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Electronic Waste Management in Zimbabwe: A Slow Onset Public Health Disaster

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Abstract

The unprecedented growth in electronic industry has witnessed generation of tones of electronic goods in the world. The rate of technological change created an appetite for a replacement behavior among consumers leading to stockpiles of electronic waste. However, because of the cost associated with safe management of the electronic waste, little attention is put on it, hence a hazard to the community. The unprecedented rising global demand for electronic products has swiftly transformed to a major risk and hazard to the communities. The piecemeal application of e-waste management law increases the risk to the communities as matters of electronic waste risk to the environment are treated as soporific. In Zimbabwe, there is fragile interest in electronic waste management as evidenced by lack of electronic waste law. Both ignorance and lack of interest has affected electronic waste management in Zimbabwe putting communities at risk. Despite its invisible risk to human health, discourse in electronic waste risk features very little in health, environmental management, as well as disaster management strategic plans minimizing the dangers of e-waste to the public. This paper examines electronic waste management in Zimbabwe and provides practical recommendations for reducing the invisible electronic waste hazard in Zimbabwe.

Keywords: Electronic waste, health risk, environmental risk, regulation, monitoring, e-waste management

1. Introduction and background

The late twenty first century has witnessed an unprecedented growth of the electronic industry in the first world. To date, the electronic industry remains the fastest and the largest growing industry globally. Recent global policy changes have precipitated an influx of Multinational Companies (MNCs) to set up electronic research and development centers and manufacturing plants globally. This has provided an impetus in the growth of their economies culminating into the rapid rise in the consumption rates of electronic products in the world. The rapid economic growth, the sustained availability, and access to electronic goods in the market gave birth to the rise of demand to replace household electronic items with newer models. The net effect of this replacement behavior is a high rate of obsolescence culminating into the ever-growing piles of electronic waste globally. Evidence indicate that in 2008 alone USA generated 3.16 million tons of e-waste. In addition, of this amount only 13.6% was recycled (EPA, 2008)

Safe management of electronic and electrical waste is becoming a major problem for many countries (Herat and Agamuthu 2012; Pinto, 2008). Zimbabwe is one of the countries which have no known official strategy for managing electronic waste. Just as in many other southern African countries, waste has not been given sufficient attention as a hazard in Zimbabwe (Taghipour, 2012). This paper examines the management of electronic waste in Zimbabwe. It provides strategies that may be resorted to improve the electronic waste management in Zimbabwe. It also explores how stakeholders may take active roles in the management of electronic waste in Zimbabwe.

2. Definition and Taxonomy of electronic waste

Electronic waste is a term used to describe old, end of life electronic appliances such as computers, laptops, TVs, DVD players, mobile phones, mp3 players that have been disposed by original users (Swerts, 2006). Sinha (2007) attempts a taxonomy of e-waste and established three major heads which dovetail white goods, comprising of household appliances which include air conditioners, dishwashers, refrigerators and washing machines; brown goods which comprise of TVs, cameras, etc grey goods which include computers, printers, fax machines, scanners. The gray goods are more difficult to recycle due to their toxic composition (Sinha, 2007).

3. E-Waste, a growing invisible health hazard in in the world

Research signals a growing concern on the production and management of electronic waste. Evidence indicates that in 2008 alone USA generated 3.16 million tons of e-waste. Moreover, of this amount only 13.6% was recycled (EPA, 2008). The reports identify United States and China as the world's largest producers of electronic waste (CBS, 2015, ITU, 2011, E-Waste Balde et al, 2015. CBS, 2015,) In 2012, USA produced 20 Billion pounds of electronic waste and the majority was sent to landfills. Projections indicate that by 2017, the volume of discarded e-products globally is expected to be 33percent higher than the 2012 levels, (SBC, 2011).This is insignia of a growing invisible hazard to communities.

