# BANGLADESH

# *Review of E-waste Management Rules, 2021*

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*September 2022*

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## *Acknowledgement*

*We acknowledge and appreciate the support and cooperation extended by Association for Progressive Communications (APC)*

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## *Executive Summary*

*The Government of Bangladesh enacted the Hazardous Waste (e-waste) Management Rules, 2021. This legislation was made to make the producers follow systematic process to store and recycle e-waste matter generated from their electrical, electronic and home appliance products and/or collected from the consumers end. The Rules also set provisions to limit the use of substances covered by the EU RoHS Directive.*

*Bangladesh generates 3.2 million tons of e-waste per year and 20 to 30 per cent of which is recycled and the rest is dumped on the ground. Every year, around 2,96,302 TV sets are scrapped and create around 0.17 million tons of e-waste in the country.*

*Only mobile phone sets produced approximately 10,504 metric tons of E-waste in the last 2021 in Bangladesh. Moreover, generation of e-waste per year is about 2.81 million tons, and majority of these are thrown into landfilling or dumped in the water bodies (Awasthi et al., 2016) The growth rate of e-waste is estimated to reach approximately 15% by 2025.*

*A BUET research estimated that the amount of e-waste in the country will increase to 4.62 million tons by 2035. A report says that the creation of e-waste in Bangladesh is increasing at a rate of 20 per cent annually. The country is responsible for 7% of the total e-waste in the world (Awasthi et al. 2016). Lack of well-planned and established system of waste management, Bangladesh can recycle only a little fraction of the generated e-waste.*

*The Hazardous Waste (e-waste) Management Rules, 2021 has some provisions which would be helpful to manage e-waste created in the country following a systematic manner given it is enforced effectively.*

*According to the rules, violators of the Rules are supposed to be imprisoned, fined or punished both. Its legal provisions would help the Department of Environment keeping the country's manufacturers of electrical and electronic products under a monitoring and management system to be followed to make the countries environment sustainable if it is implemented with firmness though it has some lacunae.*

*Dissemination and awareness raising of the Hazardous Waste (e-waste) Management Rules, 2021 should be done with urgent priority. Liability and monitoring of the processes and management of e-waste at the end of the manufacturers and industries need to be ensured. The Rules should be further discussed with a panel of experts from legal perspective as well as industries to review and update.*

## *Introduction*

*According to the data of Wikipedia, E-waste is considered the "fastest-growing waste stream in the world" with 44.7 million tons generated in 2016- equivalent to 4,500 Eiffel towers. In 2018, an estimated 50 million tons of e-waste were reported, thus the name 'tsunami of e-waste' given by the UN. Its value is at least $62.5 billion annually. In 2019, an enormous volume of e-waste (53.6 Mt, with a 7.3 kg per capita average) was generated globally. This is projected to increase to 74 Mt by 2030. Asia still remains the largest contributor of a significant volume of electronic waste.*

*Studies of Encyclopedia Britannica found that globally, e-waste constitutes more than 5 per cent of all municipal solid waste and is increasing with the rise of use of electronic products in developing countries. In 2021, an estimated 57.4 Mt of e-waste was generated globally. According to estimates in Europe, where the problem is the best studied, 11 of 72 electronic items in an average household are no longer in use or broken. Annually, per citizen, another 4 to 5 kgs of unused electrical and electronic products are hoarded in Europe prior to being discarded. In 2021, less than 20 per cent of the e-waste was collected and recycled.*

*E-waste is electronic products that are unwanted, not working, and nearing or at the end of their "useful life. E-waste contains toxic materials such as lead, mercury, copper, cadmium, beryllium, barium etc., that cause severe risks to health and damage to the environment. Highly toxic chemicals in the e-waste components can contaminate soil, groundwater and air, as well as affect the workers of the unit and the community living around it. They also contribute to the climate change through releasing carbon dioxide ($CO_2$) during combustion and recycling of e-waste.*

*Digital devices, which has increased the volume of e-waste roughly from 2.81 million tons in 2009 to around 12 million tons e-waste in 2019 in Bangladesh. Environment of Bangladesh is mainly polluted due to deficiency of standard waste management system and land use, rapid urbanization, overpopulation, exploitation of natural resources, industrialization and capitalization.*

*Bangladesh produces E-waste of different kinds from versatile sources, and among all the sources, mobile phones, televisions contribute to the primary portion of total e-waste generated.*

*In Bangladesh, the growth of e-waste is expected to reach approximately 15% between 2020 and 2025. Due to the lack of smart waste management solutions, Bangladesh recycles a tiny fraction of the total waste it produces.*

*Most of the e-wastes are collected informally from the sources, some reusable metals are taken out and the rest are dumped in to open landfills, farming land and in the open water bodies. And unstructured, unskilled and informal practices of e-waste recycling leave more than 30 million of children, women and non-formal workers exposed to the hazardous substances. Unfortunately, the environmental consequence as well as the emission factors of millions of tons of e-waste is largely unknown.*

