MITIGATING ENVIRONMENTAL AND REGULATORY CHALLENGES POSED BY E-WASTE: AN ANALYSIS OF LEGISLATION'S SAFEGUARDING AGAINST ELECTRONIC WASTE POLLUTION

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By

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Declaration

I, Kinya Wanjiku Muturi, do hereby declare that this research is my original work and that to the best of my knowledge and belief, it has not been previously, in its entirety or in part, been submitted to any other university for a degree or diploma. Other works cited or referred to are accordingly acknowledged.

Signed: .....

This dissertation has been submitted for examination with my approval as University Supervisor.

Signed: .....

[Purity Wangigi]

Date: 12th March 2025

LIST OF LEGAL INSTRUMENTS

Constitution of Kenya 2010

Environmental Management and Coordination Act 1999 (EMCA)

E-Waste Management Guidelines (2010),

Information and Communication Technology (ICT) Policy of 2020

Rio Declaration of 1992 on Environment

The Basel Convention on Trans-boundary Movements of Hazardous Wastes and their Disposal

Bamako Convention on the Ban of the Import To Africa and The Control of Transboundary Movement And Management of Hazardous Wastes Within Africa,

Producer Responsibility Scheme

Product Eco-responsibility Ordinance

The Hazardous Chemicals Control Ordinance (Cap. 595)

The National Solid Waste Management Strategy (2015)

The Nairobi Declaration on the Environmentally Sound Management of E-waste

Sessional Paper No. 6 of 1999 on Environment

East African Community Regional E-Waste Management Strategy, June 25, 2019

Waste Disposal Ordinance (Cap. 354)

Waste management regulations

LIST OF CASES

United States v. Brandon Richter (2017), Colorado District courts

United States v. Intercon Solutions (2012), United States District Court, N.D. Illinois, Eastern Division

LIST OF ABBREVIATIONS

CoP 8	Conference of the Parties 8

CRT'S	Cathode Ray Tube.
EAC	Eat African Community
EEE	Electrical and electronic equipment.
EMCA	Environmental Management and Coordination Act 1999 (EMCA)
EPA	Environmental protection agency
EPR	Extended producer responsibility
E-WASTE	Electronic waste.
GDP	Gross domestic Product
ICT	Information and communication technologies
MT	Metric Tons
NEMA	National Environmental Management Authority
PIC	Prior informed consent
PRS	Producer Responsibility Scheme
RCRA	Resource conservation and recovery Act
REE -	Regulated Electrical Equipment (REE)
SDG	Sustainable Development Goals
SW	Solid waste
WEEETRF	Waste Electrical and Electronic Equipment Treatment and Recycling Facility

ABSTRACT

There has been a major increase in the presence of technology not only in Kenya but the world. It has led to the revolution of various people's lives creating a large impact. An example of this is the smartphone which has made it easier to access various sectors such as the banking sector, health, and media. Due to this, there is a large market for the consumption of such goods. However, the question we should ask ourselves as the consumers of such goods is after we dispose of them and mark them as waste how is it managed? What governmental organization deals with the management of this electronic waste? and what statutory legislation deals with this waste? The current legislation, The Environmental Management and Coordination Act 1999 (EMCA), that Kenya relies on to deal with waste management does not provide for electronic waste and only slightly hints at it through other provisions. The purpose of this proposal is to highlight the inconsistency in statutory provisions when it comes to e-waste management. The research will employ the use of doctrinal legal research by studying the statutory provisions of other countries regarding the management of e-waste and specifically pinpointing the statutes that may be applied in Kenya to mitigate the problem. The topic of research is important as it will help bring up creative solutions for the problem of e-waste management that may be employed by various legislators.

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CHAPTER 1:

INTRODUCTION

Waste generation is an unavoidable activity that occurs on a local level among households as well as on a national level through industrialization.[1] Due to this, the management of the waste produced has become an important concern for not only the people but for governments as well. Article 42 of the Kenyan Constitution states that every person has the right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures; and to have environmental obligations fulfilled under Article 70.[2] Article 70 (1) of the Constitution recognizes a clean environment as a claimable right for any member who believes his right to a clean environment has been violated.

In our rapidly advancing technological era, the relentless pace of innovation has led to an unprecedented proliferation of electronic devices. However, a major result of this technological revolution is the alarming increase in electronic waste, commonly known as e-waste. As consumers all around the world embrace the latest gadgets i.e. smartphones, laptops, tablets, and refrigerators etc., the question arises: Where do these discarded electronic devices end up?

The major issue with the innovation of electrical and electronic equipment (EEE) is that most of them have a short life span and may be considered a challenge or expensive to repair hence becoming e-waste. The statistics show that there has been a rapid increase in the production of this waste. In 2021 it was measured to be at 57.4 million Metric Tons (Mt) and is expected to have increased by 30 Mt by 2030. Moreover, there is 347 Mt of e-waste that is un-recycled.[3] Moreover, only 14.7% of electronic waste is known to be collected and recycled.[4] Kenya is also affected by this its ICT industry is growing rapidly however there is a lack of policies or legislative framework within the country.

On a national scale, Kenya only has a draft regulation as well as guidelines to deal with the issue of electronic waste management. As much as it is considered a step in the right direction it is further taking a long time to enact this legislation which allows for an increase in the

[1] Kofi Asante Duah, A Paradigm of International Environmental Law: The Case for Controlling the Transboundary Movements of Hazardous Wastes, vol 27, no. 6, 2001, 780

[2] Article 42, Constitution of Kenya (2010)

[3] -<https://weee-forum.org/ws_news/international-e-waste-day-2021/> - on 24 February 2025

[4] -<https://weee-forum.org/ws_news/international-e-waste-day-2021/> - on 24 February 2025

percentage rate of e-waste produced while being mismanaged.[5] On a global scale, one of the laws that protect the environment and promote its sustainability is the Basel Convention which controls the transboundary movement of hazardous waste and its disposal, however, it does not comprehensively address the challenge posed by electronic waste.

This paper undertakes a thorough analysis of the escalating e-waste crisis emphasizing the serious environmental ramifications Moreover, it emphasizes how urgently strong legislative frameworks are needed to rectify the present shortcomings in disposing of electronic trash. Investigating this important matter functions as a spur for drafting and improving laws that can lessen the negative effects of e-waste on the environment.

BACKGROUND

A GENERAL OVERVIEW

There are various types of waste which are grouped into various categories such as: solid, liquid, and gaseous through open-burning. However, it has been stated that of all the possibilities listed above, solid waste (SW) is the most pressing worldwide issue in terms of management and environmental impact. The mismanagement of this waste has been identified as one of the major inhibitors of Sustainable development goals (SDG).[6]

In this paper, we will focus on E-waste as it is one of the rapidest -growing solid waste. It is expanding the quickest in the world, hence extensive regulatory measures must be put in place to handle and control its management, disposal, and recycling. Ensuring the sustainable treatment of electronic trash, avoiding unlawful disposal, and encouraging ethical behaviours may all be greatly aided by legislation.

The past of e-waste disposal can be tracked back to the mid 70's to be specific 1976. During this year the Resource Conservation and Recovery Act (RCRA) was passed to ensure that it was illegal to dump e-waste in the United States. In the late 1980s, various companies applied for their hazardous waste to be shipped overseas and it was granted. Later on, in 1989, the Basel Convention was held where laws on the cross-border movement of waste were regulated.

[5] Omwenga. E, Otieno Ibrahim, E -Waste Management in Kenya: Challenges and Opportunities, Journal in emerging trends in computing and management science 12(16), 662, 2012

[6] Navarro. F, Vincenzo. T, Waste Mismanagement in Developing Countries: A Review of Global Issues, International Journal of Environmental Research and Public Health, 2019, -<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6466021/#B12-ijerph-16-01060>- on 22nd December 2023

It also created the liability countries would incur to each other for certain acts of mismanagement of waste.

On a global level, statistics show that the amount of electronic waste in 2024 is rising five times faster than documented in previous years. Currently, it has been noted that there is an increase of 2.6 million tons annually of e-waste and by the year 2030 it is predicted to reach 82 million tons. The major challenge with e-waste is that there is a larger consumption of electronics now than before which have short life cycles or limited repair options. However, several countries have created enacted laws that cater towards the management of e-waste.

There currently five countries leading with their e-waste management policies such as Kazakhstan which created a new law which mandates that that e-waste collection be separated from the collection of general waste. It further promotes for proper recycling practices. Switzerland is another country with similar practices.[7] It is known to have one of the best e-waste recycling practices. On top of this the government has taken it upon its hands to guarantee that the producers of electronics are held accountable for the recycling of their products. Foot.[8] South Korea has also set an example by its endeavour to manage e-waste. South Korea has opted to create public-private partnerships where the government has decided to partner with private organizations to set up recycling centres throughout the country. Hong Kong is also another country that has endeavoured to bridge the gap in e-waste management by applying laws that mandate large electronic appliances such as televisions to be recycled hence improving the recycling rates.[9]

When we narrow down into Africa there seems to be a larger problem as several countries do not have laws regarding the matter of management of e-waste. Africa is among one of the fastest growing mobile phone and electronics market which keeps increasing annually. The amount consumed is equivalent to 60% of Africa's GDP and is expected to double by the year 2030.[10] The United Nations further noticed that the impact of technological advancement weighed more on developing countries as they were being used as a junk yard or dump for electronic waste under the guise of selling second hand goods. [11] One of the countries in Africa

[7] -<https://www.weforum.org/videos/countries-leading-recycling-e-waste>- 0n the 28th August 2024

[8]-< https://reecollabb.com/8-countries-leading-the-way-in-e-waste-recycling/-> on 28th August 2024

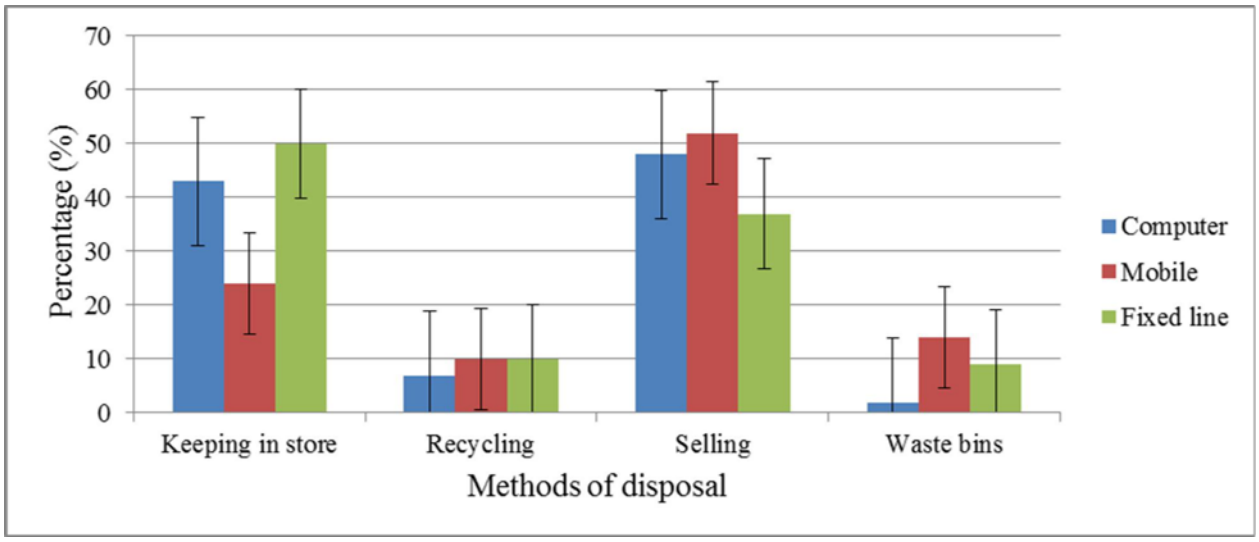
[9] < https://reecollabb.com/8-countries-leading-the-way-in-e-waste-recycling/-> on 28th August 2024

