ETC CE Report 2025/8

A Just Transition to Circular Economy

Exploring current and potential social implications exemplary for the value chains batteries, plastics, and textiles

Authors:
Burcu Gözet (Wuppertal Institute), Wim Van Opstal (VITO), Giacomo Sebis (Wuppertal Institute), Jens Günther (UBA), Rosalyn Old (CSCP)

European Environment Agency
European Topic Centre
Circular economy and resource use

Cover design: EEA
Cover image © by Cecilie_Arcurs on iStock
Layout: ETC CE

Publication Date May 2025

EEA activity Circular Economy and Resource Use

ETC CE coordinator: Vlaamse Instelling voor Technologisch Onderzoek (VITO)

ETC CE partners: Banson Editorial and Communications Ltd, česká informační agentura životního prostředí (CENIA), Collaborating Centre on Sustainable Consumption and Production (CSCP), Istituto Di Ricerca Sulla la Crescita Economica Sostenibile, Istituto Superiore per la Protezione e Ricerca Ambiantale, IVL Swedish Environmental Research Institute, Norion Consult, Universita Degli Studi Di Ferrara (SEEDS), German Environment Agency (UBA), Teknologian Tutkimuskeskus VTT oy, Wuppertal Institut für Klima, Umwelt, Energie gGmbH, World Resources Forum Association.

doi: 10.5281/zenodo.15494624

European Topic Centre on
Circular economy and resource use
https://www.eionet.europa.eu/etcs/etc-ce

Contents

List of Figures

List of Boxes

Acknowledgements

The ETC task team is especially grateful for the valuable guidance and support of the EEA task manager Sanna Due (EEA). It would also like to thank Tobias Nielsen (EEA), Lars Mortensen (EEA), Peder Jensen (EEA), and Martina Bisello (EEA) for their valuable suggestions and feedback. Finally, the authors are grateful to Livia El-Khawad (CSCP), Saskia Manshoven (VITO), Pieter Willot (VITO), Lamia Jaber (WI), and Maike Demandt (WI) for their various support throughout the project duration.

Summary / Description

In recent years, circular economy has developed as a concept that goes beyond merely managing waste and moving away from the tradition linear model. It now presents a systemic approach to extending the lifespan of materials, maintaining a higher quality, as well as contributing to solutions for the triple planetary crises of climate change, biodiversity loss and pollution. Yet, current circular economy discourses within academia, politics, and relevant institutions predominantly focus on avoiding negative environmental impacts of supply chains through changes within the economic system, while overemphasizing technological solutions. Circular economy is often portrayed as a techno-economic approach that prioritizes industrial strategies and economic growth alongside environmental goals but lacks sufficient democratic consultation with citizens and vulnerable groups. Social implications (i.e. aspects of justice), however, are essential to sustainable transitions and hence, essential to circular economy. This reveals a complex challenge with numerous additional cross-cutting gaps and tensions.

The following report aims to expand the narrative of circular economy and adds to the emerging just sustainability transition discourse by (1) mapping the understanding of circular economy and just transition, (2) conceptualizing an approach to a just circular economy by integrating both concepts (3) observing current and potential social implications of circular economy measures along the three key value chains of batteries, textiles, and plastics (4) assessing circular economy policies and initiatives and recommending next steps towards a socially fair circular economy.

Assessing key social dimensions discussed within the discourse of circular economy, employment emerges as the most frequently explored topic, with varying findings on job creation and distribution. Informal sectors, such as waste management, play a critical role but are marked by precarious conditions and risks of exclusion from transition processes. Poverty and education are interconnected with the circular transition. While job creation offers potential for poverty alleviation, this remains largely theoretical without further research and implementation. Education and skill development are essential to enable workers to adapt to circular economic models, particularly in sectors requiring digital and technical capabilities. Gender inequality is another overlooked yet critical area; women´s disproportionate representation in informal labour and unpaid work can exacerbate existing inequalities and requires special attention when designing policy measures.

Against this background, the authors propose an approach towards a just circular economy that balances the economic, ecological, and social dimensions of sustainability, where social aspects are given equal importance alongside environmental and economic considerations. This is carried out based upon the principles of distributional, recognitional, and procedural justice. An evaluation of the value chains batteries, plastics and textiles thereby revealed the following justice concerns that are relevant in the context of circular economy:

- **Batteries:** The extraction of key materials for batteries like cobalt, nickel, and lithium disproportionately impacts low- and middle-income countries through environmental degradation, poor labour conditions, and public health risks, while the economic and technological benefits largely accrue to wealthier nations *(distributional justice)*. Mining

projects thereby often marginalize vulnerable groups, including indigenous populations and small-scale farmers, failing to include them in decision-making processes about land use and resource extraction *(procedural justice)*. Further, indigenous and local communities are frequently displaced due to mining activities, eroding traditional knowledge, cultural heritage, and livelihoods *(recognitional justice)*.

- **Plastics:** Low- and middle-income countries, particularly in the Global South handle much of the world´s plastic waste, bearing the environmental health burdens of plastic pollution. Workers in the plastics production and recycling chains face significant health risks due to exposure to toxic substances and pollutants, which disproportionately affects lower-income communities in both the Global North and South *(distributional justice)*. Informal waste workers (i.e. waste pickers) are integral to the global plastic system but face marginalization and are often excluded from formal decision-making processes *(procedural justice)*. Acknlowedging their expertise could thereby lead to better collaboration, greater socio-economic benefits, and a more inclusive approach to tackling environmental challenges such as plastic pollution *(recognitional justice)*.
- **Textiles:** The global textile value chain disproportionately burdens workers and communities in low- and middle-income countries particularly through environmental pollution, mismanagement of textile waste, and poor labour conditions *(distributional justice)*. While focusing on individual (consumer) efforts and technology-driven solutions, a global need for systemic change of the value chain is often overlooked *(procedural justice)*. Marginalized groups involve women, migrant workers and local communities in the Global South, whose needs need to be addressed, achieving fair wages and addressing social stigmas surrounding second-hand clothing and repair practices, and understanding cultural differences in sustainability approaches *(recognitional justice)*.

The value chain assessment clearly shows that comprehensive measures are required at each stage of the value chain to ensure a fair and sustainable transition to circular economy. Circular economy policies and strategies can have tremendous impacts on different regions, societal system and groups – emphasizing their need to be designed to prevent exacerbating existing inequalities or shifting environmental and social burdens to regions outside of Europe; While mandatory policy measure can be crucial in ensuring the contribution of all stakeholders, non-mandatory policies (such as taxation and subsidies) can redistribute financial effects and reduce burdens on certain groups. Standards can address informational asymmetries and unfair practices, while multilateral approaches and international trade regulations can promote fairness, as long as they reflect mutual benefits for all stakeholders along the value chains, including end-of-life actors such as informal waste pickers. Governments can support long-term justice through participatory processes and by developing and promoting metrics, frameworks, and global standards to monitor progress toward justice dimensions and aspects. A just transition to circular economy requires policymakers and researchers to deeply understand existing injustices and incorporate social fairness into circular economy activities. The authors conclude that this requires continuous commitment, since circular economy will not be just by default but by design with data generation for monitoring and evaluation as a key enabler. A comprehensive set of indicators is thereby essential to support the transition to circular economy covering material and waste flow indicators, environmental footprint indicators, policy and process indicators, behavioural indicators, as well as economic and social impact indicators – as defined in the “Bellagio Declaration”[1] (EPA Network et al., 2020).

[1] The “Bellagio Declaration” is a set of principles capturing the monitoring of the transition towards circular economy with all relevant aspects and parties. It serves to guide national and European authorities in the development of monitoring frameworks and indicators.

Key Messages

- A just circular economy must be actively shaped, not assumed. Social fairness will not occur by default, but through intentional and well-designed transformation processes. To prevent deepening existing inequalities and avoid creating new ones, policies and regulations must be socially inclusive and thoughtfully developed.

- Circular economy policies and practices often prioritise technological and economic solutions, neglecting social dimensions and therewith justice aspects, such as employment impacts, informal labour, or gender inequality.

- Key justice concerns in the global value chains of batteries, plastics, and textiles include poor labour conditions, health risks, environmental degradation, unequal economic benefits and burden shifting[2] from Global North to Global South. Addressing these issues requires tailored approaches that address distributional, procedural, and recognitional justice.

- Inclusive governance structures, participatory decision-making, and recognising the contributions of marginalised groups, such as informal waste workers and indigenous communities, are vital and crucial for a just transition towards circular economy.

- Transparency along value chains, monitoring and evaluation mechanisms, standardised metrics, and effective communication are essential to track progress, ensure accountability, and foster broad support for just circular economy initiatives.

- Supporting stakeholder initiatives, skills training and justice-related new business models are key to fostering a just and inclusive circular transition, as well as increasing societal awareness through educational campaigns and empowering communities to ensuring sustainable production and consumption patterns.

- Managed in the right way, the circular transformation has the potential to enhance social impacts, such as those related to employment and equity. It is possible to manage the transition in ways which benefit both established players and marginalised communities in Europe and in the Global South.

[2] Burden shifting occurs when consumption and production happen in different places. It means that the impacts driven by consumption are translocated to countries where production takes place. It typically occurs between 'developed' and 'developing' countries. (IRP, 2024)

1 Introduction to the discourse around circular economy

1.1 Circular economy – a common understanding

In recent years, circular economy has developed as a concept to go beyond just managing waste and moving away from a linear model. It is now seen as systemic approach keeping materials in use for longer, maintaining a higher quality, as well as contributing to solutions for the triple planetary crises of climate change, biodiversity loss and pollution (EEA, 2024a).

In order to achieve ambitious EU sustainability goals, circular economy[3] is part of wider transitions, which will involve significant changes to lifestyles, especially from the consumption and production perspectives (EEA, 2024a). The focus of circular economy has primarily been on avoiding negative environmental impacts of our supply chains through changes within the economic system. However, these transitions do aim to also improve wellbeing for humans and other species, with respect for ecological boundaries and the addressing of existing injustices which are linked to environmental degradation and climate change (EEA, 2024a).

Against this background, the following chapter analyses the current discourse on circular economy, while highlighting gaps and challenges towards justice aspects (chapter 1.1). By aiming to conceptualise a circular economy in which justice serves as a backbone the concept of just transition, its principles and aspects will be reviewed in chapter 1.2.

1.2 Current discourses on circular economy – a solely ecological debate?

Social sustainability and justice

Alongside environmental and economic aspects, a range of social issues have the potential to interact with or face implications from the circular transition, including (but not limited to): fairness (see Box 1), justice, equity[4], equality, migration status, intersectionality, and inclusion. While any of these individual elements may apply to an individual, intersectionality can also play a role, defined by the EEA (EEA, 2024c) as "how specific circumstances related for instance to demographic characteristics and socio-economic and legal status intersect and how disadvantages can compound themselves" (e.g. how socio-economic and demographic characteristics such as gender, level of education, social class, ethnicity, etc. interact in the generation of injustices). Circular economy does not sit outside of the social sphere and inevitably has a range of social impacts such as regional and global inequalities, impacts on employment markets and working conditions (EEA, 2024a).

For a more holistic approach to circular economy, a variety of adjacent agendas present further factors for consideration, corresponding to who is involved in circular economy, who benefits, and who is affected, at which stage of the circular process. There are several different approaches to such themes from the broader sustainability field, including from the gender perspective (e.g., Bell, 2016; L. Suarez-Visbal et al., 2022), labour movement (e.g., Saliba, Rué Glutting, et al., 2023), social and cultural aspects (e.g., Pal, 2022), alternative economic and de-growth agendas (e.g., Hobson & Lynch, 2016; Rask, 2022; Schröder, Bengtsson, et al., 2019) and equality perspectives (e.g., Lettmann & Schmoeckel, 2022). The field is broad, and therefore a focus in this context is put on the most relevant interpretations in relation to circular economy within the European sustainability transition.

Justice as a concept is one which increasingly comes up in sustainability discourse. The latest EEA's documents briefing 'Delivering justice in sustainability transitions' (2024) and 'Just sustainability

[3] The circular economy focuses on the transition from linear models of consumption and production to those which keep resources in use, as part of a cycle of reuse and repair, for longer. (https://www.eea.europa.eu/en/topics/in-depth/circular-economy)

[4] The EEA´s understanding of these indicators are as follows: Equity: Customised tools and assistance that acknowledge and address inequality (Inequality: Unequal access to opportunities); Justice: Transforming the system to provide equal access to both tools and opportunities for all; Equality: Evenly distributed assistance and tools. (EEA, 2024b)

transitions. From concept to practice' (2024) aims to unpack what the concept of justice can mean in the context of this process. They suggest Avelino et al. (2023)'s interpretation of the point at which transitions can be considered 'just', when they:

> *'improve the quality of life of current and future generations, both human and non-human, within ecological boundaries while eliminating injustices that are triggered or exacerbated by unsustainability and its underlying causes' (Avelino & et al., 2023)*

Opportunities of a circular transformation which incorporates social and justice principles

The incorporation of justice and social aspects into circular economy presents a number of opportunities. Managed in the right way, the circular transformation has the potential to enhance positive social impacts, such as those related to employment and equity. It is possible to manage the transition in ways which benefit both established players and marginalised communities in Europe and in the Global South (Schröder, Anggraeni, et al., 2019). In many cases, changes to circular business models have the potential to present new opportunities. For example:

- Steps could be taken to expose fewer informal workers to hazardous materials through the management of waste from EU countries (Old et al., 2022). Informal waste pickers may lose their traditional income through such improved waste management, but they could instead be included in official waste management structures, or in the infrastructure needed for reuse- and refill systems. Thus, there is a need for workers to be included in processes (Schröder, 2020), for example, in decision-making or sectoral change processes.
- People working with plastics or batteries are exposed to many hazardous substances (Conlon et al., 2021; O'Hare et al., 2023a; Oyegunle & Thompson, 2018; Steenmans & Lesniewska, 2023). However, when materials and products get more environmentally friendly, easier to recycle or have longer use phases, workers tend to get exposed less to hazardous materials, reducing negative health impacts (PACE, 2021).
- Building new circular economic structures has the potential to create many new jobs across value chains, through new design, infrastructure, waste management methods, and development of further systems for repair, lending etc. (Passaro et al., 2024; Saliba, Rué Glutting, et al., 2023). Technology transfer and capacity building could be supported by effective planning in the transition (EEA, 2024b). As a result, this new employment, knowledge transfer and innovation in local communities could additionally provide social benefits in low-income countries (Fråne et al., 2021).

Gaps, challenges, and tensions

Overall, circular economy has the potential to deliver social benefits (Valencia, Solíz, et al., 2023a). However, to realise this potential, it must be intentionally designed to enable these social impacts (EEA, 2024a). Such benefits won't occur automatically, they need to be clearly identified and deliberately integrated into planning. This will require full societal engagement, and there is a need for further research and analysis on the most effective ways in which to incorporate social equity, inclusion, and accessibility issues (EEA, 2024b). However, there is a lack of indicators on circular economy for the comprehensive monitoring of its impacts on social issues, and there appears to be no holistic framework at present to incorporate social indicators (Coghlan et al., 2021). From the just transition perspective, there are frameworks of indicators available for use, for example those from the Just Transition Fund, covering output indicators (e.g., investments in facilities for separate waste collection) and result indicators (e.g., population benefiting from measures for air quality) (Di Paola, 2023). However, these frameworks have not yet been tested in circular economy contexts. As there is no fully developed circular economy in any setting so far, providing insights beyond speculative hypothesis is difficult. Consequently, the associated social issues and exposure risks remain unaddressed.

In addition, technological developments - such as new technologies, digital processes and data use - must be integrated into the transition alongside social considerations. This ensures that they do not lead to negative social impacts, such as those related to ethics, data security, and privacy. Instead, they should contribute to the shared goals of just transition. This is particularly relevant in terms of employment (job losses/creation), efficiencies, and systemic reshaping of workflows and value chains. One suggested approach is to focus on the knowledge and involvement of stakeholders. This way, the transition to circular economy is not seen just as a technical issue that overlooks power, fairness, and justice. Instead, it is viewed as a process of social and economic change based on principles of social and environmental justice (Purvis et al., 2023).

Active steps need to be taken to ensure that the circular economy transition does not unintentionally exacerbate existing social inequalities (EEA, 2024a). Some illustrative examples include:

- Waste pickers, such as those collecting electronic waste from mixed waste disposal sites, (a common practice in the Global South), often endure low incomes and precarious working conditions (Gutberlet, 2023). A reduction in the volume of used products sent from Europe to these regions for disposal could risk eliminating their already limited income opportunities.
- Working conditions in sectors such as textiles and mining are already very challenging. The regionalisation of supply chains within Europe, driven by circular economy policies, could reduce demand for e.g. apparel production and potentially worsen job security challenges in producing countries outside of Europe (Repp et al., 2021a).
- Globally, women are often employed in less formalised forms of labour. Consequently, large-scale shifts in economic structures may disproportionately affect their job prospects due to lack of formal protections.
- Current linear workflows often foster conditions that contribute to social and labour exploitation. Circular business models risk replicating these issues, such as the reliance on cheap labour and unsafe working environments, particularly in recycling industries in the Global South. For example, electronic waste from Europe is frequently exported to Ghana (Basel Action Network, 2019), where it is processed at sites like Agbogbloshie, one of the world's largest e-waste hubs. Workers there endure extremely hazardous conditions and severe health risks (Asante et al., 2016; Population Connection, 2021). As recycling is a cornerstone of circular economy, these harmful practices could persist or even intensify if not carefully addressed.

In summary, the incorporation of the social pillar of sustainability into circular economy transition is a complex challenge, revealing numerous additional cross-cutting gaps and tensions.

2 Just transition and its principles

The notion of just transition emerged in the 1970’s and has since evolved into a concept that considers social needs and aspects in the design of transformation processes. It originates from discourses on labour-related impacts of phasing out from fossil energy sources (Schröder, 2020). This concept essentially aims to ensure that the social costs and benefits of transition processes are equitably distributed among societal actors, while respecting the interests of the most vulnerable and affected groups.

2.1 Key justice dimensions

The specifics of the just transition concept are still subject to debate in academia. Yet, considering Schlosberg's conceptualisation of Environmental Justice (Schlosberg, 2004), three key dimensions have surfaced over the past decades: *Distributional justice*[5]*, Procedural justice, and Recognitional justice*.[6]

These three key dimensions attempt to highlight the importance of ensuring that, overall, costs and benefits of transformation processes are distributed equally; processes for the distribution outcomes are designed fairly; and that they take into account the unique positions of affected stakeholders. In essence, it is not only the outcome of transformation processes that must reflect a fair allocation of costs and burdens among actors, but the underlying process itself must be as inclusive as possible by design (EEA, 2024a). These three core dimensions, aimed at fostering as holistic and fair a transition as possible, are further explained below.

Distributional Justice addresses how costs and benefits of human activity are distributed within societies, among societal actors, and towards other species, when designing measures for transformation processes (EEA, 2024b). This idea first emerged in Aristotelian philosophy and developed over the course of centuries (Kloepfer, 2006). Key to this dimension is the identification of potential positive or negative implications as a result of the decision-making process, as well as discerning who will specifically benefit from or bear the costs of the decision. The main objective of distributional justice is to identify anticipated winners and losers and ensure that risks are adequately mitigated to prevent certain societal actors from bearing an unfair burden. In the past, justice scholars have also identified a broad set of criteria to more specifically guide how distribution should occur (Elster, 1993).

Procedural Justice considers procedural aspects in the design of societal decision-making processes. Within this dimension, it is essential to include and consider any relevant stakeholder group that might be affected by the impending decision. Hence, the level of participation in the processes leading to the re-evaluation of societal structures and the distribution of their outcomes determines the fairness of the path for transitional politics. Inclusion is a pivotal determinant in this regard, aiming to prevent the creation of new injustices and the deepening of existing ones. The fairness of the outcome is also determined by how the stakeholders involved perceive the structure of the process (Lind & Tyler, 1988).

Recognitional Justice gives space to the notion that for a system to be successfully designed, it must reflect a multitude of worldviews and reflect upon existing injustices. This entails considering not only stakeholders' views but also the injustices that they endure and the underlying systems upholding them. Recognitional justice primarily tackles predominant and underlying worldviews that fundamentally shape existing systems (Steenmans & Lesniewska, 2023). For the transition towards circular economy, this might entail explicitly acknowledging injustices in transition processes and actively respecting and including the viewpoints of stakeholders. To a certain degree, recognitional justice is inherent in distributional and procedural justice, as the equitable distribution of resources and the inclusion of stakeholders in processes involves considering and including their viewpoints and ideas.

Considering all three dimensions of justice allows decision-makers to adequately reflect potential transitional challenges, gather sufficient information to effectively address obstacles, and thereby design a pathway that is as socially reflective as possible.

[5] The terms "distributive justice" and "distributional justice" are often used interchangeably to refer to the equitable allocation of resources, benefits, and burdens within a society. Both concepts focus on fairness in distribution, though "distributive justice" is more commonly used in philosophical and ethical discussions, while "distributional justice" appears in environmental justice and policy-oriented contexts (EEA, 2024b; Kirchherr, 2021). In this report, we therefore refer to the concept "distributional justice".

[6] These are also explored in the EEA briefing: Delivering justice in sustainability transitions — European Environment Agency (europa.eu)

2.2 Justice Aspects

As indicated, the details of the just transition framework are still debated in academia. In addition to the three key dimensions, some further cross-cutting aspects have a significant relevance for an all-encompassing approach towards a just transition and impact upon all three of the above-mentioned key dimensions.

These are Intersectionality, Capabilities, Epistemologies, Spatiality, Temporality (or Intergenerational Fairness), as well as Restorative justice, highlighted here as a thematic and domain-specific justice (EEA, 2024a).

With I**ntersectionality**, multiple interconnected social dimensions of discrimination can be unveiled (Atewologun, 2018). This essentially suggests that individuals or groups can be characterised by a range of social determinants, each of which may contribute to either societal exclusion or inclusion. Such social determinants can include age, sex, gender, sexual orientation, country of origin, nationality, neurodiversity, religion or income. All of these factors also determine an individual's or group's conception of justice. Acknowledging and comprehending the multitude of these potentially interconnected circumstances allows the development of more thoughtfully crafted policies aimed at achieving socially just outcomes that address the needs of diverse populations (Crenshaw, 1989; Gonzalez, 2021).

Capabilities concerns the access to means and resources of an individual or a group in order to engage in societal developments (Biermann & Kalfagianni, 2020; Nussbaum, 2011). Considering this aspect allows for reflection on the extent to which societal actors possess the capacity to respond to transformative changes, and consequently, how significantly they might be affected or which additional support they may require to mitigate potentially overwhelming consequences.

The core idea of **Epistemology** is to encompass a wide range of viewpoints and knowledge, granting them a role in decision-making processes (Fricker, 2007; Ghosh et al., 2021; Wijsman & Berbés-Blázquez, 2022). In light of this aspect of justice, it becomes crucial to actively incorporate various sources of evidence and utilise them as the foundation for policy making. For instance, this could mean to respect and consider indigenous or other non-scientific sources of knowledge.

Spatiality refers to the geographic area impacted by specific measures (Langemeyer & Connolly, 2020; Soja, 2010; Stevis & Felli, 2020). It allows the mapping of expected or projected losses and benefits of transformation processes, considering how these implications might be distributed across different geographical areas. This helps prevent impacts that could disproportionately burden specific regions, whether at the regional, national, or international level.

Temporality addresses how policies impact issues of justice over time (Gonzalez, 2021; Langemeyer & Connolly, 2020). With this aspect, societal decisions must consider short-, mid- and long-term effects and precariously manage them to avoid perpetuating injustices for future generations. A specific notion of temporality is I**ntergenerationality**, which deals with how current generations take into account the effects of their actions on future generations (GNDE, 2019, pp. 83–84). Especially the burdens of ecological adaptation must be distributed fairly across generations in order to ensure ongoing well-being and good living conditions.

With **Restorative Justice** (Zehr, 1990), an additional recourse to the timely dimension of justice has been added. Past injustices can continue to exert influence on the present, hindering affected individuals from benefiting from ongoing (and future) transformation processes. It is therefore important to confront past injustices and remedy or compensate for losses and damages to ensure that individuals and other species and ecosystems will be able to overcome the enduring negative implications of past injustices and capitalise on the positive effects of transformative policy measures. This can, for instance, be done through financial compensation for losses or the restoration of natural areas (EEA, 2024b).

Considering all aspects of justice is crucial when applying the three dimensions of justice, in order to accurately reflect social realities, account for effects over time, and address consequences for individuals who may be beyond immediate access.

Box 1: Social Fairness

Fairness was prominently elaborated by John Rawls in his concept of 'Justice as Fairness' in 1971, where he essentially characterized fairness as a societal situation, in which the exercise of personal rights is equally ensured and where inequalities exist to serve the benefit of least advantaged groups of society (Rawls, 1971). Fairness is an adjacent concept that can be considered in terms of how the benefits and negative impacts of the transition are spread across countries, sectors, and demographic groups within populations, often (but not exclusively) in terms of employment. It also relates to decision-making processes, including how decisions are made, whose perspectives are taken into account and who holds decision-making power. The notion of social fairness especially encompasses equitable engagement across different generations, ensuring an intergenerational distribution of societal challenges (EEA, 2024c). Social fairness has been declared a key guiding principle for the next European Commission (von der Leyen, 2024).

3 Just transition within the circular economy discourse

Current circular economy discourses within academia, politics, and relevant institutions predominantly emphasise economic and ecological concerns, often neglecting social aspects of both the transformation towards circular economy and the envisioned model of a circular economic system. A growing body of literature is beginning to address this gap, but significant aspects are not yet reflected. This gap was identified through a literature analysis, examining relevant sources.

For the following analysis, both scientific and grey literature has been reviewed. The aim was to identify whether the abovementioned dimensions and aspects of just transition were integrated or discussed within the realm of circular economy, particularly along the life cycles 'before use', 'during use' and 'after use'.

3.1 State of the art

Within the literature that reflects critically upon the current circular economy discourse, it appears to be a consensus that there is too strong an emphasis on the role of technology, while neglecting social aspects of sustainability transitions, and equally so of potential social implications arising from those technologies. It is claimed that circular economy presents a 'techno-based solution, combining the imperative of economic expansion with environmental concerns' (Purvis et al., 2023, p. 10) that develops strategies for industry and products (Saliba, Rué Glutting, et al., 2023) without sufficient democratic consultation with citizens and vulnerable people (Friant et al., 2021).

Researchers and international organisations such as the ILO play a significant role in popularising the topic. Despite their reports and a number of definitions of circular economy emphasising social dimensions, and in particular social equity, literature seeking to explore this dimension in a systematic way is still scarce. A study examining 203 studies on circular economy revealed that only 18% of studies considered any social dimensions, compared to coverage of 80% and 66% for environmental and economic dimensions respectively (Calzolari et al., 2022). Furthermore, within the social dimension, 'employment opportunities' is the topic examined most frequently, while indicators such as 'quality of jobs' or 'social cost of waste', 'social inclusion', 'gender', 'training and education' or 'well-being' are less often considered (Calzolari et

al., 2022; Padilla-Rivera et al., 2020). The authors argue that these are crucial aspects, which must be brought more to the forefront in the circular economy discourse (Padilla-Rivera et al., 2020).

