MINISTRY OF ICT & NATIONAL GUIDANCE

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FINAL REPORT

BASELINE SURVEY ON WASTE FROM ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) IN UGANDA

MAY, 2022

Table of Contents

List of figures

List of tables

Acknowledgement

This study was a collaborative work between the Ministry of Information Communications Technology and National Guidance (ICT&NG), National Information Technology Authority Uganda (NITA-U) and Centre for Green ICT & Circular Economy LTD (GICTACE-CENTRE). Great thanks to the World Bank for funding the study under the Regional Communications Infrastructure Program (RCIP) Phase V-Uganda project.

Special thanks to the field researchers for the tremendous data collection job well-done given the tight timelines. Lastly, special gratitude to the entire team who were involved in data collection, data reviews, project meeting and report compilation.

Key Definitions

Disposal facility: An establishment that receives, stores, processes or treats general waste and includes recycling facilities.

Electrical and electronic equipment: Equipment which are dependent on electric currents or electromagnetic fields to work properly.

E-waste: Discarded electrical and electronic equipment and those yet to reach the end of life. Such as phones, laptops, fridges, sensors and TVs.

Extended Producer Responsibility: A policy approach under which producers are given significant responsibility to manage e-waste.

ICT: Information and communications technologies which use electronic and electrical equipment and are therefore major generators f e-waste.

Recycling: A process of converting waste materials into new materials and objects.

Refurbishment: A method of promoting reuse and recycling of e-waste through modifying the current state of electronic and electrical equipment through repair, maintenance, and other renovations.

Storage: An action or method of keeping electronic and electrical equipment that have reached their end of life or that are currently not in use prior to further management.

Take Back Scheme: An initiative organised by a manufacturer or retailer to collect used products or materials from consumers and reintroduce them to the original processing and manufacturing cycle.

Treatment: Includes dismantling, processing and end-processing of electronic and electrical equipment.

Producer Responsibility Organisation: An organisation that assumes the responsibilities of an obligated party as outlined in government regulations regarding the collection and recycling of used electronic and electrical equipment.

List of Acronyms

CSO	Civil Society Organisation
EEE	Electronic and Electrical Equipment
EoL	End of Life
EPR	Extended Producer Responsibility
ICT	Information and Communication Technology
FGD	Focus Group Discussion
GEM	Global E-waste Monitor
ITU	International Telecommunications Union
KII	Key Informant Interviews
LG	Local Government
MDAs	Ministries, Departments and Agencies
MPPI	Mobile Phone Partnership Initiative
NITA-U	National Information Technology Authority – Uganda
NSC	National E-waste Steering Committee
ODK	Open Data Kit
PACE	Partnership for Action on Computing E-waste
POM	Put On Market
PPP	Public Private Partnership
PRO	Producer Responsibility Organisation
RCIP	Rural Communications Infrastructure Project
SDGs	Sustainable Development Goals
StEP	Solving the E-waste Problem Initiative
UBOS	Uganda Bureau of Statistics
UCC	Uganda Communications Commission
UNBS	Uganda Nation Bureau of Standards
UNEP	United Nations Environment Programme
URA	Uganda Revenue Authority
WEEE	Waste from Electrical and Electronic Equipment

Executive Summary

Introduction

National Information Technology Authority-Uganda, under the Regional Communications Infrastructure Program (RCIP) Phase V-Uganda embarked on an exercise to conduct a national survey on waste from electronic and electrical equipment (e-waste). The overall objective of the assignment was to establish the baseline situation of e-waste in Uganda and collate existing e-waste management initiatives so as to aid development of appropriate policies, guidelines and regulations for effective e-waste management in the country. This report presents the findings of the baseline survey on waste from electrical and electronic equipment in Uganda amongst Hospitals or and Health Centres, Universities and Tertiary Institutions, Business entities or Private sector, Device repairers, Device Manufacturers/ Importers/ Assemblers or retailers, Broadcasting Companies, Local Governments, MDAs, Telecommunications Operators, E-Waste handlers and other categories across the country.

The study used a mixture of qualitative and quantitative approaches to facilitate triangulation of the findings and help enrich the outcomes. Using desk reviews, researchers extracted a variety of literature and datasets on key issues as well as policy relating to the e-waste across the country. In addition, the study conducted focus group discussions with key informants selected from repairers and members of the National Steering Committee on e-waste. The study conducted a nationally representative survey that collected data for a comprehensive set of indicators to measure the existing volumes of e-waste, e-waste management practices and awareness.

Key findings

The results of the study indicate that a total of 900/1200 (75%) respondents were interviewed during the survey from Central (172), metropolitan (228), Western (235), Eastern (185) and Northern (80). Most of the respondents had desktop computers, printers, laptops, televisions and mobile phones. Few respondents had tablets, fax machines and game consoles.

The findings of this study further indicate that majority of the respondents put into storage (75.3%) the working devices they no longer use while few return to the vendor (3.6%) or local recycling centre (2.6%).

Regarding the dangers from the poor disposal of e-waste very few respondents had substantial knowledge about the dangers. On average most of the respondents repaired (5-10) devices a year (51.7%) while 9.2% repaired more than 50 devices. The most common factor influencing the respondent's choice whether to repair a device or not was the price of repair compared with replacing with a new device. 93.3% of the organisations interviewed had no e-waste management guidelines and majority considered availability of replacements, repair services, technology and brands as the major factors considered when disposing off old devices.

The National Environment Act 2019, E-waste Management Policy 2012 and the National Environment Regulations Act were the most known to the respondents. On average 93.3%of the organizations don't provide e-waste management trainings and lacked proper inventory on the e-waste generated.

For the device repairers, most of them get spare parts from vendors (52.7%) while very few import the spare parts (8.3%), majority lacked e-waste management training and guidelines. There is no takeback policy in place for the device manufacturers, importers or retailers, no importation of used electronics and little or no e-waste awareness regarding the e-waste national laws and the existing e-waste facilities in Uganda.

CHAPTER ONE: BACKGROUND TO THE STUDY

1.1 Assignment Background

The Government of Uganda, through the National Information Technology Authority - Uganda (NITA-U), received funding from the World Bank towards financing of the Regional Communications Infrastructure Project (RCIP). As part of the RCIP Uganda, the project focused on complementary infrastructure investments to ensure greater access to affordable, high-quality Information and Communications Technologies (ICTs), and deployment of a range of enabling e-Government foundations such as shared infrastructure and e-services for Ministries, Departments and Agencies (MDAs), among other interventions. As planned, the extension of affordable broadband to rural areas as well as the roll out of citizen-centric e-services has led to an increase in the number of users that interact with and access services online. In addition, the use the internet for socio-economic activities across all demographics has increased.

While investments into ICT equipment contributes to rapid socio-economic development, it inevitably results into rapid generation of large volumes of e-waste. Many Ugandan institutions are aware of this, and have conducted different surveys on e-waste in the country as part of attempts to improve e-waste management. It is noteworthy that there is a planned establishment of ICT parks throughout the entire country in area areas such as Entebbe and Namanve that will handle ICT related issues.

The challenge with this is that this data is not consolidated which leads to challenges in developing relevant policy interventions. To address this, NITA-U procured consultancy services to collate existing data and studies on e-waste and conduct a baseline survey on e-waste in Uganda through surveys and interviews to establish the baseline situation of e-waste in Uganda. The baseline survey will support the ministry of ICT/GOV to develop appropriate policy interventions for enhanced e-waste management in Uganda and feed into the design of the proposed Uganda Digital Acceleration Project.

1.2 The Evaluation Objectives and Scope

1.2.1 Evaluation Objectives

The overall objective of the survey was to have consolidated information on e-waste in the country which shall further inform the ministry of ICT/GOV in the

development of appropriate policy interventions for enhanced e-waste management in Uganda.

1.2.2 Scope

The survey only considered WEEE at the level institutions and enterprises rather than at the individual and household level. These institutions and enterprises included Ministries, Departments and Agencies (MDAs), Local Governments (LGs), hospitals and health centres, educational institutions, civil society organisations, development partners, manufacturers and assemblers, e-waste collectors, transporters, storage facilities, among others. Data was collected from the different regions of Uganda i.e., Central, West, East and Northern Uganda. Out of the six categories of e-waste proposed by the Global E-waste Monitor (GEM) 2017, only two categories were considered, i.e., (a) Small IT and Telecommunications equipment, and (b) Screens and Monitors as shown in table 1.

Table 1: The two categories of e-waste considered in the survey

Category of ICT Equipment	**Name/List of equipment**	**Potential Sources**
Small IT and Telecommunications equipment	Desktop PCs (excluding Monitors and other accessories)	UNU-Key 0302
	Small IT equipment (routers, mice, keyboards, external drives, and accessories)	UNU-Key 0301
	Printers (Includes scanners, multi-functional, and faxes)	UNU-KEY 0304
	Telecommunication equipment ([cordless] phones, answering machines)	UNU-KEY 0305
	Mobile Phones (including smart phones and pagers)	UNU-KEY 0306
Screens and Monitors	Laptops (including tablets)	UNU-Key 0303
	Cathode Ray Tube Monitors	UNU-KEY 0308
	Flat Display Panel Monitors (LCD, LED)	UNU-KEY 0309
	Cathode Ray Tube TVs	UNU-KEY 0407
	Flat Display Panel TVs (LCD, LED, Plasma)	UNU-KEY 0408
	Game Consoles	UNU-KEY 0702

1.3 Secondary Data Collection

Secondary data was mainly sourced from the different documentations on e-waste. Uganda Revenue Authority (URA) provided the database for EEE imports of the relevant categories to the study. The EEE that were considered under the survey are those that were imported within the last five (5) years, i.e., 2016-2021. Table 2 shows the lifespan of all the EEE under the survey which was identified in order to get the statistics of the e-waste generated. The harmonized system (HS) code was used to identify the equipment that was relevant to the survey. The data was then analysed and synthesised using the Microsoft Excel tool.

