aggregate dimension “social justice and inclusion”

Themes	Topics	Code Count
<b>Gender and sexual equity</b>	Gender inclusiveness	19
	Gender discrimination	24
	Women movements	3
	Key role of women for CE	2
	Gender pay gap	3
	<b>Total</b>	<b>51</b>
<b>Labour opportunities and employment conditions</b>	Job creation	27
	Job loss	9
	Poor working conditions	33
	Good working conditions	24
	Informality and formalization	42
	Temporary work	1
	Sufficient wages and income	5
	Insufficient wages and income	18
	Education, skills, and training	26
	Stigma against waste workers	12
	Child labour	8
	Unemployment and lack of jobs	16
	Youth employment and unemployment	4
	Migration of workforce	10
	<b>Total</b>	<b>235</b>
<b>Social and solidarity economies</b>	CSOs and NGOs	20
	Unions	13
	Local currencies	7
	Gift and sharing economy	7
	Alternative local economies	13
	Collaboration between SSE groups and grassroots organising	9
	Microfinance	2
	Conviviality	8
	Care	9
	Worker-owned cooperative firms	18
	Open source, open access, and creative commons	1
	<b>Total</b>	<b>107</b>
<b>Health and well-being</b>	Health benefits and impacts	43
	Hygiene or health problems with recovered products	1
	Health impacts	1
	<b>Total</b>	<b>45</b>
<b>Social structures and relations</b>	Religion	1
	Willingness or not to pay more for circular product or service	5
	Ageing	2
	De-industrialisation	13
	Access to transport	5
	Foreign population	8
	Depopulation	11
	Social resilience and harmony	10
	<b>Total</b>	<b>55</b>
<b>Social inclusiveness and discrimination</b>	Distribution of costs and benefits of CE	55
	Poverty and exploitation	26
	Age discrimination	2

Racial and ethnic discrimination	8
Class discrimination	22
Empowering and regenerating people	9
Social welfare state	1
Colonial History	5
<b>Total</b>	<b>128</b>

The co-production workshop helped complement, nuance, and validate the results from the coding process. Overall, they both found similar enablers and barriers. The most voted barrier--the assumption that social justice is static and reduced to an indicator such as job creation alone--is related to the coding results that emphasise the need for quality employment. Moreover, the most voted enablers--to create multi-stakeholder platforms and participatory mechanisms that ensure all voices are heard--align with the coding results regarding the need to improve collaboration with unions, CSO, and other SSE actors to improve workplace democracy and working conditions.

The workshop also led to some new barriers, which were not present in the coding, such as the trade-off between different social priorities and the focus on paid labour compared to reproductive care work. On the other hand, the enablers to address these issues that the workshop evidenced are similar to those found in the coding process. Indeed, SSE initiatives such as worker-owned cooperatives, unions, and community composting initiatives can create an alternative to capitalist labour relations and foster a myriad of non-commodified exchanges of value and relationships of care.

Some other new elements brought about by the workshop are the barriers caused by the various perceptions of social justice and its related enablers regarding the need to foster shared wealth and access to social and public services and to create an ongoing inquiry on the meaning of social justice. Despite not being addressed in the case studies, these are vital components, as public services can create alternative non-monetised systems of provision that reduce inequalities and help the most vulnerable sectors of the population (Hickel, 2021; Jackson, 2016). Moreover, social justice is a complex term that must be continuously negotiated, questioned, and co-created to ensure fair distribution of the costs and benefits of a CE transition.

Table 8: Results of the co-production workshop on the enablers and barriers to a just and sustainable circularity transition related to “social justice and inclusion” \*

Social justice and inclusion	
Barriers	Enablers
- Standardisation of CE application without considering local context (0 votes)	- <b>Creation of multistakeholder platforms so all voices can be heard and context-related regulations and policies can be established (5 votes)</b>
- Corruption in the design of systems to implement CE that foster certain unsustainable economic interests (3 votes)	- Transparent material flows and consequences of CE actions to increase understanding and awareness (0 votes)
- <b>Assumption that social justice is static and reduced to an indicator (5 votes)</b>	- <b>Shared value systems not only measured by monetised system (5 votes)</b>
- Various perceptions of the meaning of social justice and how to implement them (2 votes)	- Equity and shared wealth (not only money) and access to social and public services (3 votes)

- Trade-offs between different social priorities, who decides what is done/implemented <b>(0 votes)</b>	- Ongoing inquiry into social justice with an emphasis on the continuous emergence of what social justice means <b>(1 vote)</b>
- Focus on paid labour and productivity, disregard for unpaid labour <b>(1 vote)</b>	- <b>Don't be bullied by existing choices, create alternative path (4 votes)</b>
	- <b>Reframing understanding of labour and ending capitalist labour relations (5 votes)</b>

\* numbers in parenthesis represent the total votes given to the barrier/enabler by participants at the end of the workshop; barriers/enablers with more than 4 votes were placed in bold.

## 3.2. Politics and governance

"Politics and governance" is the aggregate dimension with the most codes (685 in total). It thus contains some of the most discussed topics in the case studies. The theme with the most topics and codes from this aggregate dimension is "governance problems" with 173 total codes. Some of the most occurring governance problems were "lack of democracy and unequal power relations" and "government favouring economic interests of large industry". These problems were evident in 7 out of 10 case studies. They are significant impediments to a just CE transition as they curtail the democratic creation of a desirable circular future by imposing the will of powerful actors above the aspirations and needs of other citizens. These issues can be clearly evidenced in these two quotes from the Minga case study:

*"The top-down policy narrative alienates most of the elderly Minga collaborators. They feel that policymakers substantially dismiss local and experience-based knowledge and fear CE regulation could once again create obstacles to their circular practices."*

*"By dismissing local knowledge about specific territories and modes of circularity already in place, ill-informed policies may further increase depopulation and desertification processes instead of helping to fix them."* (JUST2CE D2.2, 2023 p427 and p453)

Other critical governance problems found in the case studies include "bad, insufficient, or excessive regulation", "lack of support for CE initiatives", "lack of government enforcement", "lack of CE infrastructure", "lack of funds", "lack of transparency", "too high" or "too low" taxes, "too much bureaucracy", and "lack of long-term vision". A recurring problem throughout the results was thus a lack of effective and strong government intervention to support a just CE transition and the persistence of regulations and incentives that favor unsustainable linear industries like fossil fuels, industrial agriculture, and single-use packaging. Moreover, these governance problems often result from broader geopolitical trends evidenced in our research, such as the unequal power and trade relations between the Global North and South (EU and Africa) and the lack of access to technologies and financial resources.

These governance problems often led to wholesale social resistance and contestation, such as the resistance against polluting industries in Taranto, Galicia, and Zimbabwe. It also evidenced class conflicts related to the preservation or destruction of working-class heritage, such as the historical narrative surrounding the Battle of Orgreave near Sheffield, England. These contestations show the negative results of a CE transition that does not consider social justice and the democratic governance and inclusion of citizens. Nonetheless, it also provides a potential enabler to a just CE when such resistance leads to better governance arrangements and a fairer distribution of the costs and benefits of a CE transition. Unfortunately, this was not the case in the selected cases, but there is ample evidence of successful transformative social movements (Maldonado-Villalpando et al., 2022; Martinez-Alier, 2021; Nirmal & Rocheleau, 2019).



Some criminality precluded a just CE transition in our case studies, such as illegal waste trade to the Global South, illegal disposal and burning of waste, and the cannibalisation of valuable secondary materials. These problems were, however, only found in the case of Campania, where government failure to address waste problems had led to a serious waste crisis and a rise in criminality. Yet, the actual scale and significance of these illegal activities is rather unclear, so more research is needed to better understand and address these issues.

A wide range of different governance structures and public policies were discussed to address these barriers. “greater democracy and participation” was mentioned in 7 of the 10 case studies as a key enabler to improve CE governance and implementation and ensure a fair distribution of costs and benefits. For instance, the Campania case concludes that:

*“participatory approaches involving all the stakeholders are required to assure that distributional effects are taken into account and adequately addressed” (JUST2CE D2.2, 2023 p135).*

Other important enablers include supporting CE and social and solidarity economy initiatives, funding CE research and innovation, fostering education and awareness-raising programs on CE, creating policies that equitably redistribute wealth and income, establishing taxes on polluting activities, and creating extended producer responsibility systems. All in all, the importance of effective, holistic, and systemic socio-ecological policy and governance for a just CE transition is vital, as exemplified by these reflections from the Zimbabwe case study:

*“The role of the government in ensuring and enforcing mandates for adequate waste management, employment targets and standards, and social and labour protections cannot be overemphasized. Governance actions must not just enable inclusion but also create mechanisms to enforce inclusive EPR, protect waste pickers’ access to waste, prevent monopoly power and greenwashing, promote partnerships, support entrepreneurship and empower the informal waste economy in actualising EPR, while ensuring strict mechanisms for data traceability and accountability of the industry.” (JUST2CE D2.2, 2023 p98-99).*

Table 9: Results of the coding process for the aggregate dimension “politics and governance”

Themes	Topics	Code Count
<b>Public policy levels</b>	Local government	19
	Regional or provincial government	10
	National government	41
	EU government	13
	International government	2
	<b>Total</b>	<b>85</b>
<b>Governance problems</b>	Politicians breaking promises	2
	Political disputes on control of waste resources	5
	Lack of support for CE initiatives	10
	Lack of government enforcement	18
	Lack of waste collection and recovery infrastructure	4
	Lack of democracy and unequal power relations	37
	Lack of government funds and financial capacity	1
	Government favouring economic interests of large industry	20
	Lack of organised civil society	2
	Taxes too high	6
	Taxes and disposal fees too low	3
	Lack of transparency	8
	Free riders not contributing to CE	7



	Too much bureaucracy	6
	Clientelism and patronalism	6
	Lack of long-term vision of government	7
	Lack of trust in government	8
	Bad, insufficient, or excessive regulation	23
	<b>Total</b>	<b>173</b>
<b>Governance structures</b>	Public-private partnerships	25
	Strong government intervention	10
	Democracy and participation	41
	Informal rules and structures	14
	Good government control and monitoring	14
	Transparency and accountability	3
	Market-based governance	15
	<b>Total</b>	<b>122</b>
<b>Public policies</b>	Incentives or investments for CE research and development	11
	Improved collection and recovery infrastructure and technology	12
	Economic support, subsidies, and incentives for CE activities	27
	CE regulations and norms	19
	Communication, education, and awareness-raising policies	24
	Redistributive policies	6
	Support for social and solidarity economy	10
	Polluter Pays Principle and taxes, fees, and tariffs	13
	Extended Producer Responsibility (EPR)	17
	<b>Total</b>	<b>139</b>
<b>Geopolitics</b>	Southerners in the North	4
	Lack of access to technology	1
	North-South relations and dynamics	6
	Externalisation of environmental and social impacts from Global North to South	5
	Strategic importance of certain industry	6
	South-South Cooperation	2
	Unequal trade and power relations	14
	<b>Total</b>	<b>38</b>
<b>Global value chains and trade</b>	Waste trade	18
	Global value chains and resource trade	11
	Too much trade liberalisation	4
	Different labour costs in different countries	2
	Transport costs and problems	4
	Supplier sustainability requirements	3
	<b>Total</b>	<b>42</b>
<b>Social resistance, contestation, and social movements</b>	Resistance to the opening of waste recovery infrastructure	2
	Worker strikes and class conflict	15
	Legal prosecution of polluting firms	5
	Social opposition to polluting industry	22
	Polluting industry buying land and displacing residents	6
	Social polarisation and disagreement	9
	Conflict over biodiversity and access to ecosystems	5
	<b>Total</b>	<b>64</b>
<b>Criminality</b>	Illegal waste trade	8
	Illegal pollution	7
	Sabotage	1
	Illegal cannibalisation of waste	6
	<b>Total</b>	<b>22</b>

The results of the co-production workshop are largely in line with those of the coding. Indeed, the need for more “citizen participation” and the “political focus on certain disciplines and social actors” was voted as the most important enabler and barrier respectively. This reiterates the importance of creating democratic and inclusive institutions for a just CE transition, which was one of the key findings of the case study coding process. Other similar barriers relate to knowledge, education, and the need to improve awareness of CE amongst citizens and politicians.

Some new elements also emerged from the workshop, such as the academic dynamics that focus on single technical disciplines and econometric analysis that fail to see the whole complexity, and the need for inter-disciplinary governance that includes a broader range of experts and academics. Another noteworthy barrier that came out from the workshop was the lack of inter-ministerial connections and cooperation for CE and the need for multi-departmental governance processes to address this.

Table 10: Results of the co-production workshop on the enablers and barriers to a just and sustainable circularity transition related to “politics and governance” \*

Politics and governance	
Barriers	Enablers
- <b>Science-policy interface focus on certain disciplines and actors (4 votes)</b>	- Inclusive governance processes ( <b>2 votes</b> )
- Slow and outdated policy focus on technical fixes ( <b>1 vote</b> )	- <b>Citizen participation (9 votes)</b>
- No knowledge on CE policies from citizens ( <b>3 votes</b> )	- Multistakeholder platforms ( <b>2 votes</b> )
- Academic dynamics ( <b>1 vote</b> )	- Education and awareness raising on CE to politicians ( <b>2 votes</b> )
- Lack of inter-ministerial connections ( <b>3 votes</b> )	-Raising awareness of citizens on CE and its impacts ( <b>0 votes</b> )
- Lack of financial resources ( <b>0 votes</b> )	- Interdisciplinarity ( <b>3 votes</b> )
	- Multi-departmental governance processes ( <b>1 vote</b> )

\* numbers in parenthesis represent the total votes given to the barrier/enabler by participants at the end of the workshop; barriers/enablers with more than 4 votes were placed in bold.

