THE UNITED REPUBLIC OF TANZANIA

TANZANIA COMMUNICATIONS REGULATORY AUTHORITY

A STUDY ON ELECTRONIC WASTE MANAGEMENT IN TANZANIA

Presented by:

The Coordination Committee on e-waste Management (CCeWM)

FINAL REPORT

March 2012

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LIST OF ABBREVIATIONS AND ACRONYMS

e-waste	Electronic Waste
CCeWM	Coordination Committee on e-waste Management
TCRA	Tanzania Communications Regulations Authority
NEMC	National Environmental Council
EEE	Electrical and Electronic Equipment
WEEE	Waste Electrical and Electronic Equipment
NEMA	National Environment Management Authority
CPU	Central Processing Unit
SWOT	Strengths, Weaknesses, Opportunities, Threats
EPOCA	Electronic Postal and Communications Act
EACO	East African Communications Organisation
ITU	International Telecommunications Union
CRT	Cathode Ray Tubes
PC	Personal Computer
ICT	Information and Communication Technology
RoHS	Restriction on Hazardous Substances
PVC	Polyvinyl Chloride
LDC	Liquid Crystal Display
IETC	International Environmental Technology Centre
DTIE	Division of Technology, Industry and Economics
UNEP	United Nations Environmental Programme
ISWM	Integrated Solid Waste Management
EPA	Environment Protection Agency
NGOs	Non- Government Organisation
SIDP	Sustainable Industrial Development Policy
SMEs	Small and Medium Enterprises
StEP	Solving the e-waste Problem
CAI	Computer Aid International
CCK	Communications Commission of Kenya

ACKNOWLEDGEMENTS

The Tanzanian environment is being challenged by a high rate of pollution by Electrical and Electronic Equipment Wastes which if not attended to may endanger the country. The Tanzania Communications Regulatory Authority (TCRA), in exercising her electronic communications regulatory mandate, in September 2011 formed a Committee (see Section 1.0 of the Report) to assess the current E-waste management in the country.

An assignment like this could not have been accomplished without help of others, whom the Committee would like to publicly acknowledge here.

Firstly, the Committee Members are indebted to the Director General of TCRA Professor John S. Nkoma for his initiative to form, finance and trust in this Committee to carry out such an important study. Similarly, the TCRA Management on her side owes appreciation and is grateful to all individuals who were able to travel within the country and beyond for the purpose of facts finding and situational observations.

Secondly, the Committee wishes to express her recognition and gratitude to the Vice President`s Office, the National Environmental Council (NEMC) and the Inspector General of Police for their support and acceptance to release their officers to join the Committee as well as the time afforded by them in this study. Likewise, the Committee wishes to thank the Dar Es Salaam City Council, the Management of Pugu Kinyamwezi Dump and the M/S Harmonics Biosphere Company Limited for the cooperation they accorded when the committee visited their respective places.

Thirdly, without reservations, the Committee would also like to recognize valuable inputs, dedication and commitments extended by Mrs. Gladys Muhunyo, the Director of Computer Aid International and her colleagues as well as Dr. Thony Musili the Director WEEE Centre of Kenya, who co-hosted the committee during their study visit in Kenya. Their institutional and personal contributions which, indeed without them this study would not have been as successful as it is.

Fourthly, the Committee also extends her special thanks to the Director of Computers for Schools Kenya Ms Mercy Ndericho, Director of Planning of the Ministry of Nairobi Metropolitan Development Mr.Peter Kebinda, Ag. Director General of the Communications Commission of Kenya Mr. Francis W. Wangusi and the Director of the National Environment Management (NEMA) Kenya Dr. Ayub Macharia for the immeasurable commitment and facilitation they accorded the committee during the study visit to Kenya.

Finally, the Committee wishes to express her love and gratitude to their beloved families; for their understanding and endless love, throughout the duration of the study. Similarly, the Committee appreciates the time accorded by various Working Sub-committees including the Report Writing Sub-committee Members for their invaluable commitment, time and constructive ideas in the course of preparing this report.

EXECUTIVE SUMMARY

Electronic waste (e-waste) is the most rapidly growing segment of the municipal waste stream. E-waste is a general category of electronic products including broken or obsolete televisions, computer monitors, central processing units (CPU), cordless and cell phones, cash registers, videocassette recorders, copiers and printers, stereos and speakers, microwaves, x-ray machines, and some scientific equipment. Electronic waste (e-waste) now makes up five percent of all municipal solid waste worldwide, nearly the same amount as all plastic packaging, but it is much more hazardous. These products may contain toxic materials such as lead, barium, mercury, and cadmium that require proper management as well as valuable resources that could be recovered. In Tanzania, research has indicated that from computer alone, more than 9500 tonnes of e-waste will be generated by 2015.

This report contain outcomes of a study carried out between November 2011 and March 2012 by a committee established by the Director General of the Tanzania Communication Regulatory Authority (TCRA), to look into the problem of e-waste and come up with practical recommendations to manage the same in Tanzania.

The report highlights the need to identify and map environmental impact of e-waste on Tanzania, outlines capacity constraints on the collection and disposal system and recycling infrastructure of e-waste. Similarly, the issues regarding the promotion of multi-stakeholder partnership by involving manufacturers' and private sector in tackling e-waste and the formulation of a policy development framework in line with International best practices have been discussed together with the positive aspect of e-waste such as job creation and the formulation of a common stand and way forward on e-waste management.

The report is organized into seven parts. Part one contains the introduction which gives genesis of the study, objectives and the terms of references given to the Committee formed. Part two contains the background to the study by defining what is e-waste, discussion on Effects of e-Waste to Public Health and Environment, and reference to International Conventions on e-waste. Part three discusses e-waste as a global challenge, Tanzania inclusive. Part four explains the objective of the study and part five is the study approach. Part six contains stakeholder's analysis and mapping. Part seven contains SWOT ANALYSIS on e-waste management. Part eight contains study findings and part nine contains study visit whereas part ten is the committee's recommendations. The committee recommends the formulation and adoption of specific and clear policies, legislation and guidelines to tackle the problem of e waste management; drafts of the same have been annexed to this report for consideration.

1.0 INTRODUCTION

The Director General of Tanzania Communications Regulatory Authority (TCRA) on 16th September 2011 formed a Committee on e-waste. The Committee was composed of the following members:-

Table 1: List of Committee Members

S/N	Name	Institution	Position
1.	Dr. Raynold C. Mfungahema	TCRA	Chairman
2.	Mr. John W.Daffa	TCRA	Member
3.	Mr. Wilfred Maro	TCRA	Member
4.	Eng. James M. Kilaba	TCRA	Member
5.	Eng. Andrew Kisaka	TCRA	Member
6.	Ms. Thuwayba Hussein	TCRA	Member
7.	Mr. Richard Kayombo	TCRA	Member
8.	Mr. Erasmo A. Mbilinyi	TCRA	Secretary

The Committee was given the following Terms of Reference:

1. To study and identify drawbacks in the existing Policies and regulations in the country and propose remedies of the identified gaps;
2. To consult NEMC and establish the areas of collaboration on e-waste issues;
3. To identify areas in the EPOCA and respective Regulations thoserelates to e-Waste and propose ways to address them;
4. To prepare country contributions to EACO and ITU on e-waste as appropriate;
5. To prepare a comprehensive report to Management on Tanzania's e-waste management, for sharing with other stakeholders.
6. To start the assignment on 1st November 2011; and
7. To present a report to Management within approximately four months, by **1st March 2012**. Due to large amount of work required tocomplete the report the, the DG on the request of the committeeextended the submission date of the report to 30th March 2012.

The Committee was given mandate to co-opt other Members with specialities

related to this assignment. Five Members were co-opted, two from TCRA and three from other Institutions.

Table 2: List of Co-opted Members

S/N	Name	Institution	Position
1.	Dr. Ally Y. Simba	TCRA	Member
2.	Ms. Napalite Magingo	TCRA	Member
3.	ACP Charles Nyanda	TPF	Member
4.	Eng. Charles Swai	VPO	Member
5.	Ms. Nancy Nyenga	NEMC	Member

2.0 BACKGROUND

2.1 Definition of e-Waste

Electronics Waste (e-Waste) or Waste Electrical and Electronic Equipment (WEEE) is a term used to cover almost all types of electrical and electronic equipment (EEE) that can't be upgraded or repaired for re-use and finally enter the waste stream. Although e-waste is a general term, it can be considered to cover TVs, computers, mobile phones, white goods (e.g. fridges, washing machines, dryers etc), home entertainment and stereo systems, toys, toasters, kettles – almost any household or business item with circuitry or electrical components with power or battery supply.

Others define the re-usables (working and repairable electronics) and secondary scrap (including Copper, Steel, Plastic, etc.) to be "commodities", and reserve the term "waste" for residue or material which is dumped by the buyer rather than recycled, including residue from reuse and recycling operations. Because loads of surplus electronics are frequently commingled (good, recyclable, and non-recyclable), several public policy advocates apply the term "e-Waste" broadly to all surplus electronics.

2.2 Effects of e-Waste to Public Health and Environment

Many of Electronic Equipment contain hazardous chemicals and materials such as Lead, Cadmium (Cd), Beryllium, or Brominated Flame Retardants.

Informal recycling and disposing of electronic waste in developing countries can cause serious health and pollution problems, though these countries are also most likely to reuse and repair electronics. Some electronic scrap components, such as Cathode Ray Tubes (CRTs), may contain contaminants. Even in developed countries recycling and disposal of e-Waste may involve significant risk to workers and communities and great care must be taken to avoid unsafe exposure in recycling operations and leaching of material such as heavy metals from landfills and incinerator ashes.

In addition to various hazardous materials, e-waste also contains many valuable and precious materials. In fact up to 60 elements from the periodic table can be found in complex electronics. Using the Personal Computer (PC) as an example – a normal CRT Computer Monitor contains many valuable but also many toxic substances. One of these toxic substances is Cadmium, which is used in rechargeable computer batteries and contacts and switches in older CRT monitors. Cadmium can bio-accumulates in the environment and is extremely toxic to humans, in particular adversely affecting kidneys and bones. It is also one of the six toxic substances that have been banned in the European Restriction on Hazardous Substances (RoHS) Directive.

Beyond CRT monitors, plastics, including polyvinyl chloride (PVC) cabling is used for printed circuit boards, connectors, plastic covers and cables. When burnt or land-filled, these PVCs release dioxins that have harmful effects on human reproductive and immune systems. Mercury (Hg), which is used in lighting devices in flat screen displays, can cause damage to the nervous system, kidneys and brain, and can even be passed on to infants through breast milk. Electrical goods contain a range of other toxic substances such as lead (Pb), beryllium (Be), brominated flame retardants and polychlorinated biphenyls (PCB) just to name a few. Lead plays an important role in the overall metal production processes. Even the lead-free solder elements are co-produced with lead. This illustrates the need for a holistic view to be taken in analyzing the e-waste situation for working out possible solutions.

On the other hand, the huge impact of e-Waste on valuable metals resources must not be neglected. A mobile phone e.g. can contain over 40 elements including base metals Copper (Cu), Tin (Sn), special metals Cobalt (Co), Indium (In), Antimony (Sb), and precious metals Silver (Ag), Gold (Au) and

Palladium (Pd). The most common metal is copper (9 g), while the precious metal content is in the order of milligrams only: 250 mg silver, 24 mg gold and 9 mg palladium. Furthermore, the lithium-ion battery contains about 3.5 grams of cobalt. This appears to be quite marginal but with the leverage of 1.2 billion mobile phones sold globally in 2007 this leads to a significant metal demand. Similar calculations can be made for computers or other complex electronics. The increasing functionality of e-Waste products is largely achieved using the unique properties of precious and special metals. For example 80% of the world indium demand is used for LCD screens, over 80% of Ruthenium is used for Hard Disks and 50% of the worldwide demand for Antimony is used for Flame Retardants. Taking into account the highly dynamic growth rates of e-Waste, it becomes clear that they are a major driver for the development of demand and prices of certain metals.

Because of this complex composition of valuable and hazardous substances; highly specialized and often "high-tech" methods are required to process e-Waste in ways that maximize resource recovery and minimize potential harm to humans or the environment. Unfortunately, the use of these specialized methods is rare, with much of the world's e-Waste traveling great distances, mostly to developing countries, such as Tanzania where crude techniques are often used to extract precious materials or recycle parts for further use. These "backyard" techniques pose dangers to poorly protected workers and their local natural environment. Moreover, they are very inefficient in terms of resource recovery as recycling in these instances usually focuses on a few valuable elements like gold and copper (with often poor recycling yields), while most other metals are discarded and inevitably lost. In this sense it can be demonstrated that resource efficiency is another important dimension in the e-waste discussion in addition to the ecological, human security, economical and societal aspects.

2.3 International Conventions on e-waste

Tanzania is part to a number of international and regional Convention or agreements related to environmental management issues. Two of the conventions to which Tanzania is a party are the Basel Convention on Control of Trans-Boundary Movement of Hazardous Wastes and their disposal and

the Bamako Convention on Ban of the Import into Africa and Control of Trans boundary movement and Management of Hazardous wastes within Africa.

