

Electronic waste and management

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Abstract

E waste management should be globally accessed to improve ecological balance in the world. The valuable materials should be recycled using rudimentary techniques. There must be a treaty signed between developing and developed countries to further improve functional areas in environment and health implications caused due to the ill effects of E waste. Since the technology is increasing more the E waste is also generated. It is a serious issue to be concerned for further changes in the developing countries. We must refer the western waste management principles and international recycling technology that must be promoted for further assistance.

Keywords: reuse, recycle, refurbishment

Introduction

Electronic products such as discarded computers, televisions, fax machines, electronic lamps, Cell phones and audio equipment if not properly disposed can affect soil and underwater by Creating toxins. Current practiced lead to economic stimulus. Most of the developing countries lack the infrastructure for sound hazardous waste management include recycling or regulatory framework for hazardous waste management. There must be an international cooperation to promote new ideas for the promotion of business and investment on E waste projects. So many aftereffects of E waste management could be solved.

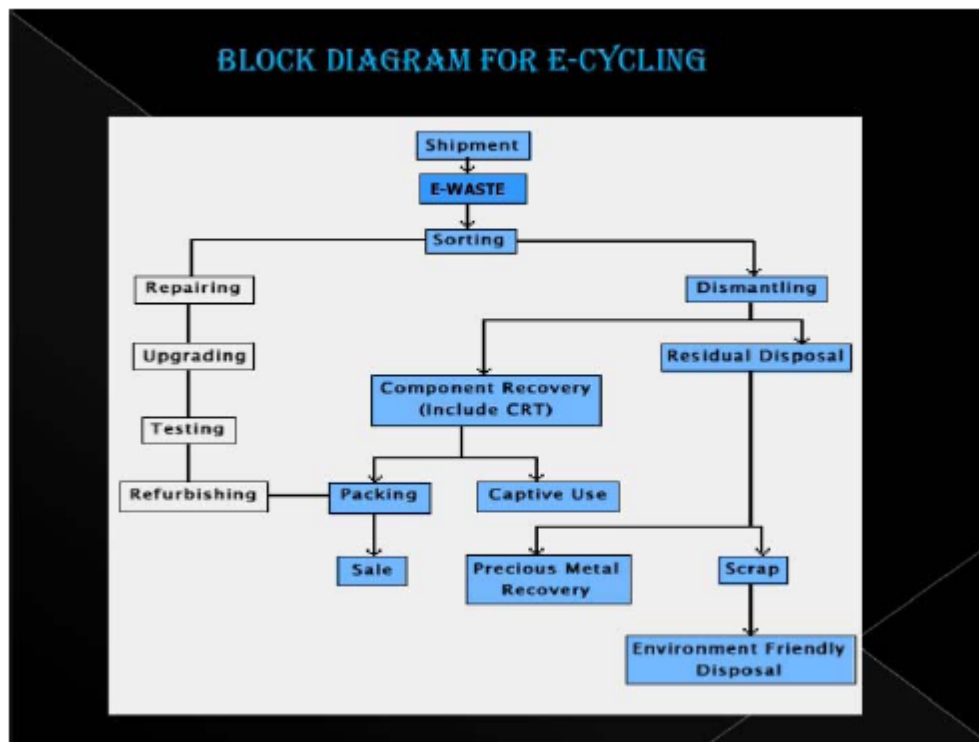
How is affecting our life

Electronic products accumulate the toxic substances including heavy metal such as lead, nickel, chromium, mercury, persistent organic pollutants (pop) such as polychlorinated biphenyls and brominated flame retardants.

- Acids leaching operation and sludge obtained from melting computer chips disposed on the ground causes acidification of soil
- Incineration of e wastes can emit toxic fumes and gases thereby polluting the surrounding air.
- Disposing of e waste is not affecting human but even animals Health effects of certain constituents in E wastes