[10]-<https://www.ellenmacarthurfoundation.org/circular-economy-in-africa-e-waste >- on 14th September 2024

[11] -<https://www.theafricareport.com/355569/how-can-africa-stop-itself-being-used-as-an-e-waste-junk-yard/ >- on 28th Aug 2024

that has made great strides in fixing the challenge that e-waste imposes is Rwanda. In the year 2020 it had created several amenities for the management of electronic waste.[12]

In Kenya we are plagued by the same problems where electronic waste is becoming a main source of our waste component which is an estimated 51,300 tons generated annually while or recycling rates remain low as shown in the figure below.[13]



This is because of various reasons such as the current legislation around the matter and the increase in electronical gadgets in the country. There is a large accumulation of second-hand electronic goods from foreign countries that are transported to Africa under the disguise of selling them at cheaper prices despite them having a shorter life span forcing the people to replace the gadgets continuously. The Basel laws which were meant to help control the transboundary movement of environmental waste are limited to hazardous waste and do not adequately provide for e-waste. It further identifies what e-waste is but does not go any further to direct how it shall be managed. It therefore leaves this gap to be dealt with as countries deem fit. The essential claim of this paper is that the laws at present are not capable of to cater for the problem. The purpose of this study is to suggest a way in which the problem of increase in e-waste may be dealt with by finding solutions that tackle this problem at the roots. The solutions will then create a path or a clear guideline on how e-waste is to be handled. By doing this we create a formal and legal way to deal with the waste.

[12]-< https://eridirect.com/blog/2022/08/countries-with-e-waste-legislation-in-2022/>- on 28th Aug 2024

[13]-<https://apnews.com/article/electronic-waste-kenya-united-nations-ewaste-environment-e37667e5a6b08fe8ef161d386eb3404d# >- on 28th Aug 2024

PROBLEM STATEMENT

Majority of the issue surrounding the topic of electronic waste stems from the increase in use of technology. Currently everyone owns a type of electronic gadget be it a phone, laptop, tablet washing machine, fridge etc. However, the rate at which we replace these devices are higher than the rate of how they are managed. This then leads to a lot of e-waste which has not been handled. Ideally, when such waste is created it is meant to be managed in an efficient way such as recycling so as to conserve the environment. Another problem regarding e-waste is that there are no concise laws surrounding the matter. In regards to this the research proposes that we compare and contrast laws of other nations and draw the useful points and apply them to our country to better manage e- waste, the damage that would be posed by the increase in electronics hence no laws sufficient enough were created to cater for the problem. As various countries realized this, they each started to make rules and regulations to cater to the problem. As much as this was an adequate solution to the problem it led to various legislations on the matter and not one unified legislation. This also applies to Kenya, as a country we suffer from the influence of technology and digitization which results in the accumulation of e-waste.[14] There are several regulations put set up to cater for e-waste however, it has been identified that the majority of electronic waste has been dealt with by informal structure and not formal structures. Thus, showing that the legal system backing e-waste is not sufficient enough to deal with this problem and there needs to be some development in the legal sector

RESEARCH OBJECTIVES

The main aim of carrying out this research is to:

a) Firstly, identify whether the legislative and institutional framework in Kenya of e-waste in place are sufficient to cater to the increasing issue of electronic waste pollution in the country.

b) From the analysis of the legal and institutional framework, show how the gaps are contributing to the e-waste problem in Kenya the paper aims to identify the legal gaps present in the laws in Kenya.

[14] Cheshmeh .Z, Eqbalpour. Z, Kowsari. E, Ramakrishna. S , Gheibi. M , A comprehensive review of used electrical and electronic equipment management with a focus on the circular economy-based policy-making, 389 (1), 2

c) The research paper aims to compare and recommend the various ways in which Kenya can apply the laws that have been created in other countries to mitigate the problem of e-waste to its laws on e-waste pollution.

d) Lastly the main purpose of pursuing this is to solve the increasing problem of e-waste by helping in the advancement of environmental governance around e-waste regulation

RESEARCH QUESTIONS

Consequentially there are other questions that we may need to solve for us to reach a suitable argument. The key research questions that need to be asked include:

i) What is the current legislation in regards to management of e-waste in Kenya and its efficiency?

ii) What are the laws applicable in a country of best practice in relation to e-waste and their influence in the management of the waste?

iii) What lessons can be drawn from other countries legal doctrines and practices to tackle the gaps presenting Kenya's legislation and management of e-waste?

With the guidance of these questions, we will ascertain whether the laws suggested are capable of filling the loophole made by the current laws.

HYPOTHESIS

Application of electronic waste legislation in Kenya will lead to a significant reduction in electronic waste pollution levels and improve environmental sustainability by promoting proper disposal, recycling, and management practices. Additionally, strengthened regulatory frameworks will enhance stakeholder compliance, resulting in more effective mitigation of e-waste pollution and a reduction in associated environmental and health risks.

SIGNIFICANCE OF THE RESEARCH

The value of this study rests in its examination of the ongoing issues associated with e-waste disposal, despite the existence of laws and rules controlling this subject. By delving into the underlying reasons for these ongoing issues, the study aims to identify specific gaps within existing legislation and waste management practices, particularly concerning electronic waste. Legislators stand to benefit significantly from the findings of this research, as it will provide crucial insights into where legal frameworks may fall short in effectively addressing e-waste challenges. By pinpointing these deficiencies, policymakers can then tailor interventions and

reforms to bolster e-waste management efforts, thereby mitigating environmental risks and promoting sustainable practices.

THEORETICAL FRAMEWORK

The theories that relate to the effective control of electronic waste can be used to understand why waste management is essential. The first theory is the theory of strong sustainability which was developed by the Greifswald approach after many years of cooperation with environmental philosophers and ecological economists. This theory seeks to unite ethical arguments for present and future generations in terms of sustainability. Strong sustainability is founded on the notion that natural capacity must be protected on a global, continental, and national scale in order to respect future generations.[15]In the context of mitigating the environmental and regulatory challenges posed by e-waste in Kenya, the strong sustainability theory underscores the importance of adopting holistic approaches to e-waste management that go beyond mere compliance with regulations.

The strong sustainability theory emphasizes the finite nature of natural resources, including minerals and metals used in electronic devices.[16] Therefore, it calls for strategies that prioritize resource conservation through measures such as product design for longevity, In the context of electronic waste management in Kenya, this could involve implementing extended producer responsibility (EPR) schemes that incentivize manufacturers to design products with minimal environmental impact and promote the circular economy principles of reuse and recycling.[17]

Central to the strong sustainability theory is the idea of protecting ecosystems and biodiversity to ensure the resilience and stability of natural systems.[18] In Kenya, inappropriate e-waste disposal and recycling procedures can cause both soil and water contamination, air pollution, and harmful affects on human health and ecosystems.[19] Strong sustainability principles argue for severe laws and enforcement mechanisms to reduce damage to the environment and encourage environmentally friendly waste management techniques,

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[15] -<-https://literatur.thuenen.de/digbib_extern/dn046915.pdf >- on 21st February 2025

[16] -<-https://literatur.thuenen.de/digbib_extern/dn046915.pdf >- on 21st February 2025

[17] -<-https://literatur.thuenen.de/digbib_extern/dn046915.pdf >- on 21st February 2025

[18]-<https://literatur.thuenen.de/digbib_extern/dn046915.pdf>- on 21st February 2025

[19] Rath P, Jain. H, Choudhury. M, Exploring the effects of e-waste on soil, water quality and human health Discover Civil engineering 2(12), 1-5, 2025

The strong sustainability theory emphasizes the importance of social equity and justice in environmental decision-making.[20] In the case of electronic waste management in Kenya, this means tackling the disproportionate weight of environmental pollution by marginalized populations, such as informal e-waste recyclers and citizens living near disposal sites. Policies and interventions guided by strong sustainability principles should prioritize the protection of vulnerable populations.[21]

A further crucial aspect of the strong sustainability theory is the principle of intergenerational equality, which maintains that current generations have a moral obligation to safeguard natural resources and ecosystems for the benefit of future generations.[22] In the case of electronic waste management in Kenya, this entails putting in place laws and practices that limit the long-term environmental and health repercussions of e-waste disposal while encouraging sustainable consumption and production habits. Strong ecological principles that promote the lasting well-being of both current and future generations guide efforts to address the environmental and regulatory challenges posed by e-waste in Kenya in a comprehensive and integrated manner.

LITERATURE REVIEW

There have been various attempts throughout the years to elaborate on what the problem with e-waste exactly is. Other than high consumerism which is the first reason for its increase it is essential to understand why it is being mismanaged to the extent that it is.[23] However, one of the biggest challenges is that most articles and journals have been written on the concept of the impact the massive production has on e-waste or the recycling systems that may be put in place. Very few authors have looked at the legislation in place to tackle the problem at hand. It has been concluded that E-waste is one of the fastest-growing sources of waste in the world.[24]

The government has undertaken a number of initiatives to tackle the electronic waste problem. They have, nonetheless, experienced a number of disadvantages. The lack of a legislative framework and the loose enforcement of current regulations are two of the main disadvantages. The National Environmental Management Authority defined target groups for e-waste disposal

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[20] Rath P, Jain. H, Choudhury. M, Exploring the effects of e-waste on soil, water quality and human health Discover Civil engineering 2(12), 1-5, 2025

[21] -<https://literatur.thuenen.de/digbib_extern/dn046915.pdf>- on 21st February 2025

[22] -<https://literatur.thuenen.de/digbib_extern/dn046915.pdf>- on 21st February 2025

[23] Shivam N, Rohit J, Singh R, A different approach to electronic waste handling 46 'A Review' 3, 1519- 1525

[24] Garlapati. V, E-waste in India and developed countries: Management, recycling, business, and biotechnological initiatives, 54 'Renewable and sustainable energy reviews' , 2016, 881

in Kenya. These categories comprised customers, government entities, manufacturers, importers, assemblers, distributors, and refurbishers and recyclers.

The Rio Declaration of 1992 and the Nairobi Declaration on the Environmentally Sound Management of E-waste, focused on the needs of developing nations, are just a few of the conventions and policies that NEMA used as guidelines when creating its laws. However, even with all these laws and principles guiding the management of electronic waste is still a reoccurring issue. Jecton Anyago observes that the majority of these sources deal with dangerous compounds, but it does not define how they should be dealt with in terms of e-waste management. However, we have to keep in mind that this legislation is still a draft in the making and has not been passed. Jecton Anyango in his paper asserts the above statements to be true. In his research paper, he claims that there is an inadequacy in the policy framework that addresses the issues of collection and the management of e-waste.[25]

He further identifies countries that have managed to deal with e-waste management and draws lessons on them on how to draft the ideal regulatory framework. The countries include South Africa and China. South Africa was creating a national electronic waste recycling compliance plan to guarantee that the framework conditions were conducive to effective technology transfer.[26]

However, Rolf Widmer produces insight that as much as electronic waste is a growing problem it is also a business prospect.[27] In the past before the ban was put in place in China to not import waste materials into the country, they bought waste from industrialised countries such as the United States and Europe.[28] This proved to be a fantastic economic enterprise since e-waste contained precious metals and extracting them from various devices became a successful industry. However, he is one of the few scholars that investigates legislation as a possible source of this quick increase.

