THE REPUBLIC OF UGANDA

MINISTRY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY





Strategy for Electronic Waste Management

December 2013

FOREWARD

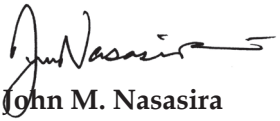
TThe revolutionary changes experienced in Information and Communications Technology (ICT) across the world are enormous, and as a result, the evolutionary demands make the electronics age unprecedented. As newer models of ICT systems are created, impact on human society and spectacular enhancement of connectivity across the globe is common manifest. Along with other benefits it brings, we need to focus on new challenges, like the rising problem of Electronic Waste (e-waste) that has to be boldly dealt with by society. In the current scenario, it is always possible that human health and environment would be drastically endangered if concerted legislations and actions were not taken for efficient management and disposal of e-waste.
It is believed that besides global warming, E-Waste is one of the new environmental threats arising out of huge global sales of electronic equipment, with symmetric volumes of waste generated after, whose disposal is a complicated process especially for countries like Uganda.

According to the United Nations Environment Programme (UNEP, 2013), open dumping remains the prevalent waste-disposal method in most low income countries like Uganda and by the year 2025, more than 2.2 billion tones of E-Waste a year are expected to be generated worldwide. Urbanization, industrialization, increasing population and economic development are all contributing to the rise in e-waste and also to its increasing complexity and hazardousness. Municipal waste collection rates are similarly sobering in low developed countries like Uganda as compared to developed countries. E-waste is mainly disposed through rudimentary methods and some in poorly operated landfills.

According to the Basel Convention's definition of E-Waste, to which Uganda is a signatory, E-Waste encompasses all discarded and disposed of electrical and electronic assemblies, scrap, components and batteries; some of which contain hazardous materials such as cadmium, mercury, lead, and polychlorinated biphenyl. 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 Government of Uganda, through the Ministry of Information and Communications Technology, formulated and passed a policy to deal with the threat of e-Waste. Subsequently, a strategy for the implementation of the policy has now been developed, with detailed implementation modalities.

It is my wish that all Ugandans appreciate the strategic interventions of the Government on E-waste, and follow the Implementation Strategy so that together we can mitigate the threat posed by improper e-waste handling and disposal.



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ACRONYMS AND ABBREVIATIONS

ABS	Acrylonitrile Butadiene Styrene
AC	Air Conditioners
Ag	Silver
AIDS	Acquired Immune Deficiency Syndrome
Au	Gold
CDM	Clean Development Mechanism
CDs	Compact Discs
CoC	Certificate of Conformity
CFC	Chlorofluorocarbons
CRT	Cathode Ray Tube
DSF	Digital Solidarity Fund
DVB-T2	Digital Video Broadcast-Terrestrial-2nd Generation
EEE	Electrical and Electronic Equipment
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMPA	The Swiss Federal Laboratory for Material Testing and Research
EPR	Extended Producer Responsibility
E-waste	Electric and Electronic waste
FRs	Flame Retardants
GoU	Government of Uganda
Hg	Mercury
HIPS	High impact polystyrene
HIV	Human immunodeficiency virus
HP	Hewlett-Packard Company
IBM	International Business Machines
ICT	Information and communications technology
IT	Information Technology
KACITA	Kampala City Traders Association
KCCA	Kampala Capital City Authority
LC	Local Council
LGs	Local Governments
MoICT	Ministry of Information and Communications Technology
MoLG	Ministry of Local Government
MoU	Memorandum of understanding

MTIC	Ministry of Trade Industry and Cooperatives
MWE	Ministry of Water & Environment
NCR	Non Conformity Report
NDA	National Drug Authority
NEMA	National Environment Management Authority
NITA-U	National Information Technology Authority Uganda
ODSs	Ozone Depleting Substances
OEM	Original Equipment Manufacturers
PC	Poly carbonate
PCBs	Polychlorinated biphenyls
PCTs	Polychlorinated terphenyls
Pd	Lead
PDU	Procurement and Disposal Unit
PE	Polyethylene
PET	Polyethylene terephthalate
POPs	Persistent Organic Pollutants
PP	Polypropylene
PPDA	Public Procurement Disposal of Public Assets Authority
PPP	Public Private Partnerships
Pt	Platinum
PVC	Polyvinyl chloride
PVC	Polyvinyl Chloride
PVoC	Pre-Export Verification of Conformity to Standards Programme
SMEs	Small and medium enterprises
TVs	Televisions
UCC	Uganda Communications Commission
UCPC	Uganda Cleaner Production Centre
UIRI	Uganda Industrial Research Institute
UNBS	Uganda National Bureau of Standards
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
URA	Uganda Revenue Authority
USA	United States of America
VAT	Value Added Tax
WEEE	Waste Electrical and Electronic Equipment
WTO	World Trade Organization

EXECUTIVE SUMMARY

There has been tremendous increase in the use of Electrical and Electronic Equipment, and ICT equipment in particular. Considering these equipment have a short lifespan, mainly due to obsolescence and aging, their disposal and effects on health and the environment are an increasing concern. The Electrical and Electronic Equipment waste is unique given the toxic nature of its components.

There have been interventions to limit importation of already used EEE or those not meeting standards set by the government of Uganda (GoU). Collection, dismantling, re-use and disposal of existing e-waste in the country is a largely informal activity. These wastes have hazardous components which if not handled and disposed properly can cause severe impacts on the environment and public health.

Related to the impacts of hazardous waste, and in line with climate change mitigation, there is need to ensure sustainable management of e-waste. It is against this background that MoICT with support from UNDP has prepared this E-waste strategy to support implementation of the E-waste policy approved by Cabinet in 2012. In order to increase participation and ownership of this strategy, preparation of this strategy has been largely consultative, involving all Government lead agencies and key stakeholders, as well as the Private Sector.

Based on the situational analysis, stakeholder consultations, literature reviewed and documentation on good practices in e-waste management, the following strategic actions are required:

i. To set up an e – waste coordinator to Supervise and address all management issues for smooth implementation of the e-waste strategy
ii. To review and update the legal and institutional framework for e-waste management, and support enforcement of laws, regulations and standards
iii. To raise awareness and advocate for e-waste management across all stakeholders and general public
iv. To maintain statistical records of imported EEE
v. To carry out baseline surveys to inform e-waste interventions

vi. To mainstream e-waste issues in all MDAs and the private sector
vii. To invest in e-waste handling and disposal infrastructure, including a modern e-waste recycling facility
viii. To mobilise human, financial, and technical resources for e-waste management
ix. To set up and operationalise an e-waste fund

The strategy includes an implementation and monitoring framework, with targets and progress indicators identified, implementing agencies, timelines for deliverables, a provision for surveillance by a coordinator based at MoICT, as well as a budget over the five year period of implementation. The budget for e-waste strategy implementation over the five year period has been estimated at Uganda Shillings 7.95 Billion. There is a provision for Uganda Shillings 30 Billion as a contribution to a PPP for a modern e-waste recycling facility. It is also expected that by the end of the planning period, contributions to the e-waste fund should reach at least 30% of the e-waste management budget.

This strategy will be reviewed midterm after 3 years, and again after five years. It is expected that with implementation of the identified actions, the e-waste challenge will largely be addressed in Uganda. Benchmarking good practices and training in other developed countries is also proposed to enrich the e-waste strategy implementation process.

1. BACKGROUND

1.1 INTRODUCTION

The Electronic Waste Management Policy (2012) for Uganda defines electronic waste (e-waste) as a generic term embracing various forms of electric and electronic equipment that have ceased to be of any value to their owners.

Electronic equipment is defined as "a complex mixture of several hundred components many of which contain heavy metals and hazardous chemicals". This definition has been adopted from the Basel Convention to which Uganda is a signatory.

Implementation of the e-waste policy however faces a number of challenges, including no strategy to action it, lack of required resources, and no implementation framework.

In light of the above, the Ministry of Information and Communications Technology has developed an Implementation Strategy for the Electronic Waste Management Policy. Support in preparation of the e-waste strategy was provided by UNDP under the project "Improving policies and strategies for sustainable environment, natural resources and climate risk mitigation" which aims to contribute to strengthening of national capacity for policy implementation through the review and development of policies. The e-waste strategy development was guided by provisions in the National IT policy, the Basel Convention, the National Environment Policy and relevant laws and regulations on waste management. These are discussed in more detail in chapter 3.

1.2 JUSTIFICATION FOR THE ELECTRONIC WASTE MANAGEMENT STRATEGY

The justification of developing an e-waste strategy in Uganda arises because of these challenges:

a. Rapidly increasing e-waste volumes, both from imports of second hand equipment, and domestically generated e-waste

b. Low level of awareness amongst key stakeholders, users and consumers of the electronic and electronic equipment standards,

of the hazardous nature or toxicity of e-waste and effects of incorrect e-waste disposal.

c. Lack of appropriate infrastructure and technical capacity to handle and dispose e-waste generated, including collection, dismantling, treatment, recycling and final disposal

d. Gaps in existing legislation and institutional framework for e-waste management and weaknesses in enforcement of laws, regulations and standards, including international obligations under the Basel Convention

e. Existing e-waste recycling and disposal practices are largely informal, with rudimentary techniques applied for treatment and disposal

f. Lack of incentives for consumers and enterprises to hand out obsolete EEE, or voluntary take back systems for end of life equipment

g. Lack of baseline studies or accurate estimates of the quantity of e-waste generated and recycled, to inform e-waste management interventions.

h. Limited resources in place for e-waste management, and profitable e-waste investments, including financial, human and e - waste handling infrastructure.

1.3 OBJECTIVES OF THE E-WASTE STRATEGY

The main objective is to provide an all-encompassing plan for implementing the e waste policy, detailing the costs, time frames, targets, outputs and outcomes.

The specific objectives in formulating this strategy are:

i. To identify and prioritise areas of intervention in the e-waste strategy

ii. To identify the different stakeholders and their respective roles in e-waste management

iii. To provide for establishment of e waste management infrastructure

iv. To provide for awareness and education on e-waste

v. To mobilise funds, human and technical resources for implementation of the strategy

vi. To establish an implementation and monitoring framework to track implementation progress.

1.4 Presentation of e-waste strategy

Section 2 is a situational analysis with details on challenges cited in section 1.2. In section 3, the existing policy, legal and institutional framework for ICT and waste management is discussed. Section 4 then presents strategic interventions and proposed action to address the e-waste challenge in Uganda.

This strategy includes an implementation and monitoring framework, as well as a budget presented in section 5.

It is expected that sources of funding to implement the strategy will include the Government of Uganda through budgetary allocations as there are none at the moment, the e-waste fund that includes contributions from consumers, importers or distributors, as well as from development partners whose activities and development objectives tend towards greening the e-waste value chain. In order to ensure sustainability, investments in e-waste infrastructure by the private sector and through public private partnerships are recommended.

