

A Future Beyond Single-Use Plastics

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### Executive Summary

The global utilization of single-use plastics, including plastic bags, has grown exponentially throughout the decades, creating significant hazardous environmental impacts. They are easily discarded and can end up in the ocean, harming millions of animal lives along the way. These plastics also do not biodegrade. Instead they release chemical toxins into the air which continues polluting our planet and risks human/animal lives. Furthermore, its production process contributes significantly to CO<sub>2</sub> emissions which leads to enhanced global warming potential. Hence, several countries around the world have begun banning these bags.

This essay researches other single-use items that should also be banned including plastic straws, cups, coffee stirrers, lids, etc. due to their negative environmental impact, as well as reusable alternatives that could be used instead. Creative implementation procedures for these bans are also introduced within the essay, including incentivized reverse vending and bioplastic development.

Yet despite the positive effects of banning plastics, there will still be some barriers in regards to the implementation of these regulations, such as the cost and resources associated with creating reusable alternatives. However, it is the consumer's responsibility to choose a sustainable lifestyle as this makes a greater difference in the end. And as the next generation, we have the power to greatly influence new policy development to ensure that it will also benefit our planet. It is our responsibility to raise awareness and take action now. Our future must be one where we do not depend on single-use plastics, and instead make sustainable choices that will change our environment and our planet for the better, before it is too late.

The utilization of single-use plastics has grown exponentially throughout the years due to its versatility and inexpensive manufacturing process. Since 1950, there has been around 8.3 billion tonnes of plastic produced (“Single-Use Plastic Harm”, 2019). Yet this sheer amount also means waste. In fact, there is over 150 million tonnes of plastic in the oceans (World Economic Forum, 2016), with 3.95 trillion plastic bags being contributed towards this litter annually (Kinal, 2020). This has created dangerous consequences towards marine life, wildlife, human life, and our environment. Thus, numerous areas around the world, including Nova Scotia, have begun banning single-use plastic bags in order to reduce pollution, protect animals, and save our planet.

While this is a promising step forward, there are still other single-use plastics the government can ban, such as straws. 57 million plastic straws are used and discarded every day in Canada alone (Griggs, 2019). Millions then end up in oceans, harming countless animals. Thus, banning them would have major impacts on plastic waste reduction, hence saving an innumerable amount of wildlife/sea life. Moreover, replacing these items with green alternatives is extremely manageable, either by substituting with metal/bamboo/glass straws, or by simply going without one in the first place.

Other single-use plastics that should be banned are coffee stirrers, lids, and disposable cups lined with polyethylene. Globally, 16 billion paper coffee cups are used per year (“Effects of Coffee Cups”, 2019). These products contribute towards pollution, are not easily recycled due to difficulties associated with separating the polyethylene lining from the paper (Zarmon, 2019), and often end up in oceans. Therefore, a ban would significantly aid with a decrease of plastic litter. Replacements including coffee mugs made with stainless steel/glass/silicone, and spoons instead of plastic stirrers, can be used instead.

Indeed all single-use plastics including cotton buds, cutlery, even balloon sticks, should be regulated by the government due to their environmental harm. These items do not biodegrade, instead breaking into smaller particles called microplastics that release harmful toxins into the air/soil/water (Wales, 2018). This contaminates ecosystems; harming animals and humans. Furthermore, sea creatures often mistake single-use plastics for food. In Indonesia, a whale was found with thousands of bags, cups, and bottles, in its stomach (CBC News, 2018). Sadly, this is only one of countless cases. Moreover, these plastics contribute towards greenhouse gas emissions with its production from fossil fuels including oil or natural gas (Joyce, 2019), to its refining, and to the way it is managed as waste. By 2050, it is estimated that CO<sub>2</sub> emissions from the production and incineration of plastic could grow to over 2.75 billion tonnes annually (Laville, 2019), which further increases global warming potential as greenhouse gases trap heat in the atmosphere. This then causes extreme weather conditions, melts ice which leads to rising sea levels, jeopardizes animals, and affects agriculture (Bradford, 2017). Ergo, banning all single-use plastics would significantly benefit our environment.

And several countries have already begun this process. States in the European Union voted to ban most single-use plastics including cutlery/straws/stirrers by 2021 (Rankin, 2019). Additionally, there is a focus on public awareness. The EU announced laws where producers are required to label products such as tobacco filters and sanitary towels with instructions for proper disposal (Britton, 2019). The notion of public awareness in general is extremely effective as it makes people conscious of how they should handle/recycle their waste in a safe manner, and is an idea that could be implemented in Nova Scotia.

