

INTERDISCIPLINARY INVOLVEMENTS OF ENVIRONMENTAL ISSUES AND WEEE MADE MORE EMPLOYMENT OPPORTUNITIES IN INDIA

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Abstract

The major environmental problem that the human race is facing now is the effects of the E-pollution caused by the electronic waste and plastics. The rate at which the Waste of Electrical and Electronics Equipment's (WEEE) is growing can cause serious damages in 2020. So an immediate solution has to be drawn to reuse or reduce the WEEE and its effects on humans. An economic solution and implementation of law (IPC-Sections) are designed to achieve an optimal source to reuse and reduce the WEEE. There are about 94 types of electronic products as re-selling illegally by recycling methods. So immediate steps are to be taken by involving interdisciplines in environmental issues.

Keywords: E-pollution, Backyard recycling, Energy re-usage, Innovation, Implement- IPC

I. INTRODUCTION

Environment means different things to different peoples. To some it means home; to others it may refer to a village, a city, a country or the whole world. It is formed by combining two words, viz., 'environ' and 'ment' meaning 'encircle' or 'all round'. Environment is a complex of many variables, which surrounds man as well as the living organisms. So, we should take care to protect our environment at any cost. The current problem is the accumulation of WEEE which would cause series problem to man and nature. Environment includes water, air and land and the inter-relationships which exist among and between water, air and land and human beings and other living creatures of plants, animals, micro-organisms. The Encyclopedia of Science and Technology describes 'environment as a collective term describing the conditions surrounding an organisms. It includes air, light, soil, temperature, water and the presence of other organisms¹. i.e., the conditions for development or 'growth'. It is also defined as a whole set of natural and social systems in which man and the other organisms live and from which they draw their sustenance. Environment is, thus, described as the assemblage of material factors and conditions surrounding the living organisms and its components. The Electronic products comprise of WEEE which have reached their end-of-life stages, like televisions, PCs, mobile phones, electrical appliances, etc. The WEEE is one of the fastest growing types of waste in the developed world in view of the growing menace of WEEE generation and large scale involvement of the

unorganized sector in processing WEEE in an environmentally unsound and occupationally hazardous. In the current situation urgent technological innovation and market intervention in tackling the problem is a must. To reduce this issue we should involve interdisciplinary activities like engineering, medicine, law, economics, mathematics otherwise the pollution caused by the WEEE would engross the whole world with severe impacts on ecological system.

II. IRRESPECTIVE ACTIVITIES CARRIED OUT BY INDUSTRIAL AND OTHER ORGANIZATION

The industries and other organization are quiet unmindable of dumping the e-waste in public places such as on riverbanks, ponds, other places where many peoples inhabits. The rotten smell coming out of this is unbearable and obnoxious. The people living in such areas are on the edge of being affected by contagious diseases. According to hospital reports a large host of people frequents doctors to have a cure on cancer, asthma, dialysis, liver problems. It is reported that one lakh and 80 thousands peoples died out of liver cancer in our country. So, immediate steps are to be taken to say a colossal perdition of lives².

(a) Problems with WEEE

There are no harmless substances. There are only harmless ways of using substances. Dumping of e-wastes is putting children at risk and 50 percent of all used e-waste is "dumped" into India, China and African countries, where it is a common practice for children (and some adults) to make money by

“backyard recycling” scrap electronic products are fired in open places to remove reusable components. Electronic waste is the major issue in India. It affects many peoples either directly or indirectly. E-waste creates a lot of economic and environmental losses to our country.

The term WEEE is applied to all waste from or caused by Electrical and Electronics, which is often toxic waste. It is a major concern with respect to wireless technology and computers, which are readily discarded due to rapid technological change, low initial cost and planned obsolescence. The various solutions including recycling, re-use, standardization of technologies and implementation of law for less rapid obsolescence are applied.

The development of semiconductor products has been accompanied by an increased release of potential toxic wastes, which are harmful to health and environment.

In India, 133 crore inhabitants generate 3.3lakh metric tones of e-waste per year that is 0.29 kg of WEEE per person per annum-an astounding figure. A recent survey shows that WEEE amounting to 21.8kg per annum is already being produced in India. The e-waste imbroglio in India stood at 3,000tonnes per day in 2007 and is projected to reach 10,000 tonnes per day by 2012⁹. In 2020 the WEEE is produced above 40000 tonnes per day, as we expect. So steps are to be taken to tackle this problem¹⁰.