Table 2: Equipment life span

	List of EEE	**New Equipment Life Span (Years)**	**Lifespan of Second-hand Equipment (Years)**
A	**Small IT and Telecommunications equipment**		
1	Desktop PCs	6	4
2	Routers	5	3
3	Mice	4.5	3
4	Keyboards	4.5	3
5	external drives	5	3
6	Accessories	4	3
7	Printers	5	3
8	Scanners	5	3
9	multi-functional	5	4
10	Faxes	3	2
11	Cordless phones	2	1
12	Answering machines	3	2
13	Mobile Phones	4	3
14	smart phones	2	1
15	Pagers	3	2
B	**Screens and Monitors**		
16	Laptops	3 to 5	1 to 2
17	Cathode Ray Tube Monitors	4	1 to 2
18	Flat Display Panel Monitors (LCD, LED)	5	3
19	Cathode Ray Tube TVs	4	2
20	Flat Display Panel TVs (LCD, LED, Plasma)	5 to 7	4
21	Game Consoles	6	4

1.4 Report Organization

The survey report has been structured in four (4) chapters as follows:

1. Chapter one provides the context and background to the study. It presents background of the assignment, context of the assignment, evaluation objective and scope, as well as the evaluation key guiding questions.
2. Chapter two presents the study design and methodology of the assignment as well as its limitations.
3. Chapter three presents the findings of the study. This entails the situation analysis, e-waste legal and regulatory frameworks, e-waste inventory, e-waste management practices, and global and regional trends in e-waste management.
4. Chapter four concludes the report and presents recommendations based on the emerging lessons and best practices in e-waste management.

The Appendix section presents the survey tools and documents review.

CHAPER TWO: STUDY DESIGN AND METHODOLOGY

2.1 Study Design

2.1.1 Sampling

The study was designed to be geographically representative by considering the main enumeration areas of Uganda Bureau of Standards (UBOS) i.e., Central, Eastern, Northern and Western regions. The sampling strategy was stratified, multi-stage purposive random, with sampling performed in several steps.

The sampling employed the Cochran formula to calculate an ideal sample size given a desired level of precision, desired confidence level, and the estimated proportion of the attribute present in the population. It was noted that the population size is 34,000 institutions and organisations. With a desired degree of precision of 3%, a confidence level of 95%, and an assumed response rate of 50%, the approximate logical sample size was determined as 1,035 respondents. The stratification considered parameters like region in the country, type of institution, role of the organisation, among others. Table 3 shows the different types of stakeholders that were to be contacted.

Table 3: The different stakeholder categories that were considered

Respondent Category	**Number Targeted (complete)**	**Data Collection Method**
Hospitals and health centres	150	Survey Questionnaire (SQ)
Schools (Primary and Secondary)	500	SQ
Universities and Tertiary	100	SQ
Government Agencies	50	Key Informant Interview (KII) & SQ
Government Ministries (including Policy Makers	23	KII or SQ
Local Governments (Districts, Cities, and Municipal Councils)	60	KII or SQ
Telecom Operators	15	SQ
Broadcasting Companies	90	SQ
Business Entities	71	SQ
Storage companies and Warehouses	10	SQ
Manufacturers	12	SQ

Repairers	20	SQ or FGDs
Total targeted stakeholders	1,101	

2.1.2 Recruitment of Researchers

Researchers were recruited to assist in the collection of field data. They were thoroughly trained how to administer the tool using the Open Data Kit (ODK) software. The training enabled researchers to gain skills in using the tool, understand technical terms in the tool and be able to explain/translate them to respondents in local languages when needed. Figure 1 shows the lead consultant conducting an induction training for all the researchers.

Figure 1: Researcher training session held at Makerere University

2.1.3 Development and Pre-testing of the Data Collection Tool

Researchers were equipped with Android devices to facilitate mobile data collection. The ODK platform was used on tablets to collect data accurately, quickly and offline. The combination of the tablets with ODK and cloud servers enabled the team to benefit from a digitised data collection process. The benefits included faster data processing, validation analysis since the platform provided for question branching, skipping and looping, and automatically capturing the Global Positioning System (GPS) coordinates for the location where each respondent was interviewed. Such paperless data collection approaches are very vital in the survey process in the modern era because they limit the bureaucratic tendencies involved in digitising the collected data from

paper questionnaires into data analysis software. Additionally, such approaches are environmentally friendly since there is no pollution or environmental hazards as a result of chemicals due to littering of papers.

The key steps involved in setting up the ODK platform for data collection and processing included:

1. Building the data collection form or survey questionnaire and programming the tool.
2. Installation of ODK onto the android mobile devices.
3. Data was then collected by the trained researchers using the tool loaded onto the Android mobile devices. The researchers carried out face-to-face interviews in the field to collect the data offline.
4. At the end of each day of data collection, the data was uploaded onto the sever by every researcher. Once the data was in the server, the consultant monitored it and performed quality control checks.
5. The data was then aggregated and prepared for processing and analysis.

2.1.4 Field Data Collection

Based on five operational zones of Central, Metropolitan Kampala, Eastern, Northern and Western based on language and logistical efficiency, three field teams, each consisting of one supervisor, were dispatched to collect data. The first team, which included four researchers, covered Eastern and Northern regions. The second team, which included four researchers, went to the Central and Western regions. The third team composed of 8 researchers covered parts of Central region and Metropolitan Kampala. The data collection exercise took 15 working days, commencing on 17 January 2022 up to 4 February 2022.

Prior to actual collection of data, an advance team had visited these areas to deliver letters from NITA-U to the respective Chief Administration Officers (CAOs), the Resident District Commissioners (RDCs), the Local Council (LC) 5 Chairpersons and the LC 1 Chairpersons of the actual village where respondents were located. The letter formally introduced the survey, explained its purpose, and helped the advance team establish contact with the LC 1 Chairperson.

For most of the MDAs, NITA-U contracted a commercial courier company to deliver the letters. A delivery note was stamped by the end user to acknowledge receipt and act as proof of delivery.

2.1.5 Data Analysis and Synthesis of Qualitative Data

The data was imported into Stata 15 for statistical analysis as well as Microsoft Excel for analysis. Quantitative analysis involved descriptive and inferential statistics. Descriptive analysis involved uni-dimensional analysis where variables were measured through frequencies and bivariate analysis which involved measuring the relationships between two variables using cross-tabulations. On the other hand, inferential statistics measured the significance of the relationship between two or more categorical variables and was measured using the chi-square test.

Quantitative data was uploaded and analysed using Stata 15. Qualitative data was coded through identification of segments of meanings in the data and labelling them with a code to enable placing them under specific emergent themes. Coding helped to retrieve data under different themes, build analytical bases, structure the data and reinforce validity through checking whether the survey questions are actually being answered.

The qualitative method benefited from the secondary data collection and two Focus Group Discussions (FGDs) which involved the repairers and members of the NSC. The two groups were engaged separately on different days. The secondary data included the review of different documents which provided a deeper understanding of e-waste management within and at a global level. The documents included the legal frameworks and case studies among others.

2.1.6 Response Rate

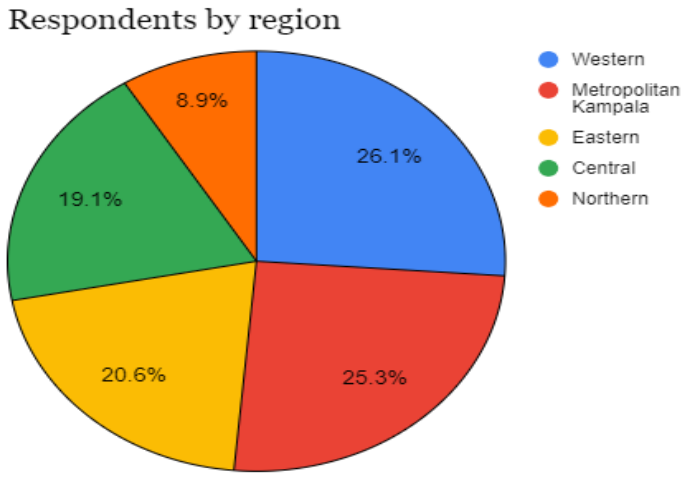

Figure 2: The percentage of interviewed respondents per region

The results of the study indicate that a total of 900/1200 (75%) respondents were interviewed during the survey. The breakdowns per region are as follows: Central (172), Metropolitan Kampala (228), Western (235), Eastern (185) and Northern (80) as shown in Figure 2. In Table 4, it can be seen that schools formed the majority of respondents with a percentage of 38.7%. A comparable number of respondents were interviewed from the hospitals, universities and tertiary institution, and the private sector at 11.6%, 11.2%, and 10.2% respectively. E-waste handlers and telecommunications operators registered the lowest percentages at 0.1% and 2.0% respectively. Some of the target respondents did not comply with the survey by refusing to give out their information, hence the failure to reach a 100% response rate. The main reasons for non-response included the unavailability of ICT personnel to respond to the questionnaire, and access denial due to Covid 19 restrictions.