3.1.1 Employment

Job creation and employment appears to be the most frequently addressed social aspect within the discourse of a transition to circular economy [e. g. in Calzolari et al., 2022; Padilla-Rivera et al., 2020]. Existing studies on the employment effects of a transition to circular economy differ significantly in their findings, largely due to variations in their methodologies.

While most methodologies in the literature focus on forecasting exercises, discrepancies arise due to factors such as whether environmental tax reforms are included in policy scenarios, the extent to which economic activity is estimated to shift toward more labour-intensive sectors, and the overall heterogeneity of the modelling approaches used (Saliba, Rué Glutting, et al., 2023). An ILO study from 2018, for instance, highlights an uneven global distribution of employment impacts in the absence of redeployment strategies (e.g., unemployment protection schemes, cash transfer programs, public employment programs and payments for ecosystem services fees) (ILO, 2018a). The study found that job reallocations from mining and manufacturing to sectors like waste management, services, or utilities would lead to job growth in Europe and the Americas. In contrast, regions such as Africa, Asia, the Pacific, and the Middle East would face significant job losses.

Despite this, most research on employment and circular economy remains focused on the Global North, particularly the EU and its Member States (Guillibert et al., 2021; Saliba, Rué Glutting, et al., 2023). However, some scholars suggest a potential decline in employment in low- to upper-middle-income countries outside the EU, especially in the labour-intensive textile industry (ILO, 2018b; Repp et al., 2021a). Moreover, job creation stemming from a circular transition is often believed to provide opportunities for vulnerable people in the labour market (OECD, 2022a). However, this should not be taken for granted (Van Opstal et al., 2024).

The informal sector, particularly informal waste management systems, plays a crucial role for employment globally (Gall, Wiener, Chagas De Oliveira, et al., 2020; Mies & Gold, 2021) and there are concerns about the precarious living and working conditions within this sector (Guillibert et al., 2021; UN-HABITAT, 2022). Consequently, some authors advocate for the inclusion of informal waste pickers in transition processes to promote social justice (Schroeder & Barrie, 2022). Lastly, child labour is rarely addressed in the context of circular economy (Padilla-Rivera et al., 2020; Saliba, Rué Glutting, et al., 2023) despite being a well-known issue within literature on informal workers (Saliba, Rué Glutting, et al., 2023). Given the crucial role of the informal sector in waste management globally, child labour could pose a challenge within circular economy.

3.1.2 Poverty

Two notions of poverty can be identified as occurring within circular economy. First, in-work poverty connected with working in the informal sector and low-quality jobs in waste management could be reinforced through circular economy measures (Guillibert et al., 2021; Saliba, Rué Glutting, et al., 2023). Second, current discourse promotes the view of circular economy as a means to eradicate poverty on a larger scale, suggesting that job creation in this sector could bring significant socio-economic benefits. However, this potential remains largely theoretical, as research on poverty alleviation within the circular economy is still insufficient (Saliba, Rué Glutting, et al., 2023).

3.1.3 Education

The generation of circular jobs requires training and education to obtain a new skill set, associated with specific needs for e.g., circular material streams, reverse logistics, resource sorting, or product refurbishing. Moreover, as circular business models are often connected with data management, digital skills and technological capabilities require further development as well (Saliba, Rué Glutting, et al., 2023).

3.1.4 Gender inequalities

Gender-based discrimination is a significant issue in both environmental justice and circular economy discourses, as noted by several studies (Padilla-Rivera et al., 2020; Schroeder & Barrie, 2022) since, among other things, women are strongly represented in the field of unpaid care work and informal waste picking (Guillibert et al., 2021). In addition, the lower socio-economic position that women occupy in the labour market can exacerbate this inequality, as demonstrated by case studies conducted in Ghana, Zimbabwe, and Morocco (Friant et al., 2021). On the other hand, it is stated that a circular transformation can have positive implications on female employment if accompanied with certain policy measures. A number of authors call for a distinct feminist approach when designing the transition towards circular economy, as some types of work important for circular economy are typically associated with women (Guillibert et al., 2021, p. 12).

3.1.5 Justice

Justice aspects have mainly remained untouched in circular economy literature (Ripa & et al., 2021) and there is relatively little research on what just transition entails in the context of circular economy (EEA, 2024a).

The recently conducted "JUST2CE" Horizon2020 project (2020 - 2024) stands out as an exception, as it explored the conceptualisation and implementation of a just transition towards circular economy. The project aimed to develop an epistemological, theoretical, and methodological foundation for a just transition to circular economy by considering gender and labour justice, global environmental justice, social justice, principles of responsible research and innovation and decoloniality (Passaro et al., 2024; Ripa & et al., 2021). The wide-ranging work packages involved a critical literature review on circular economy and just transition with bibliometric analysis and content analysis. Concerning specific social issues related to circular economy, thematic reports were prepared on gender and labour. These analyses concluded that academic papers on circular economy often overlook the effects of the transition on reproductive and unpaid labour. Additionally, they noted that the definition of labour tends to focus primarily on the quantity of the jobs created locally, while the global employment effects are rarely considered. A multidimensional framework that has also been designed to understand the social justice implications of a circular economy transition was built on the four pillars of the concept of Technologies of Humility (framing, vulnerability, distribution, and learning). This framework was applied to ten case studies[7] (UAB, 2023) from countries around the world, in order to deepen the understanding on socio-cultural implications of the transition towards circular economy and critically question current perceptions and worldviews on circular economy (Ripa & et al., 2021). The project also investigated the potential measurement of the just transition to circular economy by analysing 12 macroeconomic indicators next to GDP (Casazza, 2024; Pinyol Alberich et al., 2024). Although none of the indicators were identified as suitable by the authors, due to several limitations, they can be seen as guidance for the development of

[7] Ethiopia, Ghana, Greece, Italy, Morocco, Portugal, South Africa, Spain, United Kingdom, and Zimbabwe.

new indicators to overcome GDP and enable the measurement of a just transition towards circular economy.

Further research on justice aspects in circular economy literature reveals that most studies addressing justice aspects do not differentiate between its dimensions across various phases of the life cycle. Instead, these dimensions are often considered collectively – across the entire value chain or through a conceptual approach within sustainability transitions. One notable exemption is the publication by Steenmans & Lesniewska (2023), which examines circular economy through the three dimensions of justice while providing concrete examples in this context. For instance, when discussing distributive justice, the authors elaborate two possible distributive risks associated with extended producer responsibility (EPR) schemes: first, adverse effects on informal workers following their inclusion into formalized EPR systems, and second, the increased appropriation of materials by companies through the handling of EPR schemes.

As mentioned earlier, the literature addresses some notions of justice, particularly a few social aspects while others remain underexplored. This includes atypical forms of work, such as informal and temporary employment, as well as the geographical distribution of these potential implications, particularly in distinguishing between the Global North (e.g., the EU) and the Global South. Emphasising these aspects is crucial, particularly within the EU context, since the largest environmental costs of European production and consumption are often felt outside Europe's borders (EEA, 2024a, p. 82). Against this background, the following section proposes a concept for a just circular economy that has been further refined and adapted to pursue a more holistic approach to the justice dimensions and aspects of a circular economy transition.

3.2 Just circular economy - a conceptual approach

Circular economy systems are not inherently socially beneficial just because they are circular (EEA, 2024a). Therefore, the current discourse must adopt a more holistic approach, one that considers the social dimension of sustainability alongside the ecological and economic aspects, while also incorporating principles of justice.

A just transition towards circular economy must be one that is guided by the effort to protect the environment and the rights of human beings fairly and equally, with a just outcome not only regarding the distribution of benefits and burdens but also among businesses and citizens in an international context and across generations (Ashraf et al., 2024a; National Circular Economy Programme 2023-2030, 2023). As environmental and social injustices are deeply embedded in economic and industrial developments (Steenmans & Lesniewska, 2023), both environmental as well as social concerns must be a strong pillar in economic transformation processes. This will ensure that not only any potential environmental and social harm is prevented but that just outcomes in a sustainable future are created.

In order to achieve a just transformation towards circular economy, the concept must not only integrate social aspects but also principles of justice (Härri et al., 2023). The concept of ‘circular society’ serves as a conceptual framework that puts the social aspects in scope (Friant et al., 2021). It thereby expands the current understanding of the circular economy by considering aspects such as power distribution, knowledge inclusion, ecosystem cycles, and more (Friant et al., 2021; Jaeger-Erben et al., 2021; Velenturf & Purnell, 2021). Overall, principles of just transition could thereby serve as guidance for the operationalisation process.

While addressing distributional issues is crucial to ensuring justice in the transition to a more circular economy, it is equally important to focus on the underlying and transitional processes that enable this change (procedural justice). This highlights the need for an inclusive process that includes a variety of perspectives and stakeholders (EEA, 2024a). By doing so, it fosters a better understanding of existing inequalities and narratives. This understanding helps challenge current ideas and empowers policymakers to embrace new viewpoints and systemic insights, promoting recognitional justice.

The following figure proposes such a just transition towards circular economy by expanding upon the traditional circular economy narrative and incorporating dimensions of justice. The figure illustrates an economy that equally prioritises the economic, ecologic, and social dimensions of sustainability. It highlights that circularity measures across the entire value chains of products and services are aimed at achieving this goal. While the concept of the three dimensions of sustainability is not new (Purvis et al., 2019), there is a specific emphasis on highlighting the previously neglected social component within the context of circular economy. The figure furthermore underlines that the application of the dimensions and elements of justice set the frame for balancing the dimensions of sustainability and thus incrementally enable a just transition towards circular economy. Within this context, all three justice principles must equally be considered for measures along the value chain, while considering all six aspects of justice, which can be seen as cross-cutting issues to determine a successful transformation towards a just circular economy.

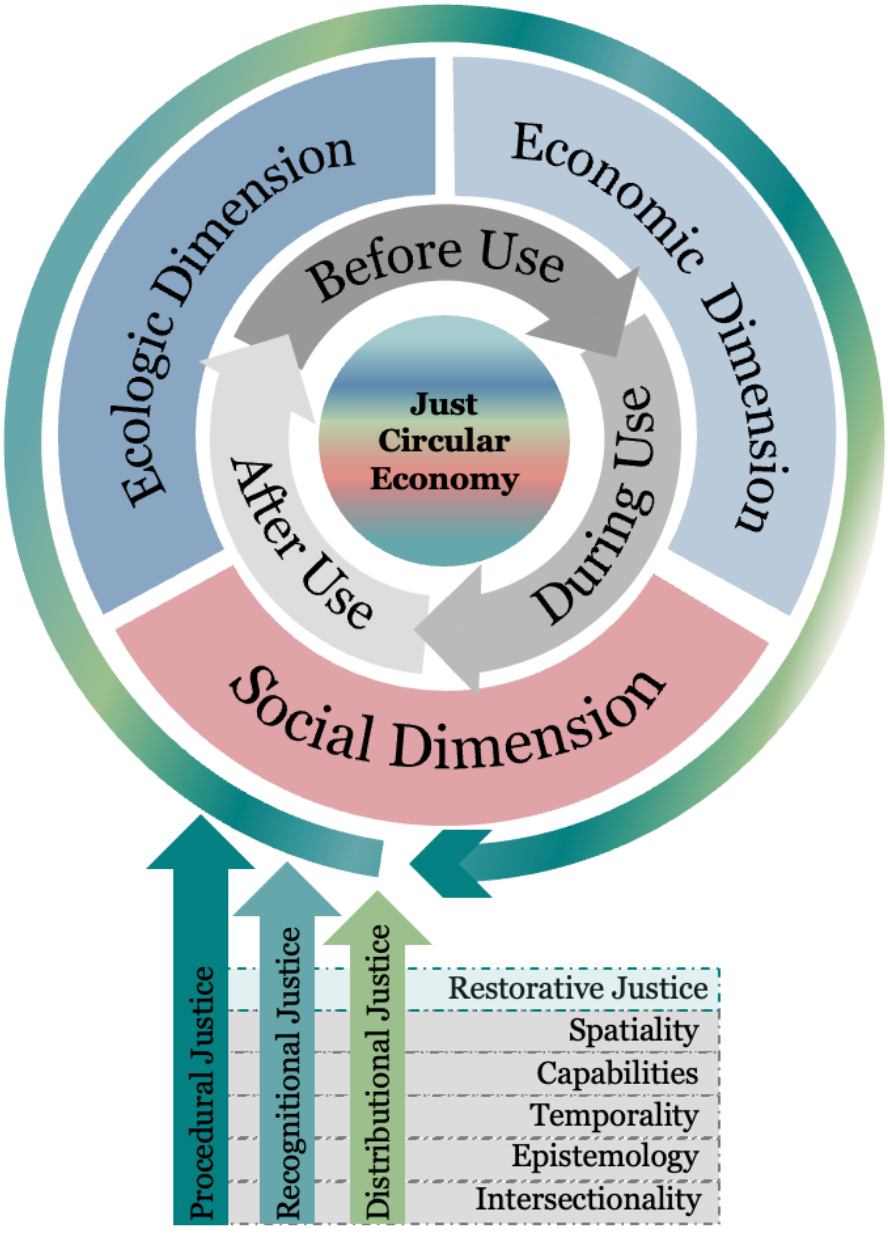

Figure 1. Conceptual Approach Towards a Just Circular Economy.
Source: own graph

Circularity measures, especially when oriented towards the 10-R-Strategies[8] framed by Potting and colleagues (Potting et al., 2017), are implemented within one of the three main life-cycle phases: before use, during use and after use. Independent from how a specific circularity measure will look like, and at which stage of the value chain it will be located, it will have social implications. Different life-cycle phases are confronted with their own challenges when transitioning towards a circular economy (see Bressanelli et al., 2019), and in a circular economy, each life-cycle phase needs different kinds of job types and skills in order to be shaped adequately (Circle Economy, 2021). Interestingly, these phases might offer many opportunities to be thought together and to establish interrelations between them. For example, the design phase of a product is of utmost importance for the overall product performance, and it determines the way resources and product parts can be managed throughout the lifecycle, recycled, repaired, or re-used (Fifield & Medkova, 2016). These circularity challenges will also vary depending on the specific service or product at hand, and on the industry or actor in the value chain, as every industry faces different circularity challenges (Lacy et al., 2020). To add complexity to the issue, the circularity of a product or service also depends on surrounding societal and systemic factors (EEA, 2017).

In sum, there is a need for value-phase- and product-specific approaches to enable a sustainable circular transformation for as many industries as possible. Consequently, these nuanced approaches will affect various social dimensions and issues differently. Hence, all dimensions and elements of a just transition must be considered in order to achieve a full overview of aspects that guide the design of processes and mitigation measures. This helps mitigate negative social consequences and exploit the social potential of the transformation.

4 Value chain related perspectives on justice in the context of circular economy

The following section concretises the previously outlined themes by examining specific justice issues within three selected global value chains: batteries, plastics, and textiles. It will identify potential hotspots of justice concerns within these value chains. For each value chain, case studies will be discussed to illustrate the possible social, environmental, and economic implications of the EU's circular economy transformation on non-EU countries. This analysis will address each dimension of justice: distributional, procedural, and recognitional.

4.1 Batteries

The demand for batteries and especially lithium-ion batteries is expected to significantly increase as they are an essential component in several clean energy technologies such as mobility and energy storage systems, as well as in modern electronics, mostly portable devices. The market for electromobility, and therefore the demand for batteries needed for this, is especially expected to growth rapidly worldwide (IEA, 2024). In addition, the performance of lithium-ion batteries is continuously improving, and they are rapidly replacing other types of rechargeable batteries such as nickel metal hydride (NiMH) and lead-acid (PbA) batteries in various applications (JRC, 2023). Therefore, lithium-ion batteries are expected to dominate the global and the EU battery market for the next two decades and are declared as strategically important in Europe (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal, 2019; EC, 2023; JRC, 2023).

With the new Batteries Regulation, adopted on 12 July 2023, the EU Commission aims to make batteries sustainable throughout their entire life cycle – from the sourcing of raw materials to their collection,

[8] Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, Recover.

recycling and repurposing (Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 Concerning Batteries and Waste Batteries, Amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and Repealing Directive 2006/66/EC (Text with EEA Relevance), 2023). The key aspects within the regulation are:

- Ensuring that batteries are environmentally friendly throughout their life cycle by having a low carbon footprint and containing fewer harmful substances.
- Increasing collection, reuse and recycling rates of batteries to reduce dependence on imported raw materials and promote more efficient use of resources in the EU.
- The introduction of stricter requirements for the safety, performance and durability of batteries is intended to improve safety for people and the environment.
- Extended producer responsibility and due diligence obligations should ensure that social and environmental risks in the battery supply chain are assessed and mitigated.
- By promoting the internal use and processing of resources, the regulation aims to increase the EU's strategic independence with regards to key raw materials.

In addition, through the Critical Raw Materials Act (European Commission, 2024), which entered into force in May 2024, the EU is creating a common legal framework to supply its industry, including battery production and recycling industry, with critical raw materials in a secure and sustainable manner (see Box 3).

Nevertheless, influences on aspects of just transition along the battery value chain can still be identified, but these may at least be mitigated by the further implementation of the two regulations.

Distributional Justice

The sharp rise in demand for batteries leads to a growing need for the corresponding raw material. Even if circular economy pursues the goal of minimizing the need for primary raw materials and the associated negative effects, it is not technically possible to completely close the material cycle. A certain need for primary raw materials therefore remains, which is why circular economy also aims to align raw material extraction with ethical, environmental, and social sustainability goals to minimize harm (ETC CE, 2023a). Addressing issues like human rights abuses, unfair labour practices, and environmental damage during extraction ensures that the materials entering the circular system do not perpetuate harm. Currently, in the battery value chain the main raw materials are primarily cobalt, lithium, nickel and graphite (EC, 2023; JRC, 2023, 2024; SCRREEN2 Project, 2024d, 2024a, 2024b, 2024c). These are often mined in low- and middle-income countries. Typical negative impacts from mining for workers and communities in these countries include severe local pollution, deforestation for agriculture, poor labour conditions and public health risks associated with resource extraction and manufacturing (de Haes & Lucas, 2024; Lucas et al., 2022).

Poor labour conditions

Cobalt is still frequently mined in small-scale mines. For this type of mining violations of human rights, including the most severe forms of child labour, are reported (Campbell, 2020; Church & Crawford, 2018; JRC, 2020). Unfair payment of miners is another social risk in small-scale mining (GIZ & Bundesanstalt für Geowissenschaften, 2021). Forced resettlement and abuses of workers' rights have also been associated with nickel mining in Indonesia (Rushdi et al., 2021) and forced labour in general satisfying EU's demand for minerals (Malik et al., 2024).

Health risks associated with resource extraction

In small-scale mining, there are considerable health risks (sometimes fatal) due to the lack of occupational safety precautions and unsafe locations (Banza Lubaba Nkulu et al., 2018; Church & Crawford, 2018; GIZ & Bundesanstalt für Geowissenschaften, 2021). Other common health problems faced by miners and the surrounding population included respiratory, skin and eye conditions, either through lack of safety precautions in handling chemicals used in mining processes or through emissions associated with mining (Agusdinata et al., 2018; Banza Lubaba Nkulu et al., 2018; Dolega et al., 2020; Rushdi et al., 2021). For example, in Indonesian nickel mines, coal-fired power plants are often the main energy source – associated with respiratory health issues for local residents (To, 2022).

For copper and cobalt mining in Congo negative health effects are also reported. Residents of fence line communities[9] of large copper-cobalt mines reported having not enough clean water to drink, let alone enough for washing and personal hygiene, which is forcing them to use contaminated water for their everyday needs. This leads to skin and dermatology problems and a lower health status in general, but also affecting the gynaecological and reproductive health of women and girls, resulting in irregular menstruation, urogenital infections, more frequent miscarriages and, in some cases, birth defects (RAID, 2024).

Impairment of the living environment of local populations

The environmental impact of raw material extraction often has a direct and far-reaching impact on the livelihoods of local populations. In particular, indigenous populations depend on agriculture for their subsistence and livelihoods. And these are in turn reliant on functioning ecosystems such as rainforests, bodies of water or wetland areas and their ecosystem services (Rüttinger & Scholl, 2017).

In Congo, water pollution related to copper-cobalt mines has significant impacts on crop and fields yields leading to negative impacts on people's income. This in addition, has dramatic implications like reducing food intake (with only meal per person per day), fewer children attending school and individuals being unable to afford healthcare and medicine (RAID, 2024).

Smelting nickel emits sulphur dioxide that pollutes the air, and the sulphuric acid used for leaching contaminates the water. One of the most serious environmental threats of nickel mining comes from disposing nickel tailings, that may damage marine ecosystems as reported for Indonesia (Rushdi et al., 2021). The depletion of marine ecosystems degrades local community livelihoods, especially those of fishermen and farmers. In addition, non-compliance with the necessary safety precautions could lead to contamination of drinking water through the mining and processing of nickel (GIZ & Bundesanstalt für Geowissenschaften, 2021; Rushdi et al., 2021). Acid mine drainage and a higher risk that such tailing dams could overflow and break are associated with copper mining and may have severe negative impacts on the surrounding population (GIZ & Bundesanstalt für Geowissenschaften, 2021). If the mining occurs in arid ecosystems, as e.g. for lithium, the risk of water shortages can negatively impact groundwater levels, and therefore the local population, depending on this water source (Agusdinata et al., 2018; GIZ & Bundesanstalt für Geowissenschaften, 2021; Riofrancos et al., 2023).

The use of large areas of land for mining, as is often the case for copper, results in competition over the use of land with other sectors, above all the agricultural sector. In particular, mining increases the risk of land grabbing, in a context where governments of developing countries often fail to recognise indigenous peoples and communities' customary rights to the lands they inhabit. When these rights are not recognised this often leads to forced resettlement, violation of traditional land-use rights and lands risk to be allocated to outside investors for development (GIZ & Bundesanstalt für Geowissenschaften, 2021; Rüttinger & Scholl, 2017).

[9] A fenceline community lives in the immediate vicinity, so to speak at the company fence, of typically highly polluting facilities (e.g. mines, industrial parks or large production plants) and is directly affected by traffic, noise and, above all, emissions to water, soil and air (based on Chinogwenya, 2024; Fos et al., 2021).

In addition, the local population often benefits little or disproportionately from the mining projects. Mining companies often recruit workers who are not from the region, which means that the expectations of the local population in terms of development and prosperity remain unfulfilled (Petavratzi et al., 2022; Rüttinger & Scholl, 2017).

Disproportionately high impact of conflicts on vulnerable groups

The environmental and social impacts of the mining sector are often relevant drivers of armed conflicts or exacerbate existing tensions, such as disputes over land and water (Franks et al., 2014). Poor working conditions and low wages can also trigger conflicts (Banza Lubaba Nkulu et al., 2018), along with forced resettlements, which have far-reaching social impacts (Rüttinger & Scholl, 2017). Indigenous populations are disproportionately affected by these conflicts due to displacement, resettlement and human rights violations. The profound changes to their way of life, traditions and cultures create unique challenges for these communities, leading to higher potential for conflict compared to other negative consequences of metal extraction (Church & Crawford, 2018; Rüttinger & Scholl, 2017).

The example of the Democratic Republic of Congo, the largest producer of cobalt and a relevant supplier of copper, shows that mining continues to finance armed conflicts (Church & Crawford, 2018; UN Security Council Committee, 2019). Moreover, individual population groups are particularly affected by these armed conflicts. For example, the report by the Group of Experts on the Democratic Republic of the Congo to the UN Security Council Committee shows that children and women are particularly badly affected (UN Security Council Committee, 2019).

Impact of increased use of secondary raw materials

The EU relies for 68% of its cobalt sourcing on the Democratic Republic of the Congo (DRC), with annual demand already being nine times greater than the EU internal supply. Cobalt trade is a key source of revenue for the DRC. Over the period 2014-2017, natural resource extraction accounted for 25-26% of the country's GDP, with natural resources generating 95% of its export earnings (Langsdorf & Duin, 2022). If the demand for primarily extracted cobalt is significantly reduced (Baars et al., 2020), e.g. in implementation of the battery regulation (Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 Concerning Batteries and Waste Batteries, Amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and Repealing Directive 2006/66/EC (Text with EEA Relevance), 2023) and the Critical Raw Materials Act (European Commission, 2024) through increased recycling of batteries and the use of secondary raw materials, significant negative effects on the economy in the DRC are to be expected. In general, it can be stated, that increased recycling of batteries may further transfer profits away from commodity mining countries to producer countries, as the recycling industry is mostly located near the battery production sites due to the specialised expertise needed (Melin et al., 2021).

Unequal adoption rates

Another distributional impact related to batteries is the unequal adoption rates of electric vehicles (EVs) and stationary batteries for renewable energy storage among different social strata. High market prices and regressive distributional fiscal policies primarily benefit high income and wealthy households. In other words, the most vulnerable people in the world are suffering to serve the richest consumer segments in the Global North (Alipour et al., 2022; D'Adamo et al., 2022; Kendall et al., 2023).

Procedural justice

Impacts on SMEs for repair and maintenance

Currently, there are high barriers to repair and remanufacturing of lithium-ion batteries outside of an original equipment manufacturer certified repair network. This is in part a result of battery design, but also a result of proprietary information held by manufacturer. For example, batteries may attach via welds to the chassis, making them hard to open, and/or the use of proprietary battery management system (BMS) hardware and software under copyright make repair by consumers and third parties illegal (Kendall et al.,

2023). Especially in low- and middle-income countries, entire families or communities rely on second-hand vehicles and the ability to provide services like repair and maintenance. This business may be significantly impacted as more electric vehicles enter the market, primarily due to the limited availability of property rights, specialised expertise and expensive tools (Kendall et al., 2023).

Weak stakeholder participation

The social participatory processes that can deliver the so-called 'social license to operate'[10] for mining projects are of great importance. Although participation and consultation processes are often part of the legal framework or anchored in the mining permits, their implementation is sometimes highly questionable, particularly with regard to the granting of decision-making rights to civil society (Petavratzi et al., 2022). 33 % of mining projects related to minerals needed for the energy transition are located on the land of small-scale farmers; However, they face enormous hurdles to meaningful participation in decision-making processes of mining projects (Owen et al., 2022).

Corruption

Corruption can undermine the social contract between the state and its citizens by diverting resources away from essential services, impoverishing communities, and further exacerbating societal fragility. Mineral resources needed for batteries are reportedly subject to corruption schemes and financial crimes (Church & Crawford, 2018; GIZ & Bundesanstalt für Geowissenschaften, 2021; OECD, 2019). Therefore, in addition to reducing the demand for raw materials through circular economy, implementing good governance measures and addressing corruption at the local level are needed to mitigate the negative impacts of batteries (Wolters & Brusselaers, 2024).

