

Electronic Waste Study & Facts in Bihar

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Abstract:

Increased market driven consumer behavior, increased purchasing power, competitiveness, fast changing socio economic pattern and demography of social set up and desire for ease in life style has changed the scenario of sophisticated toxic , deadly waste which requires special attention for handling and care for preservation of human kind generation. World convergence to global village resulting in transmigration of products and developed nation's clever move to flow old obsolete discarded products in name of technology transfer to underdeveloped and developing nations is also responsible for e waste piling up. Disparity between have one and non having one is depleting but this is attracting world towards situation where one and all are being forced to sit on pool of deadly waste materials which will not see nations boundary but will pollute environment and atmosphere for all. In particular nation also situation of waste and waste handling is varied depending on populous demography and per capita income. States having less regard to norms and legislative frame work are worst effected compared to one which have sensible framework and are willing to address situation in attentive manner. Situation of Bihar state is in worst effected shape. Situation is similar to most of the underdeveloped nations scenario.

Keyword: EEE, e waste, Exchange offers, Technological up-gradation, life span, End of life, Importer / Exporter, Manufacturer.

Introduction

Advancement in life style, dependence on technology and increasing tendency of easing of life has lead to development of various equipment and support systems which solely constitute electronic electrical equipments (EEE). The consumer section of industrial growth has registered marked growth in this EEE segment only. This growth at one end has eased life to greater extent giving rise to many psychological and health problems with increased inefficiency and lessening of physical works by individuals and growth of particular type of discarded and not usable products often seen dumped in backyard of every house. These dumped discarded products have many constituents which are precious and have reuse value in first hand and have many such active radiating and non radiating elements which are dangerous when individuals come in contact of these. These discarded and products which have lost their usefulness are often known as electronic waste (e waste) or waste electronic electrical equipment (WEEE)[8].

If we look at scenario of generating these wastes , three segments can be identified namely the consumers or the household segment which makes uses of one of smaller no of units for selected number of persons or users. The segment is larger and constitutes a larger section of the tune of say 90 percentage[3]. Waste produced here is largest in volumes and measures. Next comes the segment which is bulk user of EEE products of special types depending on the service sector i.e. information sector uses maximum number of computers and related to this equipments. Offices use AC, UPS and batteries needed in it besides other EEE

general purpose products. The wastes coming out of this segment is bulkier from single units but the overall waste when compared it will turn out to be only limited to 10 percentage of WEEE of the selected group of products. Next segment is the supplier which constitutes the manufacturer, dealer, importer, exporter etc which also handles these products. Since this segment is the originator of the products so has capability and capacity for repairmen/ replacement or segment wise repairing and after these modifications and remodeling the products are once again in circulation in market. The capacity or capability of undertaking such, results in lesser or almost nil WEEE production from this section.

It is always important to know that mainly for which and which types of product we are talking about. Here most commonly used products survey and study for waste generation in Bihar state has been taken up. The products in consideration are electronic audio amplification equipment, batteries which are used in any type of EEE products, Photocopiers or Xerox machines, Digital computers & laptops, DVD & VCRs, electronic gadgets, electronic toys , electrical home appliances, electric lifting and water supply equipments, electronic fax & facsimile machines, LCD and LED lamps, mobile phones & other communication equipments, Printers, television etc.

Situation of all 38 districts of Bihar has been considered where survey through questioners, personal interviews and feedback through e mail has been obtained. It is worth mentioning that situation of Bihar districts gives a clear picture which is consistent with the national panorama and

is almost same as it is for other states having diversified demography and diverse population.

E Waste Scenario, Concerns & Trends

It is known fact by now that out of the total waste, solid waste constitutes around 98 to 97 %. Special waste which constitute medical waste and electronic waste (e waste) which have different constitution and deserve special means of treatment amount only to the tune of 2 to 3 % [4]. Situation of e waste is further complex when its manufacturing, constituents and involvement of materials and their harmful effects is thought of and comes to one's mind. Various surveys and estimates by now regarding e waste have been made. Till date there is no authentic data for such. Approximate and rough data from MIAT and GTZ 1.

studies suggest that in India alone e waste is of the tune of 800000 tones in 2012 itself [4,5]. The generation and addition in this sector is showing trend and upsurge of 200 to 400 % growth rate in general for common types of e products. Situation for IT and Computer related e waste is more alarming as the upsurge is of tune that stock may cross 500 % growth rate by 2017 [17].

Actors, strategies and factors are numerous. India being developing nation is registering increase in e products many fold from multiple sources. Data base of inventory of e products which come through market, import, export or through other legal means are known but situation becomes when inflow from other segments gets added up [11]. Sources and prime factors for e waste compilations/ generation can be shown as in this figure 1.