3.0 PROBLEM IDENTIFICATION

3.1 E-waste as a global challenge

E-Waste is one of the fastest growing waste streams in the world. In developed countries, it equals 1% of total solid waste on an average. The increasing "market penetration" in developing countries, "replacement market" in developed countries and "high obsolescence rate" make e-Waste one of the fastest waste streams. There is a pressing need to address e-waste management particularly in developing countries like Tanzania. The presence of valuable recyclable components attracts informal and unorganized sector.

The unsafe and environmentally risky practices adopted by them pose great risks to health and environment. For effective e-Waste management, we need to quantify and characterize this waste stream, identify major waste generators, and assess the risks involved. A scientific, safe and environmentally sound management system, including policies and technologies, need to be developed and implemented.

International Environmental Technology Centre (IETC) a Division of Technology, Industry and Economics (DTIE) of the United Nations Environmental Programme (UNEP) is assisting member countries on ISWM. IETC is also focusing on e-Waste management as a part of ISWM. As an initial step, to build the capacity, IETC has produced two manuals on e-Waste to assist the member countries and their cities to develop the inventories and e-Waste management system.

3.2 The Amount of E-waste

E-Waste is growing exponentially simply because the markets in which these products are produced are also growing rapidly as many parts of the world cross over to the other side of the 'Digital Divide'.

The use of computers, televisions and other electronics continues to grow. As demand increases and technology evolves, older electronics are replaced and the volume of electronic waste that is generated increases.

Rapid product innovations and replacement, especially in ICT and office equipment, combined with the migration from analogue to digital technologies and to flat-screen TVs and monitors are fuelling the increase. Additionally, economies of scale have given way to lower prices for many electrical goods, which have increased global demand for many products that eventually end up as e-Waste.

Because so much of the planet's e-Waste is unaccounted for, it is difficult to quantify e-Waste amounts. Moreover, the types of e-waste included in government-initiated analysis and collection programmes vary from country to country. Under the current version of the WEEE Directive, the EU has 10 distinct product categories, whereas in North America it is typically limited to Information and Communications Technology (ICT) products and televisions and in Japan to four product categories including TVs, air conditioners, refrigerators and washing machines.

The deviation in categorization of e-waste notwithstanding, reasonable estimates are in the order of 40 million tones p.a., which is enough to fill a line of dump-trucks stretching half way around the globe. A recent review of European legislation on e-waste, known as the "Waste Electrical Electronic Equipment (WEEE)" Directive (mentioned earlier), highlights that in 2005 in Europe alone, there were between 8.3 and 9.1 million tons of e-waste, tendency rising. In Australia, with an average of 22 electrical items per household, the Australian Bureau of Statistics has estimated that in the next two years, most of the 9 million computers, 5 million printers and 2 million scanners in Australian homes will be replaced9. In the US the Environment Protection Agency (EPA) has reported that the US generated 1.9 to 2.2 million tons of e-waste in 2005, with only 12.5% collected for recycling10.

The most recent survey (2011) conducted in Tanzania by Magashi11 has estimated e-waste of 9500 tones to be generated from computer alone by 2015.

3.3 Problems of E-waste Management in Tanzania

Efforts to deal with the e-waste problem in Tanzania at the moment are sporadic and uncoordinated as such it does not match with the gravity of the problem. Generally there is lack of awareness on the part of the general public on the e-Waste issues.

As stated in the previous sections, there is a scientific evidence that electronic waste containing substances like Lead, Cadmium, Mercury, Polyvinyl Chloride (PVC) has immense potential to cause enormous harm to human health and environment, if not disposed properly since the extant prescriptions for its disposal and safeguard are inadequate. Thus, it is indeed necessary for early formulation of a holistic e-Waste Policy. It is consensually agreed that such a Policy must appropriately reflect the concerns of various stakeholders besides views of practitioners in the field, both in the organized and the unorganized sector.

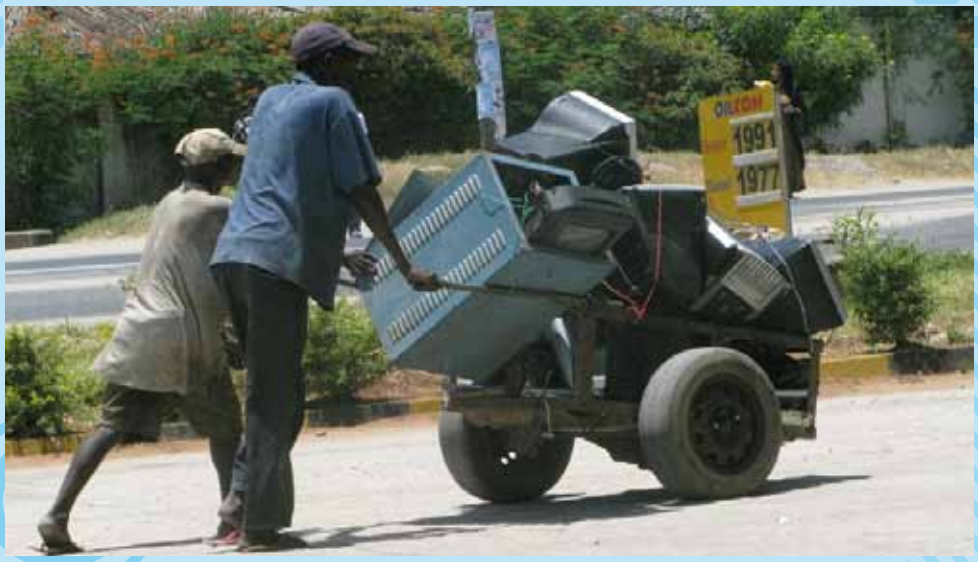

Figure 1: Unidentified persons going to dispose e-Waste to unknown location as captured in Mwananyamala area, Dar es Salaam (Source: Issamichuzi blog, 18th Feb. 2012)

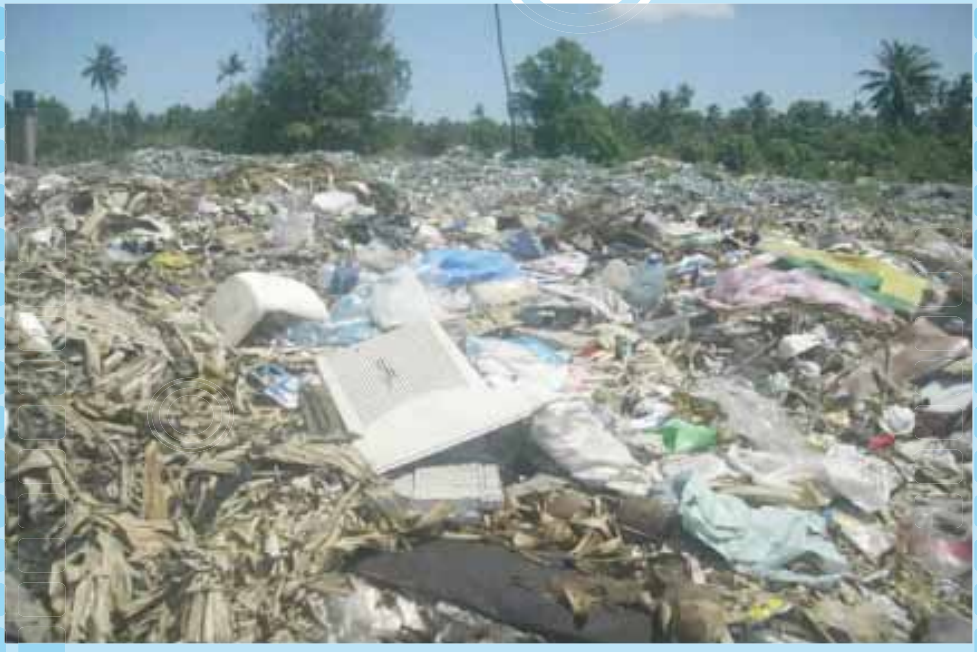

Figure 2: Photo of Jumbi dumpsite – Zanzibar showing disposed e-Waste (Source: -Waste Assessment Report under UNIDO e-waste initiative for Tanzania)

Figure 3: Photo of Murriet Dumpsite – Arusha showing disposed e-waste (Source:-Waste Assessment Report under UNIDO e-waste initiative for Tanzania)

4.0 OBJECTIVES OF THIS STUDY

(i) To contribute to the development of e-Waste management system in Tanzania and link with global efforts in solving the e-Wasteproblems.

(ii) To identify gaps in the current Legal, Regulatory and Institutional Framework that will prioritize and bring e-Waste issues to the fore.

(iii) To develop a Draft Policy, Regulations and Guidelines, to assist key stakeholders in addressing challenges of e-waste in a holistic and more systematic manner.

5.0 STUDY APPROACH

The Committee reviewed policies, legislations, guidelines and other relevant literature on e-waste management.

Furthermore the committee carried out stakeholder analysis and visited key stakeholders including ministry responsible for e-waste management, local government, environmental regulator, ICT regulator, Dar es Salaam dumping site and one e-Waste collector in Tanzania.

The Committee carried a benchmarking study visit to Kenya and met key stakeholders including ministry responsible for e-waste management, local government, environmental regulator, ICT regulator, e-Waste recycler and NGOs on e-waste management.

6.0 STAKEHOLDERS ANALYSIS

In view of the e-waste management study, it's important to note and take into account various stakeholders that matter, those that are currently impacted upon and those that will influence a change to the better.

For that matter the table below provides a stakeholder list with their roles:

Table 3: e-Waste stakeholder mapping

Stakeholder	Legal Power	Interest
Government:		
Vice Presidents Office- Division of Environment	H	H
NEMC	H	H
Local Councils	H	L
TCRA	L	H
ICT Operators	L	L
Public/Consumers	L	H
Recyclers /refurbishers	L	H
NGOs	L	H
ICT Equipment dealers	L	L
Media	L	L
UN agencies (UNIDO & UNEP)	L	H
Civil Society	L	H

Note: L: Low; H: High

6.1 Government and Agencies

The government is policy maker and its various organs/agencies are implementers of the policies and law enforcers. For the purpose of this study they include; Vice President's Office (Environmental Protection), Prime Minister's Office (Local Government), National Management Environmental Council, Ministry of Communications Science and Technology, Tanzania Communications Regulatory Authority, Fair Competition Commission, Tanzania Bureau of standards, Tanzania Police Force and Commission for Science and Technology.

6.2 Service Providers

They are responsible for the increasing volumes of electronic waste and should be involved in finding a remedy for the situation.

6.3 Importers and distributors

They are responsible for importing to the country electronic gadgets be it new, refurbished, and used or even substandard which after their usable life becomes waste. To date they are not concerned with what happens after their sale.

6.4 Manufacturers and Assemblers

This group of stakeholders includes those who manufacture or assemble electronics products in the country as well as multinational companies that have direct distributorship in the country e.g Nokia, Motorolla, Samsung, LG etc who impact on the e-waste situation through their business activities.

6.5 Collectors

The are key stakeholders to involve in order not only to get hands on experience on what they are doing but also to find better ways of supporting them to ease the growing trends of ever increasing e-waste in the country.

6.6 Specialized UN agencies

Specific UN agencies that are important to include are UNEP and UNIDO. While UNEP is directly responsible for environmental issues, UNIDO is responsible for industrial development where issues of manufacturing and recycling come into play as part of its role in ensuring environmental safety in industrial developments. UNIDO can also support initiatives towards safe recycling or re-usage projects.

6.7 Media

The media is very crucial with respect to advocacy of the dangers of e-waste and creating awareness to the public on what needs to be done by the general public as well as key stakeholders in alleviating the situation.

6.8 Civil society

Specialized Civil society organizations are agents of change since they work with communities and can dig out issues and address them closer to the people and for that matter they need to be on board. They are also good in advocacy as a way of changing trends to the worsening situation

7.0 SWOT ANALYSIS

SWOT analysis in this regard is a tool which is applied in determining the current situation of the e-waste management in the country as detailed in the table below.

Table 4: SWOT Analysis

STRENGTHS	WEAKNESSES
• Existence of the bodies/institutions dealing with the environmental is sues including e-waste management.	• No specific legal frameworkwhich address e-Waste issues. This includes' appropriate policy, legislation and regulations,
• Existence of the current practice of storing e-waste at user's site re duces the volumes being dumped il legally or in official dumpsites,	• There is no coordinated efforts/ mechanism/systems established among the bodies/institutions dealing with pollution of environment to collaborate and address matters related to e –Waste management,
• Availability of informal refurbishers which extend the life of electrical and electronic equipment,and hence reduce volumes of illegal dumping,	• Public awareness by Importers/ consumers/industries/manufacturers onthe threats/hazards arising from e-waste is very low,
• Availability of technologies thatmay be used to address issues related to e-waste management,	• There is no framework for establishing data base andkeeping statisticsof electronics equipment in use or imported/exported,
• Availability of resources; personnel, funds and working tools to initiate the process and need for having in place a proper e-waste management system,	• Unavailability of reliable source of data of the existing dealers/importers/ distributers of the electrical and electronic equipment from the authorities which show
• Availability of the Countries in the region with a system ofe-waste management which mightbe helpful for benchmarking.	

	items on stock and an indication of the e-waste generation from each stakeholder. • Lack of disposal facilities for items on stock and an indication of the e-waste generation from each stakeholder. • Lack of disposal facilities for hazardous waste, • Lack of infrastructure for formal collection, disposal and recycling procedure for e-waste, • Illegal dumping of e-waste such as burning and burying could lead to environmental pollution as well as pose risks to human health, • Lack of public awareness on the magnitude of e-waste problem and the danger associated with it.
OPPORTUNITIES • As already mentioned in this docu ment, e-waste has valuableminerals, and if properly managed can beturned in opportunity such as business and employment.	**THREATS** • Co-disposal of e-waste with domestic waste in open dumps causes severe damage to the environment and human health.

