



E-Waste Dumping in East Africa

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The use of electronic devices has skyrocketed in the last few decades. It is now commonplace not only for individuals and families to own and use electronic devices, such as personal computers (PCs), telephones, and electronic devices of different ranges, but to also dispose of these electronics at regular intervals. This increase in the use of electronic devices in the last decade implies an increase in the number of devices that are being thrown away and, therefore, producing large quantities of waste, known as electronic waste (e-waste). It was estimated that about 500 million PCs reached the end of their service lives and were disposed of between 1994 and 2003.¹

E-waste is, therefore, to be understood as a general term that refers to various forms of electric and electronic equipment, their components, sub-assemblies, and consumables that have ceased to be useful to their owners.² This could range from small electronic devices such as cell phones, music players and laptops to bigger household and industrial devices such televisions, printers, refrigerators, and air conditioners. The United Nations Environment Programme (UNEP) put the amount of e-waste dumped in 2014 at 41 million tons. As of 15 October 2022, *The World Counts*, had recorded almost 40 million tons of electronic waste globally in 2022. If the current trend continues, the amount of e-waste emitted in 2022 can be expected to reach 50 million tons.

E-waste has become a global ecological issue.³ This is especially because only a meagre 12.5% of e-waste is recycled, allowing for huge amounts of e-waste dumping.⁴ The vast majority of e-waste is sent to landfills and incinerators to be burnt. Unfortunately, these electronics contain hundreds of substances that when released into the atmosphere, soil or water become toxic. Examples of the harmful toxins found in e-waste are mercury, lead, arsenic, cadmium, selenium, chromium, hexavalent, and flame retardants.⁵ These toxins may cause brain damage, birth defects, allergic reactions, and cancer. The most affected demographic includes children, pregnant women, the

¹ Rolf Widmer et. al., 'Global perspectives on e-waste' 25 *Environmental Impact Assessment Review* 436 at 437.

² EU. Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE) – joint declaration of the European Parliament, the Council and the commission relating to article 9. Official Journal L037:0024-39 [13/02/2003; 2002a [http:// europa.eu.int/eur-lex/en/](http://europa.eu.int/eur-lex/en/)]

³ Syed Faraz Ahmed, 'The global cost of electronic waste' *The Atlantic* September 29, 2016.

⁴ Sharma Pramila, Fulekar MH and Pathak Bhawana, 'E-Waste – A Challenge for Tomorrow' 1(3) *Research Journal of Recent Sciences* 86-93 at 89; Electronic Waste Facts, *The World Counts*, available online at <https://www.theworldcounts.com/stories/electronic-waste-facts>, accessed October 18, 2022.

⁵ Rolf Widmer et. al., 'Global perspectives on e-waste' 25 *Environmental Impact Assessment Review* 436 at 444; Electronic Waste Facts, *The World Counts*, available online at <https://www.theworldcounts.com/stories/electronic-waste-facts>, accessed October 18, 2022.



elderly, people with disabilities, workers in the informal recycling sector, and waste scavengers.⁶ The dumping and management of e-waste thus have the potential to negatively impact the quality of human life and of the environment.⁷

It is estimated that 75-80% of the e-waste collected in developed countries gets dumped in developing countries, particularly those in Asia and Africa.⁸ Unfortunately, most of the e-waste produced or imported into these developing countries is not properly managed. It is often managed by the informal sector using crude methods including product reuse, crude recycling, disposal in landfills, and burning in open fields.⁹ Given the highly toxic contents of e-waste, these crude methods of managing e-waste pose significant risks to human life and the environment. Furthermore, these electronics often contain materials that causes damage to the central nervous system and kidneys.

To bring it closer to home, in Kenya the e-waste from solar products is expected to be as high as 5,000 tons by the end of 2022 while that from computers and printers is an average of 3,000 tons each year.¹⁰ According to UNEP, the country generates a total of about 44,000 tons of e-waste every year.¹¹ This pattern is similar across other East African countries. In 2019, Uganda generated over 35 million tons of e-waste. The importation of e-waste is at an annual growth rate of 22%.¹² In Rwanda, the amount of ICT equipment increased by 500% between 2010 and 2014, and the growth in the importation of e-waste was estimated to about 5.95% per annum.¹³ The annual generation of e-waste was estimated at 9,417 tons.¹⁴ Similarly, Tanzania generated between 19,841 and 36,376 tons of e-waste in 2013. Computers alone were responsible for about 2,535 tons of e-waste in 2014.¹⁵ It is no longer in doubt that the storage, collection, transportation, and final treatment and disposal of e-waste has become a major problem in urban centres across East Africa.

