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Electronic Waste in India

Challenge and opportunity

Rising disposable incomes, changing lifestyles, growing penetration of electrical and electronic goods, and increasing replacement rates are driving the generation of electronic waste (e-waste) in India. In the absence of systematic collection, disposal and recycling practices, e-waste management has raised serious environmental and health concerns. The problem is compounded because of the relative lack of awareness about the importance of the safe management and disposal of e-waste.

Of late, there has been growing recognition about the value of recoverable materials contained in e-waste. This has created an opportunity for converting waste to wealth, leading to the establishment of a formal waste recycling industry. Through regulatory reform measures, the central government could help to convert an environmental challenge into a fast growing opportunity.

Market size and current disposal practices

The Ministry of Environment and Forests (MoEF) has classified e-waste products into two categories: information technology (IT) and telecommunication equipment; and consumer electrical and electronics (CEE). These two categories include different products.

Currently, there are no official numbers available about e-waste generation in India. According to India Infrastructure Research, e-waste in India is estimated to be increasing at the rate of about 13 per cent (over the last two or three years), and is currently projected to be over 1 million tonnes (mt).

E-waste generated is estimated using actual sale of products, their average weight, expected life cycle and average replacement rate. Among the three categories of e-waste-generating products, CEE equipment accounts for the maximum quantity of waste generation

(83 per cent), largely due to its high weight content. It is followed by IT equipment (15 per cent) and mobile handsets (2 per cent).

The geographical distribution of e-waste is largely concentrated in three states – Maharashtra, Tamil Nadu and Andhra Pradesh – accounting for over 45 per cent of the total e-waste generated in the country. This is due to their large urban population, higher disposable incomes, healthy rates of state economic growth, and the presence of large numbers of business (commercial and industrial) establishments. Other high-e-waste-generating states are West Bengal, Delhi and Uttar Pradesh.

Among cities, Mumbai, Delhi and Bengaluru are the top three e-waste-generating cities, accounting for over 55 per cent of the total e-waste generated in the country.

E-waste disposal practices vary among different categories of consumers and products. While enterprise customers/large business establishments usually enter into agreements directly with equipment suppliers/vendors for buy-back arrangements, and offer discounts in exchange for their used products, households prefer to hold on to their used electrical and electronic products, pass them on to relatives/friends for further use, or store these in warehouses/storerooms. To dispose of products, the household segment usually sells the used items to local scrap dealers (kabadiwallahs) since they provide the best economic value for such equipment at the end of its life.

Registered brands like LG, Samsung, Panasonic, Dell, HCL, etc. have established collection centres to collect back their used products. The response from consumers, however, has been poor. This is primarily due to two reasons. First, not all manufacturers collect back their used products from the doorstep of consumers. In most cases, collection centres have been established, and consumers are expected to deposit their used products in these centres. Even in regard to the business segments, manufacturers collect back their used products from consumer sites subject to a minimum quantity. Second, the exchange of used products offers almost no monetary benefit, although some manufacturers offer discounts on new products in exchange for used products.

As against this, the informal sector provides the option of collecting waste from the consumer's doorstep. Consumers find it convenient to hand over the waste to informal recyclers in exchange for a monetary benefit (generally based on the weight per unit).

As a result, more than 90 per cent of the total e-waste generated finds its way to the informal scrap market. Of the total amount of

the products that are sold to/exchanged with informal recyclers, a considerable quantity is refurbished, resold or passed on to smaller towns and villages. Only the remaining quantity is recycled. Industry estimates indicate that only about 40 per cent of the annual e-waste generated is available for recycling, of which only 13 per cent is recycled.

Regulatory measures

Over the last year and a half, regulatory action shows that there has been perceptible recognition of the existing gap in e-waste management in India.

CPCB official from the Hazardous Waste Management Division stated that "The E-waste Rules, which came into effect from May 1, 2012, define the mechanisms for regulating the generation, collection, transportation, recycling, and disposal of e-waste. It puts the onus for collection and channelisation of e-waste generated at the end of the products life on producers/manufacturers. The rules are likely to strengthen the role of formal recyclers in the e-waste management cycle because producers/manufacturers will be required to channelise their e-waste to registered e-waste dismantler/recyclers. This will also pave the way for the establishment of new collection centres and of dismantling and recycling units. As per these rules, the bulk consumers are responsible to ensure that the e-waste generated by them has to be channelised to authorised collection centres or registered dismantler or recycler or is returned to the producer"

Much of the impact of the E-waste Rules will depend upon their implementation, enforcement and monitoring. The most immediate impact will be the additional cost incurred by companies in setting up collection/recycling systems for those that did not have such systems in place. For companies that had already set up such systems as part of their corporate social responsibility, it will level the playing field.

The formal sector recyclers will gain prominence, although not completely at the cost of the informal sector recyclers, particularly because large organisations and establishments will have to dispose of their e-waste (computers, laptops, printers and other equipment) only to authorised e-waste recyclers. This will provide opportunities for players in the informal sector to enter into formal arrangements with players in the formal sector. After the formulation and adoption of the E-waste Rules, the number of authorised recyclers has increased from 47 in 2011 (September) to 77 in 2012 (July). More than 21,750 tonnes of capacity has been added through these recyclers, signifying a growth of about 10 per cent in the last one year.

E-waste products and replacement rate

Product	Assumed replacement rate
Desktops/Laptops	4 years
Televisions	5 years (with a lag of 2 years)
Refrigerators	8 years (with a lag of 4 years)
Washing machines	8 years (with a lag of 4 years)
Mobile handsets	3 years

Sources: MoEF; India Infrastructure Research

Market opportunities

There are immense market opportunities across the chain – collection, dismantling, segregation, recycling and recovery – for e-waste management. Products such as computers, mobiles and television sets have high recoverable value, while others such as refrigerators have low recoverable value. Precious metals such as gold, silver and palladium are recoverable to the extent of 99 per cent. Desktops, mobile handsets and television sets together contributed over 80 per cent of the potential value of total extractable material, amounting to over Rs 56,000 million in 2011-12.

While the current crop of recyclers are focused on the dismantling and segregating exercise, with only three players capable of extracting valuable materials from e-waste – Attero Recycling, TES-AMM, and Eco Recycling Limited. Other players export the materials to Belgium-based Umicore and Singapore-based SPM Refinery Pte Limited. Going forward, domestic recycling units will gradually increase their capacity and enhance their technical expertise to recover valuable materials.

To conclude, the steady increase in the generation of e-waste, India's unmatched capacity to handle e-waste and the right policy support from the government will lure investments into the sector, which had hitherto been ignored. States such as Kerala, Tamil Nadu and Madhya Pradesh are trying to catch up in complying with the E-waste Rules. The state pollution control boards are receiving increasing numbers of applications for the setting up of new recycling units. The true impact of the implementation of the E-waste Rules will become more evident in the coming months. Finally, interest in the sector is increasing and the outlook for future growth looks positive.

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