

REPUBLIC OF UGANDA

MINISTRY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

ELECTRONIC WASTE (E-WASTE) MANAGEMENT POLICY FOR UGANDA

AUGUST 2012

FOREWORD

The Information and Communications Technology (ICT) revolution has no doubt had the biggest impact on the globe over the past two decades. Driven by more efficient, smaller and cheaper microchips, technology has wowed the world and changed people's lives. However, a dangerous new waste stream, namely electronic waste, or "E-Waste", is growing up alongside the proliferation of electronic products.

Today, it is widely believed that besides global warming, E-Waste is the most threatening environmental problem in the world. Mounting global sales of electrical and electronic products are generating an equally imposing amount of toxic waste that is too complicated to process, especially in developing countries such as Uganda.

In Uganda, just like in many developing countries, workers in e-waste scrap yards are constantly exposed to toxic chemicals that are by-products of deconstructing components. These chemicals also pollute water, soil and air.

According to the Basel Convention's definition - the most widely accepted and which Uganda is adopting - E-waste encompasses all discarded and disposed of electrical and electronic assemblies, scrap, components and batteries; some of these wastes may contain hazardous materials such as cadmium, mercury, lead and polychlorinated biphenyl. Therefore, E-waste includes a broad range and growing number of electronic devices - from large household appliances such as refrigerators and air conditioners, to personal products such as handheld cellular phones, personal stereos, consumer electronics and computers.

The E-waste problem has turned into a crisis primarily for two reasons. First, it is hazardous because it contains numerous substances, many of which are toxic, and hence, pollution is created upon its disposal. Second, it is being generated at an alarming rate due to the constant evolution of

technology, which in turn has driven the sale of new products, as well as the frequent obsolescence of electronics. Sales of other electronic gadgets - computers, TVs, monitors and console game platforms - are growing internationally from 10 percent to 400 percent annually.

In order to deal with this complex menace and as a first step, the Government of Uganda has developed this E-Waste Management Policy which presents the vision of Uganda in this area. It also elaborates the mission, goal, policy objectives and strategies in considerable detail. Further, it includes an institutional framework, as well as a monitoring and evaluation arrangement for its implementation.

Following the approval of the Policy by Cabinet, the Ministry of Information and Communications Technology intends to rapidly engage stakeholders to embark on its implementation, starting with putting in place a supportive legal and regulatory framework.

I urge all people to embrace this policy and support the Government to ensure that we together deal with the threat of E-waste in a safe, smart and modern manner so as to guarantee the safety of all of us and of our beautiful environment.



Ruhakana Rugunda
MINISTER OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

TABLE OF CONTENTS

FOREWORD 1

EXECUTIVE SUMMARY 5

ACRONYMS 8

DEFINITIONS 9

1 INTRODUCTION 10

1.1 BACKGROUND 10

1.2 SITUATION ANALYSIS 11

1.2.1 Current Status of E-waste Management in Uganda 11

1.2.2 Legal and Policy Framework 12

1.2.3 Human Resource 12

1.2.4 Infrastructure 12

1.2.5 E-waste awareness and education 13

1.2.6 ICT Equipment standards and regulations 13

1.3 RATIONALE/JUSTIFICATION 14

1.3.1 Rationale 14

1.3.2 Development Context 15

2 E-WASTE MANAGEMENT POLICY FOR UGANDA 16

2.1 Vision 16

2.2 Mission 16

2.3 Goal 16

2.4 Policy Guiding Principles 16

2.5 Policy Objectives 17

2.6 Policy Strategies 17

2.6.1 Establishment of E-waste Management Infrastructure 18

2.6.2 Awareness and Education 18

2.6.3 Legal Framework 19

2.6.4 Human Resource Development 20
2.6.5 Resource Mobilisation 20
2.6.6 E-waste Fund 20
3 POLICY PRIORITY AREAS 22
3.1 Establishment of E-waste management Infrastructure 22
3.2 E-waste Skills Development and Awareness building 22
3.3 Legal and Regulatory Framework 23
4 INSTITUTIONAL FRAMEWORK 24
4.1 Ministry of Information and Communications Technology (ICT) 24
4.2 Ministry of Finance Planning and Economic Development (MoFPED) 24
4.3 Ministry of Trade and Industry and Cooperatives (MTIC) 24
4.4 Ministry of Health (MOH) 24
4.5 National Environment Management Authority (NEMA) 25
4.6 Uganda Communications Commission 26
4.7 National Information Technology Authority – Uganda (NITA-U) 26
4.8 Uganda National Bureau of Standards (UNBS) 26
4.9 Uganda Revenue Authority (URA) 27
4.10 Local Governments 27
4.11 Private sector 27
4.12 The role of other Stakeholders 27
5 MONITORING AND EVALUATION 28
- APPENDIX A: Hazardous components of e-waste 29
- APPENDIX B: Categories of E-Waste generated from Electrical and Electronic Equipment 33
- APPENDIX C: E-Waste Taskforce members 36