Mercury is in relays, switches and gas discharge lamps. Batteries contain mercury, Cadmium and lithium. Plastics contain brominated flame retardants; cathode ray tubes contain 2 to 3 kilograms of lead. PCB and PDBEs when mixed with water and exposed to sunlight dispersed with the complex chemistry of soil. Lead used in solder of printed circuit boards, glass panels, and gaskets in computer monitors. It causes damage to central and peripheral nervous systems, blood systems and kidneys and affects the brain development of children. A cumulative toxicant that affects multiple body systems including the neurological, gastrointestinal, cardiovascular and renal systems. Mercury used in relays, switches, and printed circuit boards. It is elemental and methyl-mercury are toxic to central and peripheral nervous system. Inhalation of mercury vapor can produce harmful effects on the nervous, digestive and immune systems, lungs and kidneys, and may be fatal. The inorganic salts of mercury are corrosive to the skin, eyes and gastrointestinal tract, and may induce kidney toxicity if ingested. Lithium is used in rechargeable batteries. It is extremely hazardous in case of ingestion as it passes through the placenta. It is hazardous and an irritant of the skin and eye, and when inhaled. Lithium can be excreted in maternal milk. Barium in front panel of CRTs. It causes muscle weakness and damage to heart,

liver and spleen. It also produces brain swelling. Beryllium used in Motherboards of computers. It causes lung cancer and inhalation of fumes and dust can cause chronic beryllium disease or berylliosis and skin diseases such as warts. Cadmium in chip resistors and semiconductors. It has toxic, irreversible effects on human health and accumulates in kidney and liver. Has toxic effects on the kidney, the skeletal system and the respiratory system, and is classified as a human carcinogen



Managements steps taken in E management

- There must be a seminars and awareness programs conducted in various areas of the country. The government should practice norms and regulations used in developed countries. There must be strict policies forming a regulatory framework in different electric and electronic industries. The government should send representatives to the various developed countries to study and research how they handle the recycling cycle. Technologies should be build and laid foundation in such a way it is cost reliable. Various research programs should be conducted to promote new ideas and get innovation. There must be scientific evaluation for strengthening collaboration and data sharing network should be initiated. There must be a link with various protocols and should assign a scientific online site to clear doubts of e waste management for various industries. Protocols like strategic approach to international chemical managements, basel action network is to form a chemical free world. There must be enterprise organized for recycling, upgrading networks and for monitoring the works. There must be protection of workers for occupational health and safety guidelines
- An environmental sound e waste recycling chain contains the following steps.
- De manufacturing into subassemblies and components-this involves manual disassembly of a device or component to recover value depollution-the removal and separation of certain materials to allow them to be handled separately to minimize impacts, including batteries, fluorescent lamps and cathode ray tubes materials separation-manually separating and preparing material for further processing mechanical processing of similar materials-this involves processing compatible plastic resins, metals or glass from CRTs to generate market trade commodities.

- Mechanical processing of mixed materials-this involves processing Whole units followed by a series of separation technologies.
- Metal finishing or smelting-after being sorted into components or into shredded streams, metals are sent to refiners or smelters. At this stage, thermal and chemical management process are used to extract metals

Benefits of recycling

Environmental benefits

Protects environment: The chemicals are less released into surrounding soil water and air. It promotes sound management of toxic chemicals through reuse, recycle, refurbishment of e waste. Conserves natural resourced: Recycling recovers valuable metals thus, reducing the need to mine new raw materials. It protects this metals for future use. Reduces energy consumption: This makes the production process, Cost effective. We can conserve energy which would be used

In manufacturing plants. Reduces amount of waste to landfills: This helps in reducing water and land pollution. Through cycling we can effectively reduce the portion of the land which is used as landfill space.

Reduces pollution: E waste cycling contributes to eliminating ten percent of air pollutants and eight major categories of water pollutants.

Reduces global warming: Recycling produces less greenhouse gases As industries burn fewer fossil fuels for eco-friendly products. It minimizes the harmful impact on environment.

Judicious and sustainable use of resources: We can preserve all precious resources for our future generation without any compromise In the present.

Economic benefits

Provides good business opportunities: By using both the resources and manpower it would earn benefits in the form of incentives and raw materials. It is a great venture that is bound to prosper if recycling plants are there in developing countries.

Scope of research: It provides a promising subject for industry and environment research too. This makes the e waste recycling process worldwide. This will act as a motivation for those who want to safeguard our ecosystem.

Create green jobs: Many skilled workers could get reputable jobs. The poor people could also generate source of income thereby avoiding poverty and raising betterment of living.

Cost minimization: The indigenous e waste recycling facilities will only save the domestic costs but also reduce burden on the foreign country where the scrap was supposed to dumped otherwise.

Helping others: Donating your used electronic benefits your community by passing on ready – to-use refurbished equipment those who need it.

Electronics recycling helps protect public health and environment: By the use of reuse, recycle, refurbishment of electronic goods it safely helps in keeping the hazardous materials from harming humans to the environment.

