Towards environmentally just supply chains: From harm reduction to transformative sustainability actions

Abstract

Purpose: In response to the worsening environmental crisis, there have been multiple calls for sustainable supply chain management (SSCM) scholars and practitioners to adopt a 'business-not-as-usual' approach based on justice, fairness, equity and sustainability. We add to this literature by proposing environmental justice as a key concept for the theory and practice of SSCM.

Design/methodology/approach: This conceptual article builds theory on how EJ contributes to supply chain justice research and practice by introducing the concept of the 'environmentally just supply chain' and presenting pathways for operationalizing it in practice.

Findings: Three pathways are proposed to leverage transformative SSCM to create environmentally just supply chains: human rights due diligence, resilience thinking and coproduction of environmentally just supply chains.

Practical implications: The three pathways can be used by actors within a supply chain to create environmentally just supply chains.

Originality: This article extends transformative, non-instrumental perspectives on environmental sustainability with SSCM scholarship to provide insights into how supply chains can be transformed through EJ. Not only does the article show the relevance of EJ for SSCM theory and practice, but it elaborates pathways for moving from harm reduction to transformative sustainability actions.

Keywords: environmental justice, sustainable supply chain management, transformative supply chain management, human rights due diligence, coproduction, resilience thinking, emancipatory scholarship.

Article classification: Conceptual paper

1. Introduction

The worsening environmental crisis is also a 'inequity crisis' (Gualandris et al., 2024). The burdens of our environmentally unsustainable economic system fall disproportionately on those least responsible for it, that is, marginalized communities, vulnerable groups and the world's poor (Kashwan et al., 2020; Martinez-Alier, et al., 2014; Versey, 2021). This fundamental unfairness has led to a 'justice turn' in public discourses on sustainability (Biermann and Kalfagianni, 2020). The calls for our global political economy to be transformed in line with environmental justice (EJ) are increasing in number and volume. Perhaps the loudest of these calls is for climate justice (UN, 2022) but there are many more calls for EJ being made, for example, for water justice and for justice in relation to waste disposal, transportation, food, land-system change and land rights (Martinez-Alier et al., 2014). Despite supply chains being a major driver of environmental injustices (Global Witness, 2020; 2022), EJ remains a marginal concern for SSCM scholarship.

EJ has emerged as the pre-eminent discourse for understanding and acting on the inequitable distribution of environmental impacts and risks (Martinez-Alier et al., 2014; Schlosberg, 2007). EJ, as we will see later, was a key goal for the original articulation of the Triple Bottom Line (TBL) framework that has been central for SSCM scholarship since Carter and Rogers (2008). However, it has been left to other fields, such as Geography and Political Ecology (Lai et al., 2021; Matthews and Silva, 2024), to shed light on the environmental injustices caused

by supply chain activity. This paper attempts to reverse this trend by arguing that EJ should be a central concern for SSCM (Matthews and Silva, 2024).

Grounded in the discourse of EJ, this conceptual article reflects on how SSCM scholarship can contribute to eliminating local and global environmental injustices. By offering a non-instrumental approach to environmental sustainability, EJ will ensure that SSCM has equity as its central concern, incorporating the political aspects of supply chain activity and ensuring that the perspectives of vulnerable and marginalized supply chain stakeholders, such as local communities, indigenous peoples, environmental defenders and lower-tier suppliers, are incorporated into SSCM strategies (Touboulic et al., 2020).

The paper is structured as follows. After this introduction, we provide an overview of concepts related to SSCM and EJ. This theoretical background section helps us provide a concept for 'environmentally just supply chains' (see Section 2.3). Next, we elaborate on three pathways that can be used to operationalize environmental just supply chains. Finally, we outline the main implications of this study are before concluding the article with some reflections on the limitations of the paper and ideas for future research.

2. Theoretical background: Environmentally just supply chains

EJ initially seems like a novel and challenging concept for SSCM scholarship, but in this section, we ground it in familiar SSCM concepts, starting with the TBL framework.

2.1 Revisiting the Triple Bottom Line (TBL)

The TBL has been central to SSCM scholarship since Carter and Rogers' (2008) seminal article. Although EJ has been a peripheral concern for SSCM theory and practice (Matthews and

Silva, 2024), it was an important concept within Elkington's (1997) original presentation of the TBL framework (see Figure 1a). If, as Carter and Rogers (2008) argue, 'true' sustainability requires delivering against all three bottom lines, EJ should be a key concern for the theory and practice of SSCM.

Figure 1a represents the TBL in its original formulation with each bottom line represented with their original names. The three bottom-lines are presented hierarchically with environmental quality being the 'ultimate bottom line' (Elkington, 1997: p.73). This is consistent with nested models of sustainability, such as Montabon et al.'s (2016) SSCM framework that is based on an 'ecologically dominant' logic.

[Insert Figures 1a and 1b]

Figures 1a and 1b. The original formulation of the TBL (based on Elkington, 1997).

Elkington (1997) used the metaphor of tectonic plates to understand each of the bottom lines. Each bottom-line shifts in response to societal and political forces, creating misalignment between the three goals. The hegemony of the ideology of economic growth creates misalignment between business growth and supply chain performance on social and environmental sustainability (Luzzini et al., 2024). This misalignment is captured in Figure 1b. Elkington (1997) refers to the interfaces of the bottom lines as 'shear zones' and claims that the most difficult sustainability challenges are found in these zones. These shear zones have been numbered in Figure 2.

[Insert Figure 2]

Figure 2. The three 'shear zones' of the TBL (based on Elkington, 1997).

Much SSCM scholarship has been done within shear zones 1 and 2, helping us understand the economic benefits of action on environmental and social sustainability (Miemczyk and Luzzini, 2018). However, SSCM scholarship in shear zone 3 on the relationship between social and environmental sustainability remains a peripheral concern for SSCM scholarship. An example of SSCM scholarship in shear zone 3 is the emergent theorization of socio-ecological systems (Gualandris et al., 2024; Silva et al., 2023; Wieland, 2021) but to date the socio-ecological systems lens has not been explicitly linked to EJ.

As can be seen from Figure 2, EJ emerges at the shear zone between the 'social justice' and 'environmental quality' bottom lines. Social justice can broadly be understood as the equitable distribution of goods (resources, freedoms and opportunities) within society, which EJ extends to the include environmental goods and bads (Bullard, 1996; Elkington, 1997). There is a mutually reinforcing relationship between social justice and EJ as social justice cannot be achieved if there are environmental injustices and the inequitable distribution of environmental harms and risks both reflects and exacerbates broader social injustices, such as racism and poverty (Elkington, 1997; Schlosberg, 2013) and gender inequalities (McKinney and Wright, 2023). The presentation of EJ within the original formulation of the TBL (Elkington, 1997) drew on the theory and practice of EJ at the time of writing but the EJ literature has expanded and evolved significantly since 1997. We will draw upon this literature in the next section to better explain EJ.

