E-WASTE PROJECT KENYA

Draft Inception report

Ver 2.0

Researched and presented by

Prof Timothy Waema
School of Computing and Informatics
University of Nairobi
P O Box 30197 -00100, Nairobi
waema@uon.ac.ke

Muriuki Mureithi
Summit Strategies Ltd
P O Box 62454 -00200
Nairobi
Mureithi@summitstrategies.co.ke

Project supported by Hewlett Packard Corporation (HP), Swiss Federal Laboratories for Materials Testing and Research (EMPA) and Global Digital Solidarity Fund (DSF)

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Glossary of terms

Assemblers & Importers	Composed of assemblers and/or importers of branded and non-branded electrical and electronic equipment. It also includes IT associations. Strathmore University is a typical assembler of PCs for the purpose of this study,
Collectors	Formal or non-formal bodies that collect e-waste. This may be realised by procuring bonded computers from government and parastatals, collecting old computers from private sector organisations etc.. Includes informal rag-tag collectors. . Jospeed Auto spares Gaturi Scrap Metal are typical collectors who buy old computers from institutions.
Consumers	An organisation or individual that uses electrical and electronic equipment (EEE) and then discards it as waste after the equipment has reached its end of life (EOL). Note that the end of life for one consumer is the functional use of the equipment by that consumer and may feed into the second-hand market directly or through refurbishers.
Distributors / retailers	Include all bodies selling equipment to the end consumer and includes donated computers
Downstream vendors	Industries buying fractions (e.g. copper, plastics, metals, gold, etc.) produced by the recyclers and can be national or international
End of life(EOL)	Means the end of useful life of the equipment by consumer a particular environment eg corporation and thus one consumer may dispose this equipment to another consumer as second hand. This is distinct from lifespan which describes the total functional life of the equipment
e-Waste	Electronic waste (e-waste) or electrical and electronic equipment (EEE) means electrical or electronic equipment which is waste, including all components, subassemblies and consumables which are part of the product at the time of discarding. It includes computers and entertainment electronics consisting of valuable as well as harmful and toxic components.
Mass flow system	A description and quantification of mass flows and stocks of computers over time and defines the system borders.
Recyclers	Organizations dismantling, separating fractions, and recovering material from e-waste after the lifespan of the equipment. This includes plastic, copper, gold etc.
Refurbishers	Extend the functional life of the EEE and includes the repairs and service centres. They often feed into the second hard market (third hand market).

Acronyms

EEE	Electrical and Electronic Equipment
EOL	End of life
HH	House Hold
ICT	Information and Communications Technologies
KICTANet	Kenya ICT Action Network

Introduction and background

This project, implemented by Kenya ICT Action Network (KICTANet), seeks to provide an opportunity for Kenya to critically review its management of electrical and electronic waste (e-waste) and to work towards a strategy to create the necessary infrastructure and mechanisms to support sustainable and environmentally friendly e-waste management. A key focus is to explore the economic opportunities provided by e-waste and to address grave concerns arising from its toxic and non-biodegradable components.

The project is supported by three partners:

- Hewlett Packard Corporation (HP)
- Swiss Federal Laboratories for Materials Testing and Research (EMPA)
- Global Digital Solidarity Fund (DSF)

Hewlett Packard Corporation (HP) is a world-leading IT company and was incorporated in 1939, with its corporate headquarters in Palo Alto, California. HP has considerable experience in e-waste recycling having recycled most of its products through a number of schemes in the last 20 years. Swiss Federal Laboratories for Materials Testing and Research (EMPA) is a materials science and technology research institution based in Zurich. It belongs to the Swiss Federal Institute of Technology (ETH) domain and is specialised in applications research and development. EMPA is leading a global e-waste programme which aims at building capacities for e–waste management in developing economies. The Global Digital Solidarity Fund (DSF) is an initiative by the African Union, created as the outcome of the World Summit on the Information Society (Geneva, 2003). It is based in Geneva, Switzerland, with a mandate to reduce the digital divide by equipping the developing world with the means to access the knowledge society.

This study is part of a programme that includes similar studies being conducted in Morocco, Senegal and Tunisia, as well as a pilot project for processing e-waste in South Africa. This programme recognises that Africa is a growth market for ICTs.

KICTANet is responsible for the implementation of the study in Kenya. KICTANet was created in October 2004, as part of the APC Catalysing Access to ICTs in Africa (CATIA) project in Kenya, and currently comprises over 50 institutions, organisations and networks concerned with ICTs in Kenya. It is a multi-stakeholder network with members from the private sector, civil society, media, academia and government. For the past year, KICTANet has acted as a central meeting point and platform for collaboration and activity for various stakeholders interested in greater and more affordable access to ICTs in Kenya.

KICTAnet proposes a consultative and inclusive process to this project that brings together a wide stakeholder audience, in order to gain buy-in and support and to ensure the long-term sustainability of the outcomes. The stakeholders in this project include Government at policy and legislative and regulatory levels, the private sector, civil society, development partners and the media.

KICTAnet commissioned a team of consultants comprising of Prof T. Waema and Muriuki Mureithi to undertake the study. This inception report presents the framework of implementation for the project.

Objectives of the study

The general objective of the project is to assess the e-waste landscape in Kenya. Specifically the project will:

- Produce a baseline study on the current state of e-waste in Kenya;
- Map the strengths and weaknesses of the current situation in handling e-waste;
- Compile a written roadmap for the way forward as well as recommendations for advocacy efforts;
- Develop and enlarge the network of relevant stakeholders/key players in the existing 'e-waste scene' including the repair/reuse and recycling industry, the Electrical Electronic Equipment (EEE) supply sector as well as government administration, parastatals and corporate actors
- Create awareness of the roadmap through workshop facilitation and media reports as necessary

Scope of the study

The geographical scope of the study as far as hard data is concerned is Nairobi and its environs. This is because the overwhelming use of ICTs is in Nairobi. Data collected will be used to extrapolate to national scale if found viable. Policy considerations will, however, be national.