4. Global and regional distribution of electronic waste

The Basel Action Network, which works for prevention of globalization of toxic chemicals, has stated in a report that 50 to 80 per cent of e-waste collected by the US is exported to India, China, Pakistan, Taiwan, and a number of African countries (GPI, 2009). The global production of e-waste is estimated at 41.8 million metric tons in 2014 and it is forecasted to increase to 50Mt in 2018 (Balde, et al, 2015, p8). Just like in any other developing countries, electronic waste is a growing concern in SADC countries. In 2008, an assessment by e-Waste association (eWASA) raised concerning statistics on the state of the electronic waste in South Africa. It noted that the increasing consumption of electronic equipment has led to a rapid growth of e-waste posing health risks (Khalema, 2015). In Africa alone estimates of electronic waste indicate a total of 1.9Mt. Egypt (.037Mt), South Africa (0.35Mt), and Nigeria (0.22Mt) form the three top generators of electronic waste in Africa, (Balde, et al, 2015 p80). This is insignia of a growing hazard in Africa.

5. Feeble E-Waste regulatory Frameworks

The unprecedented rising global demand for electronic products has swiftly transformed to a major risk and hazard to the communities (Paris, 2009). According to the United Nations, electronic waste has become the fastest growing waste stream of the 21st century (UNEP, 2005).Research indicates no global consensus on the legal definition of electronic waste(Lungren,2012). As a

result, this runs the risk of every country coming up with its own definition and list of e-waste products. Consequently, there exist great variations on the scope of electronics that are regulated as electronic waste. The EU Waste Electrical Equipment Directive of 2003 guides European Union countries in the management of e-waste. In Canada-waste, regulation is not done at national level but is informed by voluntary guidelines set by the Canadian Council of Ministers of the environment (CCME, 2005).Similarly; United States has no federal e-waste policy just like Canada. In Cameroon, just as in Zimbabwe, no legislation exists to inform e-waste management (Tsamo, 2014). Thus, it is not surprising that most countries do not have e-waste regulations or laws. In Africa, South Africa has made important developments towards regulation of e-waste. The 2008 assessment published by e-Waste Association of South Africa (e-WASA) revealed concerning statistics on the state of E-waste in South Africa. This culminated in to the creation of a new law and a technical strategy for dealing with e-waste in South Africa (Khalema, 2015).However even in those countries which have created laws to regulate electronic waste management, Compliance is difficult to assure as it frequently runs against economic incentives (Sthiannopkao and Wong,2013).

Global regulatory response to e-waste exists in the form of The Basel Convention, the Bamako Convention, and the Waingani Convention. These regulatory instruments attempt to inform management of e-waste. According to Owlou (2012), the Basel *Convention* is the universal normative framework on the transboundary movement of wastes. The convention attempts to regulate waste movements by imposing restrictions to reduce transnational movement of wastes and to provide incentives for effective waste management (Olowu, 2012, p70). However, it must be noted that although the US is a signatory to the *Basel Convention on the Control of Transboundary Movement of hazardous Wastes and Their Disposal*, it has not ratified the treaty to date. Dreher and Pulver (2008) assert that the Basel Convention and the way 'waste' is defined may explain this refusal. This weakens the effectiveness of the convention.

Several issues can be derived from the inherent weaknesses of the convention. Article 4(2) (b) provides that shipments of waste must be reduced to the barest minimum, consistent with environmentally efficient standards of management. Furthermore, while Articles 4(1) and 6 of the treaty provides that prior notification and informed consent must be established between an exporting state and an importing state prior to waste exportation, these provisions are often breached as states often circumvent the bureaucratic requirements of the treaty. The reason for the breach is that the treaty does not specify what constitutes 'sound waste management' and the treaty omits to prescribe explicit liability for non-compliance with its provisions, (Olowu, 2013, p70).

The continued dumping of hazardous waste in African states drove African countries to adopt the Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa in 1991. This was a protest against the persisting dumping of hazardous and nuclear wastes in the African countries which the Basel Convention was perceived not to have effectively addressed (Wenster-Main, 2002). Thus an important addition was made by the Bamako Convention in its definition of 'hazardous waste' and included hazardous substances 'banned, cancelled or refused...in the country of manufacture. It must be acknowledged that the Bamako Convention offered more stringent restrictions to transboundary movement of waste, banned all importation of waste into African states and criminalized such acts in unequivocal terms. The shortfall of the Bamako was that it did not prescribe the enforcement and monitoring mechanism. It only provided that states to adopt domestic legislation imposing strict, unlimited joint and individual liability on generators of waste. However, twenty years after its adoption, there are only 30 signatories indicating lack of political will by the remaining African states to deal with the management of hazardous wastes decisively.

Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region ('the Waigani Convention') was opened for signatures in 1995 in Waigani,Papua New Guinea. The Waigani Convention did not make any effort to introduce any landmark regulatory framework against the menace of hazardous waste(Michael, Hamel-Green, 'Waigani Convention - A Leaky Treaty', available at http://www.klimaatkeuze.nl/wise/nl/node/4611.) There is no doubt that the Waigani Convention emerged as a radically weaker treaty in its prescriptions on hazardous waste than the 1991 Bamako Convention covering Africa.

Thus, the presence of the three legal instruments has not added much value to the management of e-waste in Africa. Africa remains vulnerable to the indiscriminate dumping of e-waste by industrialized countries. It is not thus surprising why localized instrument in individual countries are not working or even not existing. According to Balde et al (2015, p8) only Cameroon and Nigeria have enforced national e-waste related legislation while Ghana, Ethiopia and Kenya still have legislation pending approval .

6. Electronic waste in Zimbabwe

In Zimbabwe, there is fragile interest in electronic waste management. Both ignorance and lack of interest has affected the attention of electronic waste management in Zimbabwe. Health practitioners and environmentalists have expressed little interest in tackling this issue and this has resulted in little knowledge among the public on the dangers of electronic waste in Zimbabwe. Despite its invisible risk to human health, discourse in electronic waste risk features very little in health, environmental management, as well as disaster management strategic plans minimizing the dangers of e-waste to the public.

Most of the electronic waste in Zimbabwe is not locally manufactured. Just like in other SADC countries, much of the e-waste into the country is imported from developed countries. Huge volumes of electronic gadgets which include TVs, cell phones, fridges, laptops, toys, digital cameras and other micro electronics goods. Because of lack of interest, there are no efforts to quantify the electronic goods influx and determine the volumes dumped in Zimbabwe. The influx of electronic goods from South Africa, Asia, and Europe in Zimbabwe has led to a high rate of electronic waste making Zimbabwe an electronic waste graveyard. This has created profound challenges in waste management and consequently to public health.

7. E-waste regulation in Zimbabwe

The current legal instruments are not clear on the management of electronic waste in Zimbabwe. To date, Zimbabwe has no legislation or policy on electronic waste management. The available Environmental Waste Management Act (20:27) only prohibits the discharge of hazardous substances into the environment, but there is no specific legislation regulating electronic waste. The

Environmental Management Agency (EMA) education and publicity manager acknowledged that his organization had various policies to deal with hazardous waste but the Environmental Management Act do not have specifically address the issue of electronic waste, (The Zimbabwean). Thus, because the law is general on harmful waste, it thus makes it very difficult to address specific concerns regarding electronic waste.

A hodgepodge of factors compounds the situation of e-waste management in Zimbabwe. Apart from the absents of a legislation regulating the management of e-waste, recycling of e-waste is almost entirely left to the informal sector, which does not have adequate means to handle either the increasing quantities or certain processes leading to intolerable risk for human health and the environment. Furthermore, there are no companies investing in electronic waste recycling as a business in Zimbabwe. More so, electronic waste recycling business is hardly talked about in Zimbabwe by both the media and the environmentalists, health practitioners and in business forum.

In Zimbabwe, like in other countries like Iran (Taghipour, 2012) and most developing countries, there are no official and accurate figures for rapidly increasing e-waste volumes generated domestically and by imports. This has made it very difficult to regulate imports as well as estimating the level of hazards and vulnerability of communities to electronic health hazards.

Thus, the low level of awareness among manufacturers and consumers, environmentalists and legislators on electronic waste hazards and management practices remain the greatest risk and a challenge in the efforts of management of electronic waste.

8. Towards sustainable e-waste management in Zimbabwe:

The status of -e-waste management in Zimbabwe is deplorable. There is need to take urgent action to ameliorate the situation. This calls for a holistic and multi-stakeholder approach to finding a sustainable solution to the management of electronic waste in Zimbabwe. There is no doubt that e-waste is a crosscutting issue with social-economic, environmental and political ramifications and therefore requires cross –sectoral implementation and gestalt perspective in dealing with it. Thus, a hodgepodge of stakeholders that include industry, government, customs authorities, media, non-governmental organizations, environmentalists, health, and civil society must be meaningfully involved (Lundgren, 2012). What Zimbabwe needs is a potpourri of coordinated interventions, national cooperation and goal oriented actions on e-waste management in Zimbabwe.