It provides insight into the laws and initiatives that initially planned to assist in managing these growing quantities of e-waste. He concludes that the international legislation developed

[25] Jecton. A and Timothy. M Towards an e-waste management Framework in Kenya, 15(5) 2013, 99-113.

[26] Jecton. A and Timothy. M Towards an e-waste management Framework in Kenya, 15(5) 2013, 99-113.

[27] Rolf. W, Heidi. O, Max. B, Global perspectives on e-waste Volume 25, issue 5, Environmental impact assessment review, 436

[28] Rolf. W, Heidi. O, Max. B, Global perspectives on e-waste Volume 25, issue 5, Environmental impact assessment review, 436

following the Basel Convention seems to face various difficulties in trying to enforce a global prohibition on the transboundary movement of electronic waste. [29]

Rashmi Anoop Patil handles this issue effectively in his paper. The article serves as a comment on both the advantages and cons of the diverse electronic waste laws in numerous nations and their implementation. The article further proposes an e-waste management system catering to the requirements of both developed and non-developed. This has been illustrated by various countries such as Taiwan, South Korea, Australia etc. [30]

METHODOLOGY

The main method of research for this study will be doctrinal legal research. Doctrinal legal research entails studying the law as it is. It involves looking at the current state of the law and the legal rules and principles applicable. The main sources of this law are statutory materials, case reports, reference books etc. This method of research is appropriate as it involves looking at a set of legislations to depict what they are saying and whether they apply to the issue of e-waste in Kenya. As well as other foreign countries and later analyses what may be adopted by Kenya to solve the issue. Its main purpose is to dissect any inconsistencies and uncertainties in law.

ASSUMPTIONS

The researcher assumes that this study will be challenging owing to the lack of laws to cater for electronic waste. However, the challenge is essential as the researcher assumes that dealing with the problem at hand would help with the creation of efficient solutions.

LIMITATIONS

This research is limited by various factors. The first constraint is that e-waste as a problem is on a global scale, however, the research requires that it be narrowed down to Kenya. Moreover, the research is only to take a short period, hence it does not allow the researcher to do extensive research on the problem and its solution.

CHAPTER BREAKDOWN

[29] Rolf. W, Heidi. O, Max. B, Global perspectives on e-waste Volume 25, issue 5, Environmental impact assessment review, 436

[30] Anoop. P, Ramakrishna. S, A comprehensive analysis of e-waste legislation worldwide Environmental Science and Pollution Research; Heidelberg Vol. 27, Iss. 13, (May 2020)

The thesis will have a sum of five chapters that will cover the introduction to the conclusion of this research topic in an attempt to clearly explain the problem and give solutions that may be applied to solve this problem. The chapter breakdown would be as follows:

Chapter 1: Introduction

The chapter will give a brief introduction to the research to enable an understanding of waste management and the problems it creates. It will further lay out the background of the study to enable the reader to understand the history of electronic waste management. It will contain a clear statement problem which will explain why electronic waste is one of the major problems and why it should be dealt with immediately.

Chapter 2: Review of Local laws circulating the management of electronic waste in Kenya

This chapter will look at all of the regulations that have been implemented to address the issues posed by electronic trash (e-waste) and evaluate their efficacy in minimizing the problem. By examining different legal frameworks, the chapter hopes to emphasize both the merits and limitations of present rules. The debate will provide a critical review of how successfully these regulations are implemented, their effects on decreasing e-waste, and any gaps in their implementation. Finally, this research will help to deepen our understanding of the function of legislative measures in fighting e-waste and identify possible areas for change.

Chapter 3: Evaluating Global E-Waste Regulations: Lessons from International Practices

This chapter will delve into the examination of various sources of law, including legal principles, statutes, and specific provisions from different countries, all of which are designed to manage electronic waste (e-waste). By exploring these diverse legal frameworks, the chapter aims to provide a comprehensive understanding of how different nations approach the complex issue of e-waste management. This analysis will include a detailed comparison of the legal strategies employed, highlighting the principles that guide these laws, the statutes that enforce them, and the specific legal provisions that address the unique challenges posed by e-waste. Tally.

Chapter 4: Presentation of findings

This chapter aims to build upon the analysis presented in the previous chapter, which focused on the regulatory frameworks for e-waste management in various countries. By dissecting the insights gained from those global practices, this chapter seeks to extract key lessons that can be applied to the Kenyan context. The objective is to explore how successful strategies and legal provisions from other nations might be adapted or integrated into Kenyan law to more effectively address the pressing issue of e-waste.

Chapter 5: Conclusion and Recommendations

The final chapter will synthesize the findings from the preceding chapters, and concluding the viability of adopting foreign legal frameworks to address the electronic waste challenges within Kenya. By critically evaluating the insights gained from the analysis of international laws and their application, this chapter will assess whether integrating these foreign elements into Kenyan legislation offers a practical and effective solution for managing e-waste.

CHAPTER 2: REVIEW OF LOCAL LAWS CIRCULATING THE MANAGEMENT OF E-WASTE IN KENYA

The management of electronic waste in Kenya is becoming increasingly important as a result of the expanding usage of electronics and the possible environmental and health problems connected with incorrect disposal. The country has taken attempts to address the issue by implementing a variety of legislative frameworks, regulations, and programs targeted at controlling electronic waste.

Kenya is a party to several international legal frameworks addressing e-waste management, including the Basel Convention and the Bamako Convention, which regulate the transboundary movement and importation of hazardous waste.[31] These international treaties provide guidelines to ensure environmentally sound disposal and management of waste. Regionally, Kenya is part of the East African Community (EAC), have which has developed strategies to address e-waste issues. For example, the EAC Regional E-waste Management Strategy promotes harmonized policies and practices among member states to strengthen e-waste management.[32]

At the national level, Kenya has instituted its legal frameworks to manage e-waste, such as the Environmental Management and Coordination Act (EMCA) and E-Waste Management Guidelines issued by the National Environmental Management Authority (NEMA).[33] These local laws provide regulatory oversight and promote principles like Extended Producer Responsibility (EPR).[34] However, challenges such as weak enforcement, lack of infrastructure, and limited public awareness remain. Collectively, these international, regional, and local frameworks aim to address the growing e-waste problem.

International laws

Internationally, Kenya's commitment to managing e-waste responsibly is evident through its participation in key global and international treaties. the primary international frameworks for the regulation of hazardous wastes, and in extension e-waste, is the **Basel** Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the

[31] The Basel Convention On The Control Of Transboundary Movements Of Hazardous Waste And Their Disposal: Should1he Untied States Ratify The Accord?, Vol. 6, 1, 268-270

[32] East African Community, Regional E-Waste Management Strategy,

[33] Section 12, Environmental Management and Coordination Act (EMCA), CAP 387, 2012

[34] Section 13, Sustainable waste management Act

Bamako Convention.[35] In 2000, Kenya accepted the Basel Convention. The Basel Convention aims to decrease the cross-border transfer of hazardous waste, including e-waste, mostly from industrialized to developing nations. It mandates member nations to guarantee that hazardous waste is generated, collected, transported, and disposed of in an ecologically responsible way. According to Article 1 of the treaty, wastes that are prone to transboundary migration constitute "hazardous wastes". Furthermore, they are subject to the classification in the annexes contained within the treaty. The Basel Convention, notably its annexes, provides precise laws for the categorization, processing, and international movement of electrical and electronic waste (e-waste). In Annex VIII, e-waste containing hazardous materials—like certain heavy metals and flame retardants—is designated as hazardous under entry A1181, meaning its transboundary movement is strictly controlled and subject to prior informed consent (PIC) to prevent environmental harm in importing nations. Annex IX, which used to include the entry for non-hazardous electronic scrap, has also been updated. In the annexes Exemptions are made for EEE intended for reuse, thus reducing hazardous waste formation and extending the life of EEE. The Basel Convention's amendments aim to minimize illegal trafficking and ensure that hazardous e-waste is managed in an environmentally sound manner, especially in developing countries that may lack disposal infrastructure. These provisions are part of a broader strategy to promote recycling and resource recovery, alongside controlling export to regions without the capacity for safe handling

This means that Kenya by being part of the convention must adopt policies that prevent the dumping of e-waste within its borders by other countries and ensure proper disposal of its waste. The Convention also promotes the principle of prior informed consent (PIC), ensuring that hazardous waste cannot be moved across borders without the full knowledge and approval of the receiving state.[36]

The Basel Convention faces significant challenges in Kenya, primarily due to weak enforcement capacity.[37] Although Kenya is a signatory, monitoring the transboundary movement of electronic waste remain problematic. Limited resources, weak border controls, and occasional corruption make it difficult to track illegal shipments of electronic waste into the country. Furthermore, Kenya lacks adequate infrastructure and technical expertise to ensure

[35] https://pmc.ncbi.nlm.nih.gov/articles/PMC8817158/

[36] Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Basel, 22 March 1989

[37] Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Basel, 22 March 1989

that the e-waste imported for recycling or refurbishment is handled in an environmentally sound manner, as required by the Convention.[38] This creates gaps in managing the growing volume of hazardous e-waste entering the country.

To assist fulfill the purpose of the Basel treaty, the treaty urges parties to form regional, multilateral, and bilateral agreements on hazardous waste, resulting in the Bamako Convention (1998).[39] The Bamako Convention on the Ban of Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa was established to provide stricter guidelines for African countries.[40] Kenya, as a party to the Bamako Convention, commits to banning the importation of hazardous waste, including e-waste, into the country. Unlike the Basel Convention, which allows some regulated movement of waste under controlled circumstances, the Bamako Convention strictly prohibits all imports of hazardous waste, reflecting Africa's position on the dangers of becoming a dumping ground for e-waste from wealthier nations. This treaty reinforces Kenya's responsibility to ensure that no electronic waste is dumped into its borders from other regions.

The Bamako Convention, which is stricter by completely banning the import of hazardous waste, also faces hurdles in Kenya. Enforcement of this treaty is challenging, as the country lacks robust systems to prevent illegal e-waste imports. Smuggling of used electronics under the guise of donations or second-hand goods remains a persistent issue, often bypassing regulatory checks. This is mainly because the Bamako convention unlike the basal convention does not have specific provisions on issues of electronic waste.[41] Additionally, Kenya struggles to process its e-waste properly, creating further stress on a system already incapable of managing the increasing e-waste volumes domestically.

Regional laws

Regionally, Kenya is part of the East African Community (EAC), which has developed the EAC Regional E-waste Management Strategy.[42] The electronic waste management strategy aims to decrease the effect of e-waste among EACO member states by 2030. This policy

[38] Katharina Kummer, The Basel Convention: Ten Years on, volume 7 issue 3, blackwell publishers 1998, 1-3.

[39] -<https://pmc.ncbi.nlm.nih.gov/articles/PMC8817158/>- on 24th February 2025

[40] Article 2, Bamako Convention on the Ban of the Import To Africa and The Control of Transboundary Movement And Management of Hazardous Wastes Within Africa, January 30, 1991

[41] -<https://dialogue.earth/en/business/7898-illegal-trade-in-toxic-e-waste-to-rise-sharply-study/>- on 28th September 2024

[42] Regional E-Waste Management Strategy, June 25, 2019

promotes the extended producer responsibility (EPR) principle, which requires electronic device makers and importers to be responsible for their goods' whole lifespan, including e-waste collection, recycling, and correct disposal.[43] The EAC framework encourages member states to establish e-waste collection points, recycling centres for electronic waste disposal. It also advocates for harmonized e-waste policies across EAC member countries, ensuring a coordinated approach to the challenge of managing e-waste in the region. This regional cooperation is crucial for Kenya, as it enables a unified response to the transboundary nature of e-waste challenges, especially when dealing with illegal dumping or cross-border trade in used electronics.