EXECUTIVE SUMMARY

In recent years, there has been an increased uptake of ICTs and related equipment, both in Government and private sector. Government has also developed initiatives to increase the use of ICT through elimination of trade barriers in importation of computer hardware and software into the country. Parallel to this, liberalization of the telecommunications sector has led to increased use of mobile phones, fax and telephones. To crown it all, more and more households and businesses are using more and more electronic and electrical equipment ranging including fridges, through microwave ovens, Television sets, generators, power supply systems and voltage stabilizers.

This equipment gradually reaches end of life and has to be disposed of as Electronic or Electrical waste (E-Waste). Poor management of e-waste leads to exposure of human beings and indeed the whole environment to dangerous toxic materials. Government has, therefore, developed an e-Waste Management Policy to address this threat. The e-waste management policy provides for, among others, enactment of specific legislation for proper E-waste management and disposal to safe guard human life and the environment against the said hazards.

This Policy document is structured along the following themes:

i. Situational analysis which highlights recorded efforts to survey the magnitude of E-waste in the country, existing enabling legislation at both international and local levels, existence or lack of qualified personnel to address the disposal of E-waste, existence or lack of e-Waste handling facilities, limited awareness at all levels with regard to the danger posed by e-waste and how to deal with it, as well as lack of standards and regulations for importation of ICT equipment into the country;

ii. Rationale and justification for having in place an e-Waste policy to guide the nation on how to deal with increased uptake of use of

ICT equipment which with time reaches end of life and has to be disposed of;

iii. The development context that looks at international conventions such as the Basel Convention on the Control of Trans-Boundary Movements of Hazardous Wastes and their Disposal, the Stockholm Convention on Persistent Organic Pollutants (POPs) which serves to protect human health and the environment from POPs, the World Charter for Nature 1982 that provides for avoidance of discharge of pollutants into the natural systems, the Vienna Convention for the Protection of the O-zone layer 1985, and the Millennium Development Goals (MDGs)which, among other issues, is geared towards ensuring environmental sustainability;

iv. The vision, mission, goal, policy guiding principles, policy objectives and strategies, as well as policy priority areas that include establishment of E-waste management infrastructure, e-waste skills development and awareness building, as well as legal and regulatory framework;

v. Institutional framework that spells out stakeholder collaboration in implementation of the policy, including Ministry of Information and Communications Technology, Ministry of Finance, Planning and Economic Development, Ministry of Trade, Industry and Cooperatives, Ministry of Health, National Environment Management Authority, Uganda Communications Commission, National Information Technology Authority-Uganda, Uganda National Bureau of Standards, Uganda Revenue Authority, Local Governments, and the private sector;

vi. Resource mobilisation for implementation of the policy;

vii. Monitoring and Evaluation that establishes mechanisms for measurement of progress on the path to achieve set goals; and

viii. Annexes that list hazardous components of E-Waste, as well as Categories of E-Waste generated from Electrical and Electronic Equipment.

It is the belief of Government that if this policy is implemented fully, then E-Waste will be handled in a sustainable manner and, consequently, cease to be a threat to the people and environment of Uganda.

ACRONYMS

ARF	Advanced Recycling Fee
Cd	Cadium
CFC	Chlorofluorocarbon
CFSK	Computer for Schools Kenya
CRT	Cathode Ray Tube
E-Waste	Electronic Waste
eWASA	Electronic Waste Management Authority of South Africa
ICT	Information and Communications Technology
LCD	Liquid Crystal Displays
LGs	Local Governments
MDAs	Ministries, Departments and Agencies
MDGs	Millennium Development Goals
MOH	Ministry of Health
MTTI	Ministry of Trade Tourism and Industry
NEMA	National Environmental Management Authority
NGO	Non Government Organisation
NITA-U	National Information Technology Authority Uganda
PBB	Polybrominated Biphenyls
PCB	Polychlorinated Biphenyls
POPs	Persistent Organic Pollutants
PRO	Producer Responsibility Organisation
PVC	Polyvinyl Chloride
SME	Small and Medium Enterprises
TBBA	Tetrabromo bis-biphenol-a
UCC	Uganda Communications Commission
UNBS	Uganda National Bureau of Standards
UNIDO	United Nations Industrial Development Organisation
WEEE	Waste Electrical and Electronic Equipment
WTO	World Trade Organisation

DEFINITIONS

Electronic Equipment: This is equipment that involves the controlled conduction of electrons (especially in gas or vacuum or semiconductor).

Environment: All living and non-living things that occur naturally on Earth.