Current trends in e waste management

- The basel Convention network has identified E waste hazardous and developed a framework for controls on transboundary movement of such waste. Waste electrical and electronic equipment(wee), it is one of the fastest growing fractions in recycling. Extended producer Responsibility is being propagated as a new paradigm in waste management. The national strategy for electronics stewardship has resulted in building greener electronics by promoting chemical free world. Bureau of International is the gateway to the international.

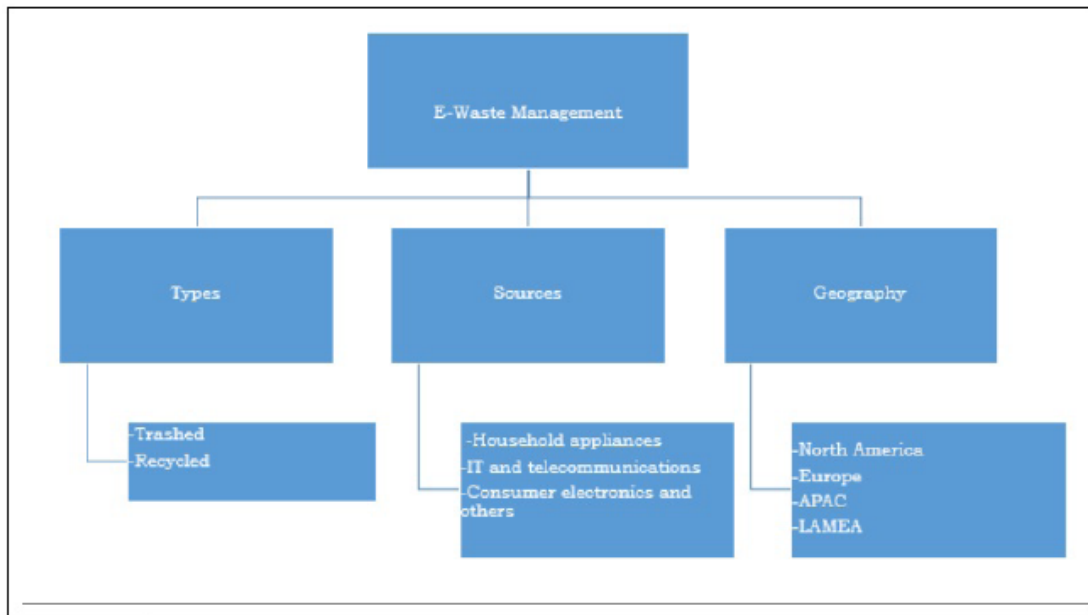
Recycling business

Obstacles found in developing countries.

Lack of public awareness.

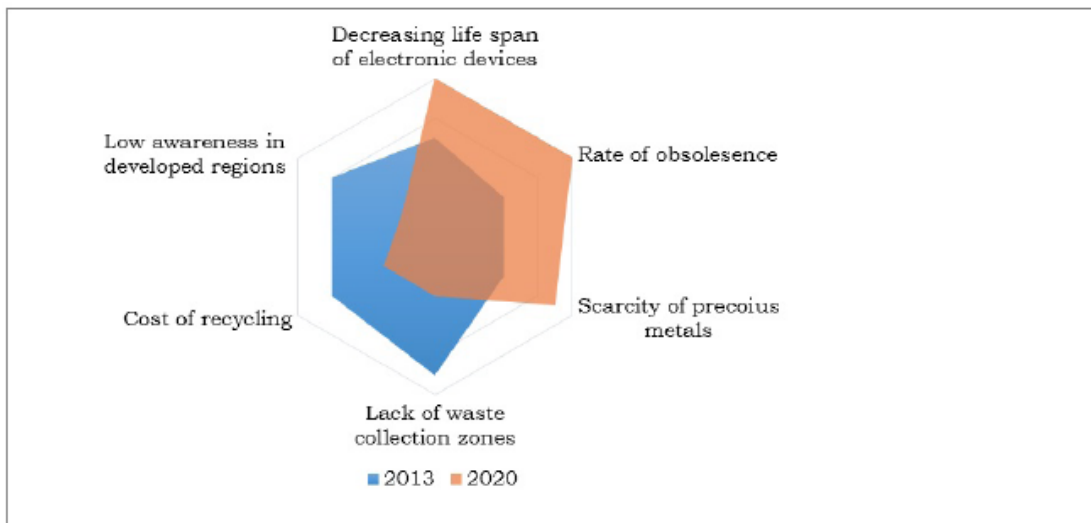
- Absent or inadequate legal framework.
- Absent or inefficient collection of e-scrap.
- Illegal shipments of e waste.
- Increasing volumes of e-scrap arising of domestic origin.
- Informal sector bad practices e.g. open burning, acid leaching, uncontrolled dumping of hazardous elements and hazardous wastes.
- Hindrances to controlled movement of e scrap to Environmentally Soundly Managed Facilities.
- Solutions found in developing countries.
- Increase public awareness.
- Duplicate best practice legal framework.
- Encourage private sector collection, otherwise implement EPR.
- Ban landfill of e-scrap.
- Institutionalise inspections and enforcement.
- Integrate informal sector in collection System-only ESM facilities-otherwise rely on EPR.
- Government & Agencies need to be encouraged to manage the e scrap controls at the speed of business.

