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E-WASTE STATUS IN URBAN AREA OF TANZANIA: A POLICY PERSPECTIVE

Summary

Rapidly expanding the use of Information and Communication Technologies (ICTs) across the world brings high demand for electric and electronic equipment (EEE) even in remote areas. This makes electronic waste more rapidly than in the years of the 1900s. In Tanzania, the 2012 Population and Housing Census (PHC) indicated that, six in ten households (61.6 percent) owned a radio, and 63.9 percent of households owned a mobile or land line phone. In addition, 15.6 percent owned television, 10.0 percent owned electric irons and 6.8 percent owned refrigerators. The 2012 PHC report also indicated that, about 2.7 percent of households owned a computer or a laptop and 4.7 percent of households had access to internet. This policy brief explains the status of e-waste in urban areas of Tanzania. It highlights the policies, laws, and legislation, the management methodologies, and challenges for e-waste management. The policy recommends that there is a need for a stand-alone e-waste policy and regulations, the presence of community awareness programs, and capacitating the local government in terms of finance and technologies for e-waste management.

Introduction

Early 21st century modifications of Information and Communication Technology transform the world spheres of life through the use of communication gadgets, electronic commerce, electronic banks, electronic government, telemedicine, and other electronic health, among others, coupled with changes in cities and rapid urbanization (UNSEAR, 2010). The World Information and Telecommunication Union (ITU) illustrates that the combination of several issues, such as unexpected population growth, rural-urban migration, human capacity growth, economic growth, modified lifestyles, and the highly globalized world as a result, it is anticipated that developing countries will triple their electronic waste production over the next few years (UNSEAR, 2010).

Globally, the annual consumption of electric and electronic equipment (EEE) up to 2016 was around 60 metric tons, and in developing countries consumption grew rapidly by 10 to 25 percent annually. E-waste is generated at a rate of around 44.7 million tons annually worldwide, equaling 6.1 kilograms per inhabitant annually (GEM, 2016). The United States of America is the leading producer of e-waste in the world, producing about 3 million tons of e-waste per year, followed by China's 2.3 million tons annually despite having banned e-waste imports. China remains a major e-waste dumping ground for developing countries (Schlueper *et al.*, 2009).

Tanzania seems like the other countries that have many urban areas in the world that are also victims of the e-waste problem to a large extent. Magashi and Schlueper (2011) showed that e-waste in Tanzania is increasing due to the fast adoption of electronics in all facets of life. For instance, Tanzania's suspicious growth in the 2010s has

improved personal disposable income, which in turn, has resulted in many people owning ICT devices.

The national e-waste statistics report of Tanzania (NEWSR, 2019) states that e-wastes generated over the years in the country, from about 2,000 tons in 1998 to 35,800 tons in 2017, are disposed of in various areas and continually degrade the environment.

Concerning the national context of e-waste, the Guidelines for Management of Hazardous Waste of the Vice President's Office, 2013 estimated that the total e-waste generated was between 18,000 and 33,000 tons annually. The unavailability of data makes the e-waste problem largely unknown in mostly urban areas in Tanzania, which impedes the country's programs aimed at better management of e-waste and also thwarts efforts in monitoring SDGs (URT, 2013).

Urban areas in Tanzania are the most vulnerable areas to the issue of e-waste due to their population making high amounts of waste per day (Mwakyusa, 2010). The study conducted at Dar es Salaam in 2014 showed that more than 0.56 kg of waste was produced per household, which is a higher rate than previous, and also the collection of e-waste still looks poor due to some mentioned factors such as poor cooperation of waste producers, shortage of facilities for waste collection, and settlement arrangement challenges, which make collection fail to reach even 90 percent of management.

This policy brief intends to illustrate the e-waste status in urban areas of Tanzania.

Policy and Legal status on e-waste issues in Tanzania

According to the study conducted by TCRA in 2012, there are no clear policies and acts specifically for electronic waste management despite the fact that some policies and acts aim to protect the environment and human health among policies and acts relevant to e-waste management as follows:

- ❖ **The sustainable industrial development policy of 1996 to 2020**, This policy promotes efficient use of resources and recycling activities as a way of achieving sustainable development.
- ❖ **National environmental policy of 1997**, The policy emphasizes health-related programs such as the separation of toxic or hazardous wastes and proper e-waste management to reduce pollution amounts in the environment and reduce risks to human health.
- ❖ **National water policy of 2002**, promotes prevention of water resources pollution and this emphasizes efficient e-waste management system for the pollution of water bodies' prevention.
- ❖ **National energy policy of 2003**, this policy make effort on the use of energy efficient equipment's through this on other hand promote the use of electronic devices energy efficient.
- ❖ **National health policy of 2007**, policy encourage the safe disposal of hazardous waste and e-waste as hazardous waste for its nature policy emphasizes the presence of hazardous waste containers at the areas.
- ❖ **National ICT policy of 2003**, policy promotes the establishment direct relationship with producers and designers of ICT resources this aimed to make e-waste recycling activities easy because of the mode of EEE produced.

On the hand of laws, there is no clear law dealing with e-waste but e-waste management is addressed within the Environmental Management Act, which is the main legislation for environmental protection in Tanzania. EMA was the basis for the formation of other acts, such as solid waste and hazardous management acts. EMA sets out a legal basis, and provides an obligation to undertake an environmental assessment, prevention and control, and waste management but is not clear on e-waste

management despite including collaterally in hazardous waste management.

