MINISTRY OF ENVIRONMENT AND FORESTRY

DRAFT

NATIONAL E-WASTE MANAGEMENT STRATEGY

JANUARY 2019

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Foreword

In the past few years, the governments have been calling for universal affordable access to Information communication technology without putting in place measures that will ensure safe disposal and E-Waste management implementation plans safer to our environment.

The raising concerns arising from this uptake is what has driven the Ministry of Environment and Forestry strategy to provide stakeholders with information and regulations to address the challenges and opportunities arising from e-waste. Some countries in the east Africa region like Uganda, Rwanda and Kenya have just begun to deal with and develop basic waste management systems, but still lack the capacity, skills, resources and infrastructure to address the challenge effectively.

The purpose of the strategy will therefore help to analyze the current situation of E-Waste in the country, with the aim of helping the government and stakeholders at all levels to understand the need to come up with regulations on e-waste management through collaborative process.

The National E-Waste Management Strategy is a five-year plan covering the period 2019/20 to 2023/24. The E-Waste Strategy has five thematic areas aimed at resource mobilization for proper e-waste management, raising awareness , Strengthen Kenya's e-waste coordination structures at national and county levels , Put in place a monitoring and evaluation mechanism for e-waste management, Promote research and innovation in e-waste management Legal and Regulatory frameworks for E-waste management in Kenya.

For this strategy to success, there is need for allocation of resources in form of finance, investment, technology, innovative and capacity building.

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CABINET SECRETARY

MINISTRY OF ENVIRONMENT AND FORESTRY

Preface

The increased use of electrical equipment's has brought about many challenges ranging from increasing stock piles of E-Waste in the country, posing environmental and health problems associated with E-Waste. In recognition of these various challenges and opportunities posed by E-Waste, the Ministry of Environment and Forestry will continue to put in place measures to ensure a clean, healthy, safe and sustainable environment.

The development of the National E-Waste Strategy marks another milestone by the government towards addressing the challenges and opportunities arising from E-Waste. This steers the country towards a nationwide action aimed at mitigating the effects of E-Waste

The National E-Waste strategy takes into consideration the negative impact coming in its wake and aims at ensuring a smooth transition to a zero waste status. This is expected to be achieved through a sustainable E-Waste management system in the country as envisaged in the goals and vision of the strategy.

The Strategy aims at addressing E-Waste management through policies, guidelines and standards, baseline survey on E-waste generation and volumes to inform priority e-waste management infrastructure in the country. It shall also put in place E-Waste management infrastructure, put in place appropriate mechanism for collection, transportation and disposal and facilitate the development of an up to date dismantling and recovery facility within the six economic zones in the country. County Governments are expected to play a leading role in this provision while there shall be at least one national recycling facility.

The Strategy will be valuable in providing collective action plan to address the issues of E-Waste and offer a basis for strengthening Waste department operations and functions supported for effective coordination of the implementation of the national strategic plan.

In conclusion, I wish to sincerely thank all the experts involved in coming up with this document, those who worked tirelessly to gather and assemble information that made it possible to produce this National E-Waste Strategy.

PRINCIPAL SECRETARY

STATE DEPARTMENT OF ENVIRONMENT

MINISTRY OF ENVIRONMENT AND FORESTRY

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A wide range of individuals and institutions have participated in the development of this National E-waste Strategy.

Sincere gratitude is extended to the National E-waste Steering Committee members for consistently working together to find a sustainable solution for E-Waste management in Kenya, and for providing their respective guiding inputs that have shaped the national strategy aimed at sustainably and productively dealing with E-Waste at a national and county level.

Much appreciation also goes the various stakeholders in Kenya for their valuable inputs and comments during national consultations and validation workshops. The government is committed in implementing the E-waste strategy and all partners and stakeholders are invited to join in delivering this great mandate of ensuring a clean, healthy and sustainable environment.

Special thanks go to the following members who spearheaded the development of the draft E-Waste Strategy:

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10) Mr. Eric Guantai – Recykla International / WEEE Africa Forum
11) Dr. Virginia Onyara-Multi Media Univertsity [MMU]
12) Mr. Lawrence Thuo –E-waste Initiative Kenya ;
13) Mr. Michael Koech – Safaricom;
14) Ms. Farida Were-University of Nairobi
15) Joshua Patroba, Recykla International / WEEE Africa Forum

Executive summary

This report presents the Republic of Kenya E-Waste Management Strategy for both the national and county governments. The strategy spells out the priority e-waste management strategies together with specific actions to help actualize them. The strategy estimates the size of investment required to execute the National E-Waste Management strategy, the targeted potential sources of funding as well as capacity building measures needed to warrant sustainable mobilization of resources to finance the strategy. The strategy further highlights the key target outcomes and the indicators, which will assist in measuring success of implementation of the plan. The roles and responsibilities of the various stakeholders in executing the strategy are also highlighted.

The National E-Waste Management Strategy is a five-year plan covering the period 2019/20 to 2023/24. However, its vision and aspiration spans a medium to long term period of about 10 years. This strategic direction is pertinent in aligning the short to medium-term interventions into the perspective plan for e-waste management. This strategy is to be used along with other strategic documents guiding priorities of EACO such as the e-waste model Policy for EACO member states and the EACO strategic plan.

The National e-waste management strategy has been developed on the backdrop of the e-waste challenges posed by the rapid diffusion of information and communications technologies (ICTs) in the country economy. These challenges range from increasing stock piles of e-waste in the region to potential environmental and health problems associated with e-waste. Another key factor driving the formulation of the e-Waste Management strategy is the need to build the capacity of the county governments in sustainable collection and management of e-waste.

There are a number of initiatives leading to the development of the national e-Waste management Strategy. Below are some of the key factors leading to the formulation of the strategy.

- Lack of a readiness assessment within both the national and county governments. The country has not carried an assessment to inform the situation of e-waste in Kenya
- The establishment of the EACO regional e-waste management steering committee and taskforce within the armpit of the EACO working group 10. The regional steering committee has prioritized e-waste management activities and their mainstreaming within EACO
- Establishment of national e-waste management steering committees and/or e- waste management technical working teams

Strategic Direction

The strategy charts the aspirations, goals and building blocks for developing the national resource mobilization strategy. These are as follows:

Vision: The Vision of the Strategy is "Towards *Zero negative impact of e-Waste in kenya by 2030*".

Goal: The goal of the strategy is to *"achieve a sustainable e-waste management system*

in kenya".

In order to realize the above goal and steadily move towards attaining the vision; the following strategies have been prioritized:

(i) Strengthen the policy, legal and regulatory framework for sustainable resourcing of e-waste management activities for effective protection of human health and environment in the country; Put in place the requisite e-waste management infrastructure and rationalize its distribution across the counties to harness unique value and enhance synergy;

(ii) Establish mechanisms for comprehensive and sustainable mobilization for e- waste management resources (physical, financial and human resources);

(iii) Strengthen the M E& F coordination structures at both national and county levels

(iv) Promote research and innovation in e-waste management;

(v) Put in place a monitoring and evaluation mechanism for e-waste management; and

(vi) Build capacity and create awareness for effective e-waste management in Kenya

These strategies resonates well with the Article 69 of the constitution of Kenya, which states that the government shall eliminate all activities and processes that are harmful to the environment. In addition the vision 2030 envisioned for the development of solid waste management systems in the five leading municipalities and the economic zones. The strategies and their corresponding actions address the binding constraints identified in each of five strategic areas of intervention/themes, namely:

i. Policy, Legal and Regulatory framework

ii. Infrastructure for e-waste management

iii. Resource mobilization

iv. Coordination and institutional alignment

v. Capacity building, Research, Monitoring and Evaluation

Definition of terms

The following key terminologies should apply;

“recycle” means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material;

“remanufacturing” means the rebuilding of a product to the specifications of the original manufactured product using a combination of reused, repaired and new parts and it requires the repair or replacement of worn out or obsolete components and modules;

“re-use” means to utilize articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles;

“waste disposal facility” means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise, reducing, recycling, reusing, storage, conversion into other useful products like energy, manure and disposal of waste;

“waste minimization or reduction programme” means a programme that is intended to promote the reduced generation and disposal of waste; and

“waste valorization” means any industrial processing activities aimed at turning waste into useful products including materials, chemicals and sources of energy and also by reusing, recycling, or composting from wastes; and

“zero waste principle” means designing and managing products and processes to reduce the volume and toxicity of waste and materials, and conserve and recover all resources, and not burn or bury them, so that waste is understood as a resource that can be harnessed to create wealth, employment and reduce pollution of the environment

1.1 Introduction

E-waste is considered as one of the fastest growing waste in the world, and yet also toxic and non-biodegradable. E-waste is growing at 3 times the rate of municipal waste worldwide. . In East Africa and Kenya specifically, the estimated volume of e-waste is not known, as there is very little statistics.