### 3.3. Discourse, knowledge, and worldviews

Within the aggregate dimension of “discourse, knowledge, and worldviews” the most recurrent theme was related to technocentric CE discourses. Our analysis found that a technocentric CE vision dominated virtually all case studies (with two notable exceptions, Minga and Lowerland). Circularity was thus often framed by governments and businesses as a win-win opportunity that could decouple economic growth from environmental impacts. New CE technologies and innovations such as the 3<sup>rd</sup> industrial revolution, biotechnology, recycling, industrial symbiosis, and automation were seen as the key to unlocking a new era of profits, resource efficiency, and green growth. This technocentric and growth-oriented narrative is exemplified in this quote by an interlocutor from AlgaEnergy:

*“so, a circular economy would imply . . . the valorization of all products and by-products and the obligation to do so implies that we can continue to grow because there is a huge opportunity to generate value and that has not been done” (JUST2CE D2.2, 2023 p.261)*

This discourse generally disregarded social justice aspects. When social issues were included, it was done in a “neoliberal manner” by which social well-being was often expected to occur as a by-product of economic growth through the creation of new jobs and the “trickle-down” of economic benefits. This was notably the case in Jealsa, Sheffield, and Taranto, where powerful actors supported large polluting industries in a bid to generate economic growth, which would lift all boats and improve living conditions for all without considering socio-ecological impacts or how to ensure a fair distribution. For example, the Jealsa-Rianxeira case study explains that neoliberal justice assumes:

*“The performance of firms within the global economy is what, eventually, will bring well-being and prosperity to societies. Consequently, firms aim to maximize profits and expand since this will positively impact societies. All these issues are well documented in the case study: politicians advocate the importance of protecting industry, CE innovations are catalogued as an example of progress and adaptation to the global ecological crisis, workers and civil society defend the need of generating profit, and even people that might be affected by the activity of the company defend the right of the company to operate there and claim for more companies like Rianxeira in the area” (JUST2CE D2.2, 2023, p.15)*

Results in all case studies found that this discourse is a significant barrier to a just transition for a number of reasons. First, it is based on disproven assumptions regarding the possibility of decoupling economic growth from environmental impacts. In fact, over 50 years of research have found that we cannot decouple economic growth from environmental degradation on a sufficient scale and speed to prevent climate breakdown, resource shortages, and biodiversity collapse (Haberl et al., 2020; Hickel & Kallis, 2019; Parrique et al., 2019; Wiedenhofer et al., 2020). A growth-driven approach might thus lead to rebound effects and unintended socio-ecological impacts, which often fall on the most vulnerable people who live near industrial areas and waste recovery infrastructure.

Secondly, due to the laws of thermodynamics and the inevitability of entropy, recovery cycles always lead to a reduction of material quality and quantity. Therefore, the promise of perfect resource circles is an illusion that replicates the idea that we can continue growing forever as long as we recycle properly. This is a dangerous discourse as it can mislead citizens and politicians into thinking technical recycling solutions could be enough to address the present socio-ecological crisis.

Third, this technocentric CE narrative is a major barrier to social justice as, even if green growth was possible, it is unlikely by itself to create employment opportunities for the most vulnerable sectors of the population and improve overall social well-being (Jackson, 2016; Raworth, 2017; Wiedmann et al., 2020). Finally, this hegemonic narrative curtails all alternative approaches to circularity that currently exist and struggle to gain attention and political acceptance. As an interviewee from Taranto pointed out:

*“it felt like struggles had little impact; the opposite sides [the ex-Ilva’s management and the Italian government] kept replying to our claims with discourses related to economic growth and the sacrifice Taranto has to make to that end”. (JUST2CE D2.2, 2023, p180)*

The conflict between CE discourses and worldviews was often framed as a “jobs vs environment” dilemma. According to this narrative, strong ecological actions are impossible because they would limit economic growth and thereby lead to job losses. A growth-oriented path to CE, which does not seriously affect unsustainable industries, is thus promoted at the expense of more transformative and sustainable options. The general lack of education and awareness on CE further reinforced the power of hegemonic narratives as people were largely unaware of alternative approaches and options in most case studies.

We found many enablers throughout the case studies to address the abovementioned imposition of a single growth-driven vision of circularity. First, many social movements and actors are proposing alternative visions of circularity that do not subordinate social needs and environmental imperatives to economic growth. In the case of Taranto, for example, these alternative discourses grew in opposition to polluting linear industries and proposed a plan to entirely transform their region away from unsustainable steel production. In the case of Lowerland, they developed alternative regenerative farming practices that improve socio-ecological well-being by regenerating both people and ecosystems. In the case of Minga, they established a cooperative that promoted local production and consumption and fostered relationships of solidarity, conviviality, and care.

All these alternatives demonstrate that another path to circularity is possible. Moreover, they reiterate the importance of greater pluralism and democracy in the creation of circularity policies, practices, and businesses to ensure that these alternatives are heard. Knowledge co-creation and transdisciplinary education were often mentioned as key enablers in this regard, as they allow citizens and vulnerable people to participate in the creation of their own knowledge and collectively build a democratic CE discourse that fits their needs and aspirations. These alternative visions are best portrayed by this quote from Plan Tarranto:

*“think about a new, radical alternative, democratic model, with the interests of the communities at the centre, where it is possible to think about quality work, good employment and what, how, how much and for whom to produce. [...] putting the right to life above everything else [...] Taranto is the emblem of a model that has failed, the one linked to the coal and fossil fuel cycle that has done so much damage to our planet, which is putting it at risk with the drama of climate change underway. [...] The processes of economic, ecological, and social reconversion implemented elsewhere are the beacon that illuminates our path, aware of the fact that there is no single recipe for each territory” (JUST2CE D2.2, 2023, p178).*

Table 11: Results of the Coding Process for the aggregate dimension “discourse, knowledge, and worldviews”

Themes	Topics	Code Count
<b>Education, knowledge, and epistemology</b>	Pluralism	12
	Lack of education and awareness	18
	CE unknown or not important part of project or discussion	4
	Lack of Data	16
	Knowledge co-creation and transdisciplinarity	23
	<b>Total</b>	<b>73</b>
<b>Crisis and risks</b>	Social crisis and inequalities	6
	Economic crisis	3
	Resource limits	4
	Environmental crisis	3
	Overpopulation	2
	Waste crisis	6
	Climate crisis	4
	Food security and insecurity	1
<b>Total</b>	<b>29</b>	
<b>Technocentric CE discourses</b>	CE as a win-win opportunity	42
	Anthropocentrism	3
	3rd industrial revolution	3
	CE as resource efficiency	29
	Against over-localisation	2

	Neoliberal growth-based justice	10
	Economic competitiveness and technological innovation	37
	Econ growth and decoupling	33
	Consumer responsibility	16
	Individualism and consumerism	4
	<b>Total</b>	<b>179</b>
<b>Alternative CE discourses</b>	Eco-centrism	2
	Degrowth visions	5
	Social and environmental objectives more important than economic gain	16
	CE as the circulation of money, capital, and wealth	3
	Focus on systemic social change	3
	Social justice and CE discourse	56
	Immaterial well-being and sharing	8
	CE in Global South as an opportunity to leapfrog 'linear lock-ins'	2
	CE and socio-ecological sustainability discourse	38
	<b>Total</b>	<b>133</b>
<b>Discursive power and conflicts</b>	Hegemonic discourse curtailing alternatives	44
	Jobs vs Environment conflict	20
	Decoloniality and coloniality	21
	Lack of systemic vision and thinking beyond capitalism	12
	CE criticism	26
	<b>Total</b>	<b>123</b>

The outcomes of the co-production workshop for the “discourse, knowledge, and worldviews” dimension were closely aligned with the coding results. The barriers found in the workshop related to “productivity as an end”, and “technofixes” are aligned with the technocentric growth-driven CE narrative that was found as a key barrier in the coding process. The enablers related to these issues are also similar, with calls for greater democracy and participation as well as conviviality and co-ownership of technology. Other major barriers in the workshop regarding the lack of knowledge-sharing, the loss of indigenous knowledge, the sense of inferiority, and the lack of training on CE and system thinking are also related to the barriers found in the coding process (especially those in the “education, knowledge, and epistemology” theme). The drivers for these barriers are also similar, with the importance of transdisciplinary education, knowledge co-creation and the revision of the entire educational curricula to empower the most vulnerable people and transform unsustainable socio-cultural norms and assumptions.

The workshop barriers regarding unequal consumption patterns that favour the Global North at the expense of the Global South were discussed in the coding results for the “politics and governance” aggregate dimension (see section 3.2). However, the enablers to address these issues that the workshop uncovered provided additional insights not derived from the coding process. They propose reducing the consumption of the richest in the Global North, sharing knowledge and technologies, and establishing better international cooperation to foster a just CE transition.

The workshop also uncovered an additional barrier related to the difficulties faced in up-scaling solutions and alternative discourses, which may be overcome by creating collaborative networks and synergies with other actors like cooperatives, NGOs, and CSOs.

Table 12: Results of the co-production workshop on the enablers and barriers to a just and sustainable circularity transition related to “discourse, knowledge, and worldviews” \*

Discourse, knowledge, and worldviews	
Barriers	Enablers
- Sense of inferiority (0 votes)	- Co-creation (0 votes)
- Focus on technofixes (0 votes)	- Conviviality, co-ownership, contextual and adapted technology (2 votes)
	- <b>Democratic decision-making and participatory planning (5 votes)</b>
- Productivity as an end (3 votes)	- <b>Sufficiency (needs-based), reproductivity, and regeneration (4 votes)</b>
- Difficulty up-scaling solutions and alternative approaches (1 vote)	- Context-driven actions, sharing experiences.
	- Scaling out by creating networks and synergies (1 vote)
- Lack of knowledge sharing and losing traditional and indigenous knowledge in Global North and South (1 vote)	- Give space to indigenous knowledge beyond academic discourse (0 votes)
- Overconsumption, North-South inequality, and geopolitical interests (3 votes)	- Responsible consumption, knowledge sharing, and sharing economy (1 vote)
	- International cooperation (0 votes)
- Lack of training on CE and systems thinking (1 vote)	- <b>Revise curricula from kindergarten to tertiary education and vocation training (4 votes)</b>

\* numbers in parenthesis represent the total votes given to the barrier/enabler by participants at the end of the workshop; barriers/enablers with more than 4 votes were placed in bold.

### 3.4. Ecological sustainability

Ecological sustainability is the aggregate dimension with the least number of codes, topics, and themes. Within this dimension, case studies primarily focused on evidencing environmental impacts, such as solid waste pollution, water quality and availability, air pollution, and soil erosion and contamination. These impacts are often the result of industrial activity connected to CE practices, such as industrial symbiosis and recycling in the cases of Zimbabwe, Ghana, and Morocco. They are also sometimes due to the mismanagement of wastes, such as in Campania, or the pollution of unsustainable industries, as in the Taranto and Jealsa case studies. In all cases, they present significant barriers to a just transition, which often fall disproportionately on marginalised people that work in the waste recovery sector or live near industrial areas and waste recovery sites.

Some environmental benefits were also discussed, especially in relation to healthy soils and biodiversity restoration and protection activities, all of which were an integral part of the regenerative farming techniques practised in Lowerland. Brownfield restoration was also discussed as a core part of the citizen-lead CE strategy (Plan Taranto) to transition the city and province of Taranto and decommission its unsustainable steel production industry. Interestingly, brownfield restoration and decontamination are not only pursued as an environmental strategy but also a socio-economic strategy which can potentially bring about thousands of jobs and substantial economic returns. Indeed, Plan Taranto demonstrates:

*“the environmental and social benefits of brownfield remediation in Taranto, highlighting the investments required and prospective jobs, and the amount of tax revenues in favour of the State and statutory local authorities. In a nutshell: for the reclamation of 4,000 hectares*

*(which include ex Ilva site, others SIN 17 areas nearby and contaminated urban areas in Taranto) about 850 million Euros would be needed, to which about 1.3 billion must be added for the purpose of reusing parts of the ex Ilva area for other activities. The investment for the Taranto's area alone would amount to just over 2 billion euros, with an employment effect capable of generating over 40,000 potential jobs that is, almost 30,000 more than those currently employed by ex Ilva and related industries" (JUST2CE D2.2, 2023, p172).*

Climate change was also addressed by the case studies but not in much detail. Some case studies discussed impacts in terms of GHG emissions (such as Campania and Jealsa), while others took limited measures for energy efficiency (Taranto), Carbon offsetting (AlgaEnergy), and renewable energy (Jealsa and Minga).

Table 13: Results of the coding process for the aggregate dimension "ecological sustainability"

Themes	Topics	Code Count
<b>Climate Change</b>	Energy efficiency	2
	Carbon offset	2
	Electrification	1
	Imported emissions	1
	Carbon sequestration	1
	GHG Emissions	7
	Renewable Energy	6
	<b>Total</b>	<b>20</b>
<b>Environmental impacts</b>	Soil erosion, desertification, and contamination	12
	Impact of transport	5
	Solid waste pollution	21
	Impact on water quality and availability	25
	Impact of raw material extraction	2
	Air pollution	18
	Impacts on local infrastructure	9
	Noise pollution	4
	Over-fishing	2
	Biodiversity loss	3
	<b>Total</b>	<b>101</b>
<b>Environmental benefits</b>	Reducing the impact of raw material extraction	3
	Healthy soil	5
	Reducing pollution	2
	Brownfield restoration	7
	Biodiversity protection	2
	Biodiversity restoration	5
<b>Total</b>	<b>24</b>	

The results from the workshop regarding the aggregate dimension "ecological sustainability" were quite different from the coding results. Participants took a rather general outlook on ecological sustainability and addressed many social and governance topics and themes that were discussed in other coding dimensions. The workshop discussed enforcement and regulation barriers and enablers, as well as geopolitical barriers regarding access to technology, all of which were addressed in section 3.2 on politics and governance.