Indigenous people disproportionally affected

According to a study by Owen and colleagues (2022), over 54 % of global metals and minerals needed for the energy transition, including raw materials for batteries, are located on lands that are either used or controlled by Indigenous peoples. Indigenous communities have deep historical, cultural, spiritual and emotional connections with the geographical area they inhabit, which are central to their societal identity. Consequently, mining in these areas becomes an enormously sensitive – and challenging – topic (Leyton-Flor & Sangha, 2024; O'Faircheallaigh, 2018). A majority of these areas are within jurisdictions with poor political conditions. For these communities, access to high-quality education, information, technical expertise and state support is often limited available, making it difficult for them to meaningfully participate in decision-making processes, for example those concerning the establishment or expansion of mining projects (Owen et al., 2022).

Recognitional justice

Loss of traditional knowledge

The loss of land due to mining activities often forces populations to resettle, whether voluntarily or involuntarily. This displacement can result in the loss of traditions, cultures and traditional livelihoods, which can lead to long-term economic consequences, particularly in the absence of alternative sources of income sources (Rüttinger & Scholl, 2017). The development of remote areas for battery raw materials extraction is often accompanied by major socio-economic and cultural changes, as is the influx of workers into the mines (Rüttinger & Scholl, 2017). Recognitional justice for Indigenous peoples involves respecting their cultural rights, land and resource rights, as well as self-determination, including their governance

[10] The "Social license to operate" is a specific term used to describe stakeholder acceptance of corporate activities (Moffat et al, 2015). Risk and conflict avoidance of corporate activities is at the core of this concept, and as long as stakeholders like local communities provide their acceptance for the ongoing corporate endeavour, the "social license" is being granted. It has been explicitly applied to activities of the mining sector in various publications (see i.e. Moffat et al., 2016; Komnitsas, 2020; Saenz, 2021).

systems and decision-making processes. It also considers inclusion in decision-making, protection against discrimination, and preservation of languages and tradition knowledge. These rights are outlined in international instrument such as the 'UN Declaration on the Rights of Indigenous Peoples' (UN, 2007) and 'ILO Convention No. 169' (ILO, 1989), which aim to safeguard their dignity and contributions.

Barriers to the reuse and recycling of EV batteries

By exploiting additional value from post-vehicle batteries, the total lifetime of the battery is increased, and recycling is delayed by 3 to 15 years (Franco & Groesser, 2021). An important impeding factor, however, is the fact that third parties mostly are not granted access to read performance data from battery management systems, leading to a suboptimal repurposing of EV batteries to e.g., stationary batteries for renewable energy storage (Kendall et al., 2023; To, 2022). Therefore, it is important to have alternative circular economy applications recognised by manufacturers.

4.2 Plastics

The issue of just transition plays a pivotal role within the plastics sector, as contemporary justice debates surrounding the currently negotiated Global Plastics Treaty show (see Box 5:). Plastic products and the plastics industry are associated with various environmental as well as social concerns, and the transition towards a circular plastics sector poses both risks and opportunities; health, working conditions, income opportunities, and global waste exports pose significant hurdles towards a just plastics sector. Low- and middle-income countries thereby play a pivotal role, particularly in managing plastic waste (Lucas et al., 2022). Justice issues concerning plastics are also referred to as 'plastics justice' (Stoett et al., 2024). Key concerns begin with detrimental effects of plastic production on frontline communities (UN Human Rights Council, 2022) and workers in the plastics chain, extend to the impacts on people consuming plastics products (CIEL, 2019; IPEN, 2022), and finally culminate in challenges associated with plastics waste management (GIZ, 2024b).

In order to tackle the detrimental environmental effects of plastics production and plastics waste, the European Union has enacted a variety of legislation under the Circular Economy Action Plan's Strategy:

- The Waste Framework Directive – since its introduction in 2008 and following amendments - defines plastics recycling targets for household wastes.
- The Packaging and Packaging Waste Directive – in its current version of 2018 - sets out specific recycled plastics content amounts for packaging.
- Beginning with the Commission's bioeconomy strategy from 2018, the policy framework for bio-based and biodegradable plastics has been continuously evolving. Notably, the Commission published its policy framework on biobased, biodegradable and compostable plastics in 2022, setting the stage for enhanced circularity and reduced environmental impacts of plastics. Additionally, various other communications regularly updated technical standards as well as punctual inclusion of the role of plastics in regulations related to different topics, for example fertilizers, complement this policy field.
- The Single-Use Plastics Directive – newly introduced in 2019 – stipulates, in exemplum, bans for plastics products for which alternatives are available, promotes the phasing-out of single-use plastics products or sets recycled content amounts for plastics bottles.
- The Waste Shipment Regulation – amended in 2021 – regulates the shipment of plastics waste from the European Union, setting bans for hazardous and hard to recyclable plastics waste exports to non-OECD countries and setting stricter rules for other plastics waste exports.
- The REACH Regulation - amended in 2023 - restricts the intentional addition of micro- and nano-plastics to certain products.

- The pending End-of-Life Vehicle Directive – once it passes the legislative procedure – could set minimum plastics recycling content rates for vehicles as well as obligations concerning adequate treatment of end-of-life vehicles.
- A currently negotiated Regulation on plastic pellet losses is supposed to enable better plastic pellet handling for the prevention of plastic pellet losses.

Distributional Justice

Health-related consequences during the production phase

Some overarching aspects characterise health issues and working conditions along the plastics value chain. Plastics, in general, pose adversarial impacts on human health, as certain contents and additives can be harmful for human bodies (Conlon et al., 2021; OECD, 2022). Workers throughout the entire plastics value chain are particularly vulnerable, for example because of the addition of toxic substances such as brominated flames retardants during plastics production which also incurs health and environmental risks during recycling (Butturi et al., 2020; CIEL, 2023a; ILO, 2023; O'Hare et al., 2023a). Due to the limited implementation of business and human rights standards in the plastics sector, precarious working situations continue to persist (International Alliance of Waste Pickers, 2023).

But not only individuals directly involved in the plastics value chain, also those living near petrochemical plants and industry zones – so-called fence line communities – experience health impacts caused by pollutants that are emitted into the air and soil. These health-related issues are experienced in many countries across the world (e.g. in Chile, Canada, the United Kingdom or the United States of America) (Bauer et al., 2023; UN Human Rights Council, 2022; Verbeek, 2021). Oil extraction for plastic production also provides health-related harms, as many toxic chemicals are released, and substances used for fracking endeavours are associated with health problems (EEA, 2021b).

Health-related consequences during the use-phase

Health hazards continue to persist after their production, namely during their use-phase (CIEL, 2019). These health-related risks occur via the contact with plastics or ingestion of plastics particles and additives (CIEL, 2019; IPEN, 2022; Kumari et al., 2023), which can cover chemicals and additives used during the production (IPEN, 2022; SWITCH-Asia, 2024). As there is a variety of such substances and additives commonly used throughout plastics products (Hahladakis et al., 2018; Wagner & Schlummer, 2020), health dangers most probably arise notwithstanding the price or quality of plastics products. For example, there is evidence that hazardous substances and microplastics leak from plastic bottles into drinking water eventually finding their way into the human body (Parag et al., 2023; UNU INWEH, 2023; Vega-Herrera et al., 2023). Children are equally exposed to risks with plastic toys (Aurisano et al., 2021; CIEL, 2019; Karlsson & Miller, 2023).

Health hazards during the use phase of plastics products appear to affect different segments of populations differently. Literature suggests a potential influence of socio-economic factors on plastics consumption, with possible differences between Global North-South differences. However, making generalized assessments remains challenging. This topic warrants greater attention and further research to better understand the impacts of plastics on various social groups.

In the United States of America, for example, many minority groups often reside in areas with poor water quality, enhancing their dependence on bottled water (Parag et al., 2023). Additionally, there appears to be a correlation between increased consumption of plastics products and higher household income (Nam, 2021; Sharif et al., 2023), as well as between higher national income and increased plastics production (Hossain et al., 2021). This suggests that higher-income demographic groups may experience greater exposure to plastics.

Some aspects support the argument that populations in the Global South are more severely affected by plastics consumption. Strict food packaging regulations in the Global North [i.e. in the EU and USA (Ong et

al., 2020)] mitigate health-related impacts for consumers in these regions. In contrast, companies operating exclusively outside of these regions are less likely to adhere to such standards, heightening health risks for consumers in the Global South. Furthermore, the high consumption of bottled water in the Global North and the export of plastic waste from the Global North to the Global South exacerbate plastic exposure for populations in the latter region.

Health-related consequences at the end-of-life

Heath-related impacts continue during the end-of-life of plastics products. Persons working in formal waste management are exposed to various health-related dangers (ILO, 2023), including exposure to toxic or infectious components, sharp objects like needles or glass or dangerous emissions – both in Europe and in the Global South (Bleck & Wettberg, 2012; EPSU, 2020). Health-related risks also include psychological stress caused by permanent threats of the working environment (Kageyama et al., 2022). For plastics, more specifically, incineration creates toxic emissions and by-products like ashes, and recycling of plastic materials can lead to contaminated plastics products (CIEL, 2019), increasing contact of workers with the substances indicated.

Informal waste pickers in this sector are particularly exposed to health hazards (O'Hare et al., 2023a), such as toxicities in the composition of waste, intense manual labour performed in a dangerous working environment (UN-HABITAT, 2022) or residues and bacteria in packaging (WIEGO, 2018a). Likewise, informal waste recycling is often associated with health-related concerns such as exposure to pollutants and toxic substances (Lesniewska & Steenmans, 2023; Shennum, 2022). Also, mental health problems are commonly associated with working in the informal sector, as indicated by several studies (Chokhandre & Kashyap, 2017; Karki et al., 2022; Makhubele et al., 2019). Due to high amounts of plastics included in electronic products, recycling of electronic waste serves as another risk factor. E-waste recycling can lead to significant health-related dangers through exposure to harmful substances like inorganic arsenic (Yang et al., 2020), PCBs, PBDEs or heavy metals (Awasthi et al., 2016).

Implications of EU plastics waste exports

Exporting plastics waste is heavily restricted under the Basel Convention, and according to its Art. 4A it is prohibited to export hazardous wastes (which certain plastics form a part of) from OECD-countries to non-OECD-countries. Nonetheless, countries in the Global North export high amounts of plastics waste (INTRACEN, 2023; Eurostat, 2024a), while countries in the Global South import more (OECD, 2022b; Xu et al., 2024).

The situation is similar for the EU: it has severely restricted international trade in plastics and since 2016, EU plastic waste exports are decreasing (EEA, 2024e). More specifically, since 2014, plastics waste exports to non-OECD countries are declining (ETC/CE, 2023). However, trade in plastics between the EU and third countries still occurs, and non-OECD countries still belong to top export destinations (Baran, 2024). Plastics imported from the European Union often have relatively high quality and provide a steady resource stream for local recycling industries. Currently, many plastics exported from the EU consists of ethylene-based polymers, which are easier to recycle (ETC/CE, 2023). However, it may also lead to a heavy dependence on European plastic waste, potentially hindering the establishment of effective local recycling infrastructure (Romson et al., 2024), which is currently the case in Vietnam (Thapa et al., 2024). With non-EU countries restricting plastic imports, waste streams may shift to other nations (EEA, 2021b; ETC/CE, 2023). As the EEA notes, the Chinese plastics trade ban created a 'domino effect' triggering a rapid shift of destinations of EU plastics waste receiving countries, Türkiye being an increasingly important destination country (ETC/CE, 2023) (see also Box 4) on the EU waste shipment regulation).

This plastics waste stream from Global North to Global South (OECD, 2022b; Stoett et al., 2024) adds to plastics waste in the global environment. Even though the contribution of plastics waste trade to global plastics pollution cannot be precisely assessed (EIA, 2021), literature hints towards a shift of environmental and health-related dangers of plastics waste towards countries in the Global South (Barrowclough &

Birkbeck, 2022; Cotta, 2020; Gündoğdu, 2024; Romson et al., 2024; WWF, 2023). This occurrence is also known as 'waste colonialism' (Fuller et al., 2022; Gündoğdu, 2024; GAIA, 2022). The effects of this phenomenon are detrimental: The largest volumes of plastics leakages into the environment occur in the Global South (Cottom et al., 2024; OECD, 2022b). Most rivers transporting plastics into the oceans are located in the Global South, with Asia being a hotspot (Meijer et al., 2021; Ritchie, 2021). This might be caused by the lack of adequate waste management infrastructure (Kaza et al., 2018). With increasing plastics waste imports, the danger of spilling increases.

Marginalised groups and disadvantaged communities

Marginalisation and inequalities are significant issues in the current global plastics system, with many knowledge gaps in understanding how a circular transition might sustain these existing global inequalities (Barrie & Schröder, 2022). There is a risk of locking-in existing inequalities due to inadequate capabilities in many low-income countries (Barrie et al., 2022) and their consequent lack of readiness for the upcoming transition.

The global negative effects of plastic consumption and pollution, including health-related issues, disproportionately impact low-income, marginalised, indigenous, and local communities (UNEP, 2021; Landrigan et al., 2023; O'Hare et al., 2023a, 2023b; Varea, 2024; Liljeblad, 2024). In the context of climate change and climate adaptation, frontline communities tend to belong to marginalised parts of society (Fitzgerald, 2022; Sanders, 2021). In the USA, for example, Black and Latino communities are disproportionately located near dangerous industrial facilities (Southerland et al., 2023). This seems to happen for a variety of reasons including less effective resistance against plants, and as such, petrochemical companies tend to locate their factories close to marginalized communities (National Minority Quality Forum & CEO Roundtable on Cancer, 2024).

It is also important to note that informal waste recycling is largely carried out by disadvantaged communities (Cook et al., 2024; Ezeah et al., 2013; Lesniewska & Steenmans, 2023), which means that they tend to have closer contact with plastics and as such face greater risk of plastics-related health impacts.

Gender issues

There are a variety of gender-related aspects associated with plastics, showing higher risks particularly for women. For instance, plastics substances and additives are associated with higher risks for diseases such as endometriosis (Chitakwa et al., 2024), as well as breast (Dematteo et al., 2013), uterine or ovarian cancer (Cathey et al., 2023). This poses a specific gender-related issue, as various products that are specifically designed for women – like sanitary products (WECF, 2017; Heinrich Boell Foundation, 2023) or make-up (WECF, 2017; Heinrich Boell Foundation, 2023) – contain plastics. Additionally, consumer goods, which also tend to be made of or wrapped in plastics, are predominantly purchased by women (WECF, 2017).

Furthermore, as women make up the largest part of workforce in the textile industry, they tend to get more into contact with plastics during their work-related responsibilities (Heinrich Boell Foundation, 2023). Literature suggests that women are overrepresented in informal, low-value waste management jobs and underrepresented in better providing formalised circular activities (GA Circular, 2019; Heinrich Boell Foundation, 2023; Martínez Álvarez & Barca, 2023). It is therefore expected that changes occurring in that sector might affect women more than men. Women earn less than their male counterparts (Watkins, 2022), and they often only have access to lesser-valued and more dangerous waste streams (UN-HABITAT, 2022). It is furthermore reported that female informal waste pickers more likely suffer from mental illnesses than male informal waste pickers (Karki et al., 2022; Makhubele et al., 2019), which could be traced to specific stressors like physical disadvantages compared to male waste pickers or more difficulties in making an adequate living out of waste picking (Makhubele et al., 2019). Sexual harassment

is experienced by females working in the informal sector, which is also true women in informal waste picking (WIEGO, 2018b; USAID, 2019).

Job creation and working conditions

The current plastics sector and its transformation provides numerous job opportunities along the value chain, reaching from product design to waste management (Watkins, 2022). For example, in the packaging sector, there is a shift towards packaging free or refill alternatives, reusable products, and other innovations eventually reducing the demand for virgin plastics (Noëth et al., 2024; Vilella, 2020). While these initiatives may create business opportunities and job growth (Zero Waste Europe, 2017), they also affect current single use packaging activities of e.g., work integration; social enterprises employing vulnerable groups at the labour market (Van Opstal et al., 2024). Increasing plastics recycling and plastics composting capacities are important for enhanced plastics circularity and could enable the creation of more formalised jobs for decent working conditions (PACE, 2021). Improved working opportunities for workers at the end-of-life can be achieved with the removal of non-recyclable plastics from waste streams, while health hazards can potentially be decreased with enhanced recycling activities (PACE, 2021).

Yet, there might also be adverse effects of a circular plastics transition. Mining or raw material manufacturing may be negatively affected through a decline in Europe´s plastics production, and employment in the Global Souths´ fossil industry thereby hampered most (Trinomics, 2021). Additionally, a declining demand for virgin plastics may reduce job opportunities in the plastics and petrochemical industries (Schröder, 2020; Watkins, 2022).

Unequal distribution of financial benefits

Financial benefits are unevenly distributed along the plastics value chain. Producers tend to generate more profits, while downstream actors and communities bear the costs of plastics waste management and handling (Karasik et al., 2023). Formal and informal plastics actors differ in earnings and size: In Ghana, for example, selling prices for Low-Density Polyethylen (LDPE) vary from 0.4 - 0.9 Ghanaian Cedi per kilogram for waste pickers and 3.5 - 5.0 Ghanaian Cedi per kilogram for Recyclers (Bening et al., 2022). In India, the informal waste sector collected and sorted around 4.7 million tonnes of plastics waste in 2016, while the formal sector only accounted for 0.2 million tonnes (WBCSD, 2016). That way, around 50 % - 80 % of plastics waste in India were collected by the informal sector (Nandy et al., 2015). Yet, the typical income for informal waste pickers in India is well below the amount needed for decent living (Fair Circularity Initiative & Systemiq, 2024).

Overall, income opportunities in the informal waste sector tend to be unstable and generally low (Fair Circularity Initiative & Systemiq, 2024). Opportunities for earning more are often limited (Barford & Ahmad, 2021), and workers in this sector are particularly affected by fluctuating plastic waste prices (Archer & Adelina, 2021; Barford & Ahmad, 2021; International Alliance of Waste Pickers, 2023; UN-HABITAT, 2022), which has been observed i.e. in Nigeria (Ogwueleka & Naveen, 2021).

Procedural Justice

Integration of formal workforce

Currently, workers' rights – including information rights and the rights to freedom of association – are not thoroughly respected in the chemical (BHRRC & OHCHR, 2018) and petrochemical industry (Human Rights Council, 2018, 2021a). Additionally, around two-thirds of plastics are produced in countries with a problematic score on workers' rights – including China and countries on the Arab Peninsula - exacerbating the exclusion of workers' viewpoints.

Integration of informal waste workers

Informal waste pickers experience problematic working and living conditions (Shift, 2022). They face the risk of being marginalised in the transition to new waste and resource management structures. Nevertheless, some countries started considering them in new processes (Schröder, 2020), such as the

waste picker cooperatives in Brazil (Valencia, Solíz, et al., 2023b). Increased access to and engagement in decision-making spaces could provide the informal sector with opportunities to contribute to a circular transition (Maddalene et al., 2023). Yet, an important challenge stemming from a circular transition is the 'fight for access and ownership' to some of the most lucrative waste resources, stemming from systems involving product stewardship, such as EPR, deposit/return, and leasing (Velis, 2017). A circular transition may result in a reappropriation of valuable material sources which may preclude access to these streams for these marginalised communities.

Exclusion during the Global Plastics Treaty Negotiations

In the context of the currently negotiated Global Plastics Treaty (see Box 5**:**), an imbalance of stakeholders comes into spotlight. For instance, concerns over the effectiveness of the final treaty to be hampered by corporate lobby influence are being addressed (Ralston et al., 2023), as corporate lobbying has increased from negotiation round 2 to 3, from negotiation round 3 to 4 and again from negotiations round 4 to 5 (CIEL, 2023b, 2024b, 2024a). Actors of the petrochemical industry are increasing their commitment within plastics production to compensate for losses in the field of energy production and create narratives to establish a favourable position for their activities (Tilsted et al., 2022; Holmberg et al., 2024). This seems to be problematic, as lobbying in general serves to specifically highlight particular interests and exacerbate their influence (OECD, 2014), decreasing inclusiveness and indicating a less just procedure. Further, participation in the negotiations proved to be challenging for academia and civil society due to organisational obstacles, such as restrictions on delegation sizes and limited opportunities to register for conferences through research institutions (Caterbow, 2024). Between the fourth and fifth negotiation rounds, observing organisations expressed their concerns about a lack of transparency during intersessional work through an open letter addressed to the secretariat of the negotiating committee (Civil Society and Rights Holders, 2024). During the most recent negotiation round in Busan, South Korea, opportunities for observing organisations to physically attend the negotiating contact groups were severely restricted, resulting in limited insights into the discussions among negotiating countries (IISD, 2024a).

Recognitional Justice

Recognising small and informal stakeholders

While formal recycling structures in developing countries can depend on the existence of informal collection and sorting structures, the latter often remains unrecognised and without access to subsidies, pensions, or health insurance (Bening et al., 2022). Moreover, informal workers often suffer from social stigma (Lesniewska & Steenmans, 2023; Velis et al., 2017) and are even criminalised for their vocation (Cook et al., 2024). Conversely, excluding key stakeholders can lead to unrest, as evidenced by the introduction of the plastics ban in Kenya (Lesniewska & Steenmans, 2023).

Overall, the valuable contribution of waste pickers to waste management is underrecognised and undervalued by society (de Olivera, 2021). This lack of societal valuation is also reflected in their insufficient inclusion in policy (International Alliance of Waste Pickers, 2023). Waste pickers therefore often view themselves as situated in a socially inferior position (Nas & Jaffe, 2004).

A true genuine just transition is considered to necessarily encompass the concerns of smaller businesses and informal waste pickers (Nagarajan, 2022). Scholars suggest viewing the informal sector as a partner, rather than as competitor (Goldstein, 2017; Lesniewska & Steenmans, 2023). High-quality recycling of plastic wastes under informal conditions is reported as feasible and could provide socio-economic benefits for marginalised waste pickers when appropriate frameworks for cooperation are established. Moreover, a close interaction between waste pickers and formally employed staff could lead to a change of perception of the informal sector and reduce social stigma (Gall, Wiener, Chagas de Oliveira, et al., 2020). Conversely, ignoring relevant stakeholders can lead to unrest, as demonstrated by the process of introducing a plastics ban in Kenya (Lesniewska & Steenmans, 2023).

Including informal waste pickers

When managed properly, informal recycling may provide a rapid and inexpensive solution to plastic pollution, benefitting both the environment as well as creating jobs for vulnerable communities. Recognising informal recyclers as a pool of over 11 million plastics recycling experts may enhance their cognitive and normative legitimation in a circular transition (Velis et al., 2022). Their active involvement could also create opportunities to integrate them into formal waste management systems, potentially improving their working conditions and income opportunities (Talbott, 2022; WIEGO, 2019). Likewise, this may support informal waste pickers in their dynamic towards self-awareness and self-recognition, enhancing them to organise themselves and construct formal economic structures such as cooperatives that may alleviate their most pressing concerns (Valencia, Solíz, et al., 2023b). Additionally, door-to-door collection services for source-separated recyclables can be considered as an unburdening and time-saving business model for informal waste collectors, providing face-to-face guidance to residents to improve the quality of waste collection (Tong et al., 2023). Recognising their potential educational role as agents of behavioural change may as well help to include informal waste pickers in a just transition (Velis, 2017).

4.3 Textiles

The textiles industry is an important sector and area of consumption for the EU (EEA, 2024a) and it currently mainly relies on the linear 'take-make-waste' approach. The consequences stemming from this value chain are therefore manyfold, related to greenhouse gas emissions, material use, water use, and land use (EEA, 2022a). Aside from the environmental and climate consequences associated with the textile production and consumption, vast amounts of textile waste are generated with no sufficient solution in place (Gözet & Wilts, 2022). While substantial shares of used textiles are exported to countries outside the EU, unsold garments within the EU are sometimes destructed highlighting the inefficiency of the current system . The latest EEA report on this issue highlighted that an estimated 4 - 9% of all textile products put on the European market are destroyed before use, amounting to between 264,000 and 594,000 tonnes of textiles destroyed each year (EEA, 2024d). The recent EU policy decision to introduce a ban on the destruction of textiles and footwear, could cause an increased export of used textiles, potentially exacerbating existing social and environmental effects of EU´s textile consumption on the second-hand textile importing Global South.

Against these challenges, the European Commission published the EU Strategy for Sustainable and Circular Textiles in March 2022 (EC, 2022). It entails a clear and ambitious vision towards the sustainability, durability, and recyclability of textiles within the EU market by 2030. The strategy furthermore addresses the social impacts of the textile industry striving to ensure that future textiles are manufactured "with respect for social rights and the environment". Stressing both, the environmental and social aspect of the textile industry, the EU textile strategy sets a significant cornerstone for the textile industry´s transformation by defining the following key action points:

- Mandatory ecodesign requirements,
- Stopping the destruction of unsold or returned textiles,
- Tackling microplastics pollution,
- Introducing information requirements and a Digital Product Passport,
- Green claims for truly sustainable textiles,
- Extended producer responsibility and boosting reuse and recycling of textile waste.

Distributional justice

Environmental and social burdens of global textile production and consumption

Workers and communities in low- and middle-income countries face disproportionate environmental and health burdens stemming from global textile production practices, as well as from the handling of used textiles from the Global North, including from the EU. Examples include severe air, soil, and water pollution

resulting from the disposal of textile waste in open landfills and drains, along with burning in unofficial dumpsites (ETC CE, 2023b). This issue is mentioned most frequently in academic literature concerning distributional justice in the textile value chain (Bick et al., 2018; Lin, 2024; Mizrachi & Tal, 2022). Studies conducting social life cycle assessments (S-LCA) indicate health risks and occupational safety as the most pressing issues in this regard, where the 2013 Rana Plaza factory collapse (Bangladesh) killing 1,134 workers is mentioned often as an example. Since then, at least 109 other buildings in Bangladesh collapsed, resulting in further deaths of garment workers. Moreover, studies show that garment workers are still being exploited, with less than 2 % of workers receiving a living wage and worsening labour rights in the global fashion supply chain (Just Fashion Transition, 2023).

The need to refine assessment techniques

Scholars stress the importance of enriching the S-LCA framework to study distributional justice aspects in the textiles value chain, improving attention to gender pay gaps (L. J. Suarez-Visbal et al., 2024), harassment and abuse, improved living wage concepts (Mair et al., 2018; Vijeyarasa & Liu, 2022), and the impact on communities near textile manufacturing sites (Thakker & Sun, 2023). Likewise, it is important to account for impacts of imports of used and discarded textiles on communities in the Global South. Many of these burdens follow from negative externalities at each step of the fashion supply chain, where burdens are shifted to the least powerful supply chain parties. This results in unsustainable consumption patterns of textiles stemming from the fact that they are sold below their 'true' cost. True cost accounting, however, would monetize and integrate social and environmental externalities into consumer prices, incentivizing customers to choose for more sustainable alternatives.