The lowest amount of e-waste per inhabitant was generated in Africa; 1.9 kg/inh. The whole continent generated 2.2 Million metric tonnes (Mt) of e-waste, and with current data, only 4 kilo-tonnes (kt) were documented as collected and recycled; this is less than 1 % (Global e-waste outlook 2017).

Holistically, the increased number of e-waste volumes results from the increasing market penetration of electronic use in developing countries, and the increase in replacement market due to technology advancement in the developed countries. The East African region has also suffered from the importation of used or obsolete Electrical and Electronic Equipment (EEE) EEE under the name of donations, as well as the prohibitive prices for acquisition of new EEE. There is therefore a high demand for used products that have a short life span and easily find their way to the waste streams in the short-term.

EEE are composed of various components, i.e. hazardous and non-hazardous materials. The hazardous materials include; Lead, Barium, Mercury, Nickel, Cadmium, Lithium etc. Components such as Lead and Mercury contaminate the soil and water when disposed of in the landfills with other waste. These hazardous components are also listed as human carcinogens as they damage the lungs and liver when eaten or inhaled.

The valuable materials in electronic products include the precious metals- (Gold, Tantalum, Silver etc), while the non-hazardous components are; plastics, Copper etc. Recycling of the precious metals conserves these valuable materials as they are rare earth minerals. Recycling also prevents air and water pollution likely to result from the extraction of new mineral from the earth as well as reduction on greenhouse gas (GHG) emissions. Recovery of these precious metals may pose a positive impact to both the environment as well as socio-economic development issues.

The past decade has seen a tremendous increase of EEE in Kenya at the government, private sector as well as at individual levels. This increase has been made possible by enabling factors such as; the elimination of trade barriers in importation of ICT equipment, liberalization of the telecommunications sectors that has increased the use of mobile phones, fax and telephones; and the development of e-initiatives to improve service delivery.

Whilst much mention has been on the increasing investments in the ICTs because of its enormous advantages, it is also important to adequately reflect end of life (EOL) of such equipment, hence mention of electronic waste (e-waste) or waste electrical and electronics equipment (WEEE).

The information and communications technology (ICT) sector has been the major driver of economic growth in Kenya over the last decade, growing on an average of more than 30%. To date, ICT growth has largely come from innovation by large multinational and local enterprises. However, this rapid growth of ICT and economy has contributed to massive generation of electrical and electronic waste (E-waste) where, an estimated 50 million metric tons of E-waste is now generated worldwide every year, with most of this heading to developing countries including Kenya for re-use and disposal. E-waste poses both challenges and opportunities for various counties in Kenya. Such challenges include: Environmental, safety and public health. On the other hand, E-waste presents opportunities to the various sectors and business enterprises such as green job creation, recovery of valuable materials and environmental protection.

It is against this background that the Ministry of Environment and Forestry is developing a five-year national E-Waste Management Strategy that will help to sustainably and productively address the E-Waste problem in the country.

The National e-waste management strategy has been developed on the backdrop of the e-waste challenges posed by the rapid diffusion of information and communications technologies (ICTs) in the country's economy. These challenges range from increasing stock piles of e-waste in the region to potential environmental and health problems associated with e-waste. Another key factor driving the formulation of the e-Waste Management strategy is the need to build the capacity of the county governments in sustainable collection and management of e-waste.

1.2 Definition of E-waste:

E-waste is a term used to cover all items of electrical and electronic equipment (EEE) and its parts that have been discarded by its owner as waste without the intent of re-use" (Step Initiative 2014). The equipment's both household and industrial are considered to be no longer functional or fit for purpose, obsolete, broken or has been discarded by the owner. May also refer to end of life EEE Electrical and Electronic Equipment or equipment that depend on electric currents or electromagnetic fields for its function and also equipment for the generation, transfer and measurement of such currents and fields.

1.3: Purpose of the strategy

In the past ten years, the governments of East African member states have been pre-occupied with universal affordable access to ICTs without paying equal attention to the environmental impact of access. To address these challenges, the EACO Regional E-Waste Management Strategy 2017 was developed. EAC Member states were encouraged to develop national E-Waste Management Strategies.

The strategy is important to provide stakeholders with information and roadmap in addressing the E-waste menace and opportunities in Kenya. The main stakeholders in e-waste generation and management are the government/policy makers, private sector (manufacturers, distributors/importers), and civil society (refurbishment centres,

collectors, recyclers). However, most of East Africa's e-waste is dealt with by the informal sector with little or no regulation and no existing strategy for e-waste management and recycling systems.

The purpose of the strategy is to analyze the situation and prescribe ways to adddress the problems. The document aims at helping leaders and stakeholders at all levels understand the need to to take urgent action in diverse fronts through collaborative process to minimize negative impacts of e-waste on the environment and human health.

1.4 Process of developing the strategy

Kenya recognized the need to address the e-waste challenge and established the National E-waste steering committee hosted by the inistry of Environment and Forestry. This team met regularly to deliberate on ways to manage e-waste in the country.

Kenya participated actively in development of the East Africa Communication Organization (EACO) E-waste Strategy through members of the National E-waste steering Committee. The EACO E-waste strategy also reiterates that the member states develop and implement similar customized documents. The Kenya's National E-Waste Strategy builds into the EACO strategy.

The National E-Waste strategy was developed through a consultative process spearheaded by the National E-Waste Steering Committee through a series of meetings. The process utilized several documents and expertise in its development.

CHAPTER TWO

CURRENT SITUATION OF E-WASTE IN KENYA

Policy and Legal Framework for E-Waste Management

2.1 Global

A number of international conventions, protocols and laws provide guidance and standards for e-waste management. These include:

1. Basel Convention on Trans boundary Movement of Hazardous Waste, and Disposal, (1992)
2. Ban Amendment (2004)
3. The Vienna Convention for the Protection of the Ozone Layer.
4. Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
5. The Stockholm Convention on Persistent Organic Pollutants (2004).
6. Kyoto protocol.
7. Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (1991).
8. Africa agenda 2063
9. Maputo protocol

2.1.1 Basel Convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, usually known as the Basel Convention, is an international treaty that advocates reduction in movement of hazardous Wastes between nations. In particular, it prevents transfer of hazardous waste from developed to Less Developed Countries (LDCs). It does not, however, address the movement of radioactive waste.

The Convention was opened for signature on 22 March 1989, and entered into force on 5 May 1992. As of July 2016, 183 states and the European Union are parties to the Convention. Haiti and the United States have signed the Convention but not yet ratified it.