8.0 ANALYSIS OF FINDINGS

8.1 State of E-Waste in Tanzania

The existing literatures show that Tanzania has no specific policy or legislation related to e-waste management. However, there are a number of Policies and legislations which aim at protecting the environment and human settlement. Some of these policies are Environmental Policy, the Sustainable Industrial Policy, the National ICT Policy, National Water Policy, National Energy Policy, and National Health Policy; just to mention the few.

Among the legislations and regulations, are the Environmental Management Act, Chapter 191 of the laws of Tanzania, the Environmental (Solid Waste Management) Regulations, 2009 and the Environmental Management (Hazardous Waste Control) Regulations, 2009. The Act is very important because it provides for key principles for environment Management, waste management and Risk Impact Assessment among others.

According to the study conducted by Cleaner Production Centre of Tanzania in collaboration with EMPA of Switzerland (January 2011), the use of ICT equipment is still low and growing at staggering pace in Tanzania compared to other countries in the world. According to the World Bank data in the last ten years the penetration of Personal Computers has increased by a factor of 10, while the number of mobile phone subscribers by a factor of 100. Extrapolations until 2009 suggest that penetration rates per personal computers lies around 19.5 computers per 1000 people which correspond to an installed base of 850,000 units in 2009.

(i) According to this study the average distribution of sales of new computers are 50% to the government, 40% to the private companies and 10% to private household and small businesses.

(ii) The average life of computers is 4 years in government and most of its agencies and private sectors and 8 years in household and small businesses.

(iii) The survey further revealed that about 200,000 computers reached end of life in 2009 whereas it was projected that between 250,000 and 800,000 computers might reach their end of life in 2015 leave alone TV sets as we move towards digital broadcasting.

(iv) The mapping of current E-Waste in Tanzania shows that there is no formal E-Waste Management system which exists. The system is controlled by informal rules in which most of E-Wastes are stored mainly in offices, garages and in municipal and town dumping sites;

(v) On the other hand there is lack of awareness on the damage which can be caused by E-Waste among the suppliers Electrical and Electronic equipment and the general population.

8.2 E-waste related Policies

According to the e-Waste Assessment Report under UNIDO e-waste initiative for Tanzania as presented in January 2011 by Magashi, Anne and Schluep, Mathias; Tanzania has no specific policy on e-waste management; however, there are a number of policies that are in existence which aims at protecting the environment and human health.
Among the identified policies relevant to e-waste management include:

(i) National Environment Policy (1997);
(ii) Sustainable Industrial Development Policy (SIDP) 1996-2020;
(iii) National Water Policy (2002); National Energy Policy (2003);
(iv) National Trade Policy (2003) Small and Medium Enterprises (SMEs) Development Policy (1996); and
(v) National Information and Communications Technologies (ICT) Policy (2003)

The objectives and relevancy-to-e-waste management of above e-waste related policies are tabulated herein below:

Table 5: e-Waste related Policies in Tanzania

Policy	Objectives	Relevancy to e-waste management
National Environmental Policy (1997)	To ensure, sustainability, security and equitable use of resources to meet the basic needs of the present population without compromising those of the future generations without degrading the environment or risking health or safety.	Sets overall framework for environmental management issues in the country Promote health related programmes including food hygiene, separation of toxic/ hazardous wastes and pollution control at house hold *Proper e-waste management reduces pollution load to the environment and reduces risks to human health*
National Energy Policy (2003)	To ensure availability of reliable and affordable energy supplies and their use in a rational and a sustainable manner in order to support national development goals	Promotes use of energy efficient equipment *Promotes use of Electrical and Electronic Equipment (EEE) and hence contributes to e-waste generation*
The Sustainable Industrial Development Policy (1996-2020)	To achieve sustainable industrial development.	Promotes industrial development with less pollution *Promotes efficient use of resources and recycling activities.*
Small and Medium Enterprise (SMEs) Development Policy	To foster job creation and income generation through promoting the creation of new SMEs and improving the performance and competitiveness of the existing ones to increase their participation and contribution to the Tanzania economy To facilitate and support programmes focusing on increased access of information pertinent to the development of SMEs	To encourage development of SMEs Encourage job creation Insure that SME operators at all levels have access to information at affordable cost E-waste recycling activities could contribute to the development of SMEs, creation of employment and access to information at affordable cost

Policy	Objectives	Relevancy to e-waste management
National Trade Policy (2003)	To rise efficiency and widen linkage in domestic production and building of diversified competitive export sector as the means of stimulating higher rates of growth and development	Promotes trade development *Recovery of valuable fractions in e-waste could contribute to this policy*
National Water Policy (2002)	To ensure that beneficiaries participate fully in planning, construction, operation, maintenance & management of community based domestic water supply schemes	Promotes prevention of pollution of water sources *Efficient e-waste management system prevent pollution of water bodies*
National Health Policy (2007)	To improve the health of all Tanzanians, particularly those at high risk	Encourages safe disposal of hazardous waste from health services including medical equipment and devices *E-waste contains hazardous substances*
Human Settlement Development Policy (2000)	To ensure sustainable human settlement development	Encourage human settlement to be kept clean Ensures that pollution from solid and liquid wastes do not endanger the public health *E-waste is one of the solid wastes which could endanger public health if not well managed*
National ICT Policy (2003)	To provide a national framework that will enable ICT to contribute towards achieving the national development goals; and to transform Tanzania into a knowledge based society through application of ICT	Promotes investments in ICT Promotes competitive development and production of ICT products and services Promotes establishment of direct relationships with manufactures and designers of ICT resources E-waste recycling activities could lead to the establishment of

Policy	Objectives	Relevancy to e-waste management
National Science and Technology (1996)	To promote science and technology as tool for economic development, the improvement of human physical and social well being, and for the promotion of national sovereignty	relationships with manufacturers and designers of ICT equipment Promotes application of science knowledge techniques and organizational methods in the production of goods and services Promotes sharing of information on R & D *R & D is still needed in the country in order to have sustainable e-waste management in the country* Capacity building and sharing of knowledge among the stakeholders is also needed

8.3 E-waste related Legislation

8.3.1 The Electronics and Postal Communications Act Cap. 306 on e-waste Management

The Electronics and Postal Regulations Act, Cap. 306 has been enacted with the objective of keeping abreast with the developments in the electronic communications industry. Part IV (g), section 90 in particular requires Network Service Licensees to blacklist damaged mobile phones. However, the Act does not provide how to dispose of the damaged phones. Hence it suffices to say the Act does not provide for management of e-waste.

8.3.2 The Environmental Management Act, Cap. 191

There is no specific e-waste management law in Tanzania. However, e-waste management has been partly addressed in the Environmental Management Act, Chapter 191 and the Regulations made thereunder. The Act and the Regulations are analyzed herein below in relation to e-waste issues.

The Environmental Management Act is the core legislation for all environmental issues in Tanzania. The Act provides for the legal and institutional framework for sustainable management of the environment. It also provides for the principles of environmental management, impact and risk assessments, prevention and control of pollution, waste management, environmental quality standards, public participation, compliance and enforcement. The Act provides a basis for the implementation of the National Environment Policy (1997) and the implementation of international instruments on environment including establishment of national offices and focal points for the implementation of international agreements on environment.

The Act stipulates the role of the local government in management and control of solid waste such as minimization, segregation, collection, transportation, storage, treatment and disposal of solid waste from various producers in both urban and rural area. The Act also includes provisions for handling hazardous waste. The Environmental (Solid Waste Management) Regulations, 2009 give further elaborations on the provisions of the Act

pertaining to solid waste management while the Environmental Management (Hazardous Waste Control) Regulations, 2009 elaborates on the provisions related to hazardous waste management.

Other related e-waste legislation include the Occupational Safety and Health Act, 2003 and Tanzania Bureau of Standards Act, 1975 No. 3 of 1975.

8.4 E-Waste related regulations

8.4.1 The Environmental Management (Hazardous Waste Control and Management) Regulations, 2009

These Regulations apply to all categories of hazardous waste and the generation, storage, transportation, treatment and disposal of hazardous waste and their movement into and out of Mainland Tanzania. The Regulations provides definition of important terms as herein below:-

Hazardous waste is defined as "any solid, liquid, gaseous or sludge waste which by reason of its chemical reactivity, environmental or human hazardousness, its infectiousness, toxicity, explosiveness and corrosiveness is harmful to human health, life or environment".

Waste disposal site means "a site, used to dispose of or treat waste and includes a mobile or immobile waste treatment plant, waste storage or transfer facility"

Waste management means "the collection, transport deposit, interim storage, transport, treatment and final disposal of waste"

Waste management facility means "any site or premises used for the purpose of recovery, recycling, treatment or disposal of waste".

The definition of hazardous waste impliedly and by inference includes electrical and electronic waste. For the administration and institutional arrangement, regulation 7 gives the Minister the duty to provide policy direction and leadership in all matters pertaining to hazardous waste management under the Environmental Management Act, Cap. 191. The Minister will be assisted by the Director of Environment in carrying out his functions.

Regulation 8 provides for the functions of the Director of Environment, which among others include developing guidelines for handling hazardous wastes, develop effective communication between the stakeholders in

hazardous waste management, and ensure that hazardous waste management is designed to derive maximum benefit at minimum cost.

Regulation 11 recognizes the classification of hazardous waste according to the Basel Convention on the control of trans boundary movement of hazardous waste and their disposal, 1989 and the Bamako convention on the ban of import into Africa and the control of trans boundary movement and management of hazardous waste within Africa.

Further the Regulations provides for packaging of wastes in the UN approved container and labeling them to identify the hazardous waste (regulation 12 and 13).

Regulation 35 of Part VIII deals specifically with electrical and electronic waste. It imposes obligation to every person possessing or having control of electrical or electronic accessories or equipment to separate the same from other types of wastes and deposit them separately into receptacles prescribed by local government. The obligation to segregate e-waste applies to collection, transportation and final disposal of e-waste from equipment and devices is listed in the Eighth Schedule of the Regulations. EEE categories listed in the 8th Schedule of the Regulations include large household appliances; small household appliances; IT and Telecommunication equipment; consumer equipment; lighting equipment; electrical and electronic tools; Toys, sports and leisure equipment; medical products; monitoring and control instruments; and automatic dispensers.

Regulation 37 (1) allows manufacturers or dealers of e-Waste to set-up and operate individually or collectively voluntary take-back systems for electrical and electronic waste from customers (households or institutions) provided that no fee is chargeable for that service while regulation 39 elaborates the role of the local government authorities in ensuring safe handling of electrical and electronic waste so as to minimize risks to human health and the environment.

8.5 Institutional framework

According to the e-Waste Assessment Report under UNIDO, January 2011-Magashi, Anne and Schluep, Mathias; the key institutions involved in the general waste management in Tanzania are Vice Present's Office –Division of Environment and the Local Government Authorities. Others include the

relevant sectoral ministries and regulatory bodies such as Ministries of Industry, Trade and Market (MITM), National Environment Management Council (NEMC); and Occupational Safety and Health Authority (OSHA).

The Environment Management Act also provides for the establishment of the National Environmental Advisory Committee (NEAC) which advises the Minister responsible for environmental and other sectoral ministries on matters related to environment degradation including waste management.

The brief on each of these institutions are given in the sections herein below:

8.5.1 Vice President's Office- Division of Environment

The Vice President's Office is the overall coordinator of all environment issues in the country. The Division of Environment (DOE) in the Vice President's Office is responsible, among other functions, for policy articulation; advocacy and implementation; monitoring and evaluation; environmental planning; environmental legislation; and international cooperation. The Division of Environment in the Vice- President`s Office is also a National Focal point for multilateral environmental agreements including the Basel Convention and Bamako Convention.

8.5.2 Local Government Authorities

The Local Government Authorities have been granted powers under section 139 of Environmental Management Act (EMA) of 2004 to ensure that various categories of wastes in solid, liquid or gaseous forms are prevented or minimized in their areas jurisdiction.

8.5.3 Ministry of Industry, Trade and Marketing (MITM)

The MITM is responsible for issuing license for establishment of new factories and businesses. All traders including electrical and electronic Equipment dealers need to be registered and issued licenses of their businesses through the BRELA, the Authority under the MITM.

8.5.4 National Environment Management Council (NEMC)

The National Environment Management Council (NEMC), under the Vice President's Office, is regulatory body, which oversees the implementation of Environment Management Act, Chapter 191. According to the Act ,the functions of NEMC include enforcement, compliance, review and monitoring of environmental impact assessment, supervision and coordination overall matter relating to the environment, evaluation of government policies and activities on pollution control and enhancement of environmental quality, recommending measures to ensure government policies take adequate account of environment effect. Other function include advancement of scientific information documentation and dissemination of information in promotion of general environmental education.