Currently, the lack of integrating negative externalities drives overconsumption of textiles, resulting in millions of tons of textile waste accumulating in landfills and unregulated settings, placing a disproportionate burden on low- and middle-income countries. This is for instance seen in Chile, where 124,000 tons of second-hand textiles are estimated to be imported in 2022 and most of it disposed of in the Atacama Desert (at around 300 hectares), transforming a natural landscape into an open-air landfill with uncontrolled negative implications (UNECE, 2024).

Distributional impacts of a circular transition

A transition to circular economy cannot be expected to mitigate or resolve distributional injustices automatically. Circular economy is expected to create new jobs in reuse, recycling, and retail activities within Europe and other industrialised regions (OECD & European Commission, 2022). However, it is also expected to lead to job reductions in low- to upper-middle-income countries outside the EU, with estimates up to 85,000 jobs created within in the EU and 756,000 jobs lost outside the EU in the apparel industry alone (Repp et al., 2021b). A European circular textile economy that re-allocates production processes closer to the market could lead to "reshoring" of manufacturing sectors back to Europe and therefore poses a threat especially to low- and middle-income countries that play a significant role in textile manufacturing, creating risk for women, who are strongly represented in this sector (Schröder, 2020). Such aspects are often implicitly overlooked by studies that focus merely on the social and environmental merits of closing textile supply chains at the local level (Martin & Herlaar, 2021).

A circular transition necessitates reconsidering the distribution of value and costs across supply chains, with suppliers often expected to bear sustainability costs, including transition costs, without adequate financial compensation (Härri & Levänen, 2024). Moreover, circular processes, such as incorporating recycled materials and improving product quality, may not necessarily lead to better job quality or higher wages (Clube, 2022).

Even within the EU, the sustainability of "circular jobs" cannot be guaranteed, potentially affecting the most vulnerable groups in the labour market. For example, a recent study on the potential impact of a circular transition on job opportunities within Work Integration Social Enterprises (WISEs) found that many of these social enterprises are currently embedded in linear value chains (e.g., single use packaging of fast-moving consumer goods) (Van Opstal et al., 2024). To fully realize the potential benefits of a circular

transition, WISEs need to invest in organisational capabilities and training to sense and leverage the opportunities of a circular transition.

Circular practices and textile waste

Another critical issue to consider is the export of used textiles and textile waste from the EU. In 2019, 46% of the EU´s used textiles were sent to Africa and 41% to Asia, with substantial uncertainties on the final destination and handling of these streams (ETC CE, 2023b). For example, Ghana, a country with a population of 31 million, receives 30 million used garments every two weeks (Ashraf et al., 2024b). Second-hand textiles exported to African countries are primarily intended for local reuse. However, garments unsuitable for reuse often end up in open landfills and informal waste streams (EEA, 2022a, 2023a). Those exported to Asia are typically sorted and often either reused within the industry or re-exported to other countries. Importing countries often lack the infrastructure needed to manage textiles when they are no longer usable (EEA, 2023b). The unequal distribution of textile waste is further accelerated by the overconsumption of fast fashion in the Global North (EEA, 2023c).

Exporting textile waste to the Global South is sometimes referred to as 'waste colonialism' (Vanacker et al., 2023). With the obligation to collect textile waste as a separate fraction in all EU countries by 2025, and the growing textiles consumption, the volume of used textiles collected is expected to increase further (EEA, 2023c) and with that, their exports to the Global South. A lack of sufficient funding for separate collection and recirculation thereby poses a barrier for a more effective realisation of re-use and recycling of textiles. This is primarily because separate collection systems in the EU are mainly financed through the re-usable clothing fraction. To overcome this challenge, structural funding would be required to cover the full costs of managing discarded textile waste (Ellen MacArthur Foundation, 2024).

Box 2: The Kantamanto market (Ghana)

A big share of the EU´s second-hand clothing is exported to low- and middle- income countries outside the EU – one of them being Ghana. While pictures of open dumping along the coast of Ghana have gone around the world, the Kantamanto market in Accra evolved to one of the biggest second-hand clothing markets worldwide, recirculating more than 25 million garments every month (GIZ, 2024a). The market provides employment to more than 30,000 workers engaging in upcycling, repairing, remaking and selling garments. While this market helps to reduce the volume of textile waste ending up in landfills or incineration, there is poor response on putting the EU´s second-hand exports on hold while stricter regulations and controls on the quality of exported clothing are favoured. The large influx of cheap and low-quality garments not only crowds out local businesses, diminishing local manufacturing capacities and skills (Lembachar et al., 2022). It also causes more garments to end up in open dumps, causing environmental and health risks. Although reliable data is missing, it is estimated that each day, one truck of textile waste is transferred from Kantamanto market to the Adipa landfill (50km north of Accra) (GIZ, 2024a). Meanwhile, informal dumpsites pose risks clogging drains, promoting floods, and spreading diseases (Ahiable & Triki, 2021).

Well-designed and robustly implemented policies, along with EPR schemes are essential for achieving a circular textile economy that fairly distributes its externalities, including its waste management. Further regulations can be important to avoid unintended consequences, such as transforming textile waste into low-value products that are categorised as 'recycled' or 'second-hand' goods to prevent its categorisation as 'waste' (Gachenga, 2022). Rebranding waste to improve figures on circularity outcomes ultimately leaves poor regions burdened with unmanaged waste and reinforces negative perceptions on second-hand products (Hur, 2020). Furthermore, while the export of second-hand clothing may offer some local economic benefits, it can also destabilise local textile industries and contribute to overwhelming landfills with low-grade waste imports (Manieson & Ferrero-Regis, 2023).

Procedural justice

Including small and independent stakeholders in decision making processes

An important hot spot regarding procedural justice in the textiles value chain is the exclusion and marginalisation of small and independent stakeholders in decision-making processes. Fashion brands are often dictating terms to their suppliers, leading to an imbalance in decision-making power (Härri & Levänen, 2024). Similarly, communities burdened by the consequences of landfills often lack the political influence needed to shape legislation (DeVoy et al., 2021). Inclusive processes towards circular economy therefore require the representation of all stakeholders, especially those affected by the industry´s practices. Furthermore, exclusionary practices extend to global narratives on a circular fashion system (Vanacker et al., 2023). For example, actors from the Global North are often portrayed as problem-solvers, stressing the importance of individual actions and technology while disregarding collective efforts (Lin, 2024) and global ethical considerations (Repp et al., 2021b).

Inclusive and transparent governance mechanisms

Decision-making processes towards the implementation of circular strategies also require transparent governance mechanisms, as the transition towards circular economy affects all supply chain actors (Valencia, Bocken, et al., 2023). Increasing transparency includes integrating and consistently managing environmental and social impacts across all stages of the supply chain to ensure fair processes (Muñoz-Torres et al., 2023). This involves practices such as transparent processes, including supplier disclosure, certification, and accountability (Thakker & Sun, 2023; Todeschini et al., 2017), along with transparent communication with both workers and consumers (Ghisellini et al., 2024; Thorisdottir & Johannsdottir, 2020). It also includes transparent data sharing and traceability throughout the supply chain (Horn et al., 2023), covering all stages from design and manufacturing, to retail, use, and end-of-life phase of textiles, including second-hand trade and waste disposal (Manieson & Ferrero-Regis, 2023). A lack of clear definitions, harmonised standards, and consistent applications of certifications across jurisdictions, however, hinders transparency in these processes (Gachenga, 2022; Gonçalves & Silva, 2021).

Ensuring effective design and enforcement of mandatory policies

To ensure a level playing field regarding environmental and social standards in a circular textile system, value chain stakeholders themselves advocate for mandatory policies (Manshoven & Van Opstal, 2022). Moreover, current practices and methodologies need to be updated to accurately track the true cost of textile production and consumption (Mair et al., 2018). A significant barrier to implement mandatory policies or innovative monitoring mechanisms in globalised value chains, however, is their lack of enforceability. Even for existing occupational and environmental standards, a weak enforcement, particularly in the Global South, remains a major obstacle (Bick et al., 2018; Herrera Almanza & Corona, 2020). Addressing this challenge, including issues related to corruption, bribery, and labour conditions, once more underscores the need for the participation of all stakeholders in the design and implementation of policies (Martin & Herlaar, 2021).

Recognitional justice

Recognising all stakeholders involved

A circular transition conceives the challenge of mitigating or aggravating recognitional injustices in the textiles value chain. Improving decision-making processes entails recognising and including marginalised groups such as women, migrant workers, and local communities, to address their disproportionate environmental and social burdens (Bick et al., 2018; DeVoy et al., 2021; Fidan et al., 2024).

It is equally important to identify the value chain partners responsible for these burdens, a task that is complex in global supply chains (Gachenga, 2022). Recognizing these partners also involves addressing key issues such as education, fair wages, and improved working conditions when designing circular economy strategies, while acknowledging the contributions and needs of workers in the textile value chain (Herrera Almanza & Corona, 2020; Thakker & Sun, 2023).

Local traditions and indigenous knowledge

Some scholars particularly point out the importance of acknowledging local traditions and indigenous knowledge when designing and implementing circular strategies (Valencia, Bocken, et al., 2023). The potential contribution of local communities to circularity is often overlooked, sometimes resulting in a portrayal of communities in the Global South as passive recipients rather than active agents (Lin, 2024). Examples are projects promoting the inclusion of migrants with preserving local traditions (Ghisellini et al., 2024) or the acknowledgement of indigenous craftmanship and practices such as care, repair, and upcycling in the Global South (Vanacker et al., 2023). This also related to the concept of epistemic injustice. Epistemic tensions follow from injustices in the distribution of information and knowledge, as well as a lack of recognition of the knowledge of marginalised communities. Therefore, it is important that all voices are heard and fairly represented in sustainability discussions (Härri & Levänen, 2024).

Social acceptance and cultural differences

Finally, a circular transition also involves addressing negative stigmas and recognising that different cultures may have diverse values, traditions, and approaches to sustainability. In some cultures, both within Europe and in the Global South, second-hand clothing or textile repair strategies are associated with negative social stigma and lack of social acceptance. While in other cultures, these practices are gaining popularity, particularly among younger and environmentally conscious consumer groups. This leads to differentiated consumption patterns influenced by perceived social and personal identity (Hur, 2020; Manieson et al., 2021). Furthermore, it is crucial to understand how cultural values shape consumer behaviour towards fashion choices, especially when aiming to address injustices in a cross-cultural context (Carranza et al., 2023; Wang et al., 2021). Recognizing these cultural differences can be essential for designing policies that are both effective and culturally sensitive, i.e. inclusive.

4.4 Conclusions

Based on this analysis, the following overarching issues can be detected across all value chains.

Regarding distributional justice, concerns in the current linear system revolve around the unequal distribution of environmental, health, and economic burdens stemming from production and informal waste management. A circular transition presents a significant potential for global job creation, with estimates suggesting 18 million new jobs worldwide and 1.2 million new jobs in the EU by 2030 (ILO, 2022). This shift would involve moving employment opportunities from raw material extraction and manufacturing to life-extension activities and waste management. Regions such as Latin America, the Caribbean, and Europe are expected to experience substantial net gains in material reprocessing and recycling (Saliba, Rué Glutting, et al., 2023). A strengthened recycling sector could also lead to job formalisation and greater recognition of waste pickers (PACE, 2021). At the same time, the literature stresses the risk of job losses and the expansion of low-quality and dangerous jobs (e.g., in informal waste management) in the Global South – especially if no mitigating measure are implemented. These outcomes could exacerbate existing inequalities and social challenges in vulnerable regions.

Global waste trade poses significant dangers in distributional terms. A lack of waste management capacities in the Global South and illegal waste trade activities lead to environmental pollution and marine litter. Health-related and environmental costs in low- and middle-income countries are the consequence, indicating a burden and cost shifting from Global North to Global South. Health-related risks are prevalent in all three product value chains analysed. Resource extraction for the batteries industry, production and usage of plastics products as well as handling textiles all lead to severe health-related risks, and at the same time indicate a shift of such health-related costs from the Global North to the Global South.

A just transition also involves procedural justice, where it is a major challenge to involve informal workers and small businesses in decision-making processes, despite their crucial role in waste management and manufacturing. A circular transition risks further marginalizing these workers unless they are actively

included in new systems. Ensuring their participation in policy development and access to decision-making spaces is crucial for just transition. An example for successful stakeholder participation is the inclusion of waste pickers in circular economy governance in Colombia. With the establishment of the Asociación Nacional de Recicladores (ANR) at the beginning of the 1990s, a nation-wide representation system for waste pickers came into existence. As a result, waste pickers have guaranteed seats in specialized municipal bodies that set local recycling-tariff parameters and they receive official recognition as public service providers. Even though some steps - such as the inclusion of waste pickers in public tenders - were achieved via the means of strategic litigation, Colombia offers waste pickers a contribution towardswaste management and circular economy implementation. Additionally, social acceptance of circular practices can be enhanced through transparent and inclusive policy design, which considers the voices and needs of all affected stakeholders.

Next, recognitional justice involves acknowledging and respecting the contribution of marginalised groups, such as informal waste pickers and small-scale manufacturers. These workers are often stigmatised and undervalued, despite their critical role in the value chains they operate in. Moreover, in many countries lacking formal employment opportunities, informal waste management activities provide vital income sources to millions of households. A just transition requires recognising the role of these activities for income generation, as well as the expertise and contribution of these workers. Such a recognition can empower them to develop organisational capabilities, improve their working conditions, and gain societal respect. Without proper recognition, new policies may fail to address the needs of these workers, perpetuating existing injustices.

Achieving just and sustainable outcomes in a circular economy and waste governance requires recognising and incorporating diverse local contexts. Adhering to principles of fairness, inclusivity, transparency, and collaboration is essential to avoid perpetuating unsustainable practices (Thapa et al., 2023a). This is why in the following chapter, circular economy policies and initiatives will be discussed through the lens of justice principles.

5 Circular Economy policies and initiatives in the scope of Just Transition

Circular economy is not fair by default, and it is therefore important that justice considerations are embedded in policy design and implementation in the context of such transition. Circular economy policies and initiatives should be designed to prevent exacerbating existing inequalities or shifting environmental and social burdens to regions outside Europe. Comprehensive measures are required at every stage of the value chain to ensure a fair and sustainable transition.

Given the strong interdependencies of global value chains, current circular economy policies and strategies are likely to have varying impacts on different regions, societal systems, and groups (EEA, 2024b; Lembachar et al., 2022). Yet, a recent study by UNIDO revealed that existing national circular economy roadmaps and strategies do not adequately address social implications of the circular transformation:

> *'Considerations of social justice, equity and inclusiveness are as important for the circular economy transition as they are in the contexts of low-carbon transitions and digitalization of the economy yet they are consistently overlooked or sidelined.'*
> *(UNIDO, 2024)*

The following chapter consequently discussed circular economy policies and instruments and their potential implications on the justice dimensions. It highlights approaches governments and other stakeholders could take to shape a just circular transition along the three dimensions of justice and illustrates interlinkages exemplary with regards to the Critical Raw Materials Act (Box 3), the Waste Shipment Regulation (Box 4: and the Plastics Treaty (Box 5:

5.1 Mandatory and non-mandatory policies

First, we reflected upon policy instruments in the hands of governments and regulatory bodies that may directly impact a just circular transition. These policy instruments are either mandatory (5.1.1), non-mandatory (5.1.2), or show mixtures of both elements, as in standards and public procurement procedures (5.1.3) or trade and development policies (5.1.4).

5.1.1 Mandatory policies

Mandatory policies refer to regulations or directives imposed by governments or regulatory authorities that require compliance by individuals, organisations, or businesses. Examples are measures that directly regulate the quantities, qualities, and direction of product and material flows, as an alternative to altering its pricing. Mandatory policies help to coordinate strategies and to ensure a contribution of all actors towards a circular transition. A key condition to make them effective is the existence of credible and just law enforcement mechanisms and practices (Bick et al., 2018; International Resource Panel, 2024).

An often used form of mandatory policies in a circular economy context are bans, such as bans on second-hand clothing imports (DeVoy et al., 2021), waste export bans (see Box 4: preventive bans on additives (CIEL, 2023a), or a ban on the destruction of unsold textile products as adopted in the recently published Ecodesign for Sustainable Products Regulation (ESPR) (EEA, 2024d; ETC CE, 2024). Such bans may support distributional justice as they serve to protect local communities from the detrimental economic, environmental, and social impacts of unfair trade relations and practices that neglect the externalities they generate. While these policies may help serving recognitional justice by acknowledging the rights of impacted communities, it is important, however, to consult and include all stakeholders affected, to ensure procedural justice and thus a fair and transparent implementation and enforcement. Lastly, only by consulting all stakeholders (and marginalized groups in particular), can potential negative social implications be fully recognised and accounted for. In many cases where bans have been implemented, policy makers did not consider possible unintended social consequences, which led to a shift of costs towards – often marginalised – parts of the population. In Nigeria, for example, the urban poor used plastic bags for certain sanitary means, and with the plastic bag ban, such sanitary demands could not be fulfilled anymore (Njeru, 2006).

Other examples of mandatory policies are reporting obligations on disposition routes (EEA, 2024d) or laws requiring the donation of unsold clothing as is the case in France (Mizrachi & Tal, 2022). The former may specifically support recognitional justice by identifying affected groups, while the latter may support distributional justice by promoting a fairer distribution of resources within society.

Overall, mandatory policies do not impact the underlying incentives of involved parties, necessitating robust enforcement and monitoring mechanisms. Otherwise, individuals and organisations may have incentives to defect from these obligations. Therefore, investing in broad stakeholder support is necessary to facilitate monitoring by a diverse set of actors and foster a collective commitment to compliance. Investing in the internalisation of these norms among all stakeholders involved can reinforce adherence by cultivating an understanding that defecting from such regulations is not only legally prohibited and economically sanctioned, but also morally incorrect.

5.1.2 Non-mandatory policies

Non-mandatory policies aim to change the rules of the system by altering prices or other incentives. They are non-mandatory in a sense that they do not prohibit or impose specific behaviours, practices, or standards but rather incentivise actors with indirect instruments such as taxation, subsidies, or specific governance practices. *Taxation* can help to internalise the true environmental and social cost of products, steering production and consumption patterns towards less impactful products and processes. This is a

direct translation of the polluter-pays principle, as operationalised in many EPR schemes (CIEL, 2023a; Zálnoky et al., 2023). Conversely, *subsidies* (or reduced taxation) may foster the uptake of more sustainable products, rewarding producers for the positive externalities they generate within and outside Europe. Generic examples are tax rebates on second-hand goods, reduced VAT on product repair (Thapa et al., 2023), reduced taxation on labour involved in circular activities (Martin & Herlaar, 2021; L. J. Suarez-Visbal et al., 2024), or a tax on unsold items (EEA, 2024d). More specific examples are the bonus-penalty system, as implemented in the Anti-Waste Law for a Circular Economy (AGEC) in France (Manieson & Ferrero-Regis, 2023), increased VAT on fast fashion imports, and tax penalties internalising external costs of virgin fibres (EEA, 2022a). Authorities may also stimulate third parties, including other countries, by providing financial incentives upstream or downstream the value chain. An example is financial support for the structural integrity and safety in garment factories in the Global South (Thakker & Sun, 2023).

Taxation and subsidies have a direct redistributive financial effect and the behavioural changes by economic agents involved may reduce externalities and foster distributional justice. However, market power dynamics may cause a shift in the tax burden or a concentration of subsidy benefits among more powerful actors in the value chain, leaving less influential actors at a disadvantage. Stakeholder engagement and participation may be necessary to ensure procedural and recognitional justice considerations in designing, implementing, and evaluating non-mandatory regulations.

Non-mandatory policies do not always involve direct financial incentives. As an example, by *extending corporate responsibility* beyond national boundaries, including accountability and liability mechanisms, governments alter the incentive structure of companies urging them to reflect on the distribution of costs and benefits along their value chain (CIEL, 2023a; Zálnoky et al., 2023). Such an all-encompassing responsibility for products is also labelled as Universal Product Responsibility (Thapa et al., 2023a) and provides opportunities for enhanced distributional, procedural, and recognitional justice. A so-called ‘ultimate producer responsibility’ (UPR) is thereby discussed in the broader framework of producer responsibility, holding producers accountable for not just the end-of-life phase but also for the broader environmental, economic and social impacts of the product´s entire lifecycle (Thapa et al., 2023b). The new EU Batteries Regulation, for example, which came into effect in August 2023, enforces EPR obligations throughout the entire lifecycle of batteries. These obligations encompass the design, production, collection, recycling, and reuse of batteries, with the goal of reducing environmental and social impacts, particularly in relation to raw material sourcing and the management of waste batteries. The regulation also strengthens the sustainability aspects of battery production, focusing on reducing carbon footprints and increasing recycling rates. By 2025, the regulation will introduce higher recycling targets, a digital passport for batteries, and stricter rules on sourcing raw materials such as lithium and cobalt.

Civil society organisations in particular expressed concerns about the lack of environmental and social safeguards in connection with the expansion of raw materials projects within and outside the EU. There is criticism that the reliance of the Critical Raw Materials Act (CRMA, see Box 3) on certification systems is not sufficient to ensure that a planned project complies with binding human rights and environmental regulations. This reflects specific attention points of procedural justice.

Concerning recognitional justice, another issue criticized by civil society organizations is the only partial consideration of the rights of indigenous peoples. Although the CRMA provides for a third country's compliance with the United Nations Declaration on the Rights of Indigenous Peoples, it does not explicitly recognize indigenous peoples' right to free, prior and informed consent (FPIC). Recognising the right to FPIC allows indigenous peoples to participate in decisions that affect their lands and livelihoods, particularly in relation to mining projects.

5.1.3 Standards and public procurement procedures

Two important policy instruments that combine ingredients of mandatory and non-mandatory regulations are imposing standards and public procurement procedures. Both instruments can help to resolve informational asymmetries by creating standardised ways of reporting, reducing opportunities to mask unsustainable and unjust practices and processes. Moreover, aligned public procurement procedures can assist in generating a market pull for circular products that meet just transition standards.

Examples are regulations and guidelines that enable the development, improvement and implementation of standards, such as UNEP/SETAC for social sustainability assessments (Fidan et al., 2024) or the circular public procurement guide by the European Commission (European Commission, 2017). Likewise, governments may require reporting standards, such as mandatory reporting on modern slavery risks in supply chains, as is the case in Australia (Mizrachi & Tal, 2022). Public procurement procedures may also encompass attention to the adoption of conventions and guidelines that protect worker rights (Vijeyarasa & Liu, 2022). Standardisation of these processes, procedures and information flows can be crucial for monitoring and ensuring the compliance with requirements from specific policy instruments (EEA, 2022b).

5.1.4 Trade and development policies

The enforcement of mandatory regulations in globalised value chains often requires a multilateral approach, with trade policies and agreements implemented at the EU level and negotiated within the World Trade Organisation (WTO) framework. Likewise, non-mandatory policies often require international alignment. Therefore, European policies should aim to foster mutual benefits with their trade partners, focusing on reducing socio-ecological harm throughout the product life cycle – from raw material extraction to waste management (Thapa et al., 2023a). Moreover, the EU and its Member States can make use of trade and development policy measures and instruments to support a just circular economy transition (see e.g., Box 3). This, however, requires an integrated approach, considering implications across multiple policy domains (Ashraf et al., 2024b). It is furthermore important to safeguard that these policies do not repeat current environmental and social impacts from the linear economy, as societal groups at risk are currently overrepresented in those segments of value chains that are likely to expand in a circular system (Lucas et al., 2022).

Box 3: Critical Raw Materials Act

With its Critical Raw Materials Act (CRMA) (European Critical Raw Materials Act, 2024), adopted and entered into force in May 2024, the EU is creating a common legal framework to supply its industry with critical raw materials in a secure and sustainable manner while becoming less dependent on individual supplier countries. This is intended to safeguard the EU's economic resilience and strategic autonomy. With the help of the CRMA, the EU intend to strengthen the entire value chain at all stages from exploration, extraction, processing, and recycling. Key issues are expanding circular economy and improving the sustainability of critical raw materials as well as the diversification of imports of critical raw materials by pursuing several approaches to securing raw materials in its international trade policy, in particular raw material partnerships with third countries, to reduce strategic dependencies.

With the targets of obtaining at least 10% of the demand for critical and strategic raw materials from mining and at least 25% from recycling within the EU, as well as ensuring 40% of the processing of those raw materials within the EU, the CRMA is expected to have a significant impact on the economic situation of the current raw material supplier countries. In addition, increased recycling may further transfer profits away from commodity mining countries to producer countries, as the recycling industry is mostly located near the production sites due to the specialized expertise needed (Melin et al., 2021). These aspects are examples of distributional justice considerations, even without addressing the most pressing social or environmental burdens of mining critical raw materials.

The EU and its Member States can leverage trade policy measures to encourage the adoption of just circular economy principles in partner countries. For example, fostering the formalisation of existing waste collection systems and improving the quality and revenue potential of recycled materials can enhance income opportunities for informal workers, such as waste pickers (UN-HABITAT, 2022; Velis et al., 2022). In this context, pricing stability and higher wages could address in-work poverty and offer more secure livelihoods (Barford & Ahmad, 2021). Facilitating access to financing for vulnerable groups, including small and medium enterprises (SMEs) and waste pickers, could further enhance the inclusivity of circular economy transitions (UNEP, 2023).

In lower-middle-income countries (LMICs), establishing fair working conditions is critical for ensuring a just transition. Incorporating the promotion of safer working environments, formal labour structures, and social protection in trade and development policies can improve the work situations of vulnerable groups (Barford & Ahmad, 2021; UN-HABITAT, 2022). Social protection measures, such as those outlined in the International Labour Organization (ILO) Recommendation 204, should be adopted to safeguard workers from displacement due to economic restructuring (Barrowclough & Birkbeck, 2022). Additionally, ensuring equitable access to waste collection sites and providing safety equipment would directly benefit informal waste pickers, improving their health and welfare (UNEP, 2023).

Trade and development policies have the potential to support just transition by ensuring that resource-rich LMICs benefit from the sustainable use of their resources. To achieve this, trade agreements should promote fair trade practices, transparent governance, and responsible resource extraction (International Resource Panel, 2024). Strengthening regulatory standards to reduce environmental harm is key to creating a fair and sustainable circular economy (Lucas et al., 2022). Financial reforms are also essential to address inequalities within and between countries. Aligning development aid with circular economy initiatives can provide technical and financial assistance that promotes sustainable practices (Schröder & Raes, personal communication, 2021). Likewise, governments should provide incentives for developing and adopting green technologies while ensuring that LMICs have access to affordable technologies that support just transition (International Resource Panel, 2024).

Box 4: EU Waste Shipment Regulation

The new Regulation on waste shipment was adopted in April 2024 and entered into force on 20 May 2024 (European Parliament and Council, 2024). The regulation´s goal is to ensure that the EU does not export its waste and therewith its burdens to the Global South. The regulation entails the prohibition of exporting non-hazardous waste (also known as green-listed waste) to non-OECD countries and thereby aims to contribute to an environmentally sound management of waste. Non-OECD countries are authorized to import waste from the EU, once the willingness is notified and the ability to treat the waste in an environmentally sound way is demonstrated, meeting specific environmental conditions. With this regulation, the traceability of waste shipment is hoped to be enhanced, facilitating recycling and re-use within the EU. Against this background, exports for recovery will be supported and new rules applied within three years (from 2027 onwards), differentiating between OECD and non-OECD countries.