2.0 SITUATIONAL ANALYSIS

2.1 THE E-WASTE CHALLENGE

ICT has caused a revolution in modern living and business in various forms, including fast communication gadgets, e-commerce, e-banking, e-government, tele-medicine, among others. This is being sustained by production of increasingly sophisticated ICT equipment and electronics. As a result, an estimated 50 million tonnes of e-waste are now generated every year, with most of this heading to developing countries for use and disposal, where less than 20% can afford new equipment.

The last ten years has seen tremendous increment in electronic and electric equipment use in Uganda, in both government and the private sector. Enabling factors have been the policies such as liberalisation of the telecom sector, and waiver of trade barriers on ICT equipment. Importation of household appliances, electrical and electronic tools, lighting equipment, toys, medical devices, ICT equipment, and consumer equipment such as cameras, DVD players and radios, among others has all increased, with more volumes out of use. By 2007 Uganda had built up an estimated computer stock of 80,000 or 2000 tons of computer waste, including desktop units and CRT screens (EMPA, 2008). This is estimated to have more than doubled by 2012.

There has been no accurate estimate of e-waste volumes since the EMPA study of 2008. The available statistics focus on computers only. Uganda E-Government Readiness Assessment 2012 Final Report by NITA-U provided an estimate of 6,622 computers out of use among government institutions surveyed, with 53% of 21,907 purchased in 2010, and hence nearly due for disposal (NITA, 2012).

In terms of communications, in 2011, national telephone penetration rose to 52.1 lines per 100 persons from 41.1 in 2010, representing a total of 4,006,463 new subscribers. The emerging importance of mobile wireless accounts continued with an estimated 977,500 wireless accounts and 88,786 fixed accounts at the end of 2011. Overall, a 91.7% growth was realized in the number of internet subscribers, and 30.5% increase in phone subscribers (UBOS Statistical Abstract 2012). There is also a high

demand for used ICT equipment, given the prohibitive pricing of the genuine new equipment.

With all the benefit of ICT listed above, the increasing volume of e-waste without appropriate handling and disposal mechanisms is of concern given the hazardous and toxic nature of electronic waste. The substances they contain such as lead, mercury, arsenic, cadmium, selenium, among others, are potentially dangerous to human health and the environment (E-Waste Management Policy for Uganda, 2012).

Uganda's policies on ICT have encouraged increased importation and use of ICT equipment over the last ten years. Some used electronic and electrical items are majorly imported as lump sum donations. Most importers, retailers and Government institutions, sell off the used equipment to interested parties at the end of their useful life. In some cases for government institutions, e-waste has accumulated in stores due to stringent disposal regulations.

On the positive side, the e-waste comes with useful recoverable materials such as plastics, copper, iron and steel, and re-usable and serviceable parts that could be sold. If collection, recovery or recycling and sale of or export of valuable components is undertaken well, this could be a source of income and employment. Currently this activity is largely informal, and investments in skills and infrastructure for repair, refurbishing and dismantling of e-waste, is lacking.

2.2 KNOWLEDGE ATTITUDES AND PERCEPTIONS

While the volumes of e-waste continue to increase, and a number of informal actors are engaging in collection, dismantling, re-using and disposing of such waste, there is limited awareness on e-waste in Uganda, including volumes generated, categories and their hazards. Major environmental and human health impacts result from dismantling, material recovery and final disposal through release of hazardous substances into soil, water and air. The burning of cables is a major source of dioxins.

There is no comprehensive strategy to increase levels of awareness of the e-waste challenge. This means therefore, that most Ugandans are

not aware of the impacts of indiscriminate disposal of such waste to the environment and human health, and the business opportunities that can be tapped into in re-use and recycling of e-waste.

Most users of electronic equipment have sentimental attachments and as such many of these items are stored in homes and offices. Such socio-economic and cultural attachments are a hindrance to sustainable management of e-waste. Some of the practices consumers are involved in regarding disposal of e-waste include: Donations to relatives, as a means of disposal; In the case of Government and donor agencies, donations of old equipment to lower administrative units is common; Indiscriminate dumping; Storage in Homes without any use; and collection as memorabilia or souvenirs.

At policy level, appreciation of e-waste management is still low in some cases nonexistent. Although Government institutions are the biggest generators of e-waste, most have no idea on how to dispose of e-waste that is lying idle in their stores awaiting disposal. These institutions need to appreciate the e-waste challenge, mainstream e-waste management in their sectoral policies and plans, and consider active participation in implementing the e-waste strategy. Engagement and lobbying at national level among decision makers to buy into the e-waste management challenge will as well be required.

2.3 POLICY AND LEGAL FRAMEWORK

Chapter 3 provides a detailed review of the legal and legislative framework. Available legislation related to e-waste is reflected in National Environment Act, Cap 153 of the laws of Uganda, and the National Environment (Waste Management) Regulations of 1999. As mentioned earlier, these are broad and do not specifically address electronic waste management.

The National e-waste Policy 2012 identifies the development of regulations, standards and guidelines in regards to e-waste management as one of the action areas. The e - waste policy is in fulfilment of the National ICT Policy requirement, and in line with the National Environmental Laws and Regulations. The National Environment (Management of Ozone Depleting Substances and

Products) Regulations (2001) caters for majority of cooling and heating equipment under electronic waste.

One of the strategic actions focuses on the need to update and to develop standards and guidelines for management of electronic waste right from the entry points into the country through usage, collection, handling, disposal, and transportation to final disposal. A database and baseline surveys on imported EEE is either lacking or inadequate to guide e-waste interventions, including infrastructure development. The structure and parameters to be collected for the e-waste database need to be defined by URA, NITA (U), UCC, UNBS and NEMA amongst other actors.

2.4 CURRENT PRACTICES IN E-WASTE HANDLING

The gaps in legislative framework for e-waste management and regulation, low levels of awareness, high demand for second-hand electronic appliances and the norm of selling e-waste to individual collectors has encouraged the growth of an informal e-waste recycling sector.

At institutional level, there are limited investments in e-waste infrastructure, with most recycling activities done by the private sector that are largely informal. In order to establish a formal system for managing e-waste in Uganda, the informal sector has to be regularized. Experiences from countries like China already show that simply prohibiting or competing with the informal collectors and recyclers is not an effective solution.

The proposed e-waste management strategy recognises the existing informal sector and the need to establish guidelines to improve recycling practices, working conditions and the efficiency of the involved informal players. Financial and non financial incentives like training, transfer of technologies, linkages to international partners and buyers of parts, lobbying for extended producer responsibility and access to funding are proposed to encourage proper recycling activities and divert more of the e-waste into an established formal recycling sector. Organising existing informal collectors into licenced e-waste collectors is proposed in this strategy.

Under the National Environment (Waste Management) Regulations of 1999, NEMA issues licences for collection, transportation, storage and treatment of hazardous waste. Sites for treatment and disposal of waste also have to be approved by the authority.

There are no budget allocations put aside for investments in e-waste infrastructure. Associated infrastructure including designated temporary storage facilities at Municipal level or regional collection centres are lacking. Current studies on the flows of e-waste have looked at different management options and are leaning towards a public private partnership for an e-waste treatment facility. Guidelines are needed to operationalize this option if adopted by Government. At the time of preparation of this e-waste strategy, a feasibility study for establishment of a national e-waste handling facility was ongoing by UCPC with support from UNIDO.

Within the East African Region, East African Compliance Recycling Company (EACR) in partnership with Hewlet-Packard (HP), Dell, Philips, Nokia and Reclaimed Appliances (UK) Ltd has set up the first e-waste recycling facility in Kenya.

One case to learn from has been the transformation of the Municipal waste collection burden into profitable business under the CDM Projects supported by the World Bank and NEMA for Municipalities in Uganda. Here the infrastructure is owned by the Local Authority but collection of waste and management of the facility is by the private sector. E-waste can as well be looked at as an opportunity, for government to partner with the private sector to develop the required infrastructure. The investor can benefit from fees charged at the facility, or from equipment made ready for re-use, resell, exported components or even scrap material. The existing informal sector can be organised to collect e-waste and supply to the recycling facility.

E-waste management will require technical intervention at each step i.e. regulation of imports, collection and transportation, storage, sorting/ dismantling, pre - processing and disposal. E-waste management should focus on the major needs to improve overall sustainability through improvement in collection, dismantling/pre-treatment, recycling and

handling of hazardous streams, as well as in interface management along the (global) recycling chain.

Trends emerging in e-waste management have been considered to benefit the e-waste management cause. These include:

i. Equipment leasing: operators of telecom companies encouraging leasing of phones other than outright purchase
ii. MoUs or agreements between producers, including importers, retailers, telecom companies and regulators to encourage buy back, or have collection centres at their service centres
iii. Setting up e-waste collection schemes or licencing a producer responsible organisation
iv. Pollution charges, including licences or fees charged to producers of e-waste, or even an advance recycling fee to be catered for in legislation;
v. Development and dissemination of standards for electronic and electrical equipment for use by PDUs of government institutions;
vi. Update of waste regulations to address the e-waste challenge;
vii. Strengthening the institutional framework, recognising increased roles of key players such as UNBS, NITA-U, UCC, Local Governments, NEMA, UCC, MoH, among others.
viii. In the long term, developing skills and capacity for handling hazardous e-waste streams

2.5 REGULATION OF EEE AT ENTRY POINTS

The existing practice is such that at entry points, various electric and electronic equipment are imported by resellers, retailers, distributors, NGOs or even individuals. Some come through as donations. Where standards have been developed, UNBS in liaison with URA enforces them through inspections at the entry points. There have been additional measures by MoTIC to engage a pre-shipment inspection agency, INTERTEK, to ensure imported goods meet standards.

To assure its consumers of the safety and quality of imported goods, the Government of Uganda through the Uganda National Bureau of Standards has re-instated from June 2013 a series of guidelines known

as a Pre-Export Verification of Conformity to Standards Programme (PVoC).

The PVoC verifies the conformity of all regulated products and enforces their standards. Compliance to PVoC requirements is applicable in addition to any existing import processes. Every consignment of regulated products exported to Uganda requires a Certificate of Conformity.

The key elements undertaken in the PVoC are:

i. Physical inspection prior to shipment

ii. Sampling, testing and analysis in accredited laboratories

iii. Quality Audit of production processes

iv. Documentary review of conformity with regulations

v. Issuance of Certificate of Conformity (CoC) or Non Conformity Report (NCR) as appropriate.

UNBS has developed a regulated products list for which CoCs are mandatory. The list includes various electric and electronic equipment. INTERTEK is authorised by the Government of Uganda to issue the Certificates of Conformity.