2.2 Environmental Justice (EJ): Schlosberg's 'integrative' framework

EJ is articulated when marginalized and vulnerable communities as well as social movements struggle against environmental injustices (Foster et al., 2024). These injustices are

experienced in a wide variety of ways, using grassroots conceptualizations of EJ that have been developed outside of academia (Martinez-Alier et al, 2014). As a result, EJ is a 'heterogeneous' discourse' (Schlosberg, 2007, p.5) as different communities and social movements will articulate their experiences of environmental injustice differently. Indeed, communities and movements 'often employ multiple conceptions of justice simultaneously' (Schlosberg, 2007, p.5). EJ is therefore what is known as an essentially contested concept, that is, an inherently pluralistic concept upon which there can never be consensus (Gallie, 1956; Ehrenfeld, 2008; Matthews and Silva, 2024).

Despite the inherent plurality and ambiguity of the EJ discourse, Schlosberg (2007; 2013) believes that there are commonalities among global EJ struggles. Inspired by the works of Fraser, Honneth, Sen and Young on social justice, Schlosberg (2007) presents an 'integrative' framework for EJ that synthesizes the following four dimensions: distribution, procedure, recognition and capabilities. These dimensions of justice will be familiar to many SSCM scholars (for example, see Fia and Sacconi, 2019; Huo et al., 2016; Narasimhan et al., 2013; Stephens et al., 2024) but are here considered in relation to EJ.

Table 1 presents the four dimensions of Schlosberg's (2007; 2013) EJ framework with definitions and links to relevant literature on social justice and EJ. Henceforth, these dimensions will be referred to as the dimensions of EJ. Schlosberg (2007; 2013) argues that communities and movements will draw on one or more of these dimensions in their struggles against environmental injustices depending on the context-specific nature of the EJ conflict. Schlosberg's (2007) EJ framework argues that the inequitable distribution of environmental risks and harms are shaped by recognitional injustices and that the struggles for equitable distribution and recognition occur in the procedural arena. Further, Schlosberg (2007; 2013), drawing on the work of Sen (2001), adopts

a ‘capabilities approach’ to EJ that expands the concept of environmental ‘goods’ to include more than just resources to also include rights, freedoms and opportunities. A capabilities approach shifts the emphasis from reducing environmental injustices to seeing EJ as essential for the flourishing of individuals and their communities (Schlosberg, 2007; 2013).

[Insert Table 1]

Table 1. The four dimensions of environmental justice (Source: Own elaboration).

Within the original formulation of the TBL, human rights are an important element of EJ (Elkington, 1997) and cuts across the four dimensions of EJ (Schlosberg, 2007). Distribution includes the distribution of human rights (Schlosberg, 2007) and environmental injustice leads to an inequitable distribution of human rights (Adeola, 2001; 2017). Human rights are an important aspect of recognition and the ‘denial of rights’ caused by environmental injustices is a form of ‘disrespect’. Capabilities include freedoms and human rights, such as ‘participatory rights’ (Schlosberg, 2007, p.34) and are a prerequisite for enjoying our human rights. In the absence of a healthy environment, individuals and communities lack the capabilities to enjoy their human rights, for example, the right to food can only be enjoyed when we have functioning ecosystems that can provide that food (Knox, 2018).

It is increasingly understood that our human rights ultimately depend upon healthy, resilient ecosystems and that individuals and communities exercising their human rights to oppose environmental injustice is essential to ensure environmental sustainability (Knox, 2018; UN, 2022, UNDP, 2024). There are two approaches that can be used to understand human rights obligations in relation to EJ. First, there are ‘environmental rights’, which consist of explicit rights that

individuals have to a healthy environment (UN, 2022). Second, there is the 'greening' of our existing human rights (Knox, 2018), which states that we cannot enjoy our human rights without a healthy environment. For example, the right to life for many people is threatened by climate change (*Ibid.*).

Those people exercising their human rights to oppose environmental injustice are *de facto* human rights defenders (HRDs), defined as 'people who, individually or with others, act to promote or protect human rights in a peaceful manner' (OHCHR, 2024, n.p.). Specifically, HRDs concerned with environmental rights are classified as Environmental Rights Defenders, defined by the United Nations Environment Programme (UNEP) as those 'individuals and groups who, in their personal or professional capacity and in a peaceful manner, strive to protect and promote human rights relating to the environment, including water, air, land, flora and fauna' (UNEP, 2016, p.4).

The consideration of rights also links to the related concept of 'rights of nature', which calls for ecosystems such as rivers to be given rights, for example, the Whanganui River in New Zealand which was given the status of a 'legal person' in 2017 (Kramm, 2020). The argument is that by giving ecosystems the rights of legal persons, this will protect them and enhance the rights of those people that depend on them, for example, supporting the right to food and water, and therefore the right to life, of the Māori tribes that live along the Whanganui River (Butler, 2020).

SSCM scholarship on EJ will be sensitive to the justice demands made by social movements and their concerns with the impacts of global supply chains practices on the lives of marginalized people (Martinez-Alier, 2002). SSCM scholars adopting this approach to EJ will acknowledge the pluralistic nature of justice in environmental struggles, producing context-specific analyses to understand and support the EJ demands of affected supply chain stakeholders

and businesses responding to them (Martin et al., 2016; Martinez-Alier et al., 2016; Sikor and Newell, 2014). The need to produce context-specific analyses also has implications in terms of the level of analysis to be adopted by SSCM scholars using an EJ lens. Specific EJ struggles will require different levels of analysis, for example, river-based pollution and deforestation may be studied at the level of local communities but issues such as climate change affects the whole Earth System (Steffen et al., 2015) and its impacts will vary from region to region (IPCC, 2021). The ways in which supply chains contribute to these different environmental injustices will vary, which will also have implications for how they are remedied.

2.3. Towards environmentally just supply chains

In Sections 2.1 and 2.2 above, EJ was linked to familiar concepts used by SSCM scholars, namely the TBL (Carter and Rogers, 2008), theories of justice (Fia and Sacconi, 2019; Huo et al., 2016; Stephens et al., 2024) and human rights (Hofman et al., 2018). In this section, we present the concept of the 'environmentally just supply chain', which expands the responsibilities of SSCM to include EJ. Building on Schlosberg's (2007; 2013) EJ framework, the 'environmentally just supply chain' is defined as *a supply chain that supports an equitable distribution of environmental goods, according to the principles of procedural and recognitional justice to support the capabilities of all its stakeholders to flourish*.

The concept of the environmentally just supply chain contributes to the emergent theorization of transformative SSCM, which aims to broaden the scope of our scholarship from incrementalist, harm reduction approaches to a radical approach that fundamentally rethinks how supply chain are organized as well as the broader political economy within which they are embedded (Knight et al., 2022; Matos et al., 2024; Wieland, 2021). Transformative SSCM adopts

a problematization approach to instrumental logic that sees sustainability as a means to improve operational and financial performance, seeing it as unable to drive the systemic changes needed to create an equitable environmentally sustainable political economy (Gold and Schleper, 2017; Gualandris et al., 2024; Matthews et al., 2016).

The concept of environmentally just supply chain contributes to scholarship on transformative SSCM by reconceiving the obligations of SSCM in line with the concept of the 'just supply chain' (New, 1997) and Matthews and Silva's (2024) conceptualization of 'supply chain justice'. This is an ethical approach to SCM that places a greater importance on the distribution of benefits and harms of supply chain activity than on conventional conceptualizations of supply chain performance, such as efficiency, flexibility and responsiveness (*Ibid.*). This approach is consistent with the view of justice as equity (Rawls, 1971), with (New, 1997, p.20) arguing that 'a benefit to one [stakeholder] does not permit an injustice to another'. The ethical principle of equity similarly informs the environmentally just supply chain with trade-offs between environmental injustice and supply chain performance considered unacceptable.

EJ, like sustainability more broadly (Matthews et al., 2016), needs to be conceptualized as a multi-level phenomenon (Matthews and Silva, 2024). The calls for EJ from communities, movements, non-governmental organizations and the United Nations will be contested at other levels, for example, by regional and national levels of government pursuing economic growth and development (Luzzini et al., 2024). Supply chains will inevitably be subject to pressures from multiple levels, as well as the pressure to deliver against conventional supply chain performance criteria (Gualandris et al., 2024).

These tensions may in some cases be articulated as tensions between different communities in relation to environmental issues (Chamanara et al., 2021). For instance, the tensions between

those communities that supported deforestation in the Brazilian Amazon, seeing it as an opportunity to see the perceived benefits of development, by integrating the deforested lands into supply chains (for example for beef), and those communities seeing deforestation as an environmental injustice, threatening their traditions and livelihoods (Bales and Sovacool, 2021). In such contexts where there are tensions within and between communities, what is considered just will be contested, with EJ seen as unfair for those seeing environmental protection as at odds with economic growth and development.

In extreme cases, the tensions within and between levels will result in violence. In the case of the Brazilian Amazon, it is alleged that the local police were complicit in deforestation and violence against those EJ activists and communities opposing it (Phillips, 2017). This is reflected in EJ conflicts globally, with 177 environmental defenders killed in 2021 on the frontiers of global commodity supply chains (Global Witness, 2022). According to Gibb's (2020), the governance of global supply chains often obscures the relationships between resource extraction and violence, reducing the transparency of global injustices for supply chain stakeholders. In response to this issue, Butt et al. (2019) developed the concept of the 'supply chain of violence' to capture the violence experienced by those individuals and communities defending their environmental rights on the frontiers of global commodity supply chains. Criminal elements are often involved in the supply chain of violence (Butt et al., 2019; Global Witness, 2021), which links to emergent SSCM scholarship on the 'criminal supply chain' (Duensing et al., 2023). There are also unfortunate linkages between unsustainable supply chain activity and modern slavery with slaves being deployed to destroy ecosystems so that they can be integrated into supply chains (Gold et al., 2015; Wang and Lofti, 2024).

A useful concept for understanding the responsibilities and obligations implied by EJ is that of 'societal supply chain risks'. The responsibility of the environmentally just supply chain extends to preventing, mitigating and remedying 'societal supply chain risks', defined as the 'unintended consequences that emanate from or materialize within supply chains' (Duensing et al., 2023, p.24). Risk here is understood not as a risk to the business caused by supply chain activity but the risks that a business' supply chain causes to society (*Ibid.*), which will be especially harmful for marginalized communities (Schlosberg, 2007). EJ allows SSCM scholars to understand the social impacts of the environmental harms produced by supply chain activity (Wang and Lofti, 2024), an area of scholarship that has been peripheral to SSCM scholarship.

A societal supply chain risk relevant to the concept of the environmentally just supply chain is the impact of supply chain organization on the resilience of socio-ecological systems (Folke et al., 2010; Folke et al., 2016; Reyers et al., 2018). Supply chains threaten the resilience of socio-ecological systems when their activity pushes past their breaking point (Folke et al., 2010). Many socio-ecological systems lack resilience (Ursino, 2019), often due to 'socio-ecological traps', which are pathologies of socio-ecological systems that lock them into unsustainable trajectories (Stockholm Resilience Centre, 2016). Due to the economic opportunities presented by exploiting natural resources, actors within a supply chain may be blinded to the effects on the resilience of socio-ecological systems that provide those resources (Steneck et al., 2011). This exploitation is bound up with environmental injustices, which are therefore indicative of a misalignment between supply chain organization and broader social and ecological systems. In such instances, incrementalist strategies will likely not be effective in restoring resilience and creating the basis for EJ (*Ibid.*). EJ is a means to problematize conventional SCM approaches based on supply chain

efficiency and responsiveness and transform social-ecological systems in line with the ethical principle of equity (Gualandris et al., 2024).

The social impacts of environmentally unsustainable supply chains are complex and are a challenge for incrementalist approaches based on harm reduction. Broadening the scope of SSCM to include EJ responsibilities and obligations is a means to address these challenges and in the next section, we will look at how these responsibilities and obligations can be operationalized.

3. Towards environmentally just supply chains: Three transformative pathways

In the previous section, we presented the normative argument that businesses should accept and act on the **obligations** implied by EJ. However, normative arguments will only change mental models, behaviours and practices when they are also plausible (Daly, 2015; Nye, 2015). To increase the plausibility of our normative argument, we show how EJ can be delivered through emergent SSCM strategies. The criteria for selection were that they had to be existing SSCM practices that could viably be used to support EJ. In this section, we therefore attempt to bridge the normative argument for EJ with the practice of SSCM by linking to the following levers for transformative SSCM: human rights due diligence, resilience thinking and coproduction. Out of these three SSCM strategies we present three pathways for creating environmentally just supply chains. The section concludes by considering the linkages between the three pathways.

3.1 Pathway 1: Human rights due diligence and EJ

Given the importance of human rights to EJ (Elkington, 1997; OHCHR, 2024; UNDP, 2024), we present a human rights pathway and link this to the existing SSCM practice of human rights due diligence, henceforth referred to as HRDD (OHCHR, 2011). As we have seen,

environmental injustices are bound up with adverse impacts on the rights of individuals and communities (Elkington, 1997; Scheidel et al., 2018; Schlosberg, 2007) and therefore a human-rights based approach to EJ is needed that 'addresses immediate environmental justice needs and tackles the structural inequalities that cause and perpetuate environmental injustice' (UNDP, 2024: n.p). This is consistent with the view that human rights are a fundamental pillar of social justice' (OHCHR, 2024).

A human rights approach to EJ allows businesses to link EJ with their existing commitments to respect human rights within supply chains (OHCHR, 2011). HRDD is an existing SSCM practice that many businesses are in the process of operationalizing (Schrempf-Stirling and Van Buren III, 2024; Smit et al., 2021). The overarching human rights framework for businesses is the United Nations Guiding Principles on Business and Human Rights (OHCHR, 2011), commonly referred to as the UNGPs, which can be used as a 'practical framework for translating environmental justice into sustainable business practice' (Okai, 2022). Despite its increasing importance for supply chain practitioners, for example in relation to labour rights, modern slavey and child labour (Sherman, 2020), the UNGPs have rarely been researched in SSCM scholarship, although they have been linked to SCM by scholars from other fields (e.g., Schilling-Vacaflor and Gustafsson, 2024; Weisert, 2018). This is unfortunate, however, as the UNGPs represent an important lever for potentially transformative change within supply chains (Hofman et al., 2018; Sarfaty and Deberdt, 2023).

HRDD refers to a management process used to 'identify, prevent, mitigate, and account for how [businesses] address their adverse human rights impacts' (OHCHR, 2011, p.17). The HRDD should include 'assessing actual and potential human rights impacts, integrating and acting upon the findings, tracking responses, and communicating how impacts are addressed' (*Ibid.*). HDRR

goes beyond simply identifying and managing material risks to the business itself, to include the effects of societal supply chain risks on rights-holders and needs to be conducted at the start of new SC activities, relationships and contracts (*Ibid.*). The scope of the business' HRDD will be defined by a policy commitment to respect human rights (*Ibid.*). When expanded to include supply chain contributions towards environmental injustices, HRDD processes support distributive justice by preventing and remedy inequitable distributions of environmental harms and risks.

To support EJ, businesses should include environmental rights within their human rights policy. As EJ is bound up with physical violence against individuals and communities opposing environmental injustices (Butt et al., 2019), businesses should make a public commitment to respect the human rights of Environmental Rights Defenders (ERDs). This should then be assessed and acted upon through their HRDD processes. This is consistent with recognition justice as it recognizes communities affected by environmental injustices and ERDs not simply as stakeholders but as rights-holders and considers the violence that can result from non-recognition and misrecognition.

In those instances where HRDD has identified adverse human rights impacts in relation to environmental rights and environmental defenders, remedy will be needed (OHCHR, 2011). For those affected by environmental injustices caused by supply chain activity, businesses should have operational-level grievance mechanisms to capture those impacts and understand how those impacted would like the situation to be remedied (OHCHR, 2011). Remedying environmental injustices for supply chain stakeholders includes ensuring 'access to justice', which may refer to the following: The feeling that justice has been done in the case of effective remedy; effective judicial remedy; and resolving broader issues, e.g. political, economic and social factors, that contributed to an environmental injustice (UN, 2024).

It is not a widely adopted practice for HRDD to assess environmental rights and impacts on environmental defenders but there are a number of businesses that support EJ through their human rights strategy. Coca-Cola has a policy to protect the land rights of traditional and indigenous communities. As part of this policy, they have adopted a zero-tolerance stance on 'land grabs' within their supply chains, which is monitored through 'third-party social, environmental and human rights assessments of its suppliers' (Corpwatch, 2022). As land-grabs are a major driver of environmental injustices (Anguelovski and Martinez-Alier, 2014), this policy indirectly supports EJ.

We are also aware of three businesses that have human rights policies that explicitly respect the rights of environmental defenders: Del Monte Philippines, Kellogg's and Rio Tinto (BHRRC, 2020). These examples come from the Business and Human Rights Resource Centre's 'Business Policies & statements that mention Human Rights Defenders & civic freedoms' (BHRRC, 2020). 'In their Human Rights Policy', Del Monte Philippines states they 'shall not tolerate threats, harassment or attacks against human rights and environmental defenders' (BHRRC, 2020, p.2). Kellogg's Supplier Code of Conduct 'states' that '[s]uppliers shall not engage in any form of retaliation including threats, intimidation, physical, or legal attacks against human or environmental rights defenders' (BHRRC, 2020, p.4). Rio Tinto states in their document on the ''Role of civil society organisations' that they 'recognise the particular risks faced by human rights and environmental defenders, respect their human rights and make it clear that attacks on them will not be accepted, including when we engage with our business partners.'' (BHRRC, 2020, p.25).

While the four businesses used as examples could go further in relation to EJ, they can be seen as adopting elements of a preventative human rights approach to environmental injustice.

There are also reasons to believe that EJ will become an important part of HRDD in the future, such as the growth of the environmental justice movement, the mainstreaming of the climate justice cause, high-profile legal action against environmental injustices, such as the landmark Lungowe v. Verdanta Resources plc case (Ojeda, 2020), and the new EU Corporate Sustainability Due Diligence Directive that will require businesses to conduct appropriate human rights and environmental due diligence, including within their supply chains. (European Union, 2024). Further, complementary guidance to the UNGPs is being provided that connects HRDD explicitly with environmental issues. The UN Working Group on Business and Human Rights (2023) has produced an 'Information Note on Climate Change and the UNGPs' and the UNDP (2023) has recently developed guidelines for 'human rights due diligence with an environmental perspective' (HRDD+E). These are all developments that present opportunities for SSCM scholarship using an EJ lens.

3.2 Pathway 2: Resilience thinking, EJ and socio-ecological systems

Our second pathway concerns the resilience of socio-ecological systems, an emergent area of scholarship within SSCM (Gualandris et al., 2024; Silva et al., 2023; Wieland, 2021), specifically through the adoption of 'resilience thinking', which is concerned with the three aspects of resilience: persistence, adaptability and transformability (Folke et al., 2010). Resilience thinking understands that the persistence of social-ecological systems depends on adaptability and transformability, with the later needed when systems become untenable (*Ibid.*).

Key to resilience thinking is the idea that small scale changes within a social-ecological system can lead to larger scale transformations throughout the system (Folke et al., 2010). This heightens the transformative potential of SSCM strategies operationalizing the environmentally

just supply chain. There is an emergent literature on SSCM strategies that operationalize resilience thinking to restore and regenerate social-ecological systems (Gualandris et al., 2024; Urzedo et al, 2022). Such strategies are needed to remedy and prevent environmental injustices by increasing the resilience of social-ecological systems (Urzedo et al, 2022).

Many SSCM strategies are focussed on mitigation, that is, strategies that reduce or prevent the negative environmental impacts of a supply chain (Matthews et al., 2016) but for many environmental issues mitigation will not be enough to remedy the environmental injustices caused by unsustainable social-ecological systems (Stockholm Resilience Centre, 2016). In the case of climate change, which is one of the greatest threats to the sustainability of social-ecological systems globally, EJ cannot be achieved by reducing supply chain emissions as concentrations of greenhouse gases in the atmosphere are incompatible with a stable climate system and stay in the atmosphere for hundreds (sometimes thousands) of years (Royal Society, 2024). Climate justice will only be possible if carbon dioxide is removed from the atmosphere. For this reason, even radical climate change mitigation strategies increasing resource productivity by Factor 10 or higher (Elkington, 1997) would be insufficient to return the climate system to stability.

In contrast to mitigation-based SSCM strategies, resilience thinking aims to create supply chains that 'actively regenerate social–ecological systems' (Gualandris et al., 2024, p.53). Although Gualandris et al (2024) do not explicitly mention EJ, SSCM strategies based on resilience thinking can be established to remedy environmental injustices, whether they were caused by the business or by a business seeking to resolve environmental injustices caused by other businesses, often within other industries. Gualandris et al. (2024) provide many examples of such supply chains, such as Interface (a carpet manufacturer) helping to regenerate ocean systems by using abandoned, lost, or discarded fishing gear as an input into their production processes. This

will help to increase the resilience of coral reefs, which are social-ecological systems upon which hundreds of millions of people worldwide depend for their livelihoods and food (Burke et al., 2011).

Besides helping to increase the resilience of local ecosystems, such as rivers, forests and coral reefs, nature positive SSCM strategies can be used to restabilize the climate system. Matos et al. (2024) present negative emission technologies (NETs) as an example of a transformative SSCM strategy. NETs involve removing carbon dioxide from the atmosphere, which can be done via supporting the carbon cycle (e.g., reforestation) or through technological innovation. In their paper Matos et al. (2024) research three types of NET strategy that have been used to support SSCM strategies: Biochar, a nature-based NET that enables carbon to be captured and stored within soil systems; direct air carbon capture and storage, an engineering NET that requires the technology to both remove and store carbon dioxide; and ocean alkalinity enhancement, an ocean-based NET that stores carbon dioxide in carbonate minerals (e.g., limestone) within the ocean system. SSCM strategies using NETs can positively support reversing climate change (Gualandris et al., 2024) and support climate justice by restabilizing the climate system. Those industrialized countries that have contributed the most towards climate destabilization through their emissions (both current and historical) should take a leadership role in supporting NETs within the supply chains of their businesses and/or finance the adoption of NETs within poorer countries, which will likely require the creation of new supply chains.

Resilience thinking is an essential strategy supporting the creation of environmentally just supply chains, which in turn can contribute towards increasing the resilience of social-ecological systems. Resilient social-ecological systems are the foundation for EJ and for communities to flourish. Regenerative supply chains are strategies that can be used to create environmentally just

supply chains, supporting distributive justice by reducing environmental bads and increasing environmental goods.

3.3. Pathway 3: Coproduction of environmentally just supply chains

The first two pathways presented have the focal business within the supply chain as the primary actor driving action on EJ. In pathway 3, the emphasis shifts to the coproduction of environmentally just supply chains with stakeholders. This shift is necessary as, in many cases, the causes of environmental injustices may be beyond the scope of individual businesses (Nidumolu et al., 2014). In such instances, many businesses participate in multistakeholder initiatives (MSIs), also known as multilateral partnerships. These are governance mechanisms set up to resolve complex social and environmental issues that include a range of societal actors, for example, businesses, including competitors and suppliers, community representatives, policy makers and civil society organizations (Mena and Palazzo, 2012; Soundararajan et al., 2019).

MSIs are emerging as a governance response to the failure of numerous businesses to overcome the persistent environmental problems within their industries that are driving sustainability issues within their supply chains, e.g. deforestation, climate change and biodiversity loss (Nidumolu et al., 2014). It is common for MSIs to be established to resolve environmental issues affecting the supply chains of an individual business (Carmagnac et al., 2022) or a whole industry (Urzedo et al, 2022). EJ may also require cross-sector collaboration, for example, Heldt and Beske-Janssen (2023) argue that working across sectors can be helpful to fight against deforestation. The potential advantage of MSIs is that they leverage the resources and perspectives of multiple stakeholders to resolve complex sustainability challenges (Clarke and MacDonald,

2019), although it has been questioned whether MSIs truly leverage the perspectives of non-corporate partners (Banerjee, 2018).

MSIs should be a participatory forum to articulate the needs of the affected communities and mobilise the resources needed to remedy environmental injustices (Urzedo et al., 2022). However, MSIs have been criticized for failing to drive the transformations needed to create sustainable supply chains (Carmagnac et al., 2022). Further, it has been claimed that MSIs are being used to govern global supply chain's 'at a distance', based on an 'ethic of detachment' (Serfaty and Deberdt, 2023). This is even happening in areas with well-established regulations against modern slavery, e.g. the 'dirty list' in Brazil (Gold et al., 2015) and the UK Modern Slavery Act (Serfaty and Deberdt, 2023). These issues can be understood as failures to adhere to the principle of procedural justice (Arenas et al., 2020). To address these issues, there needs to be consultations with affected communities to turn MSIs into 'effective advocacy platforms' (Global Witness, 2020, p.20). However, consultation in itself will not ensure that MSIs meet the needs of affected communities if the perspective of businesses is privileged (Arenas et al., 2020; Banerjee, 2018).

To ensure that MSIs able to coproduce environmentally just supply chains that meet the needs of affected communities, there needs to be a pluralist approach to knowledge (Urzedo et al., 2022). This approach to valuing the knowledge of non-corporate partners within MSIs is consistent with the recognition dimension of EJ (Schlosberg, 2007; 2013). Urzedo et al.'s (2022) study of mining restoration supply chains in Australia provides a useful example of coproducing environmentally just supply chains for seeds with communities based on a pluralist approach to knowledge. According to these authors, a transformative governance structure was developed to engage indigenous peoples in developing environmentally just practices, plans, and policies. This

was only possible when indigenous knowledge was valued and institutionalized socio-environmental inequalities were recognized and dismantled.

The coproduction strategy for creating environmentally just supply chains is consistent with the procedural, recognitional and capabilities dimensions of EJ. Consistent with the principle of procedural justice, it ensures that affected communities participate in the SSCM solutions addressing environmental injustices and supports participation through a recognition of the value of the knowledge affected communities have. As participatory rights are also a key EJ capability, a capabilities approach is also supported. By synthesizing the procedural, recognitional and capabilities dimensions of EJ, the distribution of environmental bads and goods can be aligned with the interests of affected communities.

3.4 Overview of the three transformative EJ pathways

Table 2 shows the three transformative pathways supporting the four dimensions of EJ outlined in Section 2.2. The table also indicates the primary actors within each pathway, for pathways 1 and 2 this is the focal business within the supply chain and for pathway 3 the primary actors are MSIs.

[Insert Table 2]

Table 2. The three pathways linked to the four dimensions of environmental justice (source: Own elaboration)

In sections 3.1-3.3, the three pathways were presented as independent strategies that can be pursued to create environmentally just supply chains, but the strategies are also potentially

complementary. The HRDD approach to EJ outlined in pathway 1 could be leveraged to support pathways 2 and 3. Changing the values and ethics of actors within social-ecological systems is a high leverage intervention that can help increase their resilience (Folke et al., 2010). By adopting a human rights approach to environmental risks and harms businesses can create supply chains that support local communities trying to increase the resilience of the social-ecological systems within which they are embedded.

A resilience approach to social-ecological systems based on resilience thinking supports pathway 1. This is done by helping businesses to remedy the adverse human rights impacts of environmental injustices through restoration and regenerative supply chains (Gualandris et al., 2024; Urzedo et al., 2022). Further, by prioritizing the resilience of social-ecological systems over the conventional supply chain approaches of efficiency and responsiveness, SSCM strategies can support a preventive approach to environmental injustices.

The coproduction approach outlined in pathway 3 can be leveraged to support pathways 1 and 2. Coproduction with communities is an SSCM strategy for EJ that can support pathway 1 by ensuring that HRDD mechanisms are implemented across an industry in ways that meet the needs of communities (Sarfaty and Deberdt, 2023). Pathway 3 can also support pathway 2 by ensuring that restoration and regenerative supply chains draw on the knowledge of affected communities (Urzedo et al., 2022).

4. EJ and the need for emancipatory scholarship

The concept of the environmentally just supply chain presents challenges as well as opportunities for SSCM scholarship. The challenges of creating environmentally just supply chains invites SSCM scholars to reflect on the type of knowledge we produce, how it is produced,

who uses this knowledge and how it is used. The 'core' of SCM scholarship has been based on a theory of knowledge production that assumes that SCM scholars are detached observers of the realities of SCM (Gold, 2014). This leads to an approach to theorization based on '[c]ause and effect relationships, universal laws, explanation of supply chain functioning' (Gold, 2014, p.5). As we have seen, the theory and practice of EJ defies such approaches to theorization as communities and activists draw on and rearticulate the essentially contested concept of social justice in response to environmental injustices. In contrast to the dominant SCM approach to theorization based on generalization (Gold, 2014; Cornelissen et al., 2024), SSCM scholars will need to be comfortable working with essentially contested concepts within a multi-level understanding of sustainability and EJ. They may also need to be able to negotiate real world contestations of EJ.

A further challenge to the detached mode of SSCM scholarship is that EJ would require significant changes in the organization of supply chains, requiring a concomitant transformation in the mental models of supply chain managers. Although we have considered a number of factors that are likely to see EJ rise up the mainstream sustainability agenda, for example, the mainstreaming of the climate justice cause and related high-profile legal actions (UNEP, 2023), EJ is unlikely to be central to the SSCM strategies of many businesses at present. SSCM scholars motivated by EJ will thus need to see themselves as change agents in order to support the creation of environmentally just supply chains. This would require a less detached, more involved form of knowledge production than is typical of core SCM scholarship. This is consistent with calls in the field to move away from traditional scholarship that seeks to produce propositional knowledge (abstract, decontextualized statements) based on empirical observations to embrace more 'emancipatory' scholarship, defined as a critical approach to knowledge production that seeks to

present a case for transforming supply chains in line with the values and ideals of the scholar (Cornelissen et al., 2024).

Emancipatory scholarship is a form of SSCM scholarship that is motivated by the epistemic goal of emancipation, which draws on a scholar's values and ideals to problematize current approaches to theorizing and managing supply chains and present alternative theoretical and practical approaches (Cornelissen et al., 2024). In contrast to the detached ideal of core SCM scholarship (Gold, 2014), the emancipatory scholar motivated by EJ would adopt an 'involved' stance based on their views on social justice and environmental sustainability. The involved stance of the emancipatory scholar is at odds with the preferred methods of detached SCM scholarship, such as '[s]urveys, modeling, content analyses and data mining, case study research according to Yin and Eisenhardt' (Gold, 2014, p.5). For SSCM scholars that adopt an emancipatory stance on EJ and understand social justice as an essentially contested concept, these methods will not be suitable.

A further issue with a detached, objectivist approach to researching EJ is that there are few positive examples of environmentally just supply chains that could be researched at present – indeed we have struggled to find examples for this paper. Instead, some SSCM scholars may feel the need to take responsibility for their creation. 'Engaged' and 'activist' research have emerged as two methods that SSCM scholars can adopt to work with relevant stakeholders to create environmentally just supply chains (Touboulic et al., 2020; Touboulic and McCarthy, 2020). This would be consistent with the tradition of 'scholar-activists' within EJ scholarship more broadly (Foster et al., 2024).

