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E-WASTE MANAGEMENT IN BANGLADESH: REVISITING THE EXISTING LEGAL AND POLICY FRAMEWORK

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Abstract

E-waste commonly known as electronic waste is one of the emerging environmental problems in many developing countries including Bangladesh. It is one of the latest types of waste that has entered into the category of waste materials. As e-waste is comparatively a new product in Bangladesh, the laws and policies relating to e-waste and its management are hardly available. Even though, not directly connected, few laws and policies are in place, there is no specific law or policy on management of e-waste. In 2011, an initiative was taken to adopt the Electrical and Electronic Waste (Management and Handling) Rules. However, the rules are not yet finalized. In this context, based on existing literature, this paper is an attempt to portray the scenario of e-waste management under the existing legal framework of Bangladesh. The paper will also concentrate whether existing legal framework is sufficient to manage the e-waste effectively.

1. Introduction

The vision 2021 of becoming 'Digital Bangladesh' aims to make the country stronger through proper utilization of modern technology in various sectors and areas like education, health, and communication.[1] This clearly predicates the wider usage of electrical and electronic products throughout the country. Globally, it is expected that the years ahead the use of electronic products will be increased as the World Trade Organization (WTO) has taken initiative to remove import tariffs from 201 information technology products. Needless to say, the millions of electronic devices – cell phones, tablets, laptops etc. will one day reach their end and, as such, will directly enter the waste stream of the country.[2]

Presently, e-waste is considered as the fastest growing waste stream across the globe.[3] Rapid socio-economic growth and technological advancement are the main operators of this trend. This has turned out to be a challenging issue, especially, for the developing countries, as they do not have safe technology to manage the electronic waste. Consequently, the developing countries have

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1 Rashna Raya Rahman and Naureen Shafinaz Mahboob, 'Electronic Waste: The Story of Bangladesh' *The Daily Star*, 5 August 2015.

2 Ibid.

3 Hong-Gang NI and Eddy Y Zeng, 'Law Enforcement and Global Collaboration are the Keys to Containing E-waste Tsunami in China' (2009) 43 Environmental Science & Technology, 3991.

turned out as the global dumping grounds of e-wastes.[4] Bangladesh for its development policy is gradually more inclined to using information and communication technology. Besides, with the development of the economic activities coupled with easy access of electronic gadgets, appliances and equipment at the low price, the uses of electronic and electrical products are being used more frequently. This trend is conspicuous to the young generation of the country, who belong to the largest portion of the country's population.[5]

In general, electronic gadgets are manufactured to make our lives easier, happier, and simpler. But the toxicity it contains, their disposal and recycling process becomes a health hazardous issue to us. Most of the users are unaware of the potential negative impact of rapidly increasing use of computers, monitors, and televisions. Therefore, proper management of e-waste is imperative. However, there is no particular law or policy on e-waste management in Bangladesh. Due to the absence of legal framework and institutional preparedness, some private profit making organizations are treating e-waste in an unscientific way causing further severe damage to the environment and human health.[6] Even though for the protection of environment from pollution there are some policies, no specific rules on e-waste management is existent in this country. In 2011, the Ministry of Environment and Forest (MoEF) and the Department of Environment (DoE) had taken initiative to formulate e-waste management rules which is yet to see the light. Currently, MoEF and DoE has started to prepare guidelines for e-waste management. On the whole, the existing policies, rules, and regulation are supportive and complementary to solid waste management.[7] However, instructive, trained and skilled personnel on e-waste management and clarity with regard to the environmental hazards are found to be inadequate in such governmental agencies concerned.

2. Concept of E-waste

Generally, waste indicates anything that is no longer privately valued by its owner or has reached its end of life. As such, e-waste is, therefore, an end-of life of electronic devices that has ceased to be of any value for its user.[8] E-waste in short is a generic term embracing various forms of electric and electronic equipment that have ceased to be of any value to their owners. According to Puckett et al:

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[4] Muhammad Anisur Rahman, 'E-waste management: A study on legal framework and institutional preparedness in Bangladesh' (2017) 45 The Cost and Management 1, p 28.

[5] Ibid.

[6] Ibid.

[7] Ibid.

[8] Deepali Sinha, 'The management of electronic waste: A comparative study on India and Switzerland' (Master's thesis, University of St. Gallen 2004), p 5.

