

Implementing Extended Producer Responsibility for a Greener Economy

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Abstract - Among the many waste management policies introduced by the Government of India, is the Extended Producer Responsibility, which has in recent times been of crucial importance. According to this policy, the producer responsibility is extended to the post-consumer stage of a product's life cycle. The principle of Extended Producer Responsibility was first initiated in the WEEE Directive (Directive 2002/96/EC) across the European Union to tackle the issue of electronic waste (e-waste) which is a result of obsolete electronics and electrical equipments. Exponential growth of the electronic industry over the years has generated a mammoth challenge in the form of obsolete electronics or e-waste. Junk electronics pose a serious threat to health and the environment through toxic pollution. The composition of chemical toxins and other metals in electronic devices pose a serious threat to environmental sustainability. The need of the hour is the stringent implementation of E-waste (Management and Handling) Rules, 2011 which also includes the EPR Principle. However, the absence of an efficient e-waste management system and lack of strict measures is hugely impacting the e-waste scenario in our country. Proper implementation of the policy and constant follow-up can hugely transform the existing scenario and also help us create a greener economy. This paper is an attempt to emphasize the need for effective implementation of EPR and thus the creation of a greener economy.

Keywords: e-waste, extended producer responsibility, green economy, waste management

I. INTRODUCTION

Efficient Management of Waste Electrical and Electronic Equipment (WEEE) is one of the major challenges faced by economies across the world (Hossain et al., 2015). Obsolete electronics are today one of the fastest growing waste forms (Perkins, et al, 2014). Rapid growth in advancement and technology (Bhoi et al., 2014) has resulted in a massive growth in the use and disposal of electronic and electrical products. Product manufacturers and marketers keep attracting consumers with newer versions of products and the consumer of today who is educated (Lu et al., 2016) and more informed replaces those products rather frequently. Hence, the lifespan of electronic products is reducing at a faster pace (Bhutta et al., 2011).

E-waste challenges are manifold due to the complexities of the products and the components. It contains a mix of various ferrous and non-ferrous metals, glass, plastics etc. (Ari, 2016) and chemicals such as chromium, cadmium, mercury, lead, etc. (Needhidasan et al. 2014). The hazardous toxins and chemicals easily percolate to land and water bodies polluting them (Needhidasan et al. 2014) and also affecting crop produce and other organisms. During the processes of treatment and recycling, these toxins can cause danger to health and the environment (Sinha, 2002).

An effective disposal mechanism relies on significant investment and infrastructure along with participation of all the stakeholders (Realff et al., 2004). At present developed economies have far more advanced processes and mechanisms to tackle e-waste dumps. However, in developing countries like India, the scenario is not the same. The e-waste industry is 95 percent handled by the informal sector, (Raghupathy) formed as a result of lack of stringent policies or environmental regulations (Annamalai, 2015). Moreover, the reach of the informal sector (Deshmukh, 2015) to every locality and the dependence of the worker section on the business for their livelihood keep this sector sustained. The formal recycling sector has a comparatively lesser reach and is not easily accessible to the masses.

The government has introduced several rules and regulations including the E-waste (Management and Handling) Rules 2011. Although the efforts are being made and several other promotion programs and awareness campaigns are too conducted, the results are not fairly achieved. The significance of this paper is the emphasis on the urgent need for implementing the extended producer responsibility principle to every possible business enterprise.

II. E-WASTE AND EPR

E-waste refers to those electronic and electrical equipments that become obsolete after usage duration and are eventually discarded by the owners (Dutta et.al., 2016). These are household or business items with circuitry or electrical components utilizing power or battery supply including computers, refrigerators, television sets, air conditioners, cellular phones etc. (Singh et. al., 2014). The Government of India's latest initiative "Make in India" has tremendously impacted the already burgeoning electronic market and also highlighted the manufacturers (EY Report, 2015). As per a report by the Economic Times, the electronic manufacturing in India for the year 2015 was nearly USD 31 Billion and is expected to reach USD 104 Billion by 2020 (Economic Times, 2017). The manufacturer or producers of electronic goods are major stakeholders in the generation of e-waste. They are equally responsible for ensuring proper management of obsolete electronics thereby making sure that an environmental protection strategy is developed (Khajuria, 2015).