(b) WEEE Metals

Fishes, plants and animals take up cadmium from the environment. Cadmium stays in the body a very long time and can build up from many years of exposure to low levels. Eating foods containing it, low levels in all foods (highest in shell fish, liver and kidney meats). Lead is a naturally occurring element is used almost since the beginning of the civilization. Mercury is the naturally occurring metal .It is the only metal on the Earth which is liquid at room temperature, types of mercury are Elemental or metallic mercury, Organic mercury compounds and Inorganic mercury compounds

Short-term, high-level exposure to Chromium (VI) produces irritation at the site of contact including ulcers of the skin, irritation of the nasal mucosa, perforation of the nasal septum, irritation of the gastrointestinal

tract, impairment of olfactory sense, and discoloration (Yellowing) of teeth and tongue

E-waste contributes approximately 40 percent of the lead, 70 percent of the heavy metals, and a significant portion of the organic pollutants to the US dumps. Varying susceptibility-High risk groups are children, young, pregnant women, elderly and old, preexisting illness, smokers and Alcohol consumption, poor nutritional status.

Cadmium, Lead, mercury, chromium these metals cause various side effects to the human body, soil contamination and atmospheric pollution. These things cause economic downfall either directly or indirectly.

(c) Hazardous waste

Hazardous waste is any discarded solid or liquid material that is toxic, ignitable, corrosive, or reactive enough to explode or release toxic fumes.

According to the UN Environment Programme, developed countries produce 80-90% of these wastes. The US centers for Disease control and prevention (CDC) estimates that at least 400000US children still have unsafe blood levels of lead caused by exposure from the number of sources¹¹. National academy of science and numerous other studies indicate “there is no safe level of lead in children’s blood”.Lead is especially harmful to children and is still used in leaded gasoline and household paint in about 100 countries.

III. E-WASTE LAW IN INDIA

Recently, Greenpeace examined the policy-and-practice on WEEE take-back offered by 20 e-brands in India and found that only one global brand (Acer) and two Indian brands (HCL and Wipro) have functioning take back services in India Moving a step further, Wipro walks into the path e-waste law in India.

According to Greenpeace, the demand by IT and consumer electronic brands for a comprehensive law embracing IPR in India to tackle impending e-waste crisis is getting longer as brand have started openly pitching for this. Acer is the only global brand that openly speaks about the necessity of such a law in India.

“We welcome and appreciate Wipro’s pro-law move with this the brand has joined the league that includes HCL and Acer, “commented Abhishek pratap, toxics Campaigner, Greenpeace

“Now the brand needs to lobby with in the electronics sector and with the government to make the law a reality”.

On chemical management of products, Wipro has moved further with a stronger ‘Precautionary Principle’ and chemical management policy. This is reflected in its aggressive time line of 2013 for complete phase out of phthalates, beryllium and antimony, along with phase-out time line set for BFR and PVC as 2009.

These three brands have ensured effective take-back service for their respective branded, end-of-life products in India. Greenpeace demands that other Electrical and Electronic brands should follow the path taken by Wipro and publicly announce support for e-waste law in India.

Legislation embracing producer Responsibility for e-waste is already in force in the EU, Japan, Korea, Taiwan, and in a few of the states in the US.

(a) *The Indian Penal Code (IPC)*

The Indian penal code (IPC) strongly says in IPC-486. Selling goods marked with a counter property mark—Whoever sells, or exposes, or has in possession for sale, any goods or things with a counterfeit property mark) affixed to or impressed upon the same or to or upon any case, package or other receptacle in which such goods are contained, shall, under he proves---

1. That having taken all reasonable precaution against committing an offence against this section, he had at the time of the commission of the alleged offence on reason to suspect the genuineness of the mark, and 2. That on demand made by or on behalf of the prosecutor, he gave all the information in his power with respect to the person from whom he obtained such goods or things, or 3. That otherwise he had acted innocently, be punished with imprisonment of either description for a term which may extend to one year, with fine, or with both¹².

(b) *IPC270 strongly says—Malignant act likely to spread infection of disease dangerous to life: -* Whoever Malignant does any act which is, and which he knows or has reason to believe to be, likely to spread the infection of any disease dangerous to life, shall be punished with imprisonment of either description for a term which may extend to two year, or with fine, or with both¹⁸.

