Community Perceptions on the Ramifications of Mono-use Plastic Shopping Bags and Bottles Consumption on the Environment in Morogoro Municipality, Tanzania

[1]Mrisho Mbegu Malipula*

[2]Theobald Frank Theodory

Abstract

Tanzania, as it is the case for many countries in the world, is suffering from increased mono-use plastic shopping bags and bottles besieged into the environment. This article explores the social perceptions of mono-use plastic shopping bags and bottles consumptions and the potential that those perceptions offer in mitigating the negative environmental impacts associated with their use. The article is a result of a mixed method research design that mainly relied on interviews, focus group discussion and household survey with Morogoro inhabitants. The fundamental argument of this article is that local communities in Morogoro Municipal Council perceive excessive use of mono-use plastic shopping bags and bottles negatively due to their dilapidating environmental impacts. As such, they recommend environmentally friendly choices like greater use of multi-use plastic shopping bags and bottles to substitute excessive use of mono-use plastic shopping bags and bottles for curbing the environmental impacts. Equally, restrictions on usage of mono-use plastic shopping bags coupled with voluntary actions aimed at reducing the same were deemed vital for sustaining negative effects of said plastic materials in and on the environment.

[1]Department of Development Policy, Institute of Development Studies, Mzumbe University, Mzumbe, Tanzania
[2]Centre for Environment, Poverty and Sustainable Development, Institute of Development Studies, Mzumbe University, Mzumbe, Tanzania

*Correspondence Author's email: mmmalipula@mzumbe.ac.tz

Introduction

Currently, the negative effects of plastic wastes, including those from mono-use plastic shopping bags and bottles, are obvious in the entire environment and their impacts on living things are enormous (Pearson, 2019). Literature indicates that only 9% of plastic materials are recycled, 12% incinerated and 79% end up in landfill (Stahel, 2016). Furthermore, plastic materials contribute 60–80% of the world's litter which has proven to be very hard to be cleaned (Geyer et al., 2017). Notwithstanding this, the negative effects of plastic materials on the environment, and the production of plastic goods is rising alarmingly (Brooks et al., 2018). Such situation can be proven by the fact that, in the last seven decades, it has been steadily increasing from 1.5 to 348 million metric tons between 1950 and 2017 (Plastics Europe, 2019). Such state of affairs entails a mounting dependence on plastic consumption all over the universe. Such growth of consumption of plastic all over the globe, is not free of justification as plastic products do present several societal benefits in varied aspects like health, material conservation, safety and energy saving. Equally, plastic made construction materials perform well in the construction industry; plastics reduce food wastage through plastic food packaging as well as reducing carbon dioxide emissions and transportation expenses because plastic packages weigh less compared to other packaging materials like sisal (Martin, 2015).

Increased production of plastics and the negative impacts they contribute to the environment raises the need for efficient and resourceful waste management systems for circumventing the release of plastics into the environment. The need for such systems in developing countries is acute because waste management infrastructure is evolving at an unhurried leap compared to the upsurge of daily mono-use plastic wastes in terms of beverage bottles and carrier bags to be managed (Wagner,

2017). In most developing countries, plastic waste management systems provide poor services due to policy deficiencies, limited human and financial resources as well as low community awareness (Bello et al., 2016; Mwenda, 2016). As such, mono-use plastic wastes are dumped into rivers and streets, subjected to landfill, incineration, burying and recycling (Pearson, 2019). It is on this basis that proper environmental management could be enhanced by decreasing and abandoning completely the use of mono-use plastics in our daily life (Danielsson, 2017).

Given the inefficient waste management infrastructure and low rates of recycling in Tanzania nowadays, including Morogoro, reducing consumption of single-use plastics by reusing them may prove a better choice to recycling. Reusing plastic bags and bottles will lessen the quantity of mono-use plastic shopping bags and bottles used as they would dissuade probable consumers from using more disposable and expensive plastic shopping bags and bottles. As much as less use of plastic shopping bags and bottles seems to be a rational choice advanced by environmentalists to salvage the environment, commencing such behavioural change within complex societies is certainly a hard nut to crack as multiple individual intentions and interests are not easy to reconcile (Martin, 2015). The hardness notwithstanding, Becker et al. (2014) argues that individual intentions can be collectively reconciled through institutional regulations, incentives and supports. Such reconciliation is capable of encouraging societal behaviour change by muting individuals' parochial values and intentions guiding their egoistic behaviours.

With regard to limiting the adverse impacts of mono-use plastic products, Pearson (2019) contends that taxation and/or restrictions on the consumption of mono-use plastic shopping bags provide an incentive to consume multi-use plastic shopping bags and bottles and indulge preference to returnable plastic bottles systems that can help the environment. As much as regulations and

incentives can be useful in mitigating adverse environmental ramifications, Becker et al. (2014) contend that voluntary reduction of plastic shopping bags consumption and bottles are the most rational in curtailing probable environmental effects. Arguing along the same direction, Worm (2017) argues that environmental concerns can be well addressed when individuals voluntarily decide to avoid engaging in environmentally unfriendly behaviours.