This regulation can particularly affect the textiles and plastics value chains, being the 5th and 6th highest waste export group per volume in 2023 (Eurostat, 2024b). This gives a taste of the current circumstances, in which the burdens of consumption are unequally distributed, as waste importing countries bear the environmental and social burdens of production and consumption patterns that have primarily benefitted EU countries.

A few European countries are increasingly rising awareness of their responsibility in waste management against the consequences of waste exports to the Global South. In 2024, Denmark, Sweden, and France published a joint call for new global rules on the export of textile waste to the Global South purposing to subject textile waste to the control mechanism of the Basel Convention, requiring prior consent of

the importing country and banning the export of hazardous textile waste altogether (Miljoministeriet, 2024).

Introducing a ban on waste exports could encourage the EU and the Global North to take responsibility for their own waste, fostering the development of a more comprehensive waste management infrastructure. In the long term, such a ban could protect countries in the Global South and vulnerable groups from environmental and health risks associated with dumping of imported waste and re-allocate the "hidden costs" of consumption. For textiles, it could furthermore regulate the market, preventing it from being overwhelmed by low-quality garments. However, it is important to stress that currently, the majority of textiles exported under the product code 6309 (worn textiles and clothing) are unsorted, containing items that are both fit and unfit for reuse (waste), while still addressing genuine demand in importing countries. As exemplified by the Kanto Manto market (see Box 2), the circulation of garments labelled as second-hand has partially become deeply ingrained in both the society and economy.

Finally, potential loopholes of a waste export ban to non-OECD countries should not be overlooked: Firstly, there is a significant volume of illegal trade, particularly in plastic waste, facilitated by a lack of transparency and inadequate oversight (INTERPOL, 2020). Secondly, it is essential to ensure that a ban on exporting waste to non-OECD countries does not worsen inequalities within the OECD as OECD countries such as Türkiye could face increased exposure to waste as a result (see: https://rethinkplasticalliance.eu/). And thirdly, potential negative effects on circular economy need to be avoided by preventing materials from being incinerated in OECD countries instead of being recycled elsewhere, ensuring yet the application of the waste hierarchy.

5.2 Enabling and supportive policies

In addition to utilizing mandatory and non-mandatory policy instruments to directly influence quantities, qualities, or prices, policies can also focus on enabling and supporting stakeholders across value chains to achieve a just circular transition.

5.2.1 Embedding just transition and supporting stakeholder engagement

Governments can embed essential environmental and social principles into their constitutions, such as acknowledging the right to a clean and healthy environment as a fundamental human constitutional right. In 2021, the Human Rights Council, in its Resolution 48/13 acknowledged this right (Human Rights Council, 2021b), as well as the United Nations General Assembly in its landmark Resolution 76/300 (United Nations General Assembly, 2022). Further, Article 24 of the African Charter on Peoples' and Human Rights explicitly mentions the right to a clean environment. As of 2024, over 110 constitutions globally enshrine the right to a healthy environment (OHCHR, 2024). In addition, courts around the world continue to strengthen the socio-ecological nexus in law in various climate-related proceedings (Setzer & Higham, 2024). Via the means indicated above, over 160 countries worldwide now acknowledge the right to a clean environment in some way (OHCHR, 2024). While these approaches may seem symbolic, they have the potential to empower future legislators to strengthen regulations and offer legal leverage to NGOs and trade unions, enabling them to advocate for corporate and government adherence to just transition principles and enhancing accountability across industries and countries. Most importantly, it may directly foster recognitional and procedural justice and establish governance mechanisms that contribute to addressing distributional justice. This is of particular importance, as circular economy frameworks need to adhere to existing international human rights – the same way as current economic structures are increasingly obliged to adhere to norms in the realm of business and human rights.

An Eionet workshop conducted within this task revealed that considerations of justice and social fairness within circular economy policies are in its early stages. Within this workshop, 8 out of 17 respondents stated to have 'limited' or 'no' knowledge about the concept of just transition. However, and as a result of the workshop, there is increasing awareness and interest in incorporating aspects of social fairness into policy design and implementation at a national level.

Investing in stakeholder engagement is essential for just transition, particularly with regards to vulnerable and marginalised groups. Therefore, governments can establish inclusive working groups and task forces, such as the task force for informal workers in India that aims to involve affected communities in decision-making processes (L. J. Suarez-Visbal et al., 2024). Such a participatory process is important to ensure that as many relevant groups as possible are heard, including informal workers, indigenous people, and communities impacted by a circular transition (CIEL, 2023a; O'Hare et al., 2023b; Tambunlertchai & Vassanadumrongdee, 2023). This particularly holds for governance frameworks of waste management programs that would benefit from involving informal waste pickers (UNEP, 2023) - as seen with the Global Plastic Treaty (see Box 5). Likewise, policies can be aimed at reducing barriers to participation, providing access to essential information, and addressing inequalities (Barford & Ahmad, 2021; CIEL, 2023a; UN-HABITAT, 2022).

Box 5: The Global Plastics Treaty

The currently negotiated Global Plastics Treaty is a planned Multilateral Environmental Agreement aiming to tackle plastics pollution on a global level. On 7 March, 2022 the United Nations Environment Assembly (UNEA) adopted Resolution 5/14, aimed at ending plastic pollution and calling the global community to start negotiations on a global treaty tackling exactly this issue (UNEP, 2022). The resolution aimed for the adoption of such an international legally binding instrument by the end of 2024. Since then, several rounds of negotiations, known as "International Negotiating Committee" (INC), have been conducted (IISD, 2024a). Following the failure to reach consensus during the last scheduled meeting in Busan, South Korea, an additional negotiation round was agreed for 2025. It will take place from August 5 to August 14, 2025, in Geneva, Switzerland.

While consensus has yet to be achieved, the recent negotiation rounds have proposed a variety of instruments that encompass the entire plastics value chain and address several important aspects of just transition, as well as including the principle of leaving no one behind or the principle of common, but differentiated responsibilities (UNEP, personal communication, 2024). The principle of common but differentiated responsibilities, however, has also been invoked to shift responsibilities away from actors, while offering the opportunity for a fair burden sharing amongst countries. Some states, from the Global South in particular, are advocating for the inclusion of just transition in the treaty (IISD, 2024a). However, it is important to stress that the Global South does not negotiate with a unified voice, as its countries are spread amongst different interest groups, each advocating for differently ambitious treaty outsets, like the High Ambition Coalition or the more restrictive Like-Minded Group. The negotiating parties also disagreed on the inclusion of specific social groups to be included in the treaty (IISD, 2024b).

Incorporating specific provisions for the implementation of just transition into the treaty are viewed as essential to fully tackle the social dimension of the global plastics value chain restructuring as well as its effectiveness and legitimacy (Dauvergne, 2023; O'Hare et al., 2023b). However, due to the ongoing negotiations, assessing the potential impacts of the proposed instrument remains challenging. The anticipated impacts of the treaty are closely tied to its specific design, ranging from addressing end-of-life considerations to encompassing the entire life cycle of plastics, and dimensions of just transition remain under discussion. Various social groups, along with waste pickers, are noted for their role in shaping the social dimension of the treaty (O'Hare & Nøklebye, 2024).

The draft text for the ongoing negotiations was revised following INC-5 in Busan, South Korea and subsequently published on December 1, 2024 (UNEP, 2024). Key unresolved issues include the restriction of plastics production, financing concerns and addressing chemicals and plastics of concern (WWF, 2024).

Stakeholder engagement also touches upon recognitional justice, particularly for activities such as informal waste management. Acknowledging the valuable contributions of informal waste workers can raise societal awareness and foster better support for these workers (PREVENT Waste Alliance, 2023). Policies that integrate informal workers into formalised structures, while preserving their livelihoods, can lead to decent work opportunities and improve working conditions (Buch et al., 2021; IAWP, 2023). Further, to respect indigenous peoples' rights, governments can adopt the principle of free, prior, and informed consent (CIEL, 2023a). This ensures that indigenous communities have a voice in decisions that affect their land and resources, particularly in areas related to resource extraction (International Resource Panel, 2024).

Best practice examples are seen in the field of sustainability transition, such as the Aarhus Convention from 1998 [adopted under the United Nations Economic Commission for Europe (UNECE)], which established procedural rights for individuals in the context of environmental protection. With this convention, individuals were granted the right to information in environmental matters (Article 4), the right to meaningful participation (Articles 6 – 8) as well as access to justice in order to enforce the abovementioned rights (Article 9). While each EU member state is responsible for implementing its provisions into national law, the EU, also a party to the Convention, adopted various regulations and directives to ensure an effective implementation of the Aarhus Convention across its member states. One example is the directive on public access to environmental information (Directive 2003/4/EC), adopted in 2003. The requirements of the Aarhus Convention have subsequently been successfully implemented by various governments (Osae et al., 2024). It remains important in the context of civil society inclusion (Ryall, 2023) and could serve as inspiration for the design of inclusive policies in a circular economy context.

5.2.2 Measuring, monitoring, and communicating impacts

Governments can also support the development of actionable *metrics and standards* for a just circular transition by promoting scientific research and implementing existing tools. Well-designed metrics and standards may be crucial for ensuring recognitional justice, while enabling also the development of measures that support distributional justice and processes that uphold procedural justice. Examples are the Higg Index, Transparency Index, and certification schemes such as the EU Ecolabel and Global Organic Textile Standard (Gonçalves & Silva, 2021; Mair et al., 2018). These metrics enable the classification of products and materials, providing clear benchmarks for assessing environmental and social impacts across value chains. Another example is the development of global standards and metrics for defining and implementing living wages, ensuring consistency and fairness across regions (L. J. Suarez-Visbal et al., 2024), along with stringent audits for suppliers to ensure compliance with international labour standards (Herrera Almanza & Corona, 2020). It is also important to highlight the influence of Corporate Human Rights Due Diligence on just transition, globally driven by the adoption of the United Nations Guiding Principles on Business and Human Rights (IHRB, 2020; OHCHR & ILO, 2023). Although not directly tied to circular economy, these principles have inspired the creation of various national Due Diligence Laws (ECCJ et al., 2024), National Action Plans (Danish Institute for Human Rights, 2024), and governmental guidelines for their implementation and compliance. Together, these developments form an increasingly robust network of corporate responsibilities related to social impacts, with evolving mechanisms for their implementation and monitoring. These advancements could provide a valuable foundation for enhancing the monitoring and evaluation of social issues within a circular economy context.

Improved measurement allows *monitoring* just transition by delivering essential data and insights to evaluate progress and identify areas requiring attention. Regular monitoring of vulnerable workers, e.g.,

through national censuses and surveys, is crucial for tracking improvements and ensuring fair remuneration (UNEP, 2023). Governments are also invited to expand monitoring to include social indicators, as current policy reporting largely neglects aspects, such as decent work, health risks, and inequality (International Resource Panel, 2024). In addition, national resource consumption patterns could be tracked, allowing to incorporate quantifiable targets regarding sufficiency or fair remunerations into policies to promote sustainable consumption and production practices (International Resource Panel, 2024; UNEP, 2023). As a higher demand for recycled goods could lead to higher levels of employment in sorting and recycling facilities, it is important to monitor whether this does not aggravate existing labour rights abuses and existing inequalities (Lucas et al., 2022).

Against this background, international organization including UNECE, OECD, EEA, and more, are working on monitoring frameworks capturing the broadness of circular economy, including social aspects, and thereby define guidelines for measuring circular economy (United Nations Economic Commission for Europe, 2024). Furthermore, the conceptual framework of justice published by the EEA can be used as a supporting tool for policymakers (EEA, 2024c). By providing stakeholders with key guiding questions during the design of sustainability policies, it encourages to reflect on the understanding and application of justice across its various dimensions.

Measurement and monitoring should be complemented by *transparent communication* to foster a just transition. For example, governments can require the disclosure of unsold products or the development of understandable labels to promote accountability in production and consumption (EEA, 2024d). Additionally, *impact reporting* should broaden its focus to include the social dimensions of policies, with data collection mechanisms in place to assess the effects on vulnerable groups, ensuring that these impacts are communicated clearly to all stakeholders (International Resource Panel, 2024). Likewise, broad stakeholder involvement in the design, monitoring, and evaluation of these instruments could be key to ensure procedural and recognitional justice and to ensure aligned communication.

5.2.3 Awareness and educational campaigns

Awareness campaigns can be crucial in changing consumer perceptions and encouraging the adoption of sustainable practices. Governments can implement campaigns that target specific behaviours, such as promoting the acceptance of second-hand clothing, aimed at altering negative perceptions (Hur, 2020) or encouraging consumers to choose ethically produced and environmentally friendly fashion items (Thorisdottir & Johannsdottir, 2020). Additionally, these campaigns can highlight the role consumers play in achieving a just circular transition, helping to reduce stigma associated with waste work and promoting the benefits of reuse and recycling (EEA, 2024d; UNEP, 2023). This also triggers the responsibility of all value chain partners involved, including customers themselves, which in turn can create a strong basis towards recognitional justice.

Likewise, NGOs and civil society organisations may play an important role in consumer awareness campaigns while promoting fair labour practices (Fidan et al., 2024), stressing the revision and implementation of standards (Mair et al., 2018), and engaging local communities in just transition initiatives (Ghisellini et al., 2024; Valencia, Bocken, et al., 2023). Moreover, for charities it is important to reassess the consequences of exporting excess second-hand clothing to the Global South, taking into account the quality and conditions of these items as well as the degree upon which this may disturb local industries (Manieson & Ferrero-Regis, 2023).

Educational campaigns can inform, inspire, and engage customers on the potential of circular economy in general, and of the conditions for a just circular transition in particular. A wide array of educational tools can be implemented, including Serious Games (Manshoven & Gillabel, 2021; Roba et al., 2021), Hackatons (Puttonen et al., 2022), and Massive Open Online Courses (MOOCs) (Pérez & Spalletti, 2021). Furthermore,

reskilling and upskilling programs aimed at supporting workers may help them to adapt to the evolving demands of circular economy, increasing their resilience in a circular transition (Borms et al., 2023). This includes vocational training for roles in waste management, eco-design principles in design schools, and other areas where new skills will be required (EEA, 2022a; ETC CE, 2022). Governments and civil society organisations can also enhance other educational efforts such as creating accessible *knowledge hubs* that support companies, entrepreneurs, and start-ups in adopting circular design principles. These hubs would provide technical expertise, tools, training, and information on circular business models, policy measures, and funding opportunities (ETC/WMGE, 2019). By equipping businesses with the necessary skills and knowledge, these hubs reduce the risk of failure while reinforcing the effects of broader policy measures, such as financial support and awareness campaigns (EEA, 2019). As educational campaigns can empower citizens and businesses to participate and contribute to a just transition, it can support the procedural justice dimension.

5.2.4 Supporting initiatives of businesses

Companies can play a vital role in achieving a just transition by actively pursuing initiatives driven by their *CSR or ESG policies*. This may include demanding transparency in supply chains, adopting living labour compensation standards to ensure fair wages across supply chains (Mair et al., 2018), or third-party certifications and audits for compliance with international labour and environmental standards (Ghisellini et al., 2024; Herrera Almanza & Corona, 2020; Muñoz-Torres et al., 2023). Moreover, companies envisioning circular strategies can engage in employing vulnerable groups themselves or through social economy initiatives (Van Opstal & Borms, 2024) ensuring a broader societal and economic participation of all groups at the labour market while providing meaningful jobs.

Also, *circular business models* can be developed, aiming at both environmental and social innovation and value creation while embracing the conditions for just transition (EEA, 2021a; ETC/WMGE, 2021). Companies may develop a competitive advantage when engaging in sustainable practices, stemming from a first-mover advantage in understanding major system changes. This is most feasible in monopolistic competitive markets, such as fashion brands, and less for markets with goods that are harder to differentiate towards customers, such as fibres and garments (Manshoven & Van Opstal, 2022). Likewise, circular startups may differentiate themselves by underlining their focus on key elements of a just transition, for example by developing sufficiency-based business models fostering slow fashion (Garcia-Ortega et al., 2023; Sarokin & Bocken, 2024). Also in trade policies, countries can develop agreements that support raw material leasing, stimulating the development of novel business models while improving relationships defined by mutual usage and not by exclusive possession (Barrie & Schröder, 2022).

5.3 Conclusions

Mandatory policy measures help coordinating strategies and ensure the contribution of all actors towards a just circular economy. Examples such as bans on harmful practices, can play a critical role in safeguarding vulnerable communities from adverse impacts of consumption and production and thereby support the achievement of distributional justice directly. While these may help serving recognitional justice, a fair implementation depends on credible enforcement and inclusive stakeholder engagement ensuring procedural fairness and broad support.
Non-mandatory policies such as taxation and subsidies directly redistribute financial effects and may avoid disproportionate burdens on weaker value chain actors. However, participation of those actors remains necessary to ensure procedural and recognitional justice considerations. Further, the implementation of standards can help resolving informational asymmetries and can serve as an opportunity to unmask unfair practices. Multilateral approaches and international alignments for e.g., trade regulations have the potential to foster fairness throughout the transition process and their outcome. Those regulations,

therefore, need to base on mutual benefits addressed from all stakeholders involved along the value chain, including end-of-life and should exemplarily contain fair trade practices.

Furthermore, Governments can undertake various supporting steps aiming for long-term justice. Firstly, they can enable and support stakeholders along value chains through e.g. participatory processes, which are essential particularly for vulnerable and marginalised groups. Secondly, Governments can support the development of metrics and global standards that can be used to implement and monitor the improvement towards all three justice dimensions. For the latter, the expansion of monitoring mechanisms with social indicators (e.g., decent work, health risks) will be required. Thirdly, businesses can be supported that are driven by their CSR or ESG policies covering labour compensation standards for fair wages. Further support can be outlined for certain circular business models that aim at both environmental and social innovation. Lastly, by implementing certain awareness and educational campaigns, Governments can support targeting not only a socially fair and circular behaviours, but also set a basis towards recognitional justice.

Overall, to ensure that all these points, as outlined, can contribute to a just circular transition, policymakers as well as researchers need to invest in a thorough understanding of current injustices and embed fairness by design into the circular transition. This also involves an improved measurement and strong research efforts as well as monitoring of current and upcoming policies, encompassing broad stakeholder engagement.

6 Main conclusions and reflections

The circular economy discourse has so far focused primarily on technological and environmental aspects, mostly overlooking the social dimension. Alongside environmental and economic considerations, however, the transition to circular economy has direct and indirect implications on a variety of social issues, including fairness, equality, decent work, and more. Integrating justice and social fairness into circular economy offers opportunities to enhance the social acceptance of a circular transition while safeguarding social equity and inclusion, addressing inequalities, and improving working conditions. Moreover, it supports the transition to a circular society and not merely a circular economy. Against this background, the report aimed to propose an approach towards a just circular economy that balances the economic, ecological, and social dimensions of sustainability, in which the latter is carried out based on the principles of distributional, recognitional, and procedural justice.

The assessment of the value chains revealed severe justice concerns that already exist and may be aggravated by future circularity measures. Key areas of concern cover health risks, job quality, gender disparities, and informal labour conditions:

- In the value chain for *batteries*, severe local pollution, poor labour conditions and public health risks are associated mainly with resource extraction and manufacturing. In addition, aspects such as the consideration of land use rights and stakeholder participation must be critically scrutinized in mining projects
- Health-related impacts appear to be the most prevalent social concern in the *plastics* value chain, mainly caused by resource extraction and the contact with chemicals and additives. The distribution of costs of plastic waste disproportionally affects marginalised communities and low-income countries, while plastics waste trade from the Global North to the Global South contributes to this shift of burdens.
- In the *textiles* value chain, key hotspots include the unequal distribution of environmental and social burdens from textiles production and waste exports, job displacement risks in the Global South due to reshoring, and the exclusion of marginalised groups, such as informal workers, from decision-making. Additionally, inadequate governance, transparency, and recognition of

local knowledge hinder fair outcomes, while overconsumption and fast fashion reinforce inequalities and unsustainable practices.

The assessment further revealed that there is considerable room for improvement and vast potential for progress concerning all justice dimensions (distributional, recognitional, procedural) across all value chains observed, which necessitates to recognize that all circular economy regulations and measures within the EU have direct or indirect implications along the value chain with clear disparities between the Global North and Global South. Mandatory policies, such as bans on harmful practices, can offer vital protections for vulnerable communities, while non-mandatory measures, such as subsidies and tax incentives, can align economic activities with sustainability goals. However, these measures and their process must be carefully designed to foster not only distributional but also procedural and recognitional justice, ensuring that all affected stakeholders, including marginalised groups and informal workers, have meaningful participation in decision-making processes.

Ensuring procedural justice requires inclusive policy-making processes that engage a diverse range of stakeholders, including marginalised communities, informal workers, civil society organisations, and industry representatives. Transparent dialogues, participatory decision-making structures, and mechanisms for stakeholder input throughout policy design and implementation are essential. For example, task forces for informal workers and inclusive governance frameworks for waste management programs can empower affected groups and foster trust and accountability. These can be done in form of public consultation, community-led planning or committees. Broader access to information (through awareness raising and digital platforms, as well as culturally sensitive communication), participatory monitoring, and regular assessment of policy impacts can further promote fair and transparent processes that reflect the needs and priorities of all involved.

Recognitional justice, on the other hand, emphasizes the need to respect and value the identities, contributions, and rights of all affected stakeholders within a circular transition. Policies should acknowledge and integrate the perspectives of marginalised groups, including informal waste workers, indigenous communities, and low-income populations. For example, when governments design EPR schemes for specific product categories and companies implement them through new waste management systems, it is crucial to actively involve informal waste workers. This ensures that potential challenges impacting their livelihoods—such as restricted access to recyclable materials or increased competition for waste—are identified, addressed, and mitigated, safeguarding their income and job security. Measures such as recognizing indigenous traditions and knowledge in resource governance and promoting social protections for vulnerable groups can address historical and ongoing injustices. Cultivating societal awareness of their roles and contributions, alongside embedding their voices in policy and decision-making processes, is essential for building a just and inclusive transition to a circular economy. Consequently, to prevent potential future injustices and the aggravation of existing ones, a systemic approach is necessary, which allows to prevent the shift of environmental and social burdens to other regions, particularly outside Europe, and to address the differentiated impacts on diverse societal groups along interconnected global value chains. For this, first and foremost, existing inequalities need to be recognized and measured.

Overall, further research is needed to identify inequalities within the current economic system. This will help uncover and highlight the extent of disparities that may arise during the transition to a circular economy. A robust system must be established enabling data generation, effective monitoring of implications on specific geographies and vulnerable groups, evaluation and even policy adjustment based on changing societal needs and new insights. To achieve this, transparency across the value chain must be established, which requires new technologies and digital processes ensuring that social negative impacts are avoided. This also entails the consideration of all potential (direct and indirect) implications of new circular economy measures, such as those of technological innovations on the labour market. Up to date, there is no data or indicator set to monitor social fairness within circular economy. Indicators need to be developed, and methods, such as social impact assessments, further assessed and implemented. The

European Fair Transition Observatory (EFTO) to be launched in 2025 as a 2-year pilot project could thereby provide first insights in this direction.

Ensuring justice requires a continuous commitment to assessing progress and refining policies and initiatives. If procedural and recognitional justice are not actively addressed frequently, the EU will rely on measures to merely correct unequal distribution. While there is potential for positive change, the transition is complex, demanding active steps to address tensions between social, economic, and environmental priorities. This ultimately underscores the call that a just transition towards circular economy will only be achieved through a collaborative and inclusive approach.

References

Agusdinata, D. B., Liu, W., Eakin, H., & Romero, H. (2018). Socio-environmental impacts of lithium mineral extraction: Towards a research agenda. *Environmental Research Letters*, *13*(12), 123001. https://doi.org/10.1088/1748-9326/aae9b1

Ahiable, K., & Triki, C. (2021). *Tackling Ghana's Textile-Waste Challenge*. Tony Blair Institute for Global Change. https://institute.global/insights/climate-and-energy/tackling-ghanas-textile-waste-challenge#executive-summary

Alipour, M., Irannezhad, E., Stewart, R. A., & Sahin, O. (2022). Exploring residential solar PV and battery energy storage adoption motivations and barriers in a mature PV market. *Renewable Energy*, *190*, 684–698. https://doi.org/10.1016/j.renene.2022.03.040

Archer, D., & Adelina, C. (2021). *Labour, Waste and the Circular Economy in Bangkok*. Stockholm Environment Institute. https://www.sei.org/wp-content/uploads/2021/07/210719a-mckay-caparas-2106i.pdf

Asante, K. A., Pwamang, J. A., Amoyaw-Osei, Y., & Ampofo, J. A. (2016). E-waste interventions in Ghana. *Reviews on Environmental Health*, *31*(1), 145–148. https://doi.org/10.1515/reveh-2015-0047

Ashraf, N., Adeniyi, D., & van Seters, J. (2024a). *Ecdpm (2024) external implications of the circular economy transition of the Netherlands and the EU.pdf*. (ECDPM) European Centre for Development Policy Management. https://ecdpm.org/application/files/9517/0472/2491/External_implications_of_the_circular_economy_transition_of_the_Netherlands_and_the_EU.pdf

Ashraf, N., Adeniyi, D., & van Seters, J. (2024b). *External implications of the circular economy transition of the Netherlands and the EU*. ecpdm.

Atewologun, D. (2018). Intersectionality Theory and Practice. In D. Atewologun, *Oxford Research Encyclopedia of Business and Management*. Oxford University Press. https://doi.org/10.1093/acrefore/9780190224851.013.48

Aurisano, N., Huang, L., Milà i Canals, L., Jolliet, O., & Fantke, P. (2021). Chemicals of concern in plastic toys. *Environment International*, *146*, 106194. https://doi.org/10.1016/j.envint.2020.106194

Avelino, F., & et al. (2023). *Towards a robust conceptualization of justice for sustainability transitions: A literature review for the European Environmental Agency*.

Awasthi, A. K., Zeng, X., & Li, J. (2016). Relationship between e-waste recycling and human health risk in India: A critical review. *Environmental Science and Pollution Research*, *23*(12), 11509–11532. https://doi.org/10.1007/s11356-016-6085-7

Baars, J., Domenech, T., Bleischwitz, R., Melin, H. E., & Heidrich, O. (2020). Circular economy strategies for electric vehicle batteries reduce reliance on raw materials. *Nature Sustainability*, *4*(1), 71–79. https://doi.org/10.1038/s41893-020-00607-0

Banza Lubaba Nkulu, C., Casas, L., Haufroid, V., De Putter, T., Saenen, N. D., Kayembe-Kitenge, T., Musa Obadia, P., Kyanika Wa Mukoma, D., Lunda Ilunga, J.-M., Nawrot, T. S., Luboya Numbi, O., Smolders, E., & Nemery, B. (2018). Sustainability of artisanal mining of cobalt in DR Congo. *Nature Sustainability*, *1*(9), 495–504. https://doi.org/10.1038/s41893-018-0139-4

Baran, B. (2024). Transboundary movements of plastic waste from EU countries as a constraint for sustainability. *EKONOMIA I PRAWO. ECONOMICS AND LAW*, *23*(1), 5–22. https://doi.org/10.12775/EiP.2024.001.