IV. TYPES AND ELEMENTS OF ENVIRONMENT

Environment may be divided into two types, namely Natural environment, and Man-made environment. The natural environment consists of four interlocking systems namely, the atmosphere, the hydrosphere, the lithosphere and the biosphere. These four systems are in constant change and such changes are affected by human activities and vice versa. Biosphere, Atmosphere, Hydrosphere, Lithosphere and Biosphere is the major layers in the atmosphere

(a) *Futures of Environmental Studies*

Environmental studies discipline has multiple and multilevel scopes. This study is important and necessary not only for children but also for everyone: literate or illiterate: employee or non-employee³. These futures are summarized below:

1. The study awareness among the people to know about various renewable and non renewable resources of a region. The endowment or potential, patterns of utilization and the balance of various resources available for future use in the state or a country are analyzed in the study.
2. It provides knowledge about the ecological systems and the cause and effect relationships.
3. It provides necessary information about biodiversity richness and the potential dangers to the species of plants, animals and microorganisms in the environment.
4. The study enables one to understand the causes and consequences natural and man induced disasters (flood, earthquake, landslide, and cyclone) and pollutions and measures to minimize the effects.
5. It enables one to evaluate alternative responses to environmental issues before deciding an alternative course of action.
6. The study enables environmentally literate citizens (by knowing the environmental acts, rights, rules, legislations) to make appropriate judgment and decisions for the protection and improvement of the earth.
7. The study exposes the problems of over population, health, hygiene and the role of arts, science and technology in eliminating / minimizing the evils from the society.

8. The study tries to identify and develop appropriate and indigenous eco-friendly skills and technologies to various environmental issues.
9. It teaches the citizens the need for sustainable utilization of resources as these resources are inherited from our fore fathers to the younger generation without deteriorating their quality.
10. The study enables theoretical knowledge into practice and the multiple uses of environment.

(b) *How to recycle?*

- Gather all of your electrical and electronic equipment and separate them into two categories: those that are still working and can be sold or donated and those that are no longer functioning and needed to be recycled.
- Contact your local public works department in your town/city to determine if they collect electronic recyclable items such as the ones you may have in your home. If not, proceed to next Step.
- Peruse your local phone book or the internet to find a convenient facility that collects specific types of electronic equipment for reuse or recycling. If there is not a local facility in your area visit the Electronic Waste Database online.
- Visit the Electronic Waste Database online at www.ecycle.org and enter your search criteria.
- Following the appointment, collect the recyclable WEEE materials and place them on the curb or front porch for pick-up.

At present there are no recycle units in our country. So if more recycle units is being developed, then it will ensure a lot of job opportunity to lakhs and lakhs of peoples in rural areas despite of its pollution? It supports control of pollution and also increases economic status.

So it is much important that the government must take necessary steps to make the use of these recycling plants as early as possible, because private sectors are concerned with self beneficial activity and not taking care of our people.If the government of India

shows interest in establishing a recycling plant, more than four lacs People from rural area will be benefited⁴

V. INTERDISCIPLINARY APPROACH

(a) *Overlapping Sciences*

Engineering (Electrical, Electronics, Computer, or Mech.,etc...) + Economics = Engineering Economics
Environmental Science & Engineering + Economics = Environmental Economics

Physics + Chemistry = Physical Chemistry

Biology + Chemistry = Biochemistry

Geology + Physics = Geophysics

Environmental Science + Engineering = Environmental Engineering

Interdisciplinary approach is a new method of research in which the tools of different disciplines of knowledge like Engineering, Technology, Law, Arts, Science, and Medicine etc converge and used to find a newer and sustainable explanations or solutions to the problems under study. It is thus a co-operative and co-ordinated approach in which the experts of different disciplines pool their knowledge together for the purpose of finding the proper explanation to any of the problems.

Every branch of knowledge has its own way of thinking and a specific method of study. For example, Economics is concerned with those activities of man which are related to earning and spending wealth. Political science is about the relationship of man with the State. Botany is a science concerned with plants while zoology about animals. It is observed that in all disciplines man is kept as a pivot around which all other activities revolve and connected. However, there are differences in their way of thinking and study of different aspects of human activities³.