> E-waste encompasses a broad and growing range of electronic devices ranging from large household devices such as refrigerators, air conditions, cell phones, personal stereos, and consumer electronics to computers which have been discarded by their users.[9]

Deepali Sinha mentions in her study that "E-waste can be classified as any electrical powered appliance that has reached its end-of life."[10] E-waste comprises of discarded computers, television (TV) sets, mobile phones, microwave ovens and other such appliances that are past their useful lives.[11]

The composition of e-waste is diverse and differs in products across different categories. It contains more than 1000 different substances, which fall under 'hazardous' and 'non-hazardous' categories. Broadly, it consists of ferrous and non-ferrous metals, plastics, glass, wood and plywood, printed circuit boards (PCB), concrete and ceramics, rubber and other items. Iron and steel constitute about 50% of the e-waste followed by plastics (21%), nonferrous metals (13%) and other elements.[12] Non-ferrous metals consist of metals like copper (Cu), aluminum (Al) and precious metals, e.g. silver (Ag), gold (Au), platinum, palladium, etc. The presence of elements like lead, mercury, arsenic, cadmium, selenium, and flame retardants beyond threshold quantities of e-waste classifies them as hazardous waste.[13]

3. E-waste Management and Its Importance

E-waste is one of the latest types of waste that has entered into the category of waste materials. The generation of e-waste is growing exponentially due to the increasing usage of electric and electronic devices in every aspect of the modern society. The world's production of e-waste is about 50 million tons per year.[14]

In Bangladesh, e-waste is one of the prominent issues in waste management with the increasing number of people living in urban areas and leading a modern lifestyle. In the fiscal year 2013-2014, on the whole around 10 million tonnes of e-waste was generated in Bangladesh.[15] As the e-waste product is on the rise,[16] it is crucial to find ways and solutions to manage the quantity of e-waste.

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[9] Puckett J, Byster L, Westervelt S, Exporting Harm: The high-tech trashing of Asia, the Basel action network (BAN) and Silicon Valley Toxics Coalition (SVTC), 2002; available at: http://www.ban.org/E-waste/technotrashfinalcomp. pdf; accessed on 27 July 2018).

[10] Sinha, note 8, p 5.

[11] Santhanam Needhidasan, Melvin Samuel, and Ramalingam Chidambaram, 'Electronic waste – an emerging threat to the environment of urban India' (2014) 12 Journal of Environmental Health Science & Engineering 1, p 2.

[12] Ibid.

[13] Ibid.

[14] Duncan Jefferies, '50 tonnes of e-waste generated every year and it is increasing' *The Guardian*, 2 April 2014; available at: https://www.theguardian.com/ sustainable-business/50m-tonnes-ewaste-designers-manufacturers-recyclers-electronic-junk; accessed on 27 July 2018.

[15] E-waste management rules – 2017, *The Daily Observer*, 8 November 2017.

[16] Across the globe the rate of e-waste increase is three times faster than the increase in regular municipal waste. See, Puckett et al., note 9.

Waste management in the ordinary sense means the process of collecting, transporting, processing, monitoring or disposing the particular waste product. Waste materials can range from solids, liquids and to gaseous as well as radioactive that require a proper waste management. The term 'waste' is the materials that are invented or produced by mankind and the 'management' process is done to reduce any harm or effect on human health, the environment or aesthetics.

E-waste management on the other hand has all the same principles as a general waste management process. However, the material related in this process is electric and electronic waste. As e-waste products have different components to it than any other waste material and is highly hazardous, it is to be treated in a specific and different manner. Thus, e-waste management also has its specifications in relation to the management of e-waste materials.

In the 20th century, e-waste was slowly being recognized as a new waste component in addition to other general waste materials. E-waste made a huge impact as it increased more rapidly than any other waste materials. This raised the need for an effective and efficient management system to deal with the ever increasing e-waste materials that are of no value anymore to a person, corporation or a country.

E-waste is indeed a different type of waste material as it contains hazardous substances in it. The amount of such substances is generally in a very small quantity compared to the total elements in a particular electric or electronic product. However, these small amounts of hazardous elements can cause significant damage and harm to the environment and human health. This is due to the high concentration level of the hazardous element and their persistent adaptation even when emitted to the environment.