3.0 POLICIES, LEGISLATION, STANDARDS AND GUIDELINES

3.1 INTRODUCTION

This chapter provides an overview of the relevant policies, legislation, regulations, standards and guidelines applicable to the management of e-waste in Uganda, as well as the institutional framework for e-waste management. It also provides proposals for strengthening existing legislation, as well as new regulations and standards for areas where they are weak or lacking.

3.2 NATIONAL ICT AND ENVIRONMENTAL POLICIES

3.2.1 The National IT Policy, 2012

The National ICT Policy 2012 priority areas include:

i. Review of legislative framework
ii. Investment in ICT infrastructure to ensure increased coverage and use
iii. IT human resources development
iv. Research and Development in IT
v. Development of National IT standards
vi. E-waste management
vii. Promote hardware and software industry
viii. IT Security
ix. Resource mobilisation

All these strategic actions have implication on increased e-waste volumes and its management. Under section 2.7, the National IT policy strategic actions on e-waste management include the following:

i. Development, implementation and enforcement of the e-waste policy
ii. Collaboration with relevant institutions to establish recycling centres and educate the public through the media on how to ensure that the environment is protected.
iii. Setup an e-waste management fund to which all importers of electronic equipment shall contribute.

The e-waste policy has since been developed, and approved by Cabinet, and this e-waste strategy proposes actions intended to ensure its implementation.

3.2.2 The Electronic Waste Management Policy, 2012

The e-waste policy recognises the rapidly increasing volumes of e-waste and, lists the components and likely environmental hazards. It mentions the lack of accurate estimates of e-waste volumes, low levels of awareness about e-waste effects and lack of infrastructure for e-waste recycling. The policy strategies include:

i. Establishing e-waste management infrastructure
ii. Increased awareness and education
iii. Legal and institutional Framework to ensure appropriate management of e-waste
iv. Human Resources Development
v. Resource mobilisation for e-waste management, including setting up an e-waste fund.

Each of these strategic areas in the policy has been addressed in this strategy, with actions proposed for each strategic element.

3.2.3 The Telecommunication Policy, 2012

The new policy focuses on consolidating achievements registered since liberalisation of the sector in 2007. Key focus areas include:

i. Promotion and regulation of public private partnerships in the development of telecommunications infrastructure and services.
ii. Harmonization of the currently separate regulatory regimes and operations of the traditional telecommunications, broadcasting and IT industries as a result of technology convergence.
iii. Convergence of data transport and data delivery infrastructure regardless of user services offered is now a reality and thus both the policy and regulatory environments need to be reviewed to cope with its demands.

The policy mentions the lack of appropriate disposal of telecommunication wastes, including used airtime cards, SIM cards, telephone sets and obsolete equipment.

One of the proposed changes in the institutional framework is to create and strengthen an ICT standards desk at the National Bureau of Standards with an aim of setting Quality and Industry standards in the ICT sector.

3.2.4 Digital Migration Policy for Terrestrial Television Broadcasting in Uganda (2011)

In March 2011, Cabinet approved the Policy on Migration from Analogue to Digital Terrestrial Broadcasting in line with best practices elsewhere. In light of the changes implied by adaption of digital broadcasting in Uganda, the Ministry of Information and Communications Technology authorised a review of the current Broadcasting Policy.

This is likely to lead to replacement of Television transmission technologies (i.e. from analogue to DVB-T2 - Digital Video Broadcast-Terrestrial-2nd Generation) and thus more e-waste generated. Strategic actions are required to deal with some of the e-waste components, particularly the TV screens for those who may wish to replace their analogue screens with digital ones and some set – top boxes that do not meet the required standard of DVB-T2.

3.2.5 The National Environment Policy, 2005

The overall goal of this policy is the promotion of sustainable economic and social development. Preparation of this e-waste strategy, which was preceded by the policy, is in line with the national environmental policy goals.

3.2.6 Occupational Health and Safety Policy

This policy seeks to provide and maintain a safe and healthy working environment.

The OHS Policy Statement is guided by the Constitution of the Republic of Uganda and other global, national and sectoral regulations and policies. This policy is especially relevant for OHS of e-waste workers.

3.2.7 Uganda's Vision 2040

Vision 2040 is an overriding factor in ongoing review of national policies. It recognises the role ICT is to play in achieving this vision, and the convergence of technologies. The Vision statement is "**A Transformed Ugandan Society from a Peasant to a Modern and Prosperous Country within 30 years".**

3.2.8 The National Development Plan, 2011- 2015

The NDP under section 5.7 identifies ICT as a key driver to social transformation, identifies bottlenecks to ICT usage, access and application. It proposes strategic actions and interventions to ensure increased investment and use of ICT for Uganda to reap its benefits.

Following liberalization of the ICT sector; the trends from 2006 show increased numbers of fixed telephone lines, imports of computers, mobile phone subscriptions and investments in ICT infrastructure. This goes with improved social services and business efficacy, with the bad side being increasing volumes of e-waste.

3.3 LEGISLATION AND REGULATIONS

3.3.1 The Constitution of the Republic of Uganda, 1995

The concepts of sustainable development and environmental rights are enshrined in the Constitution of the Republic of Uganda which includes the following in its National Objectives:

Objective No. XXVII, states that:

'(i) The State shall promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for the present and future generations.

Articles 39 and 17 (j) provide for the rights to a clean and healthy environment, and the duty to maintain such an environment.

3.3.2 The National Environment Act, Cap 153, 1995

The National Environment Act Cap 153 was enacted in 1995 and stipulates the principles of environmental management and the rights to a decent environment; institutional arrangements; environmental planning, environmental regulations, environmental standards; environmental restoration orders and environmental easements; records, inspection and analysis; financial provisions; offences; judicial proceedings and international obligations.

In relation to e-waste management, sections 51 – 65 of the Act address management of dangerous materials and processes, management and minimisation of waste, management of hazardous waste, illegal traffic

in waste, guidelines for management of toxic and hazardous chemicals and materials, prohibition of discharge of hazardous substances, prohibition of pollution, pollution licences and fees.

Specifically section 53 (2) provides for the authority, in consultation with the lead agency, to make regulations and issue guidelines for the management of each category of hazardous waste determined under subsection (1).

3.3.3 The National Environment (Waste Management) Regulations of 1999

These regulations apply to:

i. All categories of hazardous and non-hazardous waste
ii. The storage and disposal of hazardous waste and their movement in and out of Uganda
iii. All waste disposal facilities, landfills, sanitary fills and incinerators

The regulations address sorting and disposal of domestic waste, provide for cleaner production methods, licensing for transportation and storage of waste, packaging and labelling of waste, treatment of waste from industries, licensing for treatment of waste or waste disposal site, and trans-boundary movement of waste.

Both the National Environment Act CAP 153 and the National Environment Waste Management Regulations of 1999 do not make specific mention of electronic and electrical waste, but it can be argued it is addressed as hazardous waste.

The regulation puts responsibility for treatment of hazardous waste with the disposer, for which a licence is a requirement. The disposer is not necessarily the producer of the hazardous waste.

There are licences and fees chargeable to importers or exporters of hazardous waste under section 18 of this regulation, that is deposited in the National Environment Fund, as well as other fees described in the Sixth Schedule, and penalties for offenders. The determination of these fees needs to be reviewed for each category of hazardous waste.
In regulation 24, all licence holders are required to provide records of licensed activity and transactions related to it, and submit the record

to the Authority every six months. And in Section 25, the Authority maintains a record of all licence holders.

The waste trajectory addressed in the regulation includes households, industries, disposers, licensees and regulators as key players. For e-waste, other players would be scheme operators, producer responsible organisation, original equipment manufacturers, distributors and users, all with obligations in terms of financing, treatment, recovery and recycling, recording, and reporting compliance.

This strategy provides actions to address the above challenges, including private sector participation in e-waste management and investments, and the original manufacturers in extended producer responsibility.

3.3.4 The National Environment (Management of Ozone Depleting Substances and Products) Regulations, 2001

These Regulations aim to regulate the production, trade and use of controlled substances and products; provide for a system of data collection to facilitate compliance with relevant reporting requirements under the Montreal Protocol on Substances that Deplete the Ozone Layer; promote the use of ozone friendly substances, products, equipments and technology; and ensure the elimination of substances and products that deplete the ozone layer. The various schedules provide for controlled products, controlled substances and prohibition dates; application for licenses to import controlled substances and export them; declaration by the end user of controlled substances or products; and the need for records to be maintained for controlled substances.

Regulation 4(1) of the National Environment (management of ozone depleting substances and products) regulations, 2001 restricts importation and export controlled substances or products listed in the First and Second Schedules to only licenced persons or firms. Under section 11(1) the regulation provides for verification of goods by a customs officer whether they contain or are made with or designed for controlled substances.

Waste EEE may contain ozone depleting substances hence the relevance of this regulation. Of major concern are the CFCs, CO_2 and SO_2 which may be released to the atmosphere through improper disposal methods, such as burning.

3.3.5 The Public Health Act CAP 281

Section 7 of the Act provides local authorities with administrative powers to take all lawful, necessary and reasonable practicable measures for preventing the occurrence of, or for dealing with any outbreak or prevalence of, any infectious communicable or preventable disease to safeguard and promote the public health and to exercise the powers and perform the duties in respect of public health conferred or imposed by this act or any other law.

Section 105 of the Public Health Act (1964) imposes a duty on the local authority to take measures to prevent any pollution dangerous to the health of any water supply that the public has a right to use for drinking or domestic purposes.

Mainstreaming e-waste issues in e-Health policy has been proposed, as well as in curriculum of public health institutions.

3.3.6 The Occupational Safety and Health Act CAP 2006

The Occupational Safety and Health Act of 2006 consolidates, harmonises and updates the law relating to occupational safety and health and repeals the Factories Act of 1964. It makes provisions for the health, safety, welfare and appropriate training of persons employed in work places. This will apply to e-waste workers and handling facilities.

3.3.7 The Local Government Act CAP 243

This act provides for decentralised governance and devolution of central government functions, powers and services to local governments that have their own political and administrative set-ups. According to Section 9 of the Act, a local government is the highest political and administrative authority in its area of jurisdiction and shall exercise both legislative and executive powers in accordance with the Constitution. The local governments are responsible for the protection of the environment at the district level. This therefore, implies that local governments shall be consulted on projects to be located within their jurisdiction and on matters that affect their environment.

Districts have powers to oversee implementation of development activities through respective technical and political offices such as those

responsible for water, production, engineering, natural resources and environment, health and community development.

For this strategy, involvement of local authorities in awareness raising and regulation of e-waste collection and disposal will be critical to success.

3.3.8 The Uganda Communications Act CAP 106

This Act establishes the Uganda Communications Commission.

