Recycled electrical goods. Image Credit CLASP.2023.

Report Summary: Repair and End of Life of Electrical Appliances in Kenya

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Introduction

In 2023, **CLASP** conducted extensive research on repair and end-of-life (EoL) practices relating to Electric Cooking appliances in Kenya, using televisions as a proxy given the nascent market for electric cooking products. CLASP's report highlighted customer behaviour when electric appliances fail or reach their end of life, current eWaste policies in Kenya and the barriers of a more sustainable recycling. The report also identified the range of stakeholders involved in handling eWaste, their scope, capability and restrictions. This document is a concise summary of CLASP's report on repair and EoL of electric appliances in Kenya, which was commissioned by MECS Programme in 2023.

eCooking in Kenya

Kenya has massive potential for Electric Cooking; currently 75% of Kenyans are connected to electricity, however none use it as their primary cooking fuel. Kenya Power (KPLC) is addressing this through initiatives like the Last Mile Electrification Programme, which connects low-demand customers to renewable electricity. KPLC's 'Pika na Power' program also promotes eCooking by raising awareness and helping appliance retailers to market and sell their products to KPLC's 7 million customers.

Kenya is one of the most populous countries in Africa with a population of more than 56 million, with approximately 27% living in urban and 73% in rural areas (Worldometer n.d.). The demand for domestic electrical appliances in Kenya is increasing fast as a result of a significant rise in per capita disposable income, coupled with rapid urbanization and a growing middle-class population. In 2018, Kenya's home appliance market attained a value of USD 184.48 million and it's expected to increase to USD 363.92 million by the end of 2027, growing at a compounding annual growth rate (CAGR) of 7.8%. In addition, with the growth of the off-grid solar sector over the past 10 years, Kenya is facing a significant increase in the volume of eWaste when products reach their end of life. This poses a great threat to the environment and to people's health creating a sense of urgency for the government to act on this problem.

Electronic Waste or eWaste

eWaste refers to discarded electrical and electronic equipment that is not intended for reuse or refurbishment. It contains hazardous chemicals and metals like lead, mercury, and cadmium, which pose serious health risks, such as damage to the nervous, reproductive, and endocrine systems. eWaste is the fastest-growing type of domestic waste, driven by increasing consumption, short product lifespans, and limited repair options.

In 2020, global eWaste reached 53.6 million metric tonnes and is expected to rise to 74 million tonnes by 2030. Only 20% of eWaste is properly collected and recycled, while the rest is likely dumped, traded, or poorly recycled, with some still stored (or hibernated) in households.

As of 2021, Kenya has annually generated 51,000 tons of eWaste, increased from 3,000 tons in 2012 due to the rapid growth in ICT (Information & Communications Technology) over the past decade. Only 1% of this waste is properly disposed of, with most being stored, burned, or buried, creating significant public health and environmental risks.

Standards and Labelling Regulations

In 2013, Kenya's Energy and Petroleum Regulatory Authority launched the Standard and Labelling (S&L) program to remove low-efficiency appliances from the market. Energy labels help consumers choose high-efficiency products, with 5-star ratings indicating the most energy-efficient options, leading to lower energy bills. The program which covers lighting, refrigerators, air conditioners and motors, is mandatory, however there is no data on how effective it has been in removing low-quality appliances from the market.

Recycling and Disposal Policies

Environmental concerns are most severe in developing countries, prompting governments to implement pollution control laws enforced by regulatory bodies. However, environmental agencies in these countries often face funding shortages, they lack expertise, and have insufficient personnel, resulting in inadequate protection. Additionally, there are enforcement gaps, especially in solid waste management policies, which focus on environmental issues but fail to consider economic and health perspectives effectively.

Kenya is a signatory to various environmental agreements, such as the ***Basel Convention*** and ***Bamako Convention.*** Basel Convention is an international treaty that aims to reduce the movement of hazardous waste between countries in order to protect both the environment and human health. Bamako Convention which came into force in 1998, is a treaty of African nations which prohibits the importation of any hazardous waste into Africa.

The government has also implemented the National Solid Waste Management Strategy to promote sustainable solid waste management and support a healthy, safe environment. This strategy includes a bill designed to help Kenya transition to a green economy with zero waste, aligning with the country's Vision 2030 and its National Determined Contribution to the Paris Climate Agreement. The bill promotes waste reduction through incentives for efficient technologies, sustainable product design, resource efficiency, and recycling. The National Environmental Management Authority (**NEMA**) has established minimum requirements for improving waste management, focusing on waste collection, transportation, disposal, and licensing. Key stakeholders in the legal and regulatory framework for eWaste management are outlined, but there is no available evaluation of the strategy's effectiveness.

Kenya's waste management is regulated by the Environmental Management and Coordination Act (1999) and the Waste Management Regulations (2006). In 2013, NEMA proposed eWaste regulations, adding legal guidelines for eWaste management for producers and consumers. The guidelines for eWaste Management issued by NEMA in 2013 is the only active government document that specifically addresses the issue of eWaste. These regulations were drafted in 2013 but are still awaiting Parliament's approval. Whether off-grid products are covered by the draft regulations still remains unclear.

