

E-WASTE: STRATEGIES TO PROTECT PUBLIC HEALTH AND ENVIRONMENT*

Abstract

The growing importance of proper disposal of electronic waste has been brought to the forefront in recent times. This article examines the role of legislation to compel producers to take back their products which are nearing the end of life.¹ Other objectives are to find out how E - waste can be transformed to more precious materials that are economically viable, and to combat the tendency to use less developed economies as dumping ground for discarded electronic waste items. This paper finds that there are growing mounds of electronic waste in metropolitan areas in Nigeria such as Lagos, where refurbishing of discarded computer terminals and other accessories for sale takes place. Therefore the paper draws attention to measures that should be put into place to ensure that this process is safely maximised such that rare metals within the components are converted to other useful items.² The paper recommends that users of electronic products be encouraged to practice long use of appliances such as phones and computers to curb the environmental impact of such waste; and to put in place the enabling legal framework to monitor and regulate E- waste handling and disposal. The methodology employed is doctrinal research.

Keywords: Electronic waste, Recycling, Refurbishing, Legal Framework, Economic Derivatives, Environmental and Human Protection.

1. Introduction

The right to an adequate standard of living and right to health are issues which are tied to the dignity of the human person. These are enshrined in such international treaties like the International Covenant on Economic, Social and Cultural Rights of 16th December, 1996 (ICESCR), and can become a rallying focus for safer E – waste disposal methods.³ In recent years, a rapidly developing technological terrain has led to an increase in Electronic waste. The term E-waste refers to a terminology that describes discarded electronic appliances. We live in a consumer dominated society and this article focuses on household appliances and more specifically I.T equipment which have traditionally been subsumed under Waste Electrical and Electronic Equipment (WEEE).⁴ European Directive 2002/96/EC describes E-Waste as ‘Waste electrical equipment, including all components, sub-assemblies and consumables which are part of the products at the time of discarding’⁵ The term waste is also described as ‘any substance or object which the holder discards or is required to discard in compliance with the national legislative provisions.’⁶ Another definition from the Basil Action Network⁷ describes E-Waste to include ‘a wide and developing range of electronic appliances ranging from large household appliances, such as refrigerators, air conditioners, cell phones, stereo systems and consumable electronic items to computers discarded by their users.’⁸ The word ‘discarded’ runs through most of the definitions. This implies that issues usually arise from such products only after they have been discarded. It is no wonder then that the Organisation for Economic Co-operation and Development (OECD)⁹ describes E- Waste as ‘any household appliance consuming electricity and reaching its life cycle end.’ Other categories of e-waste include: (i) *Medical devices*: These include ‘Devices for radiotherapy/cardiology/dialysis, ventilators, analysers, freezers.’¹⁰ (ii) *Monitoring and control instruments*: Smoke detectors, heating regulators thermostats, measuring/weighing/adjusting appliances for household or

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¹Olanrewaju Fagbohun, ‘An Overview of Nigerian Regulatory Approach’ (Being a Presentation Made at the 2 day 1st Eko E-waste Summit on the Regulation and Management of E-waste in Nigeria, 24-25 February, 2011)

²Adebola K. Shabi, ‘E-Waste Management in Lagos State: Current Situation of Waste Handling-Regulations and Legislation’ (Being a paper presented on behalf of the Lagos State Environmental Protection Agency (LASEPA) by the General Manager, Engr. Shabihttp://nigeria.ahk.de/fileadmin accessed on 27 November, 2018

³Articles 11 and 12 ICESCR

⁴G Gaidajis, K Angelakoglou and D. Aktsoğlu, ‘E-Waste: Environmental Problems and Current Management’ ‘Journal of Engineering Science and Technology Review’ Jestr 3(1) (2010)193 – 199, www.jestr.org accessed 1 August 2018

⁵Ibid

⁶ The Directive 75/442/EEC, Article 1(a)

⁷ The Basil Action Network, www.ban.org

⁸ G Gaidajis, k Angelakoglou and D Aktsoğlu (n. 4)

⁹ OECD, www.oecd.org

¹⁰ Y.A. Adediran, A Abdulkarim , ‘Challenges of Electronic Waste Management in Nigeria’ *International Journal of Advances In Engineering Technology (IJAET)*, July 2012 ISSN: 2231-1963 (Dept. of Electrical Engineering, Unilorin), accessed 7 August 2018.

