

Status of Electronic Waste Generation in Bangladesh: A Review

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Abstract:- During the last century public lifestyle has radically changed with the help of industrial revolution followed by the advances in information technology all over the world. In each sector electronic appliance play a key role to harmonize the modernization. The tendency of access to technology is almost same all over the world. After a certain time this tendency emerging a cast off electronics goods market. Some of this electronic waste (e waste) is reused or broken down into parts or thrown out completely to the surrounding environment. So the generation and hazards of e-waste has become a growing environmental concern in recent year. This paper highlights the associated issues and strategies like definition, classification, composition, generation and life cycle analysis to address this emerging problem. This study found the generation of e-waste, depends upon previous study that were conducted by various authors and organization all over the world emphasized on Bangladesh. The paper summaries the status of electrical and electronic debris and its management. The study used both primary and secondary data sources to accomplish the research work. The paper provides a most recent assessment to this relatively new concept of e waste generation in Bangladesh which might help to build up an appropriate policy and management plan.

Keywords:- E-Waste, Generation, Recycling, Bangladesh, End of Life, Composition.

I. INTRODUCTION

In last decades Bangladesh has made a remarkable progress in Medical, ICT, Electrical and Electronics appliance etc are related with her socio-economic development. All levels of the education system are going to be digitalized. Secondary School Certificates, Higher Secondary Certificates enrolment and result publishing is fully automated now. The entire government ministry, departments, public and private universities and rest of the public and private sector is going to be automated. Already most of the private and public banks are doing their functioning digitally. On the other hand most of the adult peoples of Bangladesh are using a mobile phone for their personal and business communication. This tendency of access to technology and the rapid growth of the Bangladesh economy, a market have emerged for computers, consumer electrics, home appliances and electro medical equipments and other electronic goods.

Today, the Electrical and Electronic Equipments (EEE) are a fundamental commodity for different purposes in our

daily life. The generation of this commodities are multiplying 5 times faster than human, like mobile phones, which has reached zero to 7.2 billion in only last three decades [1,38,46]. In perspective of the planet e waste generated in 2016 was around 44.7 million tons and it will increase up to 52.2 million tons in 2021 with an escalation rate of 3 to 4% per year [2,36]. Some of the article [2,3] stated that since 2005 the annual wastage of electrical and electronics equipments (WEEE) growth rate is roughly 5% was registered that is leading to an overall amount of 40 million tons in 2014 globally. On the other hand the second largest WEEE generator in the world is European Union (EU) then Asia who generate 11.6 million tons in each year [2,3]. As a developing country Bangladesh is growing as one of the largest consumer country and consequence is that we are generating vast amount of e waste on behind of screen. Most recent studies of Environment and Social Development Organization (ESDO) shows that roughly ten million tons of electronic waste are generate annually in Bangladesh. RE-TEM a solid waste related Japan Bangladesh joint venture company studies shows the perilous situation regarding e waste generation scenarios in Bangladesh.

Bangladesh University of Engineering and Technology (BUET) has also conducted a study of e waste generation in Bangladesh 2019. Annually 20% percent e waste are spawn, according to the study of BUET [12,52]. Last year a survey was carried out and found that the amount of e waste increased to 4 Lac tones in 2018 from 1.30 Lac tones in 2010 and the volume is projected to be 46.2 Lac tones by 2035 [12,52]. Rapid growth and management of electronic debris is flattering a leading problem over the world., Bangladesh is going to face a serious e waste generation crisis as other countries over the globe [1,10,11,13]. The trans-border movement of e waste is a major concern throughout the world. Unfortunately Bangladesh has a few article published as propose to e waste till now while the same term of Electrical and Electronic Equipment (WEEE) waste is also utilized in the international literature in various reputed journal and seminar or Symposium.

II. E-WASTE

A. Defining E Waste

The expression "e waste" is an ellipsis of electrical and electronic debris mostly known as electronic waste. Basically e waste is used to describe the old or end of life or discarded appliances that used electricity. Still now there is a few typical explanation of e waste over the globe. Some author declared that wastes of electrical and electronic equipments including all of its apparatus which stopped

working or suffered from functional defects during its production [4,5,6,47]. According to environmental and Social Development Organization (ESDO) statement 2015 e waste is a generic term comprising all electrical and electronic equipment that have been disposed of by the user. United Nations Environmental Protection (UNEP) stated that WEEE is a complex combination of hazardous and non-hazardous waste, which consists of items of economic value and it requires specialized collection, transportation, segregation, disposal and treatment [55].