All countries in the East African region have ratified the convention

2.1.2 The Basel Convention Ban Amendment 1994

The "Ban Amendment" provides for the prohibition by each Party included in the proposed new Annex VII (Parties and other States which are members of the OECD, EC, Liechtenstein) of all transboundary movements to States not included in Annex VII of hazardous wastes covered by the Convention that are intended for final disposal, and of all transboundary movements to States not included in Annex VII of hazardous wastes covered by paragraph 1 (a) of Article 1 of the Convention that are destined for reuse, recycling or recovery operations.

The Ban Amendment was originally adopted as a decision of the second meeting of the Conference of the Parties in March 1994. The Secretariat provides assistance to parties that are facing difficulties in ratifying the Ban Amendment, on request and within available resources.

Only Kenya and Tanzania have ratified the Ban Amendment

2.2 REGIONAL

2.2.1. Bamako Convention

The Bamako Convention on the ban on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa is a treaty of the African Nations prohibiting the import of any hazardous wastes including radioactive wastes. The Convention was negotiated by twelve nations of the OAU at Bamako, Mali in January 1991, and came into force in 1998.

The Bamako Convention uses a format and language similar to that of the Basel Convention, and does not make exceptions on certain hazardous wastes (like those for radioactive materials) made by the Basel Convention.

All countries in the East African region have ratified the convention.

2.2.2 Maputo protocol

The protocol to the African charter on human and people's rights on the rights of women in Africa guarantees the right of women to live in a healthy and sustainable environment. This includes ensuring that parties take all appropriate measures to regulate the management, processing, storage and disposal of domestic waste and ensure that proper standards are followed for the storage, transportation and disposal of toxic waste.

2.2.3 Agenda 2063: The Africa We Want (2013)

This is a 50 year strategic socio economic transformation framework for the African continent. The agenda 2063 implementation plan (2014-2023) outlines specific goals to

be achieved during the first ten years, including reference to the expected transformation of waste management. Goal 1 of aspiration 1: a high standard of living, quality life and wellbeing for all citizens, priority area 4: modern, affordable and liveable habitats and basic quality services, hence cities will be recycling at least 50% of the waste they generate by 2023. Therefore to achieve respective governments must develop strategies or develop policies to grow recycling industries.

The East Africa Member States have also been concerned about the e-waste problem in the region. To address these challenges, the EACO Regional E-Waste Management Strategy 2017 was developed. Further, the EAC Member states were encouraged to develop national E-Waste Management Strategies.

2.3 National

Kenya lacks a regularity framework and a policy for recycling and e-waste management. The Kenya Constitution 2010 gave a lot of impetus to e-waste management in Kenya. The Constitution gives the right to every Kenyan to a clean and healthy environment under Article 42. In addition, Article 69 obligates the government to eliminate any processes that are deleterious to the environment.

Further, the Constitution legislates that any Convention that the Country has ratified becomes part of the national laws. In this regard, there is recognition of international conventions regulating hazardous waste, among them the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and the Bamako Convention, which aims at introducing preventive measures and guaranteeing appropriate disposal of hazardous waste in Africa.

Vision 2030 recognized that Kenya cannot attain high economic and social development without prioritizing environmental management especially the reduction of pollution by diverse wastes. In this regard, waste management including e-waste was prioritized as a flagship project. The MTP3 2018-2022 document prioritized E-waste as an emerging waste category with an emphasis on support to SMEs to manage the waste.

The main legislation guiding e-waste management in Kenya is the Environmental Management and Coordination Act 1999 (Revised 2015) and the Waste Management Regulations (2006). Both laws prohibit handling, transportation and disposal of waste without valid licenses issued by the National Management Authority (NEMA). Further, NEMA in 2010 formulated the National E-Waste Guidelines to assist the government, private sector, learning institutions and other stakeholders to manage WEEE effectively to enhance environmental conservation. These guidelines include approaches to enhance

environmental protection; environmental awareness; categories of e-waste and target groups; e-waste treatment technologies; and disposal
procedures.

Kenya also published the National ICT policy through the Ministry of ICT (Information and Communication technology) in 2006. The ICT policy requires that EEE dealers demonstrate their readiness to minimize the effects of their infrastructure on the environment before they can have their licenses renewed by the Communications Authority. This is geared towards ensuring that institutions generating e-waste take full responsibility to conserve and protect the environment from the harmful effects of WEEE.

Kenya has just finalized an e-waste regulation under the EMCA 1999 and is now at the final stages of finalization and endorsement by the government

The Public Procurement and Disposal Act governs disposal of goods and services in public institutions. Public institutions have to bond and invite competitive tenders for disposal of computers and other EEE as scrap in line with procurement procedures. Section 165(2) prescribes that electronic waste shall be disposed of only to persons licensed to handle the respective waste under section 88 of the Environmental Management and Co-ordination Act, 1999. However, the Act is silent on consideration of the end-of-life effects of EEE procured. Currently, there are only 3 recyclers licensed to handle e-waste in Kenya. The law fails to provide further guidance in case the recyclers fail to bid for purchase of e-waste. This bureaucratic process is slow and usually results in huge stock of obsolete computers and other WEEE being held in public institutions.
At County Level, some Counties such as Machakos County has developed an E-Waste Act addressing diverse issues (County Government of Machakos, 2015).

Some institutions such as JKUAT has developed an institutional e-waste policy.

2.4 E-waste generation in Kenya

The ICT industry in Kenya has been growing exponentially. Some of the reasons for this growth includes removal of tax levies on computers; promotion of e-learning in basic education and institutions of higher learning; rapid expansion of the telecommunication industry; the launch of the e-government strategy (2004) and availability of cheap ICT devices. These initiatives have created a huge demand for computers and related accessories.

This enabling environment has led to high proliferation of mobile devices. In 2018, Kenya had a total of 45.6 million mobile subscribers as per the statistics given by Communications Authority of Kenya . The number of Internet users has also increased tremendously in Kenya to 41.1 million in 2018. (CA, 2018).

Statistics show that Kenya generates 11,400 tonnes from refrigerators, 2,800 tonnes from TVs, 2,500 tonnes from personal computers, 500 tonnes from printers and 150 tonnes from mobile phones (UNEP, 2010). The mass flow study carried out in 2007 by Kenya ICT Action Network showed that 1,513 tonnes of electronics entered the market. The consumer in addition to receiving 1489.4 tonnes also received 151.3 tonnes from the second hand market. It was also revealed that consumers are likely to dispose 1,210.4 tonnes in the second-hard market, and 18.6 tonnes to collectors or as general waste which is sent to refurbishers. The consumer disposes a further 18.6 tonnes directly to recyclers. Refurbishers and recyclers then send 605.2 tonnes for disposal.

Although there have been initiatives by reputable firms to manage e-waste such Nokia through their recycling scheme and Computer for Schools through their refurbishment programme, the practices for managing e-waste are mostly handled by the informal sector (Jua Kali). Most of these operators have inadequate skills, are neither registered nor authorized and operate in a secretive manner. These operations are well connected to the supply chain processes of sourcing the raw material to finding markets for the recovered materials during post-recycling operations. The processes are highly toxic and impact adversely to both the environment and human health.

The lack of clear disposal mechanisms has resulted in excessive stocks being held by the consumer. The lack of well developed structures to handle e-waste disposal cause a ‘drag’ on waste volumes. A lot of the old technology is held in storage due to a lack of clear strategies and processes for disposal. Disposal options vary widely depending on the user. Government ministries and departments have to bond the computers and invite competitive tenders for disposal as scrap in line with procurement procedures. The process is slow and results in obsolete computers being held in government stores.

Private sector corporations often donate the computers as charity to deserving users. Collectors, refurbishers and the recycling infrastructures are generally not developed and therefore the flow down the value chain has much lower volumes.