laboratory use, other monitoring and control instruments'¹¹ (iii) *Automatic Dispensers*: 'For hot drinks, hot or cold bottles, cans, solid products, money...'¹²

These are not the only existing categories. There are other varieties of electronic waste which totally belongs to a category of waste not hitherto recognised. Nigeria will need to imbibe rules of international law in the area of pollution control to further embrace new emerging categories.¹³ Before now it could not be asserted with all certainty that there is an impending E-waste epidemic. This is because most of the waste is often dumped with solid waste.¹⁴ In developing countries, poverty accounts for a major increase in E - waste scavenging and menial recycling. Also low per capita income and minimum wage means that most households and businesses cannot afford new equipment. This has greatly led to the growth and expansion of many small businesses that function in the capacity of importing used second hand equipment such as household items and computer accessories.¹⁵

The population of Lagos State in Nigeria is estimated to be about 17 million by 2011. With growth in population comes an increased demand for household appliances such as refrigerators, television, washing machines, irons and other category of waste used in industries. Also, because the prices of computers have steadily been on the decline, it is easier for many people and small businesses to afford them.¹⁶ The contents of E-waste that pose health challenges to workers who deal with them include 'cadmium, lead, mercury, arsenic and flame retardants.' These are called BFRs and they are used in circuit boards and casings. They release harmful toxins.¹⁷ They also pose great threat to the environment. E-waste cause soil infertility as most of the components is not bio-degradable. It is important that urban areas can be linked in a tailored manner to ensure safe disposal of electronic waste. The first goal would be re-orientation to encourage better long usage of appliances and provision of safer voltage energy that prolong the lifespan of household equipment. There is an international dimension to this in as much as many foreign countries such as China and the European Union (EU) account for transportation of second hand waste items to developing nations. Recycling of E- waste is a concept that has immense potential to contribute to a rise in the GDP and economic profile of nations. It is therefore important to garner as many international conventions and protocols as possible for local domestication to properly articulate modern E-waste management mechanisms.

2. Access to Clean Environment as a Human Right

Esteemed writers like Walter Kalin and JorgKunzli believe that human rights do not exist in a vacuum, but reside with different categories of people.¹⁸ Obligations to people who are holders of human rights are part and parcel of international legal instruments. The role of the state is also highlighted by the International Law Commission (ILC). It is duty of the state to make sure all the organs of government work together towards expected ends.¹⁹

The contents of E-waste that pose health challenges to workers who deal with them include 'cadmium, lead, mercury, arsenic and flame retardants.' These are called BFR's and they are used in circuit boards and casings. They release harmful toxins.²⁰ However, as people became more specialised in the use of electronic items, especially computer, there is now 'open burning of cables and solid boards' as well as 'Bashing to open CRT's with hammers which exposes the toxic phosphorous dust to the environment.'²¹ 'The protection of man and the environment from harmful effects resulting from all substances introduced into the

¹¹ Ibid

¹² Ibid

¹³ *M.C. Mehta v Union of India* (1997) 2 SCC 353 cited in M Stallworthy, *Understanding Environmental Law* (Thompson, Sweet & Maxwell, 2008) p.176

¹⁴ Lawrence Chidi Anukam, 'E-Waste Control: The Nigerian Experience' (Being a presentation at the 2nd INTERPOL Environmental Compliance and Enforcement Conference, Singapore, 16-18 November, 2015) www.interpol.int/es/content accessed on 28 November, 2018

¹⁵ Adebola K. Shabi, (n.2)

¹⁶ Olanrewaju Fagbohun, (n.1)

¹⁷ Lucy Siegle, 'Reduce, reuse, reboot: why electronic recycling must up its game' www.theguardian.com/environment/nov/20/electronic-recycling-e-waste-2017-gadgets accessed 1 August 2018

¹⁸ Walter Kalin and JorgKunzli, *The Law of International Human Rights Protection* (New York, Oxford University Press, 2009) pp. 303 -309