⁶ Global Green Growth Institute News, Electronic waste management: A promising employment opportunity for youth in Uganda, available at <https://gggi.org/electronic-waste-management-a-promising-employment-opportunity-for-youth-in-uganda/>, accessed November 4, 2022.

⁷ Syed Faraz Ahmed, 'The global cost of electronic waste', *The Atlantic*, September 29, 2016.

⁸ Rolf Widmer et. al., 'Global perspectives on e-waste', 25 *Environmental Impact Assessment Review*, 436 at 442-443.

⁹ Osibanjo, O., & Nnorom, I. C., 2007. The challenge of electronic waste (e-waste) management in developing countries. *Waste Management & Research*, 25(6), 489-501; Schlupe, M. 2009. E-waste management in Africa - Rising up the political agenda, retrieved online from e-waste guide, <http://worldloop.org/wp-content/uploads/2013/08/E-waste-Management-in-East-Africa>, pdf retrieved October 15, 2022.

¹⁰ Sneha Balasubramanian, Dharini Clare and Sarah Ko, 'Off-grid Solar E-Waste Impact and Solutions in East Africa' 9.

¹¹ Rhoda Odhiambo, 'Kenya's e-waste problem', DW April 4, 2018, available at <https://www.dw.com/en/kenya-needs-to-step-up-efforts-to-recycle-e-waste/a-43252169>, accessed October 15, 2022.

¹² Sonny J. Nyeko et. al., 2022, 'Towards a Sustainable Electronic Waste Management in Uganda: A Stakeholder Perspective' 16(6) *African Journal of Environmental Science and Technology*, 238-251 at 239.

¹³ National E-Waste Management Policy for Rwanda 6, available https://climateportal.rema.gov.rw/fileadmin/user_upload/Documents/Policy/NationalE-WasteManagementPolicyforRwanda, pdf accessed October 31, 2022.

¹⁴ National E-Waste Management Policy for Rwanda 6 available https://climateportal.rema.gov.rw/fileadmin/user_upload/Documents/Policy/NationalE-WasteManagementPolicyforRwanda, pdf accessed October 31, 2022.

¹⁵ National Bureau of Statistics and United Nations University, 2019, *National E-Waste Statistics Report 2019*, National Bureau Statistics, Dodoma, Tanzania, United Nations University 2.



1 REGULATION OF E-WASTE IN EAST AFRICA

1.1 International Regulations

East African countries have signed various treaties and passed national laws and regulations to curb the disposal and management of e-waste within their countries. These countries are signatories to treaties such as the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention), the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal (Basel Convention), Bamako Convention on the Ban of the Import to Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (Bamako Convention), Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention), the London Guidelines for the Exchange of Information on Chemicals in International Trade, and the Montreal Protocol on substances that deplete the ozone layer.

One of the most prominent among these treaties is the Basel Convention. All East African countries are signatories to this treaty. The Basel Convention seeks to reduce and manage the transfer of environmentally and socially detrimental hazardous waste from developed countries to other parts of the world.¹⁶ The Basel Convention classifies electronic waste as one of such hazardous waste, thus bringing it within the purview of the convention.¹⁷ The convention recognizes the right of state parties to prohibit the importation of hazardous wastes and provides that other state parties shall comply with such prohibition by ensuring that they do not export hazardous wastes to such prohibiting country.¹⁸ State parties are prohibited from trading in hazardous waste, without prior written notification of consent between the trading partners, and such waste must be managed in an environmentally friendly manner. The Basel Convention includes other obligations such as the duty to reduce the generation of hazardous wastes, ensure the availability of adequate disposal facilities, manage waste in a manner that prevents pollution, minimize transboundary movement, and respect any prohibition by a developing state party of the importation of hazardous wastes.