4. Impacts of E-waste

Electrical and electronic goods contain a variety of metals, many of which are toxic to human health and ecosystems. More than 60% of e-waste consists of different types of metals (iron, copper, gold, aluminum etc.) and approximately 2.70% are toxic metals.[17] The proper management (collecting, storage, recycling, disposing) of these wastes is important because of hazardous chemicals in the waste such as aluminum (Al), arsenic (As), bismuth (Bi), cadmium (Cd), chromium (Cr), mercury (Hg), nickel (Ni), lead (Pb) and antimony (Sb). Furthermore, the combustion of these e-wastes releases polycyclic aromatic hydrocarbons (PAH), brominated flame retardants (BFRs), poly-brominated diphenyl ethers (PBDEs), polychlorinated biphenyls (PCBs)

[17] Widmer, R, Oswald-Krapf, H, Sinha-Khetriwal, D, Schnellmann, M, and Böni, H, 'Global perspectives on e-waste' (2005) 25 Environmental impact assessment review 5, pp 436-458.

and polychlorinated dibenzo-p-dioxins and furans (PCDD/ Fs) gases that effect some or all bio-physical environments (soil, atmosphere, aquatic).[18] Consequently, these releases adversely affect the surroundings and cause detrimental effects to human health. Brigden and Labunska found that PBDEs and PBDD/Fs contaminate the surrounding soil, air and water causing a depletion of fertility and water quality, as well as acting as neuro-toxicants and endocrine disruptors in infants and children.[19] These toxic chemicals compound and persistent organic pollutants (POP) affect the environment through the ecological food chain and adversely affect human health and ecosystems. Bioaccumulation (i.e., PBCs, BFRs and several chemical elements) in the food chain affects human health, especially in pregnant and breastfeeding women. In addition, they cause endocrine disruption and this, in turn, affects the nervous system, pre- and post-natal development and genotoxicity. Dioxins may alter the methylation status of deoxyribonucleic acid (DNA).[20] Furthermore, they also change the serum levels of mothers and newborns and are a potential hazard to maternal health and child development, as well producing hormonal effects by BFRs and thyroid-disrupting effects in developmental life stages.[21]

The adverse impacts of e-waste on humans and ecosystems is also crucial in South Asian countries undergoing rapid economic growth, lifestyle change, socio-technical transition and transformation, which is in complete contrast to their lack of effective waste management tools.[22] For example, in Bangladesh, only from 20% to 30% of the 3.2 metric tonnes generated e-waste each year is recycled and the rest is dumped in landfills, rivers, ponds, drains, lakes, and open spaces.[23] There are about 120,000 poor urban people involved in the informal e-waste trade chain in Dhaka, of which 50,000 are children.[24] The Environment and Social Development Organization (ESDO) found in one of their studies that the lack of an efficient e-waste management system in Bangladesh was the cause of death for approximately 15% of the illegal child laborers employed in this sector, and 83% were found to be exposed to long

[18] Md. Sahadat Hossain, Sulala MZF Al-Hamadani, and Md. Toufiqur Rahman, 'E-waste: A Challenge for Sustainable Development' (2015) 5 Journal of Health & Pollution 9, pp 7-8.

[19] Brigden K, Labunska I, Santillo D, Allsopp M, Recycling of electronic wastes in China and India: workplace and environmental contamination**.** The Netherlands: Greenpeace International, 2005, p 12. Available at: https://pubs.acs.org/ doi/pdf/10. 1021/es802725m; accessed on 27 July 2018.

[20] Frazzoli, C, Orisakwe, OE., Dragone, R, and Mantovani, A, 'Diagnostic health risk assessment of electronic waste on the general population in developing countries' scenarios' (2010) 30 Environmental Impact Assessment Review 6, pp 388-399.

[21] Ju, Y, Xu, G, Chen, L, and Shi, J, 'Effects of the electronic waste pollution on the levels of thyroid hormone and its receptor expression in the parturient woman and the newborn' (2008) 37 Wei Sheng Yan Jiu = Journal of Hygiene Research 5, pp 536-539.

[22] Hossain et al, note 18, p 8.

[23] Sarwar Uddin Ahmed, Informal sector e-waste recycling practices in Bangladesh. Dhaka, Bangladesh: Development Research Network, 2011, p 37; available at: http://www.bdresearch. org. bd / home /attachments/; accessed on 28 July 2018.