¹⁹ International Law Commission (ILC) draft Articles on State Responsibility 'Report of the ILC on its fifty – third session (2001), UN Doc A/56/100, Supplement No 10 (Official Records of the General Assembly)

²⁰ Lucy Siegle, (n.17)

²¹ Lawrence Chidi Anukam, (n.14)

atmosphere, water or soil requires the formulation of a comprehensive and interdisciplinary conceptto comprise general objectives and principles of protective action'²²

The set of human right rules that apply to the individual entails more than the right not to get killed. It also involves access to basic necessities of life such as food and shelter. More so, there should be freedom from health problems, some of which are caused by epidemics and other endemic breakouts. This is more pertinent and obvious where people cannot afford basic drugs and necessities to assure their health and survival.²³ The right to an adequate standard of living and right to health then becomes also an economic issue which are tied to the dignity of the human person. These are enshrined in such international treaties like the International Covenant on Economic, Social and Cultural Rights of 16th December, 1996. (ICESCR)²⁴ While the industries involved in the production of electrical appliances serve as an inevitable link in the duty of corporate responsibility to promote accessories to complement several facets of society, the two ends of the relationship are at polar opposites in terms of output. Human beings need this equipment to carry out their basic activities in society, but the goal of major E - appliances producing corporations is geared by profit. The right to health is not specifically mentioned in many international conventions. However international law defers to them when adjudicating matters that border on well-being of the populace.²⁵ The goal of ICESCR provision is to ensure environmentally sanitary working spaces, human and satisfactory working conditions.²⁶ ICESCR qualifies the right to health as 'availability' of not only quantitative, but also qualitative public health, which of necessity must include the availability of drugs and other medical inputs. The most important parameter seems to be that there must be equal access for all. This is to make sure that vulnerable groups have relative ease to inclusive health services as well as timely knowledge of health-related information.²⁷

According to the Human Rights Committee, discrimination may be explained by highlighting the situation whereby a measure is formulated in 'neutral terms' without making provision for divergent situations that may be prominent in other climes. Such compliance with such insensitive measures indirectly wreaks havoc on the economies and lifestyles of the people in those other climes. They are termed discriminatory because they are not backed up with strong objectives that can be justified on moral grounds.²⁸ In view of the various changes that may occur in terms of human rights violations, the Vienna Declaration implores states to be cautious about human right obligations when they enter into international covenants in the areas of intellectual property and trade liberalisation. This is to avoid disparity with the Declaration which states that 'human rights and fundamental freedoms are the birthright of all human beings, their protection and promotion the first responsibility of governments.'²⁹

3. The Theoretical Basis for the Protection of the Environment

Anthropocentric philosophy

This is the view that upholds the superiority of mankind from the rest of nature. The natural resources on earth are to be utilised for the benefit on mankind.³⁰ This is a kind of existential thinking; the 'me first' before others kind of reasoning. It is deduced from the state of man in nature in which natural resources are scarce, and only the strongest get to partake from it. However, despite holding this position, the anthropocentric school of thought also leans towards having a sustainable environment. Man is also seen as a 'steward' of natural resources and amenities. They also hold the view that the present generation should

²²Martin Uppernbrink, 'The Environmental Policy of the Federal Government in the Federal Republic of Germany' in E O A Aina and N O Adedipe, ed., *The Making of the Nigerian Environmental Policy* (Ibadan: University Press, 1991) p. 311

²³ Walter Kalin and JorgKunzli, (n.18)

²⁴Articles 11 and 12 ICESCR, (n.3)

²⁵Universal Declaration of Human Rights of 10th December 1948, UDHR Art. 25; African Charter on Human and People's rights, (Banjul Charter) of 27 June 1981(ACHPR) art 16; CERD ART 5 (e)(iv); Convention on the Elimination of all Forms of Discrimination against Women of 18th September 1979 (CEDAW) art 12; Conventions on the Rights of Persons with Disabilities of 13 December 2006, (CRPD) art 25; Preamble to the Constitution of the World Health Organization (WHO).