World e- waste management market segmentation



AMR Analysis

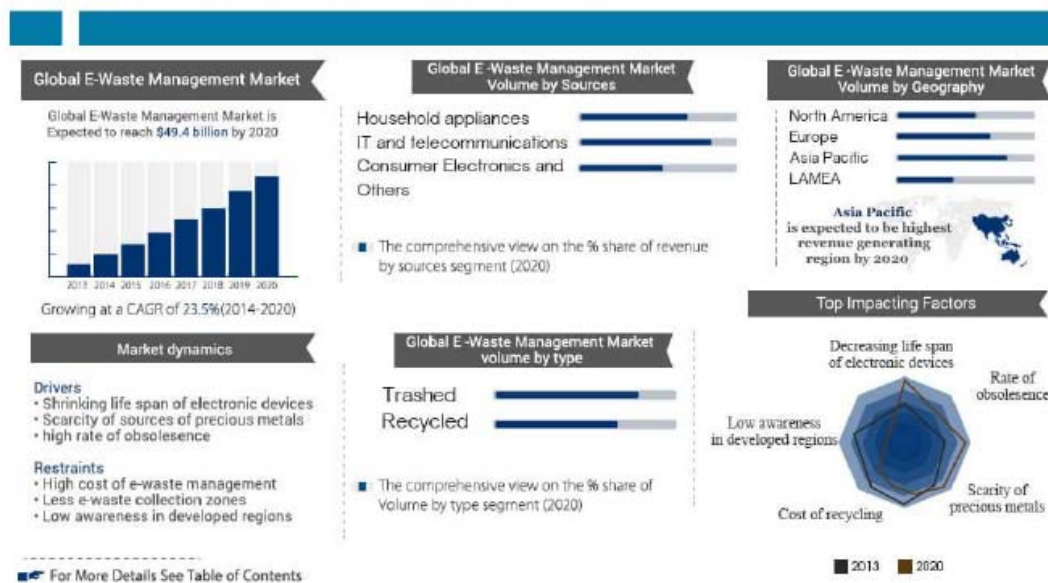
Top factors affecting e waste management



AMR Analysis

Global E-Waste Management Market

Segmentation and Forecast, 2013 - 2020



- Rare and noble in e waste are collected separately, the new concept of rare metal recovery complex is now derived.
- Urban mining which enables the minimum use of energy and reagents required for crushing/shredding, separation and purification process of rare metals
- World loop receives corporate finding to support a range of electronics recycling programs and it facilitates overseas recycle printed circuit boards, transformers and leaded glass.
- It has helped to extract gold and other valuable metals from the printed circuit boards.
- Developing countries are shipping more e waste to developed countries and develop a new era of business.
- Mobile e waste technology has been split between computers/laptops category and the telecom device category.
- Use of conveyor belts in E waste logistics and waste stream sorting operations.
- Cadmium and battery dismantling are used in rechargeable nickel-cadmium batteries.

- There has been a strong movement towards the removal of poisonous lead from consumer electronics.
- Further processing such as smelting or pulverization is introduced.
- Processing methodologies- approaches such as waste stream sorting, waste logistics, dismantling or disassembly, chemical separation efforts are taken.

Conclusion

For E waste management, many technical solution are available but to be adopted in the management system Perquisite conditions such as legislation, collection system, logistics and manpower should be prepared. This may require research and evaluation studies. Zero waste initiatives should be gathering speed in developing countries. There is a proper mantra used by many recycling advocates “Reduce, Reuse and Recycle, this must be our motto to build a chemical free environment.

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