E-WASTE

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In an ever-increasing technological society, every day more people make use of electronic devices. Whether it's cell phones, computers, tablets or a myriad of other electronic devices, our global society uses these devices and discards them. The discarding of these devices is known as e-waste. According to the EPA, e-waste is defined as, "used electronics that are nearing the end of their useful life, and are discarded, donated or given to a recycler.[1]" Often, these devices are seen to be at the end of their lifecycle but many times that is not the case. Users of these devices often discard them when new devices are purchased and with some of these components not biodegradable, i.e., mercury, lead and cadmium, they remain as hazardous materials in the environment. Relative to being harmful to the planet, we can parallel the e-waste problem with the discarding of plastic and seeing the effect it has had on our ocean. This fact makes the handling of e-waste one of the most important issues facing the global community. And just like in the case with plastic, recycling is the key to limiting the damaging effects from e-waste.

According to the Columbia Climate School, "e-waste recycling usually involves disassembling the electronics, separating and categorizing the contents by material and cleaning them. Items are then shredded mechanically for further sorting with advanced separation technologies.[2]" It is estimated that only 17-20% of e-waste is recycled. The processes of e-waste recycling along with the need to adhere to safety measures make the recycling of e-waste expensive. And because leading nations in the world have not made it a top priority, we continue to see the recycling of e-waste shipped off and handled by third world countries. These countries who handle this recycling do it for cheap and in most cases are not following any regulatory standards. Take for example a 2018 police raid on a junkyard near Bangkok, according to the New York Times Magazine, officers from the Royal Thai Police found undocumented workers from Laos and Myanmar engaged in work that exposed them to blasts of toxic fumes and dust while handling vast piles of discarded computers, electrical wires and circuit boards[3]. This alarming story also highlights another aspect of the dangers of e-waste — the fact that e-waste is outsourced to developing countries, whose residents are poor and will put their health at risk for steady work. The e-waste issue is also one of inhumanity and human rights. And to put a pin on the point, the reality of the fact is those undocumented workers were more than likely handling e-waste from two countries: China and the USA — this was the point made in the coding sample — The US and China account for over half of the e-waste produced worldwide and the two countries decided to act forcefully, it would greatly reduce e-waste as such a global concern.

China — the biggest e-waste producer in the world, currently produces 10,129 kilotons of e-waste a year and the US, the second biggest producer of e-waste in the world, produces 6,918 kilotons of yearly e-waste[4]. In fact, to further the point as far as the US is concerned, the country doesn't currently have any Federal laws concerning the handling of e-waste, leaving individual states to handle what is a national and international crisis. And this issue will only grow over time as according to the Roundup.org, "On average, the global e-waste generation has increased by 2 Mt annually over the last decade.

Global electronic waste volume is projected to grow to 74.7 Mt by 2030 – meaning it will have almost doubled in only 16 years.[4]" With growth-numbers like these it is easy to see how the time for action is past due and the good news is that some countries have made progress in dealing with the issues. Although on a smaller scale because of population differences, regions like Europe have successfully addressed the e-waste issues through legislation and enactment.

In fact, we can look at the top ten recyclers of e-waste in terms of the percentage of their countries e-waste that is recycled:

Country	Percentage of e-waste recycled
Estonia	76
Norway	72
Iceland	71
Sweden	70
Austria	69
Switzerland	63
Finland	61
Poland	60
Ireland	59
UK	57

When we compare that to China's recycle rate of 16%, US's rate of 15%, and India's rate of 1%, it is clear to see there is a great discrepancy between these two sets of countries in terms of e-waste management[4].

And the discrepancy is more than just willful ignorance, it is blatant disregard for efforts put forth by many countries to address the e-waste issue. In fact, according to the New York Times Magazine[3], "the United States is the only developed country that hasn't ratified the Basel Convention on hazardous waste, a treaty that restricts the exports of e-waste and that has the support of 186 parties." It is the opinion of the writer that the Basel Convention is not an overreaching accord but just a bare minimum to manage the distribution of e-waste, in particular, to the developing countries that may be exploited.

For example, one policy of the Basel Convention states the following:

Parties shall undertake to review periodically the possibilities for the reduction of the amount and/or the pollution potential of hazardous wastes and other wastes which are exported to other States, in particular to developing countries[5].

It is the writer's contention that policies such as stated above are the floor not the ceiling in terms of managing e-waste.

One aspect of e-waste recycling that has a potential is the increased realization and development of "e-mining" which could be defined as the mining of precious materials, i.e. gold from the circuit boards of e-waste. In fact, according to the New York Times Magazine, "The gold in the world's e-waste alone equals more than a tenth of the gold mined globally each year.[3]" Places like India and Indonesia have been mining for gold and precious materials already although their methods of recovering "gold by bathing circuit boards in nitric and hydrochloric acid, thus poisoning waterways and communities. Others, like the migrant workers in Thailand, break down used electronics with cooking stoves and shredders and wear no protection against the emissions[3]." Although these methods are crude, inefficient and unsafe no techniques have emerged to mine precious metals more efficiently and safely. Techniques using carbon nanotubes and underwater sound waves can be used to recover key minerals[3].

As these techniques develop and improve, countries and private companies may see the potential to benefit from recycling as opposed to purchasing new precious metals for new products.The belief of countries and companies acting in the self-interest of cost saving may assist in controlling e-waste. Case and point, "Apple, for instance, has pledged to make all of its future laptops and iPhones out of renewable resources or recycled materials.[3]" Is this move from Apple more about the e-waste problem? Or ways to increase profit? The writer cannot say but even if it is done out of self-interest, any efforts by large producers of electronics and products that produce e-waste to improve the recycling rate of e-waste would greatly help solve this global problem.

Resources/Citations:

1.Cleaning Up Electronic Waste (E-Waste) | US EPA
2.What Can We Do About the Growing E-waste Problem?
3.E-Waste Offers an Economic Opportunity as Well as Toxicity - The New York Times
4.17 Shocking E-Waste Statistics In 2022 - The Roundup
5.Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal