

Short Communication

Using Plastic Wastes to Exemplify Justice Dimensions of Extended Producer Responsibility

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Abstract

Extended Producer Responsibility (EPR) places liability, physical, financial, and/or informative responsibility for a product throughout its life cycle on its producer. Implementing such schemes is expected to result in many environmental and social benefits. Yet, academic and practitioner discussions on the mechanisms focus on environmental impacts, whereas social dimensions of EPR are often side-lined. This short communication contributes to addressing this gap by establishing a research agenda for the justice dimensions of EPR. For this purpose, initial links between EPR and justice – specifically waste colonialism, procedural justice, recognition justice, distributive justice, intra- and intergenerational equity, waste justice, and corrective justice – are set out, including where it affects products in their life cycles and examples of which stakeholders may be impacted, with plastic waste used to provide examples.



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Keywords

Extended producer responsibility; justice; plastic waste; plastics; circular economy; equity; governance

1. Introduction

Extended Producer Responsibility (EPR) holds producers responsible at all stages throughout the life-cycle of their products. This responsibility can be economic (i.e., the producer covers part or all of the costs of managing wastes), physical (i.e., the producer is involved in physical management), informative (i.e., the producer provides information on the product and its environmental effects), or liability for damage (i.e., the producer has responsibility for environmental damages caused by product) [1]. All types of responsibility should cover a product's entire life cycle, but in practice EPR often only applies at a product's end-of-life (e.g. [2]). Instruments typically used to implement EPR include take-back schemes, deposit refund schemes, advance disposal fees, and product standards [3].

EPR's touted economic, environmental, and social benefits include job creation, incentivizing green or eco-design, encouraging waste reuse, improving recycling rates, reducing public health risks, placing greater social responsibility on producers by applying the polluter pays principle, and environmental justice through reducing the detrimental impacts of poor waste management on marginalized groups [3-5]. It is therefore considered a cornerstone of the circular economy concept (where wastes are prevented and resource use is minimized, or wastes are reused, remanufactured, repaired, recovered, or recycled) and a key tool for sustainable development (e.g. [3, 5-7]). These possible contributions have motivated the implementation of more than 400 EPR schemes globally [3].

Research has been undertaken on many of EPR's potential benefits for various types of products within different contexts. For example, Filho et al., Bassi et al., and Lorang et al. examine the contribution of EPR schemes to achieving recycling targets for plastics in various contexts ([6], [7], and [8] respectively), while Watkins and Gionfra, and Bassi et al. investigate the cost-savings and business-case for EPR ([3] and [7] respectively). Despite nascent discussions of the social dimensions, including justice, of EPR (e.g. [9, 10]), social dimensions remain "largely absent" from EPR agendas [4]. This short communication addresses this gap. In particular, we highlight justice dimensions of EPR and propose a research agenda to examine (in)justice. For this purpose, Section 2 summarizes the justice dimensions of EPR, and Section 3 concludes by highlighting key issues and identifying future directions for research. Plastic wastes are used throughout as a useful tool to exemplify issues, as plastics are one of the critical challenges in waste management, with their scale and complexity covered in much literature (e.g. [11, 12]).

2. Justice Dimensions of EPR

Justice dimensions of related concepts and measures are gaining increasing attention. For instance, social dimensions of sustainable development are widely accepted, with the focus shifting to "what this exactly means" as it has previously "not been very clearly defined or agreed" (e.g. [13,

14]). Justice is also often absent from circular economy discussions, but there are growing calls for its consistent incorporation into circular economy laws and discussions (e.g. [9, 15]). Similarly, justice needs to become one of the focal points of EPR discussions.

We understand justice in this short communication as “giving each person his or her due, or treating like cases alike” [16]. However, a discussion of the theoretical debates on different abstract ideas and conceptions of justice is beyond the scope of this short communication (see, e.g., [16]). For each type of justice considered in this section, we briefly describe it, highlight its relevance to EPR, and provide an example within the plastic waste management sector.

2.1 Waste Colonialism

Waste and specifically plastics waste pollution have been described as (plastic) waste colonialism not only as a result of the dumping of wastes by high GDP countries in low GDP countries [17, 18], but also as a result of capitalist production and consumption practices generating wastes [18]. The United Nations Environmental Programme Basel Convention working group firstly recognized this in law and policy in the late 1980s [19]. It remains a significant issue, as evidenced by the implications of the import bans by China and other Global South countries of certain types of plastic wastes (e.g. [20, 21]). Different perspectives in the literature on what makes colonialism unjust include political domination, cultural imposition, and exploitation [22]. These sources of injustice need further investigation within the context of (plastic) wastes: to solve a problem, the problem needs to be fully understood.