On recognizing the need to play a role in easing the e-waste challenge in Kenya, Safaricom embarked on a journey to create awareness and collect e-waste for recycling and safe disposal. In this programme the company uses its network of retail shops across the country as collection centres. Together with the Waste Electrical and Electronic Centre (WEEE Centre), the company has collected over 850 tonnes of e-waste from customers and consumers. The biggest challenge still remains as low levels of awareness, incentives and lack of regulations.

2.5 Status of E-waste in Kenya

In the past decade, the Kenyan government have been pre-occupied with universal affordable access to ICTs without paying equal attention to the environmental impact of access. One of the major challenge in e-waste management in Kenya is lack of regulation,

lack of a guiding policy and strategy, lack the capacity, skills, resources and infrastructure such as recycling systems to address the challenge effectively.

Like other middle income countries Kenya has identified ICT as an enabling factor for transforming the region into an information society through initiatives such as e-government, e-education, e-medicine, e-commerce etc. As such, there has been an enormous increase in ICT usage. The landing of three fiber optic cables in the region heralds an era of exponential growth of access to and use of information and communications technologies (ICTs). With this growth, it is expected that the region will produce more e-waste as the people discard obsolete computers, television sets, mobile phones and other ICT equipment. Further, donations of second-hand equipment, the transition to digital broadcasting and the rapid turnover in technology are likely to compound the problem.

A study funded by Hewlett-Packard, the Global Digital Solidarity Fund (DSF) and the Swiss Federal Laboratories for Materials Testing and Research (Empa) in 2007 indicates that the private sector has the largest computer stocks and generates two thirds of the related waste flow in Africa. The private sector cites lack of infrastructure and policy as some of the obstacles contributing to poor e-waste management.

Manufacturing companies need to assume their responsibilities and obligations in setting up appropriate solutions and mechanisms to recycle their products. Policies for the return of goods at the end of their useful life and plans for safe and clean disposal of equipment and e-waste should be adopted. Some solutions that industry could adopt include, but are not limited to; adapting precautionary principles by employing sustainable product designs, for example through the use of renewable, biodegradable components and material and waste minimization techniques, among others. Industry could also work with governments to implement extended producer responsibility as an appropriate framework that combines major principles of environmental justice. This approach would shift responsibility for safe disposal to manufacturers.

Both the national and county governments should focus on developing policy, legislative and regulatory frameworks at a national and regional level. These policy interventions must begin by clearly defining e-waste for effective regulation and provide an integrated policy with both regulatory and operational components. They must also encourage an effective import and export regulatory regime, and ensure that the provisions of international conventions – Basel and Bamako – are implemented and followed.

The E-Waste guidelines (NEMA 2010) identify the main stakeholders in e-waste generation and management as the government/policy makers, private sector (manufacturers, distributors/ importers), and civil society (refurbishment centres, collectors, recyclers). However, most of Kenya's e-waste is dealt with by the informal sector.

2.6 Types of e-waste streams

The following are the current emerging trends and types of e-waste:

1. Large household appliances

i. Large cooling appliances

ii. Refrigerators

iii. Freezers

iv. Other large appliances used for refrigeration, conservation and storage of food

v. Washing machines

vi. Clothes dryers

vii. Dish washing machines

viii. Electrical Cooking equipment

ix. Electric stoves

x. Electric hot plates

xi. Microwaves

xii. Other large appliances used for cooking and other processing of food

xiii. Electric heating appliances

xiv. Electric radiators

xv. Other large appliances for heating rooms, beds, seating furniture

xvi. Electric fans

xvii. Air conditioner appliances

xviii. Other fanning, exhaust ventilation and conditioning equipment

2. Small household appliances

i. Vacuum cleaners

ii. Carpet sweepers

iii. Other electrical appliances for cleaning

iv. Appliances used for sewing, knitting, weaving and other processing for textiles

v. Ironing, mangling and other clothing appliances.

vi. Toasters

vii. Fryers

viii. Grinders, coffee machines and equipment for opening or sealing containers or packages

ix. Electric knives

x. Appliances for hair-cutting, hair drying, tooth brushing, shaving, massage and other body care appliances

xi. Clocks, watches and equipment for the purpose of measuring, indicating or registering time

xii. Scales

3. IT and telecommunications equipment

i. Centralized data processing:

a. Mainframes

b. Minicomputers

c. Servers

ii. Printer units

iii. Personal computing:

a. Personal computers (CPU, mouse, screen and keyboard included)

b. Laptop computers (CPU, mouse, screen and keyboard included)

c. Notebook computers

d. Notepad computers

iv. Copying equipment

v. Electrical and electronic typewriters

vi. Pocket and desk calculators and other products and equipment for the collection, storage, processing, presentation or communication of information by electronic means

vii. User terminals and systems

viii. Facsimile

ix. Telex

x. Telephones

xi. Pay telephones

xii. Cordless telephones

xiii. Cellular telephones

xiv. Answering systems and other products

xv. Broadcasting equipment for transmitting sound, images or other information by telecommunications

xvi. And other products or equipment for the purpose of recording or reproducing sound or images, including signals or other technologies for the distribution of sound and image than by telecommunications

4. Consumer equipment

i. Radio sets

ii. Television sets

iii. Video cameras

iv. Video recorders

v. Hi-fi recorders

vi. Audio amplifiers

vii. Musical instruments

5. Lighting equipment

i. Luminaries for fluorescent lamps. Straight fluorescent lamps

ii. Compact fluorescent lamps

iii. High intensity discharge lamps, including pressure sodium lamps and metal halide lamps

iv. Low pressure sodium lamps

v. Other lighting or equipment for the purpose of spreading or controlling light.

6. Electrical and electronic tools

i. Drills

ii. Saws

iii. Sewing machines

iv. Equipment for turning, milling, sanding, grinding, sawing, cutting, shearing, drilling, making holes, punching, folding, bending or similar processing of wood, metal and other materials

v. Tools for riveting, nailing or screwing or removing rivets, nails, screws or similar uses

vi. Tools for welding, soldering or similar use

vii. Equipment for spraying, spreading, dispersing or other treatment of liquid or gaseous substances by other means

viii. Tools for mowing or other gardening activities

7. Toys, leisure and sports equipment

i. Electric trains or car racing sets

ii. Hand-held video game consoles

iii. Video games

iv. Computers for biking, diving, running, rowing, and other similar gadgets.

v. Sports equipment with electric or electronic components

vi. Coin slot machines

8. Medical devices (with the exception of all implanted and infected products)

i. Radiotherapy equipment
ii. Cardiology
iii. Dialysis
iv. Pulmonary ventilators
v. Nuclear medicine

vi. Laboratory equipment for in-vitro diagnosis
vii. Analyzers
viii. Freezers
ix. Other appliances for detecting, preventing, monitoring, treating, alleviating illness, injury or disability

9. Monitoring and control instruments

i. Smoke detector

ii. Heating regulators

iii. Thermostats

iv. Measuring, weighing or adjusting appliances for household or as laboratory equipment

v. Other monitoring and control instruments used in industrial installations (

10. Automatic dispensers

i. Automatic dispensers for hot drinks

ii. Automatic dispensers for hot or cold bottles or cans

iii. Automatic dispensers for solid products

iv. Automatic dispensers for money

11. Batteries

12. Security and Military Equipment

13. Florescent tubes

2.7 Consequences of poor e-waste handling

The ecological, economic and social consequences resulting from poor handling and management of e-waste include:

2.7.1 Environmental consequences

- Air pollution, especially when e-waste is burnt

- Waste management problem of non-biodegradable equipment
- Toxicity and radioactive nature of e-waste degrades the environment
- Blockage of water runoff channels

2.7.2 Economic consequences

- Substantial public spending on health care
- Investments in complex and expensive environment remediation technologies
- Loss / waste of resources that can be recycled for re-use
- Opportunities for recycling industries and employment lost
- Ozone depletion has led to unpredictable weather conditions.