The workshop also brought about some interesting new ideas, such as the challenges faced by informal waste workers in the Global South and the need for holistic CE policies that address key issues of poverty, inequality, and lack of access to basic needs and services. This is a crucial barrier that received many votes; indeed, the workshop participants stressed the importance of CE actions that go beyond resource efficiency and technological improvements and that systemically address social and ecological imperatives.

Another new idea that was discussed is the lack of consumer awareness and the normative barriers related to the purchase of circular and sustainable products in the Global South. Participants argued that people in the South either could not purchase more expensive sustainable products or believed imported goods were of higher quality than local ones. Better awareness of sustainable products and local alternatives was thus seen as an enabler. This point also shows the significance of unequal trade and power relations between countries and people in the Global North and South and the limitations that disadvantaged and vulnerable people face in a CE transition.

Table 14: Results of the co-production workshop on the enablers and barriers to a just and sustainable circularity transition related to “ecological sustainability” \*

Ecological sustainability	
Barrier	Enabler
- Lack of awareness and knowledge about the benefits of CE ( <b>0 votes</b> )	- Increased consumer awareness and demand for products and industries adopting circular economy practices such as reuse, durability, and recycling ( <b>1 vote</b> )
- Cultural and normative barriers ( <b>1 vote</b> )	
- Inferior and expensive CE products in the Global South, especially Africa ( <b>0 votes</b> )	
- Existing policy and regulatory framework focus on the linear economy ( <b>2 votes</b> )	- Creation of supportive policy frameworks to mainstream CE ( <b>1 vote</b> )
- Lack of enforcement of existing policy and regulatory Framework on CE ( <b>0 votes</b> )	- Use of existing policies and enforce them and expand them to support CE ( <b>3 votes</b> )
- The economic benefits of linear economy and the high cost of CE ( <b>0 votes</b> )	
- Many subsidies to linear economy e.g., inorganic fertiliser production ( <b>1 vote</b> )	
- Global North financing of linear practices in the Global South, such as mining ( <b>0 votes</b> )	
- Lack of CE technologies in the Global South ( <b>0 votes</b> )	- Strengthen public-private partnerships for CE ( <b>0 votes</b> )
- CE in the Global South, and especially in Africa, is still mainly carried by the informal sector ( <b>1 vote</b> )	- <b>Holistic sustainability policies are needed as many countries must address crucial issues of poverty, inequality, and lack of access to basic needs and services (5 votes)</b>

\* numbers in parenthesis represent the total votes given to the barrier/enabler by participants at the end of the workshop; barriers/enablers with more than 4 votes were placed in bold.

### 3.5. Business models and value retention options

Within “business model and value retention options” codes focused on multiple elements. Many case studies reflected on the current market structures that constrained how CE businesses and practices were developed and implemented. The low prices of recovered products were a significant barrier for the recycling industry in Ghana, Morocco, and Zimbabwe. Globalized and hyper-competitive trade structures were also seen as a major barrier, especially when trying to implement socially and environmentally sustainable solutions while



other businesses are just focusing on the bottom line. For instance, an interviewee from Jealsa mentioned that:

*“Spain is one of the most expensive workforce places in the can fish industry at the international level, very much distant from countries in Southeast Asia, Latin America... In such an industry, the workforce is a key factor. To compete with them, you have to work at the technology and knowledge level” (JUST2CE D2.2, 2023, p.26)*

Many case studies found that access to land, technology, and financial resources was essential to face those competitive pressures and could help develop and implement sustainable CE practices. Yet access to land, technologies, and finance was not always easy, especially for small businesses and firms in the Global South. This is clearly explained in these concluding reflections from the Lowerland case:

*“From the start, this process has been burdened by the need to maintain overall production and revenue figures to meet finance fees and debt for purchase of the land. A recurring dilemma through the last years has been the need to “go short at the expense of the long” i.e., to make sure to cover immediate costs rather than investing in process that might take time to realise financial benefits.” (JUST2CE D2.2, 2023, p.308)*

Those competitive pressures are also evident in this quote by a stakeholder from Jealsa:

*“Although small companies want to implement CE actions at the industrial level, it is not going to have economic sense since investments are relatively high” (JUST2CE D2.2, 2023, p.27)*

Regarding value-retention options, we see an overwhelming focus on recycling. This is a rather low value-retention option, according to CE literature<sup>5</sup>, compared to more sustainable options like refuse, reuse, reduce, repair, refurbish, remanufacture, and redesign. While most of these options were only minor elements of our case studies, there were zero mentions of R0-“refuse”, which entails not producing or consuming something and is the highest and most sustainable value retention option according to CE literature (Reike et al., 2018). The lack of consideration for R0-“refuse” demonstrates the technocentric approach to CE found in most case studies, which did not focus on reducing over-production, over-consumption, and overall ecological footprint but instead focused on improving economic profitability and eco-efficiency.

Reuse (R2) is the second most mentioned option, and it was a crucial component in the Minga case study that reuses packaging, food waste, construction materials, and other resources. The myriad of reuse practices of the Minga case are well described by this interviewed cooperative member:

*“In the shop, when there is a surplus [abundance of a given product], we give it away for processing. For example, the surplus of tomatoes in the summer are sent for pulp production by other members. We also avoid vegetable losses by making a discount on products before they are not good for selling. Ultimately, they are given to farmers for composting. There are also approaches to packaging, namely promoting the use of paper bags and the reuse of plastic bags. [...] In the shop, we advertise the importance of avoiding waste and promoting reuse. We collect used cooking oils from the clients, which then are used for the detergents company [eco-x, in Coimbra], and then re-sold in the shop. The fresh cheese, when it reaches the expiration date, is dried and resold [only for members].” (JUST2CE D2.2, 2023, p.443)*

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<sup>5</sup> This report follows the value retention hierarchy developed by Reike et al. (2018). It contains 10Rs ranked in the following order: R0 Refuse, R1 Reduce, R2 Re-sell/Reuse, R3 Repair, R4 Refurbish, R5 Remanufacture, R6 Re-purpose, R7 Recycle materials, R8 Recover energy, R9 Re-mine (Reike et al., 2018).

The case studies also discussed unsustainable business practices, such as vertical management practices where employees have no voice, the planned obsolescence of electronic products, and protected patents and intellectual property that restrict the sharing and access to new CE technologies. However, the most common unsustainable practice, which was often pointed out as a root cause of other unsustainable practices, was the focus of businesses on the economic bottom line without sufficiently considering social and environmental impacts.

Another significant barrier was the power and maintenance of large, unsustainable industries. In cases like Taranto and Jealsa, a single major industry employing thousands of people had such an important economic and cultural significance that it could not be criticised or transformed. This demonstrates the path dependencies that large infrastructures and industries can create and the significant barrier that this represents for a just CE transition. Indeed, infrastructural and industrial investments can take years to build, decades to recuperate financially, and can tie an entire local economy to a single business or industry. This is deeply problematic when this industry is not socio-ecologically sustainable, as we can observe in the case of Taranto, where, as Leogrande put it:

*“the city grew and modelled itself around the factory. It was the times and rhythms of the factory that marked the times and rhythms of the urban fabric”* (Leogrande, 2018 quoted in JUST2CE D2.2, 2023 p162).

The case studies also evidenced many enablers for sustainable circular business practices. Horizontal democratic management was a particularly important enabler, and it directly opposes the barrier caused by vertical (top-down) management practices. The case studies of Lowerland and Minga, in particular, evidenced that horizontal management could not only be socially inclusive and sustainable but also economically profitable and innovative. Horizontal management practices in Lowerland fostered the co-creation of knowledge and business innovations that opened entirely new markets. These practices also enabled the continuous development of new skills and abilities in the workforce, improved working conditions, and better employee satisfaction and retention. Such horizontal management requires leadership that is humble and distributes power widely in a mutual learning process that can lead by listening. As an interviewee from Lowerland explained:

*“There is give and take. We work together.... there is no fear of giving power or receiving it, there is a flow of power....”* (JUST2CE D2.2, 2023, p314)

Another sustainable business practice that was often discussed is regenerative organic agriculture, which can regenerate degraded ecosystems and create economic opportunities for vulnerable people, as evidenced in the case of Lowerland. Sustainable tourism was a central component of Plan Taranto to transition from unsustainable steel production. Localisation was also often mentioned as a sustainable strategy, notably in the case of the Minga cooperative, which fostered local production and consumption.

Faced with hypercompetitive neoliberal market structures, firms often struggled to survive. They thus had many different strategies to compete. Some focused on technological innovations such as biotechnology, industry 4.0, and industrial symbiosis, as evidenced in the AlgaEnergy, Jealsa, Sheffield, and Zimbabwe cases. However, our results found that the socio-ecological benefits of such technical strategies were rather mitigated and uncertain. Other industries sought to increase their scale, notably in the E-waste sector in Campania, which requires large infrastructural investments and significant steady inputs of waste materials to be economically viable. The CE market is often one of low margins, so scaling is a strategy pursued by many.

One strategy to resolve this issue is diversifying and collaborating with like-minded businesses and stakeholders. This is the strategy pursued by Lowerland and Minga. Both created business ecosystems that diversified their sources of revenue and multiplied their impact. It also allowed them to move up the value

chain and further transform their outputs into more valuable products. Those collaborative CE practices between SSE actors are thus crucial enablers to a just CE transition as they allow smaller firms to compete and survive while remaining true to their socio-ecological objectives. These collaborative business ecosystems are exemplified in the reuse practices of the Minga cooperative that we discussed in the above paragraphs, as well as in the following practices from the Lowerland case study:

*“Grapes from the vineyards were taken to a winemaker in Paarl who had been a university friend, to make into wine using a natural fermentation process. [...] A Stellenbosch baker looking for heritage grains provided funding for an organically grown crop of wheat, and when it proved difficult to mill the grain at the bakery, Lowerland was able to start a mill on the farm. [...] A well-known organic chicken producer needed organic maize for chickens, and Lowerland agreed to grow on contract. A respected organic corn chip maker agreed to a similar arrangement. An idea being discussed at present is to start a food club in Prieska to provide a modest outlet for butter, cheeses, bacon, and patties.” (JUST2CE D2.2, 2023, p308)*

Table 15: Results of the coding process for the aggregate dimension “politics and governance”

Themes	Topics	Code Count
<b>Sustainable and Circular Business Practices</b>	Industrial symbiosis	13
	Biotechnology	7
	Product Service Systems	1
	Valorisation of 100% of a material and its sub-products	14
	Regenerative Organic agriculture	19
	Fair pricing	2
	Food waste reduction	10
	Company flexibility, adaptation, and responsiveness	5
	Industry 4.0	4
	Sustainable tourism	7
	Blue oceans thinking	4
	Innovations and technologies to compete and transition	18
	Localisation	23
	Responsible business conduct and corporate social responsibility	12
	Horizontal democratic management	37
Business ecosystems and collaboration	22	
<b>Total</b>	<b>198</b>	
<b>Unsustainable Business Practices</b>	Downcycling and "wish cycling"	1
	Vertical (top-down) management	4
	Planned obsolescence	1
	Protected patents and intellectual property	1
	Power and maintenance of unsustainable incumbent industry	17
	Business practices focus on economic aspects without considering social and environmental impacts	37
	<b>Total</b>	<b>61</b>
<b>General business practices</b>	Direct Marketing	6
	Moving up the value chain	8
	Business Research and Development	13
	Marketing and improving the image of firms	18
	Diversification of business	18

	Creating economies of scale	10
	Business economic viability and profitability	15
	<b>Total</b>	<b>88</b>
<b>Market structures</b>	Access to financial resources	28
	Excessive competition	6
	Access to land	10
	Low prices of recovered products	16
	Consumer demands	5
	Cultural relations with an industry (good or bad)	18
	Availability of skilled labour	2
	<b>Total</b>	<b>85</b>
<b>Value retention options</b>	R0 Refuse	0
	R1 Reduce	5
	R2 Reuse	18
	R 3 Repair	4
	R4 Refurbish (also reconditioning or retrofitting)	3
	R 5 Remanufacture (also reprocessing or re-assembling)	3
	R 6 Repurpose	1
	R7 Recycle	31
	R 8 Recover Energy	4
	R9 Re-mine	2
	Redesign	3
	Replace (sustainable inputs)	1
	Composting	4
	Cannibalization	9
<b>Total</b>	<b>88</b>	

The co-production workshop outcomes for “business models and value retention options” found similar barriers and enablers to the coding process. The most voted barriers regarding the fact that businesses are focussed on the bottom line and are money-oriented were also important barriers in the case study results. The unsustainable technocentric vision of CE and the focus on economic innovation and recycling were other key barriers in both the workshop and the coding process. The lack of access to finance was also seen as a crucial barrier that needed tailored investments from the state to be overcome, which aligns with the coding results from this section and from section 3.2 on politics and governance.

The need for value-oriented business models was also voted as an essential enabler to a just CE transition in the workshop, which aligns with the coding results in this section and in section 3.1, which emphasised the importance of the social and solidarity economy sector.

Furthermore, the power of lobbying from unsustainable industries was seen as a significant barrier, which aligns with the coding results regarding the power of large unsustainable industries that curtail a just CE transition. Moreover, the importance of diversification and collaboration, evidenced in the coding results, was confirmed in the workshop, where participants discussed the dangers of individual business models and the need to create collaborative business model ecosystems.

Some new elements also came about, such as protectionist policies enabling companies to compete and survive in neoliberal markets and the need to account for and report businesses' social and environmental performance and foster responsible innovation. Other new elements include the threat of AI and the need for an AI tax; however, these points did not receive many votes from workshop participants.