The product scope is computer-related equipment. The study therefore focuses on the PC with the associated visual display units, notebooks, printers and accessories.[1] Other equipment that the study would consider include cellular phones. These however are of secondary importance.

[1] In the rest of the text computer refers to the PC and associated accessories

Context of e-waste management

The fast growth of the ICT sector globally, is driven by national initiatives to enhance competitiveness in the global information society. This has lowered the cost of ICTs in many instances, and in many countries taxation has been reduced or eliminated altogether. In addition, the move towards information society initiatives - such as telemedicine, e-government and e-education - calls for the increased acquisition and use of computers as well as packages to increase computer penetration programmes. Working against the high growth is the high rate of obsolescence of ICTs due to technological change. This means that there is a need to dispose of large quantities of computers. Globally the United Nations Environment Program (UNEP) estimates that up to 50-millions tons of electronic waste is generated annually worldwide.

As equipment reaches EOL, disposal challenges arise. While fully operational appliances do not pose a danger to the user, poorly disposed of e-waste can bring severe health and environmental hazards due to highly toxic substances, such as lead and mercury. It is therefore important to arrange for safe disposal of the computers and their components, which includes the right health and safety measures.

As African countries join the global information society, the volume of ICT equipment in these markets continues to grow rapidly. Additionally, many countries have been caught up in the web of e-waste dumping, and countries are increasingly becoming hot spots for the dumping of e-waste in large amounts. This usually goes unnoticed due to the lack of legislation that governs the importing of non-functional, non-reusable and obsolete electronics into the various countries. Kenya is cited as an e-waste dumping spot.[2]

Responding to safety and health concerns, countries have taken a number of measures. Many European countries banned e-waste from landfills in the 1990s due to the fear that the toxic substances will leach and contaminate underground water. Countries in Europe and Asia have developed a policy framework for e-waste. In the United States, similar legislation and policies exist at State level, but are not enacted at national level due to stalled efforts in Congress.[3]

The key thrust of these efforts is for the manufacturers (and the consumers) to take responsibility for the end-of-life disposal. In some systems, a fee/tax is chargeable at the point of sale to cover the costs of disposal. Switzerland and some other OECD countries have established recycling systems which ensure safe disposal and high collection rates. These are partly financed by an Advance Recycling Fee (ARF) added to the sales price of new appliances, permitting consumers to return end-of-life equipment free of cost. However, consumers have to return them to retail outlets or collection points, from where e-waste is sent to specialised recyclers.

E-waste also provides opportunities. The equipment is dismantled into various parts, some of which are valuable. For instance, circuit boards contain valuable metals, including gold, that can be reclaimed. Shredded e-waste fraction is also on-sold to recyclers. According to Swiss Association for Information and Communications and Organisational Technology (SWICO), up to 80% of the weight

[2] www.wikipedia.org/wiki/electronic waste
[3] www.wikipedia .org /wiki/ electronic waste

of a PC/server is due to metals and up to 53% of CRT monitors due to glass as illustrated in Table 1. These materials provide a downstream market for recycled material.

Table 1: composition of components of the computer

Item	% in weight							
	Average weight (kg)	Metals	Plastics	Metal plastics	Cable	Glass	Printed circuit boards	Pollutants
CRT monitors	15.87	9	36	2		53		
LCD monitors	5.72	36	53			23	8	
PC/servers	13.39	80	6	1	2		10	1
laptops	3.51	40	23	13	1	4	11	
Printers	11.70	60	29	6	1	1	3	
Large scale copiers	90.96	87	7			1	3	

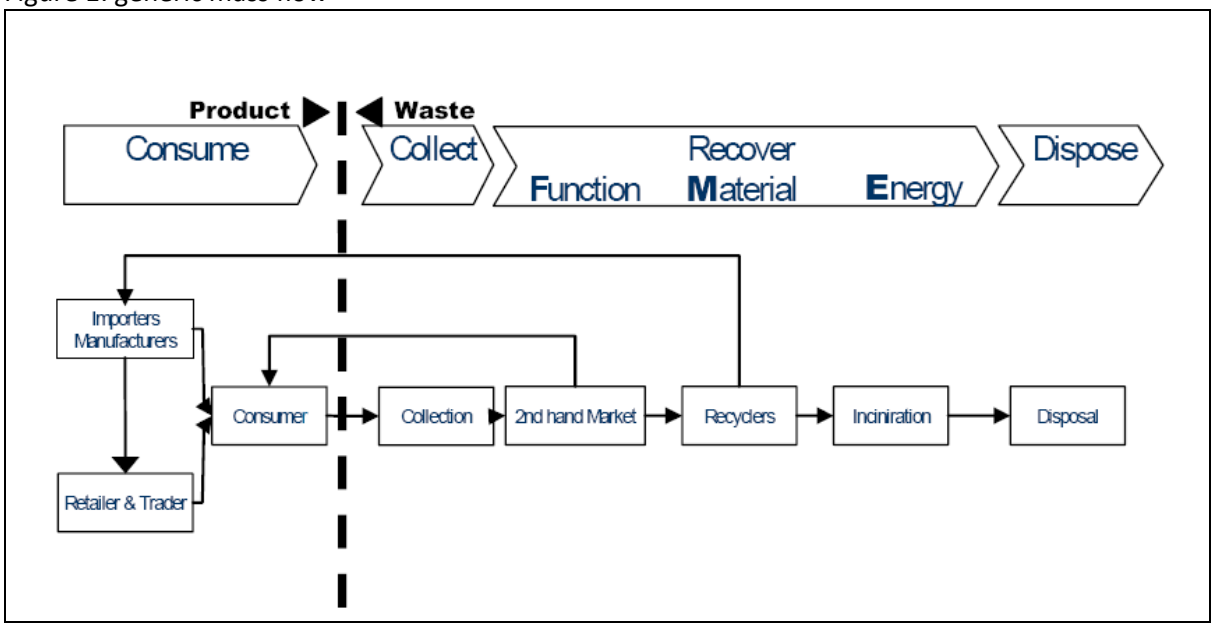
Source; Swiss Association for Information and Communications and Organisational Technology (SWICO) Activity report 2006

Most e-waste recycling in developing and transition countries is done informally and there is little regulation in place to safeguard the health of those who dismantle the electronic equipment. This project attempts to provide answers to e-waste management within the context of Kenya. First, by assessing the current conditions for electronic recycling in communities and second, proposing a framework to test methods and practices that will help make recycling of electronic equipment safer. The project also aims to explore how additional jobs can be created in this sector.

