

E-Waste Generation in Bangladesh: Present and Future Estimation by Material Flow Analysis Method

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Abstract : Last few decades have witnessed a phenomenal rise in the use of electrical and electronic equipment globally in our everyday life. As these items reach the end of their lifecycle, they turn into e-wastes and contribute to the waste stream. Bangladesh, in conformity with the global trend and due to its ongoing rapid growth, is also using electronics-based appliances and equipment at an increasing rate. This has caused a corresponding increase in the generation of e-wastes. Bangladesh is a developing country; its overall waste management system, is not yet efficient, nor is it environmentally sustainable. Most of its solid wastes are disposed of in a crude way at dumping sites. Addition of e-wastes, which often contain toxic heavy metals, into its waste stream has made the situation more difficult and challenging. Assessment of generation of e-wastes is an important step towards addressing the challenges posed by e-wastes, setting targets, and identifying the best practices for their management. Understanding and proper management of e-wastes is a stated item of the Sustainable Development Goals (SDG) campaign, and Bangladesh is committed to fulfilling it. A better understanding and availability of reliable baseline data on e-wastes will help in preventing illegal dumping, promote recycling, and create jobs in the recycling sectors and thus facilitate sustainable e-waste management. With this objective in mind, the present study has attempted to estimate the amount of e-wastes and its future generation trend in Bangladesh. To achieve this, sales data on eight selected electrical and electronic products (TV, Refrigerator, Fan, Mobile phone, Computer, IT equipment, CFL (Compact Fluorescent Lamp) bulbs, and Air Conditioner) have been collected from different sources. Primary and secondary data on the collection, recycling, and disposal of the e-wastes have also been gathered by questionnaire survey, field visits, interviews, and formal and informal meetings with the stakeholders. Material Flow Analysis (MFA) method has been applied, and mathematical models have been developed in the present study to estimate e-waste amounts and their future trends up to the year 2035 for the eight selected electrical and electronic equipment. End of life (EOL) method is adopted in the estimation. Model inputs are products' annual sale/import data, past and future sales data, and average life span. From the model outputs, it is estimated that the generation of e-wastes in Bangladesh in 2018 is 0.40 million tons and by 2035 the amount will be 4.62 million tons with an average annual growth rate of 20%. Among the eight selected products, the number of e-wastes generated from seven products are increasing whereas only one product, CFL bulb, showed a decreasing trend of waste generation. The average growth rate of e-waste from TV sets is the highest (28%) while those from Fans and IT equipment are the lowest (11%). Field surveys conducted in the e-waste recycling sector also revealed that every year around 0.0133 million tons of e-wastes enter into the recycling business in Bangladesh which may increase in the near future.

Keywords : Bangladesh, end of life, e-waste, material flow analysis

Conference Title : ICWM 2019 : International Conference on Waste Management

Conference Location : Copenhagen, Denmark

Conference Dates : June 11-12, 2019