The aim of engaged and activist SSCM scholars would be to produce knowledge that is both context-specific enough to be useful for the non-scholars involved in the research (Halme et

al., 2024) but also produce knowledge that is of general interest, i.e. of interest to scholars, activists and managers not involved in the research (Touboulic et al., 2020). This more general theory could then inform the practice of those working to create environmentally just supply chains. A specific form of engaged scholarship that can lead to better SSCM theory is 'critical engaged research' (Touboulic et al., 2020). This is due to its emphasis on 'problematization' (Touboulic et al., 2020), which has emerged as an important trend within (S)SCM scholarship in recent years (see also: Hardy et al., 2020; Matthews et al., 2016; Stephens et al., 2022). Critical engaged research requires scholars to engage in a process of problematization in which their preferred theoretical perspectives are questioned by surfacing and reflecting upon the assumptions upon which they are based (Alvesson and Sandberg, 2011).

One way in which SSCM scholarship can be problematized is through engagement with EJ activists and environmental justice organizations (EJOs) (Martinez-Alier et al., 2014). For example, in global supply chains, engagement with EJ activists and EJOs may challenge colonial and postcolonial perspectives that blind SSCM scholars to environmental injustices (Matthews and Silva, 2024). By opening themselves up to different perspectives from the Global South and East, SSCM scholars may encounter decolonial perspectives that question the sustainability solutions provided by Northern and 'developed' countries, enabling them to see alternative solutions grounded in EJ (Marques et al., 2021; Myers et al., 2020; see also Girei et al., 2024 and Kirchherr, 2021 on decolonizing the circular economy). Collaborating with scholars from those fields that have done the most to develop EJ scholarship, such as political ecology, will also help SSCM scholars to produce theories through problematization of our field's unquestioned assumptions (Matthews and Silva, 2024).

To conclude this section, we will consider how SSCM scholarship can be leveraged to help businesses realize the transformative potential of the three pathways presented in Section 3. SSCM scholars can help address these issues through emancipatory scholarship, whether that is through critical theorization, such as this paper, or through research, for example using the methods of engaged and activist research. To support pathway 1, 'engaged' and 'activist' scholars can work with supply chain managers and stakeholders to ensure that a business' human rights strategy includes EJ, environmental human rights and protections for ERDs.

To support pathway 2, engaged and activist scholars could help actors within a supply chain to adopt resilience thinking and consider the resilience of social-ecological systems when developing their SSCM strategies (Folke at al., 2010). They could help managers to see that restoration and regeneration strategies would help them realize their human rights obligations (as outlined in pathway 1). SSCM scholars could also help businesses identify the economic benefits that an EJ lens could provide by acting as a driver for new approaches to SSCM, for example, sourcing ocean plastic instead of producing new plastic, or even creating new business models based on restoration supply chains (Gualandris et al., 2024).

To support pathway 3, the scope of engaged and activist research can engage with MSIs to expand their scope to include EJ or help establish MSIs focused on EJ. SSCM scholars can help MSIs coproduce environmental policies and practices based on due consideration for the realities faced by local and indigenous communities (Pearson et al., 2023). An EJ approach to SSCM can reshape accountability systems by bringing the voices and perspectives of local and marginalized voices, for example, those of indigenous peoples, into the decision-making and implementation processes of SCM (Urzedo et al., 2022). SSCM scholars could support recognition justice by supporting and facilitating a pluralist approach to knowledge to ensure that the knowledges of

affected communities are respected within MSIs (*Ibid.*). Empowering communities in this way is crucial for ensuring that critical social and environmental needs are addressed and for fostering sustainable, environmentally just practices within and across supply chains (Touboulic et al., 2020).

5. Conclusions

The aim of this paper was to show that EJ is a potentially transformative goal for SSCM scholarship. Although EJ may initially appear to be a challenging concept for the theory and practice of SSCM, we show that the EJ discourse has strong links with SSCM scholarship and can be operationalized through emergent SSCM practices. We thus believe EJ represents a viable way forward for transformative SSCM scholarship and presented three transformative pathways that could be used to create environmentally just supply chains.

The goal of making EJ a central concern for transformative supply chains is consistent with an incipient 'justice turn' within SSCM scholarship. Recently, for example, Matthews et al. (2024) considered social justice in their conceptualization of diversity, equity and inclusion (DEI) within OSCM scholarship, Kroes et al (2024) researched the relationship between gender and social justice within SCM. and Stephens et al. (2024) made recognition justice the central concept within their conceptualization of worker voice within supply chains. Karaosman et al. (2024) have also proposed that the just transition, which they consider includes EJ, become a central concern for SSCM scholarship.

We hope SSCM scholars will find our article a fruitful resource and support those reflecting on the efficacy of the field in supporting the transition to environmental sustainability. But we also acknowledge that the paper has a number of limitations. First, the article presents a normative

argument in favour of including EJ within the theory and practice of SSCM, that is, an argument for how the authors believe the world *should* be, rather than a description of how it is. Second, while we believe that there are political and societal forces that will lead to EJ becoming a higher priority for SSCM in the future, we must acknowledge that EJ remains a marginal concern for many supply chain managers at present. Third, we are very much aware that there are considerable barriers to the mainstreaming of EJ within SSCM. A recent meta-analysis highlighted the barriers to SSCM, including cost of adoption, resistance to change and poor organisational capabilities (Khan et al., 2021). We must acknowledge that these barriers will likely be higher towards EJ.

Despite the limitations of our article, we believe that it offers a number of opportunities for future research. In this paper, we have advocated for engaged and activist SSCM scholarship, but other methodological paths can of course be followed to work with the new concepts that emerge from the EJ discourse. Wieland et al. (2024) explored some qualitative research that would be rich in this regard. For these authors, grounded theory, ethnography, sensemaking, sociomateriality, narrative research and historical research are some examples of how to advance (S)SCM research. SSCM scholars could also use novel datasets, for example, satellite data to better understand the drivers of environmental injustices, such as deforestation caused multi-tiered supply chains (see Heldt and Beske-Janssen, 2023).