Table 4: The categories of interviewed respondents

Respondent Category	**Freq.**	**Percent (%)**
School (Primary and Secondary)	348	38.7
Hospital or and Health Centre	104	11.6
University and Tertiary Institution	101	11.2
Business Entities or Private Sector	92	10.2
Device repair	87	9.7
Device Manufacturer/ Importer/ Assembler or retailer	37	4.1
Broadcasting Company	33	3.7
Local Government	26	2.9
MDAs	24	2.7
Telecommunications Operator	18	2.0
E-Waste handler	1	0.1
Other category (Specify)	29	3.2
Total	**900**	**100**

2.2 Methodology

The survey employed and adapted two categories of data collection methods i.e., the quantitative and qualitative methods. The quantitative method benefited from both the primary and secondary data. The secondary data was obtained from the URA database of imports and exports for the last five (5) years i.e., 2016-2021. The data mainly entailed small IT equipment and monitors and screens. The information was analysed to project the e-waste statistics that would be generated in the future.

Primary data included quantitative data which was collected by engaging different categories of stakeholders such as MDAs, LGs, manufacturers and importers, e-waste handlers, schools, hospitals and health centres, universities and other tertiary institutions, telecom service providers, broadcasting companies, storage companies and warehouses.

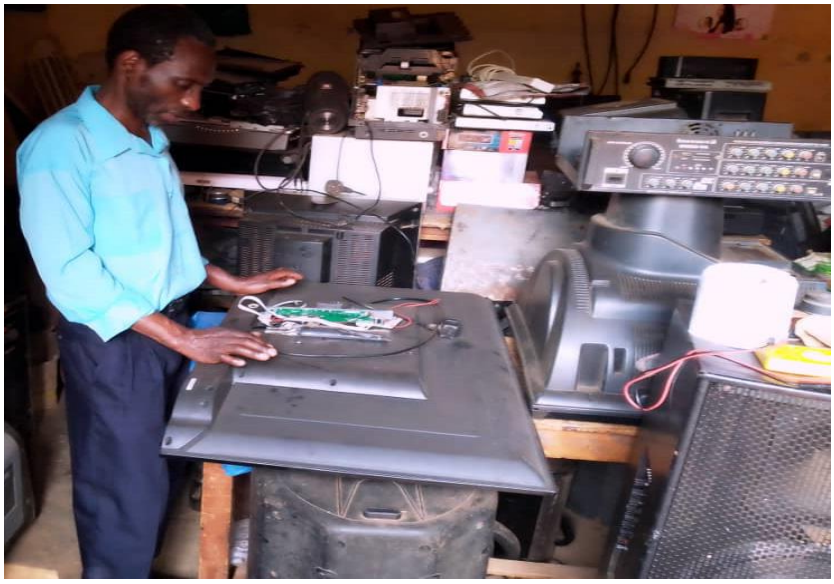

Figure 3: TV repairer at a repair shop

Figure 4: Researcher inspecting one of the e-waste store

2.3 Limitations of the Study

In some cases, the researchers were unable to collect data from some stakeholders because of several reasons such as:

1. Bureaucracies in the MDAs and other private sector players which made it difficult to secure respondents during the data collection phase.
2. Some respondents were unaware of e-waste which took very long to sensitise them.
3. Several schools were not operating at full capacity and some were still closed due to COVID-19 lockdown.
4. Some private sector businesses closed during the COVID-19 pandemic which narrowed the scope. However, in such cases, the missing respondents were replaced by others in the same category.

CHAPER THREE: FINDINGS OF THE STUDY

3.1 Situation Analysis

According to the United Nations COMTRADE, Uganda imported electronics worth US$ 404.47 million in 2020. Although there is an increase in the importation of electronics, most of the imported electronics are of low quality and reach their end-of-life quickly. In addition, Uganda Communications Commission (UCC) have communicated an intention to switch off all counterfeit communication devices. Furthermore, Uganda joined the rest of the world to migrate from analogue broadcasting to digital broadcasting in 2015. This made an estimated one million analogue television sets to reach their end of life.

The GEM 2020 report categorized different equipment according to their characteristics as shown in Table 5

Table 5: E-waste categorisation (Source: GEM 2020)

#	**Category**	**Equipment**
1	Temperature exchange equipment	Refrigerators, freezers, air conditioners and heat pumps
2	Screen and monitors	Televisions, monitors, laptops, notebooks and tablets
3	Lamps	Fluorescent lamps, high intensity discharge lamps and LED lamps
4	Large equipment	Washing machines, clothes dryers, dishwashing machines, electric stoves, large printing machines, copying equipment and photovoltaic panels.
5	Small equipment	Vacuum cleaners, microwaves, ventilation equipment, toasters, electric kettles, electric shavers, scales, calculators, radio sets, video cameras, electrical and electronic toys, small electrical and electronic tools, small medical devices, small monitoring, and control instruments.
6	Small IT and Telecommunication	Mobile phones, GPS devices, pocket calculators, routers, personal computers, printers, and

	Equipment	telephones.

Different institutions and organisations have performed surveys to estimate the quantities of e-waste in Uganda. Examples include United Nations Industrial Development Organisation (UNIDO) in 2008 and 2013 then UCC in 2018. GEM 2020 estimated that the total volume of e-waste as 17,000 tonnes in 2018 and made a projection of 4,500 tonnes of e-waste from end-user communication devices annually from 2018 to 2022 (UCC, 2020). The UCC 2018 report on survey of end of life of end user equipment made several recommendations towards the management of e-waste. These included incorporating sustainable strategies for e-waste management in the national regulatory framework, developing a permanent collaboration mechanism for end-of-life management, as well as developing strategies of attracting Public-Private Partnerships (PPP) in sustainable e-waste management.

National Environment Management Authority (NEMA), National Enterprise Corporation (NEC) and UCC established a pilot e-waste management facility for Uganda. The facility was established to ensure safe and sustainable management of e-waste as well as to mitigate its health and environmental impact. Uganda also put in a place a National Steering Committee on E-waste to guide on e-waste management issues. The committee comprises of relevant stakeholders in the e-waste ecosystem which include NEMA, UCC, Ministry of Finance, Planning and Economic Development (MoFPED), NITA-U, UNBS, Uganda Investment Authority (UIA), Kampala Capital City Authority (KCCA), NEC and the academic and research community.

Uganda has established a legal and regulatory framework for e-waste management which is in line with other regional and international frameworks. These frameworks are discussed in Section 3.2.

3.2 The E-waste Legal and Regulatory Environment

There are different legal and regulatory instruments at the international, regional, and national level that aim at enhancing e-waste management and protecting the environment.

3.2.1 International Legal Frameworks

Table 6: International legal framework

#	Legal Framework	Description
1	Basel Convention	Controls the transboundary movement of hazardous waste and its disposal. The convention aims to stop the importation of the hazardous e-waste from developed countries to developing countries. In 1999, Uganda ratified the Basel Convention.
	Bamako Convention, 1991	To ban the importation of hazardous waste into Africa and control the transboundary movement and management of hazardous waste in Africa. Uganda ratified the convention through the enactment of the National Environment (Waste Management) Regulations, 1999.
	Stockholm Convention, 2004	To reduce or eliminate the release of Persistent Organic Pollutants into the environment which might have adverse effects on humans and environment. Uganda ratified the convention through the development of the National Implementation Plan, 2003.
	Rotterdam Convention, 2004	Focuses on shared responsibility in relation to the importation of hazardous chemicals. Uganda joined the convention in 2008.

3.2.2 Regional Frameworks

The East African Communications Organisation (EACO) e-waste management strategy outlines priority strategies as well as specific activities for managing e-waste in member states. To finance effective collection and treatment of e-waste in the region, the regional policy promotes the notion of Extended Producer Responsibility (EPR). The regional plan guarantees that laws and legal frameworks in EACO member states are harmonized, that regional infrastructure is established, and that e-waste is easily transported across borders throughout the region.

3.2.3 National Laws

The Constitution of Uganda, 1995, under Articles 39 and 17 (j), provides for the rights to a clean and healthy environment, and the duty to maintain such an environment. The Local Government Act 1997 (Cap 243) decentralized governance and devolution of central government functions, powers and services to LGs that have their own political and administrative setups. According to Section 9 of the Act, a LG 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 LGs are responsible for the protection of the environment at the district level.

Uganda has enacted different legal and regulatory frameworks to guide e-waste management in the country. These legal and regulatory frameworks, shown in Table 7, are consistent with regional and international frameworks on e-waste management.

Table 7: Legal and regulatory framework for Uganda

#	Legal Framework	Description
1	E-waste Management Policy 2012	Guide the e-waste management in the country. The policy highlights the priority areas for e-waste management and the different stakeholders in the e-waste ecosystem and their role they play.
2	Electronic Waste Management Strategy, 2013	Guide for the implementation of the e-waste policy amongst the different stakeholders.
3	Guidelines for E-waste Management, 2016	Define the different roles and responsibilities for each stakeholder in e-waste that is the state and non-state actors.

3.2.3 Other Legal Frameworks Relevant to E-waste

The Uganda government, through the respective MDAs, has put in place different legal and regulatory frameworks that are relevant to e-waste management. These legal frameworks are shown in Table 8.