Table 16: Results of the co-production workshop on the enablers and barriers to a just and sustainable circularity transition related to “business models and value retention options” \*

Business models and value retention options	
Barriers	Enablers
- Visions of CE are unsustainable and not socially oriented (0 votes)	- Disseminate knowledge and skills for a just transition (1 vote)
- <b>Business focused on the bottom line (7 votes)</b>	- Account and report social and environmental performance and businesses (1 vote)
- Businesses are money oriented (1 vote)	- <b>Value-oriented business models that focus on social and environmental goals (4 votes)</b>
- The way innovation is framed/valued for economic gain alone (2 votes)	- Responsible innovation beyond monetary value (1 vote)
- Individual business models (0 votes)	- Ecosystem of business models (1 vote)
- Technical understanding of business models (0 votes)	- Support for business models that promote intangible value (0 votes)
- <b>Lack of access to finances (5 votes)</b>	- Tailored investments (2 votes)
- Need for competition to survive in neoliberal markets (3 votes)	- Moving to protectionist policies (2 votes)
- Lobbying (2 votes)	- Avoid lobbies (0 votes)
-Threat of AI (0 votes)	- Social tax of AI (0 votes)
- Focus on recycling solutions (0 votes)	- Move to design solutions (1 vote)

\* numbers in parenthesis represent the total votes given to the barrier/enabler by participants at the end of the workshop; barriers/enablers with more than 4 votes were placed in bold.

## 4. Discussion

The analysis of case study results and their comparison with the outcomes of the co-production workshop led us to find a wide range of important barriers and enablers to a just and sustainable circularity transition. To facilitate the understanding of the key outcomes of this research, we have summarised the 12 most essential barriers and their respective enablers in Table 17. These were chosen as the barriers and enablers that were both most mentioned in the coding process and most voted in the co-production workshop. These barriers and enablers were developed as pairs, whereby each barrier to a just and sustainable circularity transition relates to an enabler that can help address and resolve it. Indeed, for each of the critical barriers, issues, challenges, and negative socio-ecological impacts found in our results, a contrasting enabler was evidenced, providing opportunities and alternatives to solve the problems it caused.

Table 17: Summary of main barriers and enablers to a just and sustainable circularity transition evidenced in the 10 case studies and the co-production workshop.

Barriers	Enablers
Unequal consumption patterns, trade relations, and power dynamics that favour the Global North at the expense of the Global South.	Providing access to technology and financial resources for the Global South (e.g. open-source technologies, low-interest loans, and reparations).

Globalized economies and neoliberal trade relations that create excessive competitive pressure on firms.	Collaborative ecosystems of SSE actors that cooperate to move up the value chain and diversify their production. Protectionist policies to support sustainable practices.
Lack of employment and economic opportunities, systemic poverty, and inequalities.	Redistributive policies and progressive taxation to provide key public services, create jobs in sustainable sectors, and reskill, re-train, and re-educate the workforce.
Migration of people from depopulating, impoverished, and ageing rural areas to large cities, within or outside their countries.	Fostering re-localisation of economies and re-vitalising rural areas through CE initiatives such as regenerative agriculture and support for local cooperatives and social enterprises.
Exploitation, poor working conditions, and discrimination (based on gender, class, education, race, ethnicity, origin, belief, age, ability etc...).	Enhancing social empowerment and worker rights by supporting worker-owned cooperatives, unions, and CSO and fostering horizontal management practices. Ensuring high wages and good working conditions by strengthening labour laws and regulations.
Business focus on profits and economic growth.	Transparently accounting for the social and environmental performance of businesses and organisations.
Environmental and health impacts of industry, which often disproportionately affect the most vulnerable workers and local populations.	Fostering sustainable and clean business models with no or low pollution (repair, reuse, regenerative agriculture etc.). When pollution occurs, creating a democratic dialogue with local populations and providing adequate remediation.
Power of large unsustainable linear industries and government support towards them.	Creating democratic and transparent governance from the bottom-up that empowers citizens and prevents lobbying and co-optation by powerful actors and industries.
Bad governance and regulation of CE and lack of funds, controls, and enforcement of CE policies.	Good government regulation to support CE and sufficient funding for effective enforcement and implementation of CE policies.
Imposition of a single hegemonic technocentric CE discourse focused on green growth, decoupling, resource efficiency, and productivism.	Governance process that democratically includes all citizens accounting for the plurality of alternative circularity discourses, including degrowth-oriented visions that focus on improving socio-ecological well-being within the biophysical boundaries of the Earth.
Lack of education and awareness on circularity and holistic understanding of socio-ecological systems.	Transdisciplinarity and co-creation of circularity knowledge and visions by citizens and vulnerable peoples. Revision of the educational curricula from kindergarten to tertiary education and vocation training in line with the above need for transdisciplinary learning and co-creation.
Focus on paid labour and disregard for the role of care work.	Encouraging non-commodified circular loops and forms of care and exchange in the SSE, such as repair cafés, tool sharing, and community composting.

The above summary of key barriers and enablers starts with the systemic barriers related to the global economic inequalities between countries and peoples in the Global North and South and the hypercompetitive globalised markets that place sustainable cooperatives and social enterprises at a disadvantage compared to larger firms or unsustainable industries. These macroeconomic trends lead to a social climate characterised by a lack of employment and economic opportunities, especially in rural areas, pushing people to migrate to large cities, where they usually end up working in poor conditions and face systemic discrimination and low incomes. In these conditions, many businesses focus on profits and economic growth to compete and survive rather than social and environmental aspirations. This frequently leads to business activities that heavily pollute and create health impacts for workers and neighbouring communities, primarily affecting vulnerable and economically disadvantaged people.

In turn, the state repeatedly fails to properly regulate and control the unsustainable practices of industrial actors. Our results suggest this is commonly due to the power of large firms that can lobby politicians and

control the political sphere with their economic influence. This leads to a lack of democracy in the governance arena, which is a significant barrier because it prevents the inclusion and consideration of the needs of the most vulnerable people in the transition to a circular future. It is also a major barrier because it allows a technocentric version of CE to be imposed by powerful economic and political actors without the proper participation of citizens. Yet previous research has found that many citizens have a more ecologically holistic and social-justice-oriented understanding of circularity and would thus likely choose a very different path to the one that is currently imposed in most case studies (Calisto Friant, Vermeulen, et al., 2022; Repo et al., 2018). Technocentric approaches to CE also fail to challenge current unsustainable over-production and over-consumption patterns in the Global North, which are overshooting the Earth's ecological capacity and curtailing the possibility of people in the South to meet their most basic social needs (Brand et al., 2021; Marín-Beltrán et al., 2022; Wiedmann et al., 2020).

A lack of holistic transdisciplinary education on CE further enhances this problem as it replicates ecomodernist narratives based on false promises of decoupling and green growth. Yet decades of research have proven that we cannot decouple economic growth from environmental degradation on a sufficient scale and speed to prevent biodiversity collapse, resource shortages, and climate breakdown (Haberl et al., 2020; Hickel & Kallis, 2019; Parrique et al., 2019; Wiedenhofer et al., 2020). This narrative is thus likely to worsen our socioecological conditions by leading to a greater overshoot of planetary boundaries and a further rise of inequalities in access to essential resources and services.

To address all the above issues, our results found that a democratization of power could be the single most important enabler. Indeed, the importance of democratisation, both in the workplace and in public institutions, was highlighted in all case studies throughout the results and was a key point of discussion during the co-production workshop. By democratisation we understand a variety of institutional, social, economic, cultural, political, educational, and organizational tools, innovations, and approaches that enable the inclusion and empowerment of citizens and workers to decide on the shape and form of the circularity transition.

At the national, regional, and local government levels, democratization entails the inclusive participation of citizens in the elaboration, implementation, and monitoring of CE policies. Fostering transparent and democratic decision-making practices is a crucial enabler. It can allow a more democratic and plural debate on the shape and form of a just circularity transition and lead to a fairer distribution of the costs and benefits it will bring about. Research has found that public deliberation and decision-making through citizen assemblies of randomly selected citizens, participatory budgeting processes, and other democratic innovations can lead to much more sustainable decisions and outcomes than traditional top-down governance processes (Calisto Friant, 2019; Dryzek et al., 2019; Fishkin, 2018; Fung & Wright, 2001).

Greater democratization and bottom-up decision-making could thus help the development and implementation of key CE policies and enablers found in our research, such as redistributive policies that tax the wealthiest sectors of the population to provide essential public services and create jobs and economic opportunities in sustainable sectors. It could also open the door for labour policies that improve working conditions and incomes. Moreover, it could foster the creation of eco-design regulations that enhance product durability, modularity, repairability, and reusability and encourage open-source CE innovations. Finally, it could lead to company regulations that oblige businesses to transparently account for their social and environmental performance.

In addition to the above, our results found that the democratisation of economic institutions and businesses is key to improving worker empowerment, working conditions, and wages. Support for local social and solidarity economies, such as cooperatives, social enterprises, unions, CSOs, and NGOs, can also be a crucial enabler, as such organizations often have much more democratic and horizontal decision-making structures that give a real voice and vote to workers, women, minorities, and other vulnerable social groups (as we saw in the case of Minga and Lowerland). Moreover, our results found that SSE organisations, like cooperatives



and social enterprises, tend to focus on producing locally for the community's needs, thereby contributing to revitalising local economies and disenfranchised rural areas. They can also maintain economic and natural resources in the local economy by creating local currencies and fostering non-commodified forms of care and exchange such as repair cafés and tool-sharing networks. Moreover, they can reduce transport costs and enable a symbiosis of production and consumption patterns that can reduce waste and foster the return of nutrients to the fields through organic waste composting and regenerative organic agriculture. Furthermore, by collaborating and creating business ecosystems and relationships of solidarity, SSE actors can diversify their production and move up the value chain. They can thus better compete and innovate in a sustainable manner while remaining resilient to changing global climate patterns and economic conditions.

The above summary of barriers and enablers confirms and validates the results of the WP1 report on [gender](#) (JUST2CE D1.3, 2023) and the research of other academics that have stressed the importance of the SSE and reproductive care work for a sustainable and just circularity transition based on alternative local economies that value socio-ecological care work and regenerative circular practices like biodiversity conservation and restoration, co-housing, repair and tool sharing networks, local support groups, urban and peri-urban agriculture etc. (Calisto Friant et al., 2023; Gutberlet et al., 2017; Moreau et al., 2017; Morrow & Davies, 2021; Pla-Julián & Guevara, 2019; Villalba-Eguiluz et al., 2023).

Furthermore, our findings reinforce the results from the WP1 report on [labour](#) (JUST2CE D1.4, 2022) and the work of other researchers that have demonstrated the importance of looking not only at the number of jobs created by a transition but also taking into account the quality of those jobs (especially issues related to incomes, length of the workweek, discrimination, participation in decision-making, leave time, occupational health and safety, social protection, trade union representation, global value chains and the international division of labour) (Berry et al., 2021; Calisto Friant et al., 2020; Schröder, Anantharaman, et al., 2019; Vanhuyse et al., 2021; Velenturf & Purnell, 2021).

Our findings also validate the outcomes of the WP1 report on [environmental justice](#) (JUST2CE D1.2, 2022), the WP3 report on [responsible innovation](#) (JUST2CE D3.2, 2022), as well as the research of other academics who have argued for the need to democratically establish socially inclusive and redistributive circular policies that don't depend on unfounded assumptions regarding economic growth and decoupling (Genovese & Pansera, 2020; Purvis et al., 2023; Savini, 2021; Schröder, Bengtsson, et al., 2019; Spanier & Feola, 2022; Suárez-Eiroa et al., 2019, 2021).

Finally, this report reiterates the importance of transdisciplinary education and research to improve and expand our understanding of circularity beyond technocentric solutions and embrace the plurality of degrowth-oriented circular society approaches from the Global North and South alike (Bauwens et al., 2023; Calisto Friant et al., 2020; Clube & Tennant, 2023; Thapa, 2023; Zwiers et al., 2020). These insights from our research and other academics within and beyond the JUST2CE project are essential to ensuring that a circularity transition is scientifically valid, socially inclusive, and politically legitimate.

The above analysis is not free of limitations. First, the in-depth qualitative nature of our data collection meant that we were limited to 10 cases. Thus, we could not integrate all potential industries, settings, and socio-political, economic, and cultural contexts relevant to a CE transition. Nonetheless, we sought a diverse and comprehensive list of cases that could provide a good picture of the core enablers and barriers to a just circularity transition. Moreover, we complemented the results of our case studies with a co-creation workshop to include any potentially missing elements. The participants in the seminar were team members of the Just2CE project, meaning we had a diverse group of researchers from the Global North and South. However, it also meant we had a limited number of voices from other sectors. Further research would thus be needed to complement our findings with results from different contexts and industries.

Another limitation is the lack of substantial discussion and results regarding ecological sustainability and relationships between human and non-human nature. The case studies seemed to have a social justice and



anthropocentric bias in this regard. Further research on CE and its relation to the rights of nature and its impacts and implications on life is thus much needed to complement our results.

## 4.1. Implications for other work packages of the JUST2CE project

The results of our report can be valuable to other work packages (WP) of the JUST2CE project, in particular WP 4 and WP 5.

WP 4 aims to build a decision support tool that will enable users to explore the global nature of supply chains and how issues relating to justice and circularity are embedded within them. The support tool will provide interactive ways to better understand just and unjust circularity practices in various geographical contexts and sectors and reflect on their socio-ecological impacts and implications in a holistic and systemic manner. The summary of key enablers and barriers we found in this report could help identify the environmental, social, and economic impact hotspots that the decision support tool will consider and the opportunities it can propose to address them. The results from this report could also feed directly into a specific section of the tool that showcases key enablers and barriers to a just and sustainable circularity transition.

WP 5 aims to develop a multi-regional macroeconomic model to analyse the potential social and environmental impact of various CE scenarios and policies. By highlighting essential enablers and barriers and their interaction, results from this report can help WP5 construct more refined and holistic scenarios regarding CE innovations, practices, and policy mixes that highlight the socio-ecological trade-offs and synergies involved. In turn, the scenarios modelled by WP5 can give some insights regarding the importance of the enablers and barriers highlighted in this deliverable with quantitative predictions on their possible socio-ecological impacts.