Regionally, the EAC Regional E-waste Management Strategy also encounters implementation problems. Despite promoting extended producer responsibility (EPR) and harmonized policies, Kenya has seen slow progress in enforcing these measures. There is a shortage of facilities for collection and recycling, low public knowledge of safe e-waste disposal, and insufficient funds to assist projects. These challenges, along with inadequate coordination among EAC member nations, jeopardize the strategy's success in addressing the region's rising e-waste issue.

Together, these international and regional frameworks aim to strengthen Kenya’s efforts to manage e-waste sustainably, minimizing environmental and health risks while fostering regional and global cooperation in waste management.

National laws

Kenya's e-waste management is primarily governed by the Environmental Management and Coordination Act (EMCA) of 1999, which serves as the country’s key environmental protection law.[44] The National Environmental Management Authority (NEMA) enforces the legislation, which governs waste management and attempts to guarantee the handling of hazardous waste, including e-waste. The Environmental Management and Coordination Act (EMCA) offers a comprehensive legislative framework for environmental governance, with a focus on environmental protection, conservation, and, finally, sustainable management of the environment's resources. EMCA organizes several sectors that affect the environment and authorizes NEMA to supervise compliance and enforcement, guaranteeing sustainable practices.[45] Additionally, EMCA enshrines environmental rights for all citizens, allowing legal

[43] Regional E-Waste Management Strategy, June 25, 2019

[44] Section 12, Environmental Management and Coordination Act (EMCA), CAP 387, 2012

[45] Section 2, Environmental Management And Co-Ordination (E-Waste Management) Regulations, 2013

recourse when these rights are compromised, and sets out penalties for violations, which NEMA enforces through inspections, fines, and legal actions to deter harmful activities.

Particularly Section 87 of EMCA, mandates the proper disposal of all waste, including hazardous waste Section 87 emphasizes that waste disposal must not harm human health or the environment. However, EMCA lacks specific provisions that address the unique and growing challenges of e-waste, such as the rapid increase in discarded electronics and the need for specialized recycling processes. While NEMA has developed guidelines, such as the E-Waste Management Guidelines (2010), enforcement remains weak due to inadequate infrastructure, limited public awareness, and insufficient legal clarity, which impedes comprehensive and effective e-waste management in the country.

The E-Waste Management Guidelines (2010), developed by NEMA, serve as a crucial resource for managing e-waste in Kenya.[46] These guidelines provide a comprehensive framework that describes best practices for the management, of e-waste, with a particular emphasis on fostering extended producer responsibility.[47] EPR requires that manufacturers and importers be held accountable for the whole lifespan of their goods. This approach encourages companies to build items that are easy to recycle and to develop take-back mechanisms for outdated equipment, therefore encouraging a culture of sustainability.

However, one of the significant shortcomings of the E-Waste Management Guidelines is that it is not still legally binding. This means that while the guidelines provide valuable recommendations, there are no legal repercussions for non-compliance. The lack of stringent enforcement mechanisms limits the guidelines' effectiveness, as stakeholders may not feel obligated to adhere to them. Consequently, this results in inconsistent practices in e-waste add management across the country, with many manufacturers and consumers lacking clear responsibility for how they dispose of their e-waste.

A more comprehensive framework for hazardous waste management in Kenya is offered by the Waste Management Regulations (2006), which provide crucial standards for the handling and disposal of different waste kinds. To guarantee that hazardous waste is disposed of safely and reduce environmental concerns, Regulation 3 expressly mandates that it be segregated. Although this legislation lays the groundwork for appropriate waste management, it falls short in addressing the particular difficulties presented by e-waste, such as the widespread informal

[46] Section 2, Environmental Management And Co-Ordination (E-Waste Management) Regulations, 2013

[47] Section 2, Environmental Management And Co-Ordination (E-Waste Management) Regulations, 2013

recycling methods in many areas. Informal recycling frequently entails risky practices, such as disassembling electronic equipment by hand and burning component parts outdoors, which can release harmful elements into the environment and endanger the health of neighbouring residents and employees.

Moreover, the Waste Management Regulations do not specify the responsibilities of different stakeholders in the e-waste management process, such as local authorities, producers, or consumers. This lack of specificity can lead to confusion regarding who is accountable for managing e-waste effectively. Additionally, the regulations do not include mechanisms for monitoring and reporting on e-waste management efforts, making it challenging to assess the effectiveness of existing practices or to identify areas that require improvement.

In summary, while the E-Waste Management Guidelines and the Waste Management Regulations lay important groundwork for e-waste management in Kenya, their effectiveness is significantly hindered by the absence of enforceable measures, clear accountability structures, and comprehensive strategies to address informal recycling practices. To improve the situation, there is a need for the development of binding regulations that explicitly define responsibilities, establish penalties for non-compliance, and promote safer and more sustainable e-waste management practices.

The Information and Communication Technology (ICT) Policy of 2020 represents a significant step toward addressing the problems associated with electronic waste in Kenya's rapidly evolving digital landscape.[48] The extensive usage of electronic devices and the quick speed of technical development have led to an increase in the amount of electronic waste produced by the ICT sector, which is acknowledged by this policy. The policy specifically highlights the significance of sustainable electronic waste treatment techniques to decrease environmental damage and protect public health.

To facilitate effective e-waste management, the ICT Policy encourages the establishment of **public-private partnerships**.[49] These partnerships seek to capitalise on the advantages of both industries: the resources, creativity, and efficiency of the private sector, as well as the regulatory framework of the public sector. The strategy aims to provide infrastructure for e-waste collection, recycling, and safe disposal through these collaborations. It also calls for

[48]-<https://www.ca.go.ke/sites/default/files/CA/Statutes%20and%20Regulations/National-ICT-Policy-Guidelines-2020.pdf>-on the 13th November 2024

[49] Omwenga . E, Otieno Ibrahim, E-Waste Management In Kenya: Challenges and Opportunities, Journal in emerging trends in computing and management science 12(16), 662, 2012

educational initiatives to increase public knowledge of the environmental risks connected to inappropriate e-waste treatment..[50]

Despite these positive intentions, the ICT Policy of 2020 has notable limitations. Without specific legal requirements, the policy's objectives may be difficult to achieve, as stakeholders may not feel accountable for managing e-waste responsibly. Additionally, the absence of detailed implementation strategies means that the policy does not provide a clear roadmap for how e-waste management initiatives will be executed, monitored, and evaluated over time. This vagueness can lead to inconsistencies in e-waste management practices across the country.

Furthermore, the policy does not allocate specific funding or resources for e-waste management initiatives, which may hinder the establishment of the necessary infrastructure and systems for effective recycling and disposal. As a result, while the ICT Policy sets a commendable vision for sustainable e-waste management, its lack of enforceable measures and specific action plans may limit its effectiveness in addressing the pressing e-waste challenges in Kenya. To enhance its impact, there is a need for the development of accompanying regulations that provide clear guidelines, responsibilities, and penalties for non-compliance, alongside a robust framework for implementation and resource allocation.

The National Solid Waste Management Strategy (2015) represents a concerted effort by the Kenyan government to enhance overall waste management practices, including the critical issue of electronic waste which is under section 2.2.6[51]. By emphasising waste reduction, better collection and disposal techniques, and recycling activities, the strategy seeks to create a framework for the sustainable management of solid waste. The policy acknowledges the growing number of electronic devices entering the waste stream and the related health and environmental hazards by tackling e-waste in this larger framework.

Nonetheless, there are a number of important obstacles in the way of the National Solid Waste Management Strategy's execution. One of the main obstacles is inadequate infrastructure, since many parts of Kenya lack the facilities required for the secure collection, recycling, and disposal of e-waste.[52] The complexity of e-waste necessitates specific treatment procedures to

[50] Omwenga . E, Otieno Ibrahim, E-Waste Management In Kenya: Challenges and Opportunities, Journal in emerging trends in computing and management science 12(16), 662, 2012

[51] -<https://www.ca.go.ke/sites/default/files/CA/Statutes%20and%20Regulations/National-ICT-Policy-Guidelines-2020.pdf>- on 24 December 2024

[52] Omwenga . E, Otieno Ibrahim, E-Waste Management In Kenya: Challenges and Opportunities, Journal in emerging trends in computing and management science 12(16), 662, 2012

extract valuable materials while properly managing hazardous components, which are frequently beyond the capabilities of current waste management systems. The problem is made worse by the lack of approved e-waste recycling facilities, which forces people and companies to use unofficial disposal techniques that are extremely hazardous to the environment and public health.

Additionally, the absence of funding for waste management initiatives hampers the effective implementation of the strategy.[53] Sufficient financial resources are essential for establishing the infrastructure needed to handle e-waste properly, conducting awareness campaigns, and developing training programs for waste management personnel. Without adequate funding, initiatives aimed at improving e-waste management may be under-resourced and unable to achieve their intended goals. Lack of public knowledge about appropriate e-waste disposal techniques is another major issue. [54]Many consumers are ignorant of the possible risks connected to inappropriate e-waste disposal, including the discharge of hazardous materials that can contaminate water and land. Because of this ignorance, there may be a culture of disregard for managing e-waste, when people and organizations throw away electronic gadgets without thinking about the effects on the environment. Campaigns for public education are essential for educating the public about the value of properly disposing of e-waste and promoting involvement in recycling initiatives.

All of these laws and regulations show that Kenya is becoming more aware of the problem of e-waste. However, there are still a lot of gaps in their specificity and enforcement. Effective action has been hampered by the absence of legally binding legislation, transparent accountability systems, and sufficient. The creation of a unified approach that includes strong legislative frameworks, more funding for waste management infrastructure, and extensive public awareness campaigns must be the Kenyan government's top priority in order to overcome these deficiencies. Kenya may achieve significant advancements in the sustainable management of e-waste and the preservation of public health and the environment by doing this.

[53] Omwenga. E, Otieno Ibrahim, E-Waste Management in Kenya: Challenges and Opportunities, Journal in emerging trends in computing and management science 12(16), 662, 2012

[54]Ngethe. D, Influence of Electronic Waste Management Systems in Kenya. A Critical Literature Review Journal of Environment 1(1), 54, 2021.

Challenges in enforcing e-waste management laws in Kenya

The transboundary flow of electronic waste that is passed off as used goods presents a significant legal concern for Kenya. Kenya faces considerable difficulties in implementing these frameworks at its ports and borders, even though it is a signatory to international agreements like the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the Bamako Convention, which specifically address the management of hazardous waste in Africa. The effective regulation of e-waste classified as second-hand goods is complicated by ambiguities and enforcement gaps, despite Kenya's legal obligation under these conventions to prevent the dumping of hazardous waste.[55]

The Basel Convention expressly prohibits the shipment of hazardous waste from developed to underdeveloped nations without prior informed permission. However, the convention's provisions allow for the legitimate sale of used electronic items as long as they are intended for reuse. This legal gap is used by exporters who categorize e-waste as second-hand items, allowing its entry under the guise of reuse while unloading outmoded devices into nations with little e-waste processing capacity.[56] As a result, Kenya regularly gets shipments including obsolete and nonfunctional electronics, which soon end up as rubbish in informal dumpsites, contributing to the country's environmental and health problems.[57]

Under the Bamako Convention, which goes further by banning the import of hazardous wastes entirely within Africa, Kenya holds a stricter legal obligation to curb such imports. However, the convention has limited impact without harmonized enforcement mechanisms at a regional level or within Kenya's own legal framework.[58] Enforcement challenges arise due to Kenya's under-resourced port and border authorities, which may lack the technical expertise or equipment to inspect shipments thoroughly, particularly in distinguishing genuine second-hand

[55] Cheshmeh .Z, Eqbalpour. Z, Kowsari. E, Ramakrishna. S , Gheibi. M , A comprehensive review of used electrical and electronic equipment management with a focus on the circular economy-based policy-making, 389 (1), 2

[56] Cheshmeh .Z, Eqbalpour. Z, Kowsari. E, Ramakrishna. S , Gheibi. M , A comprehensive review of used electrical and electronic equipment management with a focus on the circular economy-based policy-making, 389 (1), 2

[57] Ngethe. D, Influence of Electronic Waste Management Systems in Kenya. A Critical Literature Review Journal of Environment 1(1), 55, 2021

[58] C. Russell H. Shearer, Comparative Analysis Of The Basel And Bamako Conventions On Hazardous Waste, 23(1), No. 1, pp. 141-183

goods from de facto e-waste. This inadequacy leaves Kenya vulnerable to circumventing tactics by exporters and prevents full realization of the convention's aims.

