



# Collective Views on Extended Producer Responsibility, E-Waste and the Circular Economy

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**ABSTRACT:** Extended Producer Responsibility (EPR) bear that producers organize and pay for treatment and recycling of waste arising from their products at end of life. EPR has been effective in enforcing some aspects of indirect economy. In India, e-waste and packaging waste have formerly been reclaimed (or reused in some cases). India produces nearly 12.5 lakh MTs of e-waste every year, (ASSOCHAM, 2014). India is being used as dumping ground of e-waste by many developed nations. This composition analyzes the challenges of enforcing EPR and provides useful perceptivity for what has worked well and what challenges remain. Relating and addressing these challenges will be pivotal for framing legislation that will move factory and society toward a further circular indirect economy.

**KEY WORDS:** Circular economy, recycling, sustainable development, policy making, e-waste, plastic waste.

## I. INTRODUCTION

One of the crucial points of the indirect frugality approach is to reduce society's dependence on scarce natural coffers by retaining and maximizing the mileage of accoutrements formerly in use and by minimizing the loss of mileage and downgrading of accoutrements, similar as by refurbishing an end-of-life phone rather than rending it to recover raw accoutrements. colourful approaches are employed to this end, including exercise, form, refurbishment, leasing, slinging, capacity sharing, or "dematerialization."

The maturity of products aren't presently designed to be fluently reused or reclaimed, and in numerous cases must be especially treated to remove dangerous materials at end of life. If products are designed to enable and optimize exercise and recovering at end of life, similar as ease of junking of critical factors for exercise, or similar as identification of plastics by polymer type, still, it becomes easier to recover precious factors and coffers and put them to new uses.

This study focuses on the part of Extended Patron Responsibility (EPR). Originally conceived in the early 1990s, EPR transfers the responsibility to pay for collection and recycling of waste from external authorities to directors. It has largely been concentrated on perfecting recycling of accoutrements, which from an indirect frugality perspective is considered the "last resort" if exercise and repair aren't possible. Nonetheless, enabling increased and bettered material recycling and treatment will be important in moving toward a further indirect frugality, formerly products have reached their final end of life and have no farther use. In addition, EPR isn't only a tool used for waste recycling for illustration, in the case of e-waste, EPR collection and recycling targets include products devoted for exercise. Likewise, the intention of EPR is also to give impulses for directors to design their products with end of life in mind and therefore take a "cradle to cradle" approach to product life cycles. This composition discusses the part EPR plays as the India attempts to move toward a further indirect frugality.

Studying EPR perpetration can give a number of useful perceptivity from over 20 times of operation. For illustration, there's still important query on how indirect frugality conditioning at the position of individual companies could be espoused within wider society. The same question was addressed regarding EPR in the late 1990s, where assiduity couldn't reach agreement on voluntary EPR measures as part of the India "precedence waste aqueducts" action, and the India consequently decided to apply obligatory EPR regulations. Eventually, EPR requires important stakeholders involved in enforcing indirect frugality approaches to work together — by particular, directors, retailers, trade associations, consumers, recyclers, cosmopolises, and public authorities.

Collecting unwanted end-of-life products and transubstantiating them back into raw accoutrements involve multitudinous complex specialized, organizational, and logistical challenges. For illustration, the electrical and electronic outfit assiduity has faced particular issues. Lower prices, shorter invention cycles, and briskly technology elaboration are only some of the multitudinous factors that led to adding demand for electrical and electronic outfit over the last decades.



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Increased consumption has led to adding volumes of waste. Disposing waste of electrical and electronic outfit which we will call e-waste — requires special treatment. First, e-waste similar as TVs, cooling appliances, and lighting contain hazardous accoutrements that cannot be land filled or burned. Second, e-waste contains precious coffers that can be recovered and converted into new raw material. Still, the earnings from recovering precious coffers from e-waste frequently don't cover the costs of collection and recycling. This constrained collection and recycling rates in the history, particularly for lower consumable particulars similar as mobile phones.

EPR was also intended to give impulses for directors to design products that are easier to reclaim, with smaller and lower dangerous accoutrements to discard at end of life; therefore, EPR aims to reduce downgrading (loss of mileage) of accoutrements from end- of- life products. In addition, the backing raised through EPR supports bettered collection, recycling, and treatment of end- of- life products. EPR legislation has been honoured as part of the request terrain that will encourage companies to move to a further indirect frugality in which products and services are developed and designed to maximize and indeed ameliorate the mileage of goods (as a first precedence) and accoutrements (formerly products eventually come waste) to reduce the environmental impact from virgin natural coffers birth and manufacturing as well as end- of- life disposal.