8.5.5 Occupational Safety and Health Authority (OSHA)

The Occupational Safety and Health Authority, established under the Occupational Safety and Health Act, 2003 is responsible for controlling and monitoring the occupational safety and health at workplaces including safe use and handling of hazardous waste.

8.6 International initiatives on e-Waste

8.6.1 The Basel Convention

In order to address E-waste issues many countries met in Basel, Switzerland to create an International Treaty (the Basel Convention) to end the immoral dumping and exporting of hazardous waste mainly from developed countries to undeveloped countries. The Convention was opened for signature on 22 March 1989 and entered into force in 1992.The objectives of the Convention are to lower the production of hazardous waste, treat and dispose of hazardous waste near their origin, and diminish international movement of hazardous waste.

Significantly the Convention imposes general obligations on State parties as follows:-

(i) It is prohibited to export or import hazardous wastes or other wastes to or from a non-party State;

(ii) No wastes may be exported if the State of import has not given its consent in writing to the specific import;

(iii) Information about proposed trans boundary movements must be communicated to the States concerned, by means of a notification form, so that they may evaluate the effects of the proposed movements on human health and the environment;

(iv) Trans boundary movements of wastes must only be authorised where there is no danger attaching to their movement and disposal;

(v) Wastes which are to be the subject of a trans boundary movement must be packaged, labeled and transported in conformity with international rules, and must be accompanied by a movement document from the point at which a movement commences to the point of disposal;

(vi) Any State party may impose additional requirements that are consistent with the provisions of the Convention.

8.6.2 The Bamako Convention

The Convention was negotiated by twelve nations of the Organization of African Unity at Bamako, Mali in January, 1991. The Convention entered into force on April 22, 1998. The objective of the Convention is to prevent the import of hazardous wastes including radioactive wastes into African nations that are party to the Convention. It also prohibits ocean disposal of all types and obliges the Parties to minimize their own intra-African waste trade and only conduct it with prior informed consent. Parties must also engage in environmentally sound management and disposal of hazardous wastes generated within the African nations while auditing and minimizing generation of hazardous wastes.

The Bamako Convention provides strong legal prohibitions on hazardous waste import and dumping by declaring such activity an illegal and criminal act. The prohibition also applies to products which have been banned, cancelled or withdrawn from registration for environmental or health reasons. The general obligations imposed by the Convention on State parties as follows:

(i) Prohibit the import of all hazardous and radioactive wastes into the African

continent for any reason;

(ii) Minimize and control trans boundary movements of hazardous wastes within the African continent.

(iii) Prohibit all ocean and inland water dumping or incineration of hazardous wastes.

(iv) Ensure that disposal of wastes is conducted in an environmentally sound manner

(v) Promote cleaner production over the pursuit of a permissible emissions approach based on assimilative capacity assumptions

(vi) Establish the precautionary principle, which entails, inter alia preventing the release into the environment of substances which may cause harm to humans or the environment without waiting for scientific proof regarding such harm.

8.7 Initiative of ITU

In recognition of the importance of this issue especially in the developing countries, the ITU set up a question 24 under ITU-D Study Group 1 to be studied within the study period of 4 years in order to come up with policy guidelines to member countries on management of e-waste. The statement of the problem is as shown below:-

"The growth of telecommunications/ICT, especially in developing countries has been exponential in recent years. For instance, between 2002 and 2007, the mobile phone penetration in the Americas region grew from 19 to 70 terminals per 100 inhabitants. Globally, the share of mobile phone subscriptions in developing countries, increased by 20 percentage points, from 44% to 64% over the same period of time.

The growth of electrical and electronic equipment and their peripherals, as well as continuous updating of technology, has generated a non-negligible growth of telecommunications/ICT waste. It is estimated that every year are generated between 20 and 50 million tonnes of telecommunications/ ICT waste worldwide. However, recycling and responsible disposal of telecommunications/ICT waste is found at low levels, making it difficult to even find figures on this issue at regional level.

The consequences of not carrying out a proper recycling or disposal generated environmental problems of a large magnitude, especially for developing countries.

Given the exponential growth of telecommunications/ICT terminals associated with the high turnover of them, as well as technological advances make it imperative to advance in the immediate future actions to prevent environmental catastrophe that would be generated in developing countries if it does not produce an adequate regulatory framework and work for policies that address this problem.

Solving the E-waste Problem (StEP) is an international initiative, created to develop solutions to address issues associated with Waste Electrical and Electronic Equipment (WEEE). Some of the most eminent players in the fields of Production, Reuse and Recycling of Electrical and Electronic Equipment (EEE), government agencies and NGOs as well as UN Organizations count themselves among its members. StEP encourages the collaboration of all stakeholders connected with e-waste, emphasizing a holistic, scientific yet applicable approach to the problem".

8.8 Initiative by the government of Tanzania

The Vice president`s office developed a draft National Waste Management Strategy Action Plan (2009-14) with the objective to minimize environmental and health risks associated with improper e-waste management through involvement of various stakeholders and review of policies and legislations. However, the strategy is still in draft form; hence, subject to finalization.

The draft strategy had Key targets as follows:-

(i) By 2014, 80% of Imported Electric and Electronics Equipment conform to product standards;

(ii) By 2010, the quality of end use of electrical and electronic equipment imported into the country is controlled; and

(iii) Two to four e-waste collection and recycling canters are established and operationalized by 2014.

This ambitious strategy is yet to be implemented.

9.0 STUDY VISITS

9.1 Visit to key stakeholders in Tanzania

On 27th of February 2012 the Coordination Committee on e-Waste carried out a study visit to Dar es Salaam City Council Offices, the Dumping site at Pugu Kinyamwezi and the offices of one e-waste collector M/S Harmonics Biosphere Company Limited at Mbezi Beach. The objective of the visits was to see various efforts being taken by stakeholders in management of e-waste in Dar es Salaam.

Table 6: Lesson Learnt from the Study visit in Dar es Salaam

S/NO	INSTITUTION	LESSONS	OBSERVATIONS
1.	Dar es salaam City Council	• Very aware of their role on general solid waste man agement; • Little aware of e-waste management issues; • Low knowledge of e-waste waste dangers to environ ment and human health; • Little resource to manage e-waste and other hazardous wastes; • Non supportive structure to waste programmes as Municipals looks more powerful with much resource leaving the city council with little or no resource for waste management.	Structurally, Dar es salaam City Council looks like a giant without a territory hence less power to impose rules to the Municipals.
2.	Dumping Site at Pugu Kinyamwezi	• No separation of e-waste from domestic waste, • Pathetic condition in the dump as no any measure taken to preserve the environment and the employees, • e-waste found at the dump site had all valuable elements already taken away (Extracted), • Low price of dumping (Shs.3000/=) per ton.	The dump was burning and many scavengers were found. The health of workers and neighbours were found to be at danger
3.	M/S Harmonic Biosphere Company Limited	• A company dealing in collection of obsolete computer and export abroad, • Not yet shipped even a single container because most government offices were not ready to release their obsolete computers	The company was found to be small and just starting to pursue e-waste issues as just part of their business.

S/NO	INSTITUTION	LESSONS	OBSERVATIONS
		due procurement and disposal procedures and low level of awareness of the people, • Inadequate strategies to collect the obsolete computers, • No support from the government.	

Figure 4: Dumping of e-waste at Pugu Kinyamwezi Dar Es salaam as captured on 27th February 2012 (Source: TCRA)

9.2 Visit to key stakeholders in Kenya

The Committee visited Kenya from 6th to 10th March, 2012 to benchmark with Kenya on management of e-waste. During the visit, the Committee visited Computer Aid International (CAI), the Ministry of Nairobi Metropolitan Development, the Waste Electrical and Electronic Equipment (WEEE) Centre and National Environment Management Authority (NEMA).

The lessons learnt and observations made during the visit are summarized in the table below for each stakeholder

Table 7: Lesson Learnt from the Study visit in Kenya

S/NO	INSTITUTION	LESSONS	OBSERVATIONS
1.	Computer Aid International	• An NGO that provide affordable and environmentally friendly ICT solution to all • Advocacy is key for raising awareness, • Collaboration among stakeholders is critical, • Skilled human resource in handling e-waste is important, • Training of handlers of e-waste is crucial, • Establishment of collection centres and take back systems is of paramount importance, • Procurement and disposal procedures in public institutions hinders e-waste collection efforts, • Establishing recycling plants is a solution to e-waste management.	
2.	Ministry of Nairobi Metropolitan Development National Environment Management Authority (NEMA)	• Is a Ministry which is dedicated for the development of Nairobi metropolitan and has a final say when it comes to Nairobi Matters, • Due to its population and contribution to the economy, there is need to have ministry dedicated for big cities like Dar es salaam,	

S/NO	INSTITUTION	LESSONS	OBSERVATIONS
		Mwanza and Arusha similar to that of Nairobi to be able to handle wastes including e-Waste. • WEEE Centre of Kenya was allocated 5 acres of land by the Nairobi City Council for e-waste management activities, • Government has a primary role in taking steps such as provision of land and investment in e-Waste Management	
3.	Waste Electrical and Electronic Equipment Centre (WEEE Centre)	• An NGO that Collects, refurbishes, recycles, disposes and exports e-waste • The plant is running under capacity probably due to lack of total public awareness within Kenya and tedious procedure of disposing obsolete computers by the government and its agencies, • Procurement of machines alone for the establishment of a WEEE costs at least shs.500 million for manual machine and shs.4billion for full or semi-automated plant apart from other costs such	Tanzania may choose to have its own WEEE Centre for e-waste management if it considers the long term benefits to its people in terms of business, environment and health.

S/NO	INSTITUTION	LESSONS	OBSERVATIONS
		as Land, buildings and power.	
4.	National Environment Management Authority (NEMA)	• Kenya treats e-waste under the hazardous waste policy, • There is no specific policy on e-waste management, • There are no specific legislation and regulations on e-waste, • There are guidelines specifically for management of e-waste. Please visit www.nema.go.ke • NEMA is engaging universities and research institutions to work on e-waste issues.	• NEMA has mandate to influence policies, legislation and guidelines on e-waste management. • NEMA has little interest with WEEE Centre.
5.	Communications Communication of Kenya(CCK)	• Understand the dangers of mismanagement of e-waste but like TCRA the existing legislation gives them little power to deal with e-waste issue.	CCK has little collaboration with stakeholders on e-waste.

Figure 5: The main entrance to the WEEE Centre in Nairobi Kenya (Source: TCRA)

Figure 6: The interior outlook of the WEEE Centre in Nairobi Kenya (Source: TCRA)

Figure 7: A semi-skilled technician dismantling computers at WEEE Centre in Kenya (Source: TCRA)

Figure 8: Tanzania Delegates (from left: Mr. E. Mbilinyi, Ms. T. Hussein, Eng. J. Kilaba, Mr. John Daffa and Dr. Ally Simba) listening to the WEEE Centre manager (Not in the picture) in Nairobi (Source: TCRA)

10.0 FINDINGS AND RECOMMENDATIONS

10.1 Findings

1. Tanzania has no elaborate framework that deals with e-waste management. The existing policies, regulations and guidelines are not e-waste specific and are not well coordinated,
2. The e-waste problem is growing exponentially,
3. There is weak enforcement of the existing regulations,
4. There is lack of awareness of the magnitude of the danger of the e-waste and its resultant adverse effects to the environment and public health,
5. There is lack of public advocacy and sensitization,
6. E-waste management can add values through creation of employment and extraction of valuable minerals that can be reused or recycled.