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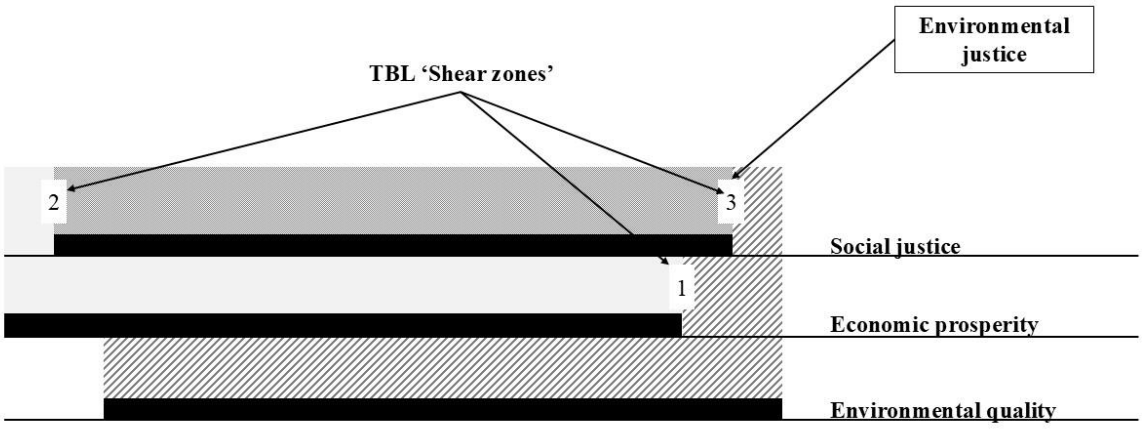
Figures 1a and 1b. The original formulation of the TBL (based on Elkington, 1997).

Figure 1a. The Triple Bottom Line (TBL) framework

Figure 1b. The TBL framework showing misalignment between the bottom lines

Figure 2. The three 'shear zones' of the TBL (based on Elkington, 1997).



1 **Table 1. The four dimensions of environmental justice**

	Definitions	**Key areas of concern**	**Application to EJ**
Distributive justice	The fair distribution of goods within a given society (Rawls, 1971). Fair is often understood to mean equitable (Rawls, 1971). Goods are not just limited to resources, such as money or physical goods, e.g. food. Goods include opportunities, rights and liberties (Schlosberg, 2007).	The focus is on what is distributed and how it gets distributed. What goods are distributed? How are those goods distributed? How can we ensure a fair distribution of goods? See: Rawls (1971), Fraser (2001), Honneth (2001), Young (2022). Please note that each of the above theorists conceptualizes distributive justice differently. Rawls (1991) attempts to establish universal rules for distributive justice, whereas Fraser (2001), Honneth (2001) and Young (2022) ground distribution	*Distributive justice* emphasizes the unequal distribution of environmental harms and risks. It includes both the environmental goods, e.g. fresh water and clean air, and the environmental bads, e.g. pollution. EJ links to different social groups, showing how some groups are advantaged by environmental decision-making. EJ also links distributive justice to conflicts over environmental issues. Martinez-Alier (2004; 2021) calls these 'ecological distribution conflicts'.

		within specific social, political and cultural processes.	See: Bullard, 1994; Schlosberg, 2007; Martinez-Alier et al., 2014.
Recognitional Justice	Recognition of the value of others based on respect for their identity, cultural traditions and difference. Non-recognition and misrecognition will affect the distribution of goods in a society (Fraser, 2001). Recognition is concerned with the self-esteem that individuals have. It is thus important in itself (Honneth, 2001). Self-esteem is understood as an inter-subjective process, i.e. a person's self-esteem is bound up	How are unfair distributions of goods embedded in social, cultural and political processes of disrespect? How are processes of disrespect institutionalized within societies? What are the consequences of non-recognition and misrecognition for individuals and communities, for example, their physical safety, their human rights and psychological wellbeing. See: Fraser (2001), Honneth (2001), Young (2022).	*Recognitional justice* provides an explanatory framework for the social, cultural and political causes of 'ecological distribution conflicts.' The recognition lens shows how environmental inequities are linked to racism, poverty and gender. Remedies for environmental injustices are based on recognition of identity, cultural traditions and differences of those impacted. Remedies can therefore be more effectively developed and implemented.

	with how others treat them (Honneth, 2001).	Please note that each of the above theorists conceptualizes the relationship between recognition and distributive justice differently. For more detail, see the debate between Fraser and Honneth (2003).	See: Ertör, 2023; Lai et al., 2021; Li and Semedi, 2021).
Procedural justice	The decision-making procedures for distributing goods are fair and inclusive (Fraser, 2001). Those affected by distribution of goods should be able to participate within decision-making procedures on equal terms, known as 'participatory parity' (Fraser, 2001). Procedural justice is linked to recognition as decision-making	How are decision-making processes for the distribution of goods designed and implemented? Are decision-making processes based on the principle of justice as recognition? Is there 'participatory parity' among those involved in the decision-making process?	*Procedural justice* ensures that environmental decision-making, whether at the level of government or the supply chain, is inclusive and based on the principle of 'participatory parity'. EJ scholarship is sensitive to the lack of meaningful participation for cultural minorities and women in environmental decision-making due to limited access to power and information.

	procedures cannot be fair and inclusive in the absence of respect for those impacted by the decision (Fraser, 2001).	See: Fraser (2001). Fraser presents a trivalent framework that includes distribution, recognition and procedure.	See: Ampaire et al., 2020; Satyal et al., 2018.
Capabilities approach to justice	The opportunities a person has to live they life they want for themselves. An individual needs to have the resources needed to live their chosen life and the agency to make decisions about their own lives. The capabilities approach to justice is linked to the concept of 'flourishing', i.e. it is not just about having the minimum resources to survive but to have the opportunities to live the best life possible.	Linking to distributive justice, do individuals have the goods needed to flourish? Linking to procedural justice, are individuals able to exercise agency in relation to their own lives? See: Sen (2001)	*Capabilities approach to justice* includes environmental goods and decision-making procedures. It extends capabilities from individual level to the level of communities. Do communities have the environmental goods needed to flourish and do communities have agency to live as they choose?

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Table 2. The three pathways linked to the four dimensions of environmental justice

	Primary actor	Distribution	Recognition	Procedure	Capabilities
Human rights due diligence and EJ	Business	Prevents and remedies human rights impacts of environmental injustices.	Recognition of affected communities and environmental rights defenders as rights-holders. Supported by human rights due diligence processes, human rights policy and remediation processes, including providing access to justice.		
Resilience thinking, EJ and socio-ecological systems	Business	Regenerative supply chains support			Environmentally just supply chains contribute to

		distributive justice by reducing environmental bads and increasing environmental goods.			resilient social-ecological systems, which are the foundation of individual and community flourishing.
Coproduction of environmentally just supply chains	Multistakeholder initiatives	The synthesis of the recognition, procedural and capabilities dimensions of justice should support just distribution of environmental goods and harms for affected communities.	Recognition of value of knowledge of affected communities.	Affected communities participate in coproduction of environmentally just supply chains.	Participation in decision-making supports agency, a key environmental justice capability.

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