Second to the Basel Convention is the Bamako Convention. Unlike the Basel Convention, the Bamako Convention does not expressly classify e-waste as hazardous waste. However, it defines hazardous waste to include waste that has certain constituents including metal carbonyls, copper compounds, arsenic, zinc, mercury, and lead; elements that are often present in e-waste. In addition, the treaty allows state parties to further categorise certain substances as hazardous.¹⁹ A state party could, therefore, expressly categorise e-waste or certain types of e-waste as hazardous thus bringing them under the purview of the Bamako Convention.

In line with the need to curb the importation of hazardous wastes, including e-waste, the Bamako Convention creates certain obligations. These include the obligation to develop a legal framework

¹⁶ Preamble to the Basel Convention.

¹⁷ Article 1 read in conjunction with Annex I of the Basel Convention.

¹⁸ Article 4 of the Basel Convention.

¹⁹ Article 3 of the Bamako Convention.



for the management of hazardous waste within their country, submit a hazardous waste report, reduce the generation of hazardous waste within their jurisdiction, ensure adequate management of hazardous waste, and prevent pollution from the management of hazardous waste.

Both the Basel Convention and the Bamako Convention do not expressly prohibit the importation of hazardous waste. The responsibility is placed on each state to define what waste is prohibited and the appropriate administrative and legal frameworks for enforcing such prohibitions within its territory. These treaties only oblige state parties to create the necessary legal and administrative framework for the prohibition of such waste, report on the movement of hazardous waste across their borders and respect any prohibition by other state parties.

It, therefore, becomes obvious that despite being signatories to these treaties, there is a need for national level e-waste control laws and policies for these treaties to become effective. In other words, the effectiveness of these treaties is dependent on the enactment and effectiveness of laws and practices within each of these East African countries.

1.2 National Regulation

Most of the countries in the East African region do not have legislation that deals specifically with e-waste management. Often the relevant environmental legislation serves as the overarching legal framework for e-waste management. Where this is the case, the provisions concerning solid waste and hazardous waste are often applicable within the context of e-waste, but even then, the inadequacies are obvious.

In addition to the lack of a legal framework, East African countries also face a capacity challenge. The necessary technical skill, infrastructure, and financial resources are often absent leading to a poorly managed e-waste system. Like most African countries, East African countries also suffer from a lack of reliable data on the volume of e-waste at each level, and within the country as a whole. This lack of data makes policy planning very difficult. It is difficult to improve upon what you cannot measure adequately.

Notwithstanding, East African countries have made some progress in the last decade towards ensuring a more viable e-waste management system within their economies. The following subsections take a closer look at the national legal and institutional frameworks governing e-waste in four East African countries: Kenya, Rwanda, Tanzania, and Uganda.

1.2.1 E-waste management law and practice in Kenya

Kenya has passed the Environmental Management and Coordination Act (EMCA) and the Waste Management Regulations. Although neither the EMCA nor the Waste Management Regulation mentions e-waste, they nevertheless apply given their composition which includes a variety of hazardous substances as listed under the Act. Section 2 of the EMCA defines hazardous waste to include 'any waste which has been determined by the Authority to be hazardous waste or to belong



to any other category of waste provided for in section 91.²⁰ Flowing from this, the EMCA goes further to prohibit the importation into Kenya of any hazardous substances.²¹ Furthermore, this law prohibits the transportation or disposal of hazardous waste without a licence from the National Environmental Management Authority (NEMA). In order to get the licences, e-waste dealers are expected to show their readiness to reduce the environmental impacts of e-waste before these licences can be granted.

Like the Basel Convention and the Bamako Convention, the EMCA tasks the government with the responsibility to further develop a framework for regulating hazardous waste and materials, including e-waste. In other words, the EMCA provides a background for the general management of waste while allowing for the development of guidelines to regulate specific types of waste. In light of this, the Guidelines for E-Waste Management in Kenya was adopted in 2010.

