

USING ICTs TO MEET GLOBAL ENVIRONMENTAL DEVELOPMENTAL GOALS

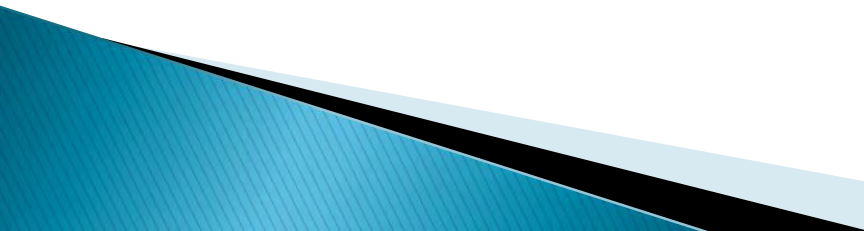
Aladesanmi, A. T^{*1} and Aladesanmi, O.T²

1. Information Technology and Communications Unit,
Obafemi Awolowo University, Ile-Ife
2. National Centre for Technology Management,
Obafemi Awolowo University, Ile-Ife

OUTLINE

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 - Emerging perspective
- WASTE DISPOSAL IN NIGERIA
 - Sources of e-waste
 - Drivers of e-waste
 - Indiscriminable disposal of waste in Nigeria
- ICT for environmental sustainability
 - Environmental benefits of ICT
 - Green ICT

Background Information

- ▶ Nigeria is the most populous country in Africa – Estimated population of 150Million (World Bank Report 2009).
 - ▶ Nigeria is a consumer nation hence a major recipient of used Electrical and Electronic equipment (EEE)
 - ▶ Nigeria first experience with Toxic Waste was in 1987
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Koko Waste Incidence

- ▶ Dateline: 19th September, 2007
- ▶ 3500 tonnes of Toxic waste contained in 8000 drums shipped to Koko village.
- ▶ The waste were basically polychlorinated biphenyls (PCBs).
- ▶ Stored in the backyard of a man for a monthly storage fee of \$5.
- ▶ With time, some of the drums were watched and turned to household utensils

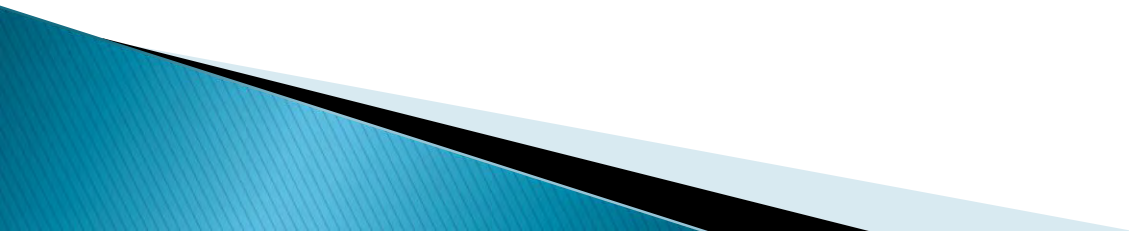
Nigeria's Environmental Waste Management Policy

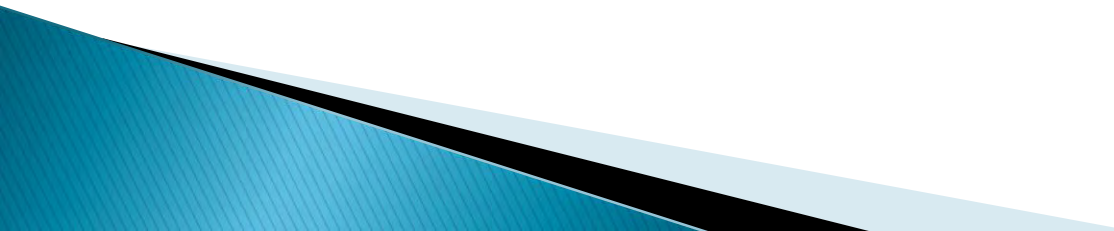
- ▶ The Institutional Framework
- ▶ – Federal Ministry of Environment (*with State counter-part*);
- ▶ Waste management in Nigeria is performed in accordance with the Waste Disposal and Environmental Pollution Control Guideline (FEPA, 1991 Guideline, FEPA was set-up by Decree 42 of November 1988).
- ▶ □ Policy formulation is more at this level;
- ▶ – National Environmental Standards and Regulations Enforcement Agency (NESREA),
- ▶ 2007 (*State Agencies like LASEPA*)
- ▶ □ Enforcement of environmental laws, regulations and guidelines;
- ▶ • Legal Framework (National/International Laws)
- ▶ – Harmful Waste (Special Criminal Provisions) Act, 1988, prohibit the carrying, depositing and dumping of harmful waste on any land, territorial waters;
- ▶ – NESREA Act;
- ▶ – Nigeria ratified the Basel Convention in March, 1991; Amendment to the Basel Convention in May, 2004; and a signatory to Bamako Convention in December, 2008.
- ▶ • Non – Legislative Initiative
- ▶ – MoU signed between NESREA, Standard Organization of Nigeria, Consumer Protection Council and Alaba International Market Amalgamated Traders Associated to fight e-waste and privacy. (Fagbohun, O. 2011)