E-waste: Electronic waste (e-waste) is an informal term referring to electronics that are at or near the end of their useful life and are due for disposal.

ICT: Is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems as well as the various services and applications associated with them, such as videoconferencing and distance learning.

Recycling: Refers to the process by which discarded materials are collected, sorted, processed and converted into raw materials which are then used in the creation of new products.

Sustainability: A pattern of resource use that aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for future generations.

INTRODUCTION

1.1 BACKGROUND

Government of Uganda identified Information and Communications Technology (ICT) as an enabling factor for the socio-economic development of the country. As a result, there has been an increased uptake of ICT and both in government and private sector. Government has also put in place an enabling environment to increase the use of ICT through elimination of trade barriers in importation of computer hardware and software into the country. Parallel to this, liberalization of the telecommunications sector has in addition increased use of mobile phones, fax machines and telephones.

The drive to transform the nation into an Information Society through initiatives such as tele-medicine, e-government, e-education and e-commerce, are gradually leading to increased use of circuit-based equipment. The private sector, business and household communities have also adopted the use the same equipment in their daily operations. This equipment gradually reaches its end of life and has to be replaced. Not until recently, a lot of used circuit system based equipment has been coming into the country through donations from developed countries. Further still, due to the prohibitive prices for acquisition of new electric and electronic equipment, there is high demand for used products. All this eventually becomes electronic waste (E-Waste).

In this policy, Uganda has adopted the Basel Convention's definition of E-Waste, which is the most widely accepted across the globe. According to this Convention, E-waste encompasses all discarded and disposed of electrical and electronic assemblies, scrap, components and batteries; some of these wastes may contain hazardous materials such as cadmium, mercury, lead and polychlorinated biphenyl. Therefore, E-waste includes a broad range and growing number of electronic devices - from large household appliances such as refrigerators and air conditioners, to

personal products such as handheld cellular phones, personal stereos, consumer electronics and computers.

Ordinarily any circuit based equipment would qualify to contribute towards e-waste and contain hazardous materials that are harmful to human health as well as the environment. Typically, these include substances listed in Appendix A.

1.2 SITUATION ANALYSIS

1.2.1 Current Status of E-waste Management in Uganda

The relevance of electronic equipment in conducting business has resulted into its increased adoption over the years, in government, educational institutions and the private sector. In particular, the ICT sector is very dynamic and indeed technology advancements occur at a fast rate. This, overtime, results into increased production of electronic equipment that is more efficient and cheaper in cost, which in turn leads to the old equipment being disposed of to obtain improved versions of the technology.

A quantitative and qualitative assessment of e-waste in Uganda was carried out by United Nations Industrial Development Organization (UNIDO) in 2008. Analysis of the data indicated that Government owns the highest number of ICT equipment in the country followed by Non- Governmental Organisations (NGOs) at about 75%, large enterprises at about 20%, private households, Small and Medium Enterprises (SMEs) and others at about 5%. Individual Government Institutions do not dispose of obsolete ICT equipment in a well-planned and managed manner. The same applies to the private sector and households. Equipment is damped on outdoor garbage heaps and landfills, thus becoming a danger to human beings and the environment.

In a nutshell, there has been no policy or strategy to handle the E-waste threat.

1.2.2 Legal and Policy Framework

The draft national IT policy for Uganda has an objective that addresses e-waste. Under Policy Priority area 2.7, it states that an e-waste policy should be developed and implemented.

The National Environmental Act, Cap.153 that provides for sustainable environment, addresses solid waste management in general. It is silent on e-waste management. There is, therefore, no specific e-waste legislation in Uganda.

The Ratification of Treaties Act 5/1998 provides for the procedure for ratification of treaties in accordance with article 123 of the Constitution, which allows Uganda to ratify international conventions related to e-waste. This treaty has allowed Uganda to be part of the international conventions concerning e-waste. These are the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal, the Stockholm Convention on Persistent Organic Pollutants and the World Charter for Nature.

1.2.3 Human Resource

Currently, the country faces a severe shortage of qualified personnel to address the disposal of e-waste. Matters are not any better with regard to the National curriculum at various levels of the education system, as well as private training and certification centers. They do not cover e-waste as a priority at the moment.

1.2.4 Infrastructure

To-date, Uganda does not have any e-waste handling facility. Some private sector entities, though, have set up centers for refurbishment for computer equipment but they operate at a low capacity and the primary focus is to make profits by availing low cost computers to a section of society. Equipment that is beyond refurbishment is still disposed of.

1.2.5 E-waste awareness and education

There is limited e-waste awareness in the public and private sector. There have been initiatives in the private sector at a low rate geared towards e-waste awareness. In the public sector, the National Environmental Management Authority (NEMA) has carried out preliminary e-waste awareness initiatives, but they are not sufficient to change the attitude of Ugandans towards E-waste management.