Mass flow assessment

According to EMPA, all e-waste systems can be represented through some variation of the generic model shown in Figure 1.

Figure 1: generic mass flow



Source: Rochat, D, Schluep, M (2007) e-waste country assessment methodology, EMPA

The consumer obtains the computer either from an importer or manufacturers who supply directly to the market or through a retailer. After the EOL of the computer, the disposal process

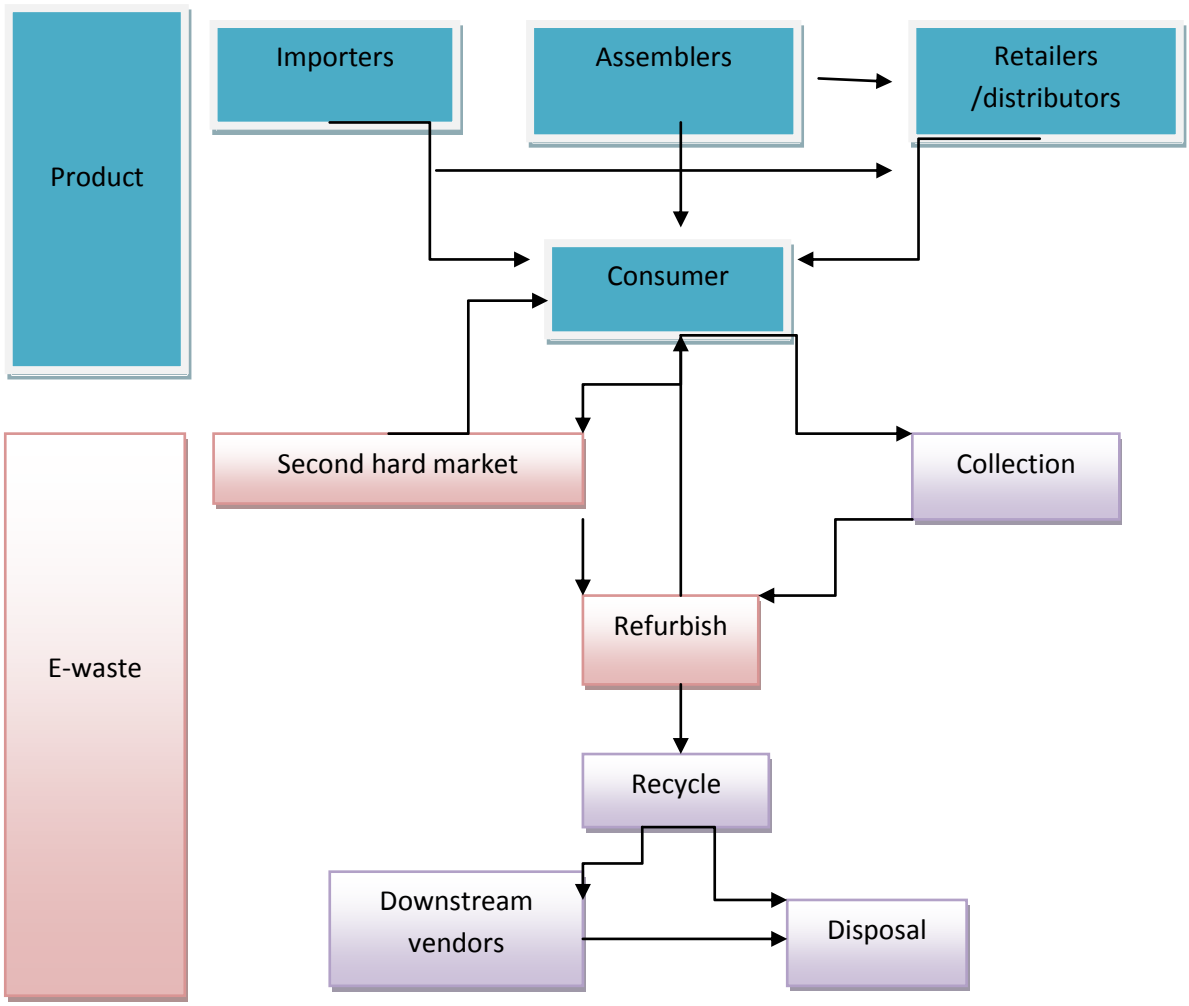
commences. In established e-waste frameworks, a formal or informal collection system exists to collect the computer. This computer may be fed into the second-hand market. The second-hand market seeks to extend the life cycle of the computer by refurbishing it. This may involve changing parts of the computer to make it operational. Once repaired, the computer is sold to a consumer as a second-hand computer and the process is repeated.

When the computer is deemed to be beyond repair the computer is dismantled to recover the component material. This material is illustrated in Table 1. In developed markets, the volume of e-waste that can be sold to downstream to vendors is significant. An alternative is to incinerate with a view to recover energy.

Illustrative Mass flow model in Kenya

A working model of the mass flow in Kenya is illustrated in Fig 2. This is a working model based on quick scanning of the e-waste scene, as well as limited expert opinion sampling. It will be validated by the project.

Figure 2: Kenyan mass flow working model



A quick e-waste scene scan indicates that computers enter the Kenyan market in two main ways. This is through imports of new and old computers and assembly of computers locally to service the local market. The consumer can get the computer directly through imports or from a local assembler or computer merchant. The computers are branded or unbranded.

Once the consumer has used the computer to its end-of-life, the consumer explores mechanism of disposal. Disposal options vary widely depending on the institution. Government and parastatals have to bond the computer and invite competitive tenders for disposal as scrap in line with procurement procedures. This is a slow process and cumbersome and some are still in government stores. Private sector corporations often donate the computers as charity to deserving users. Other institutions dump them in the repair shops. Repair shops have huge quantities of unusable computers and do not now how to handle the waste. One organisation, Computer for Schools Kenya, ships out computer components, such as monitors, to Europe for safe disposal due to the lack of local capacity. Those with old computers are not quite sure of the value of the computer and a lot of unusable computers are stored by institutions, repair shops and individuals.