WEEE is the major environmental and economical problem in India to solve this problem we have involve the multidisciplinary like Environmental Engineering + Law + Chemistry + Medicine + Electronics Engineering + Computer Engineering + Bio-medical Engineering + Remote Sensing + Economics + Mathematics

Different sciences have not only differing in their points of view but also in methods of study. They have their own concepts and technical terms. The researcher in a particular branch of knowledge has to follow them; and that is one of the reasons why it is called a discipline. Each branch of knowledge has, thus, its own discipline and conceptual tools to carry out research.

(b) Interdisciplinary Involvement in Environmental Studies

Science examines an area of knowledge, typically about something in the physical world that can be explained in terms of scientific observation or the scientific method⁶.

The sciences that describe the physical universe are categorized in different ways. The largest distinction in science is whether a science is pure, or theoretical, or whether it is applied, or practical. Pure science explains a phenomenon, while applied science determines how a particular phenomenon may be put to use. In general, pure science is divided into the following categories:

Life sciences, which describe living organism, their internal processes, and their relationship to each other and the environment. Earth sciences, which explain the phenomena of the earth, segments of the environment, and the solar system to which it belongs. Physical sciences, which deal with matter and energy and allow us to describe the material universe in terms of weight, mass, volume, and other standard, objective measures.

There are a number of areas in which these three categories of pure sciences overlap, where one type of phenomenon may be associated with another. For instance, light (a part of physics) is the energy source behind the process of photosynthesis (chemistry), or food production in plants (biology). For this reason, distinctions between pure sciences and between pure and applied sciences blur, and as a consequence a new compound science develops. An example of this is biochemistry, in which the chemical processes of living things (such as photosynthesis) are analyzed, observed and explained. In the same way, environmental study is associated with almost all branches of knowledge in one way or the other, however with varied degrees of composition.

Environmental study, relatively a new field, is a multi-disciplinary branch of knowledge. This systematic study integrates information from biology, chemistry, geography, agriculture, and many other fields. In other words, environmental study is an inclusive, holistic and mission oriented branch of knowledge.

Environmental study is, by definition, a multi-disciplinary endeavor, incorporating both natural and social sciences, in the study of man's relationship with air, water, as well as with the fellow humans and other forms of life and concerned with environmental disturbances and minimization of the impact by means of societal changes⁷.

A few decades before, if the Government wanted to construct a dam, then for that project only engineers were involved, starting from planning, execution to evaluation. This kind of single discipline involvement to the project is called mono or intra disciplinary approach in research. There were many defects in the implementation of these projects, as the activities are carried out by experts from only a single discipline. Later, besides a discipline another related discipline came to support for proper execution or evaluation of the projects. For instance, economic discipline supported for cost-benefit evaluation of the dams or road construction, city planning etc. This method of studying a problem by two related disciplines is called inter-disciplinary approach. When time passed, one or two disciplines could not plan or execute or evaluate the schemes properly and satisfactorily⁷. As a consequence, several related disciplines were involved in this process. For example, construction a new harbour or an Express Highway or a new multipurpose dam or a new nuclear power plant requires the expertise of not only the civil engineers and economists but also the involvement of a number of disciplines like sociology, law, biology, geology⁸. Involvement of such expertise for the study of such complicated environmental issues is referred as multidisciplinary approach. Now almost all researchers believe and practice multidisciplinary approach in their research projects, especially in environmental impact studies.

The study is a process aimed at improving the quality of life by empowering the students to investigate and understand environmental problems. Environmental studies can help students gain the knowledge, skills, motivation and values needed to manage the earth's resources optimally and to take responsibility for

maintaining environmental quality Environmental study is a key instrument for bringing about the changes in the knowledge, values, behaviors and lifestyles required to achieve sustainability and stability within and among countries⁹.

(c) *Biomedical Wastes*

(i) *Types of waste*

The U.S Medical waste Tracking Act (MWTA), which was enacted by congress in response to public concerns after syringes, needles, and other medical wastes washed ashore on the U.S. east coast in 1988, defines "regulated medical wastes" as:

1. Cultures and stocks of infectious agents
2. Human pathological wastes
3. Human blood and blood products
4. Sharp implements: used and unused
5. Contaminated animal wastes
6. Isolation waste from patients with highly communicable diseases

Generators of biomedical wastes include hospitals and, to a lesser extent, clinics, research laboratories, and drug companies. Solid waste generation by hospitals is estimated to be between 4.5 and 9.1 kg/day per bed (10 to 20 lb/day per bed), of which roughly 10% is thought to be infectious or disease causing. In addition to infectious wastes and noninfectious solid wastes, most hospitals also generate chemical and chemotherapy wastes, organic wastes (solvents), and radioactive wastes which may be regulated as "hazardous wastes" under RCRA (Except radioactive wastes which fall under the Atomic Energy Act). Generation of RCRA hazardous waste was estimated in one study to be 21 mL /bed per day (0.056 lb/bed per day) which, for a 200" bed hospital, translates into 152 Kg (336 lb) per month. This quantity is significant because it would qualify a hospital as a "small-quantity generator" under RCRA, forcing those wastes to be sent off-site to an authorized facility¹⁰.