1.2.6 ICT Equipment standards and regulations

The National Information Technology Authority – Uganda (NITA-U) was established in 2009 to address, among others, the issue of defining standards for ICT equipment to be imported into the country. This is supposed to be undertaken in collaboration with the National Bureau of Standards (UNBS), but has so far, the exercise has not yielded tangible results.

1.3 RATIONALE/JUSTIFICATION

1.3.1 Rationale

Poorly disposed e-waste can lead to severe human health and environmental hazards due to highly toxic substances like mercury (cancerous mercury) and lead (lead poisoning). In order to mitigate the danger of this happening, there is need to develop a comprehensive national policy on e-waste to safeguard the nation's human resource and environment. This is a challenge to deal with due to the increased uptake of use of ICT equipment which in time reaches end of life and has to be disposed of.

Other reasons for the justification of an e-waste management policy include:-

(a) Rapidly increasing e-waste volumes, both domestically generated as well as through imports. Imports are often disguised as second-hand computer donations towards bridging the digital divide or simply as metal scrap.

(b) No accurate estimates of the quantity of e-waste generated and recycled.

(c) Low level of awareness amongst manufacturers and consumers of the hazards of incorrect e-waste disposal.

(d) Widespread e-waste recycling in the informal sector using rudimentary techniques such as acid leaching and open air burning resulting in severe environmental damage

(e) E-waste workers (if they exist in Uganda) have little or no knowledge of toxins in e-waste and are exposed to serious health hazards.

(f) Inefficient recycling processes result in substantial losses of material value

(g) 'Cherry-picking' by recyclers who recover precious metals and improperly dispose of the rest.

1.3.2 Development Context

This policy has been developed in the context of the international conventions that Uganda is party/ signatory to. These conventions are related to e-waste management.

According to Article 4.2 of the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal, Party States are required to ensure that: the generation of hazardous wastes and other wastes are minimized; that adequate disposal facilities exist for sound environmental management of wastes; and that managers of waste minimize the risk to human health and the environment (Article 4.2).

Article 7.3 of the Stockholm Convention on Persistent Organic Pollutants (POPs) which serves to protect human health and the environment from POPs states that the Parties shall endeavor to utilize and, where necessary, establish the means to integrate national implementation plans for persistent organic pollutants in their sustainable development strategies where appropriate.

The World Charter for Nature 1982 under paragraph 7, as adopted by the United Nations General Assembly, provides for avoidance of discharge of pollutants into the natural systems and specifies that discharge of pollutants into natural systems should be avoided.

Furthermore, the Vienna Convention for the Protection of the Ozone Layer 1985 aims at raising international cooperation among United Nations Member States in protecting the ozone layer from depletion. Article 2(b), party states are obliged to adopt legislative or administrative measures and cooperate in harmonizing appropriate policies to control, limit or reduce or prevent human activities under their jurisdiction that are likely to have adverse effects resulting from modification or likely modification of the ozone layer.

E-waste hazards affect human health in one way or another. Therefore, this policy has been developed in the context of the Millennium Development Goals (MDGs), and specifically, MDG 4 concerning reduction of child mortality, MDG 5 concerning improving maternal health and MDG 7 which is geared towards ensuring environmental sustainability.

2 E-WASTE MANAGEMENT POLICY FOR UGANDA

It is the intention of the Government of Uganda to consolidate its efforts and focus its energies to protect the health of its citizens and environment against the hazards of e-waste.

2.1 Vision

Sustainable e-waste management for a healthy nation and environment

2.2 Mission

To have an e-waste knowledgeable nation through promotion of efficient handling and sustainable management of e-waste, hence safeguarding the country's human life and environment

2.3 Goal

To guide, promote and ensure the safe management of E-waste in Uganda and contribute to reduction of environmental degradation by mitigating pollution arising from the use of electric and electronic equipment

2.4 Policy Guiding Principles

The guiding principles for the policy are as follows:

a) Ensuring human life and environmental protection: The government shall put in place mechanisms that will increase the safety of citizens and the environment against the threat of hazardous materials released into the environment through improper E-waste disposal.

b) Taking into consideration of the impact of globalization on manufacture, usage and disposal of used electrical and electronic

equipment.

c) Ensuring consumer awareness in usage and disposal of E-waste.

d) The need for Public Private Partnership in E-waste management in conformity with the Government's Macroeconomic policy reforms (Liberalization, privatization, good governance and decentralization).

e) Addressing cross-cutting issues in E-waste management such as sustainability, gender, youth and people with disabilities.

2.5 Policy Objectives

The national e-waste policy shall have the following objectives

(a) To provide for establishment of e-waste facilities in the country.

(b) To mobilize and sensitize the Government, private sector and the communities on the proper management and handling of e-waste on a sustainable basis.