Where the old computers are bought from the consumer, the same is fed into the second-hand market after undertaking repair or refurbishing. Note that most old computers imported into the country are refurbished before being introduced in the market.

When the computer can no longer be used, it is dismantled and parts are sold largely at component level, a notable component for reuse being the monitor. Final disposal is as part of solid waste.

Kenya is developing a framework to manage e-waste. The National Environmental Management Agency (NEMA) is responsible for promulgating guidelines on the disposal of the hazardous waste. This project will contribute to the ongoing development of the necessary policy and regulatory framework for sustainable e-waste management. At operational level, an NGO known as PACT is working on a project to collect old computers and establish an e-waste system to create jobs.

Research design and methodology

The project will be realized through an explorative/formulative research to find out the state of computer acquisition, use and disposal market. This research seeks to explore the state of affairs of e-waste handling in Kenya and to formulate a framework for supporting a sustainable process of e-waste management. The research will collect quantitative as well as qualitative data to establish the flow of e-waste and subsequent disposal.

Target population

The e-waste 'universe' in Kenya comprises the stakeholders outlined in Fig 2; namely the importers, assemblers, retailers, consumers and refurbishers and recyclers. However no definitive list is available since the licensing framework does not disaggregate ICTs from general trade. Equally, no trade or professional association maintains a definitive list of either category. A working list was developed for the research attached as Annex 1.

The list was developed through the researchers' experience in the ICT market, interviews with key players in computer repair, importers and those buying second-hand computers from government or corporate entities. We also consulted the yellow pages of the national directory. Most of the importers and refurbishers are located on either Revlon Plaza or the Jamia Shopping mall in the city.

Certain schools included in the list have huge stocks of old computers and are included. Cyber cafés are heavy consumers of used equipment. Most of them have between 10-50 computers, and have a general tendency to cannibalise. The computer dealers that are included in the list indicated in the yellow pages that they conduct repair services.

Sampling design

The sampling will be purposive to address the non-homogonous nature of the population. A sample of 112 interviewees will be selected for face to face interviews within each subsystem (i.e. importers, refurbishers etc.) to constitute the sample. A customised methodological framework indicating the sampling is attached as Table 2.

Data collection procedures and instruments

The primary data will be obtained through administration of a questionnaire (Annex 2) to the respondents. Additionally interviews will be conducted with key persons in policy, regulatory and operational areas of the e-waste scene. A further source of primary data is site visits (e.g. to the second-hand tech market) to qualitatively map things like what they do, what the working conditions are, where the old computers comes from, kinds and numbers of customers, kinds of old tech, quantities where available etc. Site visits will also include scrap dealers and repairs shops;

Finally, secondary data will be collected through document interrogation. Key sources include government documents and previous research/experiences from other countries. It will also include relevant resources from the internet .

Data analysis

Once data is collected and checked for completeness and therefore ready for analysis, the tools for descriptive analysis will be applied to provide indices to represent the raw data. Presentation will be through graphs tables and charts as may be necessary.

SSPS and MS Excel will be used to facilitate data processing and provide presentation graphics.

Table 2: customised methodological framework

1. Geographical scope

Nairobi

2. Product scope

- Primary products
  - Computers – **main focus**
    - Notebook computers
    - Desktop computers
    - CRTs
    - Printers
    - Flat screens
  - Mobile phones – see Practical Action Report
- Secondary products - **ignore**
  - TVs

3. Stakeholder analysis

Stakeholder	Description	Qualitative issues or indicators	Quantitative indicators	Sources of data	Sample
Manufacturers and importers	Organizations manufacturing, assembling and/or importing EEE. It also includes IT associations	♦ Marketing ♦ CSR	♦ Market share for major brands ♦ Growth forecasts ♦ Annual imports of new equipment ♦ Annual imports of 2nd hand equipment ♦ % import vs % domestic ♦ % branded vs % clone	♦ Manufacturers ♦ Major importers ♦ Assemblers ♦ IT associations ♦ KRA ♦ Mobile operators ♦ Secondary sources	♦ 0 ♦ 3 ♦ 2 ♦ 1 ♦ 1 ♦ 2

Stakeholder	Description	Qualitative issues or indicators	Quantitative indicators	Sources of data	Sample
Distributors	Bodies selling EEE directly to consumers	♦ Modes of distribution ♦ Importance of 2nd hand market ♦ Importance of non-branded market	♦ No. of retail shops ♦ Size of formal 2nd hand market ♦ Size of informal 2nd hand market	♦ Brand EEE suppliers ♦ Formal 2nd hand EEE suppliers ♦ Informal 2nd hand EEE suppliers ♦ Secondary sources	♦ 3 ♦ 2 ♦ 2
Consumers	Bodies that consume EEE and discard them as waste when they have reached useful EOL	♦ Modes of consumption ♦ Modes of disposal ♦ Access to new technology ♦ Awareness of social & environmental issues	♦ PCs per 100 inh. ♦ E-waste generated per capita ♦ Life span private vs life span corporate ♦ % EEE in business vs % EEE in govt ♦ % EEE in large enterprises vs % EEE in SMEs ♦ % EEE in homes vs % EEE in corporate	♦ Private (HHs) ♦ Government ♦ Large enterprises ♦ SMEs ♦ Secondary sources	♦ 10 ♦ 3 ♦ 3 ♦ 5
Collectors	Collectors of e-waste	♦ Formal vs informal collectors ♦ Consumer pays or is paid for e-waste ♦ Any take back scheme	♦ E-waste collected per inhabitant ♦ Persons employed per ton collected ♦ No. of employees on e-waste collection	♦ Formal collectors ♦ Informal collectors	♦ 1 ♦ 5
Refurbishers	All the repair units, service centres, etc, that extend the life time of equipments and feed the second hand market	♦ Sector organization ♦ Degree of formality (registration, pays taxes, etc.) ♦ Interaction with other value-adding players	♦ % of repairable e-waste ♦ Revenue per refurbished equipment ♦ Lifespan of refurbished equipment ♦ Average age of equipments to repair	♦ Service centres ♦ Repair shops ♦ CFSK	♦ 3 ♦ 5 ♦ 1
Recyclers	Organizations dismantling, separating fractions, and recovering material from	♦ Sector organization (formal/informal)	♦ % formal vs % informal	♦ Formal recyclers ♦ Informal recyclers	♦ 2? ♦ 10