European Union Directive stated at Article 3(a), 2002/96/EC as Electrical and Electronic Equipment or e waste means the equipment which is depends on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields falling under the categories set out in Annex IA and designed for use with a voltage rating not exceeding 1000 Volt for alternating current and 1500 Volt for direct current. According to Basel Action Network (BAN), E waste is a wide 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”.

According to the Organization for Economic Co-operation and Development (OECD), “Any household appliance consuming electricity and reaching its life cycle end” [42]. Electronic Waste is discarded electronic devices and components as well as surplus or degenerating substances involved in their manufacture or use. The other terms for e waste are or ‘electronic waste or waste of electronic goods or waste from electrical and electronic equipment (WEEE) [7]. According to The Directive 75/442/EEC, E waste is stated as "Waste of electrical and electronic equipment, including all components, subassemblies and consumables which are part of the product at the time of discarding”. Robinson 2009 defines e waste as "any device connected to a power sources that no longer satisfies the current owner to the purpose for which it was created".

The most effective article regarding electronic waste generation around the world was written by [2] stated as e waste is a term that is used to cover all items of electrical and electronic equipments and its parts that have been discarded by its owner as waste without the intent of re-use.

B. Classification of E-Waste

Due to brisk growth of technology, producer campaigns, better living standard, extended producer responsibilities (EPR) towards waste collection and managements, consumer’s behaviors, consumption patterns, the WEEE classification has become a great concern now.

There is no generic system for classification of e waste so it's varies from country to country. According to United Nation University (UNU) classification also known as UNU-keys (UNU, 2015) published an article where they made e waste 10 primary categories actually which covers 54 categories of e waste. UNU-keys classification are based on the various issue such as - based on products of similar

function, In terms of hazardous substance and valuable materials, based on comparable material composition, In terms of average weight, end of life characteristics, life span distribution is regarded as most comprehensive classification.

C. Categories of E-Waste:

10 categories of e waste are classified on the basis of [64] directives 2012 /19/EU. This is one of the most widely conventional classifications-

- Categories-(C01): Bulky house hold appliance: microwaves, refrigerators, freezers, clothes dryers, washing machines, electric cooking stoves, dishwashers and electric fans, hot plates and air conditioners.
- Categories-(C02): Small house hold appliance: coffee machines, toasters, tooth brushing, vacuum cleaners, grinders, haircutting appliances, drying and shaving.
- Categories-(C03): ICT and Telecommunication equipments: minicomputers, mainframes computer, personal computers, notebooks, laptops, printers, telephones, cell phones and IP phone.
- Categories-(C04): Consumer equipment and photovoltaic panels : video recorders, video cameras, radios, stereo recorders, televisions, musical instruments, audio amplifiers etc.
- Categories-(C05): Lighting equipments: straight and compact fluorescent lamps and high-intensity discharge lamps, LED. Solar panel.
- Categories-(C06): Electrical and electronic tools (with the exception of large scale stationary industrial tools): drills, saws, sewing machines, soldering irons, equipment for turning, milling, grinding, drilling, making holes, folding, bending, or similar processing of wood and metal.
- Categories-(C07): Toys, leisure and sports equipments: Toys, leisure equipment, and sporting goods: electric trains or racing car sets, video games, and sports equipment with electric elements.
- Categories-(C08): Medical Device (with the exceptions of all implanted and infected products): Ventilators, craniological device, nuclear analyzers, radiotherapy equipment, all types of dialysis equipments.
- Categories-(C09): Monitoring and control instruments: smoke detectors and thermostats, heating regulators etc.
- Categories-(C10): Automatic Dispensers: solid products, food and drinks related electrical device, all electronics device that mechanically deliver various products, cold or hot bottles.

India categorized e waste into two groups such as-

- Group-1: ICT and telecommunication equipments: minicomputer, mainframe, personal computer Centralized data processing (including CPU), laptop, notebook, photocopy equipments, notepad, printer including cartridge telex, facsimile, electrical and electronic typewriters, telephone including mobile and cordless set.
- Group-2: Consumer electrical and electronics: All type of television set, washing machine, refrigerator, air conditioners, centralized air conditioning plant.