(c) To provide for the putting in place of specific E-waste standards, regulations and guidelines for the acquisition, handling and disposal processes;

(d) To develop a critical human resource base knowledgeable in E-waste management;

(e) To provide for resource mobilization for efficient management and disposal of e-waste.

(f) To establish incentives for encouraging both local and foreign investors to establish e-waste facilities in Uganda.

2.6 Policy Strategies

For each of the above Policy Objectives, a number of strategies have been identified, which if fully implemented will lead to achievement of the objectives and consequently the goal, mission and vision of the Policy.

2.6.1 Establishment of E-waste Management Infrastructure

As elaborated in the Situation analysis, there is hardly any infrastructure in the country capable of handling E-waste to the required national and international health and environmental standards. To this end, therefore, Government shall

(a) Develop sustainable models for E-waste management such as Public Private Partnerships (PPP) as envisaged in the PPP Policy.

(b) Encourage set up of facilities to handle refurbishment of unwanted electrical and electronic equipment and/ or E-waste recycling in all regions of the country.

(c) Develop incentives for establishment of sustainable E-waste disposal agencies through mutually beneficial reuse and/or recycling schemes.

(d) Carry out a baseline survey and analysis of the E-waste threat.

2.6.2 Awareness and Education

There is average awareness on the hazards of e-waste among the public sector and business sector as well as NGOs but limited awareness in rural communities. Community awareness campaigns on how to safely handle e-waste are nonexistent. To this end, the Government of Uganda shall:

(a) Develop a strategy for education efforts including partnerships with manufacturers/ retailers/ recyclers.

(b) Develop of a national e-waste resource web portal.

(c) Organize annual events to promote e-waste awareness.

(d) Design and conduct consumer awareness campaigns to ensure understanding of how to safely dispose of e-waste and how to access safe disposal systems.

(e) Encourage procurement of environmentally friendly ICT equipment across government.

(f) Mainstream e-waste issues in the national education curriculum.

2.6.3 **Legal Framework**

The available legislation related to e-waste is reflected in the National Environment Act, Cap 153 laws of Uganda. It is broad and does not specifically address E-waste management. There is, therefore, need to have in place specific E-waste legal framework to protect the environment and the human life in Uganda. To this end, the Government of Uganda shall:

(a) Review and amend the relevant Laws and Acts to address the gaps in the existing legal framework for e-waste.

(b) Develop standards aimed at controlling the importation of used ICT equipment

(c) Develop laws to discourage landfill dumping of ICT equipment to protect the environment.

(d) Establish gazetted areas for environmental protected industrial parks where recycling of e-waste is done to reduce the negative impact of e-waste on the environment.

(e) Develop product stewardship framework legislation which will cater for ICT equipment at the end of life stage.

(f) Establish a Producer Responsibility Organisation (PRO) for all manufacturers, importers and resellers of electronic equipment where they will be charged membership fees to cater for the cost of collection and recycling.

(g) Develop take-back system legislature that requires producers/ importers and distributors/ sellers to take back old and end of life products.

(h) Develop a legal framework for national collection recycling scheme.

2.6.4 Human Resource Development

The existing skills in the area of e-waste are limited yet these skills are a prerequisite for successful national protection against e-waste hazards for both the environment and human health. To this end, the Government of Uganda shall;

(a) Facilitate development of e-waste training modules to cover technical maintenance, dismantling, sustainable e-waste management and waste to art projects to provide for environmental and human health benefits. The training will also cater for training those in the e-waste industry (both informal and formal) to avoid health and environmental risks and local entrepreneurs on e-waste business opportunities. This will lead to job creation for certain segments of the unemployed youth.

(b) Develop e-waste business models which will yield social benefits like jobs and skills transfer from central to local governments in partnership with the private sector.

2.6.5 Resource Mobilisation

The e-waste issue is a new area and therefore does not have any funds allocated to it by Government, or even private sector. To this end, the Government of Uganda shall:

(a) Increase the budgetary allocation to the initiatives targeted at reducing e-waste risks.

(b) Put in place mechanism for resource mobilization from development partners.

2.6.6 E-waste Fund

In order to ensure sustainability of e-waste management process, an

e-waste fund shall be established as specified in the National Information Technology (IT) Policy, 2011. To this end, the Ministry of Finance planning and Economic development, the Ministry of ICT together with other stakeholders; shall develop guidelines to provide for the following:

(a) Establishment and governance framework for the e-waste fund;

(b) Financing mechanisms for the e-waste fund, including collection of Advanced Recycling Fees (ARF) on electronic equipment, as well as an e-waste levy on electronic communications and services, among others;

(c) Criteria for eligibility of access to and utilization of the fund; and

(d) Sustainability for the fund

3 POLICY PRIORITY AREAS

3.1 Establishment of E-waste management Infrastructure

Currently, there is no effective E-waste management infrastructure. To address this gap, government shall:

a) Carry out a baseline survey and analysis of the E-waste threat;
b) Develop sustainable models for E-waste management;
c) Encourage set up of facilities to handle refurbishment of unwanted electrical and electronic equipment and/ or E-waste recycling in all regions of the country; and
d) Develop incentives for establishment of sustainable E-waste disposal agencies through mutually beneficial reuse and/or recycling schemes.