Table 8: Other legal frameworks relevant to e-waste management in Uganda

#	**Legal Frameworks**	**Description**
1	The National Environment (Waste Management) Regulations, 2020	Contains Clause 44 which focuses on the management of electrical and electronic waste by the waste handler and exporters.
2	The National Environment Act (Act 5, 2019)	Provides for the management of hazardous waste.
3	The Occupational Safety and Health Act, 2006	Provides for a favourable working environment without hazardous waste.
4	US 662:2008	The standard is intended to form a basic reference document for acceptable used electronic apparatus in Uganda and promote the safe usage and dumping of used electronic apparatus to safeguard the environment. Any contract adhering to these general procedures with the intention of providing such safe and performing used electronic apparatus should be eligible to apply for certification to this code. This code of practice applies to used electronic apparatus designed to be fed from the mains, from a supply apparatus, from batteries or from remote power feeding and intended for reception, generation, recording or reproduction of audio, video and associated signals respectively. This code also concerns apparatus intended for household and similar general use, but which may also be used in places of public assembly such as schools, theatres, places of worship and the workplace.
5	US 735:2008	The standard specifies the requirements for repairers of electrical and electronic machines/devices. It provides the essential elements and conditions for service point centres or workshops undertaking servicing or repairing of electrical equipment or devices.

3.2.4 General Legal Frameworks

The Public Procurement and Disposal of Public Assets Act, 2021 (as Amended) enforces the accepted procedures for procurement of assets and disposing them in public offices. This has provided a proper way of disposing off e-waste commonly found in public offices such as computers, laptops, photocopiers, printers, among others.

3.3 Global and Regional Trends E-waste Management

Many developing and developed countries are producing a lot of e-waste. It is predicted that the global e-scrap generation will reach up to 53.9 million tonnes by 2025. Different international legal frameworks have been developed and amended as a way to manage and provide guidelines on e-waste through ratification by different countries. These include the Basel Convention, Stockholm Convention, Rotterdam Convention, the Vienna and Montreal protocol and the Minamata Convention. The Basel Convention has established initiatives to manage e-waste i.e., the Partnership for Action on Computing E-waste (PACE), the Mobile Phone Partnership Initiative (MPPI), and Solving the E-waste Problem initiative (StEP).

These initiatives provide technical guidelines for e-waste management. PACE brings together different players in the ICT sector, MPPI addresses WEEE problems worldwide and StEP promotes and develops management of end-of-life of phones. In addition, the International Telecommunications Union (ITU) has developed technical guidelines, environmental standards and recommendations to ensure the use of good practices in the management of waste from the ICT sector. A number of e-waste schemes have been introduced at international level and these include the Extended Producer Responsibility (EPR), payment of specific taxes, etc. The schemes are being practiced by different countries in the management of e-waste.

Waste has been included in the workplan of the SDGs 203012: Responsible Consumption and Production, SDG indicator: 12.5.1. which is presented as total e-waste recycled over total e-waste generated. The GEM 2020 grouped e-waste into different categories using the UNU keys and EU-6 categories.

An internationally standardized methodology for measuring e-waste has been developed by the United Nations University Sustainable Cycles (SCYCLE). The Global E-waste Statistics Partnership conducted a number of capacity-building regional workshops on how to use the methodology and this has resulted into e-waste statistics for different countries. The E-waste Generated Tool uses the

Put on the Market (POM) EEE data to calculate the national e-goods on the market, the total e-waste generated, the e-waste formally collected as well as the e-waste collection rate.

The United Nations Environment Programme (UNEP) and UNIDO have set up the National Cleaner Production Centres (NCPCs) to manage e-waste in different African countries such as Ghana, South Africa, and Uganda.

United Arab Emirates has made campaigns for e-waste collection and recycling in the construction companies and general public. E-waste collection boxes are placed in different offices across Dubai. Dubai has created partnerships with Enviroserve and have set up a recycling center. The country has also licensed different recycling companies and some of them provide reliable recycling solutions which include e-waste pick up from customers. For sensitive items such as hard drives the recyclers ensure that all data is destroyed by software experts. Malaysia has put in place different collection household e-waste equipment and also licensed recovery facilities. The recovery facilities are responsible for segregation, dismantling and treatment of e-waste.

Kenya established an e-waste collection and dismantling plant. The plant plays different roles in the e-waste ecosystem and these include; training and awareness on proper e-waste management practice, e-waste collection and processing. The center has placed e-waste bins in supermarkets and e-waste information desks on the disposal in different cities.

Through a public private partnership Rwanda established a recycling and refurbishing plant for e-waste where it recycles and resale devices. By 2020, 5,000 computers have been repaired and sold to public schools at a discount, and upwards of 4,000 tons of e-waste has been processed in total. A number of drop-collection centres were established around the country where the e-waste is dropped and later on collected and taken to the facility

In partnerships with international organisation, Ghana has carried out a number of initiatives in the country in a bid to improve e-waste management and these include; training of informal e-waste recyclers, develop business models to improve operations and analyse treatment and adequate technology options to achieve sustainable e-waste value chain for all relevant e-waste categories.

Extended Producer Responsibility (EPR) and product stewardship programs for producers of electrical equipment. In Canada producers are required to establish free collection networks for consumers, achieve management

reduction requirements through reduction, reuse or recycling, carry out education awareness programs for the consumers and register, report, keep records and undertake audits related to management activities as well as funding of e-waste shifted from the government to the producers in Canada. In Switzerland also practices the EPR but with clear roles and responsibilities of different players. Producer Responsible Organisations (PRO) makes sure that there is proper management of the financing, collection, transportation and controls systems within the e-waste management system.

There is an advanced recycling fee which is charged at the sale price of the electronic equipment. For proper disposal of e-waste in Switzerland, there is a company which disposes off e-waste and telecommunication companies are always persuaded to recycle phones or disposal them correctly.

3.4 Secondary data analysis

3.4.1 EEE Placed on the Market

The EEE that is put on the market is calculated using URA import and export statistics. Total imports plus domestically produced EEE minus total exports equals EEE placed on the market. The data for this report was taken from the Uganda Bureau of Statistics (UBOS) annual statistical abstract for 2021, and it is based on the EU-6 EEE classification.

Figure 5 shows the results. From 424,427 tonnes in 2016 to 649,094 tonnes in 2020, the amount of EEE on the market has increased by 53%. Temperature exchange equipment, followed by large equipment such as air conditioners and refrigerators, account for the majority of electronics placed on the market over the five years covered. In the period 2016-2020, screens, monitors, and equipment including screens, as well as small equipment and small IT and telecommunication equipment, only accounted for 8-14 percent of EEE put on the market by weight.

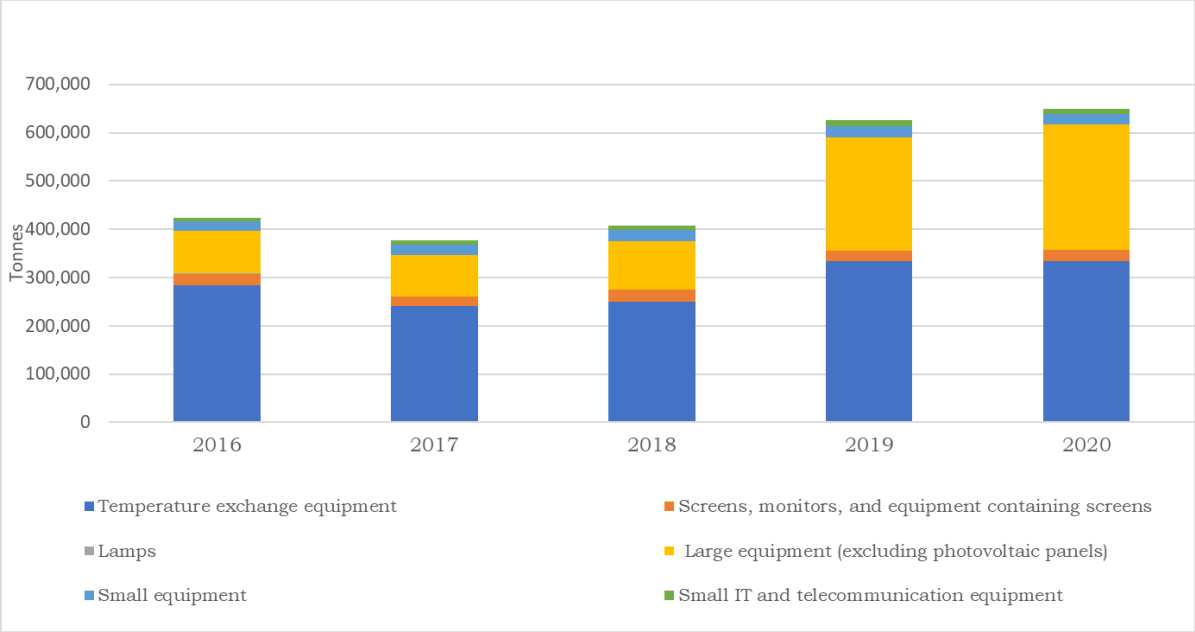

Figure 5: EEE put on the market as per EU-6 Classification (Tonnes)

3.4.2 E-Waste Generated

The generated e-waste was calculated using UNU-ViE SCYCLE's EEE Put on Market Tool and E-waste Generated Tool. The EEE put on the market and the life spans for the various EEE types were used in the E-waste Generated Tool.

The data in this report came from the UBOS annual statistical abstract for the year 2021. Figure 6 shows that the amount of E-waste generated from screens monitors and small IT equipment's rose every year from about 400 tonnes in 2000 to nearly 4,000 tonnes in 2020, a 90 percent increase.