## 5. Conclusions

This report sought to uncover the core enablers and barriers to a just and sustainable circularity transition. It draws from a detailed analysis of 10 case studies in diverse industries, settings, and socio-political, economic, and cultural contexts. The results from the coding of the 10 case study reports were complemented by a co-production workshop that helped solidify, expand, and validate our findings. A final set of 12 enablers and 12 barriers were thus developed, which evidence the most critical issues and opportunities to consider for a just and sustainable circularity transition.

The core results from this research revealed and contextualized what we already knew about the lack of social justice and participation in the development of current CE policies and practices and the technocentric focus of hegemonic CE approaches (Calisto Friant et al., 2021; Calisto Friant, Lakerveld, et al., 2022; Calisto Friant, Reid, et al., 2023; Genovese & Pansera, 2020; Giampietro & Funtowicz, 2020; Mah, 2021; Millar et al., 2019). However, the ten diverse case studies allowed us to see the actual impacts of this lack of social justice and democracy on the lives of people in the Global North and South alike. We saw how the health of communities in Ghana, Taranto, Campania, and Zimbabwe was sacrificed by unsustainable industries and technocentric CE practices. We saw how the working conditions of informal waste collectors and recyclers in Ghana, Zimbabwe, and Morocco were affecting their health and that of their communities. We evidenced the discrimination suffered by disenfranchised working-class people and communities that must deal with systemic unemployment and a general lack of sufficient economic opportunities. Our research also highlighted the problems faced by businesses trying to propose circular solutions and innovations in highly competitive globalized markets.

Our results also point toward potential pathways to overcome these barriers. In particular, our findings indicate the potential of diverse forms of democratization across institutional, business, and political settings to enable a more plural debate on the CE transition and deliver a better distribution of its costs and benefits.

In the economic arena, horizontal management practices and SSE actors like unions, worker-owner cooperatives, and CSOs can foster democratic social innovations that improve social and planetary well-being. Indeed, our case studies show that SSE organizations, with democratic and inclusive decision-making practices, can not only empower workers and improve working conditions but can also bring about key non-commodified circular loops and forms of care and exchange, such as community composting, urban agriculture, repair cafés, and tool sharing.

In the political area, greater democracy in the development, implementation, and monitoring of public policies was found to be a crucial enabler. Indeed, more transparent, inclusive, and democratic decision-making practices can improve the inclusion of the needs and aspirations of the most vulnerable peoples and ensure that social justice and environmental sustainability imperatives are properly considered and addressed in new laws, regulations, and public strategies. Including workers, unions, CSOs, cooperative firms, and other social actors in public deliberation on the future of CE also expands the range of CE discourses and visions that are considered in the public debate. It can thus break the hegemony of technocentric growth-based CE discourses that currently dominate the public debate and policies on CE. Our results found that such discourses were a significant barrier to a just CE transition as they tend to neglect social justice issues or focus only on jobs. Yet jobs alone are far from enough for a just CE transition, which needs quality jobs, quality public services, social opportunities, social empowerment, and a re-valorisation of the crucial role played by non-paid socio-ecological care work.

Moreover, this technocentric CE narrative assumes we can decouple economic growth from environmental degradation. Yet, 50 years of scientific evidence have disproven the possibility of decoupling. Following such a policy could thus exacerbate the overshoot of planetary boundaries and replicate global inequalities in access to essential resources (Haberl et al., 2020; Hickel & Kallis, 2019; Parrique et al., 2019; Wiedenhofer et al., 2020).

All in all, our results found that, despite the many systemic barriers to a just CE transition, there are equally important and powerful enablers that can foster a sustainable and democratic transformation of our society. Considering the state of the current socioecological crisis, the systemic scale and scope of the challenges ahead cannot be overstated. They will require nothing short of a wholesale transformation and democratization of our societies and our institutions. We hope that the many insights brought by this research can help us understand the key drivers of current unsustainable trends and the core enablers that can help us overcome them. The 12 core barriers and enablers we uncovered in Table 17 could be particularly relevant for policymakers, practitioners, activists, and businesses in the global North and South alike seeking to build a fairer and more sustainable future. They also add to the academic debate on the topic and improve our overall understanding regarding what prevents a just circularity transition and how those barriers can be overcome. In short, they can help us understand what makes or breaks a sustainable circular future.

In addition to this, our results will feed into the work carried out by WP4 and 5 to help build models, scenarios, policies, and decision-making tools that consider the potential socio-ecological impacts and barriers of a CE transition that we evidenced in this report as well as the many enablers and opportunities we found to address them.

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## Annex 1: Results of the Coding Process

Table B: Full Coding Results with all Topics, Themes and Aggregate Dimensions

Aggregate Dimensions, Themes and Topics	Code Count
<b>Social justice and inclusion</b>	<b>621</b>
Gender and sexual equity	51
Gender inclusiveness	19
Gender discrimination	24
Women movements	3
Key role of women for CE	2
Gender pay gap	3
<b>Labour opportunities and employment conditions</b>	<b>235</b>
Job creation	27
Job loss	9
Poor working conditions	33
Good working conditions	24
Informality and formalization	42
Temporary work	1
Sufficient wages and income	5
Insufficient wages and income	18
Education, skills, and training	26
Stigma against waste workers	12
Child labour	8
Unemployment and lack of jobs	16
Youth employment and unemployment	4
Migration of workforce	10
<b>Social and solidarity economies</b>	<b>107</b>
CSOs and NGOs	20
Unions	13
Local currencies	7
Gift and sharing economy	7
Alternative local economies	13
Collaboration between SSE groups and grassroots organising	9
Microfinance	2
Conviviality	8
Care	9
Worker-owned cooperative firms	18
Open source, open access, and creative commons	1
<b>Health and well-being</b>	<b>45</b>
Health benefits and impacts	43
Hygiene or health problems with recovered products	1
Health impacts	1
<b>Social structures and relations</b>	<b>55</b>
Religion	1
Willingness or not to pay more for circular product or service	5
Ageing	2
De-industrialisation	13
Access to transport	5
Foreign population	8

<b>Depopulation</b>	11
<b>Social resilience and harmony</b>	10
<b>Social inclusiveness and discrimination</b>	128
<b>Distribution of costs and benefits of CE</b>	55
<b>Poverty and exploitation</b>	26
<b>Age discrimination</b>	2
<b>Racial and ethnic discrimination</b>	8
<b>Class discrimination</b>	22
<b>Empowering and regenerating people</b>	9
<b>Social welfare state</b>	1
<b>Colonial History</b>	5
<b>Politics and governance</b>	<b>685</b>
<b>Public policy levels</b>	85
<b>Local government</b>	19
<b>Regional or provincial government</b>	10
<b>National government</b>	41
<b>EU government</b>	13
<b>International government</b>	2
<b>Governance problems</b>	173
<b>Politicians breaking promises</b>	2
<b>Political disputes on control of waste resources</b>	5
<b>Lack of support for CE initiatives</b>	10
<b>Lack of government enforcement</b>	18
<b>Lack of waste collection and recovery infrastructure</b>	4
<b>Lack of democracy and unequal power relations</b>	37
<b>Lack of government funds and financial capacity</b>	1
<b>Government favouring economic interests of large industry</b>	20
<b>Lack of organised civil society</b>	2
<b>Taxes too high</b>	6
<b>Taxes and disposal fees too low</b>	3
<b>Lack of transparency</b>	8
<b>Free riders not contributing to CE</b>	7
<b>Too much bureaucracy</b>	6
<b>Clientelism and patronalism</b>	6
<b>Lack of long-term vision of government</b>	7
<b>Lack of trust in government</b>	8
<b>Bad, insufficient, or excessive regulation</b>	23
<b>Governance structures</b>	122
<b>Public-private partnerships</b>	25
<b>Strong government intervention</b>	10
<b>Democracy and participation</b>	41
<b>Informal rules and structures</b>	14
<b>Good government control and monitoring</b>	14
<b>Transparency and accountability</b>	3
<b>Market-based governance</b>	15
<b>Public policies</b>	139
<b>Incentives or investments for CE research and development</b>	11
<b>Improved collection and recovery infrastructure and technology</b>	12
<b>Economic support, subsidies, and incentives for CE activities</b>	27
<b>CE regulations and norms</b>	19
<b>Communication, education, and awareness-raising policies</b>	24
<b>Redistributive policies</b>	6

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<b>Support of social and solidarity economy</b>	10
<b>Polluter Pays Principle and taxes, fees, and tariffs</b>	13
<b>Extended Producer Responsibility (EPR)</b>	17
<b>Geopolitics</b>	38
<b>Southerners in the North</b>	4
<b>Lack of access to technology</b>	1
<b>North -South relations and dynamics</b>	6
<b>Externalisation of environmental and social impacts from Global North to South</b>	5
<b>Strategic importance of certain industry</b>	6
<b>South-South Cooperation</b>	2
<b>Unequal trade and power relations</b>	14
<b>Global value chains and trade</b>	42
<b>Waste trade</b>	18
<b>Global value chains and resource trade</b>	11
<b>Too much trade liberalisation</b>	4
<b>Different labour costs in different countries</b>	2
<b>Transport costs and problems</b>	4
<b>Supplier sustainability requirements</b>	3
<b>Social resistance, contestation, and social movements</b>	64
<b>Resistance to the opening of waste recovery infrastructure</b>	2
<b>Worker strikes and class conflict</b>	15
<b>Legal prosecution of polluting firms</b>	5
<b>Social opposition to polluting industry</b>	22
<b>Polluting industry buying land and displacing residents</b>	6
<b>Social polarisation and disagreement</b>	9
<b>Conflict over biodiversity and access to ecosystems</b>	5
<b>Criminality</b>	22
<b>Illegal waste trade</b>	8
<b>Illegal pollution</b>	7
<b>Sabotage</b>	1
<b>Illegal cannibalisation of waste</b>	6
<b>Discourse, knowledge, and worldviews</b>	537
<b>Education, knowledge, and epistemology</b>	73
<b>Pluralism</b>	12
<b>Lack of education and awareness</b>	18
<b>CE unknown or not important part of project or discussion</b>	4
<b>Lack of Data</b>	16
<b>Knowledge co-creation and transdisciplinarity</b>	23
<b>Crisis and risks</b>	29
<b>Social crisis and inequalities</b>	6
<b>Economic crisis</b>	3
<b>Resource limits</b>	4
<b>Environmental crisis</b>	3
<b>Overpopulation</b>	2
<b>Waste crisis</b>	6
<b>Climate crisis</b>	4
<b>Food security and insecurity</b>	1
<b>Technocentric CE discourses</b>	179
<b>CE as a win-win opportunity</b>	42
<b>Anthropocentrism</b>	3
<b>3rd industrial revolution</b>	3
<b>CE as resource efficiency</b>	29



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<b>Against over-localisation</b>	2
<b>Neoliberal growth-based justice</b>	10
<b>Economic competitiveness and technological innovation</b>	37
<b>Econ growth and decoupling</b>	33
<b>Consumer responsibility</b>	16
<b>Individualism and consumerism</b>	4
<b>Alternative CE discourses</b>	133
<b>Eco-centrism</b>	2
<b>Degrowth visions</b>	5
<b>Social and environmental objectives more important than economic gain</b>	16
<b>CE as the circulation of money, capital, and wealth</b>	3
<b>Focus on systemic social change</b>	3
<b>Social justice and CE discourse</b>	56
<b>Immaterial well-being and sharing</b>	8
<b>CE in the global south as an opportunity to leapfrog 'linear lock-ins'</b>	2
<b>CE and socio-ecological sustainability discourse</b>	38
<b>Discursive power and conflicts</b>	123
<b>Hegemonic discourse curtailing alternatives</b>	44
<b>Jobs vs Environment conflict</b>	20
<b>Decoloniality and coloniality</b>	21
<b>Lack of systemic vision and thinking beyond capitalism</b>	12
<b>CE criticism</b>	26
<b>Ecological sustainability</b>	145
<b>Climate Change</b>	20
<b>Energy efficiency</b>	2
<b>Carbon offset</b>	2
<b>Electrification</b>	1
<b>Imported emissions</b>	1
<b>Carbon sequestration</b>	1
<b>GHG Emissions</b>	7
<b>Renewable Energy</b>	6
<b>Environmental impacts</b>	101
<b>Soil erosion, desertification, and contamination</b>	12
<b>Impact of transport</b>	5
<b>Solid waste pollution</b>	21
<b>Impact on water quality and availability</b>	25
<b>Impact of raw material extraction</b>	2
<b>Air pollution</b>	18
<b>Impacts on local infrastructure</b>	9
<b>Noise pollution</b>	4
<b>Over-fishing</b>	2
<b>Biodiversity loss</b>	3
<b>Environmental benefits</b>	24
<b>Reducing the impact of raw material extraction</b>	3
<b>Healthy soil</b>	5
<b>Reducing pollution</b>	2
<b>Brownfield restoration</b>	7
<b>Biodiversity protection</b>	2
<b>Biodiversity restoration</b>	5
<b>Business models and value retention options</b>	520
<b>Sustainable and circular business practices</b>	198