[24] Hossain S, Sulatan S, Shahnaz F, Akram AB, Nesa M, and Happell J., Study on e-waste: Bangladesh situation (Environment and Social Development Organization, Dhaka 2010), p 7.

term health problems.[25] Moreover, Chowdhury et al. found that 36.3% of 1,000 women living near the informal recycling sites experienced stillbirths in the Sylhet region of Bangladesh and 64% had hearing and/or vision problems.[26] In India, more than 1million poor people are involved in e-waste handling.[27] In addition to these statistics, 50,000 tons of e-waste is dumped in landfills annually, ultimately contaminating the seas and adversely affecting marine ecosystems.[28]

Disposal of e-wastes without appropriate measures can cause environmental pollution. Lack of awareness or lack of cautionary information for handling or re-using of these expiry products can leave people expose to health hazards. E-waste is threatening the soil contents and causing land less productive to produce crops.[29]

5. Management of E-waste

5.1. General E-waste Management

The waste management field is evolving as the issues of the increase of e-waste keeps getting bigger and bigger. There had been many approaches and theories relating to waste management. For example, waste management hierarchy, integrated solid waste management and zero water concept.[30] Out of them, waste management hierarchy is widely recognized and universally accepted.[31]

5.2. Waste Management Hierarchy

A waste management hierarchy means a chart that shows various waste management solutions in a chronological manner from the most preferred methods to the least preferred methods.[32] The methods are based on environmental values. For instance, energy conservation, resources conservation, pollution prevention or minimization, and health as well as safety protections.[33]

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[25] Ibid.

[26] Chowdhury, MMI, Ahmed, AA, and Munna, GM, 'Prioritizing E-Waste Management Needs for Mitigating Hazardous Pollutants in North-East Zone, Bangladesh' (2013) 3 Journal of Applied Technology in Environmental Sanitation 1, 61-70.

[27] Agarwal R, Ranjan R, and Sarkar P, Scrapping the hi-tech myth: computer waste in India, New Delhi, India: Toxics Link 2003; available at: http://toxicslink. org/docs/ Scrapping_ The_Hitech_ Myth_ Computer_ Waste_in_India_mail.pdf; accessed 28 July 2018.

[28] Hossain et al. note 18, p 8.

[29] Mohammad Nazrul Islam, 'E-waste Management of Bangladesh' (2016) 4 International Journal of Innovative Human Ecology& Nature Studies 2, p 9.

[30] Tengku Adeline Adura Tengku Hamzah, 'Making Sense of Environmental Governance: A Study of E-waste in Malaysia' (PhD Thesis, Durham University 2011), p 24.

[31] Ibid.

[32] Davis, G, and Heart, S, 'Electronic Waste: The Local Government Perspective in Queensland, Australia' (2008) 52 Resources, Conservation and Recycling 8-9, pp 1031 –1039.

[33] Ibid.

Normally, different countries will have differing ranking of waste management hierarchical methods. However the hierarchy that is generally accepted around the globe exudes waste prevention on top of the hierarchy, followed by reuse, recycle, energy recovery of materials and then finally the least preferred being waste disposals.