3.2 E-waste Skills Development and Awareness building

Currently, there is lack of human resource capacity capable of taking on the task of E-waste management. There is also limited awareness about the hazards of E-waste among the population. Awareness campaigns on how to safely handle E-waste are nonexistent. To this end, the Government of Uganda shall:

a) Establish centers of excellence for training the requisite human resource;
b) Develop and popularize a change management programme for leaders of Government and private sector institutions to embrace proper E-waste management;
c) Develop and implement an awareness campaign strategy to create general vigilance about the issues of E-waste management and ensure that the population understands how to safely dispose of E-waste and access safe disposal systems;
d) Ensure procurement of environmentally friendly electric and electronic equipment across the country; and
d) Mainstream E-waste issues at all levels in the national education curriculum.

3.3 Legal and Regulatory Framework

The Government of Uganda takes protection of the environment very seriously. To demonstrate this, the National Environment Act was enacted. However, at the time of its development, the issue of E-waste was not considered. In order to address this gap in the law, the Government of Uganda commits itself to:

a) Review and amend the relevant Laws and Acts to cater for E-waste management, including issues of manufacturer responsibility and end-of-life equipment take-back; and
b) Develop the relevant regulations and guidelines to operationalise the revised Law;

4 INSTITUTIONAL FRAMEWORK

The E-waste Management Policy shall be implemented through collaboration among stakeholder institutions as follows:

4.1 Ministry of Information and Communications Technology (ICT)

The ministry of ICT shall:

a) Develop an all-encompassing strategic plan for implementing the E-waste Management policy, detailing the costs, time frames, targets, outputs and outcomes;
b) Coordinate the development of regulations, standards, guidelines and quality assurance as concerns E-waste;
c) Coordinate the establishment of safe electronic waste disposal mechanisms and facilities;
d) Liaise with international agencies to ensure compliance with global Conventions, Protocols and Treaties with regards to electronic Waste management, ICT and Climate Change initiatives and environmental issues in general;
e) Coordinate the Management and operations of the e-waste fund;
f) Supervise, guide and provide technical support to MDAs as well as undertake monitoring and evaluation;
g) Undertake baseline surveys to establish the magnitude of the E-waste threat under the sector; and
h) Take the lead in E-waste awareness programs.

4.2 Ministry of Finance Planning and Economic Development (MoFPED)

The Ministry of Finance planning and Economic development shall give guidelines on:

a) Establishment of a governance framework for the e-waste fund;
b) Financing mechanisms for the e-waste fund, including collection of advanced recycling fees; e-waste levy on communication services

among others;

c) Criteria for eligibility of access to and utilization of the fund;
d) Sustainability for the fund; and
e) Mobilization of resources for the implementation of the Policy

4.3 Ministry of Trade and Industry and Cooperatives (MTIC)

The Ministry of Trade and Industry and cooperatives shall:

a) Liaise with the World Trade Organization (WTO) with a view of informing the development of standards and regulations regarding importation of electronic and electric equipment into the country; and
b) Develop a mechanism to audit and monitor compliance of incoming electrical and electronic equipment with set standards and regulations.

4.4 Ministry of Health (MOH)

MOH will develop policies that govern health and safety standards on e-waste management.

4.5 National Environment Management Authority (NEMA)

To ensure participation in the enforcement of the policy, NEMA shall:

a) Spearhead the review of the NEMA Act to incorporate E-waste management legislation;
b) Issue and enforce E-waste handling licenses in the country for entities dealing with collection, transportation and disposal/ recycling of end-of-life equipment;
c) Participate in the informative studies on E-waste such as baseline surveys; and
d) Monitor the implementation of environmental programmes including E-waste management

4.6 Uganda Communications Commission

The Uganda Communication Commission shall:

a) Collaborate with the Ministry of ICT to undertake a baseline survey to establish the magnitude of the E-waste threat under the Communications sub- sector;
b) Appropriately integrate E-waste management into licensing conditions of telecommunications and broadcasting service providers;
c) Advise the Ministry of ICT and other relevant bodies on E-waste matters in the communications sector;
d) Provide technical support in matters of E-waste management in the communications sub-sector; and
e) Collaborate with key stakeholders to educate the public in matters of E-waste management in the Communications sub-sector.