10.2 Recommendations

1. The Ministry responsible for environmental management is encouraged to develop specific e-waste policy, legislation, regulations and guidelines. The government is further invited to consider the draft proposals on E-waste Policy, Regulations and Guidelines as annexed to this Report.
2. In order to avoid further uncoordinated disposal of e-waste, NEMC and Local-Government Authorities need to facilitate establishment of e-waste collection centres immediately,
3. The Ministry responsible for environmental management is encouraged to establish e-waste recycling plants preferably on Public Private Partnership. Information found in the website indicate that for machines which can handle between 5000 to 7500 tons of e-waste the costs is at least US$ 300,000 for manual machines and US$ 2,000,000 for semi-automated machines. (Costs are exclusive of land, installation and taxes)
4. NEMC is urged to plan and initiate Advocacy Programs on e-waste management in the shortest possible time,

5. TCRA is urged to consider inclusion of take back systems by electronic communications equipment dealers/operators in their license conditions,
6. All dealers of electrical equipment be urged to establish a take back system,
7. The Government is encouraged to put in place a clear and collaborative Institutional arrangement to deal with e-waste,
8. The Government is encouraged to forge partnership with private sectors, NGO and other stakeholders in managing e-waste.
9. Recommended Action Plan on e-waste Management

Table 8: Recommended Action Plan on e-waste Management

S/N	ACTIVITY	RESPONSIBLE	TIMELINE
1	Submission of the Report to the Director General-TCRA	Coordination Committee on e-Waste Management	2nd April 2012
2	Presentation of the Report to the Management and the Board-TCRA	Coordination Committee on e-Waste Management	25th , 30th April 2012
3	Dissemination of the report to the key stakeholders	TCRA Management	17th May 2012
4	Stakeholder Workshop on e-Waste management in Tanzania	TCRA Management	Mid June 2012

11.0 ANNEXES

Annex 1: Draft E-Waste Policy
Annex II Draft E-Waste Regulations
Annex III: Draft E-Waste Guidelines

12.0 REFERENCES

1. National Environment Policy, 1997
2. Sustainable Industrial Development Policy (SIDP), 1996-

2020
3. National Water Policy (2002); National Energy Policy, 2003
4. National Trade Policy, 2003
5. Small and Medium Enterprises (SMEs) Development Policy, 1996
6. National Information and Communications Technologies (ICT) Policy, 2003
7. E-waste Assessment Tanzania (UNIDO e-waste initiative for Tanzania) Report (January, 2011): by Anne Magashi & Mathias Schluep
8. E-waste Inventory Assessment Manual, 2007 (Volume I): by UNEP of IEIETC, Osaka/Shiga
9. E-waste Management Manual, 2007 (Volume II): by UNEP of IEIETC, Osaka/Shiga
10. The Environmental (solid Waste Management) Regulations,2009,
11. The Hazardous (Waste Control) regulations, 2009,
12. The Environmental Management Act of 2004,
13. Guidelines for e-Waste Management in Kenya,
14. Executive Agencies Act No. 30 of 1997,
15. Tanzania Bureau of Standards Act No. 3 of 1975

Annex 1

DRAFT DRAFT

THE UNITED REPUBLIC OF TANZANIA

Vice President's Office

Proposed E-Waste Management Policy, 201x

P. O. Box 5380, Dar Es Salaam, Tanzania

(DRAFTED BY COORDINATION COMMITTEE ON E-WASTE MANAGEMENT – March, 2012)

Table of Contents

GLOSSARY

"Information and Communication Technology (ICT)": is described as the convergence of telecommunications, broadcasting, computers, storage and audio-visual systems in order to enable users to create, access, store, transmit and manipulate information.

"Private Sector": in this Policy are described as those entities that are contributors to E-Waste. They include ICT Network and Service Providers (i.e. ISPs, Broadcasting companies, Fixed & Mobile operators), Importers, traders, re-furbishers and vendors of EEE.

'Waste Electrical and Electronic Equipment (WEEE) or Electronic waste - e-waste or e-scrap': are described as discarded electrical or electronic devices.

"E-waste" is a 'tradable commodity' and its 'mechanism of trading' are usually described in terms of E-waste composition, potential for material recovery, E-waste trade value chain (starting from manufacture, production, import, consumption, E-waste generation, treatment and disposal), sources of generation, market controls like availability and implementation of regulations and facilities of material recovery, socio-economic and environmental impacts. E-waste market assessment includes their classification and composition to help plan for E-waste inventory assessment.

"Extended Producer Responsibility": is an environmental protection strategy that makes the producer responsible for the entire life cycle of the product, especially for take back, recycling and final disposal of the product.

"Technologies or Technical interventions" are vital for E-waste management chain to maximize material recovery and minimize the risks. Technical interventions for collection and transportation of E-waste are commonly known as treatment channels and infrastructure. Technical interventions for treatment of E-waste are generally known as treatment technologies. Environmental impacts of treatment technologies are vital to be addressed during design and operation of these technologies. Guidance

is necessary and useful for technical personnel as well as for the responsible agencies/organizations and other stakeholders to identify appropriate technical options for collection, transportation, treatment and disposal of E-waste in order to comply with policy/ laws/ regulations.

"Recycler" represents a person or entity engaged in treating or processing (of used or waste EEE) to make them suitable for use.

"Refurbisher" represents a person or entity engaged in renovating or processing e-wastes for re-use.

For effective E-waste management, we need to quantify and characterize this waste stream, identify major waste generators, and assess the risks involved. A scientific, safe and environmentally sound management system, including policies and technologies, needs to be developed and implemented.

LIST OF ACRONYMS

CBO	-	Community Based Organisation
CRT	-	Cathode Ray Tube
EEE	-	Electrical and Electrical Equipment
EPR	-	Extended Producer Responsibility
FCC	-	Fair Competition Commission
ICT	-	Information and Communication Technology
IEIETC	-	Industry and Economics International Environmental Technology Centre
NEMC	-	National Environment Management Council
NGO	-	Non Governmental Organization
PVC	-	Poly Vinyl Chloride
SMEs	-	Small and Medium Scale Enterprises
TBS	-	Tanzania Bureau of Standards
TCRA	-	Tanzania Communications Regulatory Authority
TPF	-	Tanzania Police Force
TRA	-	Tanzania Revenue Authority
UNEP	-	United Nations Environment Program
UNIDO	-	United Nations Industrial Development Organization
VPO	-	Vice President's Office
WEEE	-	Waste Electrical and Electronic Equipment

1.0 INTRODUCTION

1.1 Background

Information and Communications Technologies (ICT) advances since the beginning of the 21st Century have led to multiple convergences of content, computing, telecommunications and broadcasting. They have brought about changes in other areas, particularly in the handling of the waste associated with them known as E-waste.

E-waste is growing exponentially simply because the markets in which these products are produced are also growing rapidly as many parts of the world cross over to the other side of it.

The use of computers, televisions and other electronics as well as office and household electrical appliances continues to grow. As demand increases and technology evolves, older electronics are replaced and the volume of EEE waste that is generated increases.

Rapid product innovations and replacements, especially in household Electrical appliances, ICT and office equipment, combined with the migration from analogue to digital technologies and to flat-screen TVs and monitors, for example, are fuelling the increase. Additionally, economies of scale have given way to lower prices for many electrical goods, which has increased global demand for many products that eventually end up as e-waste.

Because so much of the planet's e-waste is unaccounted for, it is difficult to quantify e-waste amounts. Moreover, the types of e-waste included in government-initiated analyses and collection programmes vary from country to country. In developed countries, it equals 1% of total solid waste on an average. The increasing "market penetration" in developing countries, "replacement market" in developed countries and "high obsolescence rate" make WEEE/E-waste one of the fastest waste streams.

The dangers and benefits posed by the e-waste are that, in addition to various hazardous materials, e-waste also contains many valuable and precious

materials. In fact up to 60 elements from the chemical periodic table can be found in complex electronics. Using the personal computer (PC) as an example – a normal Cathode Ray Tube (CRT) computer monitor contains many valuable but also many toxic substances. One of these toxic substances is cadmium, which is used in rechargeable computer batteries and contacts and switches in older CRT monitors. Cadmium can bio-accumulates in the environment and is extremely toxic to humans, in particular adversely affecting kidneys and bones.

Beyond CRT monitors, plastics, including polyvinyl chloride (PVC) cabling is used for printed circuit boards, connectors, plastic covers and cables. When burnt or land-filled, these PVCs release dioxins that have harmful effects on human reproductive and immune systems. Mercury which is used in lighting devices in flat screen displays, can cause damage to the nervous system, kidneys and brain, and can even be passed on to infants through breast milk. Electrical goods contain a range of other toxic substances such as lead, beryllium, brominated flame retardants and polychlorinated biphenyls just to name a few. Lead plays an important role in the overall metal production processes and while attempts to design-out lead from EEE does not necessarily mean that it is no longer used. Even the lead-free solder elements are co-produced with lead.

On the other hand, the huge impact of EEE on valuable metals resources must not be neglected. A mobile phone for example, can contain over 40 elements including base metals copper, tin, special metals like cobalt, indium, antimony and some precious metals like silver, gold and palladium. Electrical waste though contains hazardous but also valuable and scarce materials.

1.2 State of affairs of E-Waste in Tanzania

In Tanzania, e-waste is mainly handled by people in informal sector. Informal sector uses crude techniques such as burning of cables to recover precious metals. Toxic substances from these techniques pollute environment and cause harm to the health of the people. The resource efficiency of these processes is also awful.

The above illustrated a pressing need for a holistic view to be taken in analyzing the e-waste situation for working out possible solutions including having clear policy direction. The analysis was carried out by a Coordination Committee on E-Waste Management in Tanzania, formed by TCRA with other memberships drawn from VPO, NEMC and TPF.
Tanzania achieved notable progress in developing a number of Policies and regulations which aim at protecting the environment and human settlement. However, there is no specific policy or regulation related to e-waste management.

In the absence of an effective method for collection of E-waste and managing the hazardous constituents, some E-waste end up at the scrap market which recycles them, using high polluting technologies. Some other E-waste is being disposed of in landfills resulting in high environmental risk and health hazards to humans.

The lack of a specific E-waste policy, Legislation and Regulations has led to unmanageable E-waste that pause unsafe exposure in recycling operations and leaching of material such as heavy metals from landfills and incinerator ashes in many parts of the country. Therefore, this E-waste Policy deploys a broad-based national strategy to address Tanzania's **E-green** agenda.

The anticipated E-waste policy has to relate to other relevant sectoral policies, whether they are **infrastructural** (such as telecommunications or ecommerce), or **vertical** (such as education, manufacturing or health), or **horizontal** (such as information, or governance). Consequently, in addition to developing and implementing an E-waste Policy, other relevant sectoral policies and their related institutions, legislations and regulations must be accommodated. It is also necessary to review existing legislation, thereby enacting requisite changes while introducing new legislation or review the current one, to create the appropriate legal framework within which this policy will be implemented.

Appropriate institutional arrangements are to be created to ensure that all stakeholders can rise to the challenge of implementing this E-waste Policy.

1.3 Vision

The E-Waste Policy is aligned to the following vision statement:

"Tanzania to become an E-green destination within the region and beyond"

1.4 Mission

The overall mission of this Policy is:

"To control nation-wide e-pollution growth and improve human health by providing appropriate e-waste management mechanisms through advocacy, partnerships, collaboration and investments in the required facilities."

1.5 The Policy context and Basis

Increased economic growth has been facilitated by technologies which have become an integral part of our daily life. Its use has generated opportunities, as well as challenges in the form of Electrical and Electronic wastes (E-waste) and their disposal.

Several categories of E-waste are generated by various sectors that require policy guidance for their management. Such categories include:

(i) IT and telecommunications equipment;
(ii) Electrical and electronic tools;
(iii) Large household appliances;
(iv) Small household appliances;
(v) Consumer equipment;
(vi) Toys, leisure and sports equipment;
(vii) Lighting equipment;
(viii) Medical products;
(ix) Automatic dispensers;
(x) Monitoring and control instruments;
(xi) Batteries

The dangers and benefits posed by the e-waste are that, in addition to

containing various hazardous substances that pose threat to human health and the environment, e-wastes also contain some valuable and precious materials. This characteristics call for specific policy direction on appropriate handling e-wastes.

This Policy has articulated five main focus areas in handling e-wastes in Tanzania which include Strategic E-waste Management; EEE Manufacturers, Traders and Users; E-waste productive sectors and handling facilities availability; Legal and Regulatory Framework; and Human Capital.

It is also noteworthy that at the end, is provided the institutional arrangements for effective, efficient and sustainable implementation of the Policy.

2.0 STATUS OF E-WASTE RELATED ISSUES IN TANZANIA

The country is experiencing piling of and crude dumping of e-wastes that has brought out both human health and environmental risks; hence the urgent need for a national e-waste management policy.
It is estimated that Tanzania generates approximately …….. tones of e-waste every year. This is produced because the growth of the economy is dependent on electronic hardware for household, industrial and office automation. However, the electronic hardware is generating electronic waste that has immense potential to cause enormous harm to human health and environment.

2.1 IT and Computer Hardware & Software

There are no local manufacturers of IT equipment in Tanzania; all local dealers or agents import these products. There are no clear standards guiding the imports of both hardware and Software. Few local companies are developing computer application packages. Most of the hardware and software used by both public and private sectors are imported but when they are destined for reuse, resale, salvage, recycling, or disposal there are no formal refurbishing plant(s) in the country. So, they contribute highly to the E-waste growth.

2.2 Electrical Appliances

Except for cables, there are no local manufacturers of household's and office electrical and electronic equipment including entertainment devices in Tanzania; all local dealers or agents import these products. In many cases, they don't comply with available standards guiding the imports of the equipment as a result; there are much substandard and counterfeit equipment in the country. Also unreliable power supply contributes to damages on EEE. All these contribute highly to the E-waste growth.

2.3 Other Communications Equipment

As in the case with IT and Electrical equipment, there are no local manufacturers of telecommunications phones, equipment or systems and television sets in Tanzania; all local dealers or agents import these products. In some cases, they don't comply with available standards guiding the imports of the equipment as a result; there are much substandard and counterfeit equipment in the country. So, they contribute highly to the E-waste growth.

2.4 Available Institutional Frameworks

The key institutions involved in the general waste management in Tanzania are Vice Present's Office –Division of Environment and Local Government Authorities. Others include the relevant sectoral Ministries and Regulatory Bodies such as Ministries of Industry, Trade and Market (MITM); National Environment Management Council (NEMC); and Occupational Safety and Health Authority (OSHA).

The Environment Management Act (2004) also provides for the establishment of the National Environmental Advisory Committee (NEAC) which advice the Minister responsible for environmental and other sectoral Ministries on matters related to environment degradation including waste management.