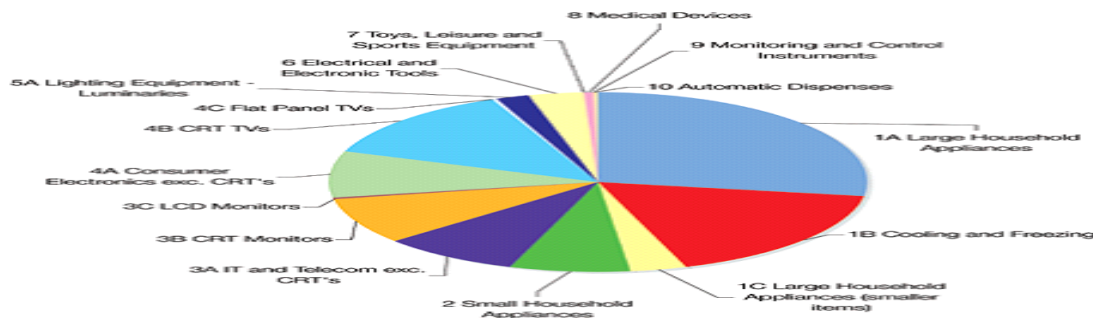


Figure 1 showing prime factors for e waste compilation

Average life of commonly used EEE products [3] and its graphical representation can be seen in table 1 and figure 2.

Table 1

Product	Life expectancy	Average life in yrs
Mobile	1 to 2 years	1.5
Camera	1 to 3 years	1.5
PC & Printers	5 years	5
Laptops	3 years	3
DVD/Players	3 years	3
Audio systems	1-3 years	2
TV	5 years	5
Microwave	5 years	5
AC	3-5 years	4
Refrigerator	10 years	10
Washing machine	5 years	5
Electrical fans motors etc	5 years	5
IT accessories	Very fast	0.5

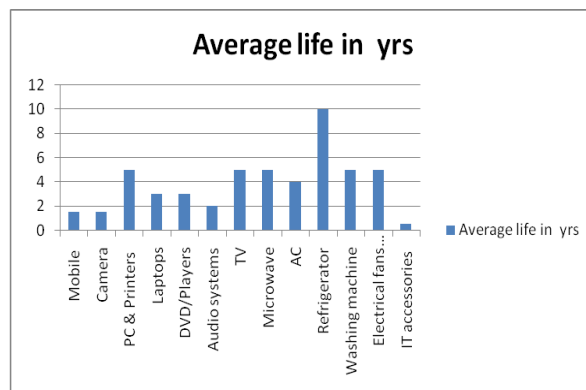


Figure 2. showing life span of EEE

A typical growth pattern of most likely constituents of e wastes from EEE industry in India [3] can be listed as per reporting and viewed as in table 2 and figure 3.

Table 2

Electronic Electrical Equipments	2005-06 in millions	2006-07 in millions	2007-08 in millions
PC	4.62	5.5	5.6
Laptop	0.45	0.86	1.83
Mobile	41.9	66.5	93.2
TV	10.3	11.78	14.9
Washing machine	1.68	1.73	2.97
Refrigerator	4.37	4.84	5.29

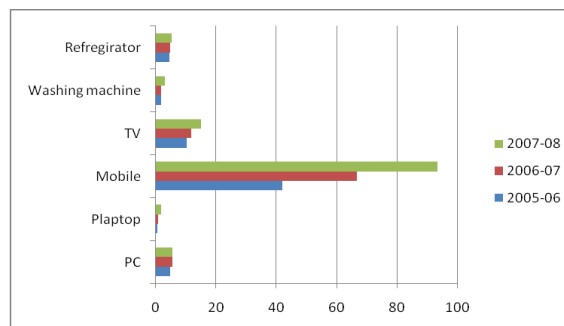


Figure 3. Growth pattern of EEE

Among the developed, developing and underdeveloped nations if we like to draw and see that strategic e waste management pattern then it can be put as the under mentioned table 3. Typical comparative strategies among the nations like Switzerland, China, India and South Africa has been taken for demonstration [5].