Feeding bottle made out of plastics known as Bisphenol-A is dangerous to the health of a baby, it causes chest cancer and hormone imbalance¹²s. This bottles is declared illegal in Canada Australia, France and Britain, in India IPC270—Malignant act likely to spread infection of disease dangerous to life: - Whoever Malignant does any act which is, and which

he knows or has reason to believe to be, likely to spread the infection of any disease dangerous to life, shall be punished with imprisonment of either description for a term which may extend to two year, or with fine, or with both.

According to NASA's report the world temperature in the year 1899 was 13.88 degree celcius and in 1999 it was 14.45 degree celcius. The difference is 0.57 with in the period of past 100 years. It is predicted that the next 100 year the world temp. would be raised from 1.4 to 5.8, we expect.

VI. E-WASTE CONTROL BY LAW

(a) *IPC-485*

Making or possessing of any instrument for counterfeiting a trade-mark or property mark. - Whoever makes or has in his possession any die, plate or other instrument for the purpose of counterfeiting a property mark, or has in his possession a property mark for the purpose of denoting that any goods belong to a person to whom they do not belong, shall be punished with imprisonment of either description for a term which may extend to three year, or with fine, or with both¹³

(b) *IPC-487*

Making a false mark upon any receptacle containing goods¹⁴. - Whoever makes any false mark upon any case, package or other receptacle containing goods, in a manner reasonably calculated to cause any public servant or any other person to believe that such receptacle contains goods which it does not contain or that it does not contain goods which it does contain, or that the goods contained in such receptacle are of a nature or quality different from the real nature or quality thereof shall, unless he proves that he acted without intent to defraud, be punished with imprisonment of either description for a term which may extend to three years, or with fine, or with both.

(c) *IPC-488*

Punishment for marking use of any such false mark,- Whoever makes use of any such false mark in any manner prohibited by the last foregoing section shall, unless he proves that he acted without intent to defraud, be punished as if he had committed an offence against that section¹⁵.

(d) IPC-489

Tampering with property-mark with intent to cause injury.-whoever removes, destroys, defaces or adds to any property-mark, intending or knowing it to be likely that he may thereby cause injury to any person, shall be punished with imprisonment of either description for a term which, may extend to one year, or with fine, or with both¹⁶.

(e) IPC-472

Making or possessing counterfeit seal. with intent to commit forgery punishable under Sec.467 of the Indian penal code¹⁷.- Whoever makes or counterfeits any seal, plate or other instrument for making an impression, intending that the same shall be used for the purpose of committing any forgery which would be punishable under Sec.467 of this code, or with such intent, has in his possession any such seal, plate or other instrument, knowing the same to be counterfeit, shall be punished with³ [imprisonment for life],or with imprisonment of either description for a term which may extend to seven years, and shall also be liable to fine.

(f) IPC-473

Making or possessing counterfeit seal, etc. with intent to commit forgery punishable otherwise.-Whoever makes or counterfeits any seal, plate or other instrument for making an impression, intending that the same shall be used for the purpose of committing and forgery which would be punishable under any section of this chapter other than Sec.467, or with such intent, has in his possession any such seal, plate or other instrument , knowing the same to be counterfeit, shall be punished with imprisonment of either description for a term which may extend to seven years, and shall also be liable to fine¹⁸.

(g) IPC-475:

Counterfeiting device or mark used for authenticating documents prescribed in Sec.467 or possessing counterfeit marked material.-Whoever counterfeits upon, or in the substance of any material any device or mark used for the purpose of authenticating any document described in Sec.467 of this code, intending that such device or mark shall be used for the purpose of giving the appearance of authenticity to any document then forged or thereafter to be forged on such material, or who, with such intent, has in his possession any material upon or in the substance of which any such device or mark has been

counterfeited, shall be punished with ¹ [imprisonment for life], or with imprisonment of either description for a term which may extend to seven years, and shall also be liable to fine¹⁹.