Others who are indirectly being involved in one way or another with E-waste issues include TPF (for disposal of EEE handled to them as stolen but not collected by owners), TRA (on imports and exports), TBS (on Electrical Equipment standardization and enforcement) and TCRA who regulate the

communications industry with a specific mandate on type approving all Electronic Communications Equipment.

It is therefore obvious that E-waste is a cross-cutting affair that requires a clear institutional leadership.

2.5 Government efforts on handling e-waste

The government did develop a number of policies that are in existence which aims at protecting the environment and human health. Among these policies include:

(i) National Environment Policy (1997);
(ii) Sustainable Industrial Development Policy (SIDP) 1996-2020;
(iii) National Water Policy (2002); National Energy Policy (2003);
(iv) National Trade Policy (2003);
(v) Small and Medium Enterprises (SMEs) Development Policy (1996);
(vi) National Information and Communication Technologies (ICT) Policy (2003)

However, none of these Policies provides clear directions as far as E-waste is concerned. Considering the gravity of the problem, Tanzania needed a specific Policy on e-waste management.

On the other hand, the Vice president`s office developed draft National Waste Management Strategy Action Plan with the objective to minimize environmental and health risks associated with improper e-waste management through involvement of various stakeholders and review of policies and legislations. The draft strategy had Key targets as follows:-

(i) By 2013, 80% of Imported Electric and Electronics Equipment conform to product standards;

(ii) By 2010, the quality of end use of electrical and electronic equipment imported into the country is controlled; and

(iii) Two to four e-waste collection and recycling centers are established and

operationalized by 2013. However, this ambitious strategy is yet to be implemented.

An assessment of e-waste in Dar Es Salaam was conducted by VPO in 2005 and another one by Cleaner Production Centre of Tanzania in 2011 as the latest.

3.0 POLICY OBJECTIVES, CHALLENGES AND STATEMENTS

The E-Waste Policy's Strategic objective is to provide a national E-Waste network that will enable each citizen and institution to contribute towards achieving the stated Vision herein

The E-Waste Policy's Specific objectives are to:

(a) Provide a framework and basis for either development or alignments of appropriate Legislation(s), Regulations and Guidelines;

(b) Deploy E-waste management systems and Centre(s) in all sectors of the economy and to all communities in Tanzania; and

(c) Have a well informed and responsible public on E-Waste issues;

The policy articulates five focus areas whose objectives, challenges and policy statements are detailed herein below. As already shown under Policy Context and basis, the five focus areas are drawn from the situations described in the fore-sections. These areas should be interpreted, not as sequential steps, but as elements of a multi-dimensional space with numerous cross-cutting themes. This crosscutting characteristic is one of the main reasons why a coherent over-arching E-Waste Policy is urgently needed.

3.1 Strategic E-Waste Management

3.1.1 Issues

Tanzania's E-Waste environment is lacking a specific policy direction and leadership that takes into account the multi-sectoral nature of WEEE itself. Some statements are fragmented in various policies hence make the oversight, leadership, ownership and accountability issues unaccounted for.

Leadership backed with clear policy is important in resourcing, creating an attractive environment for investors and consumers, identifying areas needing priority funding and support, and obtaining direct resources from either national or international sources for E-waste initiatives and investments. Consequently, leadership requires institutional development for organizations involved in E-waste productions and for political and executive responsibilities to be assigned towards delivering this Policy.

3.1.2 Policy Objectives

The overall Objective for E-Waste Management Policy is to minimize environmental and health risks by promoting proper management of WEEE.

The Specific Objectives are:

i) To develop and cause implementation of a scientific, safe and environmentally sound management system, including policies and technologies;

ii) To raise public awareness and understanding of the WEEE problems and to promote individual and community participation in management action;

iii) To strengthen regulatory regime and institutional capacity in e-waste management;

iv) To review related policies and Streamline innovative approaches on e-waste management into national policies;

v) To promote handling of e-waste including minimization, reuse, separation at source, refurbishing, recycling and environmentally sound disposal of e-waste;

vi) To establish sufficient and reliable data on e-waste management for informed decision making;

vii) To promote public and private investments in the e-waste sector; and

3.1.3 Policy Challenges

i) Finding appropriate mechanisms for policy coordination due to cross-cutting nature of E-Waste management affairs;

ii) Creating awareness and knowledge among leaders and the public on EEE wastes,

iii) Having plans and appropriate resources for establishing WEEE Centre(s),

3.1.4 Policy Statements

(i) Since E-waste is a delicate matter, the Government will engage in creation of data base on best practices and failure analyses for development and deployment of efficacious E-waste management and disposal practices within the country;

(ii) The Government will set forth its position on E-waste management by identifying the roles and responsibilities of all stakeholders, including the public, in reducing the generation of E-wastes and providing a system for its general handling including segregation at source, collection, recycling and disposal;

(iii) The Government will make appropriate laws, regulations and rules governing importation, manufacture, transportation, handling, use, storage and disposal of EEE with toxic substances, and dangerous products, hazardous wastes and hazardous substances, as appropriate;

(iv) The Government will promote bilateral relations and cooperation with national, regional and international organizations that supervises, produce, process, store and trade E-wastes.

3.2 EEE Manufacturers, Traders and Users

3.2.1 Issues

Tanzania has made remarkable progress in deploying, trading-on and using both ICTs and electrical appliances. This progress has been well received by the citizens, service providers and traders who are striving to address unmet demand and competition in newly liberalized as well as long existed markets.

The high rise in use of Electrical and Electronic Equipment (EEE) greatly contributes to e-waste generation.

On the other hand, Women are the natural resource managers in our society. Their knowledge, experience, and traditional skills in the management of resource stocks and households need to be tapped for increased action.

3.2.2 Policy Objectives

(i) To have in place facilities for recovery of valuable fractions out of e-wastes;

(ii) To engage in E-waste recycling activities that could contribute to the development of SMEs hence creation of employment;

(iii) To set forth an efficient e-waste management system in order to prevent pollution of water bodies

3.2.3 Policy Challenges

(i) E-waste is one of the solid wastes which could endanger public health if not well managed
(ii) Unreliable power supply contributes to frequent damages on EEE;
(iii) There are no local manufacturers of EEE in Tanzania;

3.2.4 Policy Statements

(i) The relationships with manufacturers and Traders of EEE shall be established through engaging the country into E-waste recycling activities by creating an enabling environment so as dispose of E-waste scientifically at economic costs;
(ii) The role of women in e-waste-related activities will be recognized and promoted with a view to achieving increased women's involvement and integration in general e-waste management areas; and
(iii) The manufacturer and Traders of EEE will be required to strengthen the implementation of the principles of extended producer responsibility.

3.3 E-Waste Productive Sectors and Facilities Availability

3.3.1 Issues

Electrical and Electronic Equipment (EEE) is currently one of the fastest growing waste streams in the world. In developed countries, it is about 1% of total solid waste. The increasing “market penetration” in developing countries, “replacement market” in developed countries and “high obsolescence rate” are among the issues.

Many of the EEE contain hazardous chemicals and substances that can cause serious human health and pollution problems if their wastes are not handled properly.

In Tanzania where there is also high rise in use of EEE in various areas like communications, offices, households and health or medical services premises. Unfortunately, the associated wastes recycling and disposal are

unprofessionally been carried out by informal and unorganized sectors mainly due to the presence of some valuable recyclable components.

3.3.2 Policy Objectives

(i) To have in place a mechanism that will enable the Government quantify and characterize E-waste streams, identify major E-waste generators, and assess the risks involved;
(ii) To foster entrepreneurship and innovativeness in the areas of EEE refurbishing and technical interventions.

3.3.3 Policy Challenges

(i) Institutional coordination of trade links and e-markets;
(ii) Flood of substandard and counterfeited EEE due to absence of appropriate facilities to perform conformity tests;
(iii) Unreliable power supply contributes to damages on EEE.

3.3.4 Policy Statements

(i) The Government will encourage all sectors that are likely to contribute to e-waste production to strengthen the implementation of the principles of extended producer responsibility;
(ii) The Government will develop a structured policy implementation strategy by detailing the action programme with definite timelines, setting up a monitoring committee, promoting E-waste recycling as a socially viable industry and involving specialized champion groups, institutions or SMEs.
(iii) The Government will encourage beneficial reuse/refurbish/recycling of E-waste, catalyzing business activities that use E-waste.

3.4 Legal and Regulatory Framework

3.4.1 Issues

The government did develop a number of policies that are in existence which aims at protecting the environment and human health. However, none

of these Policies provides clear directions as far as E-waste is concerned. So to say, currently, there is no specific policy or legislation on E-waste management in Tanzania. E-waste is interpreted under Hazardous Waste regulations.

Further, there are also various institutions involved in the general waste management without concrete focus on E-waste.

It is obvious that E-waste is a cross-cutting affair that requires a clear institutional leadership and specific Policy direction.

3.4.2 Policy Objectives

(i) Establish an enabling legal and institutional frameworks with clear institutional leadership and specific Policy direction; and
(ii) Ensure that Tanzania does not become a destination of E-wastes.

3.4.3 Policy Challenges

(i) Mould the present EEE traders and users to adopt changes which may culturally be difficult;
(ii) Address the inadequate regulatory capacity, especially in the areas of human resources and facilities for E-waste management; and
(iii) Enacting specific and effective legislative instrument or reviewing the existing ones.

3.4.4 Policy Statements

(i) The Government will continue promoting the businesses and entrepreneurships in EEE;
(ii) The Government will regularly carry out assessment, covering all the cities and all the sectors in order to envelope inventories that can be used to prepare action plan for eco-friendly and economic

E-waste management;

(iii) The Government will formulate and regulate occupational health safety norms for the medical E-waste handling;

(iv) The Government will insist on stringent enforcement against want on infringement of Basel convention and E-waste dumping by preferring incarceration over monetary penalties for demonstrating deterrent impact;

(v) The Government will enforce labeling of all computer monitors, television sets and other household/industrial electronic devices for declaration of hazardous material contents with a view to identifying environmental hazards and ensuring proper material management and E-waste disposal;

(vi) The Government will announce incentives for growth of E-waste disposal agencies so that remediation of environmental damage, threats of irreversible loss and lack of scientific knowledge do not anymore pose hazards to human health and the environment; and

(vii) The Government will consider gradual introduction of enhanced producer responsibility process, practices and procedures so that preventive accountability gains predominance over polluter immunity.

3.5 Human Capital

3.5.1 Issues

Tanzania is not the only country with insufficient numbers of skilled and experienced experts not only in E-waste but in other professions too.

In regard to E-waste management, there are opportunities in the areas like re-engineering of curriculum development, Research & Development and teaching methodologies as well as entrepreneurship.

Both adequate facilities and trained personnel need to be made available to handle E-wastes. Building capacity for the development of general competence is inherently a lengthy process; it takes time to train an appropriate cadre of professionals, and even longer for them to acquire mature experience.

3.5.2 Policy Objectives

(i) Increase the size and quality of E-Waste skilled human resource base in Tanzania;

(ii) Expand and develop the teaching of E-Wastes at all levels of the national system of formal and informal education and training;

(iii) Give special attention to women and youth, the disabled and disadvantaged in order to address social inequities;

(iv) Plan and carry out advocacy rallies across the country aiming at informing the public on issues surrounding E-wastes and what they should do; and

(v) To foster interest among Tanzanian Scientists to conduct research and development activities related to E-wastes.

3.5.3 Policy Challenges

(i) Boosting the number of dedicated and qualified E-waste professionals;

(ii) Willingness and attitudes in refining the educational system;

(iii) Financial requirement for setting-up WEEE and Research & Development Centre(s).

(iv) Developing remuneration and incentives/risk packages for E-waste skilled staff with focus on retention schemes for skilled workers and moving from "brain drain" to "brain gain"

3.5.4 Policy Statements

(i) The Government will promote and support the development of qualified personnel for efficient policy-making, regulation and management of E-wastes through short and long training and retraining programmes for professionals and other operatives;

(ii) Human resource development will be a priority at all levels - the general public, NGOs, public officials, technical and scientific staff with particular attention be paid to the establishment and strengthening of institutions responsible for E-Waste management;

(iii) Research & Development and WEEE Centre(s) will be established for use by both formal and informal sectors, in order to have sustainable e-waste management in the country; and

(iv) The Government will facilitate capacity building for industrial E-waste handling for policy makers, managers, controllers and operators. It will also enhance consumer awareness regarding the potential threat to public health and environment by electronic products, if not disposed properly.

4.0 INSTITUTIONAL ARRANGEMENTS

4.1 Institutional Framework

Institutional framework that identifies and defines the roles of various actors is the backbone of the E-waste Policy. Considering that implementation of this Policy will only be possible through participation of all the key actors, the identification and definition of these roles is therefore inevitable. The common and shared Vision, Mission, goal(s) and Objectives as clearly defined in the Policy will have to be realized if the various actors will play their specific roles.

For effective, efficient and sustainable implementation of the Policy, each stakeholder in the envisaged arrangement has a role to play; the key institutions in the process will include:

4.1.1 The Government

The Government has the fundamental role of ensuring that the Policy continues to be articulate and dynamic. And, that an effective legislation, regulations and guidelines are in place.

Other roles will be to plan and lead advocacy programmes amongst the society on E-waste and related issues avail financial resources for establishing and maintaining E-waste management systems and facilities including land.