4.7 National Information Technology Authority – Uganda (NITA-U)

The National Information Technology Authority shall:

a) Collaborate with the Ministry of ICT to undertake a baseline survey to establish the magnitude of the E-waste threat under the IT sub-sector;
b) Enforce standards and regulations on E-waste management; and
c) Provide technical support and advice on E-waste disposal to the public and private sector.

4.8 Uganda National Bureau of Standards (UNBS)

Uganda National Bureau of Standards shall;

a) In collaboration with the Ministry of Trade ,Industry and Cooperatives (MTIC), notify World Trade Organization (WTO) member states on electronic Equipment standards set, policies and regulations developed that affect quality of electric and electrical imports into the country; and
b) Develop a mechanism to audit and monitor compliance of electric and electronic equipment with set standards.

4.9 Uganda Revenue Authority (URA)

Uganda Revenue Authority shall;

a) Enforce compliance of all imported electric and electronic equipment with set standards at the Point of Entry; and

b) Maintain statistical records of imported electric and electronic imports.

4.1.0 Local Governments

The Local Governments shall;

Mobilize and participate in sensitizing the communities about the threat of E-waste and how it can be safely managed.

4.1.1 Private sector

The private sector shall;

Take up the opportunity of the enabling and conducive policy and legal framework to invest and create business as well as employment around E-waste management.

4.1.2 The role of other Stakeholders

All other sectors, including, but not limited to Agriculture, Health, Education, Tourism, Finance, Trade and Industry, Justice, Law and Order, Gender, Civil Society as well as the development partners, shall;

a) Develop institutional E-waste policy guidelines;

b) Develop and operationalize implementation plans; and

c) Participate in E-waste awareness campaigns.

5 MONITORING AND EVALUATION

Measurement of progress on the path to achieve set goals, objectives, strategies and targets in the implementation of the E-waste Policy will require consistent monitoring and evaluation of the outcome indicators. The Government together with other relevant stakeholders will carry out monitoring and evaluation at different levels. A monitoring and evaluation framework shall be developed to ensure midterm review of the policy. The policy shall be reviewed every three (3) years to take into account rapid changes in technology. Annual surveys shall be carried out to gather statistics about E-waste and its management with a view to establishing whether implementation of the policy is making a positive impact on protection of the environment and life in general.

APPENDIX A: Hazardous components of e-waste

Substance	Component	Health/Environmental Effects
Antimony trioxide	A flame retardant, added to cathode ray tube (CRT) monitor glass, found in printed circuit boards and cables	Toxic to humans in ways similar to arsenic; fatal in large doses
Arsenic	In older cathode ray tubes and in light emitting diodes	Arsenic is a known cancer-causing substance (carcinogen). It is known to cause skin and lung cancer.
Barium	In CRT	When fish and other aquatic organisms absorb the barium compounds, barium will accumulate in their bodies.
Beryllium	Often allied with copper to improve copper's strength, conductivity and elasticity. Old motherboards, contact springs found in printed circuit boards, relays, and in the mirror mechanism of laser printers. In power supply boxes which contain silicon controlled rectifiers and x-ray lenses	Long term exposure can be carcinogenic, especially for the lungs. Extreme exposure can lead to a potentially fatal condition known as Acute Beryllium Disease

Cadmium	Circuit boards and semiconductors, rechargeable NiCd-batteries, fluorescent layer (CRT screens), printer inks and toners, photocopying-machines (printer drums)	Breathing high levels of Cd can cause lung damage and death. Long term exposure to low levels of Cd can cause elevated blood pressure and kidney damage. Cadmium is a known carcinogen.
Chlorofluorocarbon (CFC)	Cooling unit, Insulation foam	Converts to Chlorine in the atmosphere that attacks ozone molecules causing ozone layer Depletio*n,* Inhaled in large volumes could result in respiratory distress.
Chromium	In steel as corrosion protection, Data tapes, floppy-disks, circuit boards, photocopying-machines (printer drums)	Chromium has a variety of effects depending how it enters the body. Chromium is a carcinogen if inhaled. Chromium may also cause DNA damage
Chromium VI	Data tapes, floppy disks	
Cobalt	Component in steel for structural strength and magnetivity.	This agent is carcinogenic in experimental animals at a relatively high dose
Lead	Cathode ray tubes, solder, batteries, printed wiring boards (circuit boards), solder on components, mobile phone coatings,	Initial symptoms of exposure are anorexia, muscle pain, malaise, and headache. Long-term exposure to lead decreases the overall performance of the nervous system. High level exposure causes brain damage and death.