Domestically, the Environmental Management and Coordination Act (EMCA) and NEMA's E-Waste Management Guidelines provide a legislative framework for handling hazardous waste, including e-waste, in Kenya. However, these national rules and recommendations do not include explicit steps to counter the import of used products, exposing a vacuum in Kenya's legal defences against the influx of mislabelled e-waste. Although the EMCA gives NEMA broad jurisdiction to regulate waste management and impose fines for illegal dumping, the lack of explicit, enforceable measures addressing transboundary e-waste adds to the regulatory gap. Without defined laws mandating pre-import inspection, liability assignment, and compliance for imported second-hand items, enforcement agencies have an uphill task in combating illegal e-waste imports.

Furthermore, Kenya's ICT Policy 2020 acknowledges the increase in e-waste but does not address the transboundary challenges associated with second-hand electronic items. The policy promotes responsible disposal and recycling activities in Kenya[59]; however, it lacks a framework for inspecting imports categorized as second-hand. In fact, this creates an imbalance: while Kenya has established internal recycling objectives and disposal procedures, the flood of imported e-waste undermines these efforts and increases local waste management obligations.

Addressing this issue needs Kenya to strengthen its regulatory frameworks with laws that particularly target the transboundary flow of electronic waste disguised as second-hand gadgets. For example, implementing Extended Producer Responsibility (EPR) at the import stage might make importers accountable for managing the lifetime of imported electronics. Kenya might also create more rigorous import rules, such as enforcing functionality verification for imported second-hand electronics or requiring exporters to certify that these items are fully functioning and fulfil minimum usage criteria.

In conclusion, while Kenya has made significant strides in addressing the challenges posed by e-waste through international treaties like the Basel and Bamako Conventions, regional initiatives such as the EAC Regional E-Waste Management Strategy, and national frameworks like EMCA, the E-Waste Management Guidelines, and the ICT Policy of 2020, several gaps

[59]-< https://www.ca.go.ke/sites/default/files/CA/Statutes%20and%20Regulations/National-ICT-Policy-Guidelines-2020.pdf >-on the 13th November 2024

persist. Weak enforcement mechanisms, inadequate infrastructure, and limited public awareness undermine the effectiveness of these efforts. To achieve sustainable e-waste management, Kenya must develop more robust and enforceable legal frameworks, allocate sufficient resources for infrastructure and public education, and enhance cross-sector collaboration to curb illegal imports and promote safe disposal practices. Strengthening these measures is vital to safeguarding the environment and public health while fostering a circular economy.

CHAPTER 3

This chapter examines another country's attempt to regulate this industry by developing and implementing legislative methods to manage e-waste, and draws lessons from these practices to inform Kenya's legal framework. The country that has been chosen as the best practice is China, particularly Hong Kong.

Why Focus on Hong Kong?

Among the countries excelling in this area, Hong Kong stands out for its comprehensive and well-implemented strategies. As a bustling metropolis with a high per capita consumption of electronics, Hong Kong faces challenges similar to those of Kenya, albeit at a different scale. Despite these challenges, Hong Kong has successfully established a system that integrates robust legal frameworks, advanced recycling technologies, and proactive public engagement, making it a valuable case study for Kenya. Hong Kong is a special administrative region (SAR) of China.[60] This arrangement allows Hong Kong to preserve its own legal system, economic policies, and a high level of autonomy, but the Chinese government is responsible for foreign and defence affairs.[61] While Hong Kong is nominally part of China, it has a distinct set of rules and regulations that separate it apart from mainland China. This has enabled Hong Kong to adopt its own set of rules regarding e-waste disposal in the nation.

Hong Kong, with a population of 7.3 million people, was predicted in 2014 to create around 156,000 tons of e-waste per year, ranking among the top in terms of e-waste creation per person at 21.kg per capita (compared to 15.6 kg in Europe and 3.7 kg in Asia). Hong Kong's otherwise excellent ports serve as a hub for unregulated e-waste import-export activities. While mainland China provides an overarching view of the e-waste problem and its large-scale solutions, Hong Kong offers a more localized perspective that resonates with Kenya's context. As a global trade hub, Hong Kong has historically been a major entry and transit point for second-hand electronics and discarded e-waste.[62] The city has faced challenges with illegal e-waste imports and unregulated recycling, much like Kenya does today. However, Hong Kong has turned these challenges into opportunities by establishing progressive legislation, such as the Producer

[60] -<https://www.legalhub.gov.hk/details.php?a=10&v=one-country-two-systems-and-the-basic-law#>- on 25th January 2025

[61] -<https://www.legalhub.gov.hk/details.php?a=10&v=one-country-two-systems-and-the-basic-law#>- on 25th January 2025

[62] Wong. N, Electronic Waste Governance under "One Country, Two Systems": Hong Kong and Mainland China, 15 ' I*nternational Journal of Environment Research and public health*' 11 , 2018, 5-6

Responsibility Scheme (PRS), and investing in centralized recycling facilities like the Waste Electrical and Electronic Equipment Treatment and Recycling Facility (WEEETRF).[63]

Moreover, Kenya and Hong Kong, despite differences in size and development levels, share several key similarities that can justify Hong Kong as a best-practice comparator for e-waste management. Both countries are experiencing rapid urbanization, which leads to increased adoption of electronic devices and consequently higher rates of e-waste generation. In Kenya, urban centres like Nairobi are witnessing growing populations with increasing access to mobile phones, computers, and other electronics, while Hong Kong, a highly urbanized and tech-driven city, already has an established tech industry contributing to significant e-waste accumulation.[64]

One of the most significant factors that contributed to Hong Kong's historical struggle with illegal e-waste trade was its strategic geographical location. Positioned at the crossroads of global trade, Hong Kong has long served as a major logistics and shipping hub due to its well-developed port infrastructure, free trade policies, and close proximity to Mainland China. This unique positioning made it an ideal transit point for the movement of electronic waste, both legal and illegal, leading to its emergence as a global hotspot for e-waste trafficking. Similarly, Kenya currently faces challenges with the uncontrolled importation of used electronics, as its strategic location along the East African trade corridor makes it a key entry point for second-hand electronics, many of which ultimately contribute to the growing e-waste crisis. Hong Kong's success in managing the cross-border flow of e-waste and integrating informal recyclers into formal systems makes it an ideal reference point for Kenya. Its experience in addressing issues like the importation of second-hand electronics and illegal waste trafficking provides Kenya with actionable lessons on policy enforcement and infrastructural development.

Illegal E-Waste Trafficking in Hong Kong

History

Over the decades, Hong Kong's geographical position, advanced logistics infrastructure, and trade connections have made it an attractive destination for e-waste shipments, frequently

[63] -<https://weee.gov.hk/en/background/weee-park-weee-treatment-and-recycling-facility/>-

[64] Kimeli I, Factors Influencing E-waste Management In Kenya: A Case Of Mobile Phones Disposal In Nairobi county, Kenya, University Of Nairobi, School Of Continuing And Distance Education, 2020

originating from developed nations.[65] However, the lack of adequate regulatory frameworks and enforcement mechanisms has led to significant environmental and health challenges. Several cases illustrate the persistent challenges and evolving legal responses in this domain, providing insights into the global e-waste crisis.

One prominent case is United States v. Brandon Richter and Tor Olson (2014), which exposed the illegal export of hazardous e-waste to Hong Kong under the guise of second-hand electronics. Brandon Richter and Tor Olson, operators of Executive Recycling, Inc., marketed their company as an environmentally friendly recycler of electronic waste, claiming that all e-waste was processed domestically.[66] In reality, they exported tons of hazardous materials, including cathode ray tubes (CRTs), to Hong Kong and other countries in violation of U.S. federal laws and international agreements such as the Basel Convention. CRTs contain toxic substances like lead, posing severe risks to both human health and the environment when improperly handled.[67] The case revealed the systemic flaws in monitoring and regulating e-waste exports. This case underscored the necessity of stringent enforcement and highlighted the role of dishonest practices in exacerbating global e-waste challenges.

Another significant case within Hong Kong's jurisdiction is Environmental Protection Department v. Wing Kee Recycling Co. (2015). Wing Kee Recycling Co., a Hong Kong-based company, was found importing hazardous e-waste without the required permits under the Waste Disposal Ordinance (Cap. 354).[68] Investigations revealed that the company operated illegal facilities where electronic waste containing toxic materials such as lead and mercury was dismantled in unsafe conditions. These activities resulted in severe soil and water contamination in surrounding areas, jeopardizing the health of nearby communities.[69] The Hong Kong Magistrates' Court fined the company and mandated stricter oversight and compliance measures for similar operations. This case highlighted Hong Kong's internal challenges in regulating e-waste and the importance of enforcing local environmental laws to mitigate harm caused by unsafe recycling practices.

[65]Siyi L, Yu. B, Ka. L, Zheng C & Ming H, impacts of the influx of e-waste into Hong Kong after China has tightened up entry regulations, Critical Reviews in Environmental Science and Technology, 7-9, 2019.

[66] United States v. Brandon Richter (2017)

[67] United States v. Brandon Richter (2017), Colorado District courts

[68]Environmental Protection Department v. Wing Kee Recycling Co. (2015)

[69] Environmental Protection Department v. Wing Kee Recycling Co. (2015)

A similar scenario unfolded in the United States with United States v. Intercom Solutions (2012),[70] where a company falsely claimed to recycle e-waste responsibly. Intercom Solutions marketed itself as an environmentally conscious recycler, assuring clients that electronic waste would be processed domestically. However, investigations uncovered that the company exported hazardous e-waste, including CRTs, to Hong Kong and other countries in violation of the Basel Convention. Although Intercon Solutions denied the allegations, the U.S. Environmental Protection Agency (EPA) revoked its certifications, effectively ending the company's operations.[71] This case further emphasized the global dimension of e-waste issues and the need for rigorous certification programs and monitoring mechanisms to prevent such violations.

Beyond formal litigation, advocacy efforts and public pressure have also played a pivotal role in shaping e-waste management policies in Hong Kong. For instance, organizations like Greenpeace have been vocal about the government's failure to enforce the Basel Convention effectively. In a hypothetical case often cited in policy discussions, Greenpeace v. Hong Kong Government, activists argued that Hong Kong's lax enforcement of international and local e-waste regulations allowed the territory to become a dumping ground for hazardous materials.[72] The Greenpeace advocacy brought attention to the inadequacies of customs inspections and the loopholes that allowed hazardous waste to enter under the of second-hand goods. Although not a formal court case, this advocacy led to significant policy reforms. These included stricter customs inspections, enhanced monitoring of transboundary e-waste movements, and the establishment of WEEE·PARK, a state-of-the-art recycling facility designed to process electronic waste safely and sustainably.