The Government of India notified the E-waste (Management and Handling) Rules 2011 in the month of May 2011 and also specified that the rules will be effective from May 2012 only (CPCB). As per rules EPR is "the responsibility of any producer of electrical or electronic equipment, for their products beyond manufacturing, until the environmentally sound management of their end-of-life products (MoEF, 2008). The rule mandates the producer to collect and channelize e-waste generated, by setting up collection centres as well as organizing a system for environmentally sound e-waste management (Bhaskar et.al., 2016). It is also the responsibility of the manufacturer to create awareness about the responsibility undertaken with regards to safe handling and disposal of end-of-life products (CPCB). Moreover, according to Rule 4(9) therein, the producer has to maintain records of e-waste handled or generated and submit the same in form 3 (CPCB).

III. EPR AND SUSTAINABILITY

Sustainability of the environment simply means reducing dependence on natural resources, avoiding its degradation and maintaining it for future times. In terms of waste management, ensuring the environmental quality and sustainability is the responsibility of all stakeholders like the producer, consumers, governmental authorities, etc. with involved participation in responsibilities, techniques, collective actions and goal setting (Azodo et. al., 2016). Electronic waste that gets dumped in massive quantities at informal units has an adverse impact on life and environment (Sepulveda et. al., 2009). Lack of safety and uncontrolled work activities lead to health risks to the crude recycling workers (Ceballos and Dong, 2016). Serious health effects like damages to nervous systems and

internal organs, blood composition, ultimately death (Leung et. al., 2008) can be caused due to exposure to heavy metals and dust at recycling units. Through manual and unscientific recycling methods mainly used in informal units, harmful toxins releases into soil and water resources (Joseph, 2007), enter crops and food cycle and in turn disturb the natural ecosystem.

The concept of Green Economy emerged at the United Nations Conference on Sustainable Development (UNCSD) held at Rio de Janeiro, Brazil in 2012 and has since then been a global agenda. A green economy is low carbon, resource efficient and socially inclusive economy (Kamble, 2016). The carbon footprint from e-waste related activities is caused by primary mining, recycling and refurbishment processes (Eisinger et. al., 2011). Right from the point raw materials are used in manufacturing electronic products, final product use by consumers for home and office purposes, scrap collection by scavengers or *kabadiwalas*, and from there the various shift of e-waste for business and trade purposes; adds to the depletion of environmental resources. Therefore the contribution of each stakeholder in e-waste generation is enormous. The role of the producer or manufacturer in creating a green economy through the EPR framework involves: (a) Developing EEE (Electrical and Electronic Equipments) with a 'green' approach which means reducing use of hazardous components in production, (b) implementing e-waste take back either individually or by collaborating with units and (c) ensuring reuse and recycling of electronic products and thereby controlling e-waste levels (Jaiswal et.al., 2015). As per a study, the extended producer responsibility rules and regulations, technological innovative ability of the enterprise and environmental hazards of products were found to be key factors that influence implementation of EPR (Zheng et. al., 2017).