2.7.3 Social consequences

- E-waste affects people's health (e.g. lead poisoning and cancerous mercury).
- Growth of informal waste disposal centres in the neighbourhood
- Informal trade and management of e-waste
- Loss of appreciation for ICT

2.8 Current e-waste management practices

The current trends for waste management are as follows.

2.8.1 Segregation of Waste at source.

E-Waste Can be segregated as :-

A – Recyclable Waste- Plastics, Paper, Glass, Metal Etc.
B- Toxic Waste:- – Old Medicine, paints, Chemicals, bulbs, Spray Cans, fertilizer and pesticide containers, batteries, shoe polish.
C- Soiled:- Hospital waste such as cloth soiled with blood and other body fluids. Toxic & soiled waste must be disposed of with utmost care.

Color codding: green for voluntary organic collection containers.

Blue has been designated for recycling containers.

2.8.2 Collection

The existing collection centers are established individually or jointly or a registered society or a designated agency or a company or an association to undertake collection operations of e-waste;

The established collection centers contract or sub contract the e-waste collectors normally known as ‘scavengers’.

2.8.3 Transportation

Once general waste is collected at designated places, the contracted service providers collect and take it to dumping sites and recycling facilities for processing.

The service providers are licensed for transporting E-waste by NEMA.

2.8.4 Recycling

There exists both formal and informal recycling in the Kenyan market with scanty information on the volumes collected and processed.

2.8.5 Refurbishing

There is a growing number of licensed entrepreneurs and organized groups which are refurbishing e-waste in the country with the intent of increasing product lifespan.

2.8.6 E-waste take back

There are efforts by a few manufactures who have introduced take-back programmes in the country. However, there is lack of consistency and awareness to the public.

2.9 The E-Waste Challenges and Opportunities in Kenya

2.9.1 The e-waste challenges.

- lack of legislation

- Inadequate infrastructure for e-waste management.
- absence of frameworks for end-of-life (EoL)
- no comprehensive product take-back and implementation of extended producer responsibility (EPR) system in place
- lack of citizen awareness on the harmful effects of WEEE on the environment, their health and safety
- poor methods of E-waste treatment and disposal that discharge harmful heavy metals such as mercury and lead into the environment, depletion of the ozone layer, blocking water drainage channels.
- Lack of consumers' ability to purchase brand new EEE, leading to consumption of second-hand or refurbished products which are cheaper but have a shorter life-span.
- The government agencies dealing with waste management have generalized e-waste as part of solid waste. Hence, E-waste management has not been given the priority it deserves at the national level.
- The Government agencies have limited capacity, inadequate resources to effectively address the problems and challenges associated with E-waste.
- inadequate regulatory framework to deal effectively with WEEE management.
- The national Government has not streamlined mechanisms for the county Governments to separate WEEE from other solid wastes, store, collect, transport and process E-waste in a structured manner.

2.9.2 E-waste opportunities.

Despite the problem of e-waste, it contributes many useful benefits and opportunities. Proper management of e-waste using environmentally sound systems, presents numerous socio-economic opportunities that can stimulate entrepreneurship, employment and enhancement of livelihoods. The Government can use the sector to raise the standards of living and poverty eradication. E-waste opportunities can be considered at several levels.

a. Recycling level. This involves converting fractions of e-waste into useful products. This can contribute to production of waste bi-products which can be used to feed other

local industries. Organisations and individuals that are licensed to recycle create job opportunities or self-employ themselves.

b. Dismantling and refurbishing level. The refurbisher extends the functional life of electronic or electrical equipment by breaking apart the end of use equipment and selling the parts that can still be used. Some equipment can be dismantled and some valuable parts re-used for repairs or precious metals like gold, silver and copper reclaimed and availed for other useful purposes. This process, besides creating job opportunities, saves the environment by diverting large volumes of e-waste from energy-intensive down cycling processes where the equipment is reverted to raw materials for use in manufacturing. The environmental and social benefits of refurbishing and reuse include diminished demand for new products and virgin raw materials and diminished use of landfills.

c. Collection level. Through the Producer Responsibility Organization (PRO) and take back systems, those who collect e-waste and hand it over to recyclers, refurbishers and treatment plants are paid a take back fee which improves their livelihoods.

d. Creation of artificial mines. It is a fact that e-waste contains hundreds of tonnes of various metals. These metals can be isolated, treated and made available for use in new forms. This is done by establishing metal separation facilities at landfills or e-waste deposits. This process not only creates employment but also reduces metal loading on e-waste deposit sites and hence reduces the risk of soil contamination, besides making available new metals for use.

2.10 SWOT ANALYSIS

STRENGTH	WEAKNESS
- Model the national waste management policy framework in place - Political commitment through the ratification and adoption of relevant policies, laws and conventions - Existence of E-waste management coordination structures at regional and national levels (EACO WG 10, National steering committee)	- Lack of adequate statistics on e-waste generation in the region - Limited coordination of e-waste activities at both at national and regional level - Lack of comprehensive awareness on e-waste especially among end-users, decision makers. - Limited expertise in e-waste

- Improved appreciation on awareness of e-waste matters across the board (political, technical and general public) - Implementation of e-waste management initiative of EACO e.g. studies/ statistics(study on going) - Existence of some basic e-waste management infrastructure within the country - Existence of enabling environment at national level such as EMCA Act(E-waste regulations 2019)	management within the region - Inadequate e-waste management infrastructure and facilities. - Insufficient e-waste policies laws and regulations and weak enforcement of existing ones and lack of harmonization of the existing ones - Unpredictable flow of resources on e-waste management
- Existence of downstream market for some fractions of e-waste in Kenya.	
OPPORTUNITIES	**THREATS**
Political - Global push on e-waste management issues and initiatives by ITU, UN activities through UNFCCC, UNEP, Basel and Bamako Convention, StEP - Regional integration and the EAC policy harmonization framework - Global conventions, protocols, declarations.	Political - Political instability in the region - Set back on political will
Economic - Economic opportunities arising from E-waste management	Economic - Affluent societies – High consumption

- Business and employment - Potential for export growth	- Counterfeit of substandard goods
Social - Growing activism on environment and Green computing - Increased Awareness of negative impact of e-waste – Public health - Potential positive on special impact groups such as women, youth and PWDs – people with disabilities.	Social - Booming informal sector in the region - Social practices and culture in handling e-waste (holding on items due to emotional attachment)
Technology - Availability of available technologies Best practices for Bench mark	Technology - Changing of technology making the ICT equipment's inseparable Rudimentary technology like incineration or burning.
Environment - Urban mining - Reduced Greenhouse gases emissions	Environment - Continued Poor disposal methods hence pollution to the environment - Non segregation of waste
Legal Alignment of the existing policies and laws to the emerging WEEE issues.	Legal Lack of political will.

Chapter 3

3.1 Kenya's preferred approach to e-waste management

The current total e-waste levels collected is estimated at 50%. However, most of it ends up at Dandora dumpsite in Nairobi and other illegal dumpsites in the country. With the lack of a specific government policy on e-waste, best practices are hard to achieve. In

addition, when the EEE comes to end of life, individuals and corporates hoard the products in stores and homes for lack of awareness on e-waste management facilities.

The preferred approach to e-waste management in Kenya include

i) Reduce WEEE disposal to landfill;

ii) Provide for an extended producer take-back scheme for consumers of end-of-life equipment

iii) Regulate product design of electrical gadgets imported in the country with a view to both preventing WEEE and to increasing its recoverability, reusability and/or recyclability.

iv) Achieve targets for recovery, reuse and recycling of different classes of WEEE;

v) Provide for the establishment of collection facilities and separate collection systems of WEEE from private households;

vi) Provide for the establishment and financing of systems for the recovery and treatment of WEEE by producers including provisions for placing financial guarantees on new products placed on the market.

vii) To tackle the problem with “sham reuse”, the criteria for imports, especially of WEEE or non-waste used EEE should be clarified with the e-waste regulations, guidelines and standards.