EPR can both contribute to and mitigate waste colonialism. On the one hand, there is a risk within the context of calls for developing recycled plastics markets (e.g. [23]) that EPR may be implemented in such a way that, for example, Producer Responsibility Organizations (PROs) (organizations that assume the EPR responsibilities of producers for a fee) operating in the Global North– meet recycling targets by selling waste to Global South-located recycling operators.¹ On the other hand, there is an opportunity for EPR to contribute to preventing waste colonialism if requirements of, for instance, local waste management under the proximity principle are included as part of an EPR scheme. This may, however, give rise to other environmental injustices (see Section 2.5).

2.2 Procedural Justice

Procedural justice focuses on “gather[ing] all relevant information”, including through involving relevant stakeholders and promoting transparency, during procedures [24]. This remains a challenge for EPR implementation. Within the context of plastic waste management in low-income Asian countries, for example, Johannes et al. observe that insufficient engagement with informal sectors will lead to difficulties in EPR application [10]. In the wider context beyond plastic waste, ensuring the inclusion of the informal sector within the negotiations for a global plastics treaty has been a challenge [25, 26]. Simultaneously, the extent and form of industry representation within these negotiations have been controversial [27, 28].

In order to ensure procedural equity when discussing, drafting, and implementing EPR schemes, the following questions need to be asked: How to identify and prioritize stakeholders impacted by EPR schemes (e.g., through the stakeholder salience model [29])? How are identified stakeholder

¹ This is only an example: PROs operate both in the Global North and Global South.

groups involved during the discussion through to the implementation stages of EPR schemes? Are the institutional arrangements and procedures by which policies are formulated and implemented fair to different groups? How is the burden of risk allocated across society? Are stakeholders involved in setting the standard against which decisions will be judged fair? [30-32].

2.3 Recognition Justice

Recognition justice “requires that policies and programs meet the standard of fairly considering and representing the cultures, values, and situations of all affected parties” [33]. It is not enough on its own to recognize relevant stakeholders (see Section 2.2) without a deeper understanding of their characteristics. For example, the possible impacts of EPR on the informal sector cannot be addressed without understanding the informal sector first, as this informs the impacts. Such recognition is also critical to informing the methodology of identifying stakeholders and deciding whom to include in processes (see Section 2.2).

2.4 Distributive Justice

Distributive justice is “the distribution of benefits and burdens to individuals, or the balancing of the competing claims persons make on the benefits that are up for distribution” [16]. There are four predominant ways distributive justice issues emerge in EPR schemes. First, there may be increased burdens for consumers. Even though producers should be responsible, costs can be passed onto the consumer. Second, the informal sector may be adversely impacted as research demonstrates that, for example, the formalization of the waste sector often marginalizes informal workers and makes their existence more precarious [4, 9, 34]. This is underpinned by EPR laws and policies “add[ing] to trends in the existing economy to enclose and commodify the planetary commons, including ecosystems (referred to as natural capital)” ([9], see also: [35, 36]). Third, there may be an uneven distribution of beneficial and burdensome effects on companies. Some forms of EPR can place a large burden on companies, which large corporations may be able to deal with more than smaller companies. Finally, EPR also raises equity questions about the global allocation of responsibility between Global North and Global South countries [37]. This links back to the waste colonialism discussion (see Section 3.2).

2.5 Intra- and Intergenerational Equity

Intergenerational equity requires that “all generations have an equal place in relation to the natural system, and that there is no basis for preferring past, present or future generations in relation to the system.” In contrast, intragenerational equity is “among those living today” [38]. Plastic wastes are inherently an intergenerational issue due to the time it takes to degrade – some plastics take 400 years [39]. EPR can support mitigating the impacts of such long-lasting plastics through eco-designing products with reduced amounts of plastics used. Where plastics are unavoidable, incentives can be incorporated in EPR schemes to, for example, promote standards for plastics, and/or ensure plastics are recyclable or bioplastics are used (though these have other challenges – see, e.g. [9]).

Management of waste, including plastic waste, has intragenerational equity repercussions – both between Global South and Global North and within the same country. The polluting effects and

siting of waste operations underscore inequities and injustices within and between countries. Waste operations vary significantly according to income level and region – for example, open dumping and burning are more widespread in lower-income countries [40]. Evidence exists indicating that waste facilities, including legal and illegal incinerators, landfills, and hazardous waste sites, are often disproportionately located in areas with more deprived residents or from ethnical minorities [30, 41]. Unsurprisingly, if disproportionately located, researchers have observed that poor and minority communities bear more associated environmental risks related to waste facilities [41]. EPR schemes’ contributions to these inequities must be investigated (Sections 2.1, 2.2, and 2.4).