Barford, A., & Ahmad, S. R. (2021). A Call for a Socially Restorative Circular Economy: Waste Pickers in the Recycled Plastics Supply Chain. *Circular Economy and Sustainability*, *1*(2), 761–782. https://doi.org/10.1007/s43615-021-00056-7

Barrie, J., & Schröder, P. (2022). Circular Economy and International Trade: A Systematic Literature Review. *Circular Economy and Sustainability*, *2*(2), 447–471. https://doi.org/10.1007/s43615-021-00126-w

Barrie, J., Schröder, P., Schneider-Petsinger, M., King, R., & Benton, T. (2022). *The role of international trade in realizing an inclusive circular economy*. Royal Institute of International Affairs. https://doi.org/10.55317/9781784135393

Barrowclough, D., & Birkbeck, C. (2022). Transforming the Global Plastics Economy: The Role of Economic Policies in the Global Governance of Plastic Pollution. *Social Sciences*, *11*(1), 26. https://doi.org/10.3390/socsci11010026

Basel Action Network. (2019). *Holes in the Circular Economy WEEE Leakage from Europe*. http://wiki.ban.org/images/archive/f/f4/20190212001729%21Holes_in_the_Circular_Economy-_WEEE_Leakage_from_Europe.pdf

Bauer, F., Tilsted, J. P., Deere Birkbeck, C., Skovgaard, J., Rootzén, J., Karltorp, K., Åhman, M., Finkill, G. D., Cortat, L., & Nyberg, T. (2023). *Petrochemicals and climate change: Powerful fossil fuel lock-ins and interventions for transformative change*. Environmental and Energy Systems Studies.

Bell, K. (2016). Bread and Roses: A Gender Perspective on Environmental Justice and Public Health. *International Journal of Environmental Research and Public Health*, *13*(10), 1005. https://doi.org/10.3390%2Fijerph13101005

Bening, C. R., Kahlert, S., & Asiedu, E. (2022). The true cost of solving the plastic waste challenge in developing countries: The case of Ghana. *Journal of Cleaner Production*, *330*, 129649. https://doi.org/10.1016/j.jclepro.2021.129649

BHRRC, & OHCHR. (2018). *Business & human rights in the chemical industry: An assessment of company responses to human rights issues*. https://media.business-humanrights.org/media/documents/files/BHRRC_Chemical_Briefing_30_Jan_2018.pdf

Bick, R., Halsey, E., & Ekenga, C. C. (2018). The global environmental injustice of fast fashion. *Environmental Health*, *17*(1), 92. https://doi.org/10.1186/s12940-018-0433-7

Biermann, F., & Kalfagianni, A. (2020). Planetary justice: A research framework. *Earth System Governance*, *6*, 100049. https://doi.org/10.1016/j.esg.2020.100049

Bleck, D., & Wettberg, W. (2012). Waste collection in developing countries – Tackling occupational safety and health hazards at their source. *Waste Management*, *32*(11), 2009–2017. https://doi.org/10.1016/j.wasman.2012.03.025

Borms, L., Van Opstal, W., Brusselaers, J., & Van Passel, S. (2023). The working future: An analysis of skills needed by circular startups. *Journal of Cleaner Production*, *409*, 137261. https://doi.org/10.1016/j.jclepro.2023.137261

Bressanelli, G., Perona, M., & Saccani, N. (2019). Challenges in supply chain redesign for the Circular Economy: A literature review and a multiple case study. *7395-7422*, *57*. https://doi.org/10.1080/00207543.2018.1542176

Buch, R., Marseille, A., Williams, M., Aggarwal, R., & Sharma, A. (2021). From Waste Pickers to Producers: An Inclusive Circular Economy Solution through Development of Cooperatives in Waste Management. *Sustainability*, *13*(16), 8925. https://doi.org/10.3390/su13168925

Busch, P.-O. (2024). *Positions of All Countries on the Global Plastics Treaty*. SWITCH-Asia Programme. https://www.switch-asia.eu/site/assets/files/4061/positions_plastics_treaty_world-1.pdf

Butturi, M. A., Marinelli, S., Gamberini, R., & Rimini, B. (2020). Ecotoxicity of Plastics from Informal Waste Electric and Electronic Treatment and Recycling. *Toxics*, *8*(4), Article 4. https://doi.org/10.3390/toxics8040099

Calzolari, T., Genovese, A., & Brint, A. (2022). Circular Economy indicators for supply chains: A systematic literature review. *Environmental and Sustainability Indicators*, *13*, 100160. https://doi.org/10.1016/j.indic.2021.100160

Campbell, J. (2020, October 29). Why Cobalt Mining in the DRC Needs Urgent Attention. *Council on Foreign Relations*. https://www.cfr.org/blog/why-cobalt-mining-drc-needs-urgent-attention#:~:text=These%20human%20rights%20risks%20are

Carranza, R., Zollo, L., Díaz, E., & Faraoni, M. (2023). Solving the luxury fashion and sustainable development "oxymoron": A cross-cultural analysis of green luxury consumption enablers and disablers. *Business Strategy and the Environment*, *32*(4), 2399–2419. https://doi.org/10.1002/bse.3255

Casazza, M. (2024). Chapter 11: Integrated indicators for the assessment of economic, social and environmental benefits. In *Circular Economy for Social Transformation: Multiple Paths to Achieve Circularity*. Ledizioni Ledipublishing. https://just2ce.eu/wp-content/uploads/2024/06/2024-JUST2CE-eBook-Final_Version_19.4.24-ch11.pdf

Caterbow, A. (2024). *Wie Steht es um das Globale Plastik-Abkommen? Verhandlungen zwischen Reduktionsforderungen und Lobbyeinfluss*. Forum Umwelt & Entwicklung. https://www.forumue.de/wp-content/uploads/2024/03/FORUM_rundbrief124_240315web.pdf

Cathey, A. L., Nguyen, V. K., Colacino, J. A., Woodruff, T. J., Reynolds, P., & Aung, M. T. (2023). Exploratory profiles of phenols, parabens, and per- and poly-fluoroalkyl substances among NHANES study participants in association with previous cancer diagnoses. *Journal of Exposure Science & Environmental Epidemiology*, *33*(5), 687–698. https://doi.org/10.1038/s41370-023-00601-6

Chinogwenya, T. (2024). Frontline, Fence Line, and Shoreline Communities. *Climate Justice*. https://www.mfsaweb.org/news/frontline-fence-line-and-shoreline-communities

Chitakwa, N., Alqudaimi, M., Sultan, M., & Wu, D. (2024). Plastic-related endocrine disrupting chemicals significantly related to the increased risk of estrogen-dependent diseases in women. *Environmental Research*, *252*, 118966. https://doi.org/10.1016/j.envres.2024.118966

Chokhandre, P., & Kashyap, G. C. (2017). Assessment of Psychological Well-being of Waste-pickers of Mumbai, India. *Asian Journal of Epidemiology*, *10*(3), 138–143. https://doi.org/10.3923/aje.2017.138.143

Church, C., & Crawford, A. (2018). *Green Conflict Minerals: The fuels of conflict in the transition to a low-carbon economy* (p. 56). International Institute for Sustainable Development. https://www.iisd.org/system/files/publications/green-conflict-minerals.pdf?q=sites/default/files/publications/green-conflict-minerals.pdf

CIEL. (2023a). *Beyond Recycling Reckoning with Plastics in a Circular Economy*. https://www.ciel.org/wp-content/uploads/2023/03/Beyond-Recycling-Reckoning-with-Plastics-in-a-Circular-Economy.pdf

CIEL. (2023b). *Fossil Fuel and Chemical Industries Registered More Lobbyists at Plastics Treaty Talks than 70 Countries Combined*. https://www.ciel.org/news/fossil-fuel-and-chemical-industries-at-inc-3/

CIEL. (2024a). *Fossil Fuel Lobbyists Flood Final Scheduled Round of Global Plastics Treaty Negotiations*. https://www.ciel.org/news/inc-5-lobbyist-analysis/

CIEL. (2024b). *Fossil Fuel Lobbyists Outnumber National Delegations, Scientists, and Indigenous Peoples at Plastics Treaty Negotiations*. https://www.ciel.org/news/fossil-fuel-and-chemical-industry-influence-inc4/

CIEL, C. for I. E. L. (2019). *Plastic & Climate: The Hidden Cost of a Plastic Planet*. https://www.ciel.org/wp-content/uploads/2019/05/Plastic-and-Climate-FINAL-2019.pdf

Circle Economy. (2021). *Closing the skills gap: Vocational education & training for the circular economy*. https://www.circle-economy.com/resources/closing-the-skills-gap-vocational-education-and-training-for-the-circular-economy

Civil Society and Rights Holders. (2024). *Subject: Participation of Civil Society and Rights Holders in the Ad Hoc Intersessional Open-ended Expert Groups*. https://www.breakfreefromplastic.org/wp-content/uploads/2024/07/Coalition-Response-to-IW-Mandate.pdf

Clube, R. (2022). Is job creation a legitimate social benefit of the circular economy? *Resources, Conservation and Recycling*, *181*, 106220. https://doi.org/10.1016/j.resconrec.2022.106220

Cobbing, M. (2024). *People vs. Plastic! Global Support for a Strong Plastics Treaty*. Greanpeace. https://www.greenpeace.org/static/planet4-international-stateless/2024/04/eaa6997d-survey-results-global-plastics-treaty.pdf

Coghlan, C., Proulx, P., & Salazar, K. (2021). A Food-Circular Economy-Women Nexus: Lessons from Guelph-Wellington. *Sustainability MDPI*, *14*(1), 192. https://doi.org/10.3390/su14010192

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal, European Commission, COM(2019) 640 final (2019). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2019%3A640%3AFIN

Conlon, K., Jayasinghe, R., & Dasanayake, R. (2021). Circular Economy: Waste-to-Wealth, Jobs the Global South. *Urban Studies and Planning Faculty Publications and Presentations*. https://pdxscholar.library.pdx.edu/usp_fac/308

Cook, E., Silva de Souza Lima Cano, N., & Velis, C. A. (2024). Informal recycling sector contribution to plastic pollution mitigation: A systematic scoping review and quantitative analysis of prevalence and productivity. *Resources, Conservation and Recycling*, *206*, 107588. https://doi.org/10.1016/j.resconrec.2024.107588

Cotta, B. (2020). What goes around, comes around? Access and allocation problems in Global North–South waste trade. *International Environmental Agreements: Politics, Law and Economics*, *20*(2), 255–269. https://doi.org/10.1007/s10784-020-09479-3

Cottom, J. W., Cook, E., & Velis, C. A. (2024). A local-to-global emissions inventory of macroplastic pollution. *Nature*, *633*(8028), 101–108. https://doi.org/10.1038/s41586-024-07758-6

Crenshaw, K. (1989). Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics. *University of Chicago Legal Forum*, *1989*(1). https://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8

D'Adamo, I., Gastaldi, M., & Morone, P. (2022). The impact of a subsidized tax deduction on residential solar photovoltaic-battery energy storage systems. *Utilities Policy*, *75*, 101358. https://doi.org/10.1016/j.jup.2022.101358

Danish Institute for Human Rights. (2024). *National Action Plans on Business and Human Rights*.

Dauvergne, P. (2023). The necessity of justice for a fair, legitimate, and effective treaty on plastic pollution. *Marine Policy*, *155*, 105785. https://doi.org/10.1016/j.marpol.2023.105785

de Haes, S., & Lucas, P. (2024). *ENVIRONMENTAL IMPACTS OF EXTRACTION AND PROCESSING OF RAW MATERIALS FOR THE ENERGY TRANSITION*. PBL Netherlands Environmental Assessment Agency.

de Olivera, I. A. (2021). Environmental Justice and Circular Economy: Analyzing Justice for Waste Pickers in Upcoming Circular Economy in Fortaleza, Brazil. *Circular Economy and Sustainability*. https://doi.org/10.1007/s43615-021-00045-w

Dematteo, R., Keith, M. M., Brophy, J. T., Wordsworth, A., Watterson, A. E., Beck, M., Ford, A. R., Gilbertson, M., Pharityal, J., Rootham, M., & Scott, D. N. (2013). Chemical Exposures of Women Workers in the Plastics Industry with Particular Reference to Breast Cancer and Reproductive

Hazards. *NEW SOLUTIONS: A Journal of Environmental and Occupational Health Policy*, *22*(4), 427–448. https://doi.org/10.2190/NS.22.4.d

DeVoy, J. E., Congiusta, E., Lundberg, D. J., Findeisen, S., & Bhattacharya, S. (2021). Post-Consumer textile waste and disposal: Differences by socioeconomic, demographic, and retail factors. *Waste Management*, *136*, 303–309. https://doi.org/10.1016/j.wasman.2021.10.009

Di Paola, L. (2023). *Just transition measurement approaches: A catalogue for just transition regions* (Just Transition Fund). European Commission. https://ec.europa.eu/regional_policy/sources/funding/just-transition-fund/toolkit-just-transition-measurement-approaches.pdf

Dolega, P., Buchert, M., & Betz, J. (2020). *Environmental and socio-economic challenges in battery supply chains: Graphite and lithium* (p. 25). Oeko-Institut e.V. https://www.oeko.de//fileadmin/oekodoc/Graphite-Lithium-Env-Soc-Eco-Challenges.pdf

EC. (2022). *EU Strategy for Sustainable and Circular Textiles*. https://environment.ec.europa.eu/document/download/74126c90-5cbf-46d0-ab6b-60878644b395_en?filename=COM_2022_141_1_EN_ACT_part1_v8.pdf

EC. (2023). *Study on the critical raw materials for the EU 2023: Final report.* Publications Office. https://data.europa.eu/doi/10.2873/725585

ECCJ, Public Eye, Corporate Justice Coalition, Above Ground, & International Corporate Accountability Roundtable. (2024). *Business and Human Rights in Law*. https://www.bhr-law.org/

EEA. (2017). *Circular by design—Products in the circular economy* (No. EEA Report No 6/2017; Issue 6/2017). European Environment Agency.

EEA. (2019). *Textiles in Europe's circular economy* (No. EEA Briefing No 10/2019). European Environment Agency. https://www.eea.europa.eu/publications/textiles-in-europes-circular-economy

EEA. (2021a). *A framework for enabling circular business models in Europe*.

EEA. (2021b). *Plastics, the circular economy and Europe's environment—A priority for action*.

EEA. (2022a). *Textiles and the Environment—The role of design in Europe's circular economy* (ETC/CE Report No. 2/2022). Publications Office of the European Union. https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-products/etc-ce-report-2-2022-textiles-and-the-environment-the-role-of-design-in-europes-circular-economy

EEA. (2022b, June 29). *Towards 'just resilience': Leaving no one behind when adapting to climate change* [Briefing]. https://www.eea.europa.eu/publications/just-resilience-leaving-no-one-behind

EEA. (2023a). *EU exports of used textiles in Europe's circular economy* (No. Briefing no. 01/2023; Issue 01/2023). European Environment Agency. https://www.eea.europa.eu/publications/eu-exports-of-used-textiles)

EEA. (2023b). *EU exports of used textiles in Europe's circular economy.* European Environment Agency. https://data.europa.eu/doi/10.2800/189382

EEA. (2023c). *Textiles in Europe's circular economy* [Briefing]. https://www.eea.europa.eu/publications/textiles-in-europes-circular-economy/textiles-in-europe-s-circular-economy

EEA. (2024a). *Accelerating the circular economy in Europe: State and outlook 2024*. Publications Office of the European Union. https://data.europa.eu/doi/10.2800/055236

EEA. (2024b). *Delivering justice in sustainability transitions* [Briefing]. EEA. https://www.eea.europa.eu/publications/delivering-justice-in-sustainability-transitions/delivering-justice-in-sustainability-transitions

EEA. (2024c). *Just sustainability transitions—From concept to practice*. https://www.eea.europa.eu/en/analysis/publications/just-sustainability-transitions

EEA. (2024d). *The destruction of returned and unsold textiles in Europe's circular economy* [Briefing]. European Environment Agency. https://www.eea.europa.eu/publications/the-destruction-of-returned-and/the-destruction-of-returned-and

EEA. (2024e). *The role of plastics in Europe's circular economy*. https://www.eea.europa.eu/publications/the-role-of-plastics-in-europe

EIA. (2021). *The Truth Behind Trash: The scale and impact of the international trade in plastic waste*. Environmental Investigation Agency. https://eia-international.org/wp-content/uploads/EIA-The-Truth-Behind-Trash-FINAL.pdf

Ellen MacArthur Foundation. (2024). *Pushing the boundaries of EPR policy for textiles*. https://www.ellenmacarthurfoundation.org/epr-policy-for-textiles

Elster, J. (1993). *Local Justice: How Institutions Allocate Scarce Goods and Necessary Burdens*. Russell Sage Foundation.

EPA Network, EEA, ISPRA, & Systema Nazionale per la Protezione del' Ambiente. (2020). *Bellagio Declaration—Circular economy monitoring principles*. https://epanet.eea.europa.eu/reports-letters/reports-and-letters/bellagio-declaration.pdf/view

EPSU. (2020). *Safe Jobs in the Circular Economy Health and Safety in Waste and Wastewater Management*.

ETC CE. (2022). *Textiles and the environment—The role of design in Europe's circular economy* (ETC CE Report No. 2/2022). https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-products/etc-ce-report-2-2022-textiles-and-the-environment-the-role-of-design-in-europes-circular-economy

ETC CE. (2023a). *ETC/CE Report 2023/7 Circular Economy and Biodiversity*. Eionet Portal. https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-report-2023-7-circular-economy-and-biodiversity

ETC CE. (2023b). *EU exports of used textiles in Europe's circular economy* (Eionet Report ETC/CE No. 2023/4). European Topic Centre Circular Economy and Resource Use. https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-report-2023-4-eu-exports-of-used-textiles-in-europe2019s-circular-economy

ETC CE. (2024). *Volumes and destruction of returned and unsold textiles in Europe's circular economy*. https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-report-2024-4-volumes-and-destruction-of-returned-and-unsold-textiles-in-europes-circular-economy

ETC/CE. (2023). *The fate of EU plastic waste* (No. ETC CE Report 2023/2). https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-report-2023-2-the-fate-of-eu-plastic-waste

ETC/WMGE. (2019). *Textiles and the environment in a circular economy* (Eionet Report No. 6/2019). European Topic Centre for Waste and Materials in a Green Economy. https://www.eionet.europa.eu/etcs/etc-wmge/products/etc-reports/textiles-and-the-environment-in-a-circular-economy

ETC/WMGE. (2021). *Business Models in a Circular Economy* (ETC/WMGE Report 2/2021 No. 2/2021). https://www.eionet.europa.eu/etcs/etc-wmge/products/etc-wmge-reports/business-models-in-a-circular-economy

European Commission. (2017). *Public procurement for a circular economy. Good practice and guidance*.

European Commission. (2024). *Critical Raw Materials Act*. https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials_en#critical-raw-materials-act

European Critical Raw Materials Act, 67 (2024). REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401252

European Parliament and Council. (2024). *REGULATION (EU) 2024/1157 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL*. http://data.europa.eu/eli/reg/2024/1157/oj

Eurostat. (2024a). *Trade in recyclable raw materials by partner* [Dataset]. https://doi.org/10.2908/ENV_TRDRRM

Eurostat. (2024b). *Trade in waste by type of material and partner* [Dataset]. https://doi.org/10.2908/ENV_WASTRDMP

Ezeah, C., Fazakerley, J. A., & Roberts, C. L. (2013). Emerging trends in informal sector recycling in developing and transition countries. *Waste Management*, *33*, 2509–2519.

Fair Circularity Initiative, & Systemiq. (2024). *A Living Income for the Informal Waste Sector: A methodology to assess the living income of waste workers in the context of the Global Plastics Treaty*. https://faircircularity.org/app/uploads/2024/05/Systemiq-A_Living_Income_for_the_Informal_Waste_Sector_EN.pdf

Fidan, F. Ş., Aydoğan, E. K., & Uzal, N. (2024). Comprehensive analysis of social subcategories throughout life cycle assessment approach for the textile industry. *The International Journal of Life Cycle Assessment*. https://doi.org/10.1007/s11367-024-02340-8

Fifield, B., & Medkova, K. (2016). *Circular Design—Design for Circular Economy*. https://www.researchgate.net/publication/313771263_Circular_Design_-_Design_for_Circular_Economy

Fitzgerald, J. (2022). Transitioning From Urban Climate Action to Climate Equity. *Journal of the American Planning Association*, *88*(4), 508–523. https://doi.org/10.1080/01944363.2021.2013301

Fos, P. J., Honore, P. A., Honore, R. L., & Patterson, K. (2021). Health Status in Fence-Line Communities: The Impact of Air Pollution. *International Journal of Family Medicine and Primary Care*, *2*(3), 1040.

Franco, M., & Groesser, S. (2021). A Systematic Literature Review of the Solar Photovoltaic Value Chain for a Circular Economy. *Sustainability*.

Fråne, A., Dahlbom, M., Sanctuary, M., Malmeus, M., Fjellander, L., & De Jong, A. (2021). *Towards sustainable consumption in the Nordic Region* (Report No. 2021:024; p. s. 78). Nordisk Ministerråd. https://pub.norden.org/nord2021-024/

Franks, D. M., Davis, R., Bebbington, A. J., Ali, S. H., Kemp, D., & Scurrah, M. (2014). Conflict translates environmental and social risk into business costs. *Proceedings of the National Academy of Sciences*, *111*(21), 7576–7581. https://doi.org/10.1073/pnas.1405135111

Friant, M. C., Doezema, T., & Pansera, M. (2021). *Cross-Case Comparison Report*.

Fricker, M. (2007). *Epistemic Injustice: Power and the Ethics of Knowing*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198237907.001.0001

Fuller, S., Ngata, T., Borrelle, S., & Farrelly, T. (2022). Plastics pollution as waste colonialism in Te Moananui. *Journal of Political Ecology*, *29*. https://core.ac.uk/download/pdf/552798072.pdf

GA Circular. (2019). *The Role of Gender in Waste Management: Gender Perspectives on Waste in India, Indonesia, the Philippines and Vietnam*. https://oceanconservancy.org/wp-content/uploads/2019/06/The-Role-of-Gender-in-Waste-Management.pdf

Gachenga, E. (2022). Linear to circular waste policies: Breathing life into the polluter pays principle? *International Journal for Crime, Justice and Social Democracy*, *11*(2), 61–73. https://doi.org/10.3316/informit.479048023484640

GAIA. (2022). *Stop Waste Colonialism: Public Statement*. GAIA. https://www.no-burn.org/wp-content/uploads/2022/06/Stop-Waste-Colonialism-Public-Statement-.pdf

Gall, M., Wiener, M., Chagas De Oliveira, C., Lang, R. W., & Hansen, E. G. (2020). Building a circular plastics economy with informal waste pickers: Recyclate quality, business model, and societal impacts.

Resources, Conservation and Recycling, *156*, 104685. https://doi.org/10.1016/j.resconrec.2020.104685

Gall, M., Wiener, M., Chagas de Oliveira, C., Lang, R. W., & Hansen, E. G. (2020). Building a circular plastics economy with informal waste pickers: Recyclate quality, business model, and societal impacts. *Resources, Conservation and Recycling*, *156*, 104685. https://doi.org/10.1016/j.resconrec.2020.104685

Garcia-Ortega, B., Galan-Cubillo, J., Llorens-Montes, F. J., & de-Miguel-Molina, B. (2023). Sufficient consumption as a missing link toward sustainability: The case of fast fashion. *Journal of Cleaner Production*, *399*, 136678. https://doi.org/10.1016/j.jclepro.2023.136678

Ghisellini, P., Quinto, I., Passaro, R., & Ulgiati, S. (2024). Exploring environmental and social performances of circular start-ups: An orientation and certification assessment. *Business Strategy and the Environment*, *33*(4), 3222–3241. https://doi.org/10.1002/bse.3620

Ghosh, B., Kivimaa, P., Ramirez, M., Schot, J., & Torrens, J. (2021). Transformative outcomes: Assessing and reorienting experimentation with transformative innovation policy. *Science and Public Policy*, *48*(5), 739–756. https://doi.org/10.1093/scipol/scab045

GIZ. (2024a). *Assessment study: Used textiles at Kantamanto market* (Sector Programme Social and Ecological Transformation of Textile Supply Chains). GIZ and BMZ.

GIZ. (2024b). *Towards a Sustainable Future: Recommendations for a Just Transition in Waste Management and Circular Economy in the ASEAN Region*. https://www.giz.de/en/downloads/giz2024-en-just-transition-report.pdf

GIZ & Bundesanstalt für Geowissenschaften. (2021). *Rohstoffe für E-Mobilität. Entwicklungspolitische Perspektiven* (p. 108). Deutsche Gesellschaft für Internationale Zusammenarbeit. https://www.bgr.bund.de/DE/Themen/Zusammenarbeit/TechnZusammenarbeit/Downloads/2057_Rohstoffe_%20E-Mobilitaet.pdf;jsessionid=BC9F35877CF06866A04128E094AEDB64.internet982?__blob=publicationFile&v=2

GNDE. (2019). *Blueprint for Europe's Just Transition*.

Goldstein, J. (2017). A Pyrrhic Victory? The Limits to the Successful Crackdown on Informal-Sector Plastics Recycling in Wenan County, China. *Modern China*, *43*(1), 3–35. https://doi.org/10.1177/0097700416645882

Gonçalves, A., & Silva, C. (2021). Looking for Sustainability Scoring in Apparel: A Review on Environmental Footprint, Social Impacts and Transparency. *Energies*, *14*(11), Article 11. https://doi.org/10.3390/en14113032

Gonzalez, C. G. (2021). Racial capitalism, climate justice, and climate displacement. *Oñati Socio-Legal Series*, *11*(1), Article 1.

Gözet, B., & Wilts, H. (2022). *Die Kreislaufwirtschaft als neues Narrativ für die Textilindustrie: Eine Analyse der textilen Wertschöpfungskette mit Blick auf Deutschlands Chancen einer kreislaufwirtschaftlichen Transformation* (Zukunftsimpuls 23). Wuppertal Institut. https://epub.wupperinst.org/frontdoor/deliver/index/docId/7999/file/ZI23_Textilindustrie.pdf

Guillibert, P., Barca, S., & Leonardi, E. (2021). *Labour in the Transition to the Circular Economy: A Crtitcal Literature Review on Just Transition and Circular Economy*. JUST2CE. https://drive.google.com/file/d/1pdk-1HLMVeJQ-fUBIOrDf9-FKfkvfp_Y/view?usp=sharing

Gündoğdu, S. (2024). *Plastic Waste Trade—A New Colonialist Means of Pollution Transfer*. Springer.