Table 3 Approach Details of Developed Switzerland, Developing China, India & Third World Country S Africa

Important aspect	Switzerland	China	India	South Africa
Technology Development	Indigenous Developed & trans boarder migrated from fellow nations	Indigenous & few borrowed	Borrowed, indigenous	Borrowed
Existing waste management system	Swiss Association for Information, Communication & Organizational (SWICO) Technologies, Organized system	Only organized for urban areas	Unorganized with exceptions for metros	Unorganized
E waste management	Not specific	Non specific & Semi organized	Unorganized and informal	Not specific
Actors	Manufacturers, importers, distributors, traders, consumers, recyclers, licensed collectors and licensed dismantlers, refiners, etc.	Manufacturers, distributors, traders, importers, consumers, recyclers, scrap dealers, disposers.	Manufacturers, distributors, traders, importers, consumers, formal and informal recyclers, scrap dealers.	Distributors, traders, importers, consumers, recyclers, collectors, sorters, disposers.
Formal e-waste collection centers	SWICO and SENS (Swiss Foundation for Waste Management)	EMPA, GTZ and EECZ	Pollution control boards manages	DESCO Electronic recyclers & Universal recycling co.
Disposal / dumping sites	Landfills	Outlined Municipal & illegal sites	Landfills	Landfills
Disposal site technologies	Systematic and meticulous process	Lacks legal collection systems	Lacks proper collection system	Partly Permitted sites with tech.

Various studies have put the state wise e waste figures [11] in percentage till 2012 as mentioned in table 4. The graphical representation of it is shown in the figure 4.

Table 4 Showing Details of State wise E Waste Contribution in India

SI	States	E waste in % in India	SI	States	E waste in % in India
1	Maharashtra	13.88121	19	Uttarakhand	1.123886
2	Tamil Nadu	9.235316	20	Himachal	1.092317
3	Andhra Pradesh	8.751912	21	Jammu & Kashmir	1.041916
4	Uttar Pradesh	7.108937	22	Goa	0.292682
5	West Bengal	6.888625	23	Tripura	0.259058
6	Delhi	6.662478	24	Chandigarh	0.246321
7	Karnataka	6.244472	25	Pondicherry	0.194619
8	Gujarat	6.159256	26	Meghalaya	0.144903
9	Madhya Pradesh	5.341829	27	Nagaland	0.099364
10	Punjab	4.765149	28	Arunachal Pradesh	0.090188
11	Rajasthan	4.332633	29	Andaman Nicobar	0.063138
12	Kerala	4.226421	30	Mizoram	0.054647
13	Haryana	3.086305	31	Manipur	0.05451
14	Bihar	2.092461	32	Sikkim	0.053483
15	Orissa	2.011792	33	Diu & Daman	0.02794
16	Assam	1.490594	34	Dadar & Nagar Haweli	0.019928
17	Chhattisgarh	1.472242	35	Lakshadweep	0.005067
18	Jharkhand	1.384383			

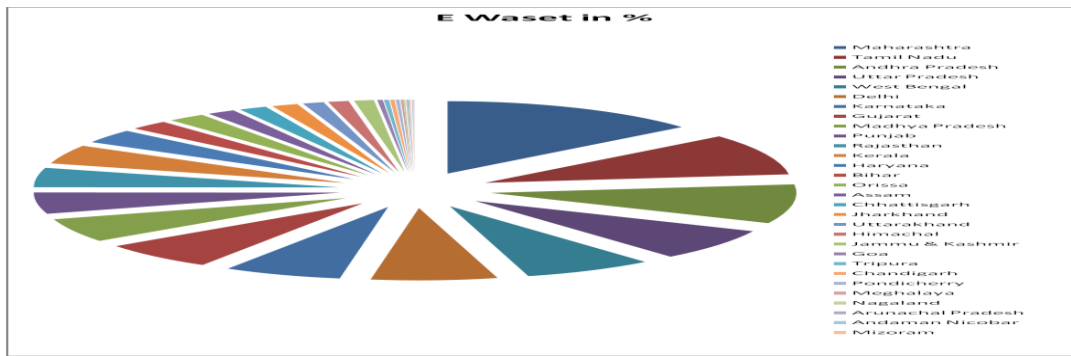


Figure 4 Showing percentage representation of E waste generation in India state wise

Studies and Data Outlines of 38 Districts of Bihar

In order to obtain overall scenario and situation of e waste stocks in Bihar under mentioned strategies were adopted for getting data for taking stock of e waste scenario in state:-

1. Brain storming session among the students and think group was undertaken to arrive at proper questioner. Developed questioner was circulated among the target group identified by post, hand to hand and through e mail in equal numbers. Interviews were conducted with the persons whom questioners were distributed in hand. Filled in papers having requisite data was obtained from all modes. Target group was distributed as per socio economic strata also. Thus data's received from diversified socio economic groups across the sections was tabulated and processed upon for proper ascertaining practical results from sample data of the state of affairs so far practicable. The different socio economic groups were further divided into equal numbers as :-
 - a) Households considering large, medium and small scales depending on size and persons involved.
 - b) Business organizations & institutions including offices with consideration of large, medium and small scales depending on size and persons involved.
 - c) Manufacturers, dealers, Importers / exporters, EEE second-hand shops, EEE repair shops, Recyclers / dismantlers, Processors of recyclable materials, Re-users, EEE collectors, R&D units including similar types of institutions /organizations with

consideration of large, medium and small scales depending on size and persons involved.