2.6 Rectifying Injustices

EPR simultaneously contributes to and mitigates various justice issues, as discussed in the preceding sections. As a result, there is a need to rectify injustices inflicted by one party on another (i.e., corrective justice) [42]. EPR schemes may be implemented to contribute to such a notion through funds raised from PRO fees or penalties for non-compliance with mandatory EPR schemes.

Moreover, the movement of waste justice can bring attention to injustice problems of waste management, including EPR schemes, as labels can help disseminate the message of corrective justice [43, 44]. Waste justice is a term proposed by Weber et al. to describe “a new and growing social movement that includes a variety of progressive political, economic and ecological currents, aside from grassroots initiatives, campaigning to minimize and eventually eliminate waste as a by-product of our non-circular modes of production” [45].

3. Conclusion

In this short communication using illustrative examples from the plastic waste sector, we have demonstrated that EPR can both be a contributor to and mitigator of justice challenges throughout a product’s life-cycle (though justice issues of extraction have not been covered (e.g. [46])). Figure 1 summarizes (non-exhaustively) the life-cycle stages at which justice issues may manifest as set out in the examples from the plastics waste sector discussed in Section 2. Moreover, the discussions have also highlighted that justice issues do not exist in siloes; no single justice dimension can remedy all injustices [47].

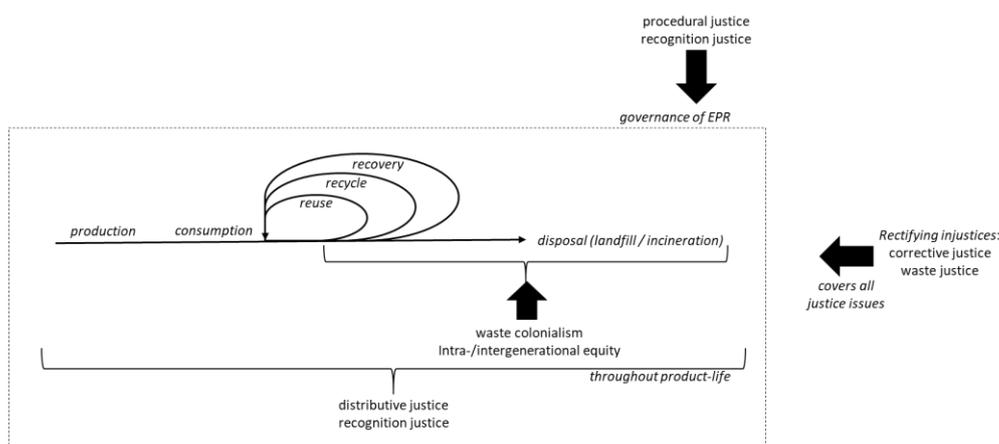


Figure 1 Justice dimensions of a product’s life-cycle covered in this short communication.

The preceding discussions only take an initial step toward addressing the justice dimensions of EPR. Overall, further research is needed to identify opportunities and challenges and how to take and overcome them. We recommend the following future directions to be investigated in different contexts and for various product types:

1. *Identification of justice issues to which EPR contributes and those which it mitigates*: Initial identification of justice issues of EPR schemes is a key first step. Questions include: Which types of EPR contribute to which justice issues? Which types of EPR can mitigate which justice issues?
2. *Understanding of the impacts of justice issues on and as a result of different stakeholder groups*: This goes beyond the initial superficial identification of justice issues, as issues need to be understood before possible effective solutions can be identified. Questions include: What are the impacts of the injustices? Which stakeholder groups – including PROs – contribute to or are affected by justice issues of EPR and how?
3. *Identification of ways injustices can be overcome*: This should include exploration of waste justice and corrective justice, and opportunities and mechanisms for resolving the identified injustices. Mechanisms may include requirements and standards as part of EPR schemes and non-EPR measures, as justice issues are not limited to EPR scheme implementations.
4. *Development of evidence base*: Case study research covering, among other things, different injustices, geographical contexts, life-cycle stages of production processes, affected stakeholders, and recommendations to overcome injustices is needed to facilitate understanding and dialogue.

EPR is just one mechanism to support the governance of (plastic) waste management. Justice issues are not unique to EPR and simultaneously EPR is not the only way to address some of the justice issues. This further complicates the landscape; EPR needs to be more clearly linked to other circular economy tools [26], each of which will have its own justice implications, which may exacerbate justice repercussions from any implemented EPR schemes. In this short communication we have merely contributed to a small part of a very complex and extensive web of regulatory mechanisms that can and should be used to achieve sustainable development and transition to a circular economy.

Author Contributions

Both authors contributed to the intellectual development of this short communication. KS led on the writing, with RM contributing extensively to the reviewing and revising of the manuscript.

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Competing Interests

The authors have declared that no competing interests exist.

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