Electronic waste recycling challenges and new trends.

Santoso Wibowo*

Department of Environment Engineering and Technology, Central Queensland University, Melbourne, Australia

Growth in the IT and telecommunications sectors has led to a dramatic increase in the use of electronic devices. Faster upgrades of electronic products force consumers to dispose of old electronic products very quickly, which in turn adds a stream of waste to the waste. The growing e-waste problem requires more emphasis on e-waste recycling and better waste management. E-waste or e-waste is created when electronic and electrical equipment is no longer suitable for its intended purpose or has expired. Examples include computers, servers, mainframes, monitors, CDs, printers, scanners, copiers, calculators, fax machines, battery cells, mobile phones, transceivers, televisions, iPods, medical equipment, washing machines, refrigerators, air conditioners (used). These devices are rapidly being replaced by new models due to rapid technological advances and the production of new devices. This has led to an exponential increase in waste generation. People tend to switch to newer models, and product life is shortened [1].

E-waste usually consists of metal, plastic, cathode ray tubes (CRTs), circuit boards, cables and more. Valuable metals such as copper, silver, gold and platinum can be recovered from waste if scientifically treated. The presence of toxic substances such as liquid crystal, lithium, mercury, nickel, polychlorinated biphenyls (PCBs), selenium, arsenic, barium, brominated flame retardants, cadmium, chromium, cobalt, copper and lead treats rudimentary waste [2]. Sometimes very dangerous technology is disassembled and roughly processed. Waste poses tremendous risks to people, animals and the environment. The presence of heavy metals and highly toxic substances such as mercury, lead, beryllium and cadmium poses a significant environmental threat, even in trace amounts.

Consumers have better waste management. Initiatives such as Extended Producer Responsibility (EPR). Designed for the Environment (DfE); Reduce, Reuse, and Recycle (3R), technology platforms that connect the market to promote the circular economy, allow consumers to better recycle and recycle waste. It is intended to be disposed of and encouraged to adopt sustainable consumption habits. Waste management is prioritized in developed countries, but in developing countries due to the full adoption or imitation of waste management in developed countries, and some related issues such as lack of investment and technically skilled personnel. It gets worse. In addition, there is a lack of infrastructure and appropriate legislation, especially dealing with e-waste. International treaties, such as the Basel Convention, aim to reduce and regulate the movement of hazardous waste between nations. Despite the agreement, the illegal transportation and dumping of e-waste continues. It is estimated that 50 million tons of Waste will be generated worldwide in 2018. Half of these are personal devices such as computers; monitors, smartphones, tablets and TVs, and the rest are large appliances and air conditioning devices [3].

Although 66% of the world's population is subject to the Electronic Waste Act, only 20% of the world's electronic waste is recycled each year. That is, 40 million tons of electronic equipment are either incinerated for resource recovery or illegally traded and processed in a degraded manner. In the United States alone, more than 100 million computers have been scrapped and less than 20% are properly recycled. China disposes of 160 million electronic devices each year. In the past, China was considered the largest landfill in the world. Hundreds of thousands of people have the expertise to dismantle e-waste. Efficient disposal of e-waste quickly turned out to be a major Challenge. If ignored, it causes catastrophic environmental turmoil in addition to serious health problems. This paper provides insights into the status of E-waste management in Bangalore. It is based on intensive fieldwork supported by focus group discussions, participatory observations, and interviews. This paper also documents formal/informal institutional management processes, bad practices that have affected health and urban ecology, and guidelines for improved E-Waste management [4].

References

1. Salhofer S, Tesar M. Assessment of removal of components containing hazardous substances from small WEEE in Austria. J. Hazard Mater. 2011;186:1481-8.

2. Ismail H, Hanafiah MM. A review of sustainable e-waste generation and management: Present and future perspectives. Journal of environmental management. 2020;264:110495.

3. Perkins DN, Drisse MN, Nxele T, et al. E-waste: A global hazard. Ann Glob Health. 2014;80:286-95.

4. Adanu SK, Gbedemah SF, Attah MK. Challenges of adopting sustainable technologies in e-waste management at Agbogbloshie, Ghana. Heliyon. 2020;6:04548.