*In the informal sector, women and child laborers are mostly involved. Every year almost 15% child workers die and more than 83% are exposed to toxic material and become sick and forced to live with long term illness. Approximately 50 thousand children are involved in the informal e-waste collection and recycling process, amongst them about 40% are involved in ship breaking yards. Moreover, labour of this sector faces a highly toxic work environment where health and environment are compromised and particularly dangerous for children and pregnant women.*

*A study report of DoE on 8 types of electrical and electronic products of everyday use in 2018 has revealed that around 4 hundred thousand tons of electrical and electronic wastes are generated in Bangladesh annually. A BUET study report anticipates that the e-waste volumes (limited items) in the country will increase to 4,62 million tons in 2035. If the list is extended for the electronic wastes the annual volume will be significantly high. The published reports suggest that the e-waste generation in Bangladesh has been increasing annually at a rate of 20 per cent. Bangladesh is responsible for approximately 7% of the total E-waste dumping annually all over the world (Awasthi et al. 2016).*

*The cadmium from one mobile phone battery is enough to pollute 600 m3 of water (Trick, 2002). The quantity of cadmium in landfill sites is significant, and considerable toxic contamination is caused by the inevitable medium and long-term effects of cadmium leaking into the surrounding soil (Envocare, 2001). Plastics are highly flammable, the printed wiring board and housings of electronic products contain brominates flame retardants, a number of which are clearly damaging to human health and the environment.*

## *Purpose of the Review*

- *To identify the strength and weakness of E-waste Management Rules 2021 to examine the compliance measures of environmental sustainability*

## *Legal Regime and Major Features of E-waste Management Rules, 2021*

*On June 10, 2021, Bangladesh's Department of Environment (DOE) published the Hazardous Waste (e-waste) Management Rules, 2021 under the Bangladesh Environmental Protection Act, 1995. The Hazardous (e-waste) Management Rules, 2021 is the first formal legislation regarding the E-waste management in Bangladesh that enables large e-waste producers to store and recycle wastes in a systematic manner. The E-waste rules cover the products listed in the Schedule (home appliances, monitoring and control equipment, medical equipment, automatic machines, IT and communication equipment), and establishes obligations for manufacturers, assemblers, collectors, sellers, and consumers of the products. The rules also set provisions to limit the use of the 10 substances covered by the EU*

*RoHS Directive. This regulation entered into force since its publication.*

*Upon violation of the rules, the offender is liable to imprisonment or fine or to both. The e-waste management rules will aid the Department of Environment in bringing all of the country's extended producers of electrical and electronic waste under an appropriate management system. Manufacturers, large importers, dismantlers, recyclers, traders or shopkeepers, hoarders, logistics companies, repairers, collection centers, auctioneers, and exporters will be registered and this will also enable efficient monitoring of management activities across the country. Furthermore, the rules assist in determining the responsibilities of different waste manufacturers, assemblers, hoarders, and recycling companies for their storage and disposal operations. Moreover, as mentioned earlier in the paper, apart from limited exceptions (for the reasons of research use and in academic institutions with a no objection certificate (NOC) from the Department of Environment), the recent e-waste management regulations prohibit the import of old or used electrical and electronic products.*

## *The main provisions of the regulations are as follow:*

- *Manufacturers, traders, sellers, transporters, repairers, collection centers, recyclers, dismantlers, etc. of the subject products are required to register with a prescribed form to the DOE. When applying for registration, they shall also submit a WEEE (waste electrical and electronic equipment) management plan.*

- *Registered manufacturers, recyclers, etc. shall obtain environmental clearance in accordance with the Bangladesh Environmental Protection Rules, 1997*

- *Manufacturers have to establish individual or joint collection centers and set aside funds for the management of WEEE.*

- *For fluorescent lamps and mercury incandescent lamps, if they cannot be recycled, they need to be handed over to collection centers for storage and disposal.*

- *Manufacturers, importers, etc. shall meet the collection targets for WEEE as specified in the Schedule (10% in the first year of the implementation, 20% in the second year, 30% in the third year, 40% in the 4th year, and 50% in the fifth year and thereafter).*

- *In order to facilitate the proper management of WEEE, the*

*name, address and contact information of the trader or seller as well as the information on the registered collection center shall be displayed on the product or on the product label, or this information shall be provided to consumers or large consumers.*

- *Traders, sellers and collectors of WEEE shall receive them from consumers. In case of violation of the provisions of these rules, the offender shall be liable to imprisonment for a maximum period of two years or to a fine of up to two hundred thousand taka, or to both. In accordance with Section 15(1) of the Bangladesh Environmental Protection Act, 1995. In case of repeat offenders, they shall be punished with imprisonment for a term ranging from two to ten years or a fine ranging from Taka 200,000 to Taka 1,000,000 or both.*