Another most renewed organization of the world "Step Initiatives" categorized e waste as six option [40] such as-

- Category-1: The temperature exchange equipments (TEE): Commonly known as freezing and cooling equipments like freezer, refrigerator, heat pumps etc.
- Category-2: Display unit, laptops, monitors, tablet, notebook, tablet, televisions and cell phone.
- Category-3:Lamps: LED lamps, fluorescent lamps, high intensity discharge lamp.
- Category-4:Large equipments: Electric stove, dish washing machines, washing machine, cloth dryers, large printing machine.
- Category-5: Small equipments: Vacuum cleaners, toaster, microwaves, ventilator, ventilation equipments, electric kettles, electric shavers, scales, calculators, radio sets, video cameras, electric and electronic toys small electric and electronic tools small electronic tools, small medical devices, small monitoring and control instruments.
- Category-6: Small Telecommunication and IT equipments: Mobile phones, Global positioning systems (GPS), pocket calculators, routers, personal computers, printers, telephone.

III. SOURCE OF E WASTE

E waste can be generated in various source that may be include the following dead electrical and electronic device-

➤ *Small and Large Household Appliance:*

TVs, Fridges, water heater, room heater, air conditioner, washing machines, dish washing machines, air cooler, air appliances, electric fans, exhaust ventilation and conditioning equipment, rooms and seating furniture, large appliances for heating beds, vacuum cleaners, brushing teeth, Carpet sweepers, appliances for hair-cutting, shaving, hair drying and massage, clocks, electric knives, power supply, UPS, IPS, lamps, clocks, flashlight, calculators, IP Phone, cell phone, tele phone, answering machines, digital/video cameras, radios home theaters, television tubes, LCD, CRTs and LED etc [10,16,24].

➤ *Ict Equipments:*

Mainframes, Personal computers including CPU, mouse, screen and keyboard, Laptop computer, Networking equipment, CD / DVDs /Floppy Disks, Scanners, Mobile phones, UPSs, Radio sets, Television sets, Video cameras, Hi-fi recorders, Video recorders, LCD/ TFT screens, Audio amplifiers and Musical instruments, printers, tonner, Computer monitors, Switch, Hub, Router, Gateway, scanners, pointer, Speakers, pen drive, Video game devices, cables, circuit boards, Digital Video Display players, MP3 and Compact Disc players [10,11,25].

➤ *Kitchen Equipment:*

Water dispensers Induction Cooker, Coffee makers, microwave ovens, sandwich maker, Electric heating appliances, Electric hot plates, etc.

➤ *Laboratory Equipment:*

Microscopes, hot plates, calorimeters, Oscilloscope, Bread board, Electric radiators, etc.

➤ *Medical Equipments:*

Radiotherapy equipment, Pulmonary ventilators, Scanners, Operating equipment, Stethoscopes, Cardiology,

Dialysis, x-ray machine, nuclear medicine equipment, ultra sonogram machine, laparoscopy machine, Angiogram machine, Equipments of in-vitro diagnosis, freezers, analyzers, fertilization tests etc. Other detecting appliances, monitoring, preventing, treating, alleviating illness, injury or disability etc.

➤ *Electrical Equipment:*

Wire, Electrical tools, Mobile Tower, Electrical Tower or pole, Damage Substation equipment, Generator, GIS bus duct, Air bushing, DISC insulator, cu conductor, Bus bar Protection panel, Metering panel etc.

➤ *Industrial Appliance:*

Equipment for knitting, weaving, and sewing, milling, turning, drilling, cutting, grinding, sanding, punching, shearing, folding, meandering or processing wood, metal and other materials. Tools for nailing or screwing, riveting or removing rivets, nails, screws or similar uses, Tools for welding, Soldering or similar use. Tools for mowing or other gardening activities.

➤ *Office Equipments:*

All type of calculators, Note book, Telephones, Electrical and electronic typewriters, Facsimile, FAX, Photocopier, Scanner, printer etc.

➤ *Toys, Leisure And Sports Equipment:*

Hand-held video game, Electric trains or car racing sets, Video games, Computers for diving, running, rowing, etc., Sports equipment, remote control toys etc .

➤ *Wire, Cables :*

All Type of Plastic insulated Wire and cables.