²⁶ ICESCR, Art. 7 and 12 (n.3)

²⁷*Purohit and Moore v The Gambia*, Communication No. 241/2001 (2003), para 80; ACmHR (American Commission of Human Rights)

²⁸HRCtee, *Althammer et al v Austria*, Communication No. 998/2001 (2003), para 10.2.; see also European Court of Justice (ECJ), Case C- 184/89 *NimtzvFreie and Hansestadt Hamburg* (1999): ECJ Case C-360/90 *Arbeitswohlfahrt der Stadt Berlin Ev v Boetel*, (1992).

²⁹ Article 1 of the Vienna Declaration and Programme of Action, 25th June, 1993, UN Doc. A/CONF. 157/24 (Part 1)

³⁰ J. Thornton and S. Beckwith, *Environmental law* (2nd Ed., London: Thomson Sweet & Maxwell, 2004) p. 6

hold the environmental assets in trust for future generations.³¹ Other erudite authors who hold this position includes Olajide. He posits that man has no other choice but to coexist in a sustainable manner with the environment as this adds value to the quality of the time he spends on earth.³²

Biocentric Philosophy

A more dominant view is that animals are meant to co-exist with nature, including man. If humans view the environment from this perspective, then they would better understand their responsibilities towards animals and plant species. This is especially as man, being a form of animal himself is biologically dependent upon the earth's natural ecosystem.³³

Ecocentric Theory

This is a more holistic theory about the environment, as it highlights the inter dependence of man and other aspects of nature on each other. More so, the environment is acknowledged as a wider spectrum that recognises plant and animals, but also includes the the atmosphere and stratosphere.³⁴

4. Balancing the Economic Indices of E-waste against the Environment

Japan has been rated as second to China in generation of electronic waste according to UN Regional E - Waste Monitor. Asia is the 'largest manufacturer and market for EEE – a term used to describe electrical and electronic equipment intended for re-use.' Many of the mobile phones produced in Japan are not in use for extended periods. Rather than being sent for recycling when discarded, they are exported to other countries.³⁵ In Asia alone, E- waste increased by 63% in the five years preceding 2015. The scenario is not much different at the international scene and the level of E-waste is projected to mark up to 49.8million tons by 2018.³⁶ Most of the discarded E – waste such as phones and other computer and household appliances are shipped out to developing countries. They end up in regions such as Agbogbloshie in the commercial district of Ghana. It is estimated that in 2011, Ghana took in about 17,765 tonnes of E –waste from the United Kingdom which constituted nearly 50% of all the waste.³⁷ Other destinations for E-waste include the computer village in Ikeja, Lagos, Nigeria. It has been confirmed by the Computer and Allied Products of Nigeria that Nigeria is indeed a dumping ground for E- waste products in their last phase of life. Most of these are in very retarded conditions. This is has been confirmed by the Basil Convention Network (BAN).³⁸ In various locations in Lagos, waste is also refurbished for sale which in the end produces a sizable amount of discarded boards, terminals and other toxic parts. Such refurbishing markets in Lagos State Nigeria include Alaba International Market, Westminister market, Ikeja computer village, and Lawanson Market.³⁹ According to a former minister of state for environment in Nigeria, Alhaki Ibrahim Jibri, E-waste is an economic opportunity that can be fully explored to generate wealth.⁴⁰

5. Optimising the Second Hand Value of E- Waste

Once a phone is discarded by the user, there are still many options and alternatives to prolong shelf life and still give it some mileage either by further refurbishment or to be sold at second hand value. Countries where such phones have second hand value include those in Hong Kong. Toxic chemicals are released during the refurbishing processes which are dangerous to human health. They include such processes as 'incineration and open burning.'⁴¹ There are major second hand markets where used phones and other items can be discarded and also refurbished. The markets can be demarcated into two distinct ones; the legal second hand market and the illegal one. The illegal second hand items are the emerging e- waste hubs which in recent

³¹ Ibid, p. 7

³² A .Olajide, 'Man as Environment; An Existential Appraisal' in *Environmental Law and Policy*. Simpson & Fagbohun ed., (Lagos State University, 1998) p. 9

³³ J Thornton and S Beckwith, (n.30) p.7; see also National Park Service Act, Cap 65 E9 LFN 2004 (C.30); Endangered Species (Control of International Trade and Traffic) Act, Cap. E9 LFN 2009