## II. SIGNIFICANCE

The paper mainly focuses on how to implement effectively EPR to achieve SDG goals, to reduce the burden of waste disposal & recover rare earth mineral from e-waste to reduce the import bill of country. This paper will highlight the methodology implemented in the world & the scopes that needed to be done. According to a recent study, only 9 percent of the global frugality is indirect (reused or reclaimed into products). The other 91 percent follows a direct model of making and taking waste. This study investigates the part of effective e-waste operation as a pivotal part of a circular economy. The study of literature survey is presented in section III, Methodology is explained in section IV, section V discusses the future study and Conclusion.

## III. LITERATURE SURVEY

### EPR in Europe

EPR was first enforced for packaging in Germany in 1992. Latterly, EU Member States followed suite and enforced EPR for pack- growing waste in their public legislation, transposing the EU directive on collection and recycling targets. After a number of EU Member States also extended EPR to other waste aqueducts, the EU tried to harmonize scores by enforcing Directives on End- of- Life Vehicles in 2000, Waste Electrical and Electronic Equipment (WEEE) in 2003, and Batteries in 2006. Under colourful EU Directives and their Member States' public enforcing laws, the consumer can return any e-waste, packaging, or batteries to an external collection point or to a retail outlet free of charge. Producers are also responsible for financing, collection, recycling, and recovery from collection points onward. Directors don't inescapably have to organize the collection and recycling directly; they're responsible for paying costs. EU EPR directives set minimal conditions for all Member States but allow inflexibility for public transposed regulations to go further. As a consequence, public EPR legislation and enforcement can differ substantially between Member States.

Following the illustration set firstly in the EU for packaging, EPR continues to be applied using a number of different approaches to different waste aqueducts, similar as chemicals, cabinetwork, apparel, tires, paper, and canvases, and implemented throughout the world, for illustration, the United States, Canada, Japan, Taiwan, China, Australia, and multiple countries in South America. Thirty- two countries in the United States presently have some form of e-waste legislation on TVs and observers. There is, still, no regulation at the civil position. Different take- back laws live in the United States for makeup, medicinal, lights, batteries, and some mercury containing- bias.

Under the new “indirect frugality” package, which includes multitudinous measures addressing product recycling and exercise, the EU now plans to harmonize rules for EPR systems to insure harmonious perpetration between EU Member States, consolidating and erecting upon experience gained over the last two decades. This package proposes to strengthen measures introduced under the EU's eco-design working plan covering order, continuity, and recyclability. Legislation and norms are formerly in development in this respect (e., see proposed EU regulation for boxes and displays, as well as the sanctioned accreditation from the European Commission for general material effectiveness standards). The package also proposes a review of the EU Waste Framework Directive to address perpetration of EPR as well as waste collection and recycling targets, a process that's also presently underway between the EU Parliament and Council. A limitation of this approach so far with respect to the indirect frugality is that the EU strategy on waste and the indirect frugality design conditions aren't linked up. Product development and design are addressed independently from end- of- life management, which means a whole life or systems design and invention approach of the type demanded for indirect frugality results



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isn't implicitly encouraged or anticipated. The question remains how to more use EPR to award and incentivize products designed to reduce environmental impact, similar as by reducing dependency on virgin raw accoutrements and using lower dangerous accoutrements.

## IV. METHODOLOGY

This paper follows an exploratory strategy dependent on a private inspection of the ecological and social angles. An exploratory fashion was entered due to non-accessibility of acceptable data. Information gathered through total disquisition of private information linked with the theme that have been distributed in different Government and NGOs' reports, exploration papers, news stories, spots and so on.

### EPR and the Circular Economy

As demonstrated by the achievements of EPR in India, waste collection and recycling have increased, and precious accoutrements have been recovered and diverted from tip and incineration. These achievements have been financed by directors (and eventually the consumer) rather than cosmopolites and their original taxpayers. By furnishing a robust frame of conditions for collection and recycling, EPR has formerly moved entire diligence toward a further indirect frugality, as opposed to a more limited company- by- company approach.