➤ *Batteries:*

Lead acid batteries, Lithium ion batteries, Nickel Cadmium (NiCd) batteries, Nickel-metal hydride (NiMH) bateries, Zinc-Carbon batteries, Alkaline bateries [44,50].

IV. COMPOSITION OF E WASTE

Across different waste categories the composition of e waste is very assorted and differs in products. In “hazardous” and “non-hazardous” categories e waste contains more than 1000 different substances. E waste consists of non-ferrous and ferrous metals, glass, concrete, ceramics, wood or plywood, plastics, printed circuit boards (PCB), rubber, LCD, LED etc. Iron and steel constitutes about 50% of e waste followed by plastics twenty one percent, nonferrous metals thirteen percent and rest of other constituents. Non-ferrous metals consist of metals like copper, aluminum and precious metals e.g. silver, gold, platinum, palladium etc. The presence of elements like Hg, Pb, Cr6, Cd, arsenic, selenium, hexavalent chromium, and flame retardants beyond threshold quantities in electronic waste classifies them as hazardous waste [9]. The diagram below shows the percentage of various materials present in e waste where all of the measurement are conducted by weight. It is observed that copper, iron and steel metals represent the largest fraction followed by plastics (17).

Composition of e waste	Reference for Average Composition of E Waste			
	Widmer et al. 2005	UNEP, 2013	M C Vats et al. 2014	Sabah M. Abdelbasir et al. 2018
Metal	60%	30%	60.20%	62.20%
Plastics	15%	12%	15.2%	15.3%
Screens	12%	-	11.90%	12%
Metal plastic	5%	-	-	-
Cables	2%	-	2%	2%
Printed Circuit Board	2%	-	1.7%	1.7%
Pollutants	3%	-	2.7%	3%
Glass	-	0.30%	-	-
Lead Glass	-	19%	-	-
Brominates plastic	-	18%	-	-
Lead	-	0.29%	-	-
Aluminum	-	5%	-	-
Copper	-	0.31%	-	-
Other Metals	-	3.1%	-	-
Others	1%	6%	1.4%	1.4%
Metal Plastic Mixer	-	-	5%	5%
	100	100	100	100

Table 1:- Comparison on general composition of e waste . [04,17,28]

V. LIFE SPAN OF E WASTE

Although there are several indicator in several inhabitants to define the End of Life (EoL) of e waste, the

most common definition is the product no longer satisfies the initial purchaser.

In this point of view the average life span of some electronics device are as follows-

Products	Reference								Average life span / years	
	S. M. Rezaul Karim et al., 2018		M. U. Kabir et al., 2015	Anisur Rahmn 2016	Dasgupta D et al., 2016		G. Gaidajis et al., 2010	Moham R A et al., 2015		
		mean				mean				mean
Mobile	1.5-2.5	2	2	1-3	2	2	2	4	2.3	
Computer	3-5	4	3	2-3	2.5	3	3	5-8	6.5	
Laptop	-	-	-	-	-	-	-	5-8	6.5	
Printer	-	-	-	-	-	-	-	5	5	
Television	9-14	11.5	5	5-13	9	8	10	8	8.6	
Refrigerator	15-17	16	10	-	10	-	15	10	10.2	
Washing machine	-	-	8	-	10	-	8	-	8.6	
Electric cooker	-	-	10	-	-	-	10	-	10	
Photocopier	-	-	8	-	-	-	8	-	8	
Air-conditioner	-	-	12	-	-	-	15	-	13.5	
Dish washer	-	-	10	-	-	-	10	-	10	
Freezer	-	-	10	-	-	-	8	-	9	
Tumble dryer	-	-	10	-	-	-	-	-	10	
Micro-oven	-	-	7	-	-	-	7	-	7	
Vacuum cleaner	-	-	10	-	-	-	10	-	10	
High-fidelity system	-	-	10	-	-	-	-	-	10	
Video player	-	-	5	-	-	-	5	-	5	
Electronic games	-	-	5	-	-	-	3	-	4	
Fax machine	-	-	5	-	-	-	5	-	5	
Radio	-	-	10	-	-	-	5	-	7.5	
Food mixer	-	-	5	-	-	-	-	-	5	
Hair-dryer	-	-	10	-	-	-	4	-	7	
Iron	-	-	10	-	-	-	10	-	10	
Kettle	-	-	3	-	-	-	10	-	6.5	
Telephone	-	-	5	-	-	-	5	-	5	
Toaster	-	-	5	-	-	-	5	-	5	