The evolution of e-waste management laws in Hong Kong reflects broader global concerns and responses. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, to which Hong Kong is obligated by China, is the primary international framework managing hazardous waste. The treaty forbids exporting hazardous waste, including e-waste, to nations lacking the ability to adequately manage it.[73] Despite this, enforcement remains inconsistent, as highlighted by cases like United States v. Brandon Richter and Tor Olson and United States v. Intercon Solutions. These cases reveal how entities

[70] United States v. Intercon Solutions (2012), United States District Court, N.D. Illinois, Eastern Division

[71] United States v. Intercon Solutions (2012), United States District Court, N.D. Illinois, Eastern Division

[72] Stichting Greenpeace Council v Income Team Ltd T/a Green Peace and Other (1996), High Court (Hong Kong)

[73] Katharina Kummer, The Basel Convention: Ten Years on, volume 7 issue 3, blackwell publishers 1998, 1-3.

exploit regulatory gaps and weak enforcement to profit from illegal e-waste exports, often at the expense of developing countries' environments and communities.

The consequences of inadequate e-waste management are profound. Improper recycling and disposal of hazardous materials in electronic waste release toxic substances into the environment, contaminating soil, water, and air. Communities near informal recycling operations, such as those in the New Territories of Hong Kong, face elevated risks of health issues, including respiratory diseases, neurological disorders, and cancers. The cases discussed here underline the critical need for stricter enforcement of existing laws, international collaboration, and investments in sustainable recycling infrastructure.

In recent years, Hong Kong has made strides in addressing e-waste issues, driven by both legal pressures and public advocacy. The introduction of the Producer Responsibility Scheme (PRS) in 2018 marked a significant step forward. The PRS places responsibility on manufacturers and importers of regulated electrical equipment (REE) to ensure proper recycling and disposal of e-waste.[74] Additionally, the development of facilities like WEEE·PARK has demonstrated a commitment to sustainable waste management. However, challenges persist, particularly in addressing illegal imports and ensuring compliance with international and local regulations. Illegal e-waste trafficking poses serious environmental and health risks. Unregulated recycling techniques, typically carried out by informal sectors, release dangerous substances into the environment, such as lead, mercury, and cadmium. The open burning of electronic components to extract precious metals produces toxic fumes that pollute the air and endanger workers' health. These practices are especially prevalent in areas around Hong Kong's ports, where informal recycling operations are concentrated.

The Basel Convention, signed in 1989, seeks to control international traffic in hazardous waste and limit its migration from developed to underdeveloped nations.[75] However, enforcement issues and loopholes in international trade restrictions typically weaken their efficacy. In 2016, Hong Kong was named the world's top destination for illicit e-waste exports from the United States, revealing major enforcement gaps.[76] These shipments frequently contain abandoned

[74] -<https://www.epd.gov.hk/epd/english/environmentinhk/waste/pro_responsibility/index.html>- on the 14 the of November 2024

[75] Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Basel, 22 March 1989

[76] Karacs. S, c, Hong Kong becomes a dumping ground for US e-waste, research finds, South China Morning Post, 19th June 2016, 1-2

electronics that are mislabelled as second-hand gadgets intended for reuse but are, in fact, non-functional junk that must be properly disposed of.

Illegal e-waste trafficking poses serious environmental and health risks. Unregulated recycling techniques, typically carried out by informal sectors, release dangerous substances into the environment, such as lead, mercury, and cadmium.[77] The open burning of electronic components to extract precious metals produces toxic fumes that pollute the air and endanger workers' health. These practices are especially prevalent in areas around Hong Kong's ports, where informal recycling operations are concentrated.[78]

Similar Factors Enabling Illegal Electronic Waste Trade in both Hong Kong and Kenya

The factors enabling illegal electronicwaste trade in Hong Kong are mirrored in various ways in countries like Kenya, where e-waste trafficking and improper disposal have also become significant issues. While the specific contexts differ, the broader dynamics of illicit trade in e-waste can be compared between Hong Kong and Kenya.

Hong Kong's Position as a Free Port and Kenya's Limited Enforcement

Hong Kong's status as a free port with cheap customs taxes is a major reason why e-waste passes through the territory with relative ease, taking advantage of the absence of stringent customs inspections.[79] Similarly, Kenya's strategic location as a key entrance point into East Africa puts it vulnerable to illegal e-waste imports. Although Kenya has signed international accords such as the Basel Convention, which tries to prevent unlawful cross-border movement of hazardous waste, the government still has issues in controlling e-waste imports. Kenya's customs and enforcement authorities have limited resources, insufficient infrastructure, and large import volumes, making it difficult to trace and restrict the flow of unlawful e-waste. As in Hong Kong, e-waste may be mis declared or hidden.[80]

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[77]Oladunni B, Oladayo.A, Environmental and health impacts of unsustainable waste electrical and electronic equipment recycling practices in Nigeria's informal sector, 2(4) Discover chemistry, 2025, 2.

[78] Hyong R, Logistics of the Accident: E-Waste Management in Hong Kong, logistical Asia: The Labour of Making a World Region. Singapore 2018, 17.

[79] -<Http://www.greenpeace.org/hk/press/releases/toxics/2003/08/96293/.>- accessed on 24th january 2025

[80] Kimeli I, Factors Influencing E-waste Management In Kenya: A Case Of Mobile Phones Disposal In Nairobi county, Kenya, University Of Nairobi, School Of Continuing And Distance Education, 2020

The Role of Demand for Raw Materials

Hong Kong's proximity to manufacturing hubs in mainland China drives the demand for valuable materials like copper, gold, and rare earth metals, which are extracted from e-waste. [81]Similarly, Kenya's informal recycling sector plays an important role role in the local economy, driven by the high demand for these raw materials. Informal recyclers in Kenya, often operating in slums or unregulated environments, extract metals from e-waste using rudimentary methods that are harmful to the environment and public health.[82] The growing electronics market in Kenya also increases the volume of discarded devices, creating a steady supply of e-waste for recyclers who prioritize profit over environmental sustainability.

While Hong Kong's proximity to China accelerates the demand for e-waste recycling, Kenya faces its own challenges, where informal and often unsafe recycling practices are spurred by local economic conditions. Despite lacking large-scale manufacturing like China, Kenya's rapidly growing population and the increasing penetration of electronics create a steady demand for materials recovered from e-waste.[83]

Informal Recycling and Environmental Consequences

In both Hong Kong and Kenya, informal recycling practices form a significant part of the e-waste trade. In Hong Kong, informal recyclers often use unsafe techniques like open burning and chemical processing to extract valuable metals.[84] These methods result in hazardous emissions and environmental contamination. Similarly, in Kenya, informal e-waste recycling is prevalent in areas like Nairobi's Korogocho slum, where people dismantle electronics using basic tools and hazardous methods, such as burning cables to retrieve copper. These practices expose workers to harmful substances contributing to severe health risks and environmental degradation.[85] Many people involved in electronic waste recycling lack the necessary equipment and knowledge to handle hazardous materials safely. This situation leads to

[81] Kimeli I, Factors Influencing E-waste Management In Kenya: A Case Of Mobile Phones Disposal In Nairobi county, Kenya, University Of Nairobi, School Of Continuing And Distance Education, 2020

[82]Nigatu. M revisiting e-waste management practices in selected African countries, 70 journal of the air & waste management association 7, 2020, 659-660.

[83] Kimeli I, Factors Influencing E-waste Management In Kenya: A Case Of Mobile Phones Disposal In Nairobi county, Kenya, University Of Nairobi, School Of Continuing And Distance Education, 2020

[84] Nigatu. M Revisiting e-waste management practices in selected African countries, 70 JOURNAL OF THE AIR & WASTE MANAGEMENT ASSOCIATION 7, 2020, 659-660.

[85] Oladunni B, Oladayo.A, Environmental and health impacts of unsustainable waste electrical and electronic equipment recycling practices in Nigeria's informal sector, 2(4) Discover chemistry, 2025, 2.

contamination of environmental sources, further exacerbating public health issues and environmental damage. The lack of formal recycling infrastructure, similar to the informal practices in Hong Kong, contributes to these environmental and health challenges.[86]

Economic Incentives for E-Waste Trade

Both Hong Kong and Kenya face the challenge of economic incentives driving the illegal e-waste trade. In Hong Kong, the financial gains from extracting precious metals motivate informal recyclers to engage in unsafe practices.[87] Similarly, in Kenya, the potential profits from the resale of recovered metals encourage individuals and small businesses to engage in unregulated recycling. The financial rewards in both regions are so significant that they outweigh the risks posed by health and environmental impacts.

Enforcement Challenges

Both regions struggle with enforcing regulations surrounding e-waste. Hong Kong's busy port makes it challenging to inspect every shipment, and Kenya faces similar hurdles in managing the importation of e-waste due to corruption, lack of infrastructure, and insufficient capacity to deal with illegal shipments.[88] In Kenya, the rapid influx of second-hand electronics, often in poor or non-functional condition, makes it difficult for customs authorities to distinguish between legal and illegal e-waste. This has led to an influx of toxic electronic waste, contributing to the growing problem of e-waste in landfills and informal recycling sites across the country.

[86] Kimeli I, Factors Influencing E-waste Management In Kenya: A Case Of Mobile Phones Disposal In Nairobi county, Kenya, University Of Nairobi, School Of Continuing And Distance Education, 2020.

[87] Oladunni B, Oladayo.A, Environmental and health impacts of unsustainable waste electrical and electronic equipment recycling practices in Nigeria's informal sector, 2(4) Discover chemistry, 2025, 2.

[88] Kimeli I, Factors Influencing E-waste Management In Kenya: A Case Of Mobile Phones Disposal In Nairobi county, Kenya, University Of Nairobi, School Of Continuing And Distance Education, 2020

CHAPTER 4

Hong Kong is a leading example of how densely populated regions can manage e-waste effectively despite limited land and resources.[89] This chapter focuses on how Kenya can draw lessons from Hong Kong's innovative approaches to e-waste regulation and management. By examining Hong Kong's legal frameworks, infrastructure, and strategies for handling both e-waste and second-hand electronics, this chapter identifies actionable insights for the Kenyan context.

Hong Kong faces unique challenges due to its role as a regional trade hub and its dependence on imports for electronic goods. Due to this the government has implemented robust policies, including extended producer responsibility (EPR) schemes and regulated second-hand markets, to mitigate e-waste issues. These strategies provide valuable lessons for Kenya, particularly in managing second-hand electronics, which often dominate the African market.

Legislative and Policy Framework for E-Waste Management in Hong Kong

Hong Kong's legislative and policy legislation for e-waste management reflects the city's attempts to balance its role as a global trade hub with its responsibility to address environmental and public health concerns.[90] The legislative and administrative frameworks seek to govern the management of e-waste while adhering to international environmental standards. This section delves into Hong Kong's legislative structure, concentrating on the Producer Responsibility Scheme (PRS), conformity with the Basel Convention, and obstacles in enforcement.