E-waste generation in urban areas of Tanzania

Research carried out by Michael Y. and Amir K. and their Environmental Resources Consultancy team in 2016 in major urban areas of Tanzania, which were Mbeya, Mwanza, Tanga, Dodoma, Moshi, Mtwara-mikindani, Lindi, and Arusha showed that the collection capacity of urban areas authority not lined with the production of waste in the area, the study showed Moshi and Tanga collect 90% of waste as highest e-waste collector and Dodoma and Mbeya collect 32.8% and 35.0% respectively (ERC, 2016).

- ❖ In Tanga city collect solid of 185.3 tons/day and 3% of waste were e-waste versus collection capacity of 166.8 tons/day equal to 90% and recycling capacity of 14.09 tons/day, this makes 18.5 tons/day not collected (Michael and Amir 2016).
- ❖ In the city of Arusha generated about 550 tons/day of waste average of 1.08 kg/person/day and e-waste is 5% of total, collection capacity of about 302 tons/day equal to 54.8% with a 16% recycling capacity, means 248 tons not collected.
- ❖ In Mwanza city generate 338 tons/day and e-waste is 5.2% of total waste collected, the city collection capacity about 227 tons/day equal to 67.2%, makes 110.9 tons remained at the streets without collected.
- ❖ Mbeya generated waste 400 tons/day average of 0.7 kg/person/day versus collection capacity of 140 tons/day equal to 35% and recycling capacity is unknown, this makes 260 tons/day uncollected.
- ❖ Moshi municipality generated about 225 tons/day and approximately to be 1.2% of total wastes, while collection capacity is 203 tons/day equal to 90% and recycling capacity unknown, this makes 22 tons/day

uncollected and dumping within environment.

- ❖ In Dodoma city populated by 507,350 people generate 305 tons/day of wastes and approximately 0.6% is e-waste versus collection capacity of 100 tons/day equal to 33% and make 205 tons/day dumping at surrounding environment irregularly.
- ❖ In Lindi municipality of population of 78,841 generate about 23 tons/day of waste and e-waste approximately 0.08% of total waste versus 11 collecting capacity and recycling tons is unknown, this makes 12 tons/day uncollected.
- ❖ And the lastly, Mtwara-mikindani municipality populated by 108,299 people solid waste generated about 97.5 tons/day average of 0.7 kg/person/day and e-wastes approximately of 0.3% of total waste and the collection capacity is 59.0 tons/day equal to 60.5% and makes 39.5% of solid waste remained at the settlements without collected.

Management techniques of e-waste in urban areas of Tanzania

Statistically, urban areas in Tanzania are the major e-waste producers compared to rural areas (URT, 2019). The management techniques that reduce pollution of e-waste in an urban area in Tanzania are as follows:

- ❖ **Land fillings**, among of the techniques used specific area selected and trenches excavated and the e-wastes dumping on the pits and the final buried by covering such pits by layers of the earth.
- ❖ **Incineration**, waste collected putting on incinerator which burn waste by the temperature ranging between 900 to 10,000 degrees and makes changes its shape and sometimes ash remaining.
- ❖ **Recycling**, after life time of e-equipment's end up, collected and passing the process of make minor improvement then bring again

on the uses cycle as the new product this reduce the dumping waste.

- ❖ **Open waste dumping**, common management technique used, collection point established and then specific cargo passing to collect on points then going dumping on the specific area isolated special. Area being far away from the human settlements.

Challenges facing e-waste management in urban areas of Tanzania

Kironde, (2000) and Kaseva, (2005) argued that in Tanzania's urban areas, more than 50 percent of the solid waste is not collected by the local government authorities. Theodora (2012) argued that 30 to 50 percent of the solid waste remains uncollected and hence dumped around the urban settlements. This implied their challenges in the collection and recycling of e-waste and all waste. The following are the challenges facing e-waste management in urban areas of Tanzania as follows;

- ❖ The lack of e-waste data due to sparse and inconsistent estimates has led to a general lack of awareness of the issue in the nation. This interferes with the nation's initiatives for improved e-waste management and the oversight of the Sustainable Development Goals (SDGs)
- ❖ There are no alternative e-waste management methods, only dumping waste at collection points. This makes the point of underperformance and e-waste spread around the settlements.
- ❖ Lack of sites designed for waste collection, transfer stations, and sanitary landfills. This makes sites less than the actual demand of settlements, hence underperformance.
- ❖ Unaffordable supportive infrastructures such as vehicles, one vehicle collecting waste of more than one street per day hence underperformance or fast damage.
- ❖ Community ideological differences about e-waste management, others to deny

collection costs and dumping at open spaces, and also a lack of knowledge specifically on e-waste management makes them treat e-waste as other solid waste.

- ❖ Poor settlements planning made collection vehicles fail to reach every household due to the presence of pathways and no roads. This was mostly in urban areas where there were some areas not planned during plots' sales.

Recommendations

- ❖ Training should provide the population with reduction strategies at the family level
- ❖ Adoption of stand-alone policy and laws for e-waste
- ❖ Tracking e-waste in urban areas
- ❖ Innovation and adaptability of new e-waste management methods
- ❖ The central government should continue to build the capacity of local government authorities in terms of financial and innovative suitable technologies that can help reduction of e-waste production.

Conclusion

Population increase and technological advancement are the main causes of rapid waste production. There are several policies and regulations which aim at protecting the environment and human settlements, yet there is no clear e-waste regulation at hand. The absence of a clear e-waste management policy, lack of e-waste data, the usage of outdated e-waste management methods and tools for waste collection, poor collection infrastructure, the ideological difference among community members, and unplanned settlements are among the obstacles to e-waste management. Proper stand-alone e-waste policy and regulation and community awareness programs will help to reduce the problem in urban areas of Tanzania.

For Further Reading

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