E-Waste Management from a Business Perspective

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Abstract:

Environmental pollution typically has no boundaries. Pollution in the form of E-waste is a growing problem worldwide and its proper management is a global issue. In this work we intend to draw attention on the growing e-waste problem worldwide and how best it could be managed by means of proper recycling/reusing or adapting to other appropriate methodology. The work will also provide some examples of countries like Switzerland, India and others as to how effectively, environment friendly and economically they are managing their e-waste and what the rest of the world can learn from them to protect the environment from e-waste pollution.

Introduction

E-Waste is electronic waste, e-scrap, and electronic equipment that have been carelessly discarded. These broken electronic devices are being discarded improperly causing many health issues around the world. The causes of E-waste are attributed to the decreasing cost of electronic goods, planned obsolescence, lack of proper domestic facilities to handle the toxic e-waste disposals and recycling. Improper disposal of electronic items results in toxic garbage. Most electronic products contain dangerous metals such as lead, cadmium and mercury, which can contaminate air and water when they are dumped. The corporations that are not taking the proper processes are infecting countries with serious health issues and polluting their environments. When humans or animals are exposed to these chemicals and metals, it can lead to serious nervous system damage, cause brain disorders and even lead to death. E-waste has significant risk to workers and populations especially in developing countries.

How developing countries and others are addressing the E-Waste problem?

Developing countries are addressing the e-waste issue by putting forth new initiatives and policies aimed at reducing their environmental impact. Countries are not just focused on the effects resulting from the end use of the product, but also on its impact on the environment throughout the product's entire life-cycle. The policies that countries are implementing concentrate on principles of the extended producer responsibility (EPR). The extended producer responsibility, also known as the "Polluter Pays Principle", addresses sustainable environmental programs in environmental laws that are put in place within international trade (Clift, and France). Within the "Polluter Pays Principle" the producer of a particular good is responsible for the impact of that item throughout its entire life-cycle. This has been a challenge for some developing countries to meet this standard because of the state of the art facilities needed to be able to properly disperse off end-of-life materials. Countries are addressing the EPR through administrative, economic, and informative policies with six main goals in which they plan to deal with the e-waste issue. These goals are: waste prevention and reduction, product reuse, increased use of recycled materials, reduced natural resource consumption, internalization of environmental costs into product prices, and energy recovery when incineration is considered appropriate. In Japan, the environmental producer responsibility is managed differently than in other European countries. Japan's environmental producer responsibility objectives focus more heavily on the "take back" policy and product re-design. The "take back" policy of returning old electronic goods to the retailer is not free in Japan. Retailers set prices for the cost of taking products back at the end of their life-cycle and dispersing of the items. The "take back" policy has also

impacted Japan's designing of products. Japan was the first country to focus on producing lead and bromine free products. Further, it was one of the first countries to focus on developing light weight, slim electronic products that are easier to recycle.

As developing countries have become more technologically advanced, the management and disposal of e-waste has become a global issue. The e-waste that is discarded is not only toxic to humans, but it is also toxic to the environment. "It has become such a major issue that the United Nations has decided to step in and create programs that educate the public on how to properly recycle E-waste (UN News Centre p1)." The goal of this program is to make sure that people understand that throwing out E-waste has far reaching consequences. "However the United Nations has found that in some countries like China are reluctant to dispose of E-waste properly because there is a lack of proper laws (UN News Centre p1)". This is a major problem because China is a rapidly developing nation and possesses the probability of producing a significant amount of E-waste.

The management of e-waste has to be a coordinated global effort; otherwise e-waste is going to continue to be a global issue. In order to accomplish global e-waste management goals, developed countries, like the United States, need to set an example of properly disposing of E-waste. However, according to the "Environmental Protection Agency (EPA) there is no current federal mandate to recycle e-waste, instead just a patchwork of state mandates (U.S Environmental Protection Agency)". This is a major problem because the United States is a developed country that produces a lot of e-waste. To address the e-waste problem, the "EPA decided to implement the Sustainable Material Management (SMM) Electronics Challenge (Sustainable Plant p.1)". The goal of this initiative was to make the United States more in line with progressive countries in Europe. The EPA felt that through this challenge it could push for a more uniform e-waste recycling program without the federal government passing a mandate. In a way, this challenge is a side step to a federal mandate because many companies resist the proper disposal of e-waste due to the considerable increase in costs of proper disposal versus placing the e-waste into a dump. However, without a federal mandate all of the programs that the EPA develops are not enforceable. Companies can decide if and when they would like to follow these programs. The only legal requirements companies have to follow are the laws in that govern the specific state where they are disposing of the e-waste.

In order to protect the environment, all companies that dispose of e-waste must do so in a safe and proper way. However, this is a problem because some countries are progressive when it comes to the proper way to dispose of e-waste, while other countries turn a blind eye to the disposal of e-waste. The problem becomes magnified because some countries that turn a blind eye to proper e-waste disposal also allow the importation of e-waste from other countries that have tougher e-waste laws. The United Nations and other organizations have to unite and agree on a set of guidelines that all of the member countries will follow. Otherwise, some countries will still allow the illegal dumping of e-waste. This will ultimately destroy the environment and make it unhealthy for people to live in those countries. There also have to be technological developments that allow companies to produce electronics without using products that are harmful to the environment.

The trade of e-waste must be prohibited by international organizations. Trading e-waste creates danger for the public health of under-developed countries because of improper recycling conditions and electronic land filling. Instead, we should come up with different solutions for different regions of the world. This mostly depends on the education level and economic growth of the country. We cannot apply the same rules to all. However, we can start with one main aspect; the manufacturer should be held responsible for the recycling process of their own products, which includes collecting, recycling and reuse of the components.