Some of the regulations relevant to e-waste management that have been developed and functional under this Act include:

i. The Communications (Telecommunications and Radio Communications Equipment Type Approval) Regulations;
ii. The Telecommunications (Licensing) regulations;

It is proposed that these regulations be updated to ensure that these licensees or operators take responsibility for used communication equipment and contribute to e-waste management. The licensees should also participate in e-waste awareness raising and promote take back schemes for used or old equipment.

3.3.9 The National Information Technology Act, 2009

This Act establishes the National Information Technology Authority, whose roles among others are:

i. to provide first level technical support and advice for critical Government information technology systems including managing the utilization of the resources and infrastructure for centralized data centre facilities for large systems through the provision of specialised technical skills;
ii. to identify and advise Government on all matters of information technology development, utilisation, usability, accessibility and deployment including networking, systems development, information technology security, training and support;
iii. to co-ordinate, supervise and monitor the utilisation of information technology in the public and private sectors;
iv. to regulate and enforce standards for information technology hardware and software equipment procurement in all Government Ministries, departments, agencies and parastatals;

v. to set, monitor and regulate standards for information technology planning, acquisition, implementation, delivery, support, organisation, sustenance, disposal, risk management, data protection, security and contingency planning;
vi. to promote and provide technical guidance for the establishment of e-Government, e-Commerce and other e-Transactions in Uganda;
vii. in liaison with other relevant institutions, to regulate the information technology profession in Uganda in order to ensure its effective utilisation promotion and development;
viii. to act as an authentication center for information technology training in Uganda in conjunction with the Ministry responsible for Education;
ix. to provide advice on information technology project management services to Government;
x. to provide guidance in information technology audit services to Government;
xi. to undertake and commission research as may be necessary to promote the objects of the Authority;
xii. to arbitrate disputes arising between suppliers of information technology solutions and consumers;
xiii. to protect and promote the interests of consumers or users of information technology services or solutions;
xiv. to undertake any other activity necessary for the implementation of the objects of the Authority.

This Act makes no specific mention of NITA-U involvement in e-waste management, but NITA-U roles in setting standards, guidelines for IT equipment and infrastructure, in undertaking surveys and information dissemination, consumer protection, providing advisory services to Government Institutions, awareness raising, research, capacity building, implies they have a crucial role in limiting e-waste accumulation, and generally e-waste management.

3.3.10 The electronic media Act, CAP 104

The Electronic Media Act, Cap 104 (Laws of Uganda) provides for;

i. Establishment of the Broadcasting Council to license and regulate radio and television sets, to amend and consolidate the

law relating to electronic media and to provide for other related matters. The purchase, use and sale of television sets is also subject to licensing by the Council. Under the Electronic Media Act, a person shall only operate a TV station, a radio station or any broadcasting apparatus, upon a license being issued under the Act.

ii. The minimum broadcasting standards for broadcasters and provides for the functions of the Council.

3.3.11 APPLICABLE INTERNATIONAL CONVENTIONS FOR E-WASTE MANAGEMENT

Uganda has signed and /or ratified a range of international conventions and agreements relating to the environment, both regionally and globally. Conventions and agreements of potential relevance to e-waste management are described in table *3.1.*

Table 3.1: Relevant Conventions and Agreements

Convention/Agreement	Description
The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989	seeking to protect human health and the environment against the adverse effects of hazardous wastes
The Stockholm Convention 2004 on Persistent Organic Pollutants	to protect human health and the environment from persistent organic pollutants
The Rotterdam Convention 1998	to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm; to contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

3.3.12 International Standards and Guidelines

The e-waste Policy adopted definition of electronic waste from the Basel Convention. Relevant guidance from the Basel convention, including standards and guidelines on e-waste management that has been reviewed include the following:

i. Draft technical guidelines on transboundary movements of e-waste and used electrical and electronic equipment, in particular regarding the distinction between waste and non-waste under the Basel Convention;

ii. Technical Guidelines for the Environmentally Sound Management of Wastes Consisting of, Containing or Contaminated with Persistent Organic Pollutants (POPs)

The technical guidelines will particularly be useful in future review of the national waste management regulations and guidelines, and developing e-waste management guidelines.

3.3.13 Institutional framework for e-waste management in uganda

Table 3.2 provides roles identified in the e-waste policy for key stakeholders. It also provides emerging roles emanating from existing policy and legislation not mentioned in the e-waste policy of 2012. Other stakeholders initially left out and will be key in e-waste strategy implementation have been identified together with their roles.

Table 3.2: Key stakeholders and their roles in e-waste strategy implementation

Key stakeholder	Mandate in e-waste policy	Emerging roles from legal reviews, current trends and good practices
Ministry of Information and Communication Technology (ICT)	Develop an all- encompassing strategic plan for implementing the E-waste Management policy, detailing the cost, time frames, targets, outputs and outcomes; Coordinate the development of regulations, standards, guidelines and quality assurance as concerns E-waste; Coordinate the establishment of safe electronic waste disposal mechanisms and facilities; 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; Coordinate the management and operations of the e-waste fund; Supervise, guide and provide technical support to MDAs as well as undertake monitoring and evaluation; Undertake baseline surveys to establish the magnitude of the E-waste threat under the sector; and Take the lead in E-waste awareness programs.	i. Set up and facilitate e-waste management coordinator; ii. Bench mark e-waste activities and best practices; iii. Organise e-waste dialogues; iv. Prepare e-waste communication strategy; v. Development and dissemination of policy, laws, regulations and guidelines on e-waste management; vi. Training of lead agency staff vii. Carry out e-waste assessment viii. Promote investments in e-waste infrastructure ix. Resource mobilisation for e-waste management.

Key stakeholder	Mandate in e-waste policy	Emerging roles from legal reviews, current trends and good practices
Ministry of Finance Planning and Economic Development (MoFPED)	Establishment of governance framework for the e-waste fund; Finance mechanisms for the e-waste fund, including collection of advanced recycling fees; e-waste levy on communication services among others; Criteria for eligibility of access to and utilization of the fund; Sustainability for the fund; and Mobilization of resources for the implementation of the Policy	i. Incentives for investments in e-waste management ii. Structuring PPPs for investments in e-waste facilities iii. Budget allocations for e-waste management iv. Start up and sustainability of e-waste fund
Ministry of Trade, Industry and Cooperatives (MTIC)	Liaise with the World Trade Organisation (WTO) with a view of informing the development of standards and regulations regarding importation of electronic and electric equipment into the country; and Develop a mechanism to audit and monitor compliance of incoming electrical and electronic equipment with set standards and regulations.	i. Incentives for investments in e-waste management ii. Structuring PPPs for investments in e-waste facilities in liaison with MoFPED iii. Establishing partnerships with e-waste producers or Original e-waste Manufactures iv. Development and dissemination of standards for EEE v. Lobby for extended producer responsibility

Key stakeholder	Mandate in e-waste policy	Emerging roles from legal reviews, current trends and good practices
Ministry of Health (MOH)	MOH will develop policies that govern health and safety standards on e-waste management.	i. Mainstreaming e-waste policy aspects in e-health policy ii. Inventory of e-health equipment iii. Public sensitisation on e-waste hazards iv. Promoting safe disposal of hazardous components v. Mainstreaming e-waste aspects in Public Health Institutions curriculum
National Environment Management Authority (NEMA)	Spearhead the review of the NEMA Act to incorporate E-waste management legislation; Issue and enforce E-waste handling licences in the country for entities dealing with collection, transportation and disposal/ recycling of end-of-life equipment; Participate in the informative studies on E-waste such as baseline surveys; and Monitor the implementation of environmental programmes including E-waste management.	i. Review and update existing policy, laws and regulations to address e-waste ii. Develop and disseminate e-waste management guideline iii. Training of District, Municipal and Lead agency staff iv. Setting up and licensing e-waste collection schemes v. Enforce waste management regulations vi. Undertake e-waste assessments vii. Issuing permits and inspecting e-waste collection, recovery and dismantling facilities

Key stakeholder	Mandate in e-waste policy	Emerging roles from legal reviews, current trends and good practices
Uganda Communication Commission	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; Appropriately integrate E-waste management into licensing conditions of telecommunications and broadcasting service providers; Advise the Ministry of ICT and other relevant bodies on E-waste matters in the communications sector; Provide technical support in matters of E-waste management in the communications sub-sector; and Collaborate with key stakeholders to educate the public in matters of E-waste management in the communications sub-sector.	i. Development and dissemination of standards for communications equipment ii. Enforcement of ICT standards iii. Establishing partnerships with system operators, and producers to participate in the management of e-waste, including take back schemes iv. Undertake e-waste assessments in liaison with MoICT v. Promote leasing of ICT equipment vi. Setting up e-waste collection centres, in partnership with producers, ICT system operators vii. Public sensitisation viii. Mainstreaming e-waste issues in curriculum of technical Colleges in liaison with MoES, UICIT, NITA-U

Key stakeholder	Mandate in e-waste policy	Emerging roles from legal reviews, current trends and good practices
National Information Technology Authority- Uganda (NITA-U)	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; Enforce standards and regulations on E-waste management; and Provide technical support and advice on E-waste disposal to the public and private sector.	i. Development and dissemination of standards for IT equipment ii. Enforcement of IT standards iii. Undertake e-waste assessments iv. Establishing partnerships with producers to participate in the management of e-waste v. Setting up e-waste collection centres, in partnership with producers vi. Promote leasing for IT equipment vii. Public sensitisation viii. Mainstreaming e-waste issues in curriculum of technical Colleges in liaison with MoES, UICIT, NITA-U, UCC
Uganda National Bureau of Standards	In collaboration with the Ministry of Trade, Industry and Cooperatives (MTIC), notify World Trade Organisation (WTO) member states on electronic Equipment standards set, policies and regulations developed that affect quality of electric and electrical imports into the country; and Develop a mechanism to audit and monitor compliance of electric and electronic equipment with set standards.	i. Development and enforcement of standards in liaison with lead agencies, MDAs ii. Dissemination of EEE standards iii. Setting up an ICT standards desk

Key stakeholder	Mandate in e-waste policy	Emerging roles from legal reviews, current trends and good practices
Uganda Revenue Authority (URA)	Enforce compliance of all imported electric and electronic equipment with set standards at the Point of Entry; and Maintain statistical records of imported electric and electronic imports.	i. Maintaining imported EEE data base ii. Dissemination and enforcement of standards for imported EEE iii. Collection of revenues for e-waste fund iv. Develop and maintain a database for EEE imports and exports
Ministry of Local Government		i. Monitoring implementation of e-waste strategy by various Local Governments (DLGs and MLGs) ii. Dissemination of e-waste policy, regulations and guidelines iii. Sensitisation of LGs on e-waste management
Local Governments	Mobilize and participate in sensitising the communities about the threat of E-waste and how it can be safely managed.	i. Mainstreaming e-waste management in District Development Plans and policies ii. Public sensitisation iii. Designating and monitoring e-waste collection centres or points iv. Trading licences for e-waste collectors