Stakeholder	Description	Qualitative issues or indicators	Quantitative indicators	Sources of data	Sample
	e-waste	♦ E-waste re-cycling industry? ♦ Which fractions produced ♦ Disposal of non-valuable fractions	♦ Persons/ton employed in re-cycling ♦ No. of fractions produced ♦ No. of fractions disposed of ♦ By-products per ton of e-waste ♦ Yearly tons handled by recyclers ♦ Gross annual revenue from recycling	♦ Secondary sources	
Downstream vendors	Industries buying fractions (e.g. copper, plastics, metals, gold, etc.) produced by the recyclers	♦ Industries that use materials from recycling ♦ Does material remain in informal market or is re-injected to formal economy? ♦ What gets exported and in what status?	♦ % of raw materials from 1 ton of e-waste ♦ Usage of raw material ♦ Revenue per kg of materials sold	♦ Formal vendors ♦ Informal vendors	♦ 1? ♦ 10
Final disposers	Organizations in charge of final disposal of waste through incineration or landfilling	♦ How is e-waste treated? Formal or informal (dump sites, open burning, etc.) ♦ Agencies in charge of solid waste disposal ♦ Restrictions on landfill space? ♦ Infrastructure for hazardous waste?	♦ Available landfill volume in Kenya ♦ Tons/year of hazardous waste ♦ % of e-waste in municipal solid waste (e.g. Dandora) ♦ % formal vs. informal disposal	♦ Formal ♦ Informal (e.g. dumping sites, open burning, etc.)	♦ 0? ♦ 10
Most affected communities	Communities that have – by close neighbourship relations to collection points, refurbishment / recycling centres or disposal areas – key interests	♦ Serious health risks to the community ♦ Quality of jobs compared to local	♦ No. of high skilled jobs in e-waste ♦ No. of low skilled jobs in e-waste	♦ Persons from affected and non-affected communities	♦ 20

Stakeholder	Description	Qualitative issues or indicators	Quantitative indicators	Sources of data	Sample
	in the de-velopment of an e-waste management system. This might include interests regarding the sector's economic possibilities or interests in limiting soil, water and air pollution	alternatives at the same level of education ♦ Positive or negative influence on other social and economic activities	♦ No. of cases of negative health impacts ♦ No. of cases of increased health risks (e.g. visible soil or air contamination)		
Others	Institutions with capacity to support implementation of an e-waste management system	♦ Organizations active in solid waste management ♦ Organizations working with informal sectors ♦ International funding for e-waste ♦ Organizations implementing e-waste management	♦	♦ NGOs ♦ International bodies ♦ NEMA ♦ Ministry of Environment	♦ 2 ♦ 2
All		♦ Positive and negative social impacts (5.2) ♦ Positive and negative environmental impacts (5.3) ♦ Positive and negative economic impacts (5.4)	♦	♦ All stakeholders	♦

Annexes

Annex 1; working list of the refurbishers, ,importers and retailers

	Institution	Location	Contact Person	Indicative Volumes
	Refurbish (1) either buy or receive computer donations, they keep the broken down units which they later cannibalize for parts.			
1	Dagoretti High School	Dagoretti, tel. 0203876201	The Principal	
2	Highway Sec School	Mombasa Rd, tel. 020559174	The Principal	
3	State House Girls	State House Ave., tel. 020-2724125/6	The Principal	
4	Ofafa Jericho School	Eastlands, tel. 020-791471	The Principal	
5	Moi Girls Sec School	Woodley Estate, tel. 020-3866087	The Principal	
6	Starehe Boys Centre	Thika Rd. tel. 020-76122/4	The Principal	
7	Eastleigh Sec School	tel. 020-760806	The Principal	
8	Jamhuri High School	tel. 020-3742105/3744441	The Principal	
	Refurbish (2) importing used computers, in most cases they give warranty this forces them to keep units that they later cannibalize for parts			
9	Business Techniques	3rd Floor Revlon Plaza		
10	ProTouch Computers	3rd Floor Revlon Plaza		
11	Best Computers	3rd Floor Revlon Plaza		
12	Stallion Systems	Ground Floor Jamia Shopping Mall		
13	Davetech Systems and Services	1st Floor Jamia Shopping Mall	Mr David Ojiambo	
14	Amon Afrique	3rd Floor Revlon Plaza	Amos	
15	Capital Software	Jubilee Exchange, Grd Flr.tel. 222679/213359/222639		
16	Extreme Wireless	Loita Hse, Grd Floor		
17	Baobab Communications	Windsor Hse, 2nd Flr, tel. 6751105/247507		
18	Delight Computer Systems	Bazaar Shopping Mall, Biashara Street		
19	Sarun Communication Solutions	Hughes Bld 4th Flr, 342108/252417/311172	Mr Sam Nyambueke	
	Refurbish (3) Large scale dealers of new equipment they are also involved in repair and maintenance. They keep large volumes that they cannibalize			
20	Bytec Engineering	Wood Avenue, tel. 3877578/3877618		
21	Ebrahim Electronics	IPS Bld Grd Flr. Tel. 222679/213359		
22	Mitsumi Computer Garage	Muthithi Rd,		
23	Crescent Computers	Mpaka Plaza, 4448252/4448253		

