HINCKLEY RECYCLING NIGERIA LTD.

E-Waste Management: A formal approach

By: Belinda Osayamwen

BDM
Hinckley Recycling is committed to engender a standard of excellence by providing a high quality service for the disposal of electronic waste, and ensuring that this service is always conducted in an environmentally friendly manner, and that the processes involved during the disposal would at all times conform to and comply with all relevant legislation as enforced by the recognized authorities - local and international.

Hinckley Recycling conforms to strict environmental recycling requirements and best practices. We are the first registered E-waste recycler in Nigeria and pride ourselves on working closely with the Ministry of Environment, NESREA and LASEPA.

We offer a socially responsible solution for E-waste and we give you peace of mind ensuring that your business is contributing to reducing its carbon footprint, as well as recycling E-waste responsibly.

• Established since 1998 in Nigeria
• Nationwide Coverage
• Nigerian Company
• Recycling permits from both Federal and State government
• Meet highest International Standards
• Dedicated processing facility for removal of hazardous waste
• Multiple recycling services rendered
What is E-waste?

E-waste is any broken or unwanted electrical or electronic appliance (having electronic current flowing via it) discarded by its original user.
World E-waste Data

In 2016:
• 44.7 million Mt/ 6.1 kg per inhabitant
• 20% documented to be recycled responsibly

In Africa
• 2.2 million Mt/ 1.9 kg per inhabitant
• Less than 1% documented to be recycled responsibly
• 71,000 t were imported via 2 main ports in Lagos.
• EU member states – 77%
• Germany-20%, UK-19.5%, Belgium-9.4%, Netherlands-8.2%, Spain-7.35%, China & USA-7.33%, Ireland 6.2%
• 70% exported to China while others are split between India, Pakistan, Vietnam, the Philippines, Malaysia, Nigeria and Ghana & possibly Brazil and Mexico.

In 2017:
• Close to half of the world's population used the internet

In 2018:
• 48 million Mt/ 6.3 kg per inhabitant

• 120 countries adopted the digitalization of broadcasting in 2016.
• By mid-2017, 55 countries had implemented the digital switchover and 66 countries were in the process.
• 1 million tons of external power supplies are manufactured each year - ITU's specific principles for eco-designs.

Source: ITU 2012, 2015, 2016b & 2017a
International Standards

Any shipments of waste will be carried out in accordance to the Basel Convention as waste categorised under Annexes VIII and IX.

Hazardous fractions (Annex VIII) will require trans-boundary movement in order for delivery to adequate disposal facilities, following Basel Convention procedure of the Prior Informed Consent of all involved parties.

### Non-Hazardous E-waste

<table>
<thead>
<tr>
<th>Categorised under</th>
<th>Categorised under Annex VIII</th>
<th>Annex IX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron/Steel</td>
<td>B1010</td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>B1010</td>
<td></td>
</tr>
<tr>
<td>Bronze/Brass</td>
<td>B1010</td>
<td></td>
</tr>
<tr>
<td>Stainless steel</td>
<td>B1010</td>
<td></td>
</tr>
<tr>
<td>Mixed ferrous metals</td>
<td>B1010</td>
<td></td>
</tr>
<tr>
<td>Mixed non-ferrous metals</td>
<td>B1050</td>
<td></td>
</tr>
<tr>
<td>Mixed plastic</td>
<td>B3010</td>
<td></td>
</tr>
<tr>
<td>ABS plastic</td>
<td>B3010</td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td>B2020</td>
<td></td>
</tr>
<tr>
<td>Printed circuit boards (PCB)</td>
<td>A1180</td>
<td>B1110</td>
</tr>
</tbody>
</table>

### Hazardous E-waste

<table>
<thead>
<tr>
<th>Categorised under</th>
<th>Categorised under Annex VIII</th>
<th>Annex IX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium ion batteries</td>
<td>A1170</td>
<td></td>
</tr>
<tr>
<td>Capacitors</td>
<td>A1180</td>
<td></td>
</tr>
<tr>
<td>Lead---acid batteries</td>
<td>A1160</td>
<td></td>
</tr>
<tr>
<td>Nickel Cadmium batteries</td>
<td>A1170</td>
<td></td>
</tr>
<tr>
<td>Other batteries</td>
<td>A1170</td>
<td></td>
</tr>
<tr>
<td>LCD screens</td>
<td>A1180</td>
<td></td>
</tr>
<tr>
<td>CFL (e.g. scanner bulbs)</td>
<td>A1180</td>
<td></td>
</tr>
<tr>
<td>Toner cartridges</td>
<td>A1180</td>
<td></td>
</tr>
<tr>
<td>CRT leaded glass</td>
<td>A2010</td>
<td></td>
</tr>
<tr>
<td>Phosphorous powder</td>
<td>A3130</td>
<td></td>
</tr>
<tr>
<td>Brominated plastic</td>
<td>A3180</td>
<td></td>
</tr>
</tbody>
</table>
Today’s Electrical Life Cycle

- OEM
- IMPORTER
- COMPANY
  - SOLD TO 2ND HAND DEALER
    - DISPOSED WITH OFFICE WASTE
    - SOLD TO STAFF
  - STORED IN OFFICE
    - DONATION
      - DUMP SITE
      - ILLEGAL EXPORT
Informal E-waste Management – The Problem

E-waste collected by scrap merchants is being cannibalized for recovery of valuable fractions whilst hazardous waste is discarded in dump sites, burnt or buried.
## Effects of Informal E-waste Management