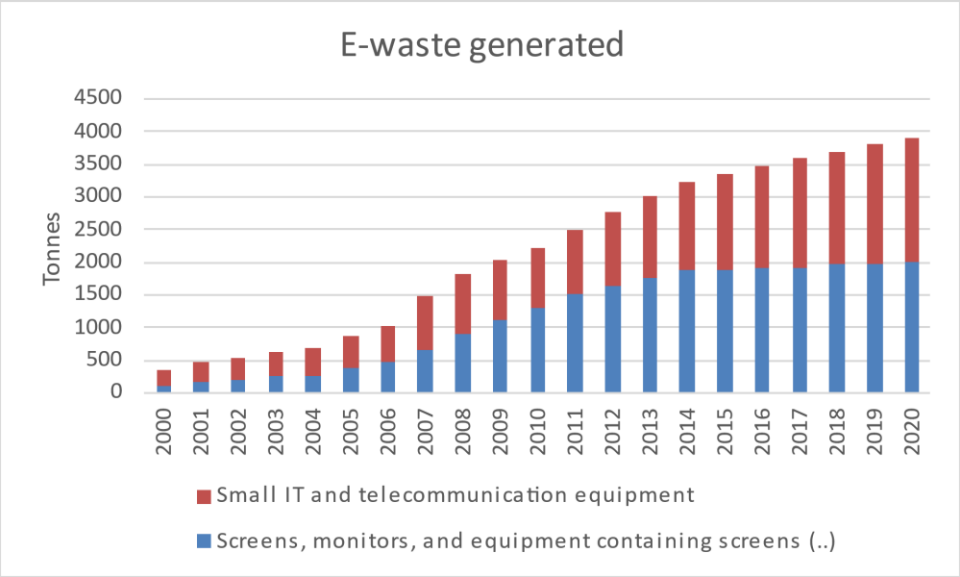

Figure 6: E-waste generated as per EU-6 Classification (Tonnes)

3.5 Survey Findings

This section presents the survey findings from the different categories of stakeholders and the different regions. The questionnaire administered to the different respondents was portioned into different parts which include e-waste inventory, management of e-waste, legal and regulatory frameworks and e-waste awareness. The table 9 below shows the collected quantities expressed in kgs for the different categories of the considered electronic equipment's. It can be seen that desktop computers, printers, television sets and mobile phones contribute largest to the e-waste generated in the country while tablets, fax machines and game consoles contribute least. Hence a total of about 14,880 tonnes of e-waste was recorded during the survey exercise.

Table 9: Collected quantities of the different EE equipment

Applicable Equipment	**Frequency**	**Total Estimates in tonnes**
Desktop Computers	773	491.880
Printers	666	508.932
Laptops	506	45.720

Flat Display Panel TVs	475	110.825
Mobile Phones	461	1.760
Scanners	375	3.036
Landline Phones	297	0.144
Flat Display Monitors	284	66.259
Radio	178	11.327
Cathode Ray Tube TVs	160	92.807
Cathode Ray Tube Monitors	87	14.7640
Tablets	80	0.125
Fax Machines	18	0.489
Game Consoles	12	0.188
Others	161	6.829
Total		**14,879.611**

3.5.1 Management of E-waste

The end users of ICT devices (MDAs, LGs, CSOs, and the private sector) were asked what they to do with working devices that are no longer in use. The findings in Table 10 and Figure 7 revealed that most of the devices (75.3%) are put into storage while only 2.6% are taken to the local recycling centre.

Table 10: What end users do with working devices that are no longer in use

	Central	**Western**	**Eastern**	**Northern**	**Metropolitan**	**Total**
Put into Storage	65.7	71.5%	77.8%	92.5%	78.5%	75.3%
Sell as second-hand	27.9%	21.7%	16.2%	25.0%	46.1%	28.2%
Throw into bin	8.7%	3.0%	17.8%	5.0%	17.5%	11.0%
Donate to organisations	3.5%	8.1%	4.3%	2.5%	8.3%	6.0%
Return to vendor	2.3%	2.6%	3.8%	0.0%	3.5%	3.6%
Local recycling centre	2.3%	0.4%	2.7%	0.0%	9.7%	2.6%
Other	9.9%	17.9%	17.3%	7.5%	11.8%	13.8%

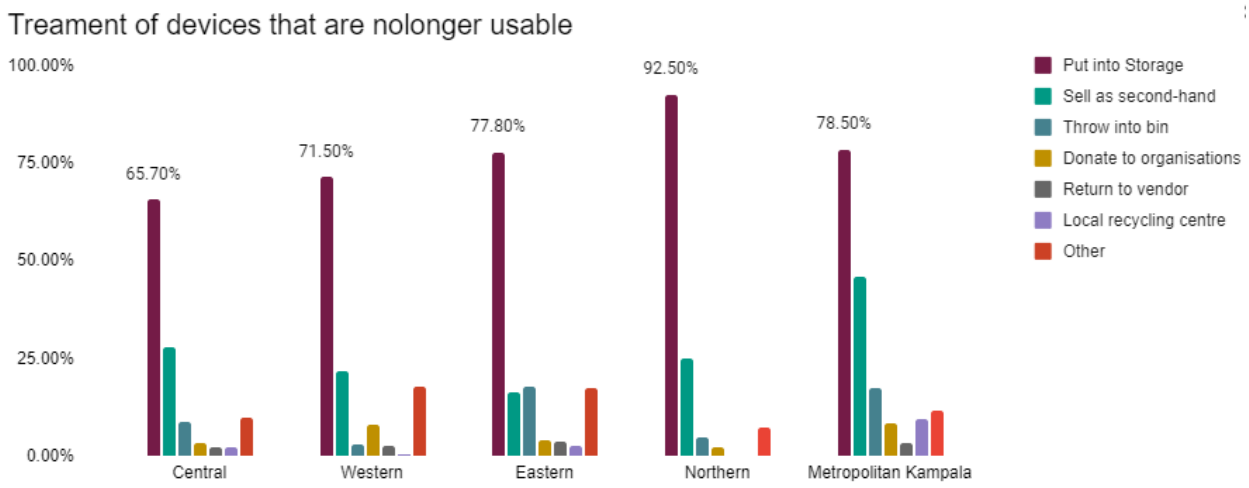

Figure 7: What end users do with working devices that are no longer in use

Figure 5 shows that 75.3% of the respondents put the equipment that have reached their end of life into storage, with Northern region having the highest percentage at 92.5% and Central region having the lowest at 65.7%.

The survey further revealed that 51.7% of the respondents' repair between 5-10 devices a year.

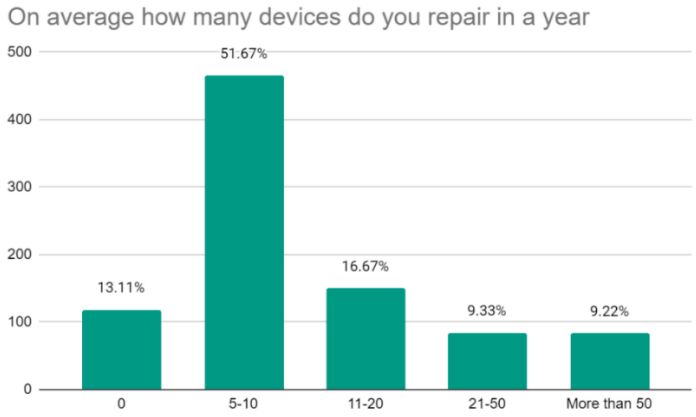

Figure 8: Number of devices repaired in a year

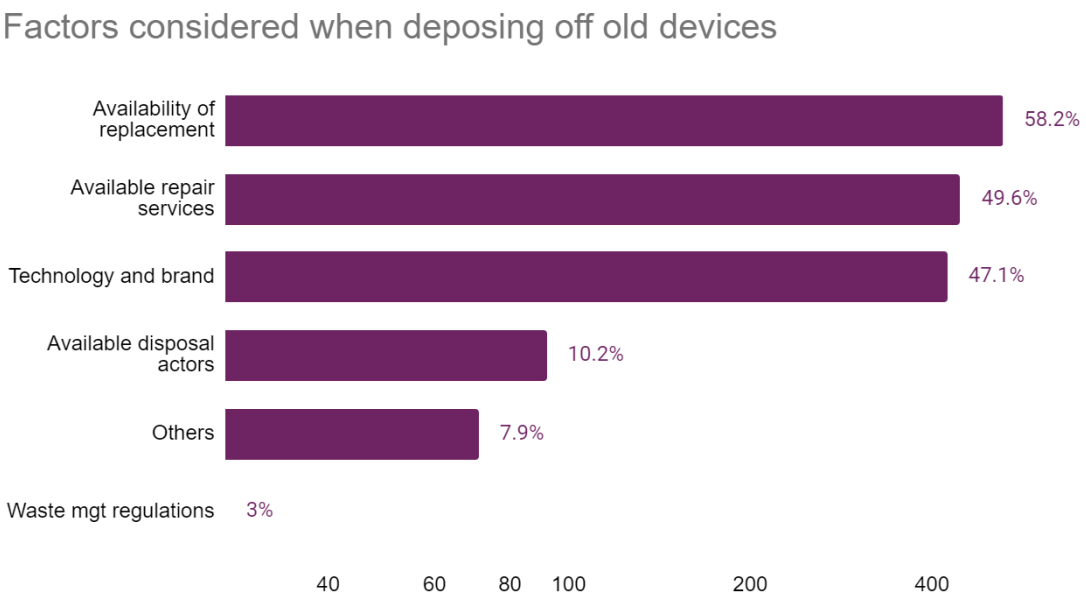

Figure 9: Factors considered when deposing off old devices

Figure 9 shows the factors that respondents consider before disposing off a device. At 58.2%, availability of the replacement is the main factor considered while 49.6% and 47.1% consider availability of repair services and the technology and brand of the device respectively.