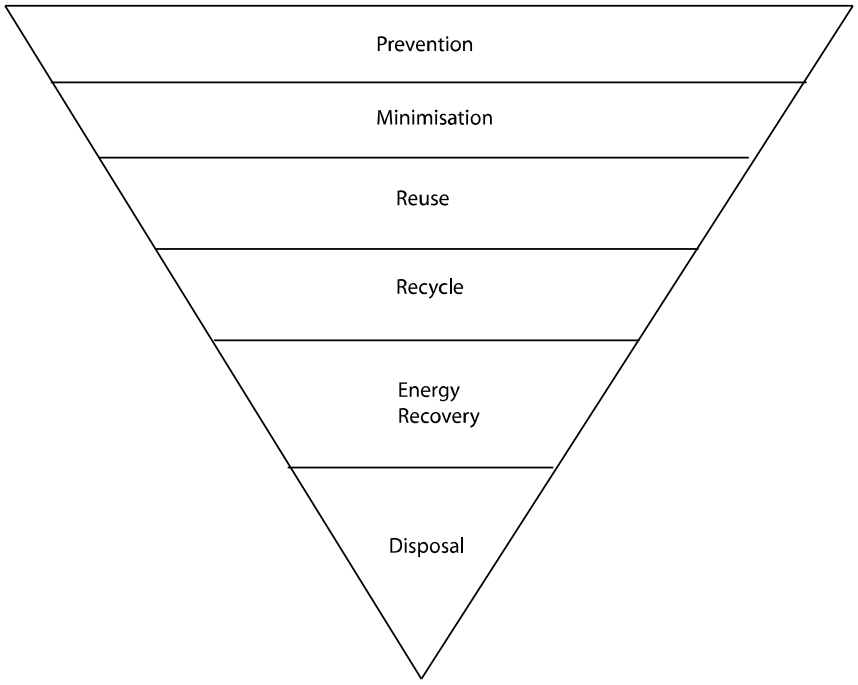

Figure 1: Generally accepted format of waste hierarchy[34]

Figure 1 shows the hierarchy of waste management that is generally accepted worldwide. The top waste management method that is most preferred is prevention and the least preferred being disposal.

These methods or technique each have their own distinct process to achieve whatever outcome they want through the process. Waste prevention and minimization is a process where the amount of e-waste and also the amount of toxic contained in the e-waste material is reduced. For instance, the manufacturing of these electronic products is done by reducing the amount of toxic element and lower volume of material and also a longer lifespan.[35] This can be further promoted into the designing and packaging of the products to give a wholesome reduction of e-waste hazardous elements. This can lead to the

[34] Hamzah, note 30, p 24.
[35] Ibid.

reduce of quantity of e-waste and also will reduce the expenses of handling it to reduce environmental risks. The process of reusing e-waste products is when the same item is used for another purpose after the purported primary use has been finished satisfactorily. This will prolong the lifespan of the particular item which is to be an e-waste product anytime soon. Apart from that, it will slow down the increase in e-waste materials.

Recycling is a process of collection and separation of waste materials, and the waste materials are then prepared to be reused, reprocessed and manufactured and then finally the materials are turned into a different item by reusing, reprocessing and manufacturing them. This reduces the demand of new resources for manufacturing of new products as these waste materials can be turned into a competent resource for manufacturing and, as such, the amount of waste going to the landfills can also be limited.[36]

Energy and material recovery simply means to extract beneficial materials (reusable and recyclable materials) and also to convert certain elements into energy sources like heat and combustible biogas. This process usually involves a thorough alteration in the physical, chemical and biological aspects of a product. This will lead to the reduction wastes going to the landfills.

Finally, the last option being disposal of waste is a dreaded process. Disposals are done by dumping those wastes to the landfill. This is done when an item cannot be recycled at all and also the remaining left after all the above methods are done. This means, any waste that goes to the landfill cannot be treated anymore and it will lie in the landfill for a very long time.[37]

Many countries are more inclined to use the reuse, recycle and material recovery technique to manage their plot of e-waste. This is because e-waste is highly hazardous and the disposal of it without treating it will cause many effects to the environment and the well-being of the country's citizens. Besides, through the process or recovering materials, precious metals can be gained and this will elevate the economic value. This, just disposing e-wastes will only pose disadvantages whereas the process of treating e-waste will give some form of benefits though the disadvantages still exists. Moreover, the risks and disadvantages can be reduced or limited.

However, in the European Union (EU), prevention and minimization is the preferred technique in handling the rise of e-wastes. This was acknowledged by the Directive on Waste Electrical and Electronic Equipment[38] (WEE Directive)

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[36] Ibid.

[37] Ibid.

[38] EU Directive. *Directive 2002/96/EC, on WEEE (Waste Electrical and Electronic Equipment;* available at: http://ec.europa.eu/environment/waste/ weee/legis_en. htm; accessed on 28 July 2018.

and the Directive on Restriction of the Use of Certain Hazardous Substances[39] (RoHS Directive). The WEE Directive aims to reduce the amount of e-waste and also recommends safe disposal methods. The RoHS Directive provides a regulation to restrict use of certain hazardous elements in the manufacturing of a product. This means the amount of hazardous elements can be reduced from the primary manufacturing of various products. Thus prevention of e-wastes is highly encouraged in the EU region.