Sustaining these achievements requires a well- performing EPR system. Grounded on our interviews, we set up that despite positive results of EPR so far, a number of challenges remain and have to be addressed, including

- How to ensure proper enforcement of recycling norms,
- What to do about waste with positive net value,
- The part of competition between PROs,
- How to insure impulses for bettered design for recyclability,
- The need for harmonized legislation between India inter state
- Development of a coordinating frame for EPR, and
- How to achieve increased waste collection targets.

Through our interviews, we delved where there may be agreement, ambivalence, or clashing interests between stakeholders on each of these issues. Similar empirical exploration can help exfoliate light on the impact of different policy and perpetration choices on different stakeholders. Our findings contribute to the development of EPR systems that are more effective at landing unwanted end- of- life products that have no eventuality for farther use or form, and that transforming the performing recovered waste accoutrements into applicable coffers. These findings reveal the part EPR can play within the India's new proposed "Circular Economy" package, which will give an overarching policy frame for the unborn development of EPR approaches in India.

### System Stakeholder Analysis

We erected our exploration design as a multiple case study, using interviews with interpreters as main source of data. Our analysis examined the seven main stakeholder groups involved in EPR in the India directors, PROs, waste drivers, national authorities, cosmopolites, trade associations, and clearing houses. We give an overview of these stakeholder groups below.

#### Stakeholders:

We named the stakeholder groups grounded on expert recommendation from two interpreters and two academics. We validated this choice by conducting a stakeholder mapping showing the influences of each group on EPR. We compactly describe our stakeholder groups below.

**Directors** — EPR legislation in India defines directors as all manufacturers, merchandisers, and importers of products falling under the compass of EPR legislation.

**PROs** — PROs organize the collection, treatment, and recovering conditioning under EPR on behalf of directors.60 PROs cover their operating costs by charging a figure to the directors they represent.



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**Waste drivers**— Waste drivers carry out waste collection, transport, treatment, and recycling of waste on behalf of PRO's. Some waste drivers also conduct these conditioning outside the EPR system. This stakeholder group is generally appertained to as "recyclers."

**National authorities**— National authorities are the nonsupervisory bodies responsible for transposing India directives into public legislation and icing targets assessed by the directives are achieved. National authorities are also responsible for enforcement of public EPR legislation.

**Cosmopolises** — cosmopolises are original authorities furnishing and organizing waste collection conditioning within their area. Cosmopolises play a central part in EPR because they admit and thus control utmost of the waste aqueducts.

**Trade associations**—under this name, we group all professional associations that represent a given sector. Our sample includes one association of battery directors, one association of e-waste PROs, and one association of retailers. We always mention the sector being represented when quoting a statement from a trade association.

## Development of a Coordinating Framework for EPR

Numerous stakeholders suppose PROs will continue to play an important part in the collaboration of the EPR systems, particularly in the development and implementation of recycling norms.

We did quite a number of specialized studies and veritably frequently they were paid for by PRO's. In a world without PRO's there would be less concentrate on the environmental issue. If you have a fractured market (i.e., without PROs), who would take care of the recycling norms? ” (Trade Association representing PRO's, e-waste) PROs do also contribute to covering the compliance of directors. Some stakeholders indeed believe that this function will come more important in the unborn

In the future, directors and PROs will have to oversee the request, in the sense of checking and controlling people who are involved in EPR, like waste drivers, retailers, cosmopolises. In the future, I see this control palace function, sort Of radar function to oversee all kinds of operations of other actors on the request. (Patron, e-waste) numerous of the PROs take on the issue of enforcement, so they spot free riders and inform the authorities. It's important that you have this in place. (Trade Association representing PROs, e-waste) PROs bring value to the system because they control waste drivers' work, and insure that the plutocrat of directors is well spent. They've an interest that EPR is dependable and effective. (Waste Operator-waste, batteries, and packaging) PROs also play an important part in raising public mindfulness by backing and conducting information juggernauts, or by making directors more apprehensive of the end- of- life stage of products.

Utmost PROs spend huge totalities of plutocrat for consumer mindfulness raising juggernauts, which would not be if there weren't similar collaborative structures.

PRO's ensure that manufacturers who make the particulars actually consider what happens to them at the end. It focuses everyone's thinking on that and this really helps now as we talk about the indirect frugality, about closing the circle and making sure we reclaim the particulars at the end. PROs are a good way of addressing this.