Key stakeholder	Mandate in e-waste policy	Emerging roles from legal reviews, current trends and good practices
Private Sector	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.	i. Setting up e-waste collection schemes ii. Support e-waste management initiatives iii. Investing in e-waste management infrastructure, including collection, processing and disposal facilities iv. Export hazardous components of e-waste in line with the Basel Convention provisions v. Develop innovative business models including leasing, take back systems for ICT equipment vi. Mainstream e-waste issues in company policies vii. Participate in e-waste dialogues
Ministry of Water and Environment		i. Review and update of environmental policy, laws and regulations to address e-waste management ii. Monitor implementation of e-waste strategy iii. Engage international agencies and development partners to support e-waste management initiatives

Key stakeholder	Mandate in e-waste policy	Emerging roles from legal reviews, current trends and good practices
Ministry of Education and Support		i. Dissemination of e-waste policy, regulations and guidelines ii. Sensitisation at all educational levels iii. Mainstreaming e-waste in curriculum at all levels of education
Uganda National Bureau of Standards		i. Participate in e-waste assessment ii. Participate in EEE data collection and maintenance iii. Enforcement of EEE standards
Agriculture, Health, Education, Tourism, Finance, Trade and Industry, Justice, Law and Order, Gender, Civil Society as well as the development partners	Develop institutional E-waste policy guidelines; Develop and operationalize implementation plans; and Participate in E-waste awareness campaigns.	i. Respective MDAs to mainstream e-waste issues in policies and plans ii. Implement ICT standards
Office of the President		i. Lobby for extended producer responsibility ii. Facilitate establishment of regional collection centres iii. Monitoring toxic traders iv. Lobby for financing for establishment of modern recycling facility

4. PROPOSED STRATEGIC INTERVENTIONS FOR E-WASTE MANAGEMENT

4.1 INTRODUCTION

The strategic plan links with the E-waste Policy Vision, Mission and objectives. It is meant to action the good intentions of the policy. Strategic elements have been generated based on the vision, mission and goals of the E-waste policy - 2012 as discussed with the stakeholders.

4.1.1 Vision

Sustainable e-waste management for a healthy environment and nation.

4.1.2 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.

4.1.3 Goal

To ensure the safe management of e-waste in Uganda.

4.2 POLICY OBJECTIVES

The E-waste policy of Uganda 2012 has the following objectives

i. To provide for the establishment of e-waste management facilities in the country;

ii. To mobilise and sensitise the Government, Private Sector and the communities on proper management and handling of E-waste on sustainable basis;

iii. To provide specific e-waste regulations (legal and regulatory) from the acquisition, handling and disposal processes;

iv. To develop a critical human resource base knowledgeable in handling e-waste;

v. To provide for resource mobilisation for efficient management and disposal of e-waste

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

4.3 STRATEGIC ACTIONS IN THE E-WASTE STRATEGY

Based on the situational analysis, stakeholder consultations, literature reviewed and documentation on good practices in e-waste management, the following strategic actions in e-waste management have been identified:

i. To set up an e – waste coordinator to supervise and address all management issues for smooth implementation of the e-waste strategy
ii. To review and update the legal and institutional framework for e-waste management and support enforcement of laws, regulations and standards
iii. To raise awareness and advocate for e-waste management across all stakeholders and general public
iv. To carry out baseline surveys to inform e-waste interventions
v. To maintain statistical records of imported EEE
vi. To mainstream e-waste issues in all MDAs and the private sector
vii. To invest in e-waste handling and disposal infrastructure
viii. To mobilise human, financial, and technical resources for e-waste management
ix. To set up and operationalise an e-waste fund

4.4 SETTING UP A COORDINATOR FOR MANAGEMENT AND SUPERVISION

During stakeholder consultations, a number of issues arose from the proposals in the policies:

i. That the need for stakeholder coordination was very pertinent in order to ensure that e-waste is managed jointly with other line ministries like Ministry of Water and Environment, Ministry of Trade and Industries, Ministry of Health, Ministry of Local Government, among others
ii. Clarity is required in stakeholder roles within the policy implementation proposals, as these are not clear at the moment

Proposed actions:

i. Set up a coordinator at the MoICT, and engage a Senior Officer to Supervise e-waste management interventions
ii. Institute a steering committee representing of key implementing agencies with terms of reference aimed at fast tracking implementation of the strategic plan
iii. Allocate budget or start up funds for the E-waste coordination Office

iv. Undertake e-waste value chain analysis to determine the constraints and opportunities that can best be tapped into for e-waste
v. Refine roles of the key stakeholders, and their responsibilities.
vi. Collate and document information on current studies relating to the best options for E-waste management in Uganda
vii. Undertake exposure visits to other countries and existing facilities for benchmarking on lessons learnt and best practices
viii. Engage with stakeholders within Government and the private sector with the aim of encouraging them to mainstream e-waste management within their policies, work plans and budgets
ix. Develop a participatory monitoring and evaluation framework

4.5 STRENGTHENING THE LEGAL AND INSTITUTIONAL FRAMEWORK

Section 3 highlights some gaps in the legal and institutional framework, including inadequacy in addressing the uniqueness of e-waste, and contradictions or non-clarity in roles of key stakeholders. Some issues for which clarity is required include sources of financing for the E-waste fund, and the need for a separate e-waste law, regulations, standards or guidelines for e-waste management and their enforcement.

The following actions have thus been proposed:

i. To review existing policies, laws and regulations to cater for uniqueness of e-waste and its management challenges
ii. Develop and disseminate guidelines for e-waste management
iii. Develop, disseminate and enforce standards for ICT equipment procured for Government Institutions
iv. Develop, disseminate and enforce standards for EEE imported into the country
v. Set up an ICT standards desk at the UNBS
vi. Develop and disseminate guidelines on disposal of EEE in public institutions
vii. Engage WTO member states on Ugandan EEE standards
viii. Support enforcement of regulations and standards among lead agencies
ix. Register, issue licences and regulate activities of e-waste collectors and owners of recovery, dismantling and disposal facilities;
x. Facilitate formulation of bye-laws to manage e-waste at district and municipal levels

xi. Provide training to Lead Agency and Local Government Staff
xii. Provide platforms for ongoing sensitisation, consultations and engagement among stakeholders in EEE and e-waste regulation, production, consumption and management
xiii. Audit and monitor compliance of EEE and ICT equipment with set standards
xiv. Enforce economic and regulatory disincentives to discourage the demand or importation of substandard goods e.g. by levying higher taxes on substandard products or use only certified distributors of original equipment manufacturers
xv. Develop and enforce economic and regulatory incentives to stimulate best practices like importation of *green* equipment.
xvi. Participate in regional and international efforts for transnational and global solutions, including the EAC, ITU and Basel Convention organised fora.

4.6 E-WASTE AWARENESS RAISING AND ADVOCACY

At all stakeholder workshops, and in consultative meetings, low awareness levels of e-waste and its hazards have been emphasised.

i. Awareness on what is E-waste is still lacking at policy and consumer levels
ii. Awareness on how to handle such waste is still lacking
iii. Awareness on the opportunities that lie in safe disposal of such waste is still lacking
iv. Awareness of the potential of e-waste as a resource.

Proposed Actions

i. Stakeholder Mapping in order to determine awareness raising media (including print, radio, TV, social media, and the internet)
ii. Develop an e-waste awareness communication strategy based on identified stakeholders, media and messages
iii. Undertake e-waste awareness campaigns in all districts and Municipalities, targeting technical staff and local leaders
iv. Develop information, education and communication packages for each stakeholder category
v. Networking with partner organisations through stakeholder meetings and dialogues
vi. Engage producers and ICT system operators to participate in e-waste awareness campaigns

vii. Mainstream e-waste issues in educational curriculum at various levels

4.7 INVESTMENTS IN E-WASTE HANDLING AND DISPOSAL INFRASTRUCTURE

The situational analysis section 3 highlights the lack of infrastructure, knowledge and skills in e-waste handling, as well as the existing informal systems handling e-waste. In line with investment in e-waste handling and disposal infrastructure the following are areas of action identified.

Proposed actions

i. Carry out ongoing e-waste surveys and assessment of mass flows to inform e-waste management interventions
ii. To establish and maintain a data base for imported and exported EEE
iii. Establish regional e-waste collection centres
iv. Initiate and implement pilot projects, for collection, recycling and treatment of e-waste
v. Facilitate formation of e-waste collection schemes, licence and set targets for each scheme
vi. Facilitate registration and formalisation of e-waste collectors and transporters
vii. Provide training for e-waste scheme operators
viii. Promote take- back systems with incentives for consumers
ix. Promote EEE leasing for bulk consumers
x. Set up national modern dismantling and recovery facility in partnership with original manufacturers and the private sector
xi. Mainstream training in e-waste recovery and dismantling skills in technical institutions curriculum
xii. Explore options for disposal of hazardous e-waste components, include treatment or sale to competent companies
xiii. Engage EEE producers and original equipment manufacturers (OEM) in strategic partnerships, including buy back systems, extended producer responsibility and setting up recovery and dismantling facilities.
xiv. Participate in regional and international fora on best e-waste management practices

4.7.1 E-waste collection, schemes and storage channels

Urban areas in Uganda have designated waste collection points where garbage skips are placed and the waste removed on a regular basis by the local authorities or contractors for disposal at approved sites. There has also been a trend to licence waste collectors, who undertake door – to – door waste collection at a fee.

A combination of retailer/producer take back systems, e-waste collection schemes, special collection centres or drop off points have been proposed to feed into the e-waste collection system.

E-waste collectors and transporters should be licensed and regulated as per requirement in the National Environment (Waste Management Regulation) of 1999. The collectors should have approved sites or facilities where the sorting, recovery, treatment and even recycling takes place. Alternatively the registered e-waste collectors will deliver to approved collection centres, or become agents to operators of recycling facilities.

For the large producers, including system operators, importers, retailers, government and private institutions, corporate community, and workshops, there should be an obligation to be part of a scheme collecting their e-waste, or an authorised agent to pick up their e-waste. Areas of disposal should be those approved by the relevant authorities. The producers should cater for the costs of collection, treatment, recovery and appropriate disposal of this e-waste. Targets should be set for each producer or scheme operator in terms of e-waste collection, and records kept of EEE put to the market and e-waste collected. Collection targets will be established based on the e-waste inventories and mass flows assessments.

For the household levels, the conceptual approach that will sustain the collection system is to provide incentives for consumers to bring their electronic waste to drop off points, collection points or centres.

Incentives can include reduced prices on new equipment when old ones are taken back; the old equipment should be bought at a fee as an incentive to the owners to deliver to collectors. The metal scrap and

waste plastic recycling industries are riding on this concept and has achieved good collection efficiencies. Raising awareness of e-waste collection systems initiated amongst consumers and the general population is a key contributing factor that will determine the success.