The Producer Responsibility Scheme (PRS), created under the Product Eco-responsibility Ordinance (Cap. 603), is one of the main laws governing the management of e-waste in Hong Kong..[91] This framework demands producers, importers, and distributors of certain electronic items to bear responsibility for the whole lifecycle of their products, including proper disposal and recycling at the end of their usage.[92] The PRS specifically covers items classified as regulated electrical equipment (REE), which include televisions, computers, printers, air conditioners, refrigerators, washing machines, and monitors.[93]

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[89] -< https://www.sciencedirect.com/science/article/pii/S2772737822000098 >- On 21st February 2025

[90] Lundgren. K, The global impact of e-waste: Addressing the challenge, Programme on Safety and Health at Work and the Environment (SafeWork), Sectoral Activities Department (SECTOR), Geneva: ILO, 16, 2012

[91] Section 2, Product Eco-responsibility Ordinance (2009)

[92] Section 32, Product Eco-responsibility Ordinance (2009)

[93] Schedule 6, Product Eco-responsibility Ordinance (2009)

Producers must register with (EPD) in compliance with the REE Regulation and pay a recycling tax for each regulated item they provide to the local market, as stipulated by Section 33 of the Product Eco-responsibility Ordinance.[94] The charge is designed to cover the costs of proper electronic waste collection and treatment, as well as ecologically responsible disposal. Furthermore, companies must provide a free take-back service, allowing customers to return their old equipment when acquiring a new one.

The implementation of the PRS represents a shift toward a circular economy, emphasizing the recycling and reuse of resources. This system also aligns with the polluter-pays principle, holding producers responsible for the impact of their products.[95] The PRS has been further supported by the establishment of licensed recycling facilities, such as the WEEE·PARK, which employs technology to treat and recycle e-waste in an environmentally friendly manner.

Other relevant regulations include the Waste Disposal Ordinance (Cap. 354), which oversees the handling, storage, and disposal of waste, including hazardous substances found in electronic waste.[96] Section 20 (A) of the Ordinance purposes to control the movement of waste into and out of Hong Kong it requires that a permit is received to import waste into Hong Kong. The permit is to be issued by the waste disposal authority. This section provides a list of requirements for the permits which includes the reason for the importation of the particular waste. The waste disposal Authority then has the discretion to provide the permit or not.

The Hazardous Chemicals Control Ordinance (Cap. 595) also plays a critical role in regulating e-waste management, particularly the handling of toxic substances such as mercury, cadmium, and lead, which are commonly found in discarded electronics. This Ordinance ensures that the import, export, and use of hazardous chemicals are strictly controlled to mitigate environmental and health risks.[97]

Compliance with International Agreements

Hong Kong's responsibilities under international accords, particularly the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, further influence its laws pertaining to the handling of electronic waste. Adopted in 1989 and ratified by China in 1991, the Basel Convention seeks to reduce the production of hazardous waste,

[94] Section 37, Product Eco-responsibility Ordinance (2009)

[95] Section 16(2), Waste Disposal Ordinance (Cap. 354)

[96] Section 20(A), Waste Disposal Ordinance (Cap. 354)

[97] Section 20(A), Waste Disposal Ordinance (Cap. 354)

guarantee environmentally responsible disposal methods, and control the flow of such garbage across international boundaries where it is barred from reaching the market.[98]

As a SAR of China, Hong Kong is bound by China's commitments under the Basel Convention.[99] As required by the Convention, the city has put in place procedures to control the import and export of hazardous waste. A permit from the Environmental Protection Department is required for any person or organisation wishing to import or export hazardous material in accordance with the material Disposal Ordinance (Cap. 354). Section 20A of the Ordinance explicitly prohibits the import or export of hazardous waste without authorization, with penalties including fines of up to HKD 200,000 and imprisonment for six months.[100]

Despite these measures, Hong Kong has faced challenges in fully adhering to the Basel Convention, particularly in preventing the illegal transboundary movement of e-waste. The city's strategic location and efficient port infrastructure make it a prime transit point for international trade, including illicit shipments of e-waste. Smugglers often exploit regulatory loopholes and misdeclare e-waste as second-hand goods to bypass customs inspections.

By improving cooperation with international organisations like the Basel Convention Secretariat and the United Nations Environment Programme (UNEP), Hong Kong has improved its enforcement capacity to solve these problems.[101] These partnerships have facilitated information sharing, capacity building, and joint operations to combat the illegality that is electronic waste trafficking. Additionally, the city has adopted advanced technologies, such as X-ray scanning systems, to improve the detection of concealed e-waste shipments at ports.

Legislative and Policy Framework for second hand E-Waste Management in Hong Kong

In Hong Kong, the management of second-hand electronic waste is regulated through an extensive legal framework designed to balance the reuse of functional electronics with the necessity of ensuring environmental safety. With rapid technological advancements leading to increasing rates of obsolescence, electronic waste has become a significant global challenge, especially in high-tech cities like Hong Kong. The Waste Disposal Ordinance (Cap. 354) stands

[98] Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Basel, 22 March 1989

[99] MalmberG. L, The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships: Progress? Unpublished LLM Thesis, Lund university, Lund, 2011, 17.

[100] Section 20(A), Waste Disposal Ordinance (Cap. 354)

[101] MalmberG. L, The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships: Progress? Unpublished LLM Thesis, Lund university, Lund, 2011, 17.

as the cornerstone of Hong Kong's e-waste management approach. This ordinance outlines the rules for the import, export, disposal, and recycling of electronic goods, including second-hand electronics, that may either still function properly or be near the end of their valuable life.[102] The main goal is to control the handling of used electronic waste that come with inappropriate disposal of electronic devices and to encourage the reuse of functional ones.

Another important aspect of regulating functional second-hand electronics is the mandatory hazardous material screening.[103] Screening used electronics to make sure they adhere to global regulations like the RoHS Directive (Restriction of Hazardous Substances) is necessary to address this problem.[104] Utilisation of hazardous materials in electrical equipment is restricted by this regulation, and used electronics that include more of these materials than is allowed are not allowed to be sold.[105] The relevant provisions under Section 20A of the Waste Disposal Ordinance empower the government, through the Waste Disposal Authority, to regulate the control of hazardous materials in electronic waste. Additionally, each item must be accompanied by proper documentation indicating its compliance with these safety and environmental standards.[106] The required documentation ensures that all stakeholders involved in the transaction — whether consumers, importers, or regulatory bodies — have access to the necessary information regarding the safety, condition, and compliance status of the devices.

On the other hand, non-functional or near-end-of-life second-hand electronics are treated very differently under Hong Kong's e-waste management regulations. These electronics, which are no longer usable for their intended purpose, are classified as hazardous waste and are subjected to stringent disposal requirements. Such items cannot be sold, resold, or exported as second-hand goods because of the environmental and health risks they pose. Under Section 9 of the Waste Disposal Ordinance, non-functional electronics must be sent to licensed waste management institutions for proper disposal.[107] These institutions are specifically equipped to handle hazardous waste, ensuring that any lethal materials, such as heavy metals and hazardous chemicals, are properly contained and disposed of in accordance with environmental protection standards. For instance, devices like old televisions, computers, or mobile phones that contain toxic substances like lead or mercury must not be disposed of in regular landfills. Instead, they are to be carefully dismantled and processed in licensed facilities, which may extract valuable

[102] Section 20(A), Waste Disposal Ordinance (Cap. 354)

[103] <https://research.hktdc.com/en/article/MTU5MDA5MjMyMQ>- On 21 February 2025

[104] -<https://research.hktdc.com/en/article/MTU5MDA5MjMyMQ>- On 21 February 2025

[105] -<https://research.hktdc.com/en/article/MTU5MDA5MjMyMQ>- On 21 February 2025

[106] Section 20(A), Waste Disposal Ordinance (Cap. 354)

[107] Section 9, Waste Disposal Ordinance (Cap. 354)

materials such as gold, silver, or copper while safely disposing of harmful components. Section 33(e) of the Waste Disposal Ordinance outlines the requirements for licensed waste disposal facilities, specifying that these must meet environmental standards to safely handle and process hazardous waste, including electronic waste.[108]

In Hong Kong, the illegal importation and exportation of non-compliant or defective electronics is a significant issue, particularly as the global trade in e-waste often involves fraudulent labelling or misrepresentation of items as second-hand goods. The regulatory framework aims to tackle this issue by enforcing strict monitoring and inspection measures. Under the Waste Disposal Ordinance, any second-hand electronics that do not meet the required safety and environmental standards are considered illegal imports and are subject to penalties. Section 13 of the Waste Disposal Ordinance outlines the penalties for violating these regulations, which include fines of up to HKD 200,000 and imprisonment for up to two years for individuals or organizations found guilty of engaging in illegal e-waste trade activities. These penalties are intended to deter offenders and to guarantee that those involved in the e-waste market agree with the rules. To further safeguard against the illegal trade of defective electronics, the EPD works in close cooperation with Hong Kong Customs to conduct inspections and monitor the movement of second-hand goods at the border.[109] Section 3 of the Waste Disposal Ordinance authorizes the EPD and Customs to inspect and regulate the import and export of waste, including second-hand electronics, at various entry points. Additionally, the EPD maintains an active function in educating the public concerning the importance of adhering to these regulations and the environmental impact of improperly managed electronic waste. The EPD's Educational as well asOutreach Programs are aimed at raising awareness about proper e-waste disposal methods, recycling, and compliance with the legal requirements.

The enforcement of these regulations is supported by the use of tracking and monitoring systems that help detect discrepancies in the movement of second-hand electronics. For example, advanced technologies such as barcoding and RFID tracking can be used to monitor the flow of electronic goods throughout the import-export process, ensuring that all items meet the required standards before they reach consumers or recycling facilities.[110] This system of oversight not only helps prevent the entry of defective or hazardous second-hand electronics

[108] Section 33(e), Waste Disposal Ordinance (Cap. 354)

[109] -< https://www.customs.gov.hk/en/customs-announcement/press-release/index_id_4374.html >- On 21 January 2025

[110] -<https://www.sciencedirect.com/science/article/abs/pii/S0956053X17308139>- on 21st February 2025

into the market but also supports the collection of data on e-waste volumes, which is essential for refining policies and improving waste management strategies.

Hong Kong promotes public involvement in the appropriate disposal of e-waste in addition to enforcement. Customers can dispose of their old electronic gadgets at easy drop-off locations thanks to programs like the Community Recycling Network.[111] These collection points ensure that even small electronics, such as mobile phones or small appliances, can be properly managed and recycled.

The comprehensive approach to second-hand electronic waste management in Hong Kong serves as an effective model for other regions struggling with the emerging issue of e-waste. By implementing rigorous standards for the import and export of second-hand electronics, Hong Kong has been able to foster a market for reusable goods while minimizing the risks associated with hazardous e-waste. Through strict enforcement, public education, and international collaboration, Hong Kong continues to demonstrate leadership in the global effort to manage e-waste sustainably. By balancing the goals of reuse, recycling, and environmental protection, the city's legal framework ensures that second-hand electronics contribute to the circular economy while safeguarding public health and the environment.