Table 2:- Life Span of EEE [9,11,12,34]

According to various study all over the world I observed that almost all of the electronics device of first world has only one active life after that they are discarded. On the other hand in the third world countries Electrical and Electronics Equipments (EEE) spent second and third life using reused system then they were discarded. So life span

of several e waste is vary from country to country in the world. Life style, technological up gradation, Income level, GDP, Weather are the most effective indicator to produce e waste in any inhabitants of the world.

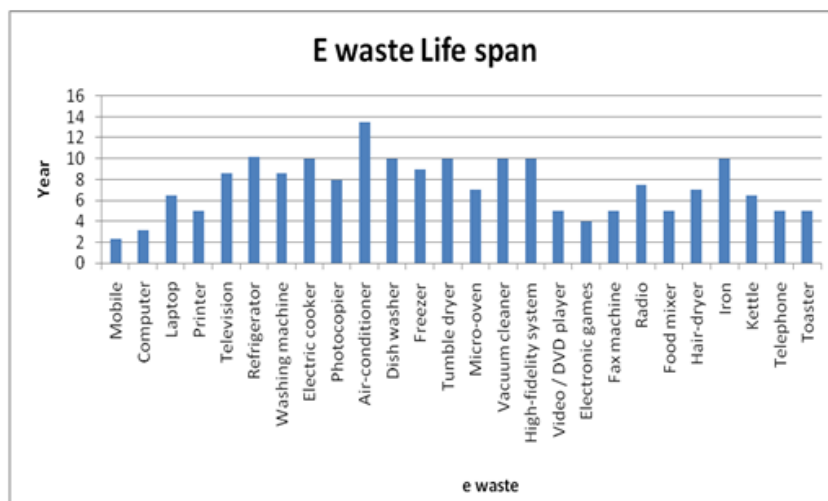


Fig 1:- Life Span of EEE [9, 11,12,14]

VI. E WASTE GENERATION SCENARIOS IN BANGLADESH

The blooming of information technology has brought a curse that barely existed in 15 years before. Now this represents the biggest and fastest growing manufacturing waste. Dhaka and Chattagram produce highest rate of e waste than the rest of the cities in Bangladesh. Dhaka City Corporation is the largest and primarily responsible stakeholder for collecting and managing e waste. Chattagram City Corporation is second largest waste management stockholder. A noteworthy amount of waste in two major cities Dhaka and Chattagram are not collected due to lack of legislation, collection truck, funds, and also infrastructure. Door to door collection system is a common phenomena at both City corporation . In this case Scavengers collect the recyclable items and sell it to Bhangariwala after sorting the e waste from another waste stream the bhangariwala sell it to Bhangari Shop. All of the large recycler like azizu recycling co., JR Enterprise, Waste Concern etc collect the waste from bhangari shop. This shop are mostly situated on the bank of the river Buriganga, Elephant road, Chankharpool, Jatrabari, Mirpur -11, Mirpur-12, Badda, Azompur, Ashkona, Tongi etc in dhaka city .

In chattagram there are several e waste collection market such as Ice factory road, CDA market, Vatiary Kadamtali, Coxy market etc. Informal e waste handling and management is a common fact in Bangladesh. Actually in national level there have no proper census conducted by government level for e waste generation, collection and management prospect.

ESDO in association with Swedish Society for Nature Conservation (SSNC) has conducted a research for current situation analysis and to review and compare the existing practices for dealing with e waste at the national and regional level. E waste has become as a profitable business

for its fast growing waste stream tendency. Electronic debris production in Bangladesh is around 2.7 million tons and out of these ship breaking industry alone generates 2.5 million tons annually [51].

Electronics waste is dumped in various Asian developing countries like India, Bangladesh, China and Pakistan etc by the developed nations through all of the possible illegal trade routes [55]. For her digital revolution, Bangladesh consume huge ICT goods. According to Bangladesh Telecommunication Regulatory Commission (BTRC) at present in Bangladesh almost 159.780 million mobile subscriber are active [53]. Consequently they use almost 160 million mobile phone set, 160 million Mobile charger 160 million battery, 320 million head phone.