Another incentive could be free provision of space for e-waste collection and recycling within regional industrial parks. Guidelines should be developed with technical specifications and other requirements for the establishment of collection centres and transportation will be provided for in the guidelines.

4.7.2 Collection centres or drop-off points

The proposed collection mechanism is to initiate pilot collection centres or drop-off points where consumers and businesses can leave e-waste. These centres or drop-off points will be established at locations that are easily accessed by those wishing to dispose of their electronic waste. The MoICT or regulators will have in place MoUs with producers or retailers for drop off points at their premises.

The centres could be managed and controlled through a collection scheme or producer responsible organization or by a third party association of informal collectors of e-waste, but with approval and regulation of, or in partnership with the relevant authority. A number of labelled sorting containers will be provided according to product type at the centre to ensure that the waste is segregated.

The collection and transport of separately collected e-waste will be carried out in a way, which optimizes reuse and recycling of those components or whole appliances that are capable of being reused or recycled. In addition collection and transport should minimize damage to the equipment.

The MoICT and regulators should have MoUs in place with large producers, retailers, telecom operators to have e-waste collection points in place.

4.7.3 Establishment of e-waste a modern national dismantling and recycling facility

A strategically located e-waste dismantling facility should be established to provide a secure and environmentally conscious solution for the sorting and segregation of electronic waste into reusable streams. Collections from the channels above – listed in 4.7.1, will be taken to the dismantling facility. Technical specifications and other requirements for establishment of dismantling facility will be provided for in the waste management regulations. In addition guidelines for dismantling and recovery will be provided for in a technical manual. Workers involved will be trained in required knowledge and skills.

In the short term, the activities will be mainly manual. Manual sorting is low capital cost initiative, where valuable fractions/components will be recovered, efficient sorting of fractions can be achieved. It is labour intensive thus job creation is assured.

Manual labour and simple tools like screw drivers, crimpers, pliers, cutters and stripper tools will be used to undertake non-destructive disassembly of the components. Manual disassembly will achieve relatively high liberation rates without breaking the original form of components and materials, which is easier to sort and improves re-usability while at the same time providing employment opportunities for those engaged in the dismantling process.

At the dismantling facility a pre-sort will be done to categorize the waste by type. Pre-inspection prior to dismantling will be done to identify whether equipment is operational in which case it will be cleaned and returned for reuse. If not operational but repairable they will be re-furbished for reuse or sold as refurbished equipment. If neither operational nor repairable, they will be dismantled. The principle of dismantling is to ensure that hazardous and excess materials are removed and disposed of safely, while the recyclable materials are recovered.

UNIDO is currently supporting a study by UCPC (MoTIC) in undertaking a feasibility study for e-waste treatment plant and preparation of a business model for its operations. It is proposed in this

strategy that results of this study be utilised, with only due diligence undertaken on its findings. A business plan for the operations of the dismantling facility is also proposed. Participation of the private sector in establishing this facility has also been proposed. Partnership with original equipment manufacturers in setting up a dismantling facility is proposed. Sourcing of a private partner in establishing an e-waste facility should follow the PPP Guidelines that have been developed by the Ministry of Finance, Planning and Economic Development.

Due to the limited access to capital intensive technologies like shredding machines and state of the art separation using eddy currents, magnetic and density separation, and the need to enhance employment opportunities, manual dismantling is a feasible option in the short-term (3 years of strategy implementation). The MoICT will however explore various technology options of e-waste dismantling and recovery available on the market through benchmarking practices elsewhere. The possibility of a shared facility for the EAC countries should also be explored.

The approach to be adopted is to collect, sort, decontaminate, dismantle and recover whatever can be reused or recycled locally. Whatever cannot be reused/recycled locally, but has market elsewhere is to be appropriately collected until when feasible volumes required are obtained and exported to industrialized countries where more optimal technical, environmental and economic outcome could be achieved through end-processing to recover trace elements like gold, mercury, sliver, palladium and platinum. The MoICT, and lead agencies will support the private sector in identifying partners to whom to export components that cannot be handled locally.

4.7.4 Strategies for managing hazardous or output components

4.7.4.1 Batteries

These include alkaline batteries, nickel-cadmium rechargeable batteries, lithium-ion batteries, and lead acid batteries. Lead acid batteries are already being taken by Uganda Batteries for recycling, other types of batteries will have to be shipped out or taken to approved hazardous waste handling facilities.

4.7.4.2 Metals

Metals including steel, iron, aluminium, and copper, are already being recycled in Uganda and have demand by local smelters like Roofings, Shumuk, Steel Rolling Mills, Tembo Steel among others thus segregation streams of metals will help in supporting the local metallurgical industry. Other metals like brass, zinc and titanium portions that might not have local demand could be collected and exported to other countries.

4.7.4.3 Plastics

Plastics make up about 17% of electronics. Thermoset plastics like ABS (Acrylonitrile Butadiene Styrene), PVC (polyvinyl chloride), PC (poly carbonate), HIPS (High impact polystyrene) and blends of ABS/PVC, PC/ABS form the biggest percentages. Majority of plastic recyclers in Uganda are able to process thermoplastics especially PET (Polyethylene terephthalate), and polyolefin plastics like Polyethylene (PE) both High and low density and PP (Polypropylene) yet this is a very insignificant portion in e-waste (<0.8%).

The emergence of technologies that enable to separate plastics with flame retardants (FRs) from those without, and those that enable direct use of recovered plastics that contain flame retardants into products that meet strict fire safety standards could provide an option of exporting shredded flakes as raw materials to feed into these recycling operations in America, Europe and Asia. For example in China recycled ABS is being used in the production of camera casing, battery boxes and compact disc trays.

Other options include controlled energy generation and recovery where direct combustion of plastics in cement kilns or in energy recovery systems for production of power, hot water or steam, and land filling of shredded plastic flakes in hazardous waste landfills that meet environmental requirements.

4.7.4.4 Printed wire/circuit boards

The wide spectrum of materials contained in boards demands diverse and separate treatment processes and considerable investment in advanced technologies (especially metallurgical recovery) is required to reach high recovery rate and low environmental impact.

This may not be possible given the capital costs and required economics of scale. MoICT together with lead agencies will support the private sector to identify companies with technical know-how, and sufficient economies of scale to whom these valuable components can be exported.

Examples are Umicore Precious Metal Refining in Belgium, Aurubis AG in Germany, Boliden in Sweden, DOWA in Japan and Xstrata in Canada.

Thus the circuit boards will be collected in significant quantities and exported for component recovery.

4.7.4.5 Cathode Ray tubes (containing lead, beryllium, phosphorus)

CRT monitors and TVs contain an average of 1.8 kg of lead and cadmium each and these need to be handled carefully and separately. This e-waste strategy proposes to explore the options of forming strategic partnerships targeting e-waste with international recyclers of CRTs that can guarantee safe disposal.

4.7.4.6 Hazardous fraction (PCB in capacitors, florescent lights, batteries)

For all the parts that are identified to have no secondary value or are hazardous, these will be disposed of either by controlled incineration or disposed of in underground landfill sites that have leachate control.

4.7.4.7 E-waste due to Digital Migration Policy for Terrestrial Television Broadcasting in Uganda (2011)

Adaption of digital broadcasting in Uganda in line with best practices elsewhere will lead to generation of e-waste due to replacement of Television transmission technologies. The e-waste will include TV screens, set top boxes, antennas, among others

Strategic actions proposed to deal with these volumes are similar to those for computers and other electronic equipment, but specifically:

i. Sensitise TV owners, users, importers and service providers on the digital migration policy and its implications;
ii. Establish TV screen and related equipment standards, and disseminate them among regulators, TV owners, users, importers and service providers prior to implementation of the policy of digital TV migration.

iii. Promote incentives to encourage owners of obsolete TV equipment to dispose at designated collection points
iv. Encourage e-waste collectors to undertake house to house collection of obsolete TV sets and related equipment
v. Dismantling and recovery of valuables, recyclables and reusable parts at approved sites or facilities. Dismantling will involve opening sets and separating CRT tubes, aluminum sinks, printed circuit boards, plastics, ferrous and non-ferrous metals. Reusable parts to be sold to re-furbishers.
vi. Recyclables to be taken by local recycling industries especially ferrous and nonferrous metals
vii. Hazardous and non-reusable items can be disposed by landfilling or incinerating.
viii. Items not re-usable in Uganda but have value elsewhere can be exported as trans-boundary hazardous waste. For example CRTs, circuit boards and plastics.
ix. Engage original equipment manufacturers, importers, resellers or retailers to buy back used TV sets and set top boxes at end of life;
x. Promote leasing of TV sets and associated equipment.

4.8 STRATEGIC PARTNERSHIPS TARGETING E-WASTE

Original Equipment Manufacturers (OEM) have considerable experience in e-waste recycling. Uganda benefited from the UNIDO and Microsoft Plan to make secondary PCs available to SMEs in developing countries with a situational analysis undertaken in 2008. Hewlett Packard has been recycling most of its products through a number of schemes in the last 20 years. Nokia and Motorola have launched EPR initiatives through voluntary take-back schemes in developing countries.

Uganda, or the wider East African Region, can benefit from the similar EPR initiatives and recycling programs from industry players like HP, Microsoft, IBM, Acer, Dell, Huawei, Sony and Samsung. The government has to seek avenues for partnerships where producers set up take back programs for old or end of life equipment like printers, computers, toner cartridges, mobile phones and batteries through their certified agents or third party entities or provide assistance in ensuring sustained management of the e - waste, or even set up refurbishment facilities.

Locally, partnerships are proposed with system operators, particularly Telecommunications companies to have in place take back schemes for the equipment they sell through promotions and normal sales like mobile and fixed phones, modems, switches, modems, routers, radio links. For licensed digital broadcasters, MoUs should be in place for take back schemes for the equipment they sell like set top boxes, decoders, antennas.

A pilot project will be initiated and designed for collection and transportation system, segregation, repair, refurbishment and recycling of e-wastes to demonstrate viability before rolling it out on a wider scale. The project model chosen will explore the opportunities in e - waste management while at the same time addressing its hazardous and toxic ratios.

4.9 CAPACITY BUILDING IN E-WASTE MANAGEMENT

Mainstreaming of e-waste issues in the curriculum of technical institutions has been proposed. Training modules to cover technical maintenance, dismantling, sustainable e-waste management, and public health, are proposed.

Training will be done for those in e-waste industry (both informal and formal) to equip them with required knowledge and skills, and avoid health and environmental risks. Local entrepreneurs will also be trained on e-waste business opportunities.