(h) IPC-476

Counterfeiting device or mark used for authenticating documents other than those described in Sec.467, or possessing counterfeit marked material.-Whoever counterfeits upon, or in the substance of, any material, any device or mark used for the purpose of authenticating [any document or electronic record] other than the documents described in Sec.467 of this code, intending that such device or mark shall be used for the purpose of giving the appearance of authenticity to [any document or electronic record] then forged or thereafter to be forged on such material, or who, with such intent, has in his possession any material upon or in the substance of which any such device or mark has been counterfeited, shall be punished with imprisonment of either description for a term which may extend to seven years, and shall also be liable to fine²⁰.

(i) IPC-477

Fraudulent cancellation, destruction etc. of will, authority to adopt, or valuable security²¹.-whoever fraudulently or dishonestly, or with intent to cause damage or injury to the public or to any person, conceals, destroys or defaces, or attempts to conceal, destroy or deface, or secrets or attempts to secrete any document which is or purports to be a will, or an authority to adopt a son, or any valuable security, or commits mischief in respect to such document, shall be punished with. ² [imprisonment for life], or with imprisonment of either description for a term which may extend to seven years, and shall also be liable to fine.

(j) IPC-263

Erasure of mark denoting that stamp has been used.- Whoever, fraudulently or with intent to cause loss to Government, erases or removes from a stamp issued by Government for the purpose of revenue, any mark put or impressed upon such stamp for the purpose of denoting that the same has been used, or knowingly has in his possession or sells or disposes of any such stamp from which such mark has been erased or removed, or sells or disposes of any such stamp which he knows to have been used, shall be punished with imprisonment of either description for a

term which may extend to three years, or with fine, or with both²².

(k) *IPC-265*

Fraudulent use of false instrument for weighing. - whoever fraudulently uses any instrument for weighing which he knows to be false, shall be punished with imprisonment of either description for a term which may extend to one year, or with fine, or with both²⁰.

(l) *IPC-269*

Negligent act likely to spread infection of disease dangerous to life. - Whoever unlawfully or negligently does any act which is, and which he knows or has reason to believe to be, likely to spread the infection of any disease dangerous to life, shall be punished with imprisonment of either description for a term which may extend to six months, or with fine, or with both²¹.

(m) *IPC-257*

Making or selling instrument for counterfeiting government stamp.- whoever makes or performs any part of the process of making, or buys or sells, or disposes of, any instrument for the purpose of being used, or knowing or having reason to believe that it is intended to be used, for the purpose of counterfeiting any stamp issued by government for the purpose of revenue, shall be punished with imprisonment of either description for a term which may extend to seven years and shall also be liable to fine²².

VII. MERITS OF INTERDISCIPLINARY APPROACH

Overlapping of the sphere of operation makes different disciplines inter-dependent and thereby creates need for multi-disciplinary approach. No discipline is complete in itself. Each discipline specializes in its own way. Hence, interdisciplinary approach is required to solve the emerging multifaceted environmental problems arising around the world. Interdisciplinary approach to environmental studies restricts the over specialization of a particular discipline because such studies are related to the dynamic man – environment relationships¹⁰. The symbiotic or inter-dependent man-environment research is necessary for achieving objectivity. The inter-disciplinary approach brings a person out of a particular discipline and takes a more comprehensive view of things through which a person observes what others say and view the problem in hand, and it would help him to modify / refine his own views. There is a possibility of listening to and

understanding the concepts and methods in other disciplines if interdisciplinary approach is adopted for solving complicated environmental issues. Hybridization of disciplines, through interdisciplinary approach, would lead to newer directions for research and methods of analysis to solve multifaceted environmental problems¹².

There is still a considerable lack of awareness about the interrelated nature of all human activities and the environment. It is mainly due to inaccurate and insufficient availability of information, especially in developing countries. Sensor based in situ data collection, remotely sensed data products, Geographical Information System based analysis, would enhance the precision and quality of environmental analysis. Besides, there is an urgent need to increase the public sensitivity to environment issues and involvement of various disciplines in solving environmental problems. It would lead to the development of a sense of personal environmental responsibility, greater motivation and commitment towards sustainable development²⁵.

VIII. CONCLUSION

WEEE recycling is the process of converting these wastes into usable things which is good for the economy due to five main reasons. They are as follows...