2. Further interview and fact collection efforts were undertaken from selective group among all the sections outlined in point 1 above. This was done to get facts & figures, representing principle of thoughts of the end users or target group fellows.
3. Details of purchasing pattern, resource availability, recycling options and facilities, reuse and disposal practices, storage and distribution/ gifting pattern were obtained and tabulated and processed to get the desired results.

In this survey most widely used seven types of commonly used consumer commodity of EEE namely Computers including its monitors of either LCD / CRT types, Laptops, most frequently used by masses Mobiles, Refrigerators finding places in almost all urban houses, Air conditioners (AC) , Batteries used for UPS or alternate lighting arrangements were identified and its account were undertaken.

In all 38 districts of Bihar [16]100 sets of questioners making it total 3800 sets each in equal numbers were delivered to different groups and sections manually and through email and post.

Responses from three categories of target groups inclusive of all sections obtained details are tabulated in table 5.

Figure 5, 6 & 7 indicates the targets verses responses of all the three categories among the districts

Table 5 Showing the Responses in the three Segments Identified and Planned

Districts	Household			Business organizations & institutions including offices			Manufacturers, Importers/exporters etc.		
	Population in lac	Questionnaire sent	Questionnaire received	Districts	Questionnaire sent	Questionnaire received	Districts	Questionnaire sent	Questionnaire received
W Champaran	39.23	100	69	W Champaran	39.23	49	W Champaran	39.23	19
E Champaran	50.83	100	69	E Champaran	50.83	59	E Champaran	50.83	29
Sheohar	6.57	100	54	Sheohar	6.57	34	Sheohar	6.57	14
Sitamarhi	34.2	100	46	Sitamarhi	34.2	48	Sitamarhi	34.2	16
Madhubani	44.76	100	75	Madhubani	44.76	65	Madhubani	44.76	15
Supaul	22.28	100	43	Supaul	22.28	33	Supaul	22.28	13
Araria	28.06	100	54	Araria	28.06	44	Araria	28.06	24
Kishanganj	16.91	100	66	Kishanganj	16.91	46	Kishanganj	16.91	26
Purnia	32.73	100	76	Purnia	32.73	36	Purnia	32.73	26
Katihar	30.68	100	71	Katihar	30.68	41	Katihar	30.68	21
Madhepura	19.95	100	74	Madhepura	19.95	32	Madhepura	19.95	24
Saharsa	18.97	100	56	Saharsa	18.97	51	Saharsa	18.97	26
Dharbhanga	39.21	100	79	Dharbhanga	39.21	47	Dharbhanga	39.21	29
Muzaffarpur	47.79	100	81	Muzaffarpur	47.79	59	Muzaffarpur	47.79	21

Gopalganj	25.58	100	62	Gopalganj	25.58	29	Gopalganj	25.58	22
Siwan	33.18	100	83	Siwan	33.18	27	Siwan	33.18	23
Saran	39.43	100	65	Saran	39.43	38	Saran	39.43	25
Vashali	34.95	100	72	Vashali	34.95	29	Vashali	34.95	22
Samastipur	42.55	100	71	Samastipur	42.55	57	Samastipur	42.55	21
Bagusarai	29.54	100	71	Bagusarai	29.54	61	Bagusarai	29.54	21
Khagaria	16.57	100	53	Khagaria	16.57	43	Khagaria	16.57	23
Bhagalpur	30.32	100	71	Bhagalpur	30.32	51	Bhagalpur	30.32	21
Banka	20.29	100	47	Banka	20.29	37	Banka	20.29	27
Munger	13.59	100	59	Munger	13.59	39	Munger	13.59	29
Lakhisarai	10	100	61	Lakhisarai	10	41	Lakhisarai	10	21
Shekhpura	6.35	100	72	Shekhpura	6.35	32	Shekhpura	6.35	22
Nalanda	28.72	100	56	Nalanda	28.72	36	Nalanda	28.72	26
Patna	57.73	100	89	Patna	57.73	83	Patna	57.73	59
Bhojpur	27.20	100	46	Bhojpur	27.20	26	Bhojpur	27.20	26
Buxor	17.08	100	43	Buxor	17.08	33	Buxor	17.08	23
Kaimur	16.27	100	34	Kaimur	16.27	14	Kaimur	16.27	14
Rohtas	29.62	100	29	Rohtas	29.62	39	Rohtas	29.62	19
Aurangabad	25.11	100	57	Aurangabad	25.11	37	Aurangabad	25.11	17
Gaya	43.79	100	70	Gaya	43.79	41	Gaya	43.79	30
Nawada	22.16	100	61	Nawada	22.16	31	Nawada	22.16	21
Jamui	17.56	100	39	Jamui	17.56	29	Jamui	17.56	19
Jehanabad	11.24	100	47	Jehanabad	11.24	37	Jehanabad	11.24	17
Arwal	6.99	100	43	Arwal	6.99	23	Arwal	6.99	13