Government Agency	Mandate in the eWaste legal and regulatory framework	Role in the implementation of the framework
Ministry of Environment and Mineral Resources (MEMR)	Set policy direction and enact legislation	
National Environment Management Authority (NEMA)	Draft regulations and guidelines	Implements and regulates all policies relating to the environment Director General NEMA is the Competent Authority of the Basel Convention

Table 1: Roles of government agencies in the implementation of eWaste regulation. CLASP.

Stakeholder Mapping

At the second stage of their research, CLASP mapped the end-of-life ecosystem, identifying a range of stakeholders such as appliance importers, appliance retailers, repairers, collectors, refurbishers, and recyclers, assessing their capacities, estimating material flows, identifying operational barriers, and evaluating policy awareness and impact.

Additionally, net-maps were created, facilitating analysis of eWaste material flows among the stakeholders and providing a more detailed understanding of the interrelationships. By identifying goals, connections, and levels of influence, it became clear which links needed reinforcement and which stakeholders could be leveraged.

The connections between stakeholders were categorized as follows:

- **Appliances:** These stakeholders are involved in the exchange of appliances.
- **Repair & Servicing:** Stakeholders engage in repairing or servicing appliances for other participants within the ecosystem.
- **Materials Handling:** These stakeholders primarily manage materials, as evidenced by the flow of materials to and from collectors and materials recovery companies.
- **eWaste Disposal:** Stakeholders interact with e-waste at disposal sites.
- **Standards and Regulations:** Stakeholders are responsible for enforcing regulations on other players in the ecosystem.

The links defined 136 relationships amongst the actors out of which 27 represented strong links, 98 normal/default links and the remaining 11 representing weak links. The figure 1 illustrates results derived from the net-mapping analysis.
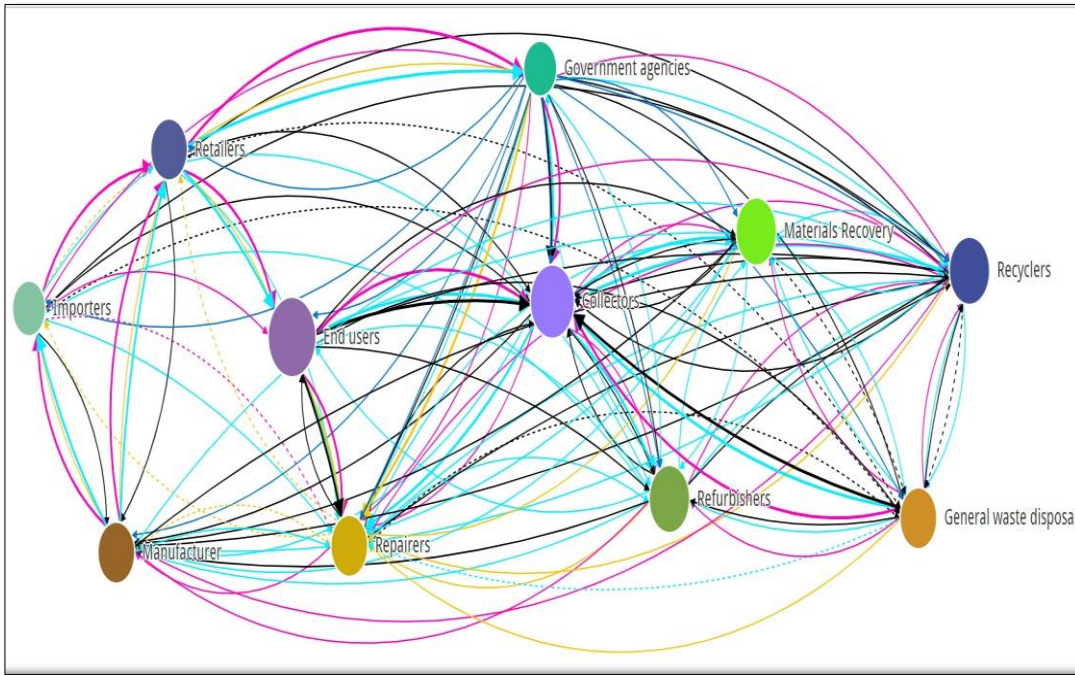
Figure 1: Net-Map Illustrating Stakeholders Supporting Proper Appliance EoL & eWaste Disposal Practices in Kenya. CLASP.

Key for categories:

CATEGORIES
- Importers
- Retailers
- Collectors
- Repairers
- Refurbishers
- Recyclers
- Materials Recovery
- General waste disposal
- Government agencies
- End users
- Manufacturer

LINKS
- Appliances
- Repair & servicing
- Materials handling
- e-waste disposal
- Standards & regulation

Key for Illustration of Linkages/Connections:

Illustration of Linkage	Interpretation
→	Strong link
→	Default/Normal Link
⇢	Weak Link

The net-map exercise revealed that end users are the most influential actors regarding proper appliance end-of-life and eWaste disposal practices in Kenya, despite their neutral stance. Collectors ranked second with a high influence score of 9, as they handle the largest quantities of appliances and parts. Refurbishers, recyclers, and materials recovery stakeholders also demonstrated significant influence (8) and support for proper eWaste disposal. Product manufacturers, importers, retailers, repairers, general waste disposal companies, and government agencies have a moderate influence score of 6-7 and generally support proper eWaste disposal practices.