This strategy prioritizes the following circular economy practices in e-waste management.

1. promotion of sustainable waste management as an income generating venture
2. creating an enabling environment for green economy jobs in the waste management recycling
3. recovery of materials
4. processing activities aimed at reusing, recycling e-waste materials into useful products
5. reducing the amount of e-waste destined for secure final disposition
6. improving conditions and health of waste pickers, sorters and handlers;
7. reducing air and water pollution;
8. establishing and achieving, progressively more ambitious waste minimization, reuse, recovery and recycling targets

3.2 Proposed strategic interventions for e-waste management in Kenya

Vision

The Vision of the Strategy is "Towards *Zero negative impact of e-Waste in kenya by 2030*".

Goal

The goal of the strategy is to *"achieve a sustainable e-waste management system in kenya"*.

3.2.1 Policy, legal and regulatory framework

To ensure protection of human health, environment and enabling conditions for sustainable investment in e-waste management, the priority intervention will be on harmonization of the existing policy, legal and regulatory framework for e-waste management within Kenya.

The Cabinet Secretary shall assign the Waste Management Directorate the role of policy development on matters related to e-waste management in consultation with county governments and NEMA; development of regulations, standards and guidelines in accordance to the National Sustainable Waste Management Bill, 2018;

There will also be a focus on realignment of other laws such as promoting sustainable procurement practices by amending the Public procurement and Disposal Act to require the decommissioning of e-waste before disposal in accordance to the e-waste regulations 2018 and set the procedure for the process.

Strategic Actions

1. Review existing Policy, laws, standards and guidelines for e-waste management in Kenya to identify gaps

2. Develop a national e-waste policy, laws, and standards to act as model guiding the national strategy.

3. Disseminate the national e-waste management strategy, guidelines, regulations and standards to cater for the uniqueness of e-waste in the 47 counties.

4. Advocate for harmonization and alignment of national policies, guidelines and standards to developed county policies, standards and guidelines

3.2.2 Awareness creation and capacity building

The Cabinet Secretary shall assign the Waste Management Directorate the role of the national knowledge and information management center for disseminating knowledge and information on waste management in accordance to the National Sustainable Waste Management Bill, 2018.

The identified actions include:

1. Raise comprehensive awareness about e-waste and its management

2. Build capacity amongst stakeholders and special interest groups such as informal sector, scheme operators etc.

3. Collaborate with the informal sector in dissemination of information, innovations sharing,

4. Undertake e-waste awareness campaigns in all counties targeting the general public, technical staff and local leaders

5. Networking with partner organizations through stakeholder meetings and dialogues

6. Engage producers/retailers of EEE to participate in e-waste awareness campaigns

7. Participate in regional and international fora on best practices in e-waste management.

8. Develop and disseminate information, education and communication (IEC) packages for each stakeholder category

3.2.3 Infrastructure for e-waste handling and management

The Directorate shall delegate authority to relevant MDAs for establishment of e-waste management infrastructure in consultation with the relevant ministries Agencies and county governments; establish modern, environmentally sound infrastructure and systems for e-waste management;

The principle strategy that will help address the identified infrastructure challenges for e-waste management is to ensure rationalization of e-waste management infrastructure in the 47 counties and put in place the requisite infrastructure.

Specific Actions

The priority interventions in the infrastructure for e-waste management over the planning period include the following:

- Conduct baseline survey on e-waste generation and volumes and develop an updated inventory to inform priority e-waste management infrastructure within the counties.

- Conduct an e-waste management infrastructure requirements analysis for the respective counties

- Develop an e-waste management infrastructure roll out plan

- Put in place appropriate mechanisms for collection, transportation and disposal of e- waste such as the take-back systems, door-to-door collection etc.

- Facilitate the development of a regional block modern dismantling and recovery facility by integrating the existing infrastructures within the counties

- Facilitate capacity building for the government assets disposal department to develop a procedure for information clean-up before decommissioning

3.2.4 Coordinated national sound e-waste management

The Cabinet Secretary shall assign the Waste Management Directorate to provide analytical support on e-waste management to the various sector ministries, agencies and county governments; provide technical assistance based on needs identified by county governments.

The ministry shall be responsible for oversight and coordination of the implementation of this by: Strengthening the national e-waste coordination structures at county and national

levels is a core strategy towards ensuring effective implementation of priority e-waste management programmes and projects in the region.

Strategic Actions

The following strategic measures will be executed to enhance coordination and institutional alignment for the strategy:

- Support the operations and functions of the ministry of environment and forestry for effective coordination of the implementation of national e-waste Strategy
- Establish collaborative frameworks with key regulatory bodies and other relevant stakeholders for the proper management of e-waste in kenya as well as within the counties.
- Mainstream and enforce EPR (Extended Producer responsibility), ARF (Advanced recycling fee) principles in national policy to enhance producer participation in e-waste management
- Establish proper mechanisms for sharing experience and knowledge on E-waste management
- Develop a Communication and Stakeholder Engagement strategy on e-waste management
- Engage with key stakeholders such as Government, Academia, private sector, civil society and development partners to foster mainstreaming of e-waste management within their policies, work plans and budgets

3.2.5 Resource mobilization for the e-waste management strategy

The Cabinet Secretary shall, through the National Sustainable Waste Management Bill, 2018 establish a fund for e-waste management infrastructure in consultation with the relevant ministries and county governments; and establishment of incentives for modern sustainable e-waste management.

The waste management fund established under the National Sustainable Waste Management Bill, 2018 shall optimize opportunities to mobilize finance for sustainable e-waste management.

Successful implementation of the national e-waste Management Strategic plan hinges on adequate availability of resources - physical, human and financial resources. Putting in place a comprehensive Resource Mobilization Mechanism for e-waste management has therefore been identified as a critical strategy.

Strategic Actions

The strategic measures, which will help in mobilization of adequate resources for e-waste management and ensure predictability and sustainability in allocation, utilization and accountability, include the following:

1. Develop a Resource Mobilization Strategy for effective implementation of the national e- waste Management Strategic Plan.

2. Streamline funding mechanisms for e-waste management within the counties.

3. Engage EEE producers/retailers in strategic partnerships including financing the e- waste collection, transportation and treatment through the extended producer responsibility (EPR) and advanced recycling fee (ARF).

4. Conduct a feasibility study and legal framework analysis for the establishment of e-waste Fund.

5. Conduct a study to determine the EPR fees or ARF fees and their collection and disbursement mechanisms

6. Set up a national e-waste Fund which will collect EPR fees, ARF individual and corporate contributions etc.

7. Engage regional, international organizations and private corporations such as UNIDO, ITU, STEP, UNEP, World Bank, UNU, GIZ, telecommunication companies, etc. for resource mobilization.

3.3 Monitoring and evaluation

To be able to gauge to what extent the target outcomes have been realized, a monitoring and evaluation framework for the plan will be developed. The framework will identify the anticipated outcomes and results of the strategy – both immediate and long term. For each result (outcomes and outputs) baseline conditions and targets will be identified to show the current status and help in assessing changes in the indicator over time.

3.4 Conclusion

E-waste management is a major challenge in Kenya. There are huge stocks that consumers are piling in homes, offices and other storage facilities. This strategy reiterates the government's commitment in charting the way forward in promoting strategies that enable broader participation in e-waste management. The government will partner with private firms through Public-Private-Partnerships (PPP) to build robust and sustainable

infrastructure to facilitate an environmentally friendly e-waste management system and provide incentives for consumers to dispose their WEEE. The government will also consider facilitating NGOs, local investors and private organizations by providing them with tax exemptions on e-waste recycling equipment and land on which to put up e-waste management facilities and infrastructure.