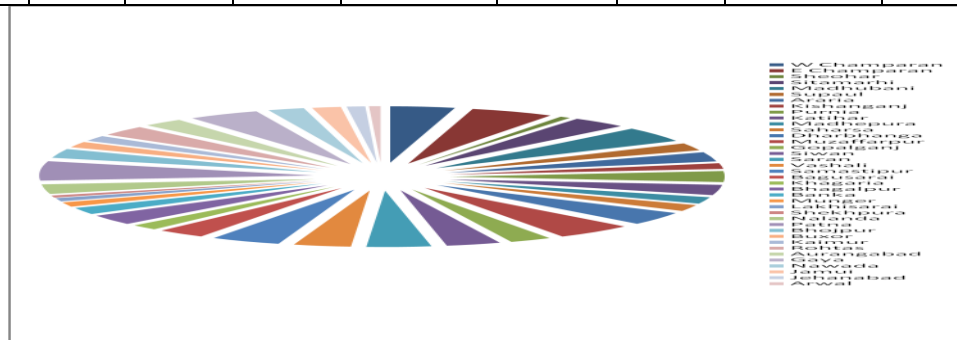


Figure 5. showing population demography of districts

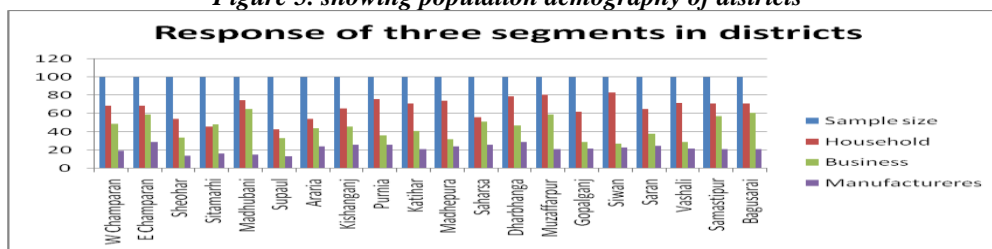


Figure 6 depicting distributed and received questionnaire for three groups

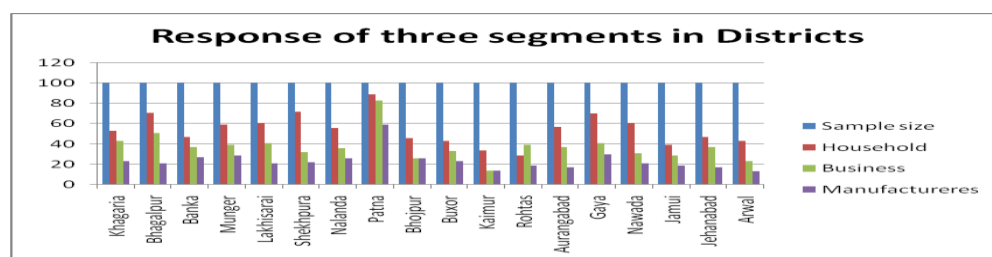


Figure 7 depicting distributed and received questionnaire for three groups

Sample Surveys Details

In survey for household segment e wastes scenario all together 3800 questionnaires were sent and only 2314 were received i.e. 1486 did not bother to respond/reply.

In the next segment of business organizations and institutions the received number of responses were 1557 i.e. 2243 chose not to respond/reply.

In the last segment i.e. manufacturers, importers / exporters etc category responses from 864 were received indicating that 2936 chose to be non responsive.

Re-users / Recyclers/ Second hand market holders and persons involved in secondary markets Questionnaires
In this category mainly four groups existed and they were

- Individuals, organizations and groups who are known as Raddiwala / kabariwala i.e. Scrap metal collectors
- Formal and informal second hand dealers and repairing shops

- c. Registered and listed formal pollution board vendors and
- d. Informal vendors irrespective of being kabariwala/raddiwala or waste collectors or otherwise but active in this arena i.e. field.

As target group belongs to middle it is not highly elite or educated, responses were collected by the interview with such individuals or groups may be varied and not pin pointed. The volumes and weight of the e wastes calculated

in this study are as per detailed report of UNEP volume I published in 2007[1].

All informations collected and obtained are listed, tabulated and processed for statistical outcome evaluations. Details of all eight listed segments regarding observations for e waste are listed/enumerated/documentated in the table 6 , 7 and 8 listed in the following sections followed by figure 8, 9 and 10 respectively.