Manufacturers must be responsible for e-waste management because; [1] they have resources for this; money, technology and knowledge. [2]Nobody knows better than they do what their products are made of and what components are in them. [3]They are more likely to be able to use the components because they are still manufacturing similar products. [4]And, more importantly, this can force them to design and manufacture environmentally friendly products because they will be responsible for their products. The business model should be prepared as follows: Manufacturers should include recycling costs in their final product prices or add recycling fee to the final prices. [1]The recycling fee must be determined accordingly

and carefully to make the system work, the fee must cover all of the expenses, collecting from customers, dismantling and processing, handling of final waste. In e-waste recycling only reuse generates money, all of the other steps cost money; therefore the recycling fee must cover all of these expenses. [2]To make end users return their unused or obsolete electronics return accordingly, manufacturers must offer cash or store credits to the customers according to the condition of the product and return time. Also, there is a lack of awareness regarding the potential risks of e-waste. It is very important to establish awareness among the public about e-waste risks to ensure them to return e-waste effectively. [3] A third-party firm can be used by manufacturers to collect, dismantle and process the e-waste but they should be responsible for the last steps, re-use and handling of final waste. [4] Manufacturers must destroy or bury the final waste in closed environment. [5] Manufacturers may use the recycled items in their new products again, (recycled part from high-end device can be used for low-end after 3 years.) they can create a new brand for the products made of recycled items to get attention from environmentally friendly customers.

Protecting the environment from E-waste

In order to try to slow down the increase in E-waste, governments across the world are implementing laws prohibiting its disposal in landfills and issuing mandates on recycling. In the EU some responsibility has been placed back on the manufacturer by making them financially or physically responsible for their equipment at the end of its life. Putting some responsibility back on the manufacturer has created a competitive incentive for companies to design 'greener' products. Currently, there is also tighter regulation on the movement of electronic waste, which usually found its way into Asian countries such as China and India.

The Basel Action Network (BAN) is "*the world's only organization focused on confronting the global environmental injustice and economic inefficiency of toxic trade (toxic wastes, products and technologies) and its devastating impacts*" (www.ban.org). BAN tackles environmental issues at a macro level by preventing irregular and unsustainable dumping of the world's toxic waste and pollution in these developing countries. BAN also promotes green, toxic free and democratic design of consumer products while banning waste trade.

E-waste is a global issue because it affects everyone in the world. According to Layne Nakagawa in an EarthTrends article entitled "*Toxic Trade: The Real Cost of Electronics Waste Exports of the United States*", the US often exports their e-waste to developing countries, allowing producers and consumers to take advantage of low labor costs (as low as $1.50 per worker per day in China). However, the dismantling of e-waste, particularly in parts of Asia and Africa, poses a significant health risk to workers and their communities.

E-waste management from a business perspective

Prabhu Srinivasan, a manager at Trishyiraya Recycling India, believes that E-waste recycling will be the next dotcom boom. Companies have cropped up due to the potential of this market once the policy is in place. Chawla states that one ton of scrap from discarded computers contains more gold than can be produced from 17 tons of gold ore. This is why E-waste recycling has becoming a booming business. E-waste recycling may be a booming business but without strict enforcements, things get can out of hand. Chawla suggests that these E-waste recycling companies come up with concrete policies by punishing defaulters and ensuring that companies take EPR seriously. Governments should also have strict laws for the import of electronic waste into developing countries.

Swiss model for e-waste management

Switzerland has one of the best established e-waste management systems worldwide. Switzerland provides a convenient, proven, and cost efficient disposal service for both producers and consumers. This was constructed over the last two decades based on industry initiatives and now covers basically all electronic products. Switzerland's system is currently managed by the responsible producers (manufacturers and importers), organized in four so called producer responsibility organizations (PRO) which handle specific categories of e-waste for their voluntary members:

- SWICO Recycling Guarantee: The unit of the Swiss Association for the Information, Communication, and Organizational Technologies (ICT) handles mainly waste ICT and consumer electronics such as personal computers.

- SENS: The Swiss Foundation for Waste Management, handling mainly waste electrical appliances and electronic equipment such as refrigerators.

- SLRS: The Swiss Lighting Recycling Foundation handles exclusively lighting equipment such as tube lights.

- INOBAT: The Lobby for Battery Disposal handles exclusively all primary and secondary batteries such as those for cellular phones.

Discussions

The world definitely needs to take a look at Switzerland's model for e-waste management. The Swiss model for e-waste, covers all aspects and they are backed by law. The important contributing factor is covering the disposal costs up front. A customer or business that has paid for this up front is more likely to dispose of e-waste properly.

Awareness, attitude and action are important steps in taking personal responsibility for e-waste management. It is very important to dispose of an electronic item properly after it has reached the end of its useful life cycle and is ready to be discarded. Safe places are easy to locate online or can also be located through local government. It is also important to purchase from companies that are actively involved in the green movement. Buying energy efficient product to save on power bills and choosing products with the least packaging and/or packaging that is recycled and recyclable should be preferred. It may be worth spending more on equipment that lasts longer and pay little extra for an extended warranty, obliging the manufacturer to repair or replace faulty items. It is possible for all of us to make a difference.

In conclusion, we recommend that in order to control E-waste in the United States Federal mandates will have to be set up. Countries all over the world will have to figure out ways to work together to control their own waste. Many people are unaware of the e-waste problem; therefore, the public should be informed about the risk and dangers of e-waste and how to dispose of electronics safely.

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