However, the Asian country Japan focuses on enhancing measures for recycling goods and reducing waste generation. Like Japan, South Korea, another Asian country, also promotes recycle technique for their e-waste. It is worth mentioning that both the countries have adopted legislation for managing the electronic waste effectively.[40]

6. Laws on E-waste Management

Unlike many other countries,[41] Bangladesh has lack of rules on e-waste and its disposal and management. The country has adopted *its National Environmental Policy* (NEP) in 1992 for regulating all activities that pollute and destroy the environment.[42] As such, the *National Environment Policy* 1992 has set the policy framework for environmental action with a set of sector-wise guidelines. The Policy embraces a number of related different sectors including ecological balance and overall development.[43] The main theme of the policy is to ensure the protection and improvement of the environment. The policy also gives the direction of amending the existing laws, framing the new laws and implementing the same. Moreover, it assigned the Ministry of Environment and Forests to coordinate the implementation of the policy and to constitute a high level National Environmental Committee (NEC). However, the Department of Environment has revised the Environment Policy 1992 to make it updated and compatible with the current national and international situation.[44] The Policy covers the environmental issues as a whole and, as such, it does not give

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[39] EU Directive. *Directive 2002/95/EC), on RoHS (The Restrictions of the Use of Certain Hazardous Substances);* available at: http://ec.europa.eu/environment/ waste/weee/legis_en.htm; accessed on 28 July 2018.

[40] Chung, SW and Murakami-Suzuki, R., 'A comparative study of e-waste recycling systems in Japan, South Korea and Taiwan from the EPR perspective: implications for developing countries', in Promoting 3Rs in developing countries: Lessons from the Japanese experience, Michikazu Kojima (ed.), Chiba: IDE-JETRO, 2008, p 128.

[41] In Malaysia, a regulation known as Environmental Quality (Scheduled Wastes) Regulations was adopted in 2005. Under this regulation, e-waste is prescribed as a type of hazardous waste. In India, E- Waste (Management & Handling) Rules, 2011 were notified in 2011 and had come into force since 1st May, 2012. Again, target based approach for implementation of EPR has been adopted in the E-Waste (Management) Rules, 2016.

[42] Mahbub Alam and Khalid Md. Bahauddin, 'Electronic Waste In Bangladesh: Evaluating The Situation, Legislation And Policy And Way Forward With Strategy And Approach' (2015) 9 PESD 1, 91.

[43] Rahman, note 4, p 33.

[44] Ibid.

emphasis on any issues of the environment specifically. Similarly, regarding e-waste the Policy does not suggest any guidelines or measures for e-waste management.[45]

The *Environment Conservation Act* 1995 is presently the main Act governing environmental protection in Bangladesh.[46] The Act was designed to preserve the environment through improving environmental standards and controlling and mitigating environmental pollution. The main objectives of the Act are, *inter alia*, conservation of the natural environment, improvement of environmental standards, and protection of the environment from pollution. The approaches of the Act focus on promulgation of standard limit for discharging and emitting waste and hazardous waste import, transportation, storage etc.[47] Under this Act, the Department of Environment (DoE) is authorized to undertake any activity necessary to conserve and enhance the quality of the environment and to control, prevent and mitigate pollution.[48] The DoE was also mandated to give clearance on environmental issues for any new project.[49] To make it more effective, the *Environment Conservation Act* 1995 was subsequently amended in 2000, 2002, and 2012. As said by the Act in its regulation number 20, the government can enact rules for the control of environment pollution. Subsequently, circulars and notifications were issued for implementing the Act.[50] However, the Act failed to suggest any monitoring mechanism for the enforcement of its provisions.[51]

In 1997, the Environmental Conservation Rules (ECR) has been framed by the Government of Bangladesh for the protection of environment from various types of pollution.[52] ECR has the mandate for all industries to carry out Environmental Impact Assessment (EIA). The Rules instruct all industries to install waste treatment plants for controlling environment pollution.[53] Additionally, all industries will conform to environmental quality standards, report accidents or unforeseen discharge of pollutants and take remedial measures under ECR. Environment Conservation Rules of 1997, divided industries and projects into different categories[54] depending upon the pollution load and likely impact on the environment. The ECR 1997 provides mandate to DoE to issue 'No Objection Certificates' (NOC). This certificate is issued to those waste management companies that conform to mandated ECR standard.[55] Yet, no rule has been