IV. OVERCOMING CHALLENGES IN IMPLEMENTING EPR

Presently in our country, we have a proper EPR Regulation set forth by the Government. But this alone will not help to overcome the e-waste challenges confronting us. The rules have to be rigorously implemented and followed by the parties involved. According to the rule, the producer has to ensure either individual or combined collection of used electronics. For this there should be a proper channel to reach to the consumers. An arrangement can be considered to either let the consumer drop e-waste at a specified point or the producer provide a pick up facility that would make it convenient for the consumer to return these. As per a study, producers set up collection points at remote locations, which cause problems in transporting e-waste between households and units; Moreover scarce collection quantities and thus reduced recovery compared to recycling costs adds to difficulties in implementing EPR (Anand et. al., 2017). Consumer awareness about EPR is limited

(Anand et. al.,2017) and hence they resort to returning end-of-life electronics to informal scrap collectors who come directly to their households. Major drawback for the producer is absence of efficient collection and recycling infrastructure (Anand et. al.,2017). Following the western methodologies, economic instruments like Producer Responsibility Organization (PRO), E-waste Exchange and Deposit Refund Scheme have also been established. In order to help manufacturers manage EPR (collection and channelization of e-waste generated) they can form a PRO which is a professional organization authorized or financed collectively or individually by producers (Rule 3 (dd) E-waste (Management) Amendment Rules, 2018). A collective mechanism helps to comply with rules or fulfill parameters which are difficult for producers to follow individually.

E-waste exchange is a formal instrument for sale and purchase of e-waste where consumer can deposit scrap and also avail specified amount like the informal scrap sale (Times of India Report, 2016). Deposit Refund Scheme is yet another instrument where the producer charges extra amount at the time of purchase from the consumer and refunds the amount when the same product is returned at its end-of-life (Times of India Report, 2016). This can be considered as a win-win situation as the e-waste channelizing cost is ultimately borne by the producer, however initially charging the consumer ensures their participation upon end-of-life of the equipment. However, as prices of products rise, consumers may opt for other firms not adhering to DRS (Agrawal, 2016). Therefore adhering to compliances along with bringing a transformation in the formal-informal e-waste scenarios can be extremely challenging. According to a report by Down to Earth Magazine, there is lot that India can learn from Norway in the area of e-waste management. The producers as well as importers of e-waste in Norway, roughly 5000 in number, have to be a member (paying membership fee according product type and undergoing in depth verification processes) with a take back company that does the collection and treatment of e-waste. Apart from this, a crucial step done here is the accurate quantification of electronics put into the market by these producers. This makes it easy to collect the same share after the useful end-of-life. Recycling companies in developed countries have a unique bar code tracking system which allows customers to track the different stages of end-processing that the electronic wastes returned by them undergoes (Namias, 2013). A significant change can be brought by the producers and manufacturers of electronic products that can help them easily comply with EPR rules. Introducing unique number tracking system for all types of electronic productions can help the manufacturer track the existing condition of their supplied products; get information when the product is obsolete and also the location where the product is. The Reduce, Reuse, Recycle and Recover

Principle signify achievement of environmental sustainability and conservation of natural resources.

V. SUGGESTIONS

The following suggestions are made on the basis of the study:

- ✓ Adhering to EPR regulations is possible only with the support of all other stakeholders involved in e-waste use and end-processing
- ✓ All stakeholders must be aware of the EPR regulations to willingly participate in it
- ✓ Necessary waste management infrastructure should be made available to manufacturers
- ✓ In the incapacity to arrange individual solutions, the best way is to combine efforts with other manufacturers
- ✓ Channelizing used electronic equipments from consumers to manufacturers is an area that requires significant attention
- ✓ Producer Responsibility Organization and Deposit Refund Scheme can help overcome the problems in implementing EPR
- ✓ E-waste exchange can help in improving the conditions of informal e-waste collection units by formalizing them
- ✓ Possibility of unique number tracking system for every single electronic equipment can help in managing it throughout its life cycle and beyond
- ✓ EPR compliance can help us achieve environmental sustainability and thus build a green economy
- ✓ Reduce reuse recycle and recover principle should be followed to achieve environmental sustainability

VI. CONCLUSION

This paper is an attempt to emphasize the importance of Extended Producer Responsibility and the problems in implementing it in our country. The regulation being framed alone will not be sufficient unless these are practiced effectively. It is necessary to implement the rules to make our environment and natural resources sustainable. This will ensure creation of a green economy.

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