The responsible ministry of environment must take charge, initiate e-waste legislation and control guidelines on the management of e-waste. The e-waste law is an important starting point towards effective e-waste management in Zimbabwe. The absents of a specific law to deal with the management of e-waste makes it very difficult for existing regulatory institutions to police e-waste management effectively.

There is need for combining legislation with incentives for informal e-waste dealers to deliver e-waste to central collection sites, which are professionally managed rather than processing themselves exposing themselves to risk, (Williams et al, 2008). There is an urgent need to come up with e-waste treatment standards and environmental protection measures that inform the e- waste management practices in Zimbabwe.

At national level, the government must provide incentives that encourage investment in e-waste recycling infrastructure to kick start a potentially vibrant electronic recycling industry, which produces employment and reduces the electronic waste accumulation. To date, there is no observable e-waste recycling industry in Zimbabwe and it is unfortunate that such a lucrative industry remains unexplored in Zimbabwe. Zimbabwe can take advantage of the knowledge and technical expertise from other countries well advanced in managing e-waste and improve e-waste management in Zimbabwe.

There is need for improving community awareness on the effects of e-waste through environmental education so that the community and other publics are meaningfully involved in electronic waste management. There is also need for finding a holistic, sustainable and effective stakeholder engagement methodologies in e-waste management in Zimbabwe.

The establishment of a coordinated framework to monitor the activities and the events on the electronic waste is needed. This framework should put the stakeholder participation at the centre of the activities. In Zimbabwe, the formation of an e-Waste Agency (EWA) may help to bring together industry, government, and NGOs to work on a sustainable, symbiotic, and synergistic all stakeholder e-waste management strategy for Zimbabwe.

An effective framework for the monitoring and evaluation of e-waste traffic must be created so that a record and database of electronic waste quantities can be established and kept under control. This will help to provide guidance in the planning for waste e-waste management. It also helps to establish the distribution of the e-waste hotspots. Such information is a sine qua non for establishing effective e-waste management systems in Zimbabwe.

9. Media coverage on electronic waste management

The coverage of e-waste disposal in Zimbabwe media is of great concern especially with the increasing volumes of importation of short-lived electronic gadgets that are being dumped in the country. Media can be used as a strategic tool for harnessing, rejuvenating, and raising environmental consciousness in Zimbabwe. In Zimbabwe media, e-waste disposal is one of the topics, which seem to be over-shadowed and not seen as newsworthy because of the rigid criterion of newsworthy determination and its unforeseen economic value and cantankerous health effects. The media seem to have relegated electronic waste hazards in health and environmental reporting to soporific matters. Electronic waste as an environmental hazard has failed to generate interest in the media as such not much is reported in Zimbabwe. The lack of knowledge from journalists in e-waste management may be attributed to a number of factors like lack of training programmes and lack of specific content on the techniques and skills of electronic disposal. The role of the media is to raise awareness to the community on proper disposal of gadgets on dumpsites. There is need to revisit the media and journalism curriculum to widen the media practitioners' verisimilitude and equip them with professional and academic edge to tackle such technical issues. Extensive use of audio and visual as well as social media can add to an assortment of options that the media may resort to sensitise communities on electronic waste issues. Public health practitioners and environmental management stakeholders must lobby for the inclusion of important public health issues like electronic waste management and reporting to increase holistic coverage of health issues through challenging existing media policies and law as well as researching on

new media and journalism methodologies.

10. Conclusion

There is no doubt that Zimbabwean communities are at risk .the lack of proper management of electronic waste is a pending publish health hazards that demand prompt attention. A part from the formation of e-waste management legislation, there is need for institutional building, civic education, and creation of best practices in electronic waste management. There is need to maximize of positive externalities which can emerge for proper management of electronic waste Research must be directed to establishing models of quantifying and tracking the traffic of electronic waste in Zimbabwe. The government of Zimbabwe must show political will in the effort to design a national legislation and strategy for electronics stewardship.

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