³⁴ Lawrence Atsegbua, Vincent Akpotaire & Folarin Dimowo *Environmental Law in Nigeria : Theory & Practice* (2nd Edn, Benin City: Ambik Press, 2010) p.14

³⁵ Sharom Lam, 'Global E-waste to hit 49.8m Tons by 2018-Here's what Japan is doing to combat it' www.forbes.com accessed on 1 August 2018

³⁶ Ibid

³⁷ Lucy Siegle, 'Reduce, reuse, reboot: why electronic recycling must up its game' www.theguardian.com/environment/nov/20/electronic-recycling-e-waste-2017-gadgets accessed 1 August 2018

³⁸ N. Weil, 'E- waste Dumping victimises developing nations, study says' DG/PC World News, October 31, 2005;The Basil Action Network, (n.4)

³⁹ Adebola K Shabi, (n.2)

⁴⁰ Kayode Ojewale, 'Improper e-waste disposal: Nigeria's deadly time bomb' sunnewsonline.com 17 August 2018

⁴¹ Sharom Lam, (n.35)

times are in developing countries such as Ghana, Nigeria, China, Pakistan, India and Vietnam. These destinations also serve as second hand markets for such goods. The bulk of these products of e-waste, and batteries are often camouflaged as second hand goods to ensure easy export to developing countries. They may be misleadingly classified as plastic and metal scrap.⁴² The unlawful dumping and the need for alternate destination for such is expedient since EU and OECD (Organisation for Economic Co-operation and Development) Member states have tightened legislations to prohibit export to non- OECD member states. As at 2015, it was reported by the UN Environment Programme (UNEP) that about 90% of world electronic waste ‘worth nearly \$19bn (12bn pounds)’ is lost to illegal dumping and illegal trade transactions. In 2014, the estimated cost to the global economy was \$52 bn (consisting of 42m tonnes) according to a UN University report. This loss in resources comes from under -utilization of rare metals in the waste thrown away such as ‘rare earth metals, copper and gold’⁴³

6. Legal Framework, Policies and Monitoring Agencies in the Context of the Protection of the Environment against E- Waste

According to Achim Steiner, (UN Under Secretary and Executive Director of UNEP) ‘We are facing the onset of an unprecedented tsunami of electronic waste rolling out all over the world.’ Because of this, there is a need to create greater awareness by having in place pre-emptive legislations that can truncate illegal dumping of E waste. Such bold legislations must traverse not only domestic spheres, but should aim at improved international cooperation through legislation as well as shared logistics.⁴⁴

Institutional Bodies who Check E - Waste (Nigeria)

NESREA: The mandate of NESREA as it relates to e-waste may be summed up as ‘To prohibit processes and the use of equipment or technology that undermine environmental quality’⁴⁵ NESREA also has the mandate of implementation of: (i) guidelines for importation of used electronic equipment; (ii) monitoring of toxic waste; (iii) arrest of vehicles carrying e waste by collaboration with Nigeria Customs Service (NCS); and (iv) collaboration with states Local Government Agencies, media organisations private sector and captains of industry as well as other professional and non – governmental organizations.⁴⁶

National Environmental (Electrical Electronic Sector Regulations) S.1 No. 23 of 2011: This provision watches over the transboundary movement of E-waste along with agencies such as the United States Environmental Protection Agency (EPA)⁴⁷

Harmful Waste (Special Criminal Provisions) Act, 1988: E-waste can be classified as ‘harmful waste’ because of its toxic properties emitting quality which makes it injurious to human health.⁴⁸

Basel Convention ratified in March 1991, as well as amendment to Basel in May 2004: Fagbohun says, there is need to domesticate the provisions of the Basel Convention though. Nigeria is also a signatory to Bamako Convention of December 2008.

Environmental Impact Assessment Act (EIA) of 1992: This Act seeks to predict the outcomes of a given course of action such as industrial, mining or agricultural activities in order to put in mitigating factors to reduce the impact on the environment through the use of monitoring and supervision agents.⁴⁹

Policy Guidelines: Before E- waste was given a special classification, due to growing environmental concerns, it was often submerged with solid waste, which consists more of household and domestic items. As such legislations on solid waste management may transverse the scope of electronic waste. The National Policy Guidelines on solid waste management is about efficient disposal of all forms of solid waste in an economic way that also safeguards the lives of individuals at recycling plants and traditional scavengers.