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[45] Ibid.
[46] *Environment Conservation Act* 1995. The Act was formulated on the basis of the policy framework provided by the Environment Policy of 1992 and the National Environment Management Action Plan (NEMAP) of 1995.
[47] Rahman, note 4, 33.
[48] *Environment Conservation Act* 1995, section 4(1)
[49] *Environment Conservation Act* 1995, section 12.
[50] Rahman, note 4, p 33.
[51] Ibid.
[52] Ibid.
[53] Rule 7.
[54] Mainly four categories- Green, Orange (A), Orange (B), and Red.
[55] Rahman, note 4, p 33.

observed in ECR that specifically deals with the issues relating to e-waste management.[56]

In 2008, Medical Waste Management Rules have been adopted by the Government of Bangladesh. The rules have been formulated under the *Environment Conservation Act* 1995. The rules highlight important definition, formation of authority and responsibility, license issue and cancelation. It also mentions the responsibility of registered vendors, segregation, packaging, transportation and hoarding, elimination and purification, classification of wastage for medical waste management. The rules address waste management issues mainly in the context of medical wastes as such e-waste management issues remain absent.[57]

In 2010, the *Environment Court Act* 2010 has been passed by the Parliament.[58] The Act provides frameworks for setting up one or more environmental courts with clear and specific terms of reference to deal with environmental offences. Initially, in every division of the country a court will be established. However, these courts are not functioning effectively and no case on e-waste has yet been filed.[59]

A rule was drafted in 2011 known as the *E- Waste Management Rules* 2011. The draft rules define the responsibilities of the producers, dealers, re-furbisher, responsibilities of collection centers, consumer or bulk consumer, dismantler, and recycler.[60] It describes procedure for grant of authorization, power to suspend or cancel an authorization, procedure for registration/environmental clearance.[61] It, further, discusses the procedure for storage of e-waste, transportation of e-waste, accident reporting and follow-up, liability of the producer, collection centre, transporter dismantler and recycler of e-waste.[62] However, the rules are not yet finalized hence; it has no implications in e-waste management of Bangladesh.[63]

7. Conclusion

The findings and analysis thereon in this study clearly indicate that Bangladesh has lack of rules and/or policy on e-waste management. It is evident that

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[56] Ibid.
[57] Ibid.
[58] *Environment Court Act* 2010 repeals and replaces the *Environment Court Act* 2000.
[59] Md Sanaul Islam Tipu, Environment Courts Sit Idle due to lack of Complaints, *Dhaka Tribune*, 5 June 2018; Md. Khaled Miah, Effective functioning of Environment Court, *The Daily Star*, 25 August 2015.
[60] Alam and Bahauddin, note 42, p 91.
[61] Ibid.
[62] Ibid, p 92.
[63] Mehedi Al Amin, 'E-waste management: no progress in 7 years since regulations drafted' *Dhaka Tribune*, 19 October 2018.

Bangladesh has some policy and laws on protecting the environment from pollution. However, no law specifically addresses the issue of e-waste management and, as such, the country is progressing without any legislation on e-waste management. On the other hand, the increasing trend of e-waste generation has come up as one of the biggest environmental problems and challenges for Bangladesh.

As a signatory to the Basel Convention[64], Bangladesh is bound to adopt regulatory framework for effective management of e-waste. It goes without saying that Bangladesh has commitment to international community for adopting measures against e-wastes within its boundary. Accordingly, the Department of Environment under the Ministry of Environment and Forest has formulated draft policies like the *E-waste Management Rules* 2011, and the *Hazardous Waste Management Policy of Bangladesh* 2009. These rules contain some clauses on e-waste management in Bangladesh. However, these laws are yet to be finalized and enacted as such.

It has also been observed in this study that e-waste can be hazardous for human health and environment if it is not properly managed or disposed. Considering its havoc many countries have already adopted new policy on the management of electronic waste. As such, the author suggests that Bangladesh should immediately finalise the pending rules or come forward with new policy on e-waste management so that the ever increasing electronic waste of the country can be well managed and the environment is protected.

[64] The *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal*, usually known as the Basel Convention, is an international treaty that was designed to reduce the movements of hazardous waste between nations. The Convention was adopted in 1989 which came into force on 5 May 1992. Bangladesh is a signatory of this Convention and also has accessed to the Basel convention on 1 April, 1993.