Table 6 Showing E waste generation from household

Components	Household sector e waste survey (Total received records 2314 from all districts)								
	Large scale			Medium scale			Small scale		
	LS Used	Repaired/ discarded	LS Ewaste	MS Used	Repaired/di scarded	MS Ewaste	SS Used	Repaired / discarded	SS Ewaste
Computers	9818	2242	44840	2262	252	831	24	6	17.52
Laptops	2484	452	1356	593	186	145	64	8	12
Printers	1807	228	1140	654	69	296	19	4	8.3
Mobile phones	17004	8376	4145	3908	1552	306	1752	541	86
TV	16994	1803	36060	4318	872	5216	1675	656	3941
Refrigerator	3371	231	6930	549	109	1658	74	9	90
AC	2107	221	4420	961	254	941	12	2	8
W machines	4651	512	10240	659	271	1681	156	87	435
Total e waste	109131 kg/yr			11074 kg/yr			4597.82 kg/yr		

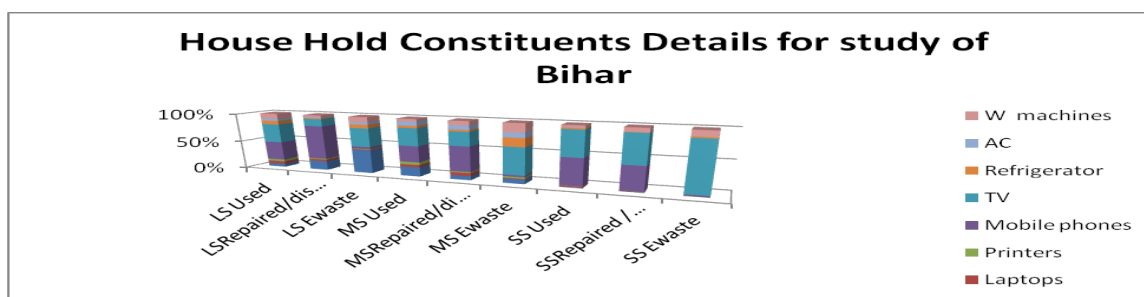


Figure 8 showing Household E waste details as per table 6

In household section major e waste generated is in Computer followed by TV, washing machine, refrigerator, AC, mobile phones, Laptop and printers. The e wastes figures from Patna, Muzaffarpur, Gaya, Madhubani etc are noticeable as the purchasing power is relatively higher. Other factor is definitely regarding availability of major markets and products, paying capacity, alertness, sense of safeness and exposer of population as major population is transmigration one from major metro etc. The least and lesser populous districts which have low purchasing power are in backward mode. Response alertness also affirms this scenario. People from these area have a decisive divide in response provision also.

Table 7 showing E waste generation from Business organizations & institutions including offices

Components	Business organizations & Institutions e waste survey (Total received records 1557 from all districts)								
	Large scale			Medium scale			Small scale		
	Used	Repaired / discarded	E waste	Used	Repaired / discarded	E waste	Used	Repaired / discarded	E waste
Computers	166265	18198	353960	32981	8912	71296	1698	2146	8584
Laptops	219826	91665	320827	4512	998	1996	1261	256	256
Printers	62872	2912	14560	5321	1217	2434	374	98	147
Mobile	121748	18734	9367	51173	17651	3530	1216	159	15.9
TV	21357	1311	19665	1678	645	3870	465	96	346
Refrigerator	9767	412	12360	1161	451	5412	121	21	126
AC	16789	7141	142820	2981	461	5532	471	78	468
W machines	1123	321	6420	114	21	189	18	4	16
Total e waste	879979 kg/yr			94259 kg/yr			9958.9 kg/yr		

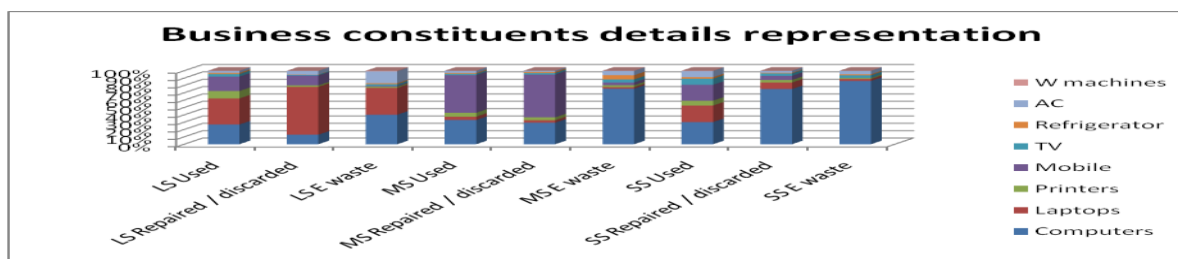


Figure 9 Showing details of Business Sector e waste

Bihar is having diverse demographic representation with activities centered from selected cities and towns. The ancient large cities and different economic zones and representation regarding e waste and even response is

similar to the activities. Major offices and business organizations are situated in Patna, Muzaffarpur and other big cities in north Bihar so is the data also collected. Area having international border with Nepal is also rich in

producing e waste mainly because the outdated transmigrated shipments of foreign make gets penetrated into the local market and it is carried to other nearby cities. These all are reflected in the representations obtained