<b>Industrial symbiosis</b>	13
<b>Biotechnology</b>	7
<b>Product Service Systems</b>	1
<b>Valorisation of 100% of a material and its sub-products</b>	14
<b>Regenerative Organic agriculture</b>	19
<b>Fair pricing</b>	2
<b>Food waste reduction</b>	10
<b>Company flexibility, adaptation, and responsiveness</b>	5
<b>Industry 4.0</b>	4
<b>Sustainable tourism</b>	7
<b>Blue oceans thinking</b>	4
<b>Innovations and technologies to compete and transition</b>	18
<b>Localisation</b>	23
<b>Responsible business conduct and corporate social responsibility</b>	12
<b>Horizontal democratic management</b>	37
<b>Business ecosystems and collaboration</b>	22
<b>Unsustainable business practices</b>	61
<b>Downcycling and "wish cycling"</b>	1
<b>Vertical (top-down) management</b>	4
<b>Planned obsolescence</b>	1
<b>Protected patents and intellectual property</b>	1
<b>Power and maintenance of unsustainable incumbent industry</b>	17
<b>Business practices focus on economic aspects without considering social and environmental impacts</b>	37
<b>General business practices</b>	88
<b>Direct Marketing</b>	6
<b>Moving up the value chain</b>	8
<b>Business Research and Development</b>	13
<b>Marketing and improving the image of firms</b>	18
<b>Diversification of business</b>	18
<b>Creating economies of scale</b>	10
<b>Business economic viability and profitability</b>	15
<b>Market structures</b>	85
<b>Access to financial resources</b>	28
<b>Excessive competition</b>	6
<b>Access to land</b>	10
<b>Low prices of recovered products</b>	16
<b>Consumer demands</b>	5
<b>Cultural relations with an industry (good or bad)</b>	18
<b>Availability of skilled labour</b>	2
<b>Value retention options</b>	88
<b>R0 Refuse</b>	0
<b>R1 Reduce</b>	5
<b>R2 Reuse</b>	18
<b>R 3 Repair</b>	4
<b>R4 Refurbish (also reconditioning or retrofitting)</b>	3
<b>R 5 Remanufacture (also reprocessing or re-assembling)</b>	3
<b>R 6 Repurpose</b>	1
<b>R7 Recycle</b>	31
<b>R 8 Recover Energy</b>	4
<b>R9 Re-mine</b>	2
<b>Redesign</b>	3

<b>Replace (sustainable inputs)</b>	1
<b>Composting</b>	4
<b>Cannibalization</b>	9

## Annex 2 Results of the co-production workshop

Table B: Results of the co-production workshop on the enablers and barriers to a just and sustainable circularity transition\*

<b>Social justice and inclusion</b>	
<b>Barriers</b>	<b>Enablers</b>
- Standardisation of CE application without considering local context <b>(0 votes)</b>	- <b>Creation of multistakeholder platforms so all voices can be heard and context-related regulations and policies can be established (5 votes)</b>
- Corruption in the design of systems to implement CE that foster certain unsustainable economic interests <b>(3 votes)</b>	- Transparent material flows and consequences of CE actions to increase understanding and awareness <b>(0 votes)</b>
- <b>Assumption that social justice is static and reduced to an indicator (5 votes)</b>	- <b>Shared value systems not only measured by monetised system (5 votes)</b>
- Various perceptions of the meaning of social justice and how to implement them <b>(2 votes)</b>	- Equity and shared wealth (not only money) and access to social and public services <b>(3 votes)</b>
- Trade-offs between different social priorities, who decides what is done/implemented <b>(0 votes)</b>	- <b>Don't be bullied by existing choices, create an alternative path (4 votes)</b>
- Focus on paid labour and productivity, disregard for unpaid labour <b>(1 vote)</b>	- <b>Reframing understanding of labour and ending capitalist labour relations (5 votes)</b>
<b>Politics and governance</b>	
<b>Barriers</b>	<b>Enablers</b>
- <b>Science-policy interface focus on certain disciplines and actors (4 votes)</b>	- Inclusive governance processes <b>(2 votes)</b>
- Slow and outdated policy focus on technical fixes <b>(1 vote)</b>	- <b>Citizen participation (9 votes)</b>
- No knowledge on CE policies from citizens <b>(3 votes)</b>	- Multistakeholder platforms <b>(2 votes)</b>
- Academic dynamics <b>(1 vote)</b>	- Education and awareness raising on CE to politicians <b>(2 votes)</b>
- Lack of inter-ministerial connections <b>(3 votes)</b>	- Raising awareness of citizens on CE and its impacts <b>(0 votes)</b>
- Lack of financial resources <b>(0 votes)</b>	- Interdisciplinarity <b>(3 votes)</b>
	- Multi-departmental governance processes <b>(1 vote)</b>
<b>Discourse, knowledge, and worldviews</b>	
<b>Barriers</b>	<b>Enablers</b>
- Sense of inferiority <b>(0 votes)</b>	- Co-creation <b>(0 votes)</b>
- Focus on technofixes <b>(0 votes)</b>	- Conviviality, co-ownership, contextual and adapted technology <b>(2 votes)</b>

- Productivity as an end (3 votes)	- <b>Democratic decision-making and participatory planning (5 votes)</b>
- Difficulty up-scaling solutions and alternative approaches (1 vote)	- <b>Sufficiency (needs-based), reproductivity, and regeneration (4 votes)</b>
- Lack of knowledge sharing and losing traditional and indigenous knowledge in Global North and South (1 vote)	- Context-driven actions, sharing experiences. - Scaling out by creating networks and synergies (1 vote)
- Overconsumption, North-South inequality, and geopolitical interests (3 votes)	- Give space to indigenous knowledge beyond academic discourse (0 votes)
- Lack of training on CE and systems thinking (1 vote)	- Responsible consumption, knowledge sharing, and sharing economy (1 vote) - International cooperation (0 votes)
	- <b>Revise curricula from kindergarten to tertiary education and vocation training (4 votes)</b>

## Ecological sustainability

Barrier	Enabler
- Lack of awareness and knowledge about the benefits of CE (0 votes)	- Increased consumer awareness and demand for products and industries adopting circular economy practices such as reuse, durability, and recycling (1 vote)
- Cultural and normative barriers (1 vote)	
- Inferior and expensive CE products in the Global South, especially Africa (0 votes)	
- Existing policy and regulatory framework focus on the linear economy (2 votes)	- Creation of supportive policy frameworks to mainstream CE (1 vote)
- Lack of enforcement of existing policy and regulatory Framework on CE (0 votes)	
- The economic benefits of linear economy and the high cost of CE (0 votes)	- Use of existing policies and enforce them and expand them to support CE (3 votes)
- Many subsidies to linear economy e.g., inorganic fertiliser production (1 vote)	
- Global North financing of linear practices in the Global South, such as mining (0 votes)	
- Lack of CE technologies in the Global South (0 votes)	- Strengthen public-private partnerships for CE (0 votes)
- CE in the Global South, and especially in Africa, is still mainly carried by the informal sector (1 vote)	- <b>Holistic sustainability policies are needed as many countries must address crucial issues of poverty, inequality, and lack of access to basic needs and services (5 votes)</b>

## Business models and value retention options

Barriers	Enablers
- Visions of CE are unsustainable and not socially oriented (0 votes)	- Disseminate knowledge and skills for a just transition (1 vote)
- <b>Business focused on the bottom line (7 votes)</b>	- Account and report social and environmental performance and businesses (1 vote)
- Businesses are money oriented (1 vote)	- <b>Value-oriented business models that focus on social and environmental goals (4 votes)</b>
- The way innovation is framed/valued for economic gain alone (2 votes)	- Responsible innovation beyond monetary value (1 vote)
- Individual business models (0 votes)	- Ecosystem of business models (1 vote)
- Technical understanding of business models (0 votes)	- Support for business models that promote intangible value (0 votes)
- <b>Lack of access to finances (5 votes)</b>	- Tailored investments (2 votes)
- Need for competition to survive in neoliberal markets (3 votes)	- Moving to protectionist policies (2 votes)

- Lobbying ( <b>2 votes</b> )	- Avoid lobbies ( <b>0 votes</b> )
-Threat of AI ( <b>0 votes</b> )	- Social tax of AI ( <b>0 votes</b> )
- Focus on recycling solutions	- Move to design solutions ( <b>1 vote</b> )

\* numbers in parenthesis represent the total votes given to the barrier/enabler by participants at the end of the workshop; barriers/enablers with more than 4 votes were placed in bold.

## Annex 3: 10 case study summaries

### Case Study 1: Jealsa-Rianxeira

This case study investigates the CE practices of *Conservas Rianxeira S.A.U.* (hereafter Rianxeira), a leading company in the canned tuna market. In the analysis of this case study this report assesses if the transition to the circular economy is incorporating different aspects of social and environmental justice. This research uses abductive methodology to systematically approach data. Data collection included 11 in-depth semi-structured interviews, 2 recorded conversations, and documentary research involving news, company reports and regulations, Facebook entries, and external reports.

Rianxeira is located in the Northwest of Spain, in Galicia. More specifically, it operates in the Ria of Arousa, an important fishing and seafood farming area. The company is implementing CE transformations to maximise the value of the waste resources generated during the production of cans of tuna. Although the company has been using tuna waste to produce fish oil and fish flour for decades, they have recently implemented a cascade production system that allows them to maximise the value of the initial tuna resources. This has led the company to produce high-value-added products such as pet food, fertilisers, nutritional products for pets and humans, and pharmaceutical products. They also produce fish oil and flour with all the resources they cannot transform into high-value-added products.

The CE activities of the company generate a particular kind of social distribution that can be called neoliberal justice (Berry et al., 2021): it enhances economic growth and generates jobs, which in turn, is supposed to improve social well-being. This understanding of social justice emerges from the hegemonic narratives and socioeconomic structures operating in the Global North and the EU. Under this paradigm, it is believed that economic growth and the performance of firms within the global economy will eventually bring social well-being and prosperity. To increase economic growth firms are thus pressured to increase their competitiveness in the global economy. The case study finds that politicians advocate the importance of protecting industry, and even some workers, citizens, and civil society organisations defend the need to generate profits. Yet this material understanding of well-being has many crucial limitations. In line with the Just2CE theoretical framework (D2.1), this case study has grouped potential elements of conflict that should be taken into consideration to promote a just transition to the circular economy in four dimensions: framing, vulnerability, distribution, and learning.

Through the dimension of framing, the transition to the CE might be decoupled from the need for endless growth. This could help create a more holistic understanding of well-being that goes beyond materialist notions. The vulnerability dimension is directly linked to the notion of recognitional and procedural justice, i.e., equal participation in the decision-making processes. In the present case study, this would imply the recognition of vulnerable groups that are not currently represented in the company's decision-making process, and the implementation of democratic channels to make decisions concerning the Ria.

Regarding the distributional dimension, it is essential to ask who wins and who loses during the transition. This involves questioning elements such as power dynamics (is power accumulated or distributed during the transition to the CE?), tendencies in economic inequalities (is inequality being increased or reduced?) and impact on lifestyles (are people being somehow forced to abandon their subsistence means and embrace the market?). Finally, the learning dimension brings together the concerns related to the difficulty of making decisions within uncertain contexts operating with ambiguous information.

The results show that several points should be addressed for a just transition to the circular economy to take place in this case study's context. First, Rianxeira should focus on minimising ecological and social impacts and maximising social well-being. This strategy might include increasing salaries, eliminating gender gaps, reinforcing communication channels to give voice to stakeholders, working with suppliers to assure socially and ecologically sustainable resources, facilitating compatibility between family and work, acting to restore ecologically degraded areas, guaranteeing transparency, reducing the length of value chains by working with regional suppliers, exploring CE innovations with a bigger impact in social well-being, distributing extra-benefits among workers and civil society, etc.

On the other hand, according to each actor's competencies, public administration can implement many different mechanisms to guarantee social and ecological justice. This might include strengthening control mechanisms on private corporations to ensure they truly meet regulations, broadening the scope of those regulations to cover (social and ecological) parameters that are currently excluded, supporting civil society associations and movements, expanding the boundaries of the public discourse concerning growth and prosperity to embrace plurality and immaterial well-being, strictly protecting ecological and cultural heritage, and democratically including all stakeholders in policy-making processes, etc.

As illustrated in this case study, social and environmental justice can only be understood by broadening the scope of the current growth-centric and technocentric imaginary of CE. Civil society's requests for social and environmental justice are in constant tension with political and economic interests. Therefore, this study concludes that the current growth-focused imaginary on CE, which is dominant in the EU, limits our capacity to transition towards a fair and sustainable circular future.

## Case Study 2: Petrecozim And Zimphos

This research investigates two CE case studies in Zimbabwe, namely Petrecozim (Pvt) Ltd and Zimphos. Petrecozim is an initiative started by major companies in Zimbabwe's beverage industry to address environmental pollution related to end-of-life polyethylene terephthalate (PET) bottles. The disposal of post-consumer PET bottles has recently become a significant problem in the country due to the lack of a systematic and planned recovery and recycling programme. This is why key actors in Zimbabwe started an Extended Producer Responsibility (EPR) organization called Petrecozim to manage end-of-life PET bottles. In an EPR system producers and importers assume responsibility for managing the waste generated by their products.

Since 1928, Zimphos has been the country's sole producer of phosphate fertilisers, aluminium sulphate for municipal water treatment, sulphuric acid, and other industrial chemicals. It operates a large factory complex at Msasa in Harare, where phosphatic fertilisers are produced using phosphate rock supplied from the Dorowa Mine. Since 1930, vast amounts of gypsum have been produced by Zimphos as a by-product of phosphatic fertiliser manufacturing and were until recently treated as wastes. Zimphos recently signed an agreement with the construction company St Gobain to use this waste gypsum to make ceiling boards, plastering materials, paints, grout, and ceiling designers. It is a classic example of industrial symbiosis, whereby one company's waste becomes another's resource.

This research sought to identify the barriers and enablers of a just CE transition in the two abovementioned cases of Petrecozim and Zimphos. To do so, this research used a mix of qualitative research methods; a total of 120 stakeholders were consulted using semi-structured interviews, questionnaires, and focus group discussions. Consulted stakeholders included Zimphos and Petrecozim shareholders, managers and employees, as well as local communities and waste pickers.

Results show that the main barrier for Petrecozim is the lack of clarity and enforcement in the national EPR policy in Zimbabwe. It is thus hard to coordinate between many different actors in the beverage industry. Moreover, many PET producers are not contributing to the EPR organization and thus don't participate in Petrecozim's collection and recycling activities. Hence, significant quantities of PET waste are still being unsustainably disposed of in the environment. In addition to this, this study has evidenced a number of important social justice issues. Waste pickers, especially women at the bottom of the value chain who supply waste through Community-Based Organisations, felt that they are not fairly remunerated and are operating in hazardous waste dumpsites with no protective clothing. Another key issue identified is that a significant number of children were working as waste pickers, depriving them of their right to education. Thus, while Petrecozim has made some important strides in collecting and recycling PET, it still has many challenges scaling up its activities and improving its social and environmental outcomes.