ICT & Environment: INTRODUCTION

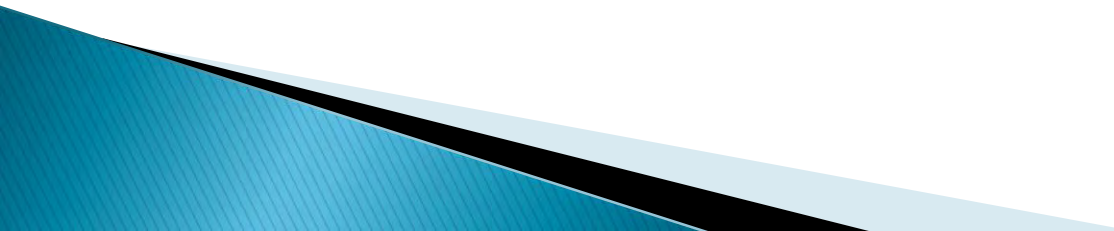
- ▶ Expansion of anthropogenic activity in recent years has been accompanied by growing global environmental concerns, such as climate change, energy security and increasing scarcity of resources.
- ▶ ICT sector has also contributed its own share to the factors that cause threat to the environment.
- ▶ In response, ICT industries have recently shown more interest in sustainable production, usage and disposal of ICTs.
- ▶ ICT in this paper is defined as information technology plus telecommunications equipment and telecommunications services (EITO (2002)).

ICT AND ENVIRONMENT: TRADITIONAL CONSTRUCT

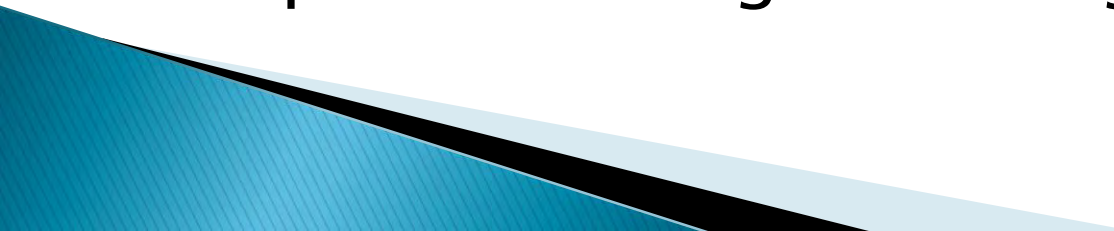


- Traditionally,
 - Think ICT, think e-waste
 - E-waste or electronic waste is any appliance using an electrical power supply that has reached its end-of-life.(OECD,2001). It includes used computers, mobile handsets and other electronic devices which are destined for reuse, resale, salvage, recycling or disposal.
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SOURCES OF E-WASTE

- ▶ House hold electronics (fridge, television etc)
 - ▶ Office equipment (shredder, computers, projectors etc)
 - ▶ Laboratory equipment (spectrophotometer etc.)
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DRIVERS OF E-WASTE

- Poverty
 - Lack of technical-know-how
 - Lack of maintenance culture
 - Unstable power supply (reduces product lifespan)
 - Lack of trade-in program
 - Uni-direction of waste (shipment of disuse electronics to developing world)
 - Inavailability of parts for replacements
 - Rapid technological changes
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OBSOLETE COMPUTERS