Gutberlet, J. (2023). Global Plastic Pollution and Informal Waste Pickers. *Cambridge Prisms: Plastics*, 1–38. https://doi.org/10.1017/plc.2023.10

Hahladakis, J. N., Purnell, P., Iacovidou, E., Velis, C. A., & Atseyinku, M. (2018). Post-consumer plastic packaging waste in England: Assessing the yield of multiple collection-recycling schemes. *Waste Management*, *75*, 149–159. https://doi.org/10.1016/j.wasman.2018.02.009

Härri, A., & Levänen, J. (2024). "It should be much faster fashion"—Textile industry stakeholders' perceptions of a just circular transition in Tamil Nadu, India. *Discover Sustainability*, *5*(1), 39. https://doi.org/10.1007/s43621-024-00211-8

Härri, A., Levänen, J., & Linnanen, L. (2023). Circular Economy: Just Sectoral Transition in the Production and Consumption of Textiles. In *Handbook of Sustainability Science in the Future* (pp. 231–249). https://www.researchgate.net/publication/373124274_Circular_Economy_Just_Sectoral_Transition_in_the_Production_and_Consumption_of_Textiles

Heinrich Boell Foundation. (2023). *Combatting Global Plastic Pollution—Feminist Perspectives for a Gender-Just Approach*. https://www.boell.de/sites/default/files/2023-03/inbrief_plastic_en.pdf

Herrera Almanza, A. M., & Corona, B. (2020). Using Social Life Cycle Assessment to analyze the contribution of products to the Sustainable Development Goals: A case study in the textile sector. *The International Journal of Life Cycle Assessment*, *25*(9), 1833–1845. https://doi.org/10.1007/s11367-020-01789-7

Hobson, K., & Lynch, N. (2016). Diversifying and degrowing the circular economy: Radical social transformation in a resource-scarce world. *Futures*, *82*, 15–25. http://dx.doi.org/10.1016/j.futures.2016.05.012

Holmberg, K., Tilsted, J. P., Bauer, F., & Stripple, J. (2024). Expanding European fossil-based plastic production in a time of socio-ecological crisis: A neo-Gramscian perspective. *Energy Research & Social Science*, *118*, 103759. https://doi.org/10.1016/j.erss.2024.103759

Horn, S., Mölsä, K. M., Sorvari, J., Tuovila, H., & Heikkilä, P. (2023). Environmental sustainability assessment of a polyester T-shirt – Comparison of circularity strategies. *Science of The Total Environment*, *884*, 163821. https://doi.org/10.1016/j.scitotenv.2023.163821

Hossain, K. B., Chen, K., Chen, P., Wang, C., & Cai, M. (2021). Socioeconomic Relation with Plastic Consumption on 61 Countries Classifed by Continent, Income Status and Coastal Regions. *Bulletin of Environmental Contamination and Toxicology*, *107*, 786–792. https://doi.org/10.1007/s00128-021-03231-6

Human Rights Council. (2018). *Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes*. https://documents.un.org/doc/undoc/gen/g18/239/70/pdf/g1823970.pdf

Human Rights Council. (2021a). *Implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes: The stages of the plastics cycle and their impacts on human rights*. https://documents.un.org/doc/undoc/gen/n21/201/78/pdf/n2120178.pdf

Human Rights Council. (2021b). *The human right to a safe, clean, healthy and sustainable environment*. https://documents.un.org/doc/undoc/ltd/g21/270/15/pdf/g2127015.pdf

Hur, E. (2020). Rebirth fashion: Secondhand clothing consumption values and perceived risks. *Journal of Cleaner Production*, *273*, 122951. https://doi.org/10.1016/j.jclepro.2020.122951

IAWP. (2023). *IAWP's Vision for a Just Transition for Waste Pickers under the UN Plastics Treaty*. International Alliance of Waste Pickers. https://globalrec.org/wp-content/uploads/2024/01/english_position-paper_IAWP-vision-just-transition_web.pdf

IEA. (2024). *Global EV Outlook 2024*. IEA. https://www.iea.org/reports/global-ev-outlook-2024

IHRB. (2020). *JUST TRANSITIONS FOR ALL Business, Human Rights, and Climate Action*. https://www.ihrb.org/resources/report-just-transitions-for-all

IISD. (2024a). *Summary of the 4th Session of the Intergovernmental Negotiating Committee to Develop an International Legally Binding Instrument on Plastic Pollution*. http://enb.iisd.org/plastic-pollution-marine-environment-negotiating-committee-inc4

IISD. (2024b). Summary of the First Session of the Fifth Session of the Intergovernmental Negotiating Committee to Develop an International Legally Binding Instrument on Plastic Pollution: 25 November – 2 December 2024. *Earth Negotiations Bulletin*, *36*(34). https://enb.iisd.org/sites/default/files/2024-12/enb3634e.pdf

ILO. (1989). *C169—Indigenous and Tribal Peoples Convention, 1989 (No. 169)*. https://normlex.ilo.org/dyn/nrmlx_en/f?p=NORMLEXPUB:55:0::NO::P55_TYPE%2CP55_LANG%2CP55_DOCUMENT%2CP55_NODE:REV%2Cen%2CC169%2C%2FDocument

ILO. (2018a). *World Employment and Social Outlook 2018: Greening with jobs* [Report]. International Labour Organization. http://www.ilo.org/global/research/global-reports/weso/2018/WCMS_615594/lang--en/index.htm

ILO. (2018b). *World Employment and Social Outlook: Trends 2018* [Report]. International Labour Organization. http://www.ilo.org/global/research/global-reports/weso/2018/WCMS_615594/lang--en/index.htm

ILO. (2022). *Inclusion of persons with disabilities in the digital and green economy*.

ILO. (2023). *Hazardous exposures to plastics in the world of work* (No. 9789220392089). ILO. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_dialogue/@lab_admin/documents/publication/wcms_894387.pdf

International Alliance of Waste Pickers. (2023). *IAWP's Vision for a Just Transition for Waste Pickers under the UN Plastics Treaty*. https://globalrec.org/wp-content/uploads/2023/11/english_position-paper_IAWP-vision-just-transition_web_v02.pdf

International Resource Panel. (2024). *Intentionally Designing Sustainable Consumption and Production Policies and Practices to Reduce Inequalities*. IRP - UN. https://www.resourcepanel.org/reports/intentionally-designing-SCP

INTERPOL. (2020). *Strategic Analysis Report. Emerging criminal trends in the global plastic waste market since January 2018.* INTERPOL General Secretariat.

INTRACEN. (2023). *List of importing markets for a product exported by United States of America—Product: 3915 Waste, parings and scrap, of plastics*. https://www.trademap.org/Country_SelProductCountry_TS.aspx?nvpm=1%7c842%7c%7c%7c%7c3915%7c%7c%7c4%7c1%7c1%7c2%7c2%7c1%7c2%7c2%7c1%7c1

IPEN. (2022). *An Introduction to Plastics & Toxic Chemicals: How Plastics Harm Human Health and the Environment and Poison the Circular Economy*. https://ipen.org/sites/default/files/documents/ipen-plastics_booklet-finalspreads.pdf

IRP. (2024). *Glossary of cross-cutting key terms from all Working Groups of the Resource Panel*. International Resource Panel.

Jaeger-Erben, M., Jensen, C., Hofmann, F., & Zwiers, J. (2021). There is no sustainable circular economy without a circular society. *Resources Conservation and Recycling*, *168*, 105476. https://doi.org/10.1016/j.resconrec.2021.105476

JRC. (2020). *Responsible and sustainable sourcing of batteries raw materials: Insights from hotspot analysis, corporate disclosures and field research.* Publications Office. https://data.europa.eu/doi/10.2760/562951

JRC. (2023). *Supply chain analysis and material demand forecast in strategic technologies and sectors in the EU: A foresight study.* Publications Office. https://data.europa.eu/doi/10.2760/386650

JRC. (2024). Lithium-based batteries supply chain challenges. *RMIS – Raw Materials Information System*. https://rmis.jrc.ec.europa.eu/analysis-of-supply-chain-challenges-49b749

Just Fashion Transition (Venice Sustainable Fashion Forum). (2023). The European House – Ambrosetti. https://eventi.ambrosetti.eu/venicefashion2023/wp-content/uploads/sites/249/2023/10/VSFF23-EXECUTIVE-SUMMARY-ING-1.pdf

Kageyama, I., Hashiguchi, N., Cao, J., Niwa, M., Lim, Y., Tsutsumi, M., Yu, J., Sengoku, S., Okamoto, S., Hashimoto, S., & Kodama, K. (2022). Determination of Waste Management Workers' Physical and Psychological Load: A Cross-Sectional Study Using Biometric Data. *International Journal of Environmental Research and Public Health*, *19*(23), 15964. https://doi.org/10.3390/ijerph192315964

Karasik, R., Lauer, N. E., Baker, A.-E., Lisi, N. E., Somarelli, J. A., Eward, W. C., Fürst, K., & Dunphy-Daly, M. M. (2023). Inequitable distribution of plastic benefits and burdens on economies and public health. *Frontiers in Marine Science*, *9*, 1017247. https://doi.org/10.3389/fmars.2022.1017247

Karki, A., Karki, J., Joshi, S., Black, M. N., Rijal, B., Basnet, S., Makai, P., Fossier Heckmann, A., Baral, Y. R., & Lee, A. (2022). Mental Health Risks Among Informal Waste Workers in Kathmandu Valley, Nepal. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, *59*. https://doi.org/10.1177/00469580221128419

Karlsson, T., & Miller, P. (2023). *Are Your Children's Toys Hazardous Waste? High levels of chlorinated paraffins in plastic toys from ten countries*. International Pollutants Elimination Network (IPEN). https://ipen.org/sites/default/files/documents/chlorinated_paraffins_report-102023.pdf

Kaza, S., Yao, L. C., Bhada-Tata, P., & Van Woerden, F. (2018). *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*. World Bank. https://doi.org/10.1596/978-1-4648-1329-0

Kendall, A., K., D., Kristi, Helal, N., Iskakov, G., Pares, F., Slattery, M., & Fulton, L. (2023). *Electric Vehicle Lithium-ion Batteries in Lower- and Middle-income Countries: Life Cycle Impacts and Issues* (p. 62). UC Davis Institute of Transportation Studies. https://escholarship.org/uc/item/7m2536mp

Kirchherr, J. (2021). Towards circular justice: A proposition. *Resources, Conservation and Recycling*, *173*, 105712. https://doi.org/10.1016/j.resconrec.2021.105712

Kloepfer, M. (2006). *Umweltgerechtigkeit Environmental Justice in der deutschen Rechtsordnung*. Duncker & Humblot.

Komnitsas, K. (2020). Social License to Operate in Mining: Present Views and Future Trends. *Resources*, *9*(79). https://doi.org/10.3390/resources9060079

Kumari, D. R., Tiwari, D. R., Akhtar, R., & Sunil Kumar Gupta, A. P. (2023). Harmful Effects of Plastics on Human Health and the Environment: A Review. *GPH-International Journal of Social Science and Humanities Research*, *06*(11), 249–255. https://doi.org/10.5281/zenodo.10429234

Lacy, P., Long, J., & Spindler, W. (2020). *The Circular Economy Handbook* (1st ed.). Palgrave Macmillan London. https://link.springer.com/book/10.1057/978-1-349-95968-6#bibliographic-information

Landrigan, P. J., Raps, H., Cropper, M., Bald, C., Brunner, M., Canonizado, E. M., Charles, D., Chiles, T. C., Donohue, M. J., Enck, J., Fenichel, P., Fleming, L. E., Ferrier-Pages, C., Fordham, R., Gozt, A., Griffin, C., Hahn, M. E., Haryanto, B., Hixson, R., … Dunlop, S. (2023). The Minderoo-Monaco Commission on Plastics and Human Health. *Annals of Global Health*, *89*(1), 23. https://doi.org/10.5334/aogh.4056

Langemeyer, J., & Connolly, J. J. T. (2020). Weaving notions of justice into urban ecosystem services research and practice. *Environmental Science & Policy*, *109*, 1–14. https://doi.org/10.1016/j.envsci.2020.03.021

Langsdorf, S., & Duin, L. (2022). *The circular economy and its impact on developing and emerging countries. An explorative study* (p. 38). Ecologic Institute.

https://www.ecologic.eu/sites/default/files/publication/2022/50068-Circular-Economy-and-Developing-Countries-final.pdf

Lembachar, Y., Marsden, J., & von Schwerdtner, A.-S. (2022). *Thinking Beyond Borders to Achieve Social Justice in a Global Circular Economy*. Circle Economy. https://circulareconomy.europa.eu/platform/sites/default/files/20220602_-_cji_-_iii-evidence_to_action_-_210x297mm.pdf

Lesniewska, F., & Steenmans. (2023). *Circular Economy and the Law—Bringing justice into the Frame*. ROUTLEDGE.

Lettmann, S., & Schmoeckel, P. (2022). From global problem to local solution: How a future-directed circular economy can foster social change. In *Social and Cultural Aspects of the Circular Economy*. Routledge.

Leyton-Flor, S. A., & Sangha, K. (2024). The socio-ecological impacts of mining on the well-being of Indigenous Australians: A systematic review. *The Extractive Industries and Society*, *17*, 1–14. https://www.sciencedirect.com/science/article/pii/S2214790X24000273?via%3Dihub

Liljeblad, J. (2024). Sea Peoples & Marine Plastic Pollution in Southeast Asia: An International Human Rights Approach in Support of Indigenous Rights to Environment. *UCLA Journal of International Law and Foreign Affairs*, *27*(2). https://escholarship.org/uc/item/3522j1dj

Lin, Y. (2024). Blame and Responsibility Assignments in Fast Fashion-Triggered Environmental Injustice: A Case Study of Eco-Documentaries. *Environmental Communication*, *0*(0), 1–21. https://doi.org/10.1080/17524032.2024.2309251

Lind, E. A., & Tyler, T. R. (1988). *The Social Psychology of Procedural Justice*. Springer US. https://doi.org/10.1007/978-1-4899-2115-4

Lucas, P., Brink, H., & van Oorschot, M. (2022). *Addressing international impacts of the Dutch circular economy transition*. PBL Netherlands Environmental Assessment Agency. https://www.pbl.nl/en/publications/addressing-international-impacts-of-the-dutch-circular-economy-transition

Maddalene, T., Youngblood, K., Abas, A., Browder, K., Cecchini, E., Finder, S., Gaidhani, S., Handayani, W., Hoang, N. X., Jaiswal, K., Martin, E., Menon, S., O'Brien, Q., Roy, P., Septiarani, B., Trung, N. H., Voltmer, C., Werner, M., Wong, R., & Jambeck, J. R. (2023). Circularity in cities: A comparative tool to inform prevention of plastic pollution. *Resources, Conservation and Recycling*, *198*, 107156. https://doi.org/10.1016/j.resconrec.2023.107156

Mair, S., Druckman, A., & Jackson, T. (2018). Investigating fairness in global supply chains: Applying an extension of the living wage to the Western European clothing supply chain. *The International Journal of Life Cycle Assessment*, *23*(9), 1862–1873. https://doi.org/10.1007/s11367-017-1390-z

Makhubele, M., Ravhuhali, K., Kuonza, L., Mathee, A., Kgalamono, S., Made, F., Tlotleng, N., Kootbodien, T., Ntlebi, V., Wilson, K., & Naicker, N. (2019). Common Mental Health Disorders among Informal Waste Pickers in Johannesburg, South Africa 2018—A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, *16*(14), 2618. https://doi.org/10.3390/ijerph16142618

Malik, A., Lafortune, G., Mora, C. J., Carter, S., & Lenzen, M. (2024). Carbon and social impacts in the EU's consumption of fossil and mineral raw materials. *Journal of Environmental Management*, *369*, 122291. https://doi.org/10.1016/j.jenvman.2024.122291

Manieson, L. A., & Ferrero-Regis, T. (2023). Castoff from the West, pearls in Kantamanto? A critique of second-hand clothes trade. *Journal of Industrial Ecology*, *27*(3), 811–821. https://doi.org/10.1111/jiec.13238

Manieson, L. A., Payne, A., & Ferrero-Regis, T. (2021). Unravelling the media representation of circular economy for fashion education. *International Journal of Fashion Design, Technology and Education*. https://www.tandfonline.com/doi/abs/10.1080/17543266.2021.1950846

Manshoven, S., & Gillabel, J. (2021). Learning through Play: A Serious Game as a Tool to Support Circular Economy Education and Business Model Innovation. *Sustainability*, *13*(23), Article 23. https://doi.org/10.3390/su132313277

Manshoven, S., & Van Opstal, W. (2022). The Carrot or the Stick? Stakeholder Support for Mandatory Regulations towards a Circular Fashion System. *Sustainability*, *14*(22), Article 22. https://doi.org/10.3390/su142214671

Martin, M., & Herlaar, S. (2021). Environmental and social performance of valorizing waste wool for sweater production. *Sustainable Production and Consumption*, *25*, 425–438. https://doi.org/10.1016/j.spc.2020.11.023

Martínez Álvarez, B., & Barca, S. (2023). *Gender Justice and Circular Economy Report* (A Just Transition to the Circular Economy Project). https://just2ce.eu/wp-content/uploads/2023/03/Attachment_0.pdf

Meijer, L. J. J., Emmerik, T. van, Ent, R. van der, Schmidt, C., & Lebreton, L. (2021). More than 1000 rivers account for 80% of global riverine plastic emissions into the ocean. *Science Advances*, *7(18), eaaz5803*. https://doi.org/10.1126/sciadv.aaz5803

Melin, H. E., Rajaeifar, M. A., Ku, A. Y., Kendall, A., Harper, G., & Heidrich, O. (2021). Global implications of the EU battery regulation. *Science*, *373*(6553), 384–387. https://doi.org/10.1126/science.abh1416

Mies, A., & Gold, S. (2021). Mapping the social dimension of the circular economy. *Journal of Cleaner Production*, *321*, 128960. https://doi.org/10.1016/j.jclepro.2021.128960

Miljoministeriet. (2024). *Sweden, France and Denmark calls for new global rules on exporting textile waste to developing countries*. https://mim.dk/media/aw2n3dts/joint-statement.pdf

Mizrachi, P. M., & Tal, A. (2022). Regulation for Promoting Sustainable, Fair and Circular Fashion. *Sustainability*, *14*(1), Article 1. https://doi.org/10.3390/su14010502

Moffat, K., Lacey, J., Zhang, A., & Leipold, S. (2016). The social licence to operate: A critical review. *Forestry An International Journal of Forest Research*, *89*(5), 477–488. https://doi.org/10.1093/forestry/cpv044

Muñoz-Torres, M. J., Fernández-Izquierdo, M. Á., Ferrero-Ferrero, I., Escrig-Olmedo, E., & Rivera-Lirio, J. M. (2023). Social Life Cycle Analysis of Textile Industry Impacts for Greater Social Sustainability of Global Supply Chains. *Systems*, *11*(1), Article 1. https://doi.org/10.3390/systems11010008

Nagarajan, A. (2022). The governance of plastic in India: Towards a just transition for recycling in the unorganised sector. *Local Environment*, *27*(10–11), 1394–1413. https://doi.org/10.1080/13549839.2022.2084721

Nam, C. (2021). Public perceptions about the management of plastic consumption in Kang Meas District, Kampong Cham Province. *Insight: Cambodia Journal of Basic and Applied Research*, *3*(2), 70–104.

Nandy, B., Sharma, G., Garg, S., Kumari, S., George, T., Sunanda, Y., & Sinha, B. (2015). Recovery of consumer waste in India – A mass flow analysis for paper, plastic and glass and the contribution of households and the informal sector. *Resources, Conservation and Recycling*, *101*, 167–181. https://doi.org/10.1016/j.resconrec.2015.05.012

Nas, P. J. M., & Jaffe, R. (2004). Informal Waste Management. *Environment, Development and Sustainability*, *6*(3), 337–353. https://doi.org/10.1023/B:ENVI.0000029912.41481.a5

National Circular Economy Programme 2023-2030. (2023). https://www.government.nl/documents/reports/2023/09/27/national-circular-economy-programme-2023-2030

National Minority Quality Forum & CEO Roundtable on Cancer. (2024). *The Cancer Moonshot, Public Policy, and Medically Underserved Cancer Care Communities*. https://shiftcancer.org/wp-content/uploads/2024/01/NMQF_WhiteHouseReport_Final.012224.pdf

Njeru, J. (2006). The urban political ecology of plastic bag waste problem in Nairobi, Kenya. *Geoforum*, *37*(6), 1046–1058.

Noëth, E., Van Opstal, W., & Du Bois, E. (2024). Introducing reusable food packaging: Customer preferences and design implications for successful market entry. *Business Strategy and the Environment*, bse.3820. https://doi.org/10.1002/bse.3820

Nussbaum, M. C. (2011). Creating Capabilities: The Human Development Approach. *Harvard University Press*. https://www.hup.harvard.edu/books/9780674072350

OECD. (2014). *Lobbyists, Governments and Public Trust, Volume 3: Implementing the OECD Principles for Transparency and Integrity in Lobbying*. OECD. https://doi.org/10.1787/9789264214224-en

OECD. (2019). *Interconnected supply chains: A comprehensive look at due diligence challenges and opportunities sourcing cobalt and copper from the Democratic Republic of the Congo*. OECD. https://doi.org/10.1787/576804e7-en

OECD. (2022a). *States of Fragility 2022*. OECD. https://doi.org/10.1787/c7fedf5e-en

OECD. (2022b). *The role of development cooperation in tackling plastic pollution: Key trends, instruments, and opportunities to scale up action*. https://www.oecd.org/content/dam/oecd/en/publications/reports/2022/11/the-role-of-development-co-operation-in-tackling-plastic-pollution_71902166/721355cb-en.pdf

OECD, & European Commission. (2022). *Policy brief on making the most of the social economy's contribution to the circular economy* (No. No. 2022/01; OECD Local Economic and Employment Development (LEED) Papers). OECD Publishing. https://doi.org/10.1787/e9eea313-en

O'Faircheallaigh, C. (2018). Mining, development and Indigenous peoples. In *Mining and Sustainable Development* (pp. 125–142). Routledge.

Ogwueleka, T. C., & Naveen, B. P. (2021). Activities of informal recycling sector in North-Central, Nigeria. *Energy Nexus*, *1*.

O'Hare, P., & Nøklebye, E. (2024). "The human face of the UN plastics treaty"? The role of waste pickers in intergovernmental negotiations to end plastic pollution and ensure a just transition. *Cambridge Prisms: Plastics*, *2*, e12. https://doi.org/10.1017/plc.2024.12

O'Hare, P., Nøklebye, E., Stoett, P., & Kortsen, K. (2023a). *Policy Brief: Towards a Just Transition Away from Plastic Pollution*. Scientists' Coalition for an Effective Plastics Treaty. https://doi.org/10.5281/ZENODO.10021005

O'Hare, P., Nøklebye, E., Stoett, P., & Kortsen, K. (2023b). *Policy Brief: Towards a Just Transition Away from Plastic Pollution*. Scientists' Coalition for an Effective Plastics Treaty. https://doi.org/10.5281/ZENODO.10021005

OHCHR. (2024). *The Right to a Healthy Environment A USER'S GUIDE*. https://www.ohchr.org/sites/default/files/documents/issues/environment/srenvironment/activities/2024-04-22-stm-earth-day-sr-env.pdf

OHCHR, & ILO. (2023). *Human Rights and a Just Transition*. https://www.ohchr.org/sites/default/files/documents/issues/climatechange/information-materials/v4-key-messages-just-transition-human.pdf

Old, R., Rumpenhorst, I., Schmidt, I., Nicolau, M., & Slaughter, R. (2022). *Discussing the social impacts of circularity*. Consumer Insight Action Panel, CSCP. https://www.cscp.org/publications/social-impacts-of-circularity/

Ong, H.-T., Samsudin, H., & Soto-Valdez, H. (2020). Migration of endocrine-disrupting chemicals into food from plastic packaging materials: An overview of chemical risk assessment, techniques to monitor migration, and international regulations. *Critical Reviews in Food Science and Nutrition*, *62*(4), 957–979. https://doi.org/10.1080/10408398.2020.1830747

Osae, I. B., Mardiste, P., Stober, D., Eiter, S., Buchecker, M., & Suškevičs, M. (2024). Access to information and public participation: Evaluating the implementation of the Aarhus Convention in Europe. *European Planning Studies*, 1–24.

Owen, J. R., Kemp, D., Harris, J., Lechner, A. M., & Lèbre, É. (2022). Fast track to failure? Energy transition minerals and the future of consultation and consent. *Energy Research & Social Science*, *89*, 102665. https://doi.org/10.1016/j.erss.2022.102665

Oyegunle, A., & Thompson, S. (2018). Wasting Indigenous Communities: A Case Study with Garden Hill and Wasagamack First Nations in Northern Manitoba, Canada. *The Journal of Solid Waste Technology and Management*, *44*(3), 232–247. https://doi.org/10.5276/JSWTM.2018.232

PACE. (2021). *Circular Economy Action Agenda: PLASTICS*.

Padilla-Rivera, A., Russo-Garrido, S., & Merveille, N. (2020). Addressing the Social Aspects of a Circular Economy: A Systematic Literature Review. *Sustainability*, *12*(19), 7912. https://doi.org/10.3390/su12197912

Pal, V. (2022). Social and Cultural Aspects of the Circular Economy: Toward Solidarity and Inclusivity. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4002766

Parag, Y., Elimelech, E., & Opher, T. (2023). Bottled Water: An Evidence-Based Overview of Economic Viability, Environmental Impact, and Social Equity. *Sustainability*, *15*(12), 9760. https://doi.org/10.3390/su15129760

Passaro, E. R., Ghisellini, P., Pansera, M., Barca, S., & Friant, M. C. (2024). *Circular Economy for Social Transformation: Multiple Paths to Achieve Circularity*. JUST2CE. https://just2ce.eu/wp-content/uploads/2024/02/D1_1-JUST2CE-Final-Version.pdf

Pérez, B., & Spalletti, S. (2021). Circular Economy and MOOCs. In D. Frau-Meigs, S. Osuna-Acedo, & C. Marta-Lazo (Eds.), *MOOCs and the Participatory Challenge: From Revolution to Reality* (pp. 119–130). Springer International Publishing. https://doi.org/10.1007/978-3-030-67314-7_8

Petavratzi, E., Sanchez-Lopez, D., Hughes, A., Stacey, J., Ford, J., & Butcher, A. (2022). The impacts of environmental, social and governance (ESG) issues in achieving sustainable lithium supply in the Lithium Triangle. *Mineral Economics*, *35*(3–4), 673–699. https://doi.org/10.1007/s13563-022-00332-4

Pinyol Alberich, J., J. Llorente-González, L., Javad Ramezankhani, M., Bimpizas-Pinis, M., & Lowe, B. (2024). Chapter 10: Beyond GDP: Using alternative macroeconomic indicators to enact an ambitious circular economy. In *Circular Economy for Social Transformation: Multiple Paths to Achieve Circularity*. Ledizioni Ledipublishing.