In the case of Zimphos, the CE activities were driven by research and development, which recently came up with new uses for the waste gypsum that has accumulated since the 1930s. The industrial symbiosis activities between Zimphos and St Gobain brought about various economic benefits, and many other industrial actors also started to realise the value of the gypsum by-product for their activities. However, this entire industry will be affected because Zimphos plans to suspend gypsum production due to the high operational costs of obtaining phosphoric acid from mined phosphatic rock. Zimphos is considering importing phosphoric acid instead, and this would eliminate the gypsum by-product from its phosphate fertiliser production. This risks ending the industrial symbiosis activities and might negatively affect the workers currently employed in those activities at St Gobain, Zimphos, and other industries. On the other hand, more research is needed to fully comprehend the social and environmental impacts and benefits of this industrial symbiosis collaboration between St Gobain and Zimphos and the impacts of importing phosphoric acid instead of producing it locally. Despite these setbacks, this study showed the potential of industrial symbiosis activities in the Global South. Future research on the topic is needed to uncover hidden industrial symbiosis and circular economy opportunities that could improve industrialization in the Global South while enhancing social and ecological well-being.

## Case Study 3: WEEE In Campania

This study analyses the formal Waste Electrical and Electronic Equipment (WEEE) management system in the Campania Region of Italy, which was implemented following the EU directives and national laws on the topic. It uses a mix of qualitative and quantitative methods (9 semi-structured interviews and an online survey answered by 392 people).

Overall, the analysis aims to understand in detail how (and if) the E-waste management system in Campania Region is transitioning to a just circular economy (CE), by analysing the collection and recovery stages for WEEE, in order to increase the available data and knowledge for decision making by policymakers. Moreover, the case study evaluates the implementation of CE within the formal WEEE management system based on a holistic approach that includes the three pillars of sustainable development, environmental and social justice, care for present and future generations, social inclusion, gender equality, formal and informal labour and child labour.



Campania is a peculiar context concerning solid and industrial waste management. The Region faced a severe waste crisis from 1994 to 2012 due to the dumping of solid waste into overfilled landfills and the incorrect storing of "ecobales" (bales of waste) destined for incineration, leading to toxic groundwater contamination. This environmental and health hazard led to protests and riots by local communities and citizens, which were angered by the serious sanitation risks caused by the pollution. Criminal organisations added further to this crisis by illegally incinerating uncontrolled landfills filled with industrial and dangerous waste. The overall state of the regional waste management system following the phenomena described has left many perplexities in the local population (especially in peripheral areas) with a strong drop in trust in public administrators. Considering these social aspects should provide the opportunity to identify the vulnerable categories of stakeholders (local communities and regional society) within the formal WEEE management system of Campania and increase the understanding of how the formal WEEE management system is addressing the interests of society as a whole. Moreover, this study seeks to uncover how benefits and costs are distributed across all the stakeholders involved in WEEE management in Campania.

Given the uncertainties in the formal WEEE management system in Campania, this study focused on interviewing a wide range of relevant stakeholders (regional and local institutions, research centers, communication managers of WEEE, dissemination campaigns in schools, environmental associations, electronic equipment producers, the regional environmental protection agency, and treatment/collection companies). This helped widen the knowledge regarding those affected by the WEEE management system and uncover how the system is performing compared with the desired outcomes of the EU WEEE directives.

Results from the interviews demonstrated that the most frequently identified barriers to WEEE collection were related to two main elements. First, the phenomenon of "cannibalisation", that is, dismantling of WEEE operated by local informal pickers who keep the parts with higher economic value before WEEE reaches the first treatment plants (parts with a lesser value are thus abandoned or treated without observing the criteria of efficiency and effectiveness regarding the recovered of materials). This phenomenon is not easily quantifiable as it occurs on the margins of the formal WEEE management system. Nonetheless, it is important to note that from an estimate made by EERA-AssoraEE, cannibalisation is a relevant phenomenon (20.000 tons in 2018) but of limited significance (5%) when compared to the total amount of WEEE collected in Italy. This highlights the need to improve the information available on such informal flows both regarding their actual impacts on the recovery of key materials, and the socio-ecological implications this has.

Second, citizens lack awareness about the importance and infrastructure of WEEE collection and recycling. In the survey, citizens showed a reasonable level of knowledge regarding the concept of CE, the collection system for WEEE, and the impact of WEEE on the environment and human health when improperly managed. However, many interviews suggested that citizen awareness was lacking regarding how and where exactly to recycle WEEE. Indeed, the literature on the topic and the interviews pointed out that better communication and awareness raising of citizens was a core driver towards an improved collection and recycling of WEEE. Economic and non-economic incentives or other forms of awards and the adoption of active education-oriented programmes and initiatives in schools, as well as improvements in collection infrastructure and its proximity to citizens, could significantly enhance the quality and quantity of collected WEEE.

## Case Study 4: Ex Ilva Taranto

This research examines a grassroots plan for a just transition of the city of Taranto towards a restorative and regenerative economy. Launched in Mayday of 2018, Plan Taranto can be considered the outcome of an intense social mobilisation that emerged in July 2012. The Plan was formulated independently by a consortium of community organisations from a city deeply affected by environmental injustice. It represents a significant effort to shape a socially consensual imaginary to transition away from the unsustainability of

a steel-based linear economy that currently dominates the city and the pervasive jobs vs environment dilemma that has curtailed any debate on the topic thus far.

Taranto, a city of about 200,000 people, is the home to the ex-Ilva, one of the biggest and oldest steel-making plants in Europe, which produces steel through an integral cycle based on blast and basic oxygen furnaces. Set up in the early 1960s with funds from the Italian government, ex-Ilva's extensive production and employment capacity strongly influenced the territory's development. It has also led to severe pollution and a public health crisis in the surrounding area, compromising any alternative economic possibility. Currently, the factory still employs around 8200 people.

This report starts with a reconstruction of the historical background of this case study – the development of a mono-industrial town and the social and environmental impacts of six decades of steel-making in the city of Taranto and surrounding areas. Second, the report offers a detailed analysis of the proposed Plan Taranto, capturing how the imaginary of transition was articulated by social movements seeking a future beyond a linear Steel-making economy. It also investigates how this citizen-led initiative has framed CE and environmental justice principles. Third, by referring to 23 semi-structured interviews, this report unpacks the collaborative bottom-up process that produced the Plan, investigating its genesis, strategy, dissemination and reception by public institutions, unions and other actors, and its influence on transition debates in Taranto.

The study provides original insights on the role of working-class environmental activism in envisaging a just transition toward a post-fossil economy. This research finds that different and competing visions of transition are emerging locally. On the one hand, a "technocratic" approach is promoted by public institutions and the ex-Ilva management, which is oriented, implicitly or explicitly, to preserve the existing steel-making industry. By applying a narrow understanding of justice in terms of employment preservation, these actors are a severe impediment to a regenerative transition to CE, or to a "just" transition. On the other hand, Plan Taranto has a distinct "convivial" approach. Arguing that a circular economy is deeply incompatible with the continuation of steel-making, the Plan foresees a transition towards a restorative economy through a massive brownfield reclamation scheme as a tool for decontaminating the site and absorbing the workforce left from the plant closure. However, we also find a number of naiveties and critical limitations that jeopardise the goals of Plan Taranto, especially regarding the need to overcome the severe path dependency and lock-in to unsustainable development created by the ex-Ilva plant.

The study argues that a just transition requires sustained engagement and leadership of community organisations, informal groups and inhabitants affected by decision-making, both for embracing justice principles and anchoring these principles in context and place. However, in this respect, this research brings out critical elements. The unity of purpose initially claimed by Plan Taranto hides a persistent disconnection between social groups, which have been unable to join forces to create a solid and united sustainable direction for the territory.

## Case Study 5: Aboabo And Agboblshie, Ghana

The consumption of electric and electronic equipment and the subsequent generation of Waste Electrical and Electronic Equipment (WEEE) throughout the world has substantially increased in the last decades and will likely continue to rise in the 21<sup>st</sup> century. There is thus a crucial need to adopt a socially just and circular approach to managing these wastes. Current research on the enablers and disablers of a CE transition has focused mainly on economic and technological issues. Little attention has thus been given to social, political, environmental and gender issues. This study, therefore, addresses the extent to which social and political factors enable or disable a just transition to a circular economy in Ghana. This research is based on two e-

waste recycling markets as case studies, the Agbogbloshie and Aboabo e-waste recycling clusters and scrap markets. The Agbogbloshie market is a major e-waste scrap yard in Accra, the capital of Ghana. Agbogbloshie is one of the largest destinations of WEEE in the world. The Aboabo market is a less-known e-waste management site in Kumasi, Ghana's second-largest city. The research maps out the e-waste value chain in the selected markets and investigates the perception of stakeholders in the selected scrap markets regarding the notion of circular economy. Methods consisted of 45 semi-structured interviews and various site visits.

Findings indicated that the activities of most stakeholders in the Agbogbloshie and Aboabo markets focused on waste recovery, involving the dismantling and sale of electronic parts, components and scrap metals found in the WEEE. Valuable items recovered include metals like iron, copper, aluminium and lead, as well as cables wires, mother boards, metal casings, circuit boards, and power motors. The players in the studied markets serve as intermediaries between the waste generators and manufacturing companies, who do the recycling. Informal workers in these markets are thus key elements of the circular economy for WEEE.

The key outcomes of the study found that most informal scrap workers were brought to this trade to earn a living after having to relocate to the cities of Accra or Kumasi from villages in the northern part of the country. The presence of a ready market and large amounts of scrap from all over the world made it possible for these informal workers to establish their trade. The general lack of employment and economic opportunities both in their villages in the north and in large cities in the south also led people to find alternatives by working in WEEE recovery.

Findings evidenced a general lack of education, skills and equipment to protect informal workers from the environmental and health impacts of their activities. While most informal workers were aware of the impact of their work on their health and ecosystems, they had no access to the training and protective equipment to prevent harm to themselves and their environments. Moreover, results found that WEEE workers were not highly concerned about adequately managing the less valuable waste materials like plastic, foam, and glass that they generated as by-products of their WEEE recovery process. Results also evidenced some conflicts over the pricing of recovered goods and the low margins gained by informal waste pickers. This limits their livelihoods, as well as their ability to purchase protective equipment and invest in reducing the environmental impacts of their activities. Finally, the public authorities included in the study indicated limitations in their ability to enforce safety rules governing e-waste management activities due to financial constraints. Moreover, the government's push to relocate Agbogbloshie recyclers has negatively impacted the ability of informal workers to access WEEE materials and clients, thereby causing a loss of their livelihoods. The lack of legal and government support and rules to help informal waste traders and recyclers also create social stigma and generates difficulties in performing their job. Further research is needed to understand the full complexity of WEEE recovery processes in Ghana and their socio-ecological implications. Future research could build on these results to improve the sustainability of WEEE recovery operations and the inclusion of waste pickers and recyclers in a just circular economy transition.

## Case Study 6: AlgaEnergy In The Spanish Circular Economy

This report analyses how the circular economy is imagined and enacted in Spain, drawing from the case study of AlgaEnergy, a company recognised as advancing the CE in Spain, which produces micro algae for a range of agricultural and consumer products. The report examines how AlgaEnergy is positioned as a quintessential CE company, what the case illustrates about how the CE is imagined as productive of a better future, and how that future can be achieved. Our methods included 11 semi-structured interviews, two site visits, and participant observations at public CE events. Further, the analysis is based on in-depth thematic

document analysis of CE strategies, public relations materials, websites, and other publicly available documents and reports related to the case study.

Mobilising the lens of socio-technical imaginaries we approach the case to understand better how CE making is pursued in the Spanish context. This approach, we argue, offers a way of investigating the CE under the framework of technologies of humility. We take circularity as a provocation, asking what it means for actors engaged in CE making in Spain to pursue a CE, and why they see it as important to do so.

By centering our critique of the CE on the spaces of imagination that undergird the CE, we situate the "impossibility" of the CE within the frame of analysis, interrogating the construction of CE as the dominant space of action for environmental transformation, and asking how the CE guides and constricts human action. We thereby contribute to addressing whether and how the CE may or may not be amenable to adoption or adaptation away from its ostensibly technical focus toward more broadly and socially inclusive framing and implementation.

We argue that the CE is animated and legitimised by a socio-technical imaginary of caring for the environment by caring for the economy. To this end, the CE discourse focuses on three key areas of CE-making that go beyond literal circle making. These key foci of CE making are innovation, growth, and scale, which are imagined as interconnected, and constructed as distinct sites of normativity.

Finally, the report offers some critical analysis of how these modes of imagination and the associated ways the world is ordered and not ordered, thereby shaping collective action for environmental remediation and broader social change processes. We argue that the CE orders the world in particular ways, shaping the kinds of things that are deemed not only possible but desirable within this framework, while drawing some modes of intervention or ways of approaching change as outside of the realm of the possible, and outside of the scope of interventions which are framed as desirable, moral, and pursuant of human well-being, broadly speaking.

The case has implications for the question of how justice can be pursued as part of the CE, a key question for this project. In mapping out the normative visions of how positive change can be pursued within a CE transition, we make visible the extant notions of justice and theories of social change that the imaginary of caring for the environment by caring for the economy draws together in the CE. The CE emerges as not only another buzzword or empty signifier into which any ideology can be projected, and through which any project of social transformation might take place. Rather the CE draws on widely shared notions of how a good future can be attained, with corollary roles and responsibilities for experts, companies, governing bodies, and "the public" at large. As such, any effort to advance an alternative vision of social or distributional justice alongside or as part of the CE must strategically engage with existing modes of sensemaking and normativity that already animate the CE.

