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CSC 300

Assignment #3

Every year, tech companies release the latest and greatest version of their products. With faster processing speeds, new features, and modern design, millions of consumers are enticed into upgrading their phones, computers, televisions, sound systems, and even smart homes. However, progress comes at a cost. As consumers are racing to stores to upgrade technology, they are leaving their old devices behind, often throwing them away. With each new technological innovation, more and more electronic waste is being generated. This waste contains rare earth metals which are valuable and can often be dangerous if they aren’t disposed of properly (which is the norm). Therefore, it is becoming a necessity to shift from a model of planned obsolescence and personal profit to a model of sustainability and environmentalism, and it must begin with lawmakers imposing stricter regulations.

The transition to environmental sustainability in technology is already beginning to take place, as lawmakers in some countries have begun to impose Extended Producer Responsibility laws. These laws are intended to make the producers of tech companies responsible for the disposal and recycling of them. The hope behind enacting laws like these is that tech companies will begin to move towards more environmental design. If their products lasted longer, they would not have to deal with as much waste. In a research article published in the Journal of Cleaner Production entitled “Extended Producer Responsibility for E-waste Management: Policy Drivers and Challenges”, the authors state “Although there remains much debate about EPR design, regarding, for example, the policy objectives (Tasaki et al., 2019); whether environmental handling fees should be visible or not (Clift and France, 2006); and the likelihood of EPR programs delivering their expected outcomes (Atasu, 2019), scholars generally agree that such policies should provide incentives for better product design (for example, Dempsey and McIntyre, 2009; Lifset et al., 2013).” (Leclerc, Badami, 4). In the same article, the six main objectives for EPR objectives are listed as 1) reduction in waste generated 2) reduction in waste disposed 3) reduction in hazardous constituents in the waste stream 4) decrease in virgin material use 5) lowered pollution in the product use phase 6) increased design for the environment. On paper, EPR policies are intended to protect the environment in both the design and disposal stages. However, in practice there are some dilemmas that arise. Often times, economic and political factors come in to play when enacting EPR policies. When comparing multiple different Canadian EPR policies, researchers found “The Quebec regulation demonstrates a greater demand for and/or supply of support for, among other things, maintaining local employment through refurbishing and reuse, and rewarding firms that make the most effort to reduce their products’ environmental impacts. Quebec’s regulator may have been comfortable imposing penalties, and modulated fees, since most of the equipment sold there is produced externally, and local businesses and employees would not be affected negatively.” (Leclerc, Badami, 4). In addition, having differing policies across states, provinces, and countries can prove to be problematic, as larger companies may have to adhere to different laws in different areas. These inconsistencies lead to workarounds for businesses and pose an accountability challenge. A study titled “E-waste policies in the United States: minimalistic federal action and fragmented subnational activities” by Katja Biedenkopf reveals “The United States is split in half, with 25 states filling the federal void of near-absent E-waste provisions while the other 25 states have not taken action” and adds “For companies, this means that the difficult-to-navigate patchwork of E-waste provisions will persist. Companies that are active on a national scale are required to monitor the various policy developments and determine their compliance obligations on a state-by-state basis” (Biendenkopf, 7). In third world countries, E-waste issues rise just as much from consumers as they do from the producers. This is demonstrated in a research article titled “Improving sustainability of E-waste management through systematic design of solutions: the cases of Columbia and Ecuador”, where two methods of E-waste management are considered. “One is the preventative approach focused on reducing WEEE generation and, correspondingly, decreasing EEE consumption. The other is the reactive approach, which guides actions toward the responsible collection and treatment of already generated waste. Responsible consumption involves both approaches. A responsible consumer should decide to buy or to reuse equipment based on economic and aesthetic criteria and environmental and ecological criteria, the latter two being related to the minimization of waste generation. A responsible consumer should also make an informed decision regarding WEEE disposal, through formal systems (as part of their behavior)”. (Mendez-Fajardo, Boni, Vanegas, Sucozhanay, 6). Third world country or not, it is important to recognize the importance of the consumer when applying EPR policy; they fail without consumer awareness and cooperation. Looking towards the future, EPR policies likely will continue to be important to help reduce the e-waste footprint. In a research article titled “Strategies for E-Waste Management: A Literature Review”, a future model is proposed which involves EPR and LCA (Life Cycle Assessment) Policies. “LCA aims to measure environmental burdens regarding a product, process, or service by identifying materials consumed and emissions generated to the environment…..the combination of LCA and EPR may be the optimal model to manage e-waste in the future regardless of the nature of e-waste issues” (Doan, Amer, Lee, Phuc, 161). Ideally, in the future these regulations will give technology companies and computer professionals incentives to build environmentally sustainable products. Computer professionals will think about the environmental and ethical implications that arise during the entire life cycle of their products, from the mining of the rare earth metals to the recycling and disposal of the product. In my optimistic vision of the future, computer professionals would be mindful and selfless enough to consider these factors in their design, so we wouldn’t even need EPR regulations to hold them accountable. If computer professionals and engineers could work together, not for profit, but truly for the benefit of society and the planet, then we could drastically reduce e-waste and help save the environment without government intervention. However, this is not the world that we live in, thus it is necessary for lawmakers to impose regulations that will force tech companies to reconsider the way they design and dispose of their products.