In Bangladesh 93.102 million internet user are active now[53]. consequently they use almost 93 million PC or laptop, 93 million CPU, 90 million keyboard 93 million mouse . After a certain period all of this equipment will be debris and will be added to electronics waste stream.

The Global E-Waste Monitor [2] refers the world's total e waste amount is 44.7 million tons in year 2016 among which 18.2 million tons is contributed by Asian countries. Compared to the amount of China (7.21 million ton) and India (1.97 million ton) and Bangladesh 0.142 Million Ton in year 2016, [2,20]. The report of ESDO for the same time period Bangladesh produced 9.81 Million Tons of e waste [51]. Conversely with collaboration of Department of environment (DoE) and BUET has performed a study in 2018-2019. This study shows that in Bangladesh total e waste generation is 0.31 million ton [52].

The figure2 depicts the electronics waste generation scenarios of various study in the ground of 2016.

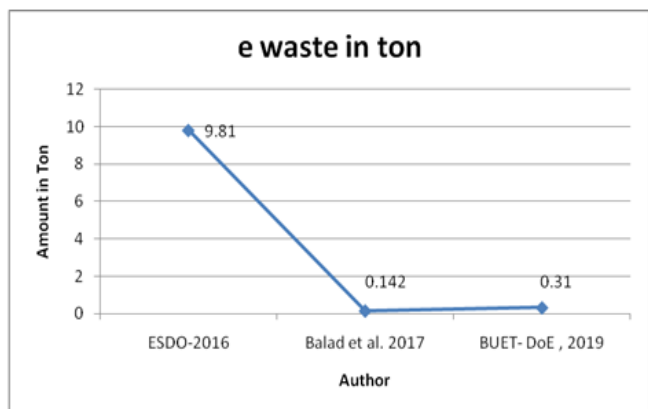


Fig 2:- Comparison of E-Wastes in Bangladesh , 2016. [2,12,51,52]

It has been observed that the estimated amount in three studies varied in wide range. The findings of ESDO is differ from the other present study due to the estimated contribution of the ship breaking industries Bangladesh. ESDO shows the lager volume of e waste is generate from illegal trade of ship breaking industries Bangladesh. The other study did not consider such evidences.

Following chart depicts the growth rate as per the BUET study group collaborated by Department of

Environment , Agargaon, Dhaka. This study projected the e waste generation on 2035.

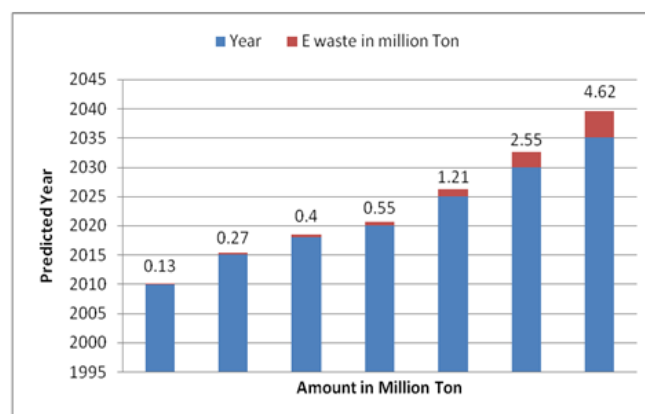


Fig 3:- Estimated amount of e wastes up to year 2035 [2,12]

There are several study ware conducted till now . Most of the study focus on 8-14 item of e waste. Latest full study was conducted by an Japanese collaborated company (RE-TEM) on June 28, 2015. Bellow table-8 depict the details e waste generation summery in Bangladesh. The consuming of electrical equipments in Dhaka statistical metropolitan area is several years ware discussed in re-tem analysis as-

Item Name	Consumption (piece/year)		
	2009	2014 (base year)	2020 (projected)
Mobile	28,76,572	71,57,845	2,13,73,211
Computer	2,40,120	3,86,910	6,85,435
Television	3,90,415	9,71,481	29,00,827
CFL Balb	69,77,892	1,40,00,000	2,55,62,198
Fan	8,68,855	14,00,000	41,80,378
Refrezarator	33,394	67,000	1,54,975
Deep Fridge	8,316	13,400	30,995
AC	33,264	53,600	94,956