Several stakeholders stressed that PROs can only achieve these important functions in EPR if they're coordinated by a central clearing house. Else, PROs may start fighting for access to waste, which is mischievous to the EPR system. As long as you have at least two contending PRO's, you need some clearing function. Having such an association which gives each PRO the responsibility of what they've to take back is necessary. There must be an allocation medium to fairly allocate the liabilities among directors. The most important thing is that all the challengers follow the same rules. The ideal of the collaboration centre (clearing house) is to maintain the observation of the rules and to let them be in competition but with clear rules. We control that every player on the request (PRO's) run their business according to the rules that were established by the law and the internal rules of the collaboration centre.

The transition toward a further indirect frugality might also bear the creation of similar central collaboration frame that will insure that a set of rules are applied by the different actors involved and regulate conditioning of contending realities. In any case, it appears that stakeholders agree that PROs give important services, without which directors would find it much more delicate to organize waste collection and recycling, covering all their products in all waste arising across India.



### **How to Achieve Increased Waste Collection Targets**

As there is no separate collection of e-waste, no reliable figures are available as yet to quantify the e-waste generation. In India, most of the operations related to e-waste such as collections, segregation, dismantling, recycling, and disposals are performed manually. In the absence of the adequate technologies and equipment, most of the techniques used for the recycling/treatments of e-waste are very raw and dangerous.

Some stakeholders expressed enterprises that increased collection targets will have high borderline costs and dwindling environmental returns. Collecting the redundant percent of waste might bear significant investment in new collection structure. The unmet target set in packaging waste is veritably hard to achieve, we're presently at 67, and all actors agree that we're reaching the limit. We agree for maximizing recycling, but the borderline cost of recovering the last tons will be veritably high.

When we're adding the collection target by  $x$ , what benefit is that for the terrain? I'm upset that when we get to a certain point, by adding targets we're actually going to increase environmental burden. We're just moving the burden from packaging going into tips to collection structure. This will lead to dwindling returns. Patron, packaging and batteries Stakeholders suggested the most effective ways to ameliorate collection rates would be to stop illegal import of e-waste, encourage and incentivize good disposal, and include e-waste collected and reclaimed legitimately outside of EPR systems in public reporting.

In other country (outside the India) the consumers aren't allowed to put e-waste in the scrap. Mindfulness of citizens is important, but they also have a responsibility to act rightly on their own, this is veritably important. Citizens don't win anything from recycling, piecemeal from the satisfaction of being environmental friendly. But not all people are motivated by this. From our estimates, we suppose that we could increase recycled waste by around 20 with a Pay as- You- Throw system. Megacity-waste, packaging, and club- Terrie's lawmakers should force forces outside of PROs as valid actors for handling waste. The benefit of this is that they're driven by profit, they really capture the substance of the waste, treat it as a resource, which is how it should be seen.

Overall waste collection and recovery targets within the India Waste Framework Directive are presently under review, as planned as part of the India's "Circular Economy" package. The exact position of targets is subject to continued discussion among Indian States concerned that they're precisely designed and set at situations that are attainable.

### **V. CONCLUSION AND FUTURE WORK**

This study presents a number of crucial issues facing EPR in India, and analyses opinions and perceptivity from a wide range of stakeholders. These findings offer sapience into the part EPR can play within unborn Circular Economy programs in India and in the rest of the world. This perceptivity are also useful as EPR is applied to fresh orders of waste accoutrements. The process of public transposition of directives is part of the Indian political geography and cannot be changed. Nonetheless, stakeholders suggested a number of areas that could profit from lesser adjustment, common guidance, and collaboration between members regarding EPR perpetration.

There was a clear agreement among stakeholders about the need for harmonized recycling norms for all recycling conditioning, whether financed under EPR or not. The recast of the waste directive formerly imposes recycling norms on all waste drivers working within or outside EPR. National authorities, still, must ensure that these norms are executed if they're to be effective, similar that EPR systems are suitable to contend on a position playing field with private waste drivers collecting waste outside of EPR systems, grounded on the same treatment and recycling norms. Recycling norms will increase the quality of recycled accoutrements and make it easier to recovered coffers for manufacturing new products. This is pivotal for the transition to the indirect frugality. Unfortunately, enforcement of norms remains low fore-waste, plastic waste and until this is addressed, EPR systems will be undermined by marketable recycling operating at lower norms. This is an issue recyclers have raised as part of the India review of the Waste Framework Directive and as yet it remains unclear if this will be taken up as a precedence issue by India.





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The policy makers of Indian government could give guidelines and stylish practices for helping public authorities with transposition. This is particularly the case for adjustment of PRO conditions, which is likely to be nearly batted between the Indian States as the “indirect Frugality” package is perfected.

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