These Guidelines define and describe e-waste within the Kenyan context. Table 4:1 contains a list of materials identified as e-waste. The Guidelines recognize that different groups may be involved in the handling of e-waste across the different stages of its life cycle, and places the responsibility for properly managing the waste on each group at the various stages.²² Producers have the responsibility to establish channels for collecting the waste at the end of its life-cycle, implement individual take-back schemes, clearly label their products, and comply with Kenya's electronic manufacturing standards.²³ Importers of electronic and electric equipment have a responsibility to specify standards for products on the expected remaining lifespan of the product, notify NEMA for consent to transport e-waste, state the number of years a computer has been used before importation, track the distribution of pre-destined end users to facilitate waste collection, indicate an envisaged lifespan and desist from importing hazardous waste.

Other key players in the life cycle of e-waste include assemblers, refurbishers, and recyclers. These players have the responsibility to label products for easy identification, ensure unusable materials go to a licenced dispenser, provide incentives to the customer to donate used devices, establish recycling infrastructure, ensure that dismantling is done in an environmentally safe manner, etc.²⁴ Other e-waste policy guidelines have also been drafted and are at different stages of approval. This includes the E-Waste Regulation, National E-Waste Management Strategy, and the Extended Producer Responsibility Regulations in 2020. NEMA is responsible for waste management in Kenya and for ensuring compliance with some of the laws and policies outlined above.

1.2.2 E-waste management law and practice in Rwanda

Like other East African countries, Rwanda is also a signatory to treaties such as the Basel Convention, the Bamako Convention and the Stockholm Convention. At the national level, Rwanda has the Environment Organic Law N^o 04/2005 which applies to waste in general but does

²⁰ Section 2 of the Environmental Management and Coordination Act.

²¹ Section 91(3) of the Environmental Management and Coordination Act.

²² Rule 5.0 of the Guidelines for E-Waste Management in Kenya.

²³ Section 5.1 of the the Guidelines for E-Waste Management in Kenya.

²⁴ Rules 5.5 – 5 the Guidelines for E-Waste Management in Kenya.



not specifically create rules governing e-waste. E-waste is considered a subset of hazardous waste and the same rules and regulations apply.

In 2018, the National E-waste Management Policy for Rwanda (NEMPR) was adopted. The goal was to ensure effective and efficient management of e-waste for a safe environment and human health protection towards sustainable green economic development.²⁵ The policy was built on the following major principles: (1) reduce, re-use and recycle e-waste; (2) resource recovery, i.e. collecting and dismantling to recover valuable metals from e-wastes; (3) handling and treatment of e-waste in a manner that avoids harming or endangering human health and the environment; (4) job creation and private sector development; and (5) sustainability.

Under the NEMPR, Rwanda's Ministry in charge of Information Communications Technology has the responsibility to lead the development of an e-waste strategic plan and to oversee the implementation of such a strategic plan in collaboration with the Ministry of Trade and Industry. The Ministry in charge of Health, on the other hand, will develop e-waste management policies as it relates to health and safety standards. The Policy distributes other responsibilities among various government departments but goes no further to create any actionable obligations or criteria for the management of e-waste.

Regulation No. 002 of 26/4/2018 Governing E-Waste Management in Rwanda sets out the legal framework for the management of e-waste in Rwanda. The Regulation places a responsibility on collectors and transporters of e-waste to ensure that any waste collected is packed and stored in a proper and secured manner, and to handle such waste in a manner that no harm is done to the environment or human health.²⁶ Any truck or vehicle used for transporting e-waste must be appropriately and completely closed, and e-waste may only be transported to a licenced e-waste facility.²⁷

Collectors and transporters of e-waste are further obliged to keep records of the e-waste handled by them.²⁸ While there is no responsibility to submit or report these records, such records must be made available upon demand by the Regulatory Authority.²⁹ The Regulation also places a responsibility on dismantlers and refurbishers of e-waste to ensure the recycling of e-waste as much as possible, and where it is impossible, such non-recyclables must be sent to the authorized treatment storage and disposal facilities.³⁰ Overall, the Regulation seeks to ensure that handlers of e-waste at the different points in its life cycle protect the human environment and health, encourage recycling, and keep proper records.

²⁵ Section 2.1 of National E-Waste Management Policy for Rwanda available at https://climateportal.rema.gov.rw/fileadmin/user_upload/Documents/Policy/NationalE-WasteManagementPolicyforRwanda.pdf, accessed November 2, 2022.