## Strengths of the E-waste Rules

*The Department of Environment (DoE) published the Hazardous Waste (e-waste) Management Rules, 2021 under the Bangladesh Environment Conservation Act, 1995. This was really a vital attempt to promulgate a specific law for E-waste management to make it binding.*

*If the manufacturers, traders, sellers, transporters, repairers, collection centers, recyclers, dismantlers, etc. are required to register to the DOE, it will be much easier to keep track of possible sales of electronic goods and to monitor the quantity of goods they import and export. That will help the DoE to figure out the illegal cycle of trading old and cheap products. Furthermore, if they propose their WEEE management plans, they will have a broad study about waste management and the dangerous effect of e waste on human health and the environment. Also, the elaborate planning of e waste management will help them to manage the hazardous waste accordingly. Even the DOE also can get new and improved ideas from these proposals.*

- *The wide-ranging use of digital technologies has essentially been triggered with the innovation of digital devices like mobile, laptops, tablets, computers etc., most of which used in the developing countries are not quality products. The quality standard is often compromised to keep the price low for mass use. In most cases, the unregulated bi-lateral trade with the technologically advanced countries makes domestic market of the poor countries over saturated with the supply of cheap devices with a relatively shorter life-span that promote 'one-time-use' culture leaving basically no option of re-reusing the devices and foreclosing the potentials of circular economy. The published rule has prohibited the trading of low quality and 2nd hand electronic devices. That is obviously a powerful*

*rule to control the flow of e-waste that is piling up day by day.*

- *The registered manufacturers, recyclers, etc. shall obtain environmental clearance in accordance with the Bangladesh Environmental Protection Rules, 1997. The DOE authority has many efficient specialists who are working on the research of these hazardous elements on electronics goods. They are concerned about the quantity measurement of the chemical products used in electronic products and the quality of those products. They will not give permission to any products whose ingredients will be harmful for the environment. That means whatever process they use for recycling, and the products they want to trade cannot carry any ingredients that will directly or indirectly contaminate the environment.*

- *In another rule, it is decided that for fluorescent lamps and mercury incandescent lamps, if they cannot be recycled, they need to be handed over to collection centers for storage and disposal. This is one of the most sufficient rules to be effective on our environment.*

- *Manufacturers have to establish individual or joint collection centers and set aside funds for the management of WEEE. This is another rule of the Hazardous Waste (e-waste) Management Rules. It will stop the practice of dumping or throwing expired electronic goods here and there among its users. If the manufacturers establish collection centers for e-waste, users can find an appropriate and fixed place to dump their e waste. In Bangladesh, people do not know or do not find any proper place to keep their e-waste. If the rules are implemented properly, the collection of the e-waste would be much easier and so is the recycling process.*

- *In the published rules, the name, address and contact information of the trader or seller as well as the information on the registered collection center shall be displayed on the product or on the product label, or this information shall be provided to consumers or large consumers. This rule has another smart way to make the WEEE management easy and efficient. Thus, the consumers will stay a phone call away to give their E Waste to them, so they can store the expired products to a fixed place and the recycler can easily collect all the wastes from specific places.*

- *There are also punishments for the violations of these rules. It's a common nature of human being, especially the citizens of developing and underdeveloped countries that they have a natural tendency of ignoring or violating any established rule. The punishment system in the rules will trigger the fear of the consequence of violating the*

*rules and lead people towards maintaining the rules.*

## *Weakness of the E-waste Rules*

*This rule has introduced a new dimension regarding the processing, storage, manufacture, collection of e-waste. It has opened a modified version of the ban regarding the import of any electric and electronic equipment under Rule-15 of this regulation. In spite of having different modules, it has some lacuna which can be understood from a deeper sense. Here some loopholes are described below-*

*Conditional Clause: Under Rule-1 of E-waste Management Rules, 2021 shall not be applied for the radioactive wastes under the Bangladesh Atomic Energy Regulatory Act, 2012. This exception is liable to create an impact on the environment where the Department of Environment cannot be able to take any initiative regarding the radioactive pollutants of the Atomic Energy Regulatory Commission. We cannot separate the environment through different divisions, so it is impossible for the Bangladesh Atomic Energy Regulatory Commission to control by themselves. Also, the question lies regarding the controlling mechanism without any cooperation with the rules and regulation of the Department of Environment.*

*Spreading Awareness towards People and Community: The way of raising awareness towards the people is an important issue. Under Rule-3(9), raising of awareness by publication, leaflet, booklet, poster and digital way through (website, e-mail, SMS) in various ways for e-waste objects like-*