Table 8 Showing E waste generation from Manufacturers, Importers/exporters etc.

Components	Software sector e waste survey (Total received records 864 from all districts)								
	Large scale			Medium scale			Small scale		
	Used	Repaired/ discarded	E waste	Used	Repaired / discarded	E waste	Used	Repaired / discarded	E waste
Computers	210042	45	Returned	41608	66	Returned	3361	4	Returned
Laptops	12471	31	Returned	1281	12	Returned	56	2	Returned
Printers	12847	46	Returned	6331	11	Returned	89	1	Returned
Mobile	116123	19	Returned	12491	29	Returned	213	8	Returned
TV	24317	19	Returned	3928	51	Returned	2241	29	Returned
Refrigerator	5731	9	Returned	311	2	0	21	1	Returned
AC	2257	7	Returned	4021	18	Returned	51	1	Returned
W machines	2478	8	Returned	342	5	Returned	112	9	Returned

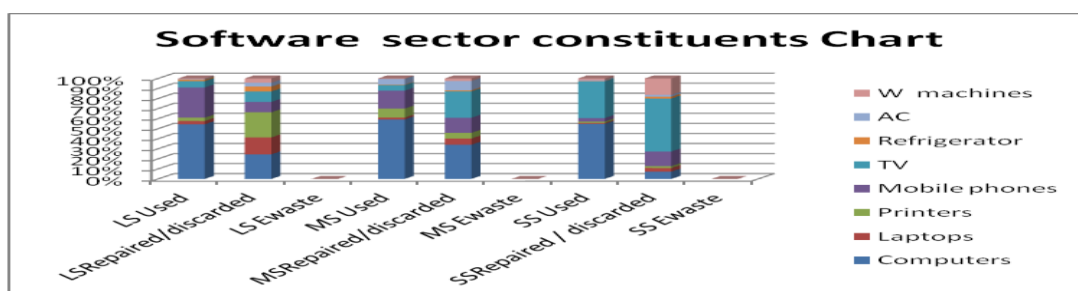


Figure 10 showing e waste in Software Sector organisations

Similar to the situation of business and institutions sector the manufacturer, importers, exporters, dealers, distributors etc are located in the traditionally developed cities of Patna and Muzaffarpur with small representation in other major towns of Bihar. The pattern obtained from this sector is similar to the growth of towns and their importance in either sense. Connectivity of international border also plays important role for mobile, computers etc areas. Connectivity to metros and major IT destinations also plays a feature in demographic representation and distribution and generation of e waste because of selected products and constituents.

Disposal Trends & E waste

Out of the obtained household survey results of 2414 observations out of 3800 and above discussion one may like to enumerate the disposal trends prevailing in market and masses typical various trend of disposal or treatment outlined or thought of in the manner as obtained from interviews and questioners the frequency and its percentage response can be listed in the table 9 for proper graphical view one can enumerated it as shown below in figure 11 and 12.

Table 9. Methods of disposal of EEE

Activity	Frequency	Percentage
Disposable EEE keep in house	431	17.9
Send to manufacturer/ buy back	356	14.7
To Repair/ Recycle centre	481	19.9
Transfer to relative	254	10.5
Donation in name of Charity	282	11.7
Waste bins	393	16.3
Others	217	9