Training will also be done to strengthen existing capacity of lead agencies involved in e-waste regulation. Agencies like NEMA, UNBS, NITA-U, PPDA, UCC, MoICT, MoH, UBOS, the District and Municipal Authorities will be trained in e-waste programs tailored to their sectors as stipulated in the policy.

4.10 RESOURCE MOBILISATION

Being an emerging issue, no resources have been allocated to the sector for e-waste management. Local authorities are already constrained in collecting solid wastes and e-waste is not seen as a priority. GoU will need to allocate initial funding to the MoICT to set up the coordinator

for coordination purposes, and in the subsequent financial years for implementation of e-waste strategy activities. Mainstreaming of e-waste management in various implementing MDA budgets will be critical. Establishing and operationalising an e-waste fund will be a medium term measure to ensure sustainable financing of e-waste management. Other sources of funding for implementation of this e-waste strategy include development partners with interest in greening the e-waste chain..

These avenues should be explored to ensure e-waste is collected and well disposed, and that the e-waste challenge is handled in a sustainable manner.

Proposed actions:

i. Engage MoFPED on the set up and management of the e-waste fund
ii. Prepare a detailed resource mobilisation plan for implementation of the e-waste strategy
iii. Facilitate formation of E-waste collection schemes and regulate their functioning, with licence fees payable to the e-waste fund
iv. Facilitate the setting up of a Producer Responsible Organisation in liaison with the MoTIC
v. Liaise with the MoFPED and URA to review legislation to include an Advance Recycling fee for imported EEE
vi. Issue operational licences to all E-waste collectors and facility operators/owners, and regulate their operations
vii. Advocate for inclusion of E-waste management in budgetary allocations at various levels of governance
viii. Engage manufactures of various EEE brands to support e-waste recycling, treatment, and disposal activities, and contribute to the e-waste fund
ix. Participate in various regional projects under the ITU, EAC, the Basel Convention, targeting e-waste management
x. Review and update existing legislation and regulations to provide for e-waste levy for all e-waste producers

4.11 SETTING UP AND FUNCTIONING OF THE E-WASTE FUND

The National IT Policy 2012 and the e-waste Policy 2012 all propose establishment of the e-waste fund by the Ministry of ICT. Currently there is no enabling law for the establishment and operationalisation of the e-waste fund, however the National Environment Act CAP 153, the National Environment (Waste Management) Regulations of 1999 (both currently being updated) need to be revisited for specific mention of the e-waste fund, sources of finances for the fund and its operationalisation. Other laws such as the Uganda Communications Act CAP 106 and associated regulations, the Electronic Media Act CAP 104 and associated regulations, the National Information Technonology Act of 2009, all need to be revised to have provisions for contributions to the fund from licencees and with economic instruments for the fund sustainability. NEMA, Ministry of Justice and Constitutional Affairs, and MoFEP guidance will be required in establishing the fund. Initial seed financing to the fund would come from the Central Government. This strategy identifies various sources that could contribute to the e-waste fund, including the following:

i. Advance recycling fees, payable by manufacturers or importers of EEE
ii. Licence fees for e-waste collection schemes, storage facilities, transporters, operators of e-waste recycling facilities
iii. Voluntary contributions from manufacturers, telecom operators, television companies and other large importers of EEE
iv. Development partners with interest in sustainable environment management

The e-waste fund will then serve the following purposes:

i. Contributions to PPP schemes, particularly in setting up a modern e-waste recycling facility, and setting up regional collection centres;
ii. Support to SMEs engaged in e-waste collection and recycling
iii. Education and awareness campaigns on e-waste management
iv. Capacity building in government institutions for e-waste management
v. Supporting research initiatives in e-waste management.

Initially this fund will be allowed to grow for the first 3 years. The e-waste coordinator or coordination office within the MoICT will then receive applications from players in the e-waste management chain for priority investments or activities. Disbursement of funds to successful applicants will be done by MoFPED, with MoICT responsible for monitoring implementation and accountabilities.

4.12 MONITORING AND EVALUATION OF E-WASTE STRATEGY

To realize outputs of the e-waste strategy, baseline conditions and targets have been identified for proposed action areas in chapter 5. Monitoring will be undertaken by the MoICT and the various MDAs or lead agencies involved in implementation of the e-waste strategy.

There will as well be surveillance by the implementation Unit or coordinator to be housed at the MoICT on a quarterly basis to ensure all stakeholders involved are on track with planned targets.

The E-waste strategy shall receive a midterm review after three years and a full review every five years.

5. IMPLEMENTATION FRAMEWORK AND BUDGET FO

Table 5.1 provides a summary of E-waste strategic actions, planned activities, tar
strategic actions within the e-waste strategy.

Table 5.1: Implementation framework and budget for e-waste strategy

STRATEGIC ACTION/ OBJECTIVE	KEY ACTIVITIES	INDICATORS OF PERFORMANCE		
		Description of indicator	**Target**	2014/2015
To establish Coordinator for supervision and management	Set up and facilitate coordinator	Office secured for e-waste coordinator	Furnished Office	20,000,000
		Officer appointed to coordinate activities	1 Senior Officer	-
		Start up funds secured	Funds provided for in budget	-
		E-waste web portal	E-waste info on MoICT website	-
		Secure budget for e-waste activities	Approved budget for FY 2014-2015	-
	Set up and facilitate steering committee	Member steering committee appointed, functional	10 steering committee meetings per quarter	12,000,000
	Bench marking e-waste activities and best practices	Meetings with key stakeholders	10 meetings with Lead Agencies, MDAs	4,000,000
		Regional and developed country collaboration	2 trips per year	50,000,000
		Monitoring framework in place	Approval by steering committee	-
	Stakeholder engagements	Regional e-waste strategy disclosure workshops	10 regional workshops	65,000,000
	Liaison with international agencies and development partners	Updates on status of compliance with conventions, treaties	Annual status reports communicated	10,000,000
		Participation in international fora on ICT, climate change, e-waste	Two conferences per year	50,000,000
To raise awareness and advocate for e-waste management across all stakeholders and general public	Prepare e-waste awareness communication strategy	Consultant engaged	Contract	50,000,000
		Multiyear communication and advocacy Plan	Communication plan	-
		Communication methods identified	Number IEC materials developed	20,000,000
		Awareness campaigns	All districts covered	150,000,000
		Number of IEC materials developed.	Packages for each stakeholder category	30,000,000
	Organise dialogues	Number of Stakeholder dialogues organized.	10 stakeholder dialogues	65,000,000
	Mainstream e-waste issues in educational curriculum	Engagement with MoES, UICIT.	Approved curriculum	50,000,000

OR E-WASTE STRATEGY

gets, baseline conditions and budget. It also proposes lead agencies to spearhead

FINANCIAL REQUIREMENT				IMPLEMENTER	TIMING/ SCHEDULE	BUDGET
2015/2016	2016/2017	2017/2018	2018/2019			
-	20,000,000	-	20000000	MoICT	Aug-14	40,000,000
-	-	-		MoICT	Aug-14	-
-	-	-		MoICT	Aug-14	-
-	-	-		MoICT	Aug-14	-
-	-	-		MoICT	Jun-14	-
8,000,000	8,000,000	80,000,000		MoICT	Jun-17	108,000,000
				MoICT	Apr-14	4,000,000.00
50,000,000	50,000,000	50,000,000		MoICT	Jun-17	200,000,000
-	-	-		MoICT	Apr-14	-
65,000,000	-	-		MoICT	Jun-14	130,000,000
-	10,000,000	-		MoICT	Jun-16	20,000,000
50,000,000	50,000,000	-		*MoICT*	Jun-16	150,000,000
-	-	-		MoICT/NEMA	Dec-14	50,000,000.00
-	-	-		MoICT	Dec-14	-
40,000,000	40,000,000	40,000,000		MoICT/NEMA	Dec-17	140,000,000
150,000,000		150,000,000		MoICT/NEMA	Jan-17	450,000,000
30,000,000	30,000,000	30,000,000		MoICT/NEMA	Feb-17	120,000,000.00
	65,000,000			MoICT/NEMA	Jun-15	130,000,000
50,000,000	-	-		MoICT/NEMA/NITA/ UICIT	Jun-15	100,000,000

STRATEGIC ACTION/ OBJECTIVE	KEY ACTIVITIES	INDICATORS OF PERFORMANCE		
To strengthen the legal and institutional framework for e-waste management	Review of policy and institutional framework	ToRs developed and Consultant engaged.	Contract	40,000,000
		Stakeholder workshops held, updates accepted.	5 regional workshops	32,500,000
	Review and update National waste regulation.	ToRs developed and Consultant engaged	Contract	40,000,000
		Stakeholder workshops held, updates accepted	5 regional workshops	32,500,000
		Updates disseminated	Printed materials, IEC packages	25,000,000
	Issue and regulate e-waste handling licenses.	E-waste collectors and facility operators registered	No. of e-waste collector registered	
		E-waste collectors and facility operators licenced.	No. of e-waste collector licensed	
	Prepare and disseminate guidelines for e-waste management	ToRs developed, Consultant engaged	Contract	40000000
		Stakeholder workshops held, guidelines approved	5 regional workshops	32,500,000
		Guidelines disseminated	Printed materials, IEC packages	30,000,000
	Support preparation of bye-laws for Districts and Municipalities	ToRs developed, Consultant engaged	Contract; 10 e-waste bye-laws	60,000,000
		LG workshops held, bye-laws approved	10 LG workshops	32,500,000
		Bye-laws disseminated	Printed materials, IEC packages	
	Develop and disseminate standards for ICT equipment	ToRs developed, Consultant engaged	Contract, ICT standards	40,000,000
		Stakeholder workshops held, standards accepted	5 regional workshops	32,500,000
		Standards disseminated	Printed materials, IEC packages	
	Develop, disseminate and enforce EEE standards	ToRs developed, Consultant engaged	EEE standards	40,000,000
		Stakeholder workshops held, standards accepted	5 regional workshops	32,500,000
		Standards disseminated	Printed materials, IEC packages	
		Standards enforced	No of Penalties	
			2 vehicles for monitoring	
	Notify WTO member states on Ugandan EEE standards	Standards circulated among WTO member states	PVoC tariff set	
	Audit and monitor compliance of EEE equipment with set standards	Quarterly inspections	Quarterly compliance reports	20,000,000
	Train lead agency staff (local)	ToRs developed, Consultant engaged	Contract	30,000,000
		Training packages approved and delivered	quarterly training for 40 staff	40,000,000
		External training	2 staff receive training in developed country annually	30,000,000