²⁶ Article 20(a), (b), (d) of the Regulation No. 002.

²⁷ Article 20(e) and (f) of the Regulation No. 002.

²⁸ Article 20(c) of the Regulation No. 002.

²⁹ Article 20(c) of the Regulation No. 002.

³⁰ Article 21 Regulation No. 002.



The Regulation requires that to operate or carry out any activity related to e-waste collection, transportation, retail, importation, dismantling, recycling, or refurbishing a person shall hold an appropriate licence issued by the Regulatory Authority.³¹ In order to obtain a licence, the applicant must demonstrate that they have an appropriate storage, dismantling, refurbishment, and recycling facility.³² The Regulation provides further requirements for different types of licences.³³ These requirements include undertaking an environmental impact assessment, environmental audit for existing facilities, compliance with all environmental standards, adequate equipment for collection and transportation of e-waste, segregation at source of e-waste from other types of solid waste, etc. Operating without a licence is punishable with a fine of between one million and five million Rwandan francs. Where a person who has been granted a licence contravenes any of the conditions of their licence, such licence may be revoked or suspended.³⁴

Importantly, Regulation No. 002 prohibits the disposal of e-waste by reselling, auctioning, or exchanging it; burning it throwing in non-designated waste receptacles; burying or throwing it away at a dump site; treating it in an environmentally unsound manner, causing the escape of hazardous waste or acids in an uncontrollable manner, or abandoning it in a place other than a collection centre or a licenced recycling facility.³⁵

1.2.3 E-waste management law and practice in Uganda

The legal and regulatory framework for managing e-waste in Uganda includes the National Environment Act, the National Environment (waste management) Regulations, the E-Waste Management Policy, the E-Waste Management Strategic Plan, and the E-Waste Guidelines. The National E-Waste Management Facility was also opened in 2021 to collect, sort, dismantle, recycle, and dispose of e-waste.³⁶

The National Environment Act provides the framework for legislation on the environment in Uganda. It provides for sustainable management of the environment. The National Environment Act prohibits or restricts the import, export, manufacture, formulation, distribution, and use of hazardous chemicals and also makes provisions for the management of products containing mercury and ozone-depleting substances and products. Although several e-waste products will fall into these categories, it is necessary to note that there is no specific e-waste law in Uganda.

Rules 40 to 44 of the National Environment (waste management) Regulations govern the management of e-waste. The Regulations prohibit the disposal of e-waste in landfills or unauthorised places. It provides that there shall be a designated collection centre for e-waste and such waste will not be disposed of together with other types of waste. Unlike Rwanda, a product

³¹ Article 5 Regulation No. 002.

³² Article 7 Regulation No. 002.

³³ Article 8, 9 and 10 Regulation No. 002.

³⁴ Article 17 of the Regulation No. 002.

³⁵ Article 23 of the Regulation No. 002.

³⁶ Global Green Growth Institute News, Electronic waste management: A promising employment opportunity for youth in Uganda, available at <https://gggi.org/electronic-waste-management-a-promising-employment-opportunity-for-youth-in-uganda/>, accessed November 4, 2022.



steward or local government receiving e-waste in Uganda does not need a licence. However, the e-waste must be received and handled in a secure manner that does not cause harm to human health and the environment. These receivers of e-waste must also keep proper records of the quantities and types of e-waste received and exported or delivered to a waste handler.

The National Environment Management Authority (NEMA) is the principal government agency responsible for the management of the environment. NEMA coordinates, monitors, and supervises all activities concerning the environment. The Ministry of ICT also provides institutional support for e-waste management by leading e-waste programs and coordinating the establishment of safe e-waste disposal mechanisms and facilities. The National E-waste Management Centre for Uganda was launched in 2021.

1.2.4 E-waste management law and practice in Tanzania

The principal environmental legislation in Tanzania is the Environmental Management Act. This law outlines the principles for management, impact and risk assessments, prevention and control of pollution, waste management, environmental quality standards, public participation, compliance, and enforcement. The Act also creates an obligation to undertake an environmental assessment, pollution prevention and control, and waste management. Although the Act does not make any e-waste-specific obligations, the provisions on hazardous waste are generally applicable to e-waste.