In view of the environmental problems associated with single-use plastic shopping bags and bottles, and the hurdles linked to mitigating them, the current article questions the Morogoro community's perceptions on the ramifications of mono-use plastic shopping bags and bottles consumption on the environment. In particular, it provides information of the perceptions of Morogoro people regarding their use of mono-use plastic shopping bags and bottles; the ramifications of the consumption of the said shopping materials; and their willingness to decrease the negative impacts of their mono-use plastic shopping bags and bottles consumption behaviours as a way of managing the deleterious environmental effects attributed to them. Analysis is banked on people's consumption habits particularly with regard to using multi-use plastics, awareness of environmental impacts resulting from their use of mono-use plastic shopping bags and bottles as well as people's readiness to lessen consumption of such plastic carriers. In the main, the paper contributes to the body of knowledge regarding the minimisation of the use of plastic bags and bottles to effectively minimise solid wastes. The paper informs policy makers to establish feasible measures and strategies that shall modify everyday community's habits of not using plastic bags and bottles for the purpose of managing the surrounding environments.

Conceptual and Theoretical Issues

Environmental Impacts of Mono-use Plastic Shopping Bags and Bottles

Plastic shopping bags are essentially containers produced from either reedy, elastic, plastic film, or plastic textile used to take shopping items from a shopping point to home or beyond (Martin, 2015). Before such bags came into existence, paper bags were used to perform the mono-use plastic bags' role. It is widely documented that essence of plastic shopping bags can be associated with a Swedish company called *Celloplast* which in 1965 created plastic shopping bags that marked the journey towards replacement of the practice of using paper bags (Petru, 2014). Plastic shopping bags may be durable and used several times to carry shopping items or less durable and essentially meant to be used once. The later informs the concept mono-use plastic shopping bags or throwaway plastic shopping bags which are meant to be used once (Martin, 2015). Such bags, as indicated in the introduction, are common in the society and their presence is not short of justifications. The justifications are mainly associated with their convenience as they are hygienic, disposable, lightweight and cheap to manufacture (Poortinga et al., 2012). Furthermore, it is worth noting that despite mono-use plastic shopping bags are meant to be used once, they are more often than not reused in varied ways. They are normally reused as bin liners, pets' excrement points and garden refuse; as well as for shopping, carrying and storing things at home, and packing lunches (Geyer, 2017). While the reusing of mono-use plastic shopping bags constitutes a friendly practice for the environment, however, most of the reused plastic shopping bags will ultimately culminate in litter and/or on landfill (Ferronato & Torretta, 2019).

Plastic bottles are products of high-density plastic mainly used to store liquids like soft drinks, water, cooking oil, motor oil, shampoo, milk etc. Normally the size of plastic bottles range from

small sample ones to large carboys. As it was the case for plastic bags, plastic bottles came into being in the late 1940s but gained currency in the 1960s. Its consumption has continuously been on the rise because of its lightweight, low production cost and its ability to resist breakage compared to glass bottles. Another factor supportive of plastic bottles is the fact that they are recycling friendly compared to plastic bags (Tolinski, 2012). It is worth noting that recycling of plastic bottles is a palliative measure and not a panacea to the environmental problems we are faced with. This is because recycling subject plastic bottles to reheating whereby every time a plastic bottle undergoes such processes; it loses its quality and quantity (Dahlbo, 2018). As such, plastic bottles' recycling is not definite as after several rounds of recycling, the plastic bottles either are burned or end up on landfills.

Numerous studies detail the damaging ramifications of plastics including mono-use plastic shopping bags and bottle in and on the environment (Md-Jalil et al., 2013; Thiel et al., 2013). In the main, the negative environmental effects are attributed to the fact that plastic products remain in the environment for many years. Barnes et al. (2009) highlight that the plastic bags and bottles do not get into the environment in their product form, but rather scrapped into minor pieces because of physical abrasion and UV light. Mono-use plastic shopping bags and bottles are the most common forms of litter. Accumulations of vast amounts of mono-use plastic shopping bags and bottles are soundly recognised for blocking local drainage systems and causing pollution in developing countries (Danielsson, 2017). Massive blockages in drainage systems from mono-use plastic bags in Bangladesh resulting into floods provide a vivid example of the negative impacts of plastics on the environment. Apart from the drainage blockages related to mono-use plastic

shopping bags and bottles, such plastic products also pose health risks to people and animals as they leach toxins into water supplies (Bello et al., 2016).