FINANCIAL REQUIREMENT				IMPLEMENTER	TIMING/ SCHEDULE	BUDGET
-	-	-		MoICT/NEMA	Dec-15	40,000,000
-	-	-		MoICT/NEMA	Mar-16	32,500,000
				MoICT/NEMA	Dec-15	40,000,000
				MoICT/NEMA	Mar-16	32,500,000
25,000,000	25,000,000	25,000,000		MoICT/NEMA	Jun-17	100,000,000
				NEMA		-
				NEMA		-
				MoICT/NEMA/MoH/ MoLG	Dec-15	40,000,000
				MoICT/NEMA/MoH/ MoLG	Mar-17	32,500,000
30,000,000	30,000,000	30,000,000	30,000,000	MoICT/NEMA/MoH/ MoLG	Jun-17	120,000,000
60,000,000				MoICT/NEMA/MoLG	Mar-16	120,000,000
32,500,000				MoICT/NEMA/MoLG	Jun-16	65,000,000
25,000,000	25,000,000			MoICT/NEMA/MoLG	Jun-16	50,000,000
40,000,000				MoICT/NITA/UCC/ UNBS	Sep-15	80,000,000
32,500,000				MoICT/NITA/UCC/ UNBS	Dec-15	65,000,000
25,000,000	25,000,000			MoICT/NITA/UCC/ UNBS	Mar-16	50,000,000
40,000,000				MoICT/NITA/UCC/ UNBS	Sep-15	80,000,000
32,500,000				MoICT/NITA/UCC/ UNBS	Dec-15	65,000,000.00
25,000,000	25,000,000			MoICT/NITA/UCC/ UNBS	Mar-16	50,000,000
-	-	-		URA/UNBS	Jun-16	-
120,000,000	120,000,000		120,000,000.00	MoTIC/URA/UNBS	Jun-15	240,000,000
				MoTIC/URA/UNBS	Jun-14	-
20,000,000	20,000,000	20,000,000		MoTIC/URA/UNBS/ NITA	Jun-17	80,000,000
				MoTIC/URA/UNBS	Sep-15	30,000,000
40,000,000	40,000,000	40,000,000		MoICT/NEMA/NITA	Jun-17	160,000,000
30,000,000	30,000,000	30,000,000		MoICT	Jun-17	120,000,000

STRATEGIC ACTION/ OBJECTIVE	KEY ACTIVITIES	INDICATORS OF PERFORMANCE		
To maintain statistical records of imported EEE	Set up and maintain database of imported EEE	EEE database	Coding for EEE in place	
To carry out baseline surveys on e-waste	Carry out informative studies on e-waste	ToRs developed, Consultant engaged	Contract	60,000,000
		Baseline surveys every two years	survey reports	
To mainstream e-waste issues in all MDAs	Identify focal persons for e-waste for all MDAs	Focal persons appointed	List of focal persons	
	Train MDA staff	all MDAs focal persons trained	Quarterly training reports	40,000,000
	Incorporate e-waste management in MDA policies, plans	e-waste aspects budgeted for and implemented	Budget for e-waste management in MDAs	
To invest in e-waste handling infrastructure	Carry out e-waste assessment	Agency engaged for e-waste inventory update	E-waste data base established	70,000,000
		Due diligence and transaction advise on feasibility report	Business plan for e-waste facility	100,000,000
			Incentives for e-waste investments	
			Contract with facility manager	
	Establish e-waste collection centres	Regional collection centres	5 regional collection centres	
		MoUs with importers, retailers, system operators	50 from system operators, importers, retailers	
	Formation of e-waste collection schemes	Engagement with informal collectors	20 meetings in all municipalities and KCCA divisions	65,000,000
		Registration and licencing of collectors.	Register of e-waste collectors, producers	
		E-waste volumes collected	Target 2000 tons per year collected	
		E-waste schemes functional	5 pilot e-waste collection schemes	
	Promote incentives for take back systems	MoUs with producers, system operators	MoUs with all system operators, major producers	
		IEC packages	Country wide coverage	25,000,000
	Promote EEE leasing for bulk consumers	Engagement with importers, buyers	5 regional workshops	60,000,000
		Sensitisation of MDAs	5 regional workshops	60,000,000
		Contracts with importers, retailers	100 contracts	
	Set up regional recovery facilities	Feasibility study and implementation	Business plan for e-waste recovery facility	40,000,000
			Incentives for e-waste investments	
			Pilot recovery facilities (5) by private sector	
			Modern recovery facility - PPP	
			Contract with facility manager	
		Engagement with e-waste scheme operators, DLGs	5 regional workshops	60,000,000
	Training in technical colleges in recovery and dismantling	Curriculum developed and implemented	Course at UICIT and in 5 technical colleges	

FINANCIAL REQUIREMENT				IMPLEMENTER	TIMING/ SCHEDULE	BUDGET
50,000,000				NITA/URA/UBOS	Jun-15	50,000,000
	60,000,000			MoICT/NEMA/NITA/ UCC/MoTIC	Jun-16	120,000,000
				MoICT/NEMA/NITA/ UCC/MoTIC	Jun-14	-
						-
40,000,000	40,000,000					120,000,000
						-
				MoICT/MTIC/UCPC/ NITA	Sep-14	70,000,000
				MoICT/MTIC/UCPC/ NITA	Mar-15	100,000,000
				MoICT/MoTIC	Mar-15	-
				MoICT	Mar-15	-
500,000,000	500,000,000			MoICT/MoLG	Jun-16	1,000,000,000
				MoICT	Jun-15	-
65,000,000				MoICT/NEMA	Mar-15	130,000,000
				MoICT/NEMA/MoLG	Jun-14	-
				MoICT/NEMA/MoLG	Dec-14	-
				MoICT/NEMA/MoLG	Dec-14	-
				MoICT/MoTIC	Dec-14	-
25,000,000	25,000,000			MoICT	Dec-16	75,000,000
60,000,000				MoICT/MoTIC/PPDA	Jun-15	120,000,000
				MoICT/MoTIC/PPDA	Jun-14	60,000,000
				MoICT/MoTIC/PPDA	Jun-16	-
-	-	-		MoICT/MoTIC/UCPC/ MoLG/NITA	Dec-14	40,000,000
				MoICT/MoTIC/UCPC/ MoLG/NITA	Dec-14	-
		1,000,000,000	1,000,000,000	MoICT/MoTIC/UCPC/ MoLG/NITA	Jun-15	1,000,000,000
	10,000,000,000	10,000,000,000	10,000,000,000			
				MoICT/MoTIC/UCPC/ MoLG/NITA	Jun-15	-
60,000,000				MoICT/MoTIC/UCPC/ MoLG/NITA	Dec-15	120,000,000
50,000,000	50,000,000			MoICT/MoES/NITA/ UCC/	Jun-16	100,000,000

STRATEGIC ACTION/ OBJECTIVE	KEY ACTIVITIES	INDICATORS OF PERFORMANCE		
To mobilise resources for e-waste management.	Exploring e-waste fund management options	Engagements with MoFPED	Quarterly meetings	20000000
		E-waste fund sources and management modalities established	E-waste fund guidelines disseminated to all MDAs	
	Prepare 5 year resource mobilisation plan	Lead agency/MDA workshops	2 workshops	
		Dialogue with producers	2 workshops	
	Regulating e-waste schemes	PRO functional	1 PRO licenced	
	Establish Producer Responsible Organisation	Engagement with producers and e-waste schemes	5 regional workshops	
		PRO licenced and functional	PRO licenced	
	Dialogue with e-waste producers	Engagement with producers and e-waste schemes	5 regional workshops	
		Contributions to e-waste fund	30% of e-waste management budget	
	Legislation reviewed to provide for e-waste fund.	Consultant engaged	Contract	
		stakeholder engagement	regional workshops	
		updated e-waste legislation	updated legislation disseminated to all key stakeholders	
				1,806,000,000

FINANCIAL REQUIREMENT				IMPLEMENTER	TIMING/ SCHEDULE	BUDGET
				MoICT/NEMA/ MoFPED	Jun-14	20,000,000
20,000,000				MoICT/NEMA/ MoFPED	Jun-14	20,000,000
20000000				MoICT/ MoFPED	Jun-14	20,000,000
20000000				MoICT/MoFPED	Jun-14	20,000,000
				MoICT/NEMA	Jun-15	-
65,000,000				MoICT/NEMA	Jun-15	65,000,000
				MoICT/NEMA	Jun-15	-
65,000,000				MoICT/NEMA	Jun-15	65,000,000
				MoICT/NEMA	Jun-16	-
40,000,000				MoICT/NEMA	Jun-16	40,000,000
65,000,000				MoICT/NEMA	Jun-16	65,000,000
25,000,000				MoICT/NEMA	Jun-16	25,000,000
2,190,500,000	**11,288,000,000**	**11,495,000,000**	**11,170,000,000**			6,779,500,000
			37,949,500,000			

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ANNEXES

ANNEX 1: LIST OF STAKEHOLDERS ENGAGED

Institution/organization	Contact Person
Uganda Communications Commission	Nakiguli Helen C
Uganda National Bureau of Standards	Tondo Zainah
Uganda Cleaner Production Centre	Silver Ssebagala
Uganda Industrial Research Institute	Oguma Boaz
The Public Procurement and Disposal of Public Assets Authority	Monica Nyakaisiki
Uganda Revenue Authority	Kaduli Eria
Uganda Investment Authority	Godfrey Ssemakula
National Information Technology Authority	Philip Walera
Kampala Capital City Authority	Najib B. Lukooya
Ministry of Trade, Industry and Cooperatives	Amumpaire Mary
Kazinga Channel office world limited	Asif Patel
Uganda Plastic Manufactures and Recyclers Association	Alfred Rwabugahya
Mitsumi distribution- Uganda	Sandeep Savant
Services and Computer Industries Ltd (NCR)	Pamba Joseph
Uganda Manufacturers Association	Okecho Lawrence Michael
Kampala City Traders Association (KACITA)	Moses Kalule
Orange Uganda Limited	Fiona Rwakitarate
MFI Uganda	Suresh Kumar
Huawei Technologies Uganda	Patrick Tong
Eaton Towers	Ronald Wejuli
Ministry of Health	Dr. Amandra Jacinto
SIMBA telecom	Lysandra Chen
Kitezi landfill management	Lutakome Obed
MTN Uganda	Sheila B. Mugisha
MIDCOM	Bijoy Varghese
Mbarara Municipal Council	Tumwebize Herbert
Ministry of Local Government	Prossie Nampijja
National Environment Management Authority	Dick Lufafa

ANNEX 2:

LIST OF WORKSHOPS HELD WITH DISTRICT AND INSTITUTIONAL REPRESENATIVES

Region/District	Venue	Date
Western Region, Mbarara	Acacia Hotel	19th September 2013,
South Western Region, Fort Portal	Cornerstone Hotel	24th September 2013,
Eastern Region, Mbale	Protea Hotel	26th September 2013
Northern region, Gulu	Golden Gate Hotel	8th October 2013
Central Region, Mukono	Ridar Hotel	23rd October 2013

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