Population Connection. (2021). *ELECTRONIC WASTE: The Case of Agbogbloshie, Ghana*. https://earthmatters.populationeducation.org/wp-content/uploads/2018/07/Electronic-Waste.pdf

Potting, J., Hekkert, M., Worrell, E., & Hanemaaijer, A. (2017). *Circular Economy: Measuring innovation in the product chain—Policy report* (No. PBL publication number: 2544; p. 46). PBL Netherlands Environmental Assessment Agency. https://www.pbl.nl/sites/default/files/downloads/pbl-2016-circular-economy-measuring-innovation-in-product-chains-2544.pdf

PREVENT Waste Alliance. (2023). *Factsheet 08 | Just Transition and recognition of the informal sector*. GIZ. https://prevent-waste.net/wp-content/uploads/2023/11/FS08_Informal-sector_updated-Nov-2023.pdf

Purvis, B., Celebi, D., & Pansera, M. (2023). A framework for a responsible circular economy. *Journal of Cleaner Production*, *400*, 136679. https://doi.org/10.1016/j.jclepro.2023.136679

Purvis, B., Mao, Y., & Robinson, D. (2019). Three pillars of sustainability: In search of conceptual origins. *Sustainability Science*, *14*(3), 681–695. https://doi.org/10.1007/s11625-018-0627-5

Puttonen, T., Christiaens, Y., Ostuzzi, F., Dumon, L., Wallat, P., Doppio, N., & Van Opstal, W. (2022). *Circular sPrint Playbook*. https://doi.org/10.5281/zenodo.6327728

RAID. (2024). *Beneath the Green* (p. 114). RAID & AFREWATCH. https://raid-uk.org/wp-content/uploads/2024/03/Report-Beneath-the-Green-DRC-Pollution-March-2024.pdf

Ralston, R., Carlini, G., Johns, P., Lencucha, R., Radvany, R., Shah, D., & Collin, J. (2023). Corporate interests and the UN treaty on plastic pollution: Neglecting lessons from the WHO Framework Convention on Tobacco Control. *The Lancet*, *402*(10419), 2272–2274. https://doi.org/10.1016/S0140-6736(23)02040-8

Rask, N. (2022). An intersectional reading of circular economy policies: Towards just and sufficiency-driven sustainabilities. *Local Environment*, *27*(10–11), 1287–1303. https://doi.org/10.1080/13549839.2022.2040467

Rawls, J. (1971). *A Theory of Justice*. Harvard University Press.

Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 Concerning Batteries and Waste Batteries, Amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and Repealing Directive 2006/66/EC (Text with EEA Relevance), 2023/1542 (2023). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1542

Repp, L., Hekkert, M., & Kirchherr, J. (2021a). Circular economy-induced global employment shifts in apparel value chains: Job reduction in apparel production activities, job growth in reuse and recycling activities. *Resources, Conservation and Recycling*, *171*, 105621. https://doi.org/10.1016/j.resconrec.2021.105621

Repp, L., Hekkert, M., & Kirchherr, J. (2021b). Circular economy-induced global employment shifts in apparel value chains: Job reduction in apparel production activities, job growth in reuse and recycling activities. *Resources, Conservation and Recycling*, *171*, 105621. https://doi.org/10.1016/j.resconrec.2021.105621

Riofrancos, T., Kendall, A., Dayemo, K. K., Haugen, M., McDonald, K., Hassan, B., Slattery, M., & Lillebei, X. (2023). *Achieving Zero Emissions with More Mobility and Less Mining* (p. 16). Climate and Community Project. http://www. climateandcommunity.org/more-mobility-less-mining

Ripa, & et al. (2021). *D2.1 Multidimensional Framework for the Case Studies*.

Ritchie, H. (2021). *Where does the plastic in our oceans come from?* https://ourworldindata.org/ocean-plastics

Roba, J., Kuppens, T., Janssens, L., Smeets, A., Manshoven, S., & Struyven, K. (2021). Serious Games in Secondary Education to Introduce Circular Economy: Experiences With the Game EcoCEO. *Frontiers in Sustainability*, *2*, 69. https://doi.org/10.3389/frsus.2021.690232

Romson, Å., D'Amato, A., Nicolli, F., Nelen, D., Paleari, S., Specker, A., Nielsen, T., & Mortensen, L. F. (2024). *ETC CE Report 2024/2 Drivers of EU plastic waste exports* (European Topic Centre on Circular Economy and Resource Use). European Environment Agency. https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-report-2024-2-drivers-of-eu-plastic-waste-exports/@@download/file/2024%202%20_Plastic%20waste%20trade_for%20publication%20(3).pdf

Rushdi, M., Sutomo, A., Pius Ginting, R., & Anwar, M. (2021). *Fast and Furious for Future: The Dark Side of electric Vehicle Battery Components and their Social and Ecological Impacts in Indonesia* (p. 108).

Rosa-Luxemburg-Stiftung Climate Justice Dialogue Programm. https://www.rosalux.de/fileadmin/images/publikationen/Studien/Fast_and_Furious_for_Future.pdf

Rüttinger, L., & Scholl, C. (2017). *Responsible mining? Challenges, perspectives and approaches* (p. 1 Onlineressource (37 Seiten)) [Online resource]. Umweltbundesamt. https://doi.org/10.60810/OPENUMWELT-6456

Ryall, A. (2023). A Brave New World: The Aarhus Convention in Tempestuous Times. *Journal of Environmental Law*, *35*(1), 161–166.

Saenz, C. (2021). *Creating Shared Value to get Social License to Operate in the Extractive Industry*. Emerald Publishing.

Saliba, M., Glutting, J. R., & Brown, E. G. (2023). *Decent Work in the Circular Economy: An overview of the existing evidence base*. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_dialogue/@sector/documents/publication/wcms_881337.pdf

Saliba, M., Rué Glutting, J., & Goodwin Brown, E. (2023). *Decent Work in the Circular Econmy*. Circle Economy.

Sanders, M. C. (2021). Equity in addressing climate change: Using law and policy to serve frontline communities. *Traumatology*, *27*(1), 48–51. https://doi.org/10.1037/trm0000284

Sarokin, S. N., & Bocken, N. M. P. (2024). Pursuing profitability in slow fashion: Exploring brands' profit contributors. *Journal of Cleaner Production*, *444*, 141237. https://doi.org/10.1016/j.jclepro.2024.141237

Schlosberg, D. (2004). Reconceiving Environmental Justice: Global Movements And Political Theories. *Environmental Politics*.

Schröder, P. (2020). *Promoting a Just Transition to an Inclusive Circular Economy*. https://www.chathamhouse.org/publication/promoting-just-transition-inclusive-circular-economy

Schröder, P., Anggraeni, K., & Weber, U. (2019). The Relevance of Circular Economy Practices to the Sustainable Development Goals. *Journal of Industrial Ecology*, *23*(1), 77–95. https://doi.org/10.1111/jiec.12732

Schröder, P., Bengtsson, M., Cohen, M., Dewick, P., Hofstetter, J., & Sarkis, J. (2019). Degrowth within – Aligning circular economy and strong sustainability narratives. *Resources, Conservation and Recycling*, *146*, 190–191.

Schröder, P., & Raes, J. (2021). *Financing an inclusive circular economy De-risking investments for circular business models and the SDGs* [Personal communication].

Schroeder, P., & Barrie, J. (2022). Is going circular just? Environmental justice and just transition – key elements for an inclusive circular economy. *The Journal of Field Actions*, *Special Issue 24*, 20–25.

SCRREEN2 Project. (2024a). *CRMS 2023 Factsheets: Cobalt*. https://scrreen.eu/wp-content/uploads/2023/08/SCRREEN2_factsheets_COBALT-1.pdf

SCRREEN2 Project. (2024b). *CRMS 2023 Factsheets: Lithium*. https://scrreen.eu/wp-content/uploads/2023/12/SCRREEN2_factsheets_LITHIUM-update.pdf

SCRREEN2 Project. (2024c). *CRMS 2023 Factsheets: Natural Graphite*. https://scrreen.eu/wp-content/uploads/2023/12/SCRREEN2_factsheets_GRAPHITE_V1.pdf

SCRREEN2 Project. (2024d). *CRMS 2023 Factsheets: Nickel*. https://scrreen.eu/wp-content/uploads/2023/12/SCRREEN2_factsheets_NICKEL-update.pdf

Setzer, J., & Higham, C. (2024). *Global trends in climate change litigation: 2024 snapshot*. https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2024/06/Global-trends-in-climate-change-litigation-2024-snapshot.pdf

Sharif, A., Sadaf, F., & Baksh, E. A. (2023). Domestic Plastic Consumption Patterns: A Data-Informed Sociological Analysis of Education and Behaviour Among Homemakers. *THE ASIAN BULLETIN OF BIG DATA MANAGMENT*, *3*(1), 197–211.

Shennum, K. (with Human Rights Watch (Organization)). (2022). *'It's as if they're poisoning us': The health impacts of plastic recycling in Turkey*. Human Rights Watch.

Shift. (2022). *Principles for Corporate Engagement on Human Rights with the Informal Waste Sector*. https://faircircularity.org/app/uploads/2022/11/Principles-for-Corporate-Engagement-on-Human-Rights-with-the-Informal-Waste-Sector.pdf

Soja, E. W. (2010). *Seeking Spatial Justice*. University of Minnesota Press. https://www.upress.umn.edu/book-division/books/seeking-spatial-justice

Southerland, V., Zota, A. R., Parasram, V., Alvarez, C., Clement, M., & Anenberg, S. (2023). Temporal trends in sociodemographic composition and land development within U.S. fenceline communities surrounding hazardous industrial facilities: 2001–2019. *Environmental Research Letters*, *18*(11), 114042. https://doi.org/10.1088/1748-9326/ad0136

Steenmans, K., & Lesniewska, F. (2023). *Circular Economy and the Law: Bringing Justice into the Frame* (1st ed.). Routledge. https://doi.org/10.4324/9780429355141

Stevis, D., & Felli, R. (2020). Planetary just transition? How inclusive and how just? *Earth System Governance*, *6*, 100065. https://doi.org/10.1016/j.esg.2020.100065

Stoett, P., Scrich, V. M., Elliff, C. I., Andrade, M. M., De M. Grilli, N., & Turra, A. (2024). Global plastic pollution, sustainable development, and plastic justice. *World Development*, *184*, 106756. https://doi.org/10.1016/j.worlddev.2024.106756

Suarez-Visbal, L. J., Rosales-Carreón, J., Corona, B., Hoffman, J., & Worrell, E. (2024). Transformative circular futures in the textile and apparel value chain: Guiding policy and business recommendations in the Netherlands, Spain, and India. *Journal of Cleaner Production*, *447*, 141512. https://doi.org/10.1016/j.jclepro.2024.141512

Suarez-Visbal, L., Stuckrath, C., & Carreón, J. R. (2022). Assessing through a gender-inclusion lens the social impact of circular strategies in the apparel value chain: The Dutch case. In *Social and Cultural Aspects of the Circular Economy*. Routledge.

SWITCH-Asia. (2024). *Chemicals and Polymers of Concern Preparing for intersessional work ahead of the fifth meeting of the intergovernmental negotiation committee on the Global Plastics Treaty (INC-5)*. https://www.switch-asia.eu/site/assets/files/4177/chemicals_polymers_brief_final.pdf

Talbott, T. C. (2022). Extended Producer Responsibility: Opportunities and challenges for waste pickers. In *Social Contracts and Informal Workers in the Global South* (pp. 126–143). Edward Elgar Publishing.

Tambunlertchai, K., & Vassanadumrongdee, S. (2023). *Circular Economy in Thailand: Steps towards a Transition in Plastic Packaging and Food Waste Management*. Friedrich-Ebert-Stiftung. https://library.fes.de/pdf-files/bueros/thailand/20942.pdf

Thakker, A. M., & Sun, D. (2023). Sustainable Development Goals for Textiles and Fashion. *Environmental Science and Pollution Research*, *30*(46), 101989–102009. https://doi.org/10.1007/s11356-023-29453-1

Thapa, K., Vermeulen, W. J. V., De Waal, M. M., Deutz, P., & Nguyễn, H. Q. (2024). Towards a Just Circular Economy Transition: The Case of European Plastic Waste Trade to Vietnam for Recycling. *Circular Economy and Sustainability*, *4*(2), 851–876. https://doi.org/10.1007/s43615-023-00330-w

Thapa, K., Vermeulen, W. J. V., Deutz, P., & Olayide, O. (2023a). Ultimate producer responsibility for e-waste management–A proposal for just transition in the circular economy based on the case of used European electronic equipment exported to Nigeria. *Business Strategy & Development*, *6*(1), 33–52. https://doi.org/10.1002/bsd2.222

Thapa, K., Vermeulen, W. J. V., Deutz, P., & Olayide, O. (2023b). Ultimate producer responsibility for e-waste management–A proposal for just transition in the circular economy based on the case of used European electronic equipment exported to Nigeria. *Business Strategy & Development*, *6*(1), 33–52. https://doi.org/10.1002/bsd2.222

Thorisdottir, T. S., & Johannsdottir, L. (2020). Corporate Social Responsibility Influencing Sustainability within the Fashion Industry. A Systematic Review. *Sustainability*, *12*(21), Article 21. https://doi.org/10.3390/su12219167

Tilsted, J. P., Mah, A., Nielsen, T. D., Finkill, G., & Bauer, F. (2022). Petrochemical transition narratives: Selling fossil fuel solutions in a decarbonizing world. *Energy Research & Social Science*, *94*, 102880. https://doi.org/10.1016/j.erss.2022.102880

To, J. (2022). The EU-CEAP impacts on developing countries: An analysis of the plastic packaging, electric vehicles and batteries sectors. *IDOS Discussion Paper*. https://doi.org/10.23661/IDP12.2022

Todeschini, B. V., Cortimiglia, M. N., Callegaro-de-Menezes, D., & Ghezzi, A. (2017). Innovative and sustainable business models in the fashion industry: Entrepreneurial drivers, opportunities, and challenges. *Business Horizons*, *60*(6), 759–770. https://doi.org/10.1016/j.bushor.2017.07.003

Tong, X., Yu, H., Han, L., Liu, T., Dong, L., Zisopoulos, F., Steuer, B., & de Jong, M. (2023). Exploring business models for carbon emission reduction via post-consumer recycling infrastructures in Beijing: An agent-based modelling approach. *Resources, Conservation and Recycling*, *188*, 106666. https://doi.org/10.1016/j.resconrec.2022.106666

Trinomics. (2021). *Circular Economy and the world of work*. https://www.smeunited.eu/admin/storage/smeunited/brochure-final-report-circular-ecenomy-en-v4-bis-compressed.pdf

UAB. (2023). *10 Case Study Reports: JUST2CE Project*. Universitat Autònoma de Barcelona. https://c5z.7e0.myftpupload.com/wp-content/uploads/2023/06/WP2_D2.2-10-CASE-STUDY-REPORTS.pdf

UN. (2007). *61/295. United Nations Declaration on the Rights of Indigenous Peoples*. https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

UN Human Rights Council,. (2022). *The right to a clean, healthy and sustainable environment: non-toxic environment. Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment*. https://www.srenvironment.org/sites/default/files/Reports/2022/A_HRC_49_53_AdvanceEditedVersion.pdf

UN Security Council Committee (Ed.). (2019, June 7). *Final report of the Group of Experts on the Democratic Republic of the Congo*. https://undocs.org/en/S/2019/469

UNECE. (2024). *Reversing direction in the used clothing crisis global, European and Chilean perspectives*. United Nations.

UNEP. (2021). *Neglected: Environmental Justice Impacts of Marine Litter and Plastic Pollution*. United Nations Environment Programme. https://wedocs.unep.org/bitstream/handle/20.500.11822/35417/EJIPP.pdf

UNEP. (2022). *UNEA Resolution 5/14 entitled "End plastic pollution: Towards an international legally binding instrument"*. https://www.endplasticpollution.eu/download/OEWG_PP_1_INF_1_UNEA_resolution.pdf

UNEP. (2023). *Topic Sheet Just Transition*.

UNEP. (2024). *Compilation of draft text of the international legally binding instrument on plastic pollution, including in the marine environment* [Personal communication].

UNEP. (2024). *Intergovernmental Negotiating Committee to develop an international legally binding instrument on plastic pollution, including in the marine environment*. https://wedocs.unep.org/bitstream/handle/20.500.11822/46710/Chairs_Text.pdf

UN-HABITAT. (2022). *Leaving no one behind: How a global instrument to end plastic pollution can enable a just transition for the people informally collecting and recovering waste*. https://unhabitat.org/sites/default/files/2023/04/en_2503_leaving_no_one_behind.pdf

UNIDO. (2024). *NATIONAL CIRCULAR ECONOMY ROADMAPS: A GLOBAL STOCKTAKE FOR 2024*.

United Nations Economic Commission for Europe. (2024). *Conference of European Statisticians' Guidelines for Measuring Circular Economy: Part A: Conceptual Framework, Indicators and Measurement Framework*. United Nations.

United Nations General Assembly. (2022). *The human right to a clean, healthy and sustainable environment*.

UNU INWEH. (2023). *Global Bottled Water Industry: A Review of Impacts and Trends*. https://collections.unu.edu/eserv/UNU:9106/BottledWater_Report_Final_-compressed.pdf

USAID. (2019). *Women's Economic Empowerment and Equality in Solid Waste Management and Recycling: Latin America and the Caribbean Landscape*. https://urban-links.org/wp-content/uploads/USAID-factsheet-_WE3-SWM-LAC_2019_09_27.pdf

Valencia, M., Bocken, N., Loaiza, C., & De Jaeger, S. (2023). The social contribution of the circular economy. *Journal of Cleaner Production*, *408*, 137082. https://doi.org/10.1016/j.jclepro.2023.137082

Valencia, M., Solíz, M. F., & Yépez, M. (2023a). Waste picking as social provisioning: The case for a fair transition to a circular economy. *Journal of Cleaner Production*, *398*, 136646. https://doi.org/10.1016/j.jclepro.2023.136646

Valencia, M., Solíz, M. F., & Yépez, M. (2023b). Waste picking as social provisioning: The case for a fair transition to a circular economy. *Journal of Cleaner Production*, *398*, 136646. https://doi.org/10.1016/j.jclepro.2023.136646

Van Opstal, W., & Borms, L. (2024). Work integration ambitions of startups in the circular economy. *Annals of Public and Cooperative Economics*, *95*(2), 477–504. https://doi.org/10.1111/apce.12431

Van Opstal, W., Borms, L., Brusselaers, J., Bocken, N., Pals, E., & Dams, Y. (2024). Towards sustainable growth paths for work integration social enterprises in the circular economy. *Journal of Cleaner Production*, *470*, 143296. https://doi.org/10.1016/j.jclepro.2024.143296

Vanacker, H., Lemieux, A.-A., Bonnier, S., Yost, M., & Poupard, S. (2023). Circularity, Garment Durability, and Just Transition: Understanding the Trinary Interrelationship through an Integrative Literature Review. *Sustainability*, *15*(15), Article 15. https://doi.org/10.3390/su151511993

Varea, R. (2024). *Tangled Waters: Equity-based Study of Plastic Pollution Impacts on Indigenous Communities in Fiji*. https://pireport.org/wp-content/uploads/2024/03/20240314_PIDP_PIR_Research_VAREARufino_Tangled-Waters-Equity-Based-Study-of-Plastic-Pollution-Impacts-on-Indigenous-Communities-in-Fiji.pdf

Vega-Herrera, A., Garcia-Torné, M., Borrell-Diaz, X., Abad, E., Llorca, M., Villanueva, C. M., & Farré, M. (2023). Exposure to micro(nano)plastics polymers in water stored in single-use plastic bottles. *Chemosphere*, *343*, 140106. https://doi.org/10.1016/j.chemosphere.2023.140106

Velenturf, A. P. M., & Purnell, P. (2021). Principles for a sustainable circular economy. *Sustainable Production and Consumption*, *27*, 1437–1457. https://doi.org/10.1016/j.spc.2021.02.018

Velis, C. (2017). Waste pickers in Global South: Informal recycling sector in a circular economy era. *Waste Management & Research*, *35*(4), 329–331. https://doi.org/10.1177/0734242X17702024

Velis, C., Hardesty, B. D., Cottom, J. W., & Wilcox, C. (2022). Enabling the informal recycling sector to prevent plastic pollution and deliver an inclusive circular economy. *Environmental Science & Policy*, *138*, 20–25. https://doi.org/10.1016/j.envsci.2022.09.008

Velis, C., Lerpiniere, D., & Tsakona, M. (2017). *Prevent marine plastic litter—Now!* International Solid Waste Association. https://marinelitter.iswa.org/fileadmin/user_upload/Marine_Task_Force_Report_2017/ISWA_report170927_interactive_lowres.pdf

Verbeek, T. (2021). Explaining public risk acceptance of a petrochemical complex: A delicate balance of costs, benefits, and trust. *Environment and Planning E: Nature and Space*, *4*(4), 1413–1440. https://doi.org/10.1177/2514848620957124

Vijeyarasa, R., & Liu, M. (2022). Fast Fashion for 2030: Using the Pattern of the Sustainable Development Goals (SDGs) to Cut a More Gender-Just Fashion Sector. *Business and Human Rights Journal*, *7*(1), 45–66. https://doi.org/10.1017/bhj.2021.29

Vilella, M. (2020). *New Business Models Cutting Back on Single-Use Plastic*. Sustainable Consumption Institute. https://zerowasteeurope.eu/wp-content/uploads/2021/06/New-Business-Models-Cutting-Back-on-Plastic_-FINAL.pdf

von der Leyen, U. (2024). *POLITICAL GUIDELINES FOR THE NEXT EUROPEAN COMMISSION 2024–2029*. https://commission.europa.eu/document/e6cd4328-673c-4e7a-8683-f63ffb2cf648_en

Wagner, S., & Schlummer, M. (2020). Legacy additives in a circular economy of plastics: Current dilemma, policy analysis, and emerging countermeasures. *Resources, Conservation and Recycling*, *158*, 104800. https://doi.org/10.1016/j.resconrec.2020.104800

Wang, P., Kuah, A. T. H., Lu, Q., Wong, C., Thirumaran, K., Adegbite, E., & Kendall, W. (2021). The impact of value perceptions on purchase intention of sustainable luxury brands in China and the UK. *Journal of Brand Management*, *28*(3), 325–346. https://doi.org/10.1057/s41262-020-00228-0

Watkins, E. (2022). *Towards greater plastics circularity: Addressing social and environmental spillovers in the plastics sector*. Institute for European Environmental Policy.

WBCSD. (2016). *Informal approaches towards a circular economy – learning from the plastics recycling sector in India*. https://sustainable-recycling.org/wp-content/uploads/2017/01/WBCSD_2016_-InformalApproaches.pdf

WECF. (2017). *Plastics, Gender and the Environment: Findings of a literature study on the lifecycle of plastics and its impacts on women and men, from production to litter*. https://sv.boell.org/sites/default/files/womenandplastics_1.pdf

WIEGO. (2018a). *Cuidar Project: Waste Pickers' Health Risk Mapping*. Women in Informal Employment: Globalizing and Organizing. https://www.wiego.org/sites/default/files/resources/files/Dias-Ogando-Project-Cuidar-Health-Mapping.pdf

WIEGO. (2018b). *Violence and Informal Work*. https://www.wiego.org/sites/default/files/publications/files/ILC_WIEGO_Briefing%20Note%20Violence%20in%20the%20workplace%20EN%20for%20web.pdf

WIEGO. (2019). *Waste Pickers—The Right to Be Recognized as Workers*. https://www.wiego.org/wp-content/uploads/2019/09/WIEGO-Waste-Pickers-Position-Paper.pdf

Wijsman, K., & Berbés-Blázquez, M. (2022). What do we mean by justice in sustainability pathways? Commitments, dilemmas, and translations from theory to practice in nature-based solutions. *Environmental Science & Policy*, *136*, 377–386. https://doi.org/10.1016/j.envsci.2022.06.018

Wolters, L., & Brusselaers, J. (2024). The energy transition paradox: How lithium extraction puts pressure on environment, society, and politics. *The Extractive Industries and Society*, *19*, 101498. https://doi.org/10.1016/j.exis.2024.101498

WWF. (2023). *ETC CE Report 2024Who pays for plastic pollution? Enabling equality in the plastic value chain*. WWF. https://wwfint.awsassets.panda.org/downloads/wwf-report---who-pays-for-plastic-pollution.pdf

WWF. (2024). *INC-5 WWF Update Day 4 & 5*. https://email.panda.org/inc-5-wwf-update-day-4-5-29-nov

Xu, T., Lv, Q., Sheng, G., Zhang, Y., Liu, Y., & Shi, L. (2024). Evolving patterns and drivers of waste plastic trade in key global economies. *Resources, Conservation and Recycling*, *206*, 107606. https://doi.org/10.1016/j.resconrec.2024.107606

Yang, J., Bertram, J., Schettgen, T., Heitland, P., Fischer, D., Seidu, F., Felten, M., Kraus, T., Fobil, J. N., & Kaifie, A. (2020). Arsenic burden in e-waste recycling workers – A cross-sectional study at the Agbogbloshie e-waste recycling site, Ghana. *Chemosphere*, *261*, 127712. https://doi.org/10.1016/j.chemosphere.2020.127712

Zálnoky, K., Drotleff, B., Chowdhury, T., Potjomkina, D., & Markkanen, S. (2023). *Policy Briefing: Inclusive Circularity: Creating decent and fair jobs in the EU*. https://www.cisl.cam.ac.uk/events/socially-inclusive-transition-european-circular-economy-gcca-pavilion-5-december-2023

Zehr, H. (1990). *Changing lenses: A new focus for crime and justice* (3. ed., [Nachdr.]). Herald Press.

Zero Waste Europe. (2017). *Seizing the opportunity: Using plastic only where it makes sense*. https://zerowasteeurope.eu/wp-content/uploads/2018/01/Position-paper-Plastics-reduction-targets.pdf

Annex 1: Methodology of literature analysis

The relevant literature was identified by searching google scholar using the specified terms “Circular Economy” AND “Just Transition”, “Circular Economy” AND “Justice”, “Circular Economy” AND “Environmental Justice”, “Circular Economy” AND “Social Fairness”, “Circular Economy” AND “Social Justice”, “Circular Economy” AND “Equity”. The top five results of each search-string were considered, resulting in 84 articles after removing duplicate entries.

The dimensions of justice examined included “procedural justice”, “distributional justice”, “recognitional justice” and “justice in general”. Besides, we also checked the mentioning or analysis of the following aspects of Just Transition: “Intersectionality”, “Capability”, “Spatiality”, “Temporality”, “Intergenerationality”, “Epistemology” and “restorative justice”.

European Topic Centre on
Circular economy and resource use
https://www.eionet.europa.eu/etcs/etc-ce

The European Topic Centre on Circular economy and resource use (ETC CE) is a consortium of European institutes under contract of the European Environment Agency.

European Environment Agency
European Topic Centre
Circular economy and resource use