The current key government institutions involved in the general waste management in Tanzania are Vice Present's Office and Local Government Authorities.

Local authorities represent the most powerful tier of Government. They

provide the most accessible channels for people to express their concerns and take action to create sustainable conditions. Since e-waste problems have their roots in local activities, Local authorities are a determining factor in fulfilling e-waste management policy objectives. Local authorities shall be responsible for overseeing planning processes, and for establishing local bylaws.

Others include the relevant sectoral Ministries such as Ministry of Industry, Trade and Market (MITM).

The lead institution will be the Ministry (through a Division) responsible for environment within the Vice Present's Office.

4.1.2 Regulatory Regime

Regulation of actors in the sectors that contribute to E-waste will be inevitable. The regulatory institutions will continue to be responsible for overseeing enforcement of Laws, Regulations and Guidelines relating to E-waste in the country.

Currently, the key Regulatory institutions involved in the general waste management in Tanzania are National Environment Management Council (NEMC) and Occupational Safety and Health Authority (OSHA). The Communications industry is regulated by the Tanzania Communications Regulatory Authority (TCRA).

For the implementation of this Policy, the lead Regulatory institution will be the National Environment Management Council (NEMC). NEMC will retain its advisory and is expected to enforce pollution control and perform the technical arbitration role in the undertaking of e-waste management compliance.

4.1.3 The Private Sector, Public and NGOs/CBOs

Environmental issues are best handled with the participation of all citizens at the relevant level. It is widely recognised that interventions which are likely to have positive impacts are those which enjoy the greatest support

from grassroots. The roles of the public and non-State actors are therefore vital in the shaping and implementation of participatory democracy. NGOs/ CBOs possess diverse experience, expertise and capacity in fields relevant to the implementation of environmental objectives. The nature and the independent role they play are a major attribute and precondition of real participation.

On the other hand, the private sector, particularly within business and industry can play a major role in reducing the stress on resource use and the environment. There is increasing recognition that production, technological and management approaches that use resources inefficiently form residues which are not reused, discharge wastes that have adverse impacts on human health and the environment, and manufacture products that when used have further impacts and are difficult to recycle. Improvement of production systems through technologies and processes that utilise resources more efficiently and at the same time generate less waste; that reclaim, recycle and re-use by-products, to a very large extent is within the province of business and industry.

In this regard, the private sector, NGOs, CBOs and every citizen as primary sources of E-waste, during their service provision, consumption, and use of EEE, are expected to make sure they comply with the prevailing Laws, Regulations and Guidelines relating to E-waste in the country.

4.1.4 Academia and Media Houses

The Academia and the Media have the fundamental role of ensuring the public is knowledgeable and well informed on the issues surrounding E-waste.

In this regard, Media houses are envisaged to work in collaboration with other stakeholders including the government to support the implementation of this Policy in various undertakings including supporting and broadcasting/ publishing as well as participating in advocacy activities.

The Academia in ensuring that the public is knowledgeable will be expected to have dynamic curriculums that would be addressing issues and

incorporating training programmes on E-waste.

4.1.5 Regional and International partnerships

Regional and International developmental partners are envisaged to work in collaboration with the government to support the implementation of this Policy in various undertakings including preparation of its implementation strategies and advocacy activities.

The financial viability of all the stages of E-waste management chain is vital for its implementation. Financing mechanism of collection, transportation, treatment and disposal of E-waste may include market-based instruments (economic instruments) including recycling fee and environmental tax based on amount and type of waste.

Regional and International developmental partners may also be invited and involved in the resources mobilization and provision of support from bilateral and multilateral partners for investing in fundamental areas like establishment of adequately equipped WEEE Centre(s), a training centre specifically for E-waste management as well as EEE Standards formulation and conformance testing.

4.2 Overall Policy implementation

Because of the multifaceted nature of E-waste issues and the factors that impact on them, the implementation of this Policy, and the consequent achievement of its goals and objectives will be the responsibility of the entire government at all levels and in all sectors, working in close partnership with the private sector within Tanzania and beyond.

There is therefore a need for the active participation and involvement of all individuals and national institutions. There is also a need of a strong commitment on the part of the political leadership of all kinds and at all levels. In order to effectively coordinate and harmonize efforts and activities undertaken by many institutions in different locations, there is a need to put a mechanism in place which will ensure that the policy is updated from time to time and that implementation strategies such as regulations and guidelines

are drawn and enforced in the most efficient and effective manner. The final goal should be the deployment of E-waste management systems in all sectors of the economy and to all communities in Tanzania.

Annex 2

DRAFT **DRAFT**

THE UNITED REPUBLIC OF TANZANIA

Vice President's Office

Proposed E-Waste Regulations, 201x

P. O. Box 5380, Dar Es Salaam, Tanzania

(DRAFTED BY COORDINATION COMMITTEE ON E-WASTE MANAGEMENT – March, 2012)

THE ENVIRONMENTAL MANAGENT ACT
(CAP. 191)

REGULATIONS

(Made under Section 133(4))

PART I

PRELIMINARY PROVISIONS

1. Citation

These Regulations may be cited as theElectronic and Electrical Waste (Management and Handling) Regulations, 2012

2. Application –

These Regulations shall apply to all categories of electronic and electrical waste with respect to manufacturing, generation, importation, distribution, sell, purchase, recycling, refurbishing, disposition and processing of electrical and electronic equipment or components, transportation and their movement into or outside Mainland Tanzania.

3. Definitions –

In these Regulations, unless the context otherwise requires,-

a) ‘Act’ means the Environmental Management Act
b) 'authorization' means permission for handling, collection, reception, storage, transportation, dismantling, recycling, treatment and dispos al of e-waste;
c) bulk consumer' means bulk users of electronic and electrical equip

ment such as Central Government or Local Government, Depart ments, public organization, banks, educational institutions, multinational organizations, international agencies and private com panies;

d) collection centre' means a centre established, individually or' jointly or a registered society or a designated agency or a company or an association to collect e-waste

e) 'consumer' means any person using electronic or electrical equip ment excluding the bulk consumers;

f) 'council' means the National Environment Council

g) 'dismantler' means any person or registered society or a designated agency or a company or an association engaged in dismantling of used electrical and electronic equipment into their components;

h) 'disposal' means any operation which does not lead to recycling, recovery or reuse and includes physico-chemical .or biological treatment, incineration and deposition in secured landfill;

i) 'environmentally' sound management of e-waste' means taking all steps. required to ensure that e-waste are managed in a manner which shall protect health and environment against any adverse effects, which may result from hazardous substance .contained in such wastes;

j) 'electronic and electrical equipment' means equipment which is dependent on electric currents or electro-magnetic fields to be fully functional;

k) 'electronic waste or e-waste' means waste electronic and electrical equipment, whole or in part or rejects from their manufacturing and repair process, which are intended to be discarded;

l) 'extended producer responsibility' means responsibility of any producer of electronic or electrical equipment, for their products' beyond manufacturing until environmentally sound management of their end-of-life

m) 'facility' means any location wherein the process incidental to the collection, reception, storage, segregation, refurbishing, dismantling, recycling, treatment and disposal of e-waste are carried out;

n) 'producer' means any person who, irrespective of the selling technique used;

i. manufactures and offers to sell electrical and electronic equipment under his own brand; or

ii. offers to sell under his own brand, assembled electrical and electronic equipment produced by other manufacturers or suppliers; or

iii. offers to sell imported electrical and electronic equipment;

o) 'recycler' – means any person who is engaged in recycling or reprocessing of used electrical and electronic equipment or assemblies or their component;

p) 'transporter' means a person engaged in the off-site transportation ofe-waste by air, rail, road or water.

PART II

RESPONSIBILITIES

4. Any person who possesses or have in control of e-waste shall be under the general obligation to ensure they are separated from other types of wastes and deposited separately into receptacles as prescribed by the Council.

Responsibilities of manufacturers or producers

5. Any manufacturer or producer of e-waste shall ensure -

(a) collection of e-waste generated during the manufacture of electrical and electronic equipment and channelizing it for recycling or disposal;

(b) collection of e-waste generated from the 'end of life' of their products in line with the principle of 'Extended Producer Responsibility' and to ensure that such e-wastes are channelized to registered dismantler or recycler,

(c) collection and channelization by authorizing collection agencies;

(d) setting up collection centers or take back systems either individually or collectively;

(e) financing 'and organizing a system to meet the costs involved in the environmentally" sound management of e-waste generated from the 'end of life' of its own products and historical waste available on

the date from which these rules come into force, The financing arrangement of such a system shall be transparent. The producer may choose to establish such a system either individually or by joining a collective scheme:

(f) providing contact details' such, as' address, telephone numbers/ helpline number of authorized collection centers to consumer(s) or bulk consumer (s) so as to facilitate return of used electrical and electronic equipment;

6. Any manufacturer or producer of e-waste shall create awareness through publications, advertisements, posters, or by any other means of communication and information booklets accompanying the equipment, with regard to-

(i) information on hazardous constituents as specified by the Council in electronic and electrical equipment;

(ii) information on hazards of improper handling, accidental breakage, damage and/or improper recycling of e-waste;

(iii) instructions for handling the equipment after its use, along with the Do's and Don'ts;

(iv) affixing a visible, legible and indelible symbol given below on the products or information booklets to prevent e-waste from'being dropped in garbage bins containing waste destined for disposal

Responsibilities of operators/importers/sellers

7. Any operator, importer, seller shall establish a take back system ……..

Responsibilities of collector

8. Any collector shall:

(a) obtain an authorization for establishing a collection centre for e-waste in accordance with the procedure set by theCouncil and provide details such as address, telephone numbers/ helpline number, e-mail, etc. of such collection centre to the general public;

(b) ensure that the e-waste collected is stored in a secured manner till it is sent to registered dismantler(s) or recycler(s) as the case may be;

(c) ensure that no damage is caused to the' environment during storage and transportation of e-waste;

(d) maintain records of the e-waste handled and make such records available for scrutiny by the Council;

(e) label vehicles used for transportation of e-Waste;

(f) transport separately the e-waste from equipment devices listed in the 8th schedule of Environmental management (hazardous waste control and management);

(g) avoid damage or breakage of components of e-Waste during collection;

(h) store the e-waste after sorting it into various categories for easieraccess by downstream users as well as to facilitate record keeping on the quantities of various categories of waste; and

(i) ensure that has adequate PPE and facilities for loading the e-waste;

Responsibilities of consumer or bulk consumer

9. Any Consumer of electrical and electronic equipment shall:

(a) ensure that e-waste generated by them is channelized to authorized collection center (s) or Bulk consumers or registered dismantler (s) or recycler(s) or is returned to the pick-up or take back services provided by the producers; and

(b) bulk consumers shall maintain records of e-waste generated by them and make such records available for scrutiny by the Council;

(c) Separate e-waste from other wastes and deposit separately into

receptacles in order to facilitate collection, treatment and recycling;

(d) dispose e-waste generated to the e-waste collection centers;

(e) sell or donate e-waste to licensed refurbishers;

(f) take back equipment to the manufacturer, operator, importer or assembler;

(g) dump e-waste at the licensed dumping site for the e-waste specified by the Council; and

(h) be responsible for following recommended disposal methods or procedures especially dates of expiry or end of usage period of the product.

Responsibilities of dismantler

10. Any dismantler shall:-

(a) obtain authorization and registration from the Council in 'accordance with the procedure issued by the Council;

(b) ensure that no damage is caused to the environment during storage and transportation of e-waste;

(c) ensure that the dismantling processes do not have any adverse effect on the health and the environment;

(d) ensure that the facility and dismantling processes-are in accordance with the standards or guidelines published by the Council from time to time;

(e) ensure that dismantled e-waste are segregated and sent to the registered recycling facilities for recovery of materials;

(f) ensure that non-recyclable/non- recoverable components are sent to authorized treatment storage and disposal facilities;

(g) not process any e-waste forrecovery or refining of materials, unless he is registered with the Council as a recycler for refining.

Responsibilities of recycler

11. Any recycler shall:-

(a) obtain authorization and registration from the Council in accordance with the procedure set under these Regulations;

(b) ensure that the facility and recycling" processes are in accordance with the standards laid down in the guidelines published by the Council;

(c) ensure that residue generated thereof is disposed of in e-waste treatment storage disposal facility;

(d) make available all records to the Council for inspection;

(e) have hazard and safety signs displayed at appropriate places indicating the treatment plant or disposal facility and nature of operations;

(f) opt for the Best Available Technologies (BAT) for the integrated E-Waste recycling facility and comply with all the environmental norms of emissions, effluents, noise waste treatment and disposal.

(g) ensure reuse, recovery, recycling and final disposal of remains of e-waste;

(h) conduct and document at all facilities regular re-evaluation of Environment, Health and Safety (EHS) objectives and monitoring of progress toward achievement of these objectives..

(i) take sufficient measures to safeguard occupational and environmental health and safety in accordance with the Environmental Management (hazardous waste control and management)) Regulations;

(j) the personnel involved in handling E-Waste in recycling facilities at all operational levels are properly qualified and trained.