The government will also provide incentives for all players willing to partner in refurbishment of old EEE and take-back programmes to ease the WEEE burden in the country. Mechanisms for tracking mass flow of WEEE in and out of the country by use of well-defined models will be strengthened so that it can identify their sources and distribution channels for effective management.

The Strategy aims at ensuring increased and robust resource mobilization as well as wide stakeholder participation and coordination to ensure that Kenya is free from adverse effects of E-waste.

HIERACHY OF INTERVENTIONS	KEY PERFORMANCE INDICATORS	BASELINE 2020	TARGET	Timeline	MEANS OF VERIFICATION	CRITICAL ASSUMPTION
Pillar 1 : Policy, Legal and Regulatory frameworks for E-waste management in Kenya						
Outcome1:A harmonized legal, policy and regulatory frameworks	**Harmonized legal, policy and regulatory framework in place**	**None**	**Harmonized policy Harmonized regulations Harmonized standards**	**2022**	**Ministerial reports**	
Output 1.1 National e-waste policies, guidelines and standards developed for Kenya.	Develop e-waste policy, guidelines and standards		1 national e-waste management policy 1 national e-waste management guidelines 1 national e-waste standards	2020	Ministerial reports	
Output 1.3: National e-waste management policy, guidelines and standards	Number of disseminations workshop		12 workshops (2 in each national economic zones)	2020	ministerialReports Workshop reports	

disseminated to counties	conducted at the counties				Reports Workshop reports	
Output 1.4 E-waste national policy, guideline and standard adopted in all 47 counties	Number of counties adopting the national e-waste policy, guidelines and standards	Machakos county E waste act	47 counties	2022	Ministerial reports Output 1.5 National policies, guidelines and standards aligned to the national e-waste strategy, policy, standards, guideline.	
Output 1.5 National policies, guidelines and standards aligned to the national e-waste strategy, policy, standards, guideline.	Number of policies, guidelines and standards aligned to the e-waste policies, standards and guidelines	None	1 E-waste policy, 1 E-waste regulation 1 E-waste standard	2022	Annual report	
Pillar 2 : Infrastructure for E-waste management in Kenya						

Outcome 2: A rationalized and well distributed E-waste management infrastructure in the six economic zones	Number of E-waste infrastructures in Kenya		6 modern facility	2022		Availability of viable investors
Output 2.1: Baseline survey on E-waste generation and volumes to inform prioritye-waste management infrastructure within the country to be Conducted	Baseline survey report on e-waste generation and volumes available	None	Survey reports	2020		Availability of funds
Output 2.2: E-waste management infrastructure requirements analysis to be conducted	Report on E-waste management infrastructure requirements	None	Produce reports	2021	Ministerial reports	Availability of funds

Output 2.3: An e- waste management infrastructure roll out plan to be developed.	Report on e-waste management roll out plan	None	None	2022	Ministerial reports	Continued political support
Output 2.4 Appropriate mechanism for collection, transportation and disposal of e-waste to be established	No of collectors and transporters trained.	None	200 collectors and transporters trained	2022	Certificate of participation	Commitment of stakeholders
	No. collection centers/ point established in the counties	None	environmentally friendly collection centres/holding point to be established (at least ten in each county)	2022	Ministerial reports	Availability of funds
	Tons of e-waste properly collected	None	20,000 tons of e-waste collected for proper treatment p.a	2022	Ministerial/NEMA reports	
Output 2.5	Business plan for	None	1Business plan or	2021		Availability of

Facilitation for the development of a modern dismantling and recovery facility within the six economic zones to be provided and at least one national recycling facility.	the facility to be developed(EOI)		EOI			funds
Pillar 3: Resource Mobilization for proper e-waste management						
Outcome 3: A comprehensive resource mobilization mechanism for e- waste management in Kenya	Availability of a comprehensive resource mobilization mechanism to be developed	None	Resource mobilization mechanism			Continued commitment and good will from Government
	Total amount of funds mobilized	None			Ministerial Report	
	Total amount invested in e-waste management by the private	None			Ministerial Report	

	sector					
Output 3.1 : A national E-waste resource mobilization strategy to be developed and implemented	A national resource mobilization strategy in place and functional	None	1 mobilization strategy	2021	Ministerial Report	Continued commitment from stakeholders
Output 3.2 Kenya e-waste fund to be established to collect EPR fees, ARF individual, corporate and donor contributions	Availability of feasibility study report	None	Feasibility report	2020	Ministerial Report	
	E-waste fund to be put in place and functional	None	E-waste fund	2021	Ministerial Report	
Output 3.3 EEE producers/retailers engaged in strategic partnerships including financing the e-waste collection, transportation and treatment	Total amount to be contributed to the E waste fund. Establishment of the E waste registry	the e-	At least 150,000USD		2021	Ministerial Reports Commitment of producers

through the extended producer responsibility and advanced recycling fee						
Pillar 4 : **Research, M&E and Capacity building**						
Outcome 4: An established research, M&E system, innovation as well as develop capacity in e-waste management		TBD				
	Number of reports generated from the M&E system	None	6 quarterly reports 1 Annual reports 1 Mid-term report 1 final evaluation report	2021		
Output 4.1 E-waste management is mainstreamed in the educational system at all levels	Availability of e-waste mainstreaming Guideline	None	1 national curriculum mainstreaming guideline	2021		
	No of curriculum with e-waste incorporated	None	3 curriculums (primary, secondary and	2022		

			tertiary) in Kenya			
Output 4.2 The e- waste strategy to be monitored and evaluated	At the availability of the strategy mid-term and final review reports	None	1 midterm report 1 final report	2021 2022		
Output 4.3: National e-waste management initiatives in all counties to be monitored and evaluated	Availability of national evaluation report	None	1 midterm report 1 final report	2020 2022		
Pillar 5: Coordination and institutional alignment						
Outcome 5: E- waste coordination structures at the national and counties levels are strengthened	Availability of financial support for the E-waste related activities	Establishment of counties E-waste steering committee		2022	Ministerial Reports	Political will and commitment of key institutions
	% of physical implementation of the strategy	0%	100% (annually 20%)	2022	Ministerial reports	

Output 5.1: E-waste department operations and functions supported for effective coordination of the implementation of the national e-waste strategic plan	Allocate resource to the operations and functions of the department Number of activities held.			2021	Ministerial reports	
Output 5.2: A national Producer Association as a mechanism for the Implementation of EPR (Extended Producer responsibility), ARF (Advanced recycling fee), is established.	National Producer association (NPA) to be established	None	1 National Producer association	2020	Ministerial/NEMA reports	
	Number of producers registered to the association	None	At least 20 producers	2020		
Output 5.3: A communication and stakeholder engagement	To develop communication and	None	1 Communication and stakeholder engagement	2020		

strategy on e-waste management to be developed	stakeholder engagement strategy		strategy			