## Case Study 7: Lowerland, South Africa

This report assesses the current state of transition towards the circular economy within the agroecological sector in South Africa, represented by the farm called "Lowerland". Lowerland's move toward regenerative practices, understood both in terms of agricultural practices and in terms of human potential development, takes place against the backdrop of a changing geo-political environment and dramatic climate change. The entire South African agricultural sector confronts changed weather patterns, experiences the fragility of extended value chains, and fears the brimming social discontent that derives from decades of extreme inequality and economic exclusion. Lowerland may then be seen as a prototype of a new mode of agricultural enterprise in South Africa and a harbinger of a future system in harmony with nature and society.

The first objective of this case study in the Global South (GS) is to document and understand the emergence of a circular economy at the agroecological farm of Lowerland, and the way that this informs and shapes the wider agricultural system. This means looking at both current practice and future circularity potential.

Secondly, this research seeks to gain insights into the 'practice' phenomenon of strategising activities and organising collective leadership practices that have coherently kept a complex adaptive system. A key part of this is the move towards horizontal management practices after decades of historically structured and racially defined hierarchical management.

The first challenge for Lowerland has been to remain economically viable in the fiercely competitive farming landscape whilst managing the transition to agroecology. This imperative has conditioned the first moves towards circularity in terms of on-farm practices and along the entire agricultural value chain.

Lowerland's core philosophies in pursuance of this business imperative may be succinctly set out as:

- a) Regenerative agricultural practices working closely with nature and regenerating the people engaged in operations.
- b) Ensuring healthy soil to produce food that is as nutritious as possible.
- c) Increasing diversity in products and services to reflect the diversity in nature.
- d) Efficiency in production to make products affordable and accessible.
- e) "Blue Oceans thinking" to develop a marketable brand, quality products, and integrated farming and production methods.
- f) Shortening the value chain and adding value on-farm rather than farming single commodities and chasing economies of scale.
- g) Bottom-up, team-centred management style with a focus on initiatives and projects that come from within the company/community.
- h) Growing knowledge and practices and sharing to foster momentum, community, and resilience.

Lowerland sets out to grow with these core philosophies intact and to seed new initiatives all the time, embracing the surrounding community and farming ecosystem. This aspiration requires careful attention to strategy and constant learning.

Using a phenomenological methodological approach, this research conducted 10 semi-structured interviews to highlight the emergent circular economy practices around Lowerland. We particularly sought to understand how strategy, organising and leadership work to cohere and embed directionality in a complex adaptive system.

We found that, in Lowerland, the aim to establish regenerative agriculture has been tied from the beginning to a quest for social transformation, "regenerating the people involved in operations" to ensure resilient communities. This goal cannot be achieved by objectives-based planning; it requires listening to and learning from evolving possibilities, adapting strategy to new potentials, constant learning, and adaptation. This study set out to gain insight into these processes. Inevitably then, this is not so much a study *about* Lowerland, but a process of *learning with* those involved in Lowerland in a phenomenological context.

The study illuminated a pattern of leadership-as-practice that treated all daily activity as an occasion for learning: about ways of feeding the soil, ways to enhance productivity through circularity, ways to engage with a direct marketing constituency, and ways to both improve individual knowledge and skills and to forge

collegial working relationships. All in all, Lowerland is a study of an alternative and locally embedded approach to circularity, that focuses on socio-ecological health and well-being. Further research on this case and replication of its successful approach to circularity could help us better understand the types of organizational and business practices that can foster a just transition to a circular economy.

## Case Study 8: Sheffield Advanced Manufacturing Innovation District

By researching the Sheffield Advanced Manufacturing District (AMID), this case study aims to explore the nature of the transition relating to the regeneration of the site. In the 1980s, the area contained the Orgreave Coking plant, where the Battle of Orgreave took place, as part of the 1984 miners' strikes. This was a politically fuelled clash between the striking miners and the police force, seen to represent the systemic mistreatment of the working class by the government. As such, this context fosters particular interest in whether the area's transition has been socially sustainable, acknowledging both local community interests and its deep-rooted working-class history and heritage.

The Battle of Orgreave could be perceived through a duality of narratives, depending on whether an individual believed the statements in the media and by the police, or the stories told by local residents and miners who were part of the conflict. This research is also interested in the co-existence of multiple narratives in the present day, where the AMID could be seen as either an area where economically justified sustainable practices could flourish, or a new development that fails to appreciate the needs of the local community and the importance of the site's heritage.

The AMID consists of the Advanced Manufacturing Park and Sheffield Business Park, both of which contain industrial organisations and the Advanced Manufacturing Research Centre (AMRC), the latter of which forms part of the University of Sheffield. The AMRC has evolved and grown over time, representing a collaboration between academia and industry, with large industrial partners such as Boeing and Rolls Royce being involved. The AMRC also receives government backing through the High Value Manufacturing Catapult scheme.

Data were collected in the form of 17 semi-structured interviews for this case study, with a sampling strategy employed to speak to as many different stakeholder representatives of the AMID as possible. An initial investigation into the value chain relationships was carried out to help understand the circular economy practices and industrial symbiosis mechanisms on site. Whilst the potential and desire for implementing circular economy practices is identified, progress towards implementing these between organisations and as a collective in the AMID appears rather limited.

When considering the transition of the site, participants highlighted that the closure of the coking plant was led by economic issues, not environmental concerns. Equally, the striking miners were motivated not by environmental reasons but by concern for the welfare of their jobs, families, and the local community. The area itself was chosen for the AMID in an opportunistic manner, simply for its availability rather than its heritage; there was no plan in place relating to Orgreave when the coking plant ceased operations.

Exploration into the social dimension of the transition reveals that some stakeholders feel the development has had no impact on working-class communities, who were neither considered in its development nor participated in its planning. New high-skilled jobs were created in the area, which brought with them new opportunities, but they are not necessarily comparable with the jobs lost with the closure of the coking plant. Education appears essential in AMID's social impact, with science, technology, engineering, and mathematics (STEM) education activities taking place. The AMRC training centre is indeed identified as an important institution to educate local people, offering apprenticeships and education to school leavers from post-16 onwards. However, STEM education opportunities do not represent the needs of all local people and their employment and social aspirations. Moreover, a lack of transport infrastructure, in terms of scarce parking and inadequate public transport links, was highlighted as a key issue. Indeed, it made the entire area



inaccessible for residents, which further enhanced their disconnection from the AMID project, and contrived the ability of young people from participating in education programmes. The fast, economically driven way the AMID has developed thus appears to have been to the detriment of social considerations and the needs and aspirations of local residents.

The duality of narrative presented around the Battle of Orgreave, can also be seen in the competing narratives on the transition of the AMID site. The dominant narrative manifests itself as an ongoing successful regeneration of the area, with new buildings, the creation of high-skilled jobs and other economic achievements. Yet, suppressed narratives relate to the memories of struggles felt by the striking miners and working-class communities, which have not been addressed through this transition. This can mean that, despite AMID's economic success, there is still an urgent need to consider social issues in the area.

## Case Study 9 - Waste Management and Recycling Systems in Morocco: SERP Recyclage

The present case study addresses the process of modernisation of waste management in Morocco. There is an emergent and ongoing transition to circularity in waste management in the country, which is expected to expand the economic opportunities associated with waste recycling, while improving environmental protection. The study of this process addresses a specific research gap, as Morocco's CE policies have not yet received much attention from academic research. In our approach, we found that this transition is not exempt from complexities, as changes will impact the current economic arrangements in the informal waste management market, from which many vulnerable people make a living. Our research questions delve into the complexities of the process, asking how it is being developed, how it might affect vulnerable populations, and how it could be improved. Following the theoretical framework of 'technologies of humility' (Jasanoff, 2007), proposed by the JUST2CE project, we organised these questions into four categories: how the transition to circularity is being framed, what vulnerabilities it exposes, how it redistributes costs and benefits, and what learning processes could improve the outcomes.

We answer these questions through qualitative research methods. Our study comprises 22 interviews with specialised scholars, non-profit organisations, governmental officials and entrepreneurs from the waste management sector. Our results show that the framing of this transition is being led by the officials from the *Ministère de la Transition Énergétique et du Développement Durable* (MTEDD) –more commonly referred as Ministry of Environment– who are in charge of passing out new legislation that would 'structure the market' around a model of higher efficiency and improved circularity. This means creating the conditions for the success of waste management companies that can realise the national plans for the modernisation of the sector. To advance this modernisation project, there is a burgeoning business and associative fabric of national companies that collaborate with the ministry and provide the kind of services and solutions that fit into the new circularity model.

On the other side of the spectrum, there are the actors from the informal economy, who are responsible for most of the waste sorting for recycling in the country nowadays, as there is no system to collect sorted waste at origin. Despite their relevance, informal waste collection practices are sometimes portrayed as part of an inefficient model that needs to be overcome. Governmental plans to improve the system consider the needs of the people working in this field, but aim to include them in a formal scheme, provided with social security and safe working conditions. However, structural contradictions make it difficult to reconcile the interests of this population (entailing around 10.000 people) and those of the emergent national waste management



market. Our research delves into these contradictions, how they are being politically addressed, and how they expose the vulnerability of this layer of the population.

To better understand the complexity of this transition, we also address how it might affect the distribution of costs and benefits in the sector, not only in economic terms but also in terms of practical living conditions. On the one hand, the current working conditions of informal collectors entail risks that would be unacceptable in a formal economy, a situation from which the Moroccan recycling industry benefits, in a labour relationship that can be considered exploitative. On the other hand, the integration of informal actors under a formal market paradigm might end up excluding some of these informal actors from the waste recovery business and could potentially reduce the relative margins of economic benefit they obtain as a collective. The ongoing policymaking on this subject must consider the pros and cons of formalisation. This leads us to the last research question regarding how learning processes can improve the fairness of the transition. In this case, we conclude –following the notion of humility in socio-technical transformations– that there is a need to provide the population working in the informal sector with the social resources to represent their interests and to participate in framing the transition to a circular economy. In other words, giving them a chance to collaborate with policymakers and other key actors in the search for solutions for the sector to ensure that their interests and views are properly considered in the process.

## Case Study 10: Minga: an integral cooperative promoting circularities

Minga is a cooperative founded in 2015 and located in Montemor-o-Novo, a small rural town of the Alentejo region in the south of Portugal. The founding members of Minga aim to promote sustainable production and consumption patterns to defy the emigration trend and contrast the environmental predicaments that the agroindustry is creating in this territory. They were inspired by aspects of a Brazilian experience that enabled the development of a communitarian economy in the suburbs of Fortaleza, a city in Brazil's northeast. Thus, Minga founders have ideological and motivational roots in the periphery of the so-called Global South, as the name "Minga" illustrates. Indeed, *minga* is the term used in Ecuador to describe communitarian work conducted for the common good and mutual help; it has its ancestral origin in an indigenous community, and many communities in Latin America still practice it.

The circularity principle that moves Minga's members has its onset in the Global South and flourishes in a peripheral territory (Montemor) of a peripheral country (Portugal) of the Global North. This study analyses the results that emerge from 18 in-depth interviews conducted by the principal author of this report with cooperative members and residents of Montemor. The main aim of this study was to investigate what circular economy means to Minga members and to what extent they implement it (if so). Our findings show that CE interpretations are complex, divergent, and divisive. This range of opinions can be linked to people's educational backgrounds. For some highly skilled graduate members who are originally urban dwellers and recently moved to the rural town of Montemor, CE means mainly waste minimisation and technology-driven circular activities. For others, farmers born in Montemor, who did not pursue a university degree, and are well acquainted with the circularities of local ecosystems and social practices, CE alludes to mutual exchange among producers and inhabitants of locally supplied and yielded resources.

Minga members and collaborators promote several circular activities to move away from the linear and predatory practice of standard businesses (supplying food from local farmers to school canteens, a grocery store with products from local producers, and reducing food waste through vacuum-packing and making food preserves from local products). With these practices, Miga shortens food chains and revitalises sustainable practices in rural areas while taking into account the regenerative cycles of local ecosystems.

However, according to the interviewees, one of the main impediments to implementing circular activities more fully is the contradictory policies that European and national institutions promote. For them, the prominent example is the Communitarian Agriculture Policy, which rewards big agroindustrial businesses and monoculture practices and brushes off small farmers and the circularities they build. The top-down policy narrative alienates most of the elderly Minga collaborators. They feel that policymakers substantially dismiss local and experience-based knowledge and fear CE regulation could once again create obstacles to their traditional circular practices.

Regarding gender, Minga's organisational structure, practices and internal attitude are not gender-biased, based on our analysis of interviews and the distribution of members in the social organs and management tasks. More nuances and doubts have generated issues about inclusivity in a broader sense. Many have noted that most of Minga's influential and effective members are Portuguese but not originally from Montemor, while, at the same time, most of the farmers, craftspeople and a high percentage of the collaborator members are originally from this municipality. It could signal either a persistent scepticism of people born in Montemor to join the cooperative or that they already have their own businesses and jobs, not needing a legal structure like Minga to do their economic activities or to find social relationships and create a new network. Moreover, the cooperative could further improve its support for people who are not highly educated or have less experience in business, financial resources and other essential factors to conduct an entrepreneurial project.

Experiences similar to those of Minga Cooperative are emerging in Portugal, both in rural and urban areas. Despite the different functioning models, they all aim to promote local production and consumption, mutually supportive exchange of material and immaterial resources with specific care for their sustainable uses and waste minimisation. They aspire to create income sources while maintaining most of the wealth created among community members. Making these experiences bloom is key in the transition to a fair and sustainable circular economy. This involves innovative policy-making processes that respect the plurality of bottom-up small-scale initiatives implementing circular activities such as cooperatives and local currencies. Territories based on circular relations cannot exist if rural areas keep losing population and are continuously denigrated by unsupportive national and EU policies, such as excessive liberalisation and support for polluting agribusiness.



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