University's IBM 360/370 Odejobi 2011 private collections

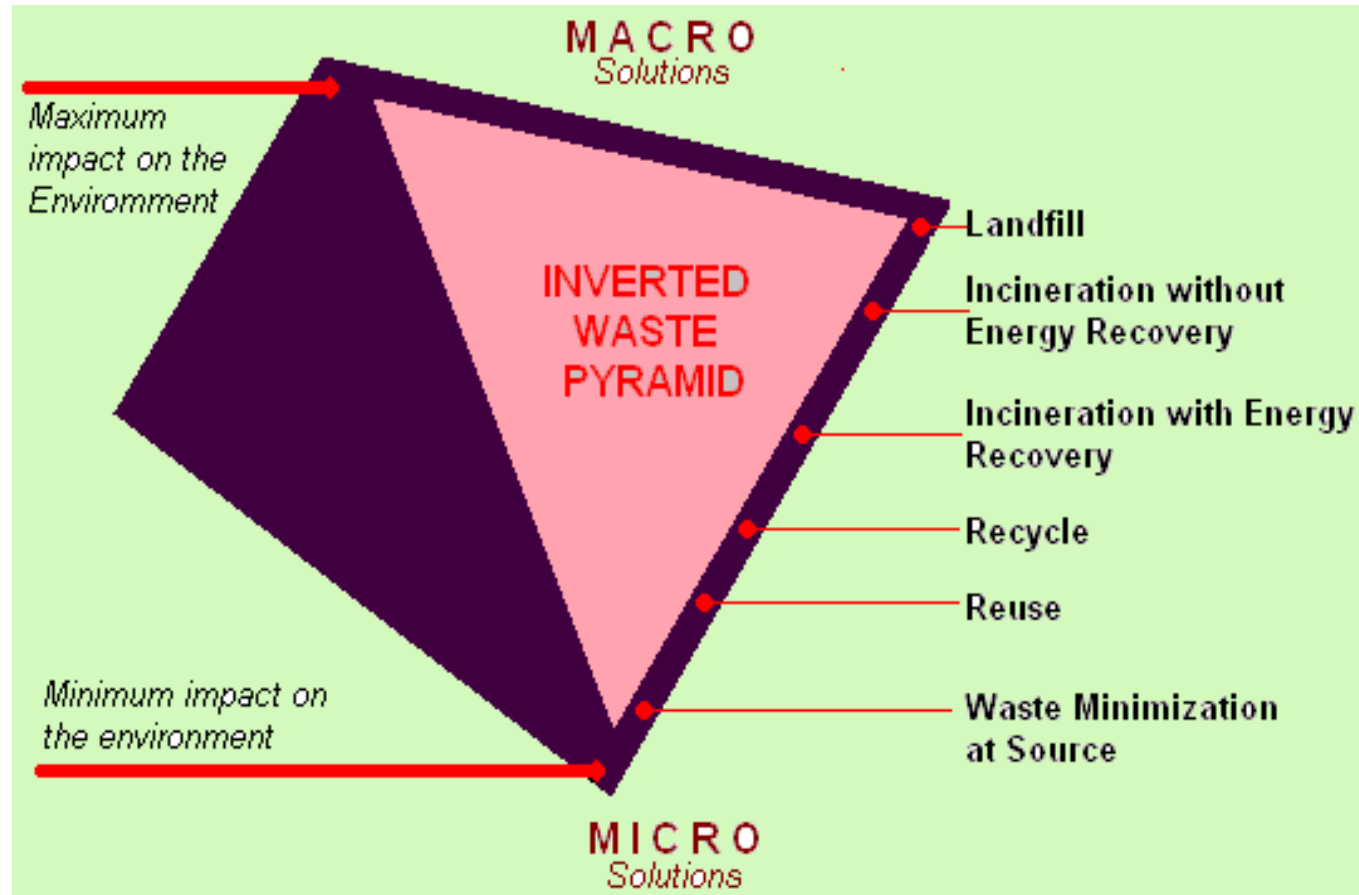
Valuable Materials from e-Waste

- ▶ Copper
- ▶ Tin
- ▶ Lead
- ▶ Aluminium
- ▶ Nickel
- ▶ Iron
- ▶ Zinc
- ▶ Plastic

E-waste material considered as hazardous

- ▶ Plastics including polyvinnyl chloride(PVC)
- ▶ Lead
- ▶ Barium
- ▶ Beryllium
- ▶ Cadmium
- ▶ Hexavelent chromium
- ▶ Selenium

WASTE DISPOSAL IN NIGERIA



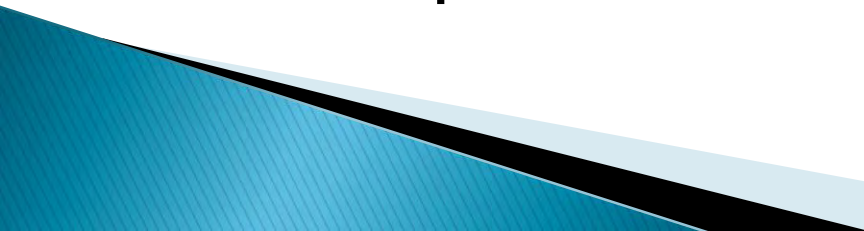
Effective Solid waste management hierarchy (IPCC, 2007)