In 2021, Tanzania adopted the Environmental Management (Control and Management of Electrical and Electronic Equipment Waste) Regulations. These govern the general management and movements of e-waste and its components in Tanzania. E-waste management in Tanzania is based on three principles: (a) precautionary principle; (b) polluter pays principle, and; (c) producer extended responsibility. The producer extended responsibility implies that the producer or importer of a product shall internalise environmental costs in the production of the products and in its whole life cycle.³⁷ The Regulations further oblige the owner or operator of a facility that generates hazardous and toxic wastes to minimize such waste.

The Regulations also prohibit the manufacture or importation of any electrical and electronic equipment which contains lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, or polybrominated diphenyl ethers. Notwithstanding, the minister may exempt certain categories of equipment and allow them to be imported or produced despite containing such substances.³⁸ Where e-waste is generated in the manufacturing process, the producer must ensure that such waste is handled in an environmentally sound manner and in line with the principles set out in this Regulation.³⁹

³⁷ Rule 4 of the Environmental Management (Control and Management of Electrical and Electronic Equipment Waste) Regulations.

³⁸ Rule 14 of the Environmental Management (Control and Management of Electrical and Electronic Equipment Waste) Regulations.

³⁹ Rule 5214 of the Environmental Management (Control and Management of Electrical and Electronic Equipment Waste) Regulations.



A person who is in possession or control of e-waste must ensure that they are separated at the source from other categories of waste, ensure safe custody, and ensure they are deposited separately into receptacles.⁴⁰ E-waste may only be packed or stored in containers meeting standards set by the National Environmental Management Council (the Council). Failure to comply with this is punishable by a fine of not less than five million shillings but not exceeding ten billion shillings or imprisonment for a term not exceeding twelve years or both. The container must also be labelled with identifying information like the identity of the e-waste, the contact details of the generator of e-waste, the net contents, and so on.⁴¹

Where the e-waste to be collected and transported is up to one tonne, the collector or transporter must apply for a permit. The main consideration in granting this permit is whether the applicant has the facilities to collect and transport that amount of e-waste without causing significant damage to public health and the environment.⁴² The Regulation permits the export of e-waste subject to the grant of an export permit but prohibits the importation of e-waste into Tanzania. Notwithstanding, the minister may, in consultation with relevant ministries and for public interest, allow the importation of e-waste into the country.⁴³ The Council is responsible for conducting regular inspections and monitor compliance with the provisions of this law.

2 CONCLUSION

Steps have begun to be put in place by various East African countries to ensure an effective and environmentally sound management of e-waste. All four countries examined have some form of legislative or regulatory framework in place to address the management of e-waste. There is widespread recognition of the increase in the amount of e-waste in the region, and the need to ensure that this does not threaten the environment or human health.

With the exception of Tanzania, where a permit is only required if the e-waste is up to one ton, most countries require a licence or permit to store or transport e-waste. This ensures that there is proper monitoring and control of the movement of e-waste in these countries. The different laws and regulations also reveal clear criteria for the granting of the required licences.

Notwithstanding, a specific e-waste law is still missing in most of these countries, making the legal status of other regulations uncertain. Additionally, the regulations as they stand are weak on capacity building and institutional frameworks. Even where regulatory bodies are established, there is very little provision on how to strengthen these bodies to better perform their objectives. Without strong institutions, the effectiveness of the laws is weakened.

It is also important to emphasize the role of manufacturers in e-waste management. Manufacturers must begin to rethink the life cycle of their products and their environmental impacts. Manufacturers must also assist in the creation of e-waste recycling centers in developing countries

⁴⁰ Rule 51.

⁴¹ Rule 17.

⁴² Rule 21.

⁴³ Rules 40, 41.



rather than using them as dumping sites for used electrical and electronic equipment from developed countries.

Consumers can resist, or at least delay, acquiring new devices until absolutely necessary. They can repair devices, when possible, rather than abandoning them. And after a new purchase, they can resell or recycle their old devices. But consumer intervention only goes so far. Governments must regulate e-waste in a manner that best ensures that the environment and human health is protected.