There have also been creative approaches to reducing plastic usage. An initiative called incentivized reverse vending was introduced in many countries including Lithuania,

Denmark, and Malaysia (Dell & Eriksen, 2018). With this concept, consumers return plastic water bottles for recycling at special vending machines located in grocery stores to receive rewards such as donations to charities/vouchers toward grocery bills (“Reverse Vending”, 2017). These convenient locations also allow for more people to access them. Furthermore, a sustainable cycle is created as refillable bottles are taken to beverage producers for cleaning/reuse and non-refillable ones are sent to processing facilities for washing/shredding, eventually going into the production of new containers (“Reverse Vending”, 2017). This incentivize concept can also be applied to other scenarios. For instance, if shoppers bring reusable options, they could be given a reward. And while there are shops in my town that offer discounts for purchases with reusable cups, I think other businesses/restaurants around the province could implement this. Many people would change their lifestyle into a sustainable one, especially if prizes are involved.

Additionally, there has been research surrounding bioplastics. These are made of polylactic acid which is derived from organic materials including corn starch (Rogers, 2015). They can break down in several weeks without emitting toxic chemicals into the air/soil (Borhauer, 2019). However the decomposition produces methane, another greenhouse gas. Thus, bioplastics must be broken down in facilities with a controlled environment (Woodford, 2020). But more research could be done to ensure bioplastics reach a usable, industrial level. Once this is reached, these alternatives can be used in communities to replace non-biodegradable plastics, which would further decrease the harmful effects of those items.

Yet despite the positive impact of banning single-use plastics, there are still barriers that may prevent implementation. Firstly, reusable alternatives are much more expensive. For instance, the cost of manufacturing one plastic straw is 0.5 cents, versus 2.5 cents for one

paper straw (Jennings, 2019). And a stainless steel straw costs around 3 dollars to manufacture, or 600 times that of a plastic one (Tolbert and Koscielak, 2018).

Furthermore, producing reusable alternatives uses more energy/resources than single-use plastics. A paper bag needs to be reused 3 times in order to neutralize its environmental impact when compared to plastic (Thompson, 2017), as it requires 4 times as much water during production (Cadman, Evans, Holland, & Boyd, 2005). A cotton bag requires 131 reuses due to the high amount of energy used to produce and fertilize cotton yarn (Edgington, 2019). Cotton plants themselves are also treated with around \$2.6 billion USD worth of pesticides each year (Environmental Justice Foundation, 2020), which also has harmful consequences on animals, farmers, and ecosystems.

Additionally, many people may simply forget to bring an alternative when going to restaurants, coffee shops, etc. Being able to use a plastic straw for example, would become extremely useful in that situation. This would then cause harder implementation processes within businesses, as they would not want to lose customers just because they forgot a reusable replacement.

All these factors combined make the implementation of bans more difficult as factories producing single-use plastics may not want to spend more money/resources on creating reusable alternatives. Others may also argue that the environmental impact of manufacturing single-use plastics is lower than paper/cotton alternatives, thus creating yet another obstacle towards a ban. However, an important idea is that *we* are actually the ones responsible for our environmental impact! If we find sustainable alternatives, reuse it frequently, ensure to recycle it properly after, and finally make these lifestyle changes for the long-term, then these actions, not the single-use plastic item itself, will create the most significant difference. And our generation needs to take these steps now before it becomes

too late. We have the ability to overcome these challenges, make sustainable change happen, and influence lawmakers around the world to create policies that benefit our environment.

Moreover, with social media and the Internet accessible nowadays from all over the world, young people could truly influence policy development. Posting online has the potential to reach hundreds, thousands, if not millions of others. We have the ability to share our thoughts and opinions instantly. By reaching more people and garnering a larger movement, these ideas can become a reality and lawmakers would have to address our demands. Many of us also have the ability to vote for climate action, but regardless of age we can all use our voice; in our schools, in our communities, on our social media accounts, to hold those in power responsible for taking important steps to change our world for the better.

Single-use plastics have become so integrated within our lives, from food packaging, to takeout cutlery, to plastic straws in coffee shops. However, with our planet, animals, even our own lives at risk, we must take action and change our lifestyle immediately into one that is sustainable. Banning single-use plastic bags is the first step, next a ban should be implemented regarding all single-use plastics. Not only would this improve our environment, reduce pollution, and save lives, it can also be accomplished using creative methods involving incentives. We are responsible for taking our own action to lead an eco-friendly lifestyle, and we are also able to influence policy development to ensure that it is sustainable for the future. We must look towards a different time; we must embrace a future beyond single-use plastics.

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