24	Computer Revolution Africa	Waiyaki Way, tel. 4444312/4444338		
25	Eclipse Technology	Natu Apartments, tel. 3865942	Mr Macharia	
26	ICN-Toshiba	Menelik Rd, tel. 341132/311494		
27	PC World	Yaya Centre, tel. 2719084		
28	Technology Today	Vanguard Hse, tel. 4444188/4448728/4448721		
29	Total Solutions	Amee Arcade, tel. 3748347/3728392		
30	Trans Business Machines (TBM)	NHIF Bld 13th Flr. Tel. 2731263/2733066		
31	Niti Computers	Muthithi Rd. tel. 4444472/4444486/4448672		
32	Microskills Information Technology	Brick Court tel. 4440065/4445069		
	Refurbish (4) Cyber cafés that run on used computers. They keep units that they cannibalize			
33	Browse Internet Access	4th Flr Norwich Union		
34	Nairobi Cyber centre	Norwich Union, 1st Flr		
35	Lazards Cyber café	Caxton Hse		
36	Ufunguo E-centre	Uchumi Hse Grd Flr		
37	Links 2000 ltd	PanAfrica Arcade, Hurlingham		
38	Talentus Cyber	George Padmore Rd		
39	Super Surf	Uchumi Hse Grd Flr		
40	Milestone communications	1st flr Kampus Towers, University Way		
41	Computers For Schools	Starehe Boys Centre (Mombasa Rd?)	Mr Tom Musili	
42	Techzone Ltd	Jamia Shopping Mall		
43	Mentor Systems	Revlon Plaza, 1st floor		
44	Weisstech Systems	Jamia Shopping Mall Grd Floor		
	Refurbish (5) buy new computers which they latter decommission. They however keep the decommissioned units for a while with an intention of cannibalizing.			
45	Kenya Institute of Administration	Lower Kabete		
46	University of Nairobi			
47	Catholic University of E. Africa	Langata Road		
48	Kenya Agricultural Research Institute	Kaptagat Road		
49	Kenya Forestry Research Institute	Muguga		
	Dumpsites			
50	Kariobangi			
51	Kariokor			
52	Kenyatta market			
53	Ngara market			

Distributors				
No	***Institution***	***tel/email***	***Physical Contact***	***Brands***
1	Mantrac Kenya	it@mantrackenya.com	Mombasa Road	HP, Dell, IBM
2	RedDot			
3	Crescent Distribution	4440719	Mpaka Plaza, Westalands	HP, compatibles
4	Mitsumi Computer Garage	3741819	Muthithi Road, Westalands	IBM compatibles, also Toshiba, HP and Acer
5	PC World	2719084	Yaya Centre	Toshiba
6	Sparnoon Dynatech	350286	Mombasa Road	
7	Brighton Distribution			Acer and HP
8	Niti Computers	4444472	Muthithi Road, Westalands	IBM compatibles
9	Sahara	558599	Mombasa Road	
10	Mecer East Africa	info@meceraf rica.com		
Retailers				
1	Bytech Engineering	3877618	Wood Avenue, Off Argwings Kodhek	
2	Comprite Kenya	3751888	City Park, Limuru Road	
3	Computech Ltd	534642	Plaza 2000 Mombasa Rd	
4	Computer Point	4446644	Centro Hse, Westlands	
5	Computer Warehouse	536293		
6	Dee Dee Computers	4445820	Assurance Plaza, Westlands	
7	Diamond Systems	2718120	Kindaruma Rd off Ngong Rd	
8	Ebrahim Computer Centre	222679	IPS Bld	Assorted
9	First Computers	535338	Plaza 2000 Mombasa Rd	HP
10	MBC	2731296/7	ACK Garden House	IBM
11	Elite Computers Ltd	3753501	Peponi Rd	Apple/Macintosh
12	Limpo Business systems	221162	Canno Hse	HP
13	Open View	4441083	New Rehema 5th	

	Business Systems		Floor	
14	OEL sysnet	4444810	37 Riverside Drv	

Annex 2 : questionnaire

Kenya ICT Action Network

Nelleon Place, 3rd Floor

P. O Box 825,

00606

Sarit Centre Nairobi

Tel: +254 (020) 4453671/2

January 2008

A. General

1. Date: _____ Interviewer:_____
2. Interviewee:_____ Position:_____
3. Name of institution: _____
4. Type of institution:

Government ☐ Private co. ☐ NGO ☐ International ☐ Informal business ☐

Other (Specify) ……..

5. Type of stakeholder (Please tick ☑):

Importer	☐	Supplier	☐
Assembler	☐	Distributor	☐
Corporate consumer	☐	Individual consumer	☐
Collector	☐	Refurbisher	☐
Recycler	☐	Downstream vendor	☐
Final disposer	☐		

Other (Specify) ……..

6. Address:

P.O. Box	
Code	
Location	
Town	

District	
Province	
Telephone	
E-mail	
Fax	
Web site	

7. Principal activity of the institution _____

8. Number of employees and the age bracket:

	10-20 Yrs	**21-30 Yrs**	**31-40 Yrs**	**41-50 Yrs**	**Above 51**
Female					
Male					
Total					

9. Is your institution ISO 14001[4] certified? YES ☐ NO ☐

B. ICT Importers, Suppliers, Assemblers and Distributors

10. Which products do you deal with?

Desktop computers (PC) ☐ Notebook computers (Laptop) ☐

Monitors (CRTs) ☐ Printers ☐

Flat screens (LCDs) ☐ Photocopier ☐

Mobile phones ☐ Fax machines ☐

[4] ISO 14001 is an internationally accepted standard that sets out how you can go about putting in place an effective Environmental Management System (EMS). The standard is designed to address the delicate balance between maintaining profitability and reducing environmental impact

Modems ☐

Others, specify _____

11. How many equipment of the following types did you import or assemble in the last four years?

Equipment	2007	2006	2005	2004
Desktop Computers (PC)				
Notebook computers (Laptop)				
Monitors (CRTs)				
Flat screens (LCDs)				
Mobile phones				
Printers				
Photocopier				
Fax machines				
Modems				
Other, specify				

12. How many of the imported or assembled equipment did you supply and distribute in the last four years?

Equipment	2007	2006	2005	2004
Desktop Computers (PC)				
Notebook computers (Laptop)				
Monitors (CRTs)				
Flat screens (LCDs)				
Mobile phones				
Printers				
Photocopier				
Fax machines				