INDISCRIMINATE DISPOSAL OF E-WASTE IN NIGERIA

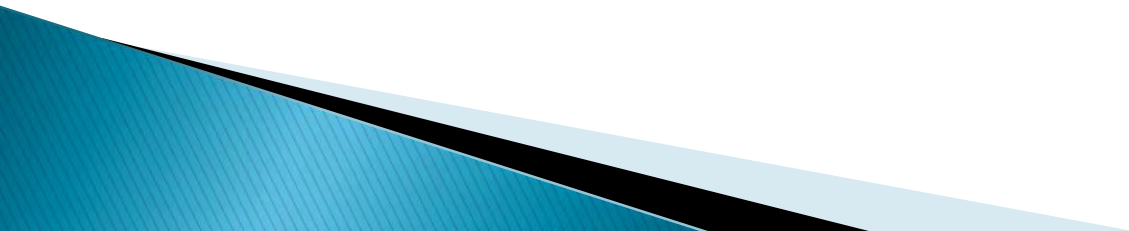


A hip of waste along a staircase in Computer Buildings (Note that this junk contains many monitors) Odejobi 2011 private collections

IMPACTS OF E-WASTE ON THE ENVIRONMENT

- Degradation of top soil (Nigerian is an agrarian economy)
 - Surface water contamination (heavy metal)
 - Environmental menace
 - Greenhouse gas emissions
 - Energy consumption and the share of renewables
 - Toxicity
 - Ozone Layer Depletion
 - Biodiversity
 - Municipal waste collected but not recycled
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ICT AND THE ENVIRONMENT: EMERGING PERSPECTIVE



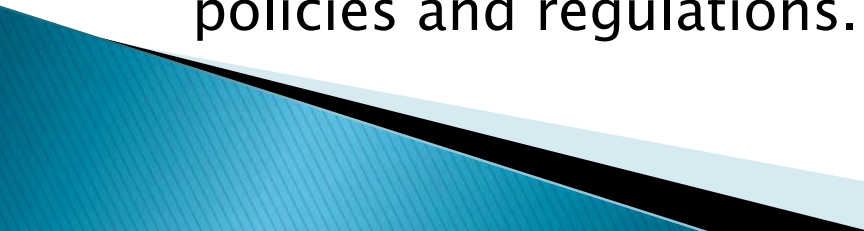
ICT FOR ENVIRONMENTAL SUSTAINABILITY

ICT in the environment sector is often used to:

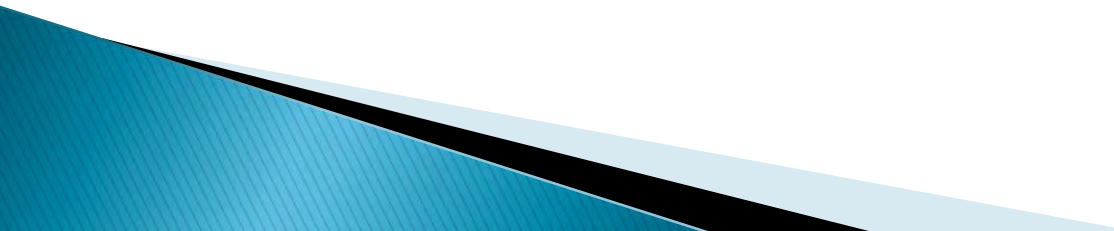
- communicate traditional forms of environmental knowledge to communities;
- facilitate the citizen monitoring of environmental issues;
- Improve, monitor, and facilitate environmental activism;
- reduce the consumption of energy, water and other essential natural resources through *more efficient agriculture and industrial procedures*
- provide more useful metrics and information, and also enable population decentralization and large-scale telecommuting;
- Used in technology forecast; and
- monitor and respond to environmental disasters.

(Adapted from Minasyan, 2006)

POLICY RECOMMENDATIONS

- The existing and developing policy frameworks should be reviewed to address enforcement and support implementation.
 - Industry should promote an environmentally benign and economically viable innovations from products to services – product service
 - ICT's efficiency improvements in transport must be combined with demand side management in order to result in an overall reduction of environmental impact.
 - Deployment of ICT support systems for decentralized electricity production from renewable sources should be promoted.
 - Eco-efficient e-work should be included in organizational policies and regulations.
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Conclusion

- ▶ The traditional construct of ICT as a major contributor of environmental degradation is not always true.
 - ▶ Indeed, proper harnessing of ICT for education, awareness and environment prediction can assist in combating some of the environmental challenges of ICT.
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Thank you.