Key Findings of Household and Stakeholder Surveys

As part of research on EoL of electrical appliances, CLASP undertook household surveys to understand the behaviours and barriers related to appliance failure and end-of-life practices, considering factors such as gender, income, and disability. Household surveys were completed in both urban (48%) and rural (52%) areas in Nairobi, Nakuru, Bungoma and Kitui, which varied in income level, electrification rate, appliance ownerships, and infrastructural development. A total of 933 people were interviewed.

Findings from the household surveys revealed 71% of the respondents use the national grid as their primary source of energy, followed by solar home system (28%) suggesting that there were significant opportunities for a transition to eCooking.

Indicator name	Results
Percentage of households with national grid electricity as main source of lighting	71%
Percentage of households with solar power as main source of lighting (solar home systems & rooftop solar)	28%
Percentage of households with mixed energy sources	1%

Table 2: Household Survey Data on Electrification rate in Kenya (Source: Kenya Household Surveys n=932).

- Most respondents (71%) across all selected regions use main grid electricity to power their households.

- The most common household appliances are mobile phones (90.6%), torches (80%), radios (85%), and TVs (77%). Fewer households own electric kettles (19%), microwaves (11%), and Electric Pressure Cookers (4%).

- Most households were unwilling to purchase used appliances because of their quality.

- When an appliance fails, 72% of respondents take it for repair, usually to local repair shops (90%). Cost effectiveness is the key factor in deciding on repairs (77%).

- Decision-making on appliance purchase, failure, and disposal is largely male led, with 69% of households stating the male head influences appliance failure behaviour. "Failure behaviour" means decisions on what to do with a non-working appliance. For disposal, 48% of households primarily burn general waste, with the female head in charge of disposal decisions in 50% of these cases.

- 66% of respondents believed that their current recycling behaviour is not environmentally friendly out of which, 83.7% were willing to adopt more sustainable ways of disposal.

- Findings show that in Kenya the eWaste sector is predominantly informal.

- There is a major gap in data and statistics pertaining to eWaste quantities and flows in the country, there is no stakeholder specifically tracking and reporting on this data.

Challenges for eWaste Management in Kenya

Kenya mainly practices informal recycling. The main challenges related to eWaste management in Kenya and specifically for off-grid products are as follows:

- Low consumer awareness of WEEE's (Waste Electrical and Electronic Equipment) environmental and health impacts.
- Lack of enforced policies and the governmental mechanisms to collect, transport and process WEEE separately and efficiently from other solid wastes.
- Lack of government support for collection and recycling infrastructure for Environmentally Sound Management (ESM) of WEEE.
- Inadequate technical expertise and formal training to properly dismantle and recycle EoL products.

Conclusions and Recommendations

Kenyan households predominantly cook with LPG, charcoal and firewood, however with 75% of the population having access to some form of electricity, there is an immense opportunity for eCooking. Improving affordability of eCooking devices and overcoming the perception that cooking with electricity is expensive, can potentially increase the uptake among customers. So, in order to facilitate transition towards a sustainable eWaste management while adopting electric cooking, CLASP has recommended the following:

1. In Kenya collection and disposal of eWaste is informal and predominantly carried out by the private sector. Local repair shops are the 'go to' option when domestic appliances fail, but these repairers face major issues such as lack of spare parts, lack of right tools, and proper training. Kenyan government is encouraged to enable the informal sector's transition to formal by providing them with training programs and capacity building. The government should also adopt new measures to support the informal sector in scaling up sustainable eWaste management.

2. The demand for eWaste recycling services is too low to drive operational efficiencies (3 major formal recyclers in Kenya – *Enviroserve*, *Hinckley* and *WEEE Center* - currently utilize only 30% of their annual capacity). To increase sustainable eWaste disposal habits, the government needs to establish regulations to improve accessibility to consumers and stakeholders; this can be done by increasing the number of collection points and improving the waste transportation system.

3. Despite regulations and standards on the importing and manufacturing good quality, energy efficient appliances, the lack of enforcing these policies has resulted in an influx of poor-quality appliances with short lifespans into the country, generating more eWaste. CLASP recommends that there should be a stronger and closer connection between government and appliance importers and distributors to make sure the policies are enforced and regularly reviewed and revised.

4. CLASP's stakeholder survey revealed there is a lack of data on quantity of imported appliances and the eWaste generated. To develop an effective eWaste management infrastructure, the government should track data on imported appliances and the amount of eWaste generated in the country. It should also design and implement comprehensive awareness programs that educate the public on product regulations and proper disposal at the end of a product's life. Ensuring public access to information on eWaste collection services, is equally important to encourage responsible and sustainable disposal.

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For further information, you can access CLASP's full report entitled "*MECS Study on The Repair and End of Life of Electrical Appliances in Kenya*" via this link: https://mecs.org.uk/wp-content/uploads/2023/07/MECS-EoL-Study-Report_Kenya-1.pdf