⁴²Achim Steiner, ‘Up to 90% of world electronic waste is illegally dumped says UN’ Guardian Environment Network The guardian, Tues 12 May 2015 12.32 BST, Accessed from www.the-guardian.com/environment/20

⁴³Ibid

⁴⁴Ibid

⁴⁵ Lawrence ChidiAnukam, (n.14)

⁴⁶ Ibid

⁴⁷ Shola Lawal, ‘Nigeria has Become an E-waste Dumpsite for Europe, US and Asia’ p.project.org accessed 05 October, 2020

⁴⁸ Nicholas A. Robinson, Lin Heng Lye, & Elizabeth Burleson, *Comparative Environmental Laws and Regulation* (2011), 40: 170

⁴⁹Omenka Helen Uchendu, ‘Household Waste Disposal Laws in the Federal Republic of Nigeria’ https://scholarworks.gsu.edu/iph_capstone/38

The Federal Ministry of Environment is at the forefront of this initiative and collaborates with waste management authorities at State level for cohesive strategies.⁵⁰

Other International Bodies that NESREA may Seek Collaboration with Include:

- a) International Network for Environmental Compliance and Enforcement (INECE)
- b) Seaport Environmental Security Network (SESN)
- c) International Criminal Police Organization (INTERPOL)
- d) United States Environmental Protection Agency (EPA)
- e) Environmental Agency (UK)
- f) Netherlands Ministry of Environment
- g) West African Network for Environmental Compliance (WANECE)

Non- Legal Alternatives

Implementation of Extended Producer Responsibility

Other Non-legal actions that can be taken include Implementation of Extended Producer Responsibility (EPR) such that manufacturers continue to take responsibility for their exported products. This option may also include the ‘take back’ or ‘buy back’ initiative. Such legislation will compel producers to take back or buy back their products which are nearing the end of life.⁵¹ Because of the informal nature of the sector, and predominance of lower end pickers and break down merchants, a sweeping legislation may be unable to garner the necessary outcome. It is hoped that the E- waste sector can be integrated into the circular economy paradigm. This is an initiative of NESREA to encourage best practices and methods to stimulate economic development.⁵²

Waste regulation in Lagos state: The role of Lagos State Environmental Protection Agency (LASEPA)⁵³

Small businesses in Lagos State of Nigeria for instance, contribute a lot to the economy, especially in terms of E - waste which is mainly refurbished and converted into usable electronic materials. In Lagos state of Nigeria, waste is mainly refurbished and sold in four different markets. The role of LASEPA includes partnering with the private sector to achieve e - waste recycling. This is by constructing joint recycling facilities. Not only are those, efforts constantly made to regulate the illegal recycling sector, not in a bid to totally abolish it, but to upgrade it to meet environmentally friendly standards. Others avenues include public awareness campaigns for operators in the sector as well as market cooperative leaders in a bid to imbibe and use better second hand processing equipment. Then again LASEPA assists corporate organizations to evacuate waste to the recycling site at Ogijo, along Ikorodu, Shagamu Road.⁵⁴ Other functions of LASEPA include safe disposal of waste and implementation of new policy guidelines as well as information dissemination and public awareness campaigns for operators in the sector as well as market cooperative leaders in a bid to imbibe and use better second hand processing equipment. ⁵⁵ Some non- legislative initiatives by LASEPA in Lagos state include:

- i. MOU with NESREA, Standards Organisation of Nigeria (SON), Consumer Protection Council and Alaba International Market;
- ii. extended producer responsibilities and subsequent sensitization visits to corporate organizations, and
- iii. use of incentives to encourage reuse or recycling schemes.⁵⁶

Laws on E- waste in the US

The Basel Convention does not allow import of hazardous waste such as cathode – rays TV’s, refrigerators and air conditioners because they all have lead content. In contrast, the US is allowed to export electronic waste to developing countries. This is as long as the ‘informed consent’ of the US Environmental Protection Agency (EPA) is given. However, most forms of electronic waste within the US are not classified as