<table>
<thead>
<tr>
<th>E-Waste Component</th>
<th>Electric Appliance found</th>
<th>Adverse Health Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>CRT monitor, lead-acid batteries, Circuit boards, some PVCs.</td>
<td>Damage to the nervous system, behavioral disturbances, attention deficits, hyperactivity, lower IQ.</td>
</tr>
<tr>
<td>Mercury</td>
<td>Fluorescent tubes, mechanical door bells, flat screen TVs/monitors, phones</td>
<td>Memory loss, muscle weakness, reduced fertility, slower growth, dermatitis, kidney damage.</td>
</tr>
<tr>
<td>Cadmium</td>
<td>Nickel-cadmium rechargeable lamps, phone battery,</td>
<td>Severe damage to the lungs &amp; kidney, neuromotor deficit in children.</td>
</tr>
<tr>
<td>Brominated Flame Retardants</td>
<td>Most electronic plastics</td>
<td>Liver &amp; thyroid problems, brain damage.</td>
</tr>
<tr>
<td>Carcinogenic Powder</td>
<td>Ink Cartridges/toner</td>
<td>Cancer, skin irritation.</td>
</tr>
<tr>
<td>Sulphur</td>
<td>Lead-acid batteries</td>
<td>Heart, liver &amp; kidney damage, eye &amp; throat irritation.</td>
</tr>
<tr>
<td>Arsenic</td>
<td>Microchips, phones</td>
<td>Negative impact on skin, liver, nervous &amp; respiratory systems.</td>
</tr>
</tbody>
</table>
Effects of Informal E-waste Management Cont.

Source: Tatenda, 2017
Formal E-waste Management

1. Appropriate storage systems
   • Collection of E-waste
   • Sorting of E-waste

2. Engaging a licensed E-waste recycler
   • Processing of E-waste
   • Repairing of E-waste
   • Recycling
   • Dismantling

3. Implementing the tenets of your ISO 14001 Certification
   • Component recovery from E-waste
   • Residual disposal of E-waste
Appropriate storage systems

- Collection of E-waste
- Sorting of E-waste
Engaging a licensed E-waste recycler

- Processing
- Repairing
- Recycling
- Dismantling

Diagram:

1. Device
2. Device-level disassembly
3. Component-level segregation
4. Non-functional components
5. Disassembled but functional components
6. Segregation of disassembled components
7. Shredding/Pulverizing
8. Material Recovery
9. Disassembled but non-functional components segregated by type

Indicators:
- Indicates manual operations that require personal protection equipment for worker safety
- Indicates technology intensive operations that damage worker health and the environment if undertaken manually
Implementing the tenets of ISO 14001

- Component recovery from E-waste
- Residual disposal of E-waste
Hinckley Recycling – Case Studies

- **ExxonMobil**
  Recycling of electronic waste including IT equipment and lead acid batteries from Victoria Island, Lagos.

- **Guinness**
  Data destruction of PDA, laptop and desktop hard drives from Ikeja, Lagos.

- **Ericsson**
  Recycling and data destruction of IT assets from VI, Lagos.

- **Friesland**
  Hard drive shredding for computer hard drives in Lagos.

- **HP**
  Long term recycling contract to recycle all end of life HP waste in Nigeria.

- **Nesrea**
  Recycling of eWaste including AC split units, phones and IT equipment.

- **Sightsavers**
  Data destruction of their laptop from the UK aid charity branch in Kaduna.

- **PZ Cussons**
  Recycling of IT electronic waste including tapes in Nigeria.

- **Haier Thermocool**
  Long term recycling of all end of life whole appliances or parts across all their RDCs in Nigeria.

- **Fan Milk**
  Long term recycling & disposal of all end of life white goods across all their RDCs in Nigeria.

- **Samsung**
  Long term recycling contract of all white, brown, black goods etc in Nigeria.

- **Nestle**
  Responsible recycling of huge backlog of ink toner cartridges in HQ & branch.

- **KPMG**
  Recycling of IT equipment including onsite shredding of hard drives.

- **Proparco**
  Responsible recycling of IT assets & refurbishing of functional units.
Proposed Solution

1. Establish a clear legal framework for e-waste collection and recycling.
2. Introduce extended producer responsibility to ensure producers finance the collection and recycling of e-waste.
3. Enforce legislation for all stakeholders and strengthen monitoring and compliance mechanisms across the country to ensure a level playing field.
4. Create favorable investment conditions for experienced recyclers to bring the required technical expertise to the country.
5. Create a licensing system or encourage certification via international standards for collection and recycling.
6. If an informal collection system exists, use it to collect e-waste, and ensure e-waste is sent to licensed recyclers through incentives.
7. When no local end-processing facilities exist for an e-waste fraction, ensure good and easy access to international licensed treatment facilities.
8. Ensure that costs to run the system are transparent and stimulate competition in the collection and recycling system to drive cost effectiveness.
9. Ensure that all stakeholders involved in e-waste collection and recycling are aware of the potential impacts on the environment and human health as well as possible approaches to the environmentally sound treatment of e-waste.
10. Create awareness on the environmental benefits of recycling among consumers.

Source: UNU 2017

1. Awareness! Awareness!! Awareness!!!
2. Formalizing the E-waste sector/ EPR
3. Strengthen compliance approaches
4. Tighten border security
5. Awareness! Awareness!! Awareness!!!
Thank you.

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