Lithium	Batteries including mobile phone batteries	Burning sensation. Cough. Labored breathing. Shortness of breath. Sore throat.
Mercury	Switches (mercury wetted) and housing, fluorescent lamps providing backlighting in liquid crystal displays (LCDs) for monitors and laptops, batteries, printed circuit boards	Short term exposure to all forms of mercury causes lung damage, nausea, vomiting, diarrhoea, increases in blood pressure or heart rate, skin rashes, and eye irritation Long term exposure permanently damage the brain, kidneys, and developing foetus.
Nickel	Batteries, electron gun in CRT , printed circuit boards	Nickel fumes are respiratory irritants and may cause pneumonitis
Polybrominated flame retardants (including polychlorinated biphenyls (PCB), polybrominated biphenyls (PBB), Polybrominated biphenyl ethers (PBDE), and tetrabromo bis-biphenol-a (TBBA)	Plastic casings, cables, and circuit boards, condensers, transformers	May cause disruption of ; steroid , thyroid and hormone regulation.
Polyvinyl Chloride (PVC)	Cable insulation	When burnt it produces highly toxic dioxins; research is finding if PCV is a hormone disruptor.

Selenium	Circuit boards as power to supply rectifier, photocopying-machines (printer drums)	
Zinc Sulphide	Interior of CRT screens, printed circuit boards	High doses may be hazardous in case of eye contact , ingestion and inhalation.

Appendix B: Categories of E-Waste generated from Electrical and Electronic Equipment

Category	Used electrical & electronic equipment	E-Waste
Cat – A1	Large household appliances	o Refrigerators and freezers o Other appliances used for refrigeration, conservation and storage of food o Washing machines o Clothes dryers o Dish washing machines o Cooking ranges/stoves o Electric hot plates o Microwaves o Other appliances used for cooking and other processing of food o Electric heating appliances o Electric radiators o Other fanning, exhaust ventilation and conditioning equipment

Cat- A2	Small household appliance	○ Vacuum cleaners ○ Carpet cleaners ○ Other appliances used for cleaning ○ Appliances used for sewing, knitting, weaving, and other processing for textiles ○ Iron and other appliances used for ironing and care of clothing ○ Toasters ○ Fryers ○ Grinders, coffee machines and equipment for opening or sealing containers or packages ○ Electric knives ○ Appliances for hair cutting, hair drying, tooth ○ ○ brushing, shaving, massage and other body care appliances ○ Digital clocks, watches and equipment for the purpose of measuring indicating of registering time scales
Cat –A3	Toys, leisure and sports equipment	○ Electric trains or car racing sets ○ Hand-held video game consoles ○ Video games ○ Computer for biking, diving, running, rowing, etc ○ Sports equipment with electric or electronic components ○ Coin slot machines

Cat-A4	Electrical and electronic tools (except large-scale stationary industrial tools)	○ Drills ○ Saws ○ Sewing machines ○ Equipment for turning, milling, sanding, grinding, sawing, cutting, shearing, drilling, making holes, punching, folding, bending or similar processing of wood, metal and other materials ○ Tools for riveting, nailing or screwing or removing rivets, nails, screws or similar uses ○ Tools for welding, soldering or similar use ○ Equipment for spraying, spreading, dispersing or other treatment of liquid or gaseous substances by other means ○ Tools for mowing or other gardening activities
Cat-A5	Medical devices (except implanted and infected products	○ Radiotherapy equipment ○ Cardiology ○ Dialysis ○ Pulmonary ventilators ○ Nuclear medicine ○ Laboratory equipment for in-vitro diagnosis ○ Analysers ○ Freezers ○ Fertilization tests ○ Other appliances for detecting, preventing, monitoring, treating, alleviating illness, injury or disability

Cat-A6	Monitoring and control instruments	○ Smoke detector ○ Heating regulators ○ Thermostats ○ Measuring, weighing or adjusting appliances for household or as laboratory equipment ○ Other monitoring and control instruments used in industrial installation (e.g. in control panels)
Cat-A7	Automatic dispensers	○ Automatic dispensers for ○ beverages ○ hot /cold bottles or cans ○ solid products ○ money ○ All appliances which deliver automatically all kind of products

Appendix C : E-Waste Taskforce Members

E-WASTE TASKFORCE MEMBERS	ORGANISATION
Dr. Jimmy Saamanya	Ministry of ICT
Dr. David Turahi	Ministry of ICT
Mr. Ambrose Ruyooka	Ministry of ICT
Mr. Godwin Kahuuta	Ministry of ICT
Mr. Emmanuel Mugabi	Ministry of ICT
MS. Eng. Geofrey Agoi	Ministry of ICT
Eng. Paul Odoi	Ministry of ICT
Mr. Richard Obita	NITA - U
MS. Helen Ssekasala	UCC
Mr. Dick Lufafa	NEMA
Ms. Nancy Alimadi	NEMA
Ms. Jackline Mbabazi	NEMA