⁵⁰Federal Ministry of Environment, ENVIRONMENTAL PPOLICIES 9, available at http://environment.gov.ng/index.php/downloads/3_environmental_policies

⁵¹Olanrewaju Fagbohun, (n.1)

⁵² Irene Galan, ‘Dark Skies, Bright Future: Overcoming Nigeria’s e-waste epidemic’, www.unenvironment (United Nations Environmental Programme) accessed 05 October 2020

⁵³Lagos State Environmental Protection Agency Law (LASEPA) of 1996 available at http://www.lasepa.gov.ng/pdf/LASEPA_LAW.pdf

⁵⁴Adebola K Shabi (n.2)

⁵⁵Omenka Helen Uchendu, (n.49)

⁵⁶Adebola K Shabi (n.2)

hazardous, especially if they qualify for recycling purposes.⁵⁷ In the US, laws on E – waste have not been made federal that stipulate recycling or export options. Rather non – mandatory guidelines are in place. An example is the Resource Conservation and Recovery Act (RCRA) which encourages and gives directives as to recycle and reuse of cathode ray tubes (CRT's) which are considered to be highly toxic.⁵⁸ The Responsible Electronics Recycling Act (RERA) was a bill raised in Congress by environmental groups, but it is yet to be passed. It was meant to stop inordinate E-waste transfer to developing nations. It must however be noted that individual manufacturers such as Samsung, Dell, Apple and like corporate bodies are allowed to, and have passed policies and guidelines that define their relations with other nations in terms of E – waste movement.⁵⁹ EPA (United States Environmental Protection Agency) is often aware, and gives consent to these initiatives. Other non – profit organisations like the National Center for Electronic Recycling (NCER)⁶⁰ continue to push for more sustainable and eco- friendly reforms. It works in conjunction with electronic recyclers and most US states that have recycling laws such as Indiana, Wisconsin and South Carolina. Only about twenty five US states have recycling laws.⁶¹ In the majority of many states such as Oklahoma and Missouri, emphasis is placed on producer responsibility. This often entails manufacturers giving evidence of a 'recovery and recycling plan' for their products.⁶²

Other International Conventions

Rotterdam Convention

The Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (the 'Rotterdam Convention'),⁶³ also emphasises the issue of 'Prior Informed Consent' when it comes to trade of certain hazardous chemicals and pesticides. Such need for shared cooperative action can be super-imposed on E – waste export trade due to its toxic and hazardous nature. This Convention has been domesticated in Nigeria by the Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Ratification and Enforcement) Act of 2005.⁶⁴

Basel Protocol

Aside from the general consequence on human health, E – waste may result as part of the reason why an area may become impoverished or experience serious economic downturn. During the 5th Conference of the Parties, the issue of compensation for damage caused by harmful dump of items such as E waste was raised. It resulted in the adoption of the Basel Protocol on Liability and Compensation for Damage resulting from Transboundary Movements of Hazardous Wastes and their Disposal (the 'Basel Protocol on Liability and Compensation')⁶⁵ This Protocol establishes a compensation regime and civil liability for damage caused by the illegal dumping of waste. Such damage may result in loss of income due to substantial changes in the quality of the environment, loss of life or personal injury.⁶⁶It must be noted that Nigeria is yet to sign or ratify the Basel Protocol.

7. Conclusion and Recommendations

This paper finds that there is need to reach out to manufacturers to buy back their discarded products and accessories for proper disposal in line with international standards. On the part of the developed nations, they must resist the urge to continually send their waste products to nations who are just coming up in terms of developing an electronic economy. They should pay compensation as specified by the Basel Protocol⁶⁷ to

⁵⁷Electronics Take Back Coalition, 'Federal Legislations and Policy on E – Waste' www.electronicstakeback.com/promote-good-laws/federal- accessed 08 October, 2020

⁵⁸Bridget McCrea (Source Today) 'The Evolution of E-waste Laws and Regulations' www.sourcetoday.com/industries/article/218867326/the-evolution-of-ewaste-laws-and-regulations accessed 05 October 2020

⁵⁹Electronics Take Back Coalition, (n.57)

⁶⁰ National Center for Electronic Recycling (NCER), founded in 2005

⁶¹EPA, (United States Environmental Protection Agency), 'Sustainable Management of Electronics' www.epa.gov/ accessed 08 October, 2020.