A future where Extended Protection Responsibility Regulations lead to greener product design is promising yet is not without challenges. In my investigation of these challenges, I chose to look at Canada’s Action Plan for Extended Producer Responsibility. It is important to understand how EPR plans are developed, which is why an Action Plan is especially interesting. Action Plans offer guidance for local governments on the reasons for creating EPR Programs, the ways to measure the success, and the implementation. In addition, it can show why EPR plans differ across provinces. One challenge that I identified through this primary source was the absence of a uniform global policy. “In a complex and competitive national and global business market signals to producers from a relatively small market like Canada may not be strong enough alone to influence new environmentally conscious product design and supply chain management” (Canada-Wide Action Plan for Extended Producer Responsibility, iv). Even though Canada may enact policies that promote green design, large companies could decide that it is more economical for them to bite the bullet in Canada and pay for increased recycling costs, while continuing to design products without any regard for the environment. At the end of the day, global warming is a worldwide issue, thus EPR policies must be implemented on a global scale in order to be as effective as possible. A second challenge that I identified through this document was that of accountability. In describing what each EPR policy should consist of, the action plan is not specific on what should be considered “recommendations” and “requirements”. “The following is a suggested summary of the program elements that are key to considering the structuring of EPR programs by both governments and producer organizations (PROs) and are the main considerations in EPR program development, design and implementation. These elements may or may not be prescribed in EPR regulations. These elements can be represented through such means as regulation and best practices guidance” (Canada-Wide Action Plan for Extended Producer Responsibility, 16). The implementation of these policies is up to the individual governments, which means that there are bound to discrepancies in regulations across the country. Therefore, it can be challenging for the national government to hold local and provincial governments accountable, as they are only offering vague guidelines on how the policy can be enacted. It also allows governments to pass EPR regulations that are catered to the incentives of particular government. Some of these regulations may be lighter, or even just posed as “recommendations” for economic, social, or political reasons. Earlier, I quoted the study on Quebec’s EPR program compared to other provinces. Quebec was more willing to impose large fines on companies for breaching EPR regulations because they knew it would not affect businesses in Quebec as much (Leclerc, Badami, 4). Although there are challenges that come with EPR regulations, there is also a huge ethical opportunity to be realized by technology companies. Government intervention can only go so far; the laws that are passed can only provide incentive for tech companies to create more environmental designs. “By shifting the responsibility for the end-of-life management of products to the manufacturer and/or importer of that product, effects will be felt throughout the product life cycle. This provides incentives to producers and importers to design their products with less environmental risk, reduced use of toxic and hazardous substances, enhanced ease of product disassembly and with other factors reducing their products’ overall environmental footprint” (Canada-Wide Action Plan for Extended Producer Responsibility, v). Tech Companies have an opportunity to create more sustainable products that are designed with environmental considerations in mind. If this new vision of ethical practice can be reached, society could be transformed with minimal intervention. Regardless of how many EPR laws are passed, the vast majority of power will still lie in the hands of the engineers and computer professionals. Lawmakers can provide incentives for technology companies to change, but the tech companies are still the ones who have to change.

Making the transition from a technological model that is built around planned obsolescence and personal profit to one of sustainability and environmentalism is by no means easy. This is because the change involves everyone in society, from the producers to the lawmakers to the consumers themselves. Taking care of the environment is everyone’s responsibility, and if one party doesn’t cooperate then it is impossible to sustain. For example, even if the producers are creating green products and the government is holding them accountable to do so, if the consumer doesn’t cooperate then they might still dispose of their technology irresponsibly. Likewise, even if the consumer is aware of EPR policy and the environmental implications of technology and the government has strict EPR restrictions in place, if technology is designed to fail then there will still be disturbing amounts of e-waste generated. Therefore, in my eyes the first step to the transition is to build more awareness for the general public on the consequences and scope of e-waste. Most people are not aware how dangerous e-waste can be if not disposed of properly, or of how much e-waste there actually is. With increased public awareness, consumers will be more mindful of the impact they have on the environment. Therefore, instead of upgrading to the newest cellphone or laptop without thinking twice, they may be more inclined to repair their device. In addition, when their technology actually does break down, they would be mindful enough to give their phones back to the producers to recycle or take them to recycling plants themselves. On top of that, increased public awareness would bring the ethical dilemma to the forefront in society, and give lawmakers incentive to enact EPR laws. Both of the challenges with EPR policies that I identified through my primary source investigation have to do with a lack of uniformity. As the public gets angrier and angrier and awareness spreads, new policies will be enacted around the world. As EPR laws become more commonplace, huge tech companies may not find it economically feasible to work around sustainable design. In addition, with more EPR laws in place, there will be more models for governments to see what works and how to hold companies accountable. If it becomes more economical for tech companies to build sustainable products because of regulations, that could become the norm. However, even if the government imposes more and stricter regulations there will still be workarounds. The true power will still lay in the hands of the tech companies. They are the ones who are mining the rare earth metals, creating the market for electronics, designing the products, and recycling them. If there isn’t a fundamental change in the ethics and incentives of technologists, then the impact of the general public or government will not be enough. However, I am actually very optimistic that this change will come. I believe that the next generation of computer professionals is preparing to enter the technology industry with more understanding and mindfulness than any generation before. I look around at my peers and see a sense of anger at the way the world is being run and feel an urgency to change it. In class I hear my peers communicate incredibly profound and intelligent thoughts that are driven by an understanding and questioning of the current system. The model is shifting from one of selfishness to one of selflessness. This shift will continue as more budding computer professionals are exposed to classes like this one. Of course, this opportunity for ethical transition is not something that is going to happen overnight and is not something that will be supported by every individual or company. But if enough computer professionals and engineers realize this opportunity, then just maybe we can save the world from environmental disaster. I never imagined myself quoting Spiderman to end my final essay, but his most famous line couldn’t be more fitting. “With great power comes great responsibility” (Spiderman). It is time for technologists to realize the power we possess and start harnessing it for good. It will by no means be easy, but it is necessary. I know I am up for the challenge.

Works Cited

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