- Safe disposal of electrical and electronic wastes can be done.
- Materials like precious metals, plastics can be recovered and also can be reused.
- More employment opportunities can be made separately for this process.
- Environmental and commonly all other pollutions can be controlled to a considerable amount because of this process.
- Economical down flow can also be controlled by using this recycling process.
- The various solutions including recycling, re-use, standardization of technologies and implementation of law for less rapid obsolescence are applied.
- In 2030 the formation of e-waste will be above 40000 tonnes per day
- Following the four R's resource use to control the WEEE: Refuse, Reduce, Reuse, and Recycle.

REFERENCES

- [1] Cunningham, W.P., T.H. Cooper, E. Gorham and M.T. Hepworth., 1999, *Environmental Encyclopedia*. Jaico Publishing House, Mumbai.
- [2] Down to Earth, 2001, Centre for Science and Environment, New Delhi.
- [3] Miller, T.O.Jr., environmental Science, Wadsworth Publishing co.
- [4] Tyllar Millar G.Jr. *Environmental Science-Working with the Earth*, Thomson Asia Pte.Ltd, Singapore.
- [5] Dr.Hari Singh Gour's *"The Indian Penal Code"* Law Publishers India Pvt. Ltd.
- [6] J.Glynn Henry and Gary W.Heinke *"Environmental Science and Engineering"*,-Hall of India Pvt. Ltd,New Delhi.
- [7] Vishakha, "E- waste: Managing the Digital Dump Yard," ICFAI University Press, December 2007.
- [8] R.E... Hester, R.M. Harrison "Electronic Waste Management", RSC Publishing, June, 2008
- [9] Electronics Bazaar, Vol 3,Issue3,May-2009,ISSN – 0974– 1062
- [10] Electronics Bazaar, Vol 3, Issue 2, April-2009,ISSN – 0974– 1062
- [11] www.eleb2b.com, www.ecycle.org
- [12] ElectronicsBazaar,Vol2,Issue8,October-2008,ISSN – 0974– 1062
- [13] Superintendent and Remembrancer of Legal Affairs,West Bengal V.Prafullakumar, A.I.R. 1954 Cal.277 at pp.278,279:1954 Cr.L.J.841:58 C.W.N.96
- [14] Chottey Lal v.state,A.I.R. 1959 Cal.32 at:62 C.W.N.38: 1959 Cr.L.J.38.
- [15] Subs by Act No.43 of 1958. Sec. 135 and Schedule for the Original Section (W.e.f.25th November,1959).
- [16] Subs, by Act No.43 of 1958.Sec.135 and Schedule for certain words (W.e.f, 25th November, 1959)
- [17] Dina Nath Kapoor v.State,A.I.R. 1963 All. 133 at p. 134:1962 A.W.R.(H.C.) 821: 1962 A.I.J. 1086
- [18] Amarnath Bihari v.Uma Shankar Bahadur, A.I.R. 1955 pat. 228 at pp.229-30:Manchersha Ardeshir v.Ismail Ibrahim, A.I.R. 1936 Bom.167:87 Cr.L.J.577 not followed.
- [19] Hari Dayal Singh v.Bhajan Chandra Shah.A.I.R. 1961 Tripura 41 at p. 41.
- [20] Added by Act No.XII of 1899, Sec.2.Subs.by Act 26 of 1955,Sec. 117 and Schedule for "transportation for life" (W.e.f. 1st January, 1956)
- [21] Kartik Sethy v. Banamati Mohanti, 1967 Cut L.T. 7 at p. 8 ; Babu Lal v. State of Uttar Pradesh. 1964 S.C.D. 262
- [22] Goluck Chunder. 13 W.R. 16Subs by Act. No. 26 of 1955. Sec 117 and Schedule for "transportation for life" (w.e.f. 1st January 1956)
- [23] Benjamin Banin, 2 Moody Kisto Soonder Deb. 2 W.R. 5; Raghoonandan, 15 W.R. 19 at p. 21; Abaji Ramchandra, I.L.R. 15 Bom. 189.
- [24] Subs. By Act No. 26 of 1955, Sec. 117 and Schedule for "transportation for life" (w.e.f. 1st January, 1956)
- [25] Per Patterson, J., in Foster, 7 COMPUTER IS AN ELECTRONIC MACHINE..& P. 495