Responsibility of Refurbishers

12. Any refurbisher shall-

(a) clearly label products for easy identification of product constituents;

(b) separate through manual dismantling and/or automatic processing, the materials in equipment and components that are not directed to reuse and direct them to recovery facilities when technically and economically feasible;

(c) clearly indicate Extended Producer Responsibility on electrical and electronic equipment;

(d) maintain good housekeeping standards, including keeping all work and storage areas clean and orderly.

(e) Clean up operations for all areas of the facility should be planned, regularly implemented, and monitored.

PART III

PROCEDURE FOR SEEKING AUTHORIZATIN AND REGISTRATION FOR HANDLING E-WASTE

5. Procedure and authorization

(i) Every producer of electrical and electronic equipment listed in Schedule I, collection centre, dismantler and recycler of e-waste shall obtain an authorization from NEMC.

(ii) Every producer of electrical and electronic equipment listed in Schedule I, collection centre, dismantler and recycler of e-waste shall make an application, within a period of three months starting from the date of commencement of these Regulations in the prescribed Form.

(iii) On receipt of the application complete in all respects for the authorization the Council may, after such enquiry as it considers necessary and on being satisfied that the applicant possesses appropriate facilities, technical capabilities and equipmentto handle e-waste safely, grant within a period of ninety days an authorization in the prescribed Form to the applicant to carry out safe operations in the authorized place only, which shall be valid for a period of five years.

(iv) The Council may after giving reasonable opportunity of being heard to the applicant refuse to grant any authorization.

(v) Every person authorized under these rules shall maintain the record of e- waste handled by them in the prescribed Form, prepare and submit to the Council annual return containing the details specified in the Form on or before 30th day of June following the financial year to which that return relates.

(vi) An application for the renewal of an authorization shall be made in the prescribed Form before sixty days of its expiry and the Council may renew the authorization after examining each case on

merit and subject to the condition that there is no report of violation of the provisions of the Act· or the rules made there under or the conditions specified in the –authorization

(vii) Every producer of electrical and electronic equipment collection centre, dismantler and recycler of e-waste shall take all steps, wherever required, tocomply with the conditions specified in the authorization.

(viii) The Council shall maintain a register containing particulars of the conditions imposed under these rules for environmentally sound management of e-waste, and it shall be open for inspection during office hours to any person interested or affected or a person authorized-by him on his behalf.

6. Power to suspend or cancel an authorization

(1) NEMC may, may, if in its opinion, the holders of the authorization has failed to comply with any of the conditions of the authorization or with any provisions of tile Act or these rules and after J giving a reasonable opportunity of being heard and after recording reasons thereof in writing cancel or suspend the authorization issued under these rules for such period as it considers necessary in the public interest.

(2) Upon suspension or cancellation of the authorization, the Council may give directions to the persons whose authorization has been suspended or cancelled for the safe storage of the e-waste and such person shall comply with such directions.

7. Procedures for grant of registration

(1) Every dismantler or recycler of e-waste shall make an application, within a period of three months starting from the date of commencement of these Regulations in the prescribed Form in triplicate to the Council accompanied with a copy of the following documents for the grant or renewal of registration:-

(i) certificate of registration issued by the Registrar of Companies or

any other government agency authorized in this regard;

(ii) proof of installed capacity of plant and machinery issued by the Council or any other government agency authorized in this behalf;

(2) If the Council is satisfied that the application is complete in all respects and that the applicant is utilizing environmentally sound technologies and possess adequate technical capabilities, requisite facilities and equipment to recycle and process e-waste, may grant registration to such applicants stipulating therein necessary conditions as deemed necessary for carrying out safe operations in the authorized place only.

(3) The Council shall dispose of the application for registration within a period of ninety (90) days from the date of the receipt of such application' complete in all respects.

(4) The registration granted under these Regulations shall be valid initially for a period of two (2) years and thereafter for a' period of maximum five years on subsequent renewals from the date of its issue, unless the operation is discontinued or the registration suspended or cancelled by the Council.

(5) The Council may after giving reasonable opportunity of being heard to the applicant, by order, refuse to grant or renew.

(6) The Council shall monitor the compliance of conditions stipulated for granting registration

(7) The Council may cancel or suspend a registration granted under these rules, if it has reasons to believe that the registered recycler has failed to comply with any of theconditions of registration, or with any provisions of the Act or rules made there under, after giving an opportunity to the recycler to be heard and after recording the reasons there for.

(8) An application for the renewal of registration shall be made in the prescribed form Form before sixty (60) days of its expiry and the Council may renew the registration after examining each case on merit and subject to the condition that there is no report of violation of the provisions of the Act or the rules made there under or the conditions specified in the registration.

(9) The dismantler or recycler shall maintain records of the e-waste purchased and processed and shall file annual returns of its activities of previous year in the prescribed Form to the Council before 30th day

of June of every year.

(10) The Council may issue guidelines for standards of performance for recycling processes from time to time.

Procedure for storage of e-waste

8. Any producer, collection centre, dismantler or recyclers may store e-waste for a period not exceeding one hundred and eighty (180) days and shall maintain a record of collection, sale, transfer, storage and segregation of wastes and make these records available for inspection:

Provided thatthe Council may extend the said period up to one year in the following cases namely the waste which needs to be specifically stored for development of a process for its recycling or reuse.

14. Offences and Penalties

Any person who contravenes any provisions of these Regulations commits an offence and shall on conviction be liable to a fine not exceeding twenty thousand US Dollars or its equivalent.

Annex 3

DRAFT **DRAFT**

THE UNITED REPUBLIC OF TANZANIA

Vice President's Office

Proposed E-Waste Guidelines, 201x

P. O. Box 5380, Dar Es Salaam, Tanzania

(DRAFTED BY COORDINATION COMMITTEE ON E-WASTE MANAGEMENT – March, 2012)

Introduction

Currently, Tanzania does not have specific guidelines for handling of E-Waste. The lack of proper method for handling E-Waste leads to environmental damage as well as depletion of the resource based in secondary materials. Therefore setting up guidelines will provide a prescribed procedure for handling E-Waste in an environmentally sound manner. These Guidelines shall apply to distributors, users, refurbishers and recyclers.

Guidelines for Producers/ Manufacturers;

There are very few (If any) manufacturers of electronic equipment in Tanzania. However producers of electronics equipment need to:-

(i) Establish channel to collect the waste at the end of its life cycle;
(ii) Implement individual take back system or get organised to sectorial or sub sector producer organisations;
(iii) Label products for easy of identifications to show constituent of the product;
(iv) Comply to Tanzania standards of manufacture of electronic equipment; Build in the cost of product take back and disposal into purchase price.

Guidelines for Importers;

Importers of electronic and electric equipment are divided into two categories; Importers of new units and importers of used units. Importers need to:-

(i) Specify standards for products on the expected remaining lifespan of equipment;
(ii) Notify NEMC for consent to transport e-waste through Tanzania subject to stated conditions;
(iii) State the number of years a computer has been in use before donation;
(iv) Ensure used electrical and electronic goods reach the pre- destined end users. A record of customers should be kept to facilitate waste collection e.g. schools;

(v) Indicate envisaged lifespan of use unit when importing and bear responsibility for this ensuring that take back mechanisms are in place; Desist from importing hazardous waste.

Guidelines for Assemblers;

Assembler need to:-

Clearly label product for easy identification;

Clearly indicate extended procuere responsibility on electrical and electronic equipment; comply with Tanzania standards on assembly of electronic goods.

Guidelines for Distributors;

The Distributors should:

(i) Established campaigns such as Take-Back Campaign, with the aim of encouraging manufacturers to take responsibility for the full life-cycle of their electronic equipments;
(ii) Encourage the development of pilot project on take back system including the environmental sound collection, reuse,refurbishment and recycling;
(iii) Offer an incentivized take back programme for E- Equipment (EE) at the end of life
(iv) Build in the cost of product take back and disposal into the purchase product price.
(v) Provide a reasonable warranty of E- equipment;
(vi) Promote the use of local knowledge and skill to refurbish EE using the modern tools and quality system;
(vii) Provide information to any relevant authority (e. g. customs, police or NEMC) that proves that electrical/electronic equipments are within Tanzania Standard and not waste.
(viii) Specify standards for products on the expected remaining lifespan of the equipments and electrical appliances (especially for used EE).
(ix) Notify NEMC/Director of Environment for consent to transport E-Waste through Tanzania subject to stated conditions

(x) State the number of years a computer or any other EE has been in use before donation;
(xi) Comply with Basel Convention procedure, in so doing electronic equipments which are outdated should be forbidden.

Guidelines for Consumers;

Consumers need to:-

(i) Separate e-waste generated to e-waste collection centres;
(ii) Dispose e-waste generated to e-waste collection centres;
(iii) Sell or donate e-waste to licensed refurbishers;
(iv) Take back equipment to manufacturers, importer or assembler;
(v) Dump e-waste at the licensed e-waste dumping sites;
(vi) Be responsible to follow recommended disposal methods or procedures especially dates of expiry of end of usage period of the product.

Guidelines for Collectors

(i) Should obtain a license for transportation or storage of hazardous waste issued by Director of Environment;
(ii) Should labeled vehicles used for transportation of E-Waste;
(iii) During transportation separate the E-Waste from equipment devices listed in the 8th schedule of Environmental management (hazardous waste control and management);
(iv) Should avoid damage or breakage of components of E-Waste during collection;
(v) Store the E-Waste after sorting it into various categories for easieraccess by downstream users as well as to facilitate record keeping on the quantities of various categories of waste;
(vi) Ensure that has adequate PPE and facilities for loading the E-Waste;

Guidelines for Refurbishers

All refurbishes should:

(i) Clearly label products for easy identification of product constituents;
(ii) separate through manual dismantling and/or automatic processing, the materials in equipment and components that are not directed to reuse and direct them to recovery facilities when technically and economically feasible;
(iii) Clearly indicate Extended Producer Responsibility on electrical and electronic equipment;
(iv) Maintain good housekeeping standards, including keeping all work and storage areas clean and orderly. Clean up operations for all areas of the facility should be planned, regularly implemented, and monitored.

Guidelines for recyclers

Recyclers should;

(i) Apply to Director of Environment for a licence /permit set in form 6 in the 4th schedule of Environmental management (hazardous waste control and management);
(ii) Have hazard and safety signs displayed at appropriate places indicating the treatment plant or disposal facility and nature of operations
(iii) The integrated E-Waste recycling facility should opt for the Best Available Technologies (BAT) and Complying with all the environmental norms of emissions, effluents, noise waste treatment and disposal.
(iv) Comply with environmental regulations on reuse, recovery, recycling and final disposal of remains of waste
(v) Regular re-evaluation of Environment, Health and Safety (EHS) objectives and monitoring of progress toward achievement of these objectives should be conducted and documented at all facilities.
(vi) take sufficient measures to safeguard occupational and environmental health and safety as per regulations (Environmental

management (hazardous waste control and management));

(vii) The personnel involved in handling E-Waste in recycling facilities at all operational levels should be properly qualified and trained.

Occupational Health and Safety

The following should be observed in facilities:

(i) Workers should wear Personal Protective Equipment, including respirators, protective eyewear, cut-resistant and gloves as appropriate for the risks involved in the tasks being performed;

(ii) The facility should have Local Emergency responders responsible for responding to and reporting exceptional releases, accidents, spills, fires, explosions, and other out-of-the-ordinary events that pose risks to worker safety, public health, or the environment;

(iii) The facility should be in good housekeeping standards, including keeping all work and storage areas clean and orderly. Clean up operations for all areas of the facility should be planned, regularly implemented, and monitored;

(iv) Employees involved are under go annual medical check-up as may be commensurate to the risks faced by employees.

Guidelines for Government organisations;

These are organizations that are involved in formulation and enforcement of regulations on generation, handling and disposal of e-waste such as VPO and NEMC

(i) Prepare framework with appropriate legislation to support e-waste management;

(ii) Monitor the process of e-waste handling regularly;

(iii) Create management plan with responsibilities for different target groups;

(iv) Provide incentives to entrepreneurs to set up e-waste collection and treatment facilities;

(v) Regulate the number of e-waste facilities within the geographical area;

(vi) Approve innovative e-waste management technologies that are environmentally sound;
(vii) Form multi stakeholder monitoring committee to oversee the implementation of the e-waste management guidelines;
(viii) Create awareness among stakeholders through the legislative framework of e-waste management;
(ix) Develop standards to prevent the importation and donation of useless or harmful e-waste;
(x) Determine the impact and come up with strategies fro managing technology changes such as analogue to digital TV equipment and deciding the procedure for strategic environment assessment.

Guidelines for Government organizations;

Guidelines for Transporters;

(i) Ensure e-waste is properly stored;
(ii) Ensure vehicles transporting e-waste obtain a waste transport license from NEMC;
(iii) Ensure e-waste is disposed in licensed dumping sites.

Guidelines for disposal Authorities;

(i) Develop disposal standards for each type of toxic e-waste including procedures for dissembling and recycling;
(ii) Provide efficient transport for e-waste;
(iii) Develop proper infrastructure for e-waste collection and disposal;
(iv) Set manageable fees to sustain e-waste management.

Guidelines for People living near dumpsite;

Need to be educated on how to detect potential health hazards through organised workshops by e-waste management stakeholders and environmental health practitioners.