Table 3:- Study on E-Waste in Bangladesh/RE-TEM/WCC/June 28, 2015 [12]

VII. PROBLEMS AND PROSPECT

Actually there are no structural disposal method in Bangladesh that are being practices. Most of the inhabitant are not aware of the negative impact of e waste. The author [41] stated that the Poor collection mechanisms, poor awareness among the users, informal processing methods, illegal dumping, cause a serious threats to environment as well as human health. If we consider only mobile phone and it's accessories then we have a large volume of possible e waste. According to Bangladesh Telecommunication Regulatory Commission (BTRC) in Bangladesh almost 159.780 million mobile subscriber are active [53]. Consequently they use almost 160 million mobile phone set ,160 million Mobile charger, 160 million battery, 320 million head phone, 93.102 million Internet user in Bangladesh so they use almost 93 million PC or laptop , 93 million CPU, 90 million keyboard 93 million mouse etc. After a certain period all of this equipment will be debris . This large volume of debris will be a special concern for

local inhabitant. Model change, technological up gradation etc can make the tendency to thrown the EEE early. Most of the people dispose their waste in the municipal bin, where e waste is not managed properly. Reverse supply chain technology of e waste and public awareness is necessary to reduce this tendency [35].

Electrical and electronic equipments are roughly consumed and after end of life dumped the useless products in a slapdash fashion in Bangladesh. Some of the electronic waste is reused or completely thrown out or broken down into parts and after a certain time it is directly incinerates to soil, water and surrounding environments like lands, rivers, ponds, drains, lakes and open spaces [25]. This may release a number of pollutants into the environment, on exposure to which, might result in several detrimental effects on various biotic and a biotic components in vicinity of such informal recycling systems [9,20]. Specially Battery management is a critical issue for e waste management. In terms of global warming and ozone layer depletion Lithium ion batteries

cause significantly more impacts than Lithium Metal Polymer units [43,44].

Conversely all of the electrical and electronics equipments contain a lot of precious metals and plastics up to 60 elements from the periodic table were found in complex electronics, most of them are recoverable in technically, though there are economic limits set by the market [2,18,21,23]. E waste contains valuable metals like as gold, copper, platinum, palladium, and silver, it also contains bulky and rare materials such as rare earth, iron and aluminum, along with plastics. In the resource point of view United Nation University estimates secondary raw materials of e waste is worth 55 Billion € globally. This may be the opportunity of third world countries like Bangladesh as because first world countries export their e waste to the developing countries [11]. UNEP said developing countries is the dumping station of developed countries.

Assumed that 80% of all developed countries e-waste is sent to developing countries [11,22]. The tendency of increasing e waste may be the great opportunity for business. The study [37,48] stated that the production of electronic equipments is a lucrative developing industries at present in the world. Bangladesh is one of the hubs of e waste generation countries also. Now a day's e waste has become the fast growing waste flows and as a result it has emerged as a lucrative business in Bangladesh. Only seven enlisted e waste management company in Bangladesh like as azizu recycling co. JR Enterprise, Waste Concern, ABC etc are operate formal e waste management . Bangladesh has mainly two major cities, Dhaka and Chattagram to produce highest rate of e waste than the rest of the cities. Dhaka City Corporation (DCC) is primarily responsible for collecting and managing waste in Dhaka as well as Chattagram City Corporation(CCC) is second largest waste management stockholder in Bangladesh [29]. A significant amount of waste in Dhaka and Chattagram are not collected due to lack of legislation infrastructure, funds and collection truck. Private organizations collect their raw material i.e. e waste in their own strategy.

VIII. CONCLUSION

There are no proper e waste management guidelines or regulations in Bangladesh still now. While the problems of e waste generation are widely discussed, there should be an urgent need to conduct comprehensively further studies in Bangladesh . Now it is urgently need to detailed assessment of the current and future scenario including environmental impacts, possible economic valuation, disposal practices, generation, quantification, threaten to human health etc. Bangladesh is a compactly populated country so the degree of impact on environment and population will be high for informal dismantling of e waste. E Waste may be an wealth of valuable materials if these debris could recovered properly. Institutional infrastructures, including electronic waste import, collection, transportation, storage, treatment, recovery and disposal are need to be established at regional and national levels due to environmentally sound management. Awareness creation could be the first point to reduce its bad impact.

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