- *The information regarding electric and electronic objects and the hazardous components in those products.*
- *Proper e-waste management, raises awareness regarding the risk as a result of disposal or recycling of e-waste and to conscious people under the reflection of Environment Conservation Rules 1997 so that public interest and public health is being protected.*

*Nowadays, social media plays an important role in publicity. But it is also taken into kind concern that all the people cannot afford the digital device and they don't understand the information properly. Most of the people have no idea about the term 'E-waste' except the person related to this. So, spreading information about the effect of electrical and electronic equipment through the digitalization process can never be able to raise consciousness until it has been implemented practically. Some issues can be pointed out like-*

- *Digital devices are not available to everyone.*
- *Mere websites, e-mail or SMS are not enough to spread awareness to everyone specially in the rural area.*
- *There is no indication of seminar, meeting, workshop or public gathering where these issues can be described properly.*

*So, these issues are taken into kind consideration of the authority so that each and every essential step can be taken to spread among the vast number of people directly.*

*The Standard of Using Hazardous Elements regarding the production of Electric and Electronic Materials: The limit of the use of hazardous substances must be followed under Schedule-3. It shall be mitigated within 5 years after adoption of this rule.*

*However, the exceptional clause has an inner meaning to delay the process. As the environment pollution is a great concern, every issue must be monitored properly. If the government wants, the concerned department can extend the time. So, it vitiated the whole process that cannot be measured generally.*

*Restriction regarding the import of old and used electrical and electronic equipment: A good decision has been adopted under Rule-15 to ban the import of old used e-waste materials from our country[x]. It seems good news for us, but the export is not banned yet. There is an indication of restricting the import, not the export. So ultimately there is a chance of violation through one process.*

*Again, there is a special concern of import for education and research purposes, and it has taken under consideration whether the rules are followed or not. And after purchasing in the name of research purpose, there is a possibility of using these for other purposes. If the monitoring process is not strong enough a lot of people would violate these.*

## *Recommendations*

- *The E-waste is gradually increasing. All the stakeholders: producers, sellers, users, recycle agencies and the policy makers need more collaboration. The following recommendations are put forward for effective management of e-waste.*

- *A large-scale awareness program should be initiated for all the stakeholders: producers, sellers, users, recycle shop owners and workers to enhance their understanding regarding the danger of e-waste and also to ensure their participation in the recycling process.*

- *There is an urgent need to establish an e-waste treatment plant. This may be founded on public- private partnership (PPP/ Non-profit basis) initiative. Producers should be registered with the recycling agencies and treatment plants for paying the recycling cost. Treatment cost might be shared by producers and consumers. It can also be based on profit. But some control should be established as profit making opportunities might lead towards early recycling and inefficient utilization of resources.*

- *Producers' responsibility should be extended so that they will ensure that hazard free disposal of e-waste is ensured. They should be responsible for the products after their useful life and pay the cost to the recycling agency. This will encourage redesign of products aiming at improved recyclability, reduce the use of toxic materials by developing alternative materials, encourage producing products with longer life span and promote research and development of environment friendly technology. Separation of Garbage: In Bangladesh, household wastes are not separated before disposal. Initiatives should be taken to separate garbage into burnable, non-burnable and e-waste. This will help the households to segregate waste easily and e- waste which will in turn increase recovery by reducing wastage. Need for Research: There is not enough research about this issue. So, Research should be conducted more for solving this issue. Besides, seminar, workshops should be arranged as awareness programs.*
- *If a product is outdated, consumers can donate it to someone who might still find it valuable. Many retailers also offer trade-in programs or incentives for people looking to upgrade electronics that require the surrender of an older model; the retailers are able to reuse or repurpose the older models. However, if a product is totally unusable or broken, instead of just being thrown in the garbage, it must be thrown away by a certified e-waste hauler or recycler, or taken to a designated drop-off at a government building, school or organization as e-waste can potentially cause harm to humans, animals and the global environment if disposed of improperly.*

## *Conclusions*

*In this advanced era of digitalization, no person can ignore the blessings of electronic goods in life. The invention of electricity and electronic goods unveiled a civilization and will contribute to the further civilization too. As the electronic goods will be used, it will produce the e-waste too. So, the smart management of the e waste is the only solution to save our ecosystem. The Hazardous Waste (e-waste) Management Rules 2021 in Bangladesh has some powerful provisions which seem to be useful to control the management of e-waste if applied properly. Though it will be tough to implement the rules on the large number of people as a big proportion of its inhabitants are mostly undereducated and not concerned about the ecosystem. Hence, hope can lift a mountain of despair. With the medium of adequate awareness activities and strictness of the law, the Rules can help improve the e-waste management system in the country and save thousands of lives who are working in the recycling and e-waste collection sector in Bangladesh. Again, there are some flaws in the rule as described above, which may be improved further with the versatile suggestions which can be gathered in time while implementing the published rules appropriately.*

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