The findings in Figure 10 show that 65.8% of the respondent organisations do not have an inventory for equipment that have reached their end of life.

Figure 10: Respondents with inventory of e-waste

Table 11 shows how organisations categorise e-waste inventory, with 52.4% categorising it as e-waste generated annually while 43.7% categorise it as e-waste disposed.

Table 11: How organisations categorise e-waste

How organizations categorize e-waste	**Central**	**Western**	**Eastern**	**North**	**Kampala Metropolitan**	**Total**
E-waste generated annually	59.3%	61.5%	46.7%	51.0%	40.0%	52.4%
E-waste disposed	40.7%	37.6%	42.6%	47.0%	60.0%	43.7%
Other	0.0%	0.9%	10.7%)	2.0%	0.0%	3.9%

For the device repairers, 34.0% sell off their devices while 33.3% store them. The repairers, who interacted with the consultant through a FGD, further revealed that some of the e-waste is stored to be reused in other devices while others throw them in the general waste. Very few of them donate or use them for other purposes as shown in Table 12.

Table 12: How respondents handle e-waste on a routine

Handling e-waste as a daily routine	**Central**	**Western**	**Eastern**	**Northern**	**Kampala Metropolitan**	**Total**
Sell it off	62.5%	29.1%	37.5%	25.0%	36.0%	34.0%
Store it	30.0%	38.2%	37.5%	41.7%	30.0%	33.3%
Throw in general waste	37.5%	29.1%	25.0%	33.3%	34.0%	31.2%
Donate it	0.0%	1.8%	0.0%	0.0%	0.0%	0.7%
Other	0.0%	1.8%	0.0%	0.0%	0.0%	0.7%

Figure 11 shows that 81.1% of the device manufacturers, importers and retailers sell off the equipment when it reaches its end of life to other users at 81.1%. Furthermore, 10.8% donate their devices and only 1% throw away the devices.

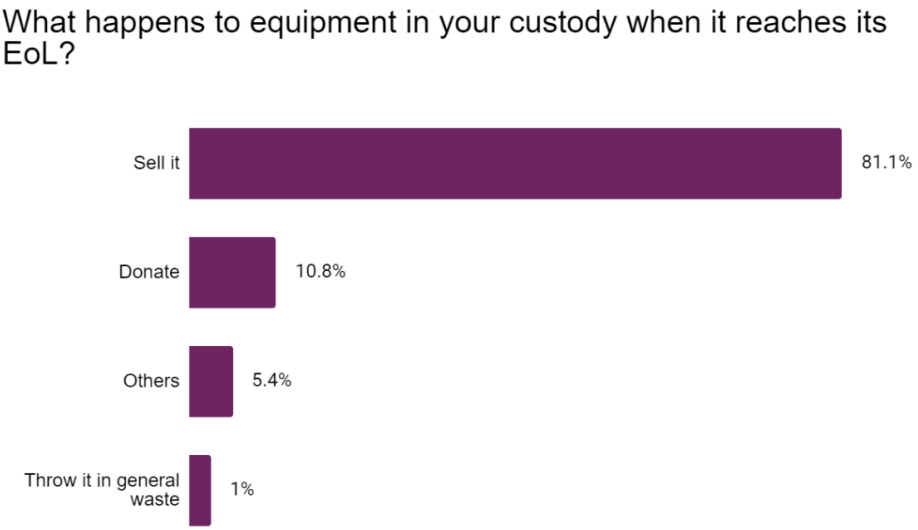

Figure 11: What happens to EoL equipment

3.5.2 Awareness of the Legal and Regulatory Frameworks

Figure 12 show that that most of the respondents had no e-waste management guidelines at their institutions. Out of the 900 end user respondents, only 6.7% of repairers had e-waste management guidelines while 93.3% had no guidelines in place. Furthermore, only 2.3% of users had guidelines while 97.7% did not have any guidelines at their institutions.

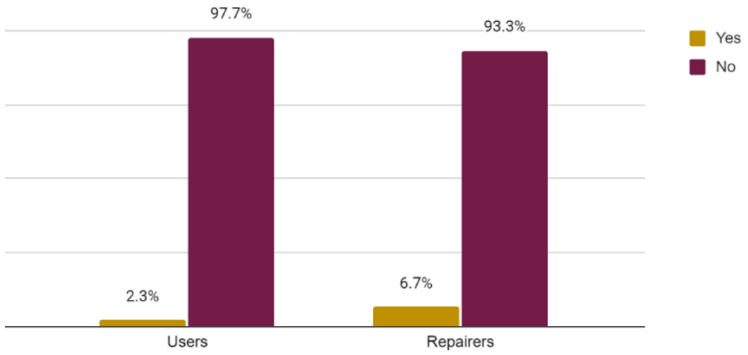

Figure 12: Respondents who have e-waste management guidelines

Figure 13 shows awareness of the e-waste legal and regulatory framework by regions. The survey finding indicates that the National Environment Act, 2019 and the National Environment Regulations, 2020 are the most commonly known policy documents among the respondents across all regions, with the

highest responses coming from Western region at 35.7% each. The strategy for e-waste, 2013 is the least known.

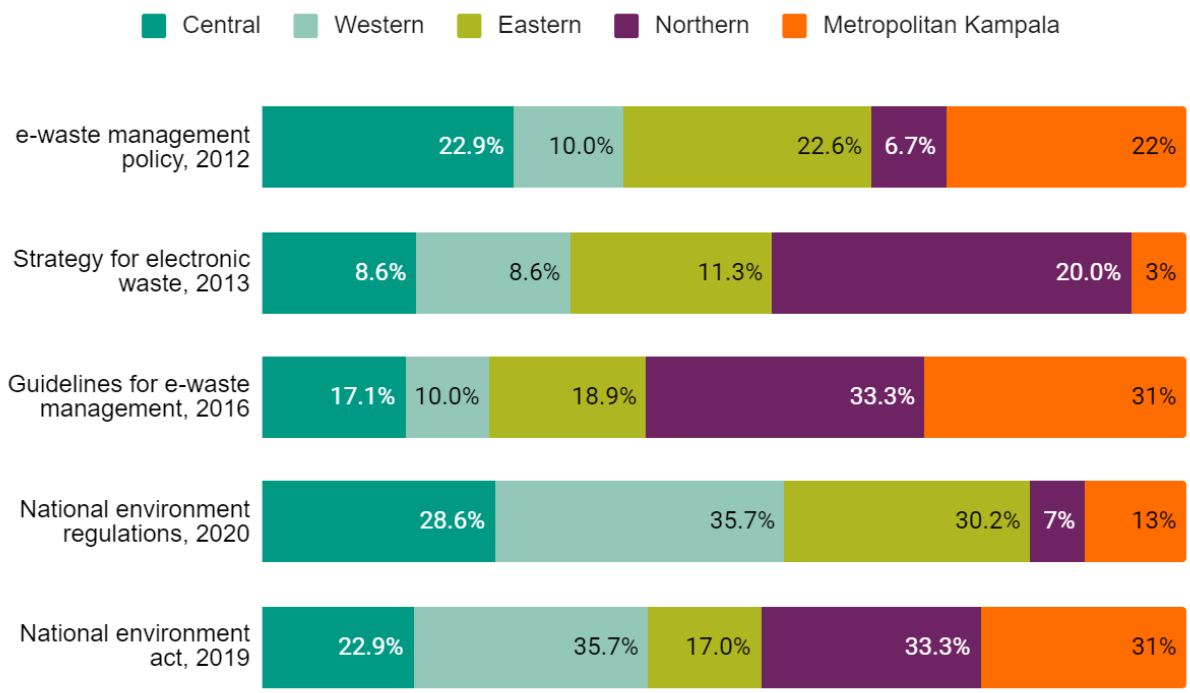

Figure 13: Awareness of the e-waste legal and regulatory framework

Figure 14 shows that only 1.3% of repairers and 3.1% of manufacturers / importers are aware of national laws and regulations in Uganda. The vast majority are not aware of the laws around e-waste management.

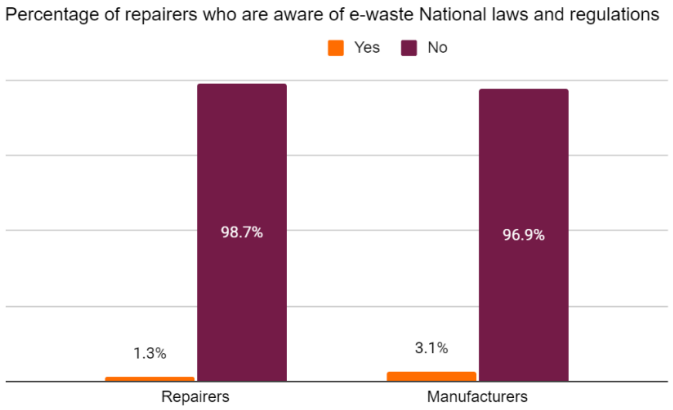

Figure 14: Awareness of national laws among repairers and manufacturers

Of the 3.1% of manufacturers and importers who were aware of the legal and regulatory framework in Figure 14, the National E-Waste Management Policy, 2012 is the most widely known at 15.6% as shown in Table 13. The strategy for e-waste management, 2013 and the guidelines for e-waste management, 2016 are the least known at 3.1%.