Figure 11 showing Disposal Activity in terms of frequency

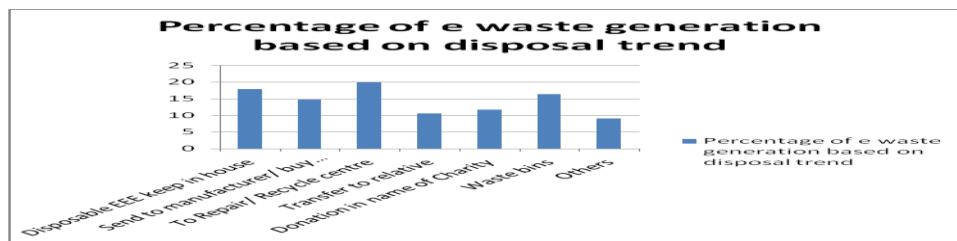


Figure 12. Disposal trends of EEE

Challenges, Concerns and Economics of E Wastes

Ever growing compounding pool, mammoth increase in special type of wastes, arising concerns for e waste in sustainable, technological development for environment concerns with updating processing advancements, growth of use, prevailing use and throw mindset, pattern of marching & matching with next man of higher strata atleast on psychology grounds for whim satisfaction backed by increased purchasing power of mankind with option of soft loans and provisions for affording legacy of modernity is vigorously resulting in increased deadly e waste and its management task to far more challenging task. The toxic hazardous constituents and its possibility of outburst from e wastes in and to environment causing irreparable damage to environment through different types of pollution makes it further worth some. These deadly aspects are posing several impediments and are resulting in increased responsibility on policy makers and law enforcing agencies to act heavily and severely in preservation and conservation of environment by increased efforts for reuse, recycle, reduced inclusion of hazardous materials in manufacturing of EEE. The possible minimization through reuse, recycle, repair and remove must be exercised. It is a well known fact that worldwide formal sectors for recycling are limited to 5 to 10 % resulting in recycling of major 90 to 95 % in informal sector [17] which does not have adequate facilities and technology. The informal sectors pose larger threat to labours and persons engaged in it. Existing buy back / exchange offers or the prevalent Extended Producers Responsibility (ERP) which aims at recycling and disposal from manufacturers end in most technological manner is good effort for minimizing the illeffects of this e waste[3].

Preservation of environment is nation's state subject so stringent regulatory measures have to be enacted for such purposes. Currently situation of regulations and strictness of adherence is also a divided lot. The overall reaction is that the "who cares" or "it's his responsibility not mine" is the situation among the different groups. The Indian business leaders are also in no mood to change them and are reluctant towards e waste handling through its proper management. In current situation as a common man is worst sufferer since he is the consumer so it is primarily his duty as user to handle e waste in safe and purposeful manner for mitigating the e waste hazards[7].

In the current situation since underdeveloped or least developed countries do not have more sophisticated gadgets and EEE so level of pollution or environmental degradation due to e waste is low but the developed nations are forcing them to cut pollution level for their quotas also for meeting the international levels in name of compensating

Conclusions

It is evident that Bihar stands at 14th position in e waste generation among Indian states. Situation of e waste generation is similar to most of other states in India and

pattern is almost similar to that prevailing in the third world nations. Presence of e waste is as per pattern of literacy. The seriousness is not being felt by fellow members and is taking back seat compared to efforts of being called autocratic and elite one. Automation eases one's life but one has to pay through environmental degradation. Multiple health and pollution related problems are prevailing in surrounding. The society is a dived lot resulting in prepositions as predictable among the aware and unaware masses. Awareness for toxicity and hardness among the masses is far from satisfactory and needs urgent exercises for redressal. Recycling, reuse, repair in name of jugad/ managing technology is popular compared to remove practice. Preservation and saving of precious raw materials has to be urgently addressed and it is getting wasted in name of retrieval from the products which continues needs to be looked in.

Might is right and in a situation when no one and no agency is responsible for regulatory mechanism implementation in state the situation of checks and control is at the bottom level. There is hardly any effort for creation of awareness through local municipal or law enforcing agencies or even local pollution boards in the state. Practically no collection centers are evident, even manufacturers, dealers, importers or exporters are in no mood of creating awareness for such efforts. The available international border have made situation even worse by presenting ample opportunity to own out dated EEE products in name of smuggled and make of leading nation.

In house hold sector, business organizations and software sections situation of e wastes as per study are as follows:

House hold sector: Large scale 109131 kg/year, medium scale 11074 kg/year and in small scale it was reported as 4597.82 kg/year

Business organization and institutions for large scale it is 879979 kg/yr, medium scale 94259 kg/year and in small scale 9958.9 kg / year.

Manufacturers / importers / exporters etc sector since they themselves produce so wastes are not reported as these get transferred to organization itself so e waste is NIL in all the categories.

Need for awareness for reduction of e waste, regulatory mechanism is to be taken up. Creation of awareness about ill effects of e wastes constituents is need of hour. Stress on possible retrieval of rare materials for preservation and optimal use needs to be looked into for proper preservation and lessening hazards to the live wares.

Urgent needs and efforts required can be listed [17,18] as follows:

Awareness creation regarding hazards of constituents and polluting natures

Ill-effects about excessive automation and their adverse affects

Proper EPR and technology based reuse, recycle, repair and remove centers creation
Proper regulatory mechanism development
Strict implementation of legislative provisions
Social and psychological awareness among consumers for reduced dependence on EEE
Collection and health centers equipped with facilities for such needs to be developed.

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