

# How E-waste is perceived in contemporary urban India: An in-depth Analysis of publics' understandings and awareness

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Keywords: E-waste, Public Understanding of E-waste, Urban India, Management, Bangalore, Disposal Behaviour, Awareness.

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Contemporary urban India is engrossed with massive challenges concerning environment and resource-friendly management of Electronic waste (E-waste) or Waste Electrical and Electronic Equipments (WEEE). E-waste signifies one of the major and fastest-growing global pollution problems. With growing consumer dependence on electrical and electronic equipments (EEEs) in every walk of life coupled with the information technology boom, E-waste becomes a significant waste stream both in terms of quantity and toxicity. Unprecedented growth of India's consumer electronics market (including the IT sector) leads to an increasing penetration of electrical and electronic equipments into the country. Once obsolete, these equipments become E-waste, contributing significantly to the country's toxic waste stream. E-waste contains considerable portions of hazardous chemical toxicants and precious metals. While precious metal components (including gold and silver) present in E-waste provide significant incentives for recycling, hazardous chemicals (mainly in the form of persistent organic pollutants and heavy metals) pose serious threats to the human health and environment if not meticulously managed. Thus, the already existent solid waste management problem in India has been aggravated manifold with the advent of domestically generated and illegal imported E-waste. Managing responsibly this considerable volume of E-waste is a mammoth task. India is already an E-waste hub. It has been estimated that annually 480,000 tonnes of E-waste is domestically generated and 50,000 tonnes of WEEE is dumped into the country by several industrialized nations. The recent trend of rapid obsolescence due to technological developments/innovations and growing incentives for consumption decline the functional life of EEs and contribute to the ever-increasing volume of WEEE in India. A joint report by United Nations Environment Programme (UNEP) and United Nations University (UNU) predicts that by the year 2020, a growth of 500 % would be observed in India with respect to E-waste from old computers alone. During the same time, an overwhelming 18 times increase in E-waste production would be observed from discarded mobile phones in the country than its 2008 level. The Indian government's recent policy initiatives directed towards the development of an 'information society' or a 'smart society' with initiatives such as 'Digital India', 'Make in India' etc will further boost the EEs surge in the country and pose serious challenges to sustainable WEEE management initiatives.

This paper is an attempt to evaluate the current E-waste management practices, with special emphasis on consumers' disposal behaviour, perception and awareness, in two emerging Indian cities- Bangalore (popularly known as the 'Silicon Valley of India') and Pune. Semi-structured interviews were carried out with a wide range of respondents from four different sectors: 1) IT and Electronics, 2) Banking, 3) Education and 4) Households. Thus, both 'bulk' and 'individual' consumers of EEs and producers of WEEE are tried to be addressed as a part of our study and a holistic view on the current WEEE associated problems in urban India are tried to be attained in detail. We attempted to address queries such as: What are the different modes of WEEE disposal practiced by the consumers of these four sectors? What are the different factors that affect the consumers' behaviour towards WEEE disposal? Does awareness level among consumers shapes their disposal behaviour? What are the different ways or means consumers usually adopt to minimise the problems of WEEE? Is there any socio-cultural/gender difference in WEEE disposal behaviour? Considering the theoretical frameworks of 1) Conspicuous Consumption, 2) Theory of Planned Behaviour and 3) Throw-Away Society, a conceptual layout of 'Public Understanding of E-waste and its Disposal' from Science and Technology Studies (STS) perspective has been prepared in order to analyze the E-waste crisis in urban India from its roots.

The results of our study illustrate that E-waste management practices are still in its infancy in Bangalore. Majority of the respondents are either unaware or ignorant towards responsible management of WEEE. Although the city has initiated some formal WEEE management initiatives, information on these are yet to reach the masses. Majority of WEEE are still stored at various sectors due to lack of knowledge about their management. Further, socio-economic connotations such as considering WEEE as 'valuables', reluctance to dispose of WEEE without sufficient financial incentives, changing hands of WEEE from one person to another before finally getting discarded, dominance of a labour intensive 'informal' WEEE recycling sector etc have made the whole WEEE

management a tedious task in India. With our experiences in the city of Bangalore, it emerges that India's WEEE management problems have their own specific characteristics. The diverse socio-cultural, economic, political, technological, infrastructural and environmental considerations among its citizens pose serious challenges in formulating one, widely accepted and explicit WEEE management strategy. It is not possible to effectively imitate and reproduce a foreign country's WEEE management experience and implement it in Indian context. Therefore, it is essential to analyse in-depth the consumers' attitudes and willingness towards sustainable management of WEEE in the country. Also, equally essential are creating mass awareness campaigns on WEEE, its detrimental environmental/human health repercussions, responsible purchase of EEEs to prevent rapid obsolescence and so on. We argue that consumers' disposal behaviour and awareness are central to any successful WEEE management interventions without which no reuse/recycling efforts would be fully functional and satisfactory, no pollution abatement initiatives would be entirely successful, no policy instruments could be satisfactorily implemented, no detrimental health/environmental consequences of WEEE could be addressed sufficiently and chaotic dubious WEEE management processes would progress towards an erratic fate. This calls for a locale-specific, vigilant and comprehensive WEEE management strategy and policy in India.