Table 13: Awareness of the different legal and regulatory frameworks

Legal framework	**Percent (%)**
National E-waste Management Policy, 2012	15.6
Strategy for electronic waste management, 2013	3.1
Guidelines for e-waste management, 2016	3.1
The National Environment (Audit) Regulations, 2020	6.3
National Environmental Act, 2019	6.3
Other laws and regulations	65.6

Figure 15 shows that only 8.1% of the device manufacturers, importers or retailers interviewed implement take back policies. Of these, 66.7% implemented the policy using cash incentives for replacement while 33.3% adopted it from organising the collections.

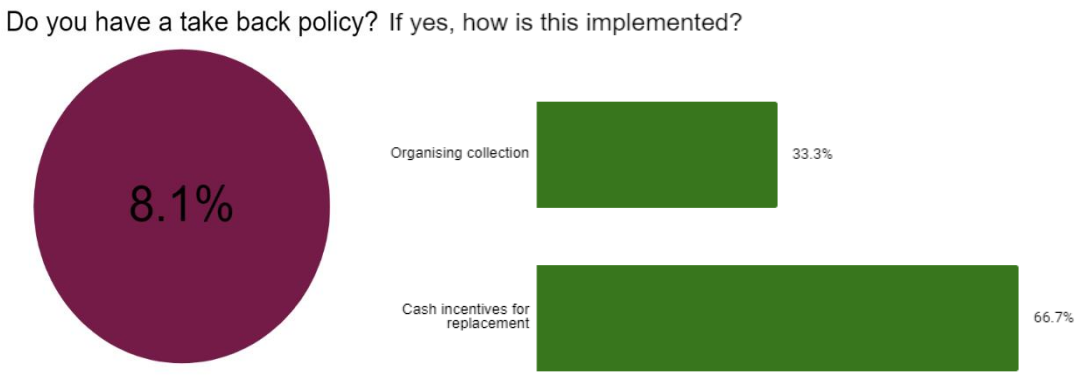

Figure 15: How take back policies are implemented

3.5.3 Awareness of the Dangers of E-waste

According to Figure 16, 47% of the end user respondents know a bit about the dangers of poor disposal of e-waste while those who know nothing account for 24.1%. The majority of those who know nothing about the dangers of e-waste, at 40%, are found in the Northern region. It was revealed during the FGDs that little has been done in sensitization of the public about e-waste although some efforts have been made by the different government MDAs.

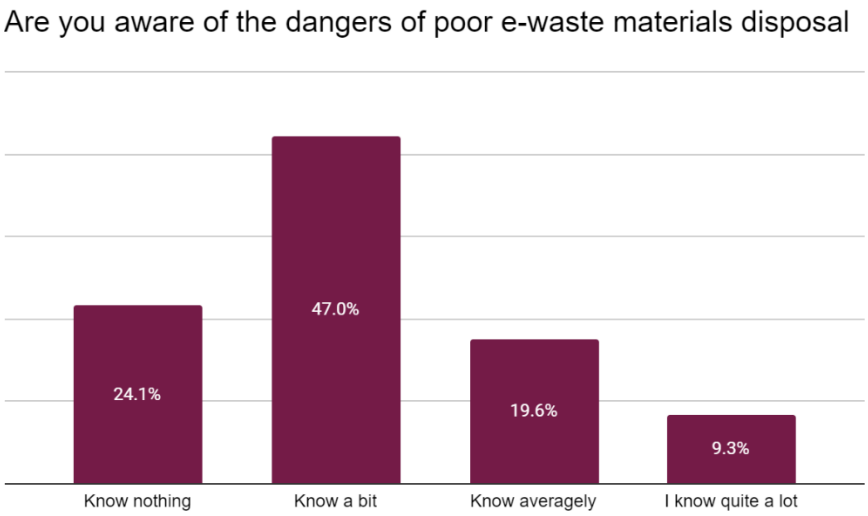

Figure 16: Awareness of the dangers of e-waste exposure

3.5.4 Training in E-waste Management

The survey showed that 89.3% of the respondent organisations do not provide training on e-waste whereas only 10.7% provide this training. The most common type of training, which accounts for 30.6%, is on disposal of e-waste.

Figure 17: Provision of training on e-waste management

All the interviewed respondents in the repairers category indicated that they had never received any formal training in proper e-waste handling. Only 4.6% of the respondents were trained through on-job training. During the FGD, the repairers' association indicated that many repairers lacked skills in proper e-waste handling. They argued that this is one of the factors causing increased volumes of e-waste since many repairers spoil the devices when during repair.

3.5.5 Awareness of E-waste Infrastructure

As shown in Table 14, The survey showed that 0.7% of respondents indicated that they were aware of the existence of an e-waste collection centre. They were able to list different e-waste collection centres in Uganda. During the FGD of the NESC, it was reported that the recently established e-waste management facility was launched but it lacked the budget vote for it to start operations. This budget would support sensitisation of the public, install proper infrastructure and employ skilled human resources.

Table 14: Awareness of e-waste infrastructure

Awareness of e-waste collection facility	Number of Respondents	Percent (%)
Yes	6	0.7
No	894	99.3
Total	900	100

All respondents in the category of e-waste handlers indicated that they did not have any collection facility for e-waste.

3.5.6 Acquisition of Spare Parts

The survey revealed that the 53.7% of the e-waste repairers get spare parts from vendors such as Master Electronics, while 17.4% get them from landfills. Only 8.3% of respondents import the spare parts.

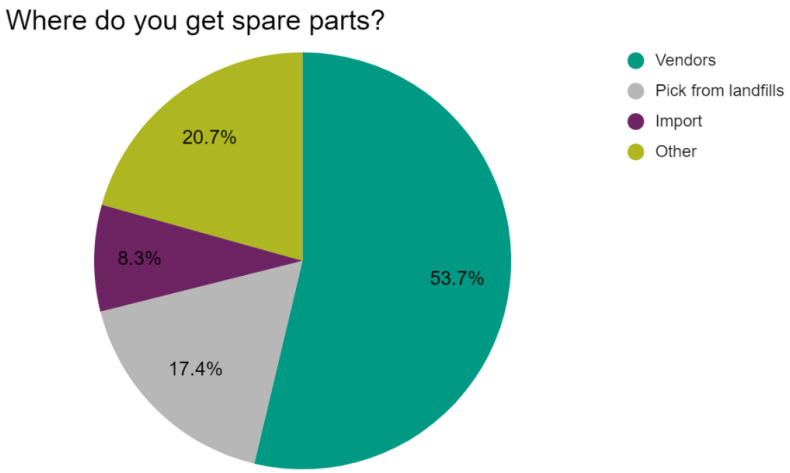

Figure 18: Where the repairers get spare parts

CHAPER FOUR: LESSONS RECOMMENDATIONS AND CONCLUSIONS

4.1 Emerging Lessons

Undertake baseline survey for effective and informative implementation of government programmes. The government has introduced many programmes which have led to end-of-life of many electronic equipment. For instance, UCC plans to switch off all counterfeit communication devices. In addition, Uganda implemented digital migration in 2012. Such government programmes have made devices reach their end of life without a proper plan of disposing them.

During the procurement of electronic equipment, a plan for their disposal should be availed in order to ensure proper disposal of the equipment once they reach their end of life.

The Uganda Nation Bureau of Standards (UNBS) should enforce electronic equipment standards because much of the equipment that has reached end of life fast is usually poor quality.

4.2 Best Practices

The survey found out that they are many best practices in the execution of e-waste management and these include:

- Training of staff on e-waste management practices such as record keeping, disposal training, occupational health/safety and awareness. This was currently done by very few organisations during the survey.
- Proper e-waste disposal which includes; waste isolation during the disposal, collecting and sorting at collection facilities for proper management such as disposal and recycling.
- Return of the e-waste equipment to the vendor, some organisation when the equipment reaches end of life, they return it back to vendor and are able to procure new equipment at subsidized costs.

4.3 Recommendations

Based on the study findings and conclusions, the study recommends that the Ministry of Information and Communication Technology and National Guidance, should:

- Review and update the e-waste management policy by MoICT&NG to include the following, E-waste disposal charges at the procurement of

new items, E-waste management plan as a requirement for every old and new companies, a component of e-waste management should be included in the education curriculum, transboundary laws to enable the country to export e-waste to other countries should also be put in place. The e-waste guidelines have no sufficient footing and therefore should be reemphasized.

- For the repairers there is a need to promote e-waste awareness and accreditation in order to streamline the device repairing sector in the country than licencing the repairers which will the end create fear and many may not come out for the licences. Furthermore, the government should provide e-waste awareness sessions using UBC and other online platforms and accreditation for all the stakeholders in the e-waste ecosystem by establishing training stations which can provide e-waste management training inorder to provide the necessary repairing skills.

- There is a need to promote awareness of the existing e-waste collection facilities in Industrial Area and Luwero by the MoICT&NG, NEMA and NITA-U such that they are fully utilized by all e-waste stakeholders.

- Lack of adequate e-waste human resource experts in many different government organisations such as ministries and agencies to handle equipment that have reached end of life can be addressed by recruiting qualified personnel.
- The government should put in place Producer Responsibility Organisations, apprenticeship programs for repairers, implementing takeback schemes and introducing the e-waste management fund as a requirement for telecommunications service providers.
- Concerned ministries and agencies should allocate more funding to e-Waste management activities like transportation to the management centre, activation of the e-Waste fund, mobilization and capacity building/awareness campaigns from all concerned votes, regular publicity on radio, televisions and other social media platforms and all relevant media, administrative improvement of the management centre through human resource capacity and other logistical challenges.
- Countrywide e-Waste awareness campaigns should be carried out on a monthly or quarterly basis. For example, at the MoICT&NG, it is carried out through quarterly work plans where dissemination awareness and capacity enhancement are done. A number of stakeholders are targeted such as ministries, Local Governments, academia, among others. NITA-U

indirectly address e-waste awareness through dissemination exercises of ICT standards where they address the issues pertaining to e-Waste.