Modems _____ _____

Other, specify _____ _____

13. What percentage of your imported or assembled equipment is 2nd hand?

None	☐	Less than 10%	☐	10-20%	☐
20-30%	☐	30-50%	☐	50-70%	☐
70-80%	☐	80-90%	☐	90-100%	☐

14. What percentage of your imported or assembled computers are clone computers?

None	☐	Less than 10%	☐	10-20%	☐
20-30%	☐	30-50%	☐	50-70%	☐
70-80%	☐	80-90%	☐	90-100%	☐

15. How do you distribute your computer equipment?

Sell directly to customers	☐	Through appointed distributors	☐
Sell directly to retail outlet chains	☐	xxxxx	☐

Others, specify _____

16. How many retail outlets sell your computer equipment in Nairobi? _____

17. What in your view is the proportion of the second hand market for computer equipment in Kenya?

Less than 10%	☐	10-20%	☐	20-30%	☐
30-40%	☐	40-50%	☐	Over 50%	☐

18. What in your view is the proportion of non-branded (clone) market for computer equipment in Kenya?

Less than 10%	☐	10-20%	☐	20-30%	☐
30-40%	☐	40-50%	☐	Over 50%	☐

C. Consumer (Government, private institutions, NGOs and individuals)

19. How many of the following new or second hand equipment do you have?

	New	2nd hand
Computers accessories (including cartridges, mouse, keyboard)	_____	_____
Desktop computers (PC)	_____	_____
Notebook computers (Laptops)	_____	_____
Monitors (CRTs)	_____	_____
Flat screens (LCDs)	_____	_____
Printers	_____	_____
Telephones	_____	_____
Mobile Phones	_____	_____
Televisions	_____	_____
Photocopier	_____	_____
Fax Machines	_____	_____
Modems	_____	_____
Others, specif	_____	_____

20. Where did you acquire your equipment from? (Tick 2 of the most common)?

Retail outlet or shop ☐

General distributor ☐

Leased ☐

Formal 2nd hand market ☐

Informal 2nd hand market ☐

Others, specify _____

21. What do you do with the equipment when it is no longer useful?

Store in own premises ☐

Sell as 2nd hand equipment ☐

Throw them away with general waste ☐

Give them to a recycler ☐

Donate to family, schools, employees, friends, etc. ☐

Return to the seller on a buy-back arrangement ☐

Give back at the store for a reduction on the price of a new equipment ☐

Disassembled to reuse some parts ☐

Others, specify _____

22. Do you keep inventories of the equipment you discard/store?

YES ☐ NO ☐

23. Have you ever discarded any of the following equipment?

Computers accessories (including, cartridges, mouse, and keyboard) YES ☐ NO ☐ Desktop

Computers (PC) YES ☐ NO ☐

Notebook computers (Laptop) YES ☐ NO ☐

Monitors (CRTs) YES ☐ NO ☐

Flat screens (LCDs) YES ☐ NO ☐

Printers YES ☐ NO ☐

Telephones YES ☐ NO ☐

Mobile Phones YES ☐ NO ☐

Televisions YES ☐ NO ☐

Photocopier YES ☐ NO ☐

Fax Machines YES ☐ NO ☐

Modems YES ☐ NO ☐

Others YES ☐ NO ☐

24. For how long did you possess the equipment before you discarded (became obsolete)?

1 month-1 year ☐ 1-2 years ☐ 2-3 years ☐

3-4 years ☐ 4-5 years ☐ Over 5 years ☐

25. In what condition was the equipment when you discarded it?

Broken – unfixable ☐

Broken – fixable ☐

Working condition ☐

Other, specify _____

26. Are you aware that some electronic parts may be profitably recycled?

YES ☐ NO ☐

27. If the equipment was sold, who did you sell it to?

The scrap collector ☐

The 2nd hand market ☐

Others, specify _____

28. Would you be ready to pay for your discarded equipment to be collected and recycled?

YES ☐ NO ☐

29. Are you aware of any company that collects discarded e-waste for recycling?

YES ☐ NO ☐

30. Does the company (waste collectors) come and pick-up waste at your door?
YES ☐ NO ☐

31. If yes, do they buy the waste from you? At what percent of the cost price?
Less than 10% ☐ 10-20% ☐ 20-30% ☐

30-40% ☐ 40-50% ☐ Over 50% ☐

32. If no, what process do you use to discard the e-waste equipment?
_____
_____
_____

33. Are you aware of what happens to the equipment you have discarded?
YES ☐ NO ☐

34. Are you aware of the social and environmental consequences of discarded electrical and electronic equipment?
YES ☐ NO ☐

35. What social consequences have you noticed of discarded electrical and electronic equipment?

_____

36. What environmental consequences have you noticed of discarded electrical and electronic equipment?

_____

37. Would you be ready to give away your e-waste for free?
YES ☐ NO ☐

38. If yes, with what conditions? (e.g. pick-up service, guarantee of proper disposal, etc.) Provide details
_____
_____
_____

D. E-waste Collectors

39. How do you identify the e-waste to be collected?

_____

_____

_____

40. How do you do the actual e-waste collection?

Pick-up e-waste door to door? ☐

Have a common collection point ☐

Pick from garbage disposal gardens ☐

Send municipal collection lorries ☐

Others, specify _____

41. Under what financial arrangements do you collect e-waste?

Consumer pays for collection of e-waste ☐

Purchaser pays for the e-waste ☐

Others, specify _____

42. How many of your staff members are assigned the task of collecting e-waste? _____

43. How many tons of computer waste did you collect in 2007? _____

44. Is the way e-waste is currently collected convenient to you?

YES ☐ NO ☐

45. If no, what can be improved?

_____

_____

_____

_____

46. After collecting the e-waste, what do you do with it?

Dismantle and sell as parts ☐

Repair and sell as 2nd hand (recycle) ☐

Deposit to a refurbishing firm ☐

Others, specify _____

E. E-Waste Refurbishers and Recyclers

47. Is the organization formally registered?
YES ☐ NO ☐

48. How many staff do you have? _____

49. Describe how the refurbishing or re-cycling business is organized. _____

_____

50. Describe the type of interactions (formal or informal) you have with other refurbishers or re-cyclers.

_____

51. What equipment do you refurbish or recycle? (Tick where appropriate)

Desktop computers (PC)	☐	Notebook computers (Laptop)	☐
Monitors (CRTs)	☐	Printers	☐
Flat screens (LCDs)	☐	Photocopier	☐
Mobile phones	☐	Fax machines	☐
Printer cartridge refill	☐	Modem	☐