Annexe 1 Log frame for the E-waste management Strategy

Logic framework for the national e-waste management strategy

Annexe 2: Implementation Matrix for the E-waste strategy

National E-waste Strategy Action Plan

ACTION PLAN

Pillar	Strategies	Strategic Actions	Inputs	Proposed Budget (in Millions KES)					Total Budget (KES)	Responsible	Time frame
				2018/19	2019/20	2020/21	2021/22	2022/23			
Policy, Legal and regulatory	1.1To put in place policy legal and regulatory	1.1.1 Review existing Policy, laws, standards and guidelines for e-waste management in	Workshops, Meetings	3	2				5	Ministry of Environment and Forestry, NEMA,	2020

frameworks	framework for e-waste management in Kenya	kenya member states to identify gaps	Desk review							KEBS, NSC, MoICT	
		1.2.1 Develop National e-waste policy, laws, regulations and standards Review guidelines	Technical working group Workshops	5					5	Ministry of Environment and Forestry, NEMA, KEBS, NSC, MoICT	2019
		1.1.3 Disseminate national e-waste management policy, law, guidelines and standards to cater for the uniqueness of e-waste in Kenya	Workshops		2	2	2		6	Ministry of Environment and Forestry, NEMA, KEBS, NSC, MoICT	2021
		1.1.4 Facilitate the adoption and entrenchment of national e-waste policy,	Workshops Meetings				5	5	10	Ministry of Environment and Forestry, NEMA,,	2023

		law, guidelines and standards in all counties							Council of Governors , MoICT	
		1.1.5 Advocate for alignments of county policies, laws, guidelines and standards to developed national policies, laws, standards and guidelines	Advocacy Workshops Meetings			2	2	4	Ministry of Environment and Forestry, NEMA,, Council of Governors, MoICT	2023
Infrastructure for E-waste Management	2.1To ensure rationalization of e-waste management infrastructure in kenya	2.1.1 Conduct baseline survey on E-waste generation and volumes and develop an updated inventory to inform priority e-waste management infrastructure in Kenya	Consultancy Workshops	5					5	Ministry of Environment and Forestry, Academia, Research institutions	2019
		2.1.2 Conduct an E-	Consultancy/	5					5	Ministry of	2019

	waste management infrastructure requirements analysis for Kenya	Workshops/							Environment and Forestry, Academia, Research institutions	
	2.1.3. Develop an e-waste management infrastructure roll out plan	Consultancy Workshop	5					5	Ministry of Environment and Forestry, NEMA CoG	2019
	2.1.4 Put in place appropriate mechanisms for collection, transportation and disposal of e-waste such as the take-back systems with incentives for consumers, door-to-door collection etc	Trainings, Workshops, Technical working group	2	2	2	2	2	10	NEMA, E-waste Recyclers, Refurbishers, collectors	2023
	2.1.5 Facilitate the	Consultancy/	10					10	Ministry of	2019

		development of a national modern dismantling and recovery facility within Kenya	Technical working group Workshops,						Environment and Forestry	
Resource mobilization	3.1Put in place a comprehensive Resource Mobilization mechanism for e-waste management	3.1.1 Develop a Resource Mobilization Strategy for effective implementation of Kenya's e-waste Management Strategic Plan	Consultancy/ Technical working groups	2					2	Ministry of Environment and Forestry, NEMA	2019
		3.1.2 Streamline funding mechanisms for e-waste management. Engage regional and international organizations such as	-	0.4	0.4	0.4	0.4	0.4	2	Ministry of Environment and Forestry, NEMA	2023

	UNIDO, ITU, STEP, UNEP, World Bank, UNU, GIZ, Basel convention, etc for resource mobilization.									
	3.1.3 Engage EEE producers/retailers in strategic partnerships including financing the e-waste collection, transportation and treatment through the extended producer responsibility and advanced recycling fee	Meetings/ workshop	5	5	5	5	5	25	Ministry of Environment and Forestry, NEMA, Industry players	2023
	3.1.4 Conduct a feasibility study for the establishment of a national e-waste fund.	Consultancy Workshop	2	2				4	Ministry of Environment and Forestry	2020
	3.1.5 Set up a Kenyan	Operation/	1	1	1	1	1	5	Ministry of	2023

		e-waste fund which will collect EPR fees, ARF individual and corporate contributions etc								Environment and Forestry	
Institutional coordination and alignment	4.1 Strengthen Kenya's e-waste coordination structures at national and county levels	4.1.1 Support the operations and functions of the National Steering Committee for effective coordination of the implementation of national e-waste Strategic plan	Meetings, Workshops, Operations, office	2	2	2	2	2	10	Ministry of Environment and Forestry	2023
		4.1.2 Establish collaborative frameworks with key regulatory bodies and other relevant	Meetings, Workshop	5	5	5	5	5	25	Ministry of Environment and Forestry	2023

	stakeholders for the proper management of e-waste in Kenya									
	4.1.3 Support the establishment of a national Producer Association as a mechanism for the implementation of EPR (Extended Producer responsibility), ARF (Advanced recycling fee), to enhance producer participation in e-waste management	Meetings, Operations	1	1	1	1	1	5	NEMA	2023
	4.1.5 Develop a communication and stakeholder engagement strategy on e-waste management	Consultancy/ Technical working groups	1	1				2	Ministry of Environment and Forestry, NSC	2020

		4.1.6 Engage with key stakeholders such as Government, Academia, private sector, civil society and development partners to foster mainstreaming of e-waste management within their policies, work plans and budgets	Meetings Workshop	5	5				10	Ministry of Environment and Forestry, NEMA	2020
Research, Monitoring and Evaluation and Capacity building	Promote research and innovation in e-waste management	5.1.1 Conduct studies and baseline surveys on E-waste	Consultancy/ Technical working group	1	1				2	Ministry of Environment and Forestry, MoICT, Communications Authority of Kenya	2020
		5.1.2 Organize annual e-waste management innovation contests/	Events, workshop	1	1	1	1	1	5	Ministry of Environment and Forestry	2023

	awards									
	5.1.3 Collaborate with research institutions to promote research and innovation on e-waste	Workshops, conferences			1	1	1	3	Ministry of Environment and Forestry, MoICT	2023
	5.1.4 Mainstream e-waste issues in educational curriculum at various levels especially in technical schools, colleges and universities	Workshops, Meetings			5	5	5	15	Ministry of Environment and Forestry, MoEST, Communications Authority of Kenya	2023
Put in place a monitoring and evaluation mechanism for e-waste management	5.1.1 Collaborate with stakeholders to establish and maintain a data base for e-waste generations/ volumes		0.4	0.4	0.4	0.4	0.4	2	NEMA	2023
	5.1.2 Develop and implement a participatory	Workshops, Visits,	1	1	1	1	1	5	Ministry of Environment	2023

	monitoring and evaluation framework								and Forestry	
	5.1.3 Conduct mid-term review and final evaluation of the national e-waste management strategy	Consultancy, workshops			2		2	4	Ministry of Environment and Forestry	2023
	5.1.4 Support monitoring and evaluation for national e-waste management initiatives in counties	Workshops, Meetings	1	1	1	1	1	5	Ministry of Environment and Forestry, NEMA, CoG	2023
Capacity Building and Awareness creation for e-waste management in Kenya	5.1.5 Raise comprehensive awareness about e-waste and its management	workshop, IEC printed materials	1	1	1	1	1	5	Ministry of Environment and Forestry, NEMA	2023
	5.1.6 Build capacity amongst stakeholders and special interest	Trainings, workshop ,	1	1	2	1	1	6	Ministry of Environment and Forestry,	2023

	groups such as informal sector, scheme operators etc.	conferences							Academia	
	5.1.7 Undertake e-waste awareness campaigns in all counties targeting the general public, technical staff and local leaders	Campaigns Road shows , workshop	2	2	2	2	2	10	Ministry of Environment and Forestry, Academia	2023
	5.1.9 Engage producers/retailers of EEE to participate in e-waste awareness campaigns	Meetings	5	5				10	Ministry of Environment and Forestry	2020

	5.1.10 Participate in national, regional and international fora on best practices in e-waste management	Travels, Meetings, conference	2	2	2	2	2	10	Ministry of Environment and Forestry, MoICT, Communications Authority of Kenya, All stakeholders	2023
	Total budget		**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total** **237**		

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