⁶² Bridget McCrea (Source Today) (n.58)

⁶³The Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (the 'Rotterdam Convention'), was adopted for Signature in Rotterdam, Amsterdam on 10th September 1998 and it entered into force on 24th February, 1998

⁶⁴Ibid

⁶⁵ The Basel Protocol on Liability and Compensation for Damage resulting from Transboundary Movements of Hazardous Wastes and their Disposal (the 'Basel Protocol on Liability and Compensation') 1999

⁶⁶ The Basel Protocol Ibid, Article 2(c)

⁶⁷ Basel Protocol (n.65)

nationals and geographical areas that have been negatively affected by indiscriminate e-waste dumping. Above all, they should imbibe well known principles of international law such as the precautionary principle and principle of shared responsibility as a guiding decimal for their various facilities and operations. Information dissemination must also be given more prominence by the legal and regulatory authorities to ensure that the E- waste handlers are aware that they have a role to play in the on-going clarion call to stop the depletion of the ozone layer. This is by ensuring that the chemicals from the waste and other ozone depleting substances which play a part in global warming and acid rain are curtailed by proper treatment. This can also be achieved by improved presence of local government personnel to promote enlightenment campaigns on public health needs to e -waste scavenging and recycling communities so as to improve quality of life. Individuals can do the following:

Recycle: It is important that consumers are aware of the role they have to play to reduce the amount of electronic waste in circulation. The first option remains for them to be aware that it is not only possible, but profitable to recycle old phones. Such phones have credible second hand value, and will be easily absorbed into various existing legitimate second hand markets.⁶⁸

Return to Manufacturer: Also, where the consumer chooses not to pass such phones directly to the second market, they have an option to return them to the manufacturers. By law, as stipulated by WEEE Directive, the retailer has an obligation to collect properly discarded old gadgets from the consumer, any time a new one is sold to them⁶⁹

Curb the urge to upgrade: It is also expedient that the individual consumer, as represented by young people, parents and working class and corporate players curb the style and fashion trend to migrate to newer models of savvy phones and other electronic appliances without fully exploring the benefits of his present contraption. This allows the present phone to run the full gamut of its life span. They should also buy appliances made from sustainable materials. The consumer can from inception choose to purchase phones and appliances made from sustainable materials such as those produced by Fairphone.com and House of Marley headphones.⁷⁰

Mitigation of E - Waste Toxicity: Gold, Silver and Bronze Option: Japan has come up with an innovative idea to convert up to eight tons of metal from discarded electronics gadgets and convert them to ‘5,000 gold, silver and bronze medal’⁷¹ The legal framework provided by the NESREA Act must continually ensure sustainable avenues for imported E- waste, and the locally generated ones are put to good use. More importantly, there is need for tougher action and enhanced border patrol to check the alarming increase in the dumping of E -waste in Nigeria. The Agency has the full powers to periodically update its regulations to meet with pressing exigencies.⁷²

Become a certified recycler. Rather than continued reliance on intermittent artisans who act as pickers of waste products, those of them genuinely interested in e -waste collection can become certified. They can form themselves into associated groups who thereby can receive financial assistance from many willing organizations, or even the parent bodies of the e waste products they scavenge for. There can also be provision of government subsidized (at least 50%) of all safe recycling implements as well as protective gear. This will not only protect their health, but ensure increased returns on products picked as they will gather informed knowledge on how to identify the most precious parts of the goods they break down without damaging them. As such, the process is safely maximised such that rare metals within the components are converted to other useful items.⁷³ This will also facilitate their speed and reduce the daily hours they put into the business.

⁶⁸Lucy Siegle, (n.37)

⁶⁹Ibid

⁷⁰Ibid

⁷¹Sharom Lam, (n.35)

⁷²See Generally, The National Environmental Standards Regulatory and Enforcement Agency (Establishment Act of 2007), Laws of the Federation of Nigeria 2004, c N164, preamble, ss 1 (1), 2.; see also Organisation for Economic Co-operation and Development (OECD) , OECD Environmental Data Compendium 2004 (Paris: OECD, 2005)

⁷³Adebola K. Shabi, (n.2)