Others, specify _____

52. How many tons of e-waste did you collect in 2007? _____

53. What percentage of this was repairable e-waste?

Less than 10%	☐	10-20%	☐	20-30%	☐
30-40%	☐	40-50%	☐	Over 50%	☐

54. What percentage of the e-waste collected is disposed of?

Less than 10%	☐	10-20%	☐	20-30%	☐
30-40%	☐	40-50%	☐	Over 50%	☐

55. What was the average revenue per ton of refurbished or recycled equipment? _____

56. What is the average age of refurbished equipment?

1 month-1 year	☐	1-2 years	☐	2-3 years	☐
3-4 years	☐	4-5 years	☐	Over 5 years	☐

57. Which kind of processes takes place at this site?

Dismantling	☐	Segregation	☐	Cable stripping	☐
Shredding	☐	Precious metal recovery	☐		

Separating fractions ☐ Recovering material from e-waste ☐

Others, specify _____

58. What main products are produced from the refurbishment or recycling processes?

a). _____

b). _____

c). _____

d). _____

e). _____

59. What protective measures, tools and equipment are given to staff to protect them from potential harmful chemicals and emissions?

Gloves ☐ Face masks ☐ Overalls uniforms ☐

Boots (shoes) ☐

Others, specify _____

60. What key expertise is needed in the refurbishing or recycling business?

a). _____

b). _____

c). _____

61. How many people are involved in the process? _____

62. Visual assessment of the amount of material processed ***(kg per year; daily figures come in table input) Photos of site (e.g. overview, storage area)***

_____

_____

_____

63. What do you do with the materials that are no longer useful?

Dispose off with other rubbish ☐

Keep in the store ☐

Burn ☐

Others, specify _____

64. Visual assessment of the environment in terms of gas emissions, dirty water etc. ***(Condition of the buildings and vegetation around to be noted)***

_____

_____

_____

65. What should be done to implement proper recycling channels in Kenya?

_____

_____

_____

_____

_____

_____

G. Downstream Vendors

66. When did you start the E-waste vendor business? _____

67. Are you a legally registered business entity (Formal organization)
YES ☐ NO ☐

68. What parts/equipment/gadgets do you deal with?
Capacities ☐ Transistors ☐ Batteries ☐

Network cables ☐ Others ☐

Others, specify _____

69. From where do you get the equipment parts/fractions?_____
E-waste collectors ☐ Hardware shops ☐ E-waste recycler ☐

E-waste refurbisher ☐ Dumping site ☐

Others, specify _____

70. How do you use the parts/fractions?
Repair broken equipment ☐ Sell them as parts ☐

Make new products ☐

Others, specify _____

71. List three categories of your clients.

a) _____
b) _____
c) _____

72. On average what is the revenue per kg of materials sold? _____ _____

73. Where do you dispose the unusable materials? _____

H. Final Disposers

74. What are the main materials that you dispose off?
Plastic ☐ Metal ☐ Computer screen ☐

Laptop screen ☐ Mouse ☐ Keyboard ☐

Computer cables ☐ Mobile ☐ Telephone headsets ☐

Modems ☐

Others (Specify)

_____
_____
_____

75. Where do you dispose off the material?
Dump sites ☐ Throw away with normal waste ☐

Open burning ☐

Others, specify _____

76. How many tons do you dispose of in a year? _____

77. In your view, does Kenya have infrastructure for hazardous waste disposal?
YES ☐ NO ☐

I. More General Questions

78. What is to your point of view the most important obstacles to proper recycling of electric and electronic equipment in Kenya? (***Rank starting with the most important***)

Costs ☐

Lacking infrastructure and/or policy within your company ☐

Absence of recycling possibilities ☐

Lack of legislation ☐

Other ☐

79. How do you recruit the member of staff?
Advertise through print media ☐ Advertise through electronic media ☐

Referrals by friends ☐ Walk in looking for Jobs ☐

Look for volunteers and pay a fee ☐

Others, specify _____

80. Are you aware about the environmental hazards caused by discarded electronic equipment?
YES ☐ NO ☐

81. Are you aware that some hazardous fractions in e-waste need a special treatment in order to be safely disposed of?
YES ☐ NO ☐

82. Does your company have a policy for the management of e-waste?
YES ☐ NO ☐

83. If yes, please share a copy with us?
_____

84. If not, does your company plan to adopt a policy of e-waste management?
YES ☐ NO ☐

85. Do workers have the following?
Union ☐ Medical Cover ☐ Flexible working hours ☐ Annual leave ☐

86. What are the key issues you would like included in the policy
_____

_____

_____

_____

87. Least five organizations that you think should take an active role in the management of e-waste from importation to the point at which they need to be discarded.
a). _____

b). _____

c). _____

d). _____

e). _____

J. General Observations

88. What health and physical risks are workers exposed to from observation.
_____
_____
_____

89. Is it obvious that the workers have undergone/use the following?
Mask and other protective gadgets ☐ Have undergone training on e-waste handling ☐

Others, specify _____

90. Describe the geographic setting of major e-waste treatment facilities and Sites.
_____
_____
_____

91. Are the collection points, refurbishment, recovery or disposal sites located in or nearby populate areas or agriculture land?
YES ☐ NO ☐

92. If yes: Describe the socioeconomic set-up of the settlement (economic basis, typical kind of housing-structure, population density (above / below local average), distance to e-waste treatment sites._____
_____
_____

93. What suggestions would you give for proper e-waste management based on this particular site as the researcher?
_____