- There is an urgent need to look into the spill over effects at collection centre and the dangers could be further transmitted through increased pollution and contamination hence a danger to human life.
- There are general regulations on waste without specific emphasis on e-Waste. Therefore, e-Waste specific regulations that thoroughly talk and address the e-Waste issues need to be streamlined. There should be promotion of e-Waste handling internally within organizations/entities.

4.4 Conclusion

Several challenges regarding e-waste management were identified. They include; lack of specific e-waste management legislation, (though waste management regulations were reviewed to cater for e-waste) weak enforcement of standards and conformity testing, weak e-waste management infrastructure, and little awareness about the dangers of e-waste.

For example, Uganda lacks specific legislation, as a result e-waste is handled under the legal framework for the general waste management. The general legal framework ignores the unique features of e-waste and the need to address them in non-conventional ways. For example, given the characteristics of e-waste that would ideally call for its preferential treatment. While for general municipality waste it is good enough to dump it at landfills, Given the toxic nature of e-waste, it should instead be sorted out from the landfills, transported, stored, treated, and disposed of in special ways, inorder to minimize risks to both human health and environment. Moreover, best practices from elsewhere in the world indicate that e-waste is a special waste category that cannot be adequately addressed by the general waste management laws.

Inadequate enforcement of standards for conformity. Some of the important EEE in Uganda are counterfeits implying weaknesses of national standards systems to prevent them from entering or wipe them from the market. UCC estimates put the proportion of counterfeit phones in Uganda at about 30%. Counterfeit phones have a short life span because of the compromised quality during manufacturing and this contributes to fast-growing e-waste stock (NITA-U, 2014).

Inadequate infrastructure and capacity for e-waste handling and treatment. Studies indicate that individual government institutions and the private sector do not dispose obsolete ICT equipment in a well-planned and managed manner. It is estimated that 75% of electronic items are stored due to uncertainty on how to manage them (NITA-U, 2014). Subsequently, equipment is dumped on outdoor garbage heaps and landfills, thus becoming a danger to human beings and the environment (Wasswa and Schluep, 2008; UCC, 2019). The majority of e-waste collection and refurbishment is done by the informal sector actors such as electronic repair shops or workshops, due to lack of e-waste management infrastructure such as e-waste collection and refurbishment centres, treatment and disposal facilities. This leaves a large quantity of e-waste in hands of the public.

Rudimentary and life threating practices by informal e-waste collectors and refurbishers. The informal handlers of e-waste do it in a manner that endangers their lives and the environment. The 2019 study of end life of communications equipment indicates that 82.4% of the e-waste handlers do not have any formal training in e-waste management, 93.6 % of the e-waste handlers do not have any specific guidelines to follow when handling the e-waste but use their tacit knowledge and experience in executing their tasks and 79.4% of the e-waste handlers do not sort e-waste from other sources of waste. For example, a computer has plastics and electronic components that should be separated as a standard process at device disposal. Phone batteries have to be removed from phones and disposed of separately (UCC, 2019).

Low awareness about the dangers and risks of e-waste. Despite e-waste awareness and education being priority interventions of the e-waste management policy, the level of awareness about e-waste, dangers of e-waste, and e-waste management initiatives are still low.

Fast-technological advancements, there is a challenge of fast-changing technologies which renders most electronics obsolete in a short time thus increasing e-waste quantities as the public embraces new technology.

Appendix

Survey Tools

NATIONAL BASELINE SURVEY OF WASTE FROM ELECTRICAL AND ELECTRONIC EQUIPMENT

Introduction

National Information Technology Authority-Uganda (NITA-U) has contracted a consultant to conduct a national e-waste baseline survey to collate the existing e-waste data and studies in the country by carrying out limited surveys and interviews.

The Global E-waste Monitor Report 2017 categorises e-waste into six categories namely, temperature exchange equipment, screens and monitors, lamps, large equipment, small equipment and small IT and telecommunications equipment. However, the scope of this assignment will only be limited two e-waste categories, namely, small IT and telecommunications equipment, and screens & monitors. The above categorisation comprises most of the e-waste that is within the institutional users. Based on the above understanding, the tentative list of waste electrical and electric equipment to be included in the survey are as presented in the Table below.

Category of ICT Equipment	**Name/List of equipment**	**Potential Sources**
Small IT and Telecommunications equipment	Desktop PCs (exclusive Monitors, accessories)	UNU-Key 0302
	Small IT equipment (routers, mice, keyboards, external drives, accessories)	UNU-Key 0301
	Printers (e.g. scanners, multi-functional, faxes	UNU-KEY 0304
	Telecommunication equipment (e.g. [cordless] phones, answering machines)	UNU-KEY 0305
	Mobile Phones (incl. smart phones, pagers)	UNU-KEY 0306
Screens and Monitors	Laptops (including Tablets)	UNU-Key 0303
	Cathode Ray Tube Monitors	UNU-KEY 0308
	Flat Display Panel Monitors (LCD, LED	UNU-KEY 0309

	Cathode Ray Tube TVs	UNU-KEY 0407
	Flat Display Panel TVs (LCD, LED, Plasma	UNU-KEY 0408
	Game Consoles	UNU-KEY 0702

Source: Global E-waste Monitor Report 2020

The main objectives of this study include but are not limited to:

- To make informed decisions on financial and economic viability of management options including Environmental and Social risks related to mismanagement of WEEE.
- To support the National E-waste Steering Committee to develop appropriate policy interventions for enhanced e-waste management in Uganda and feed into the design of proposed Uganda Digital Acceleration Project.

Part One: Confidentiality of the Data

The information provided shall be strictly used for purposes of the survey and will remain strictly confidential and your answers will never be identified. This survey will take about 30minutes to complete and the data collected will help NITA-U and government to plan for better e-waste disposal and management across the country.

GPS Location

Eastings:…… Northings:……

Starting time…… Ending time……

Part Two: Administration

Respondent's general information

Name……

Organization……

Position……

Contact……

Part Three: Respondent Profile Information.

Region

- Central
- Western
- Eastern
- Northern

1b District .....

Respondent Category

Government Ministry, Department or Agency (MDA)

Please provide the information according to the table matrix

Equipment	Quantity	In use	Not in use	0-2yrs	2-5yrs	5-10yrs
Mobile Phone						
Landline phones						
Laptop						
Fax machines						
Desktop Computer (Including Screens, external drives, keyboards and mouse)						
Cathode Ray Tube TVs						
Radio						
Printers						
Scanners						

Tablets						
Cathode Ray Tube Monitors						
Flat Display Panel Monitors						
Flat Display Panel TVs						
Game Consoles						
Other						

4a Are you aware of any e-waste collection centre

1=Yes, aware

2=Not aware ***(skip to 4.1)***

4b. If yes, name the facility……

As-An End-User (Corporate= [LG, CSO, PS, MDA])

What do you do with a working device that you no longer use? ***(Multiple answers)***

- Put into storage
- Donate to other organisations
- Sell on as second-hand
- Throw into the bin
- Take to local recycling centre
- Return to vendor
- Other (please specify)

……

……

What do you do with a device that reaches its End of Life?

- Put into storage
- Return to vendor

- Sell them as spare parts
- Throw into the bin
- Take to local recycling centre
- Other (please specify)

……

……

On a scale of **0-3**, are you aware of the dangers from the poor disposal of e-waste materials?

- 0 - I know nothing
- 1 - I know a bit
- 2 - I know averagely
- 3 - I know quite a lot

On average, how many devices do you repair in a year?

- 0
- 5 – 10
- 11 – 20
- 20 – 50
- More than 50

Which factors influence your decision of whether to repair a device or not? ***(Multiple answers)***

- Price of repair compared with replacing with a new one
- Availability of original spare parts
- Policy and manufacturer recommendations
- Availability of repair services
- Warranty of product
- Advancement in technology
- Other (please specify)

……

……

Which factors do you consider when disposing off old devices? ***(Multiple answers)***

- Availability of waste disposal actor
- Availability of replacement
- Technology and brand
- Availability of repair services
- Waste management regulations
- Other (please specify)

……

……

4.7a Does your organisation have any e-waste management guidelines /policies/standards/procedures?

- Yes
- No

4.7b) If yes, State the guidelines.

……

……

4.8(a) Are you aware of any e-waste National laws and regulations?

- Yes
- No ***(Skip to 4.9a)***

4.8(b) Which e-waste National laws and regulations are you aware of? – Allow multiple responses ***(multiple responses)***

- E-waste Management Policy 2012
- Strategy for electronic waste Management, 2013
- Guidelines for e-waste management, 2016
- The National Environment (Audit) Regulations, 2020
- National Environmental Act, 2019
- Others (specify)

……

4.9a Does your organization provide training on e-waste management?

- Yes
- No (***skip to 4.10a)***

4.9b What kind of training does your organization provide? ***(Multiple responses)***

- Disposal
- Occupational health and safety
- Record keeping
- Awareness
- Others (please specify)

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4.10a Does your organization have an inventory on e-waste generated as a result of equipment reaching EoL?

- Yes
- No ***(Skip to 4.11a)***

4.10b If yes, how does your organisation categorize e-waste during inventory? ***(Multiple responses)***

- E-waste generated annually
- E-waste disposed
- Others (please specify)

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Thank you for participating in the e-waste baseline survey