Recommendations

A complete ban on second-hand goods may seem like an effective solution to the challenges posed by electronic waste (e-waste). Although, such a blanket prohibition is impractical for multiple reasons, including economic, social, and environmental factors.[112] By examining the intricacies of second-hand goods regulation in Hong Kong and its successful implementation, similarly In Kenya, electronic waste management faces a unique set of challenges stemming from economic realities, cultural norms, and infrastructural gaps. A complete ban on second-hand goods may appear to simplify the problem, but it would instead create economic, social, and environmental issues that outweigh the benefits.[113] The sectackleond-hand electronics market in Kenya is a vibrant informal sector that employs thousands of people, from importers and traders to repair technicians. These individuals rely on refurbishing and reselling

[111] -<https://www.info.gov.hk/gia/general/202403/18/P2024031500381.htm>- on 21 February 2025

[112]-<https://www.businessdailyafrica.com/bd/corporate/technology/un-body-warns-kenya-against-blanket-ban-on-used-gadgets-4687600>- On 26 February 2025

[113] Omwenga . E, Otieno Ibrahim, E-Waste Management in Kenya: Challenges and Opportunities, Journal in emerging trends in computing and management science 12(16), 662, 2012

electronics to sustain their livelihoods. A blanket ban would disrupt this ecosystem, leading to widespread unemployment and economic hardships. Moreover, in Kenya, technology is an enabler of economic growth, education, and social inclusion. However, the cost of new electronics remains prohibitive for many households. Second-hand goods bridge this gap, allowing underprivileged communities to participate in the digital economy, access online education, and improve their livelihoods.[114]

A system could be put in place where second-hand electronics entering the market are tested for both electrical safety and functional performance. This would include certifications that confirm the devices are free from electrical faults, fire risks, or other safety hazards.[115]

A certification system for refurbishes and resellers of second-hand electronics could be adopted from Hong Kong's model. In Hong Kong, devices that pass safety testing are accompanied by certification documents that ensure their safety and compliance with environmental standards. In Kenya, a similar framework could be introduced, where refurbishes and retailers of second-hand electronics must obtain certification from a recognized body, such as the Kenya Bureau of Standards (KEBS), or the Environmental Protection Agency (EPA).[116] This practice would ensure that Kenya's large informal sector dealing with second-hand electronics maintains a high standard of quality and safety for consumers while preventing substandard or potentially dangerous devices from circulating. This would not only increase consumer trust in second-hand goods but also encourage responsible refurbishing practices, ensuring that products are safe, functional, and meet established quality standards before they enter the market.

Additionally, dangerous substances which can be detrimental to the environment—are frequently found in used electronics. According to Hong Kong's strategy, used electronics must be examined for potentially dangerous materials in compliance with the RoHS Directive (Restriction of Hazardous Substances). Kenya can adopt a similar screening process to ensure that second-hand electronics do not exceed permissible levels of harmful chemicals.[117] Devices that contain excessive amounts of toxic substances should be prohibited from entering the Kenyan market or should be processed by licensed recycling facilities where these materials can be safely removed. This would safeguard public health and reduce the environmental impact of improper disposal.

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[114] Abalansa. S, El Mahrad. B, Icely. J , Newton. A , Electronic Waste, an Environmental Problem Exported to Developing Countries: The Good, the Bad and the Ugly, 13 Earthh sciences 9 , 2021, 3.

[115] -<https://www.hkctc.gov.hk/en/tcsector/ba/eep.html> on 25 February 2025

[116] -<https://www.kebs.org/certification-schemes>- on 25 February 2025

[117] -<https://research.hktdc.com/en/article/MTU5MDA5MjMyMQ >- on 225 Ferbuary 2025

In addition to regulating the sale of functional second-hand electronics, Kenya could develop a clear framework for the disposal and recycling of non-functional second-hand electronics.[118] Non-functional devices should not be sold as second-hand goods but should instead be directed to licensed recycling facilities where they can be safely processed. Hong Kong's approach of treating non-functional electronics as hazardous waste and requiring proper disposal could be adapted to Kenya's context. By establishing designated recycling centres and encouraging the public to return non-functional electronics for recycling, Kenya can reduce the risks associated with improperly discarded e-waste.

Lastly, Kenya can work with Customs to enhance e-waste regulation by implementing stricter importation regulations, ensuring that second-hand electronics meet safety and environmental standards.[119] Customs officers should be trained on identifying hazardous e-waste and recognizing non-compliant goods through specialized workshops and capacity-building programs, possibly in collaboration with international agencies like UNEP. By adopting tracking systems, such as RFID or barcodes, Kenya can better monitor the movement of imported electronics, ensuring that only compliant products enter the market and preventing illegal shipments of hazardous waste.

[118] Omari R, 'THE ROLE OF REGULATORY FRAMEWORK ON E-WASTE IN KENYA: Case of Nairobi County (2010-2022) ' University of Nairobi, 2022 , 60—<https://erepository.uonbi.ac.ke/bitstream/handle/11295/162418/Omari%20Rodney%20Mosomi-%20Project.pdf?sequence=1 > on 25 Ferbuary 2025.

[119] Wong. N, Electronic Waste Governance under "One Country, Two Systems": Hong Kong and Mainland China, 15 ' I*nternational Journal of Environment Research and public health*' 11 , 2018, 16

CHAPTER 5

The final chapter of this research aims to bring together the key findings from the previous sections, focusing on the central objective of assessing whether Kenya can adopt elements of foreign legal frameworks, particularly the jurisdiction of Hong Kong, to enhance its approach to managing electronic waste. At the beginning of this study, the global rise in e-waste was identified as a pressing concern.[120] In Kenya, however, the problem is further compounded by the cross-border movement of discarded electronics, often brought into the country under the disguise of second-hand trade.[121] This influx has placed immense pressure on existing waste management structures, revealing gaps in both regulatory enforcement and policy effectiveness.

My hypothesis is that by evaluating the effectiveness of Kenya's current legal framework in comparison to that of a country with a well-structured e-waste management system, we can identify crucial areas for improvement. This comparative analysis serves as a foundation for refining existing laws that would strengthen oversight and control within the sector. The goal is to establish a legal framework that not only addresses local challenges but also aligns with international best practices to create a sustainable and enforceable method to electronic waste management.

The second chapter of this research examines the laws that are applicable to e-waste management in Kenya at both international and regional levels, assessing their effectiveness in addressing the growing problem. It explores key legal instruments, including the Basel Convention, which governs the inter-country movement of hazardous waste. While Basel laws provide a framework for regulating e-waste disposal, a significant limitation is that they permit the sale of second-hand electronics as long as they are intended for legitimate reuse.[122] This

[120] Park JK*, Hoerning L, Watry S, Burgett T and Matthias S, Effects of Electronic Waste on Developing Countries, Adv Recycling Waste Manag, Volume 2, Issue 2,1-3.

[121] Cheshmeh .Z, Eqbalpour. Z, Kowsari. E, Ramakrishna. S , Gheibi. M , A comprehensive review of used electrical and electronic equipment management with a focus on the circular economy-based policy-making, 389 (1), 2

[122] Cheshmeh .Z, Eqbalpour. Z, Kowsari. E, Ramakrishna. S , Gheibi. M , A comprehensive review of used electrical and electronic equipment management with a focus on the circular economy-based policy-making, 389 (1), 2

loophole has allowed large quantities of used electronics to enter Kenya under the guise of resale, contributing to the country's e-waste burden.

At the domestic level, the legal framework remains inadequate. Despite ongoing discussions and multiple parliamentary reviews, Kenya has yet to pass a dedicated law on e-waste management. The only existing legal instrument in this regard is still in draft form, having remained unapproved since 2013. This legislative gap has left the country without a comprehensive, enforceable policy to control the collection, disposal mechanisms, and recycling of e-waste.

Additionally, one of the most influential legal tools in this area is the Guidelines on the Management of Electronic Waste in Kenya. These guidelines outline best practices for handling e-waste and offer a structured approach to its management. However, a major challenge is that they are not legally binding, meaning both public and private sector actors are not obligated to comply.[123] As a result, enforcement remains weak, and stakeholders in the e-waste sector operate without clear regulatory accountability, further exacerbating the issue.

Chapter 3 identifies Hong Kong as the country of best practice in electronic waste (e-waste) management and examines the legal frameworks, enforcement mechanisms, and policy strategies it has implemented to regulate e-waste effectively.[124] The chapter then takes a deep dive into the factors that historically enabled the illegal trade of e-waste in Hong Kong, identifying parallels with Kenya's current challenges. By understanding the systemic loopholes and enforcement weaknesses that once plagued Hong Kong, this chapter aims to highlight key lessons that could inform Kenya's legal reforms in e-waste management. This chapter outlines that there is a relation between the two countries that enables Kenya to draw its lessons or recommendations from Hong Kong. The major reason being that they both have ports which allow for the access to importation of illegal shipment of electronic waste.

Building on the findings from previous chapters, Chapter Four critically examines the legal measures necessary to improve electronic waste management in Kenya. This chapter emphasizes that without the proper legal infrastructure, Kenya will continue to face significant challenges in regulating e-waste, making it imperative to enact long-overdue legislation and strengthen enforcement mechanisms. One of the key recommendations is enhancing

[123] Wong. N, Electronic Waste Governance under "One Country, Two Systems": Hong Kong and Mainland China, 15 ' I*nternational Journal of Environment Research and public health*' 11 , 2018, 16

[124] Wong. N, Electronic Waste Governance under "One Country, Two Systems": Hong Kong and Mainland China, 15 ' I*nternational Journal of Environment Research and public health*' 11 , 2018, 16

coordination between environmental regulators and customs authorities to prevent the unlawful inflow of electronic waste disguised as second-hand electronics.[125] Since a significant portion of Kenya's e-waste problem stems from transboundary movement, particularly through the Port of Mombasa, customs officials must be equipped with the tools, training, and legal backing to Detect and differentiate between functional second-hand electronics and non-functional e-waste.[126]

By critically assessing the insights gained from international legal systems and practices, this chapter offers a conclusive evaluation of whether foreign elements, if integrated into Kenyan legislation, could offer a practical and effective solution for electronic waste management. Furthermore, this chapter provides recommendations based on the findings, suggesting key strategies for improving electronic waste management in Kenya, as well as evaluating the feasibility of adopting these foreign models in the Kenyan context

Summary of Findings.

The comparative study of the legislative frameworks in Hong Kong and Kenya, several key insights have emerged that provide clarity on the potential benefits and challenges of integrating foreign elements into Kenya's e-waste management system. Hong Kong's experience with its Producer Responsibility Scheme (PRS) offers valuable lessons on how legal frameworks can drive the adequate recycling, reuse, and disposal of electronic waste by holding producers accountable for the lifespan of their products.[127] Hong Kong, further, has a comprehensive legal framework, including the Waste Disposal Ordinance (WDO), which clearly outline responsibilities for manufacturers and importers. This system has been effective in Hong Kong due to its robust infrastructure, stringent enforcement, and clear policies that govern the handling of electronic waste.

In contrast, Kenya's e-waste management framework remains in its infancy. The country grapples with issues such as the influx of second-hand electronics, the lack of efficient infrastructure, and the dominance of the unofficial sector in relation to the electronic waste

[125] Wong. N, Electronic Waste Governance under "One Country, Two Systems": Hong Kong and Mainland China, 15 ' I*nternational Journal of Environment Research and public health*' 11 , 2018, 16

[126] Ngethe. D, Influence of Electronic Waste Management Systems in Kenya. A Critical Literature Review Journal of Environment 1(1), 2021, 55.

[127] -<https://www.epd.gov.hk/epd/english/environmentinhk/waste/pro_responsibility/index.html>- on the 14 the of November 2024

management process.[128]These factors complicate the regulatory landscape and pose significant challenges in managing e-waste effectively. However, the analysis also highlights that adopting certain foreign legal frameworks could offer a solution to these challenges, provided that they are tailored to the unique circumstances in Kenya.

Conclusion

In conclusion, while foreign legal frameworks, such as those implemented in Hong Kong, provide valuable models for e-waste management, their integration into Kenya's legal system is viable but requires careful adaptation. By tailoring foreign elements to the Kenyan context, investing in necessary infrastructure, and strengthening enforcement capacity, Kenya can create a more ecological and effective electronic waste management system. The recommendations outlined in this chapter offer a complete approach to addressing electronic waste challenges, which will help ensure a cleaner, safer environment and promote the circular economy in Kenya.

[128] Wong. N, Electronic Waste Governance under "One Country, Two Systems": Hong Kong and Mainland China, 15 ' I*nternational Journal of Environment Research and public health*' 11 , 2018, 16

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