Ocean pollution and river pollution are other common environmental concerns caused by mono-use plastic shopping bags and mono-use plastic bottles (Wagner, 2017). Jambeck et al. (2015) points out that the global annual amount of plastic that finds its way into the oceans ranges between 1.1 and 8.8 million metric tons, which amounts to a sum of 83% of total mismanaged world wastes. These contaminants are a product of littering at sea, on streets as well as those blown from landfills and sewage wastes (Tibbetts, 2015). Similarly, rivers and streams harbour some wastes, including mono-use plastics which reduces the quality of water for human consumption (Rochman et al., 2016) Rivers pass other plastics to oceans through littering or storms that carry such plastics to oceans which also reduces the quality of water and endangers maritime habitat (Pearson, 2019). Apart from the decreasing quality of water in water bodies, plastics have negative impacts on the majority of wildlife in and around rivers, seas and oceans. For instance, floating mono-use plastic shopping bags in oceans are often erroneously construed to be jellyfish by several marine animals and end up to be subsequently consumed by them (Xanthos & Walker, 2017). Likewise, numerous animals and birds run the risk of injury and/or death through ingestion as plastics can hardly be digested or for by getting entwined in plastic shopping bags flotsam (Rochman et al., 2016).

The environmental ramifications of mono-use plastic shopping bags and bottles are vivid and devastating. Therefore, deliberate measures to address them are in dire need. The measures could be legal, institutional, voluntary, tax-based, etc. In this study, attention is paid to the major polluters' (users of plastic materials) consumption behaviours and attitudes.

Consumption Behaviour and Attitudes, Mono-use Plastic Shopping Carriers and the Environment

People's consumption habits in both developed and developing countries are dominantly characterised by what can be referred to as "throwaway society" (Liddick, 2011). In such society, the people tend to justify continuous production of goods by producing less durable goods which entail excessive exploitation of natural resources (Cooper, 2010). As such, throwaway societies' preference to "use-and-toss" consumption behaviours on plastic products dissuades consumption of multi-use and recyclable plastic goods and practices. Since societies are an amalgamation of individuals, it is only logical to believe that individual behaviours and actions impact those of the whole society and vice versa (Ajzen, 2005). Individual behaviours and actions are at most influenced by attitudes and to a lesser degree other factors like social norms, habitual behaviour, action difficulty, and contextual support (Petty & Cacioppo, 2018). Irrespective of the key factor(s) that inform consumption behaviours and the relationship of attitudes and behaviour in guiding consumers' actions, there are studies contending that sometimes there exists a gap between attitude and behaviour (Davisa et al., 2014). For instance, Becker et al. (2015) overtly argue that a substantial variance exists between consumers' views on consumption ethics and their inherent behaviours. Additionally, Ajzen (2005) holds the view that the more private and precise one's intents are, the more likely such views would influence behaviour of the individual in question. Such line of thought entails that people are inclined to be egoistically informed by attitudes derived from their personal needs rather than those of others and/or those deemed imperative for common environmental good. As such, consumption choices related to mono-use plastic shopping bags and bottles must be unwaveringly determined by one's environmental awareness. Resolute environmental awareness particularly on the negative ramifications of mono-use plastic shopping

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bags and bottles usage, and the imperative of furthering rational decisions meant to mitigate such impacts cannot be compromised by mere attitudinal factors inconsistent with firm determination to cripple the environmentally unfriendly aspects related to excessive use of such plastic goods. In this regard, consumers' readiness to reduce mono-use plastic bags or bottles usage and subsequent actions towards such choice can only be guaranteed by those concerned on the negative environmental consequences of massive use of the said mono-use plastic products.

Reducing Mono-use Plastic Shopping Bags and Bottles: Strategies and Alternatives

Enhanced use of Multi-use Bottles and Shopping Bags

Multi-use shopping bags and bottles include bags and bottles made of materials meant to be used many times. Shopping bags capable of being reused are often made comparatively durable materials such as canvas, hemp, synthetics and thicker plastics (Martin, 2015). As for multi-use bottles they are made of long lasting materials like thick plastics, aluminium, glass and stainless steel. Production of multi-use shopping bags and bottles consume more resources per bag and bottle compared to mono-use plastic shopping bags and bottles, however, if used numerous times, as meant to be, the negative environmental consequences dwindles as they take longer time before disposal (Muthu et al., 2010). As such, multi-use shopping bags and bottles contribute towards reducing excessive consumption of mono-use plastic shopping bags and bottles, and the environmental impacts thereof.

Ban on Mono-use Plastic Shopping Bags and Bottles

Ban on mono-use plastic shopping bags and bottles are prohibitions set on retailers barring them from selling such products within a particular jurisdiction (Danielsson, 2017). Kenya, Rwanda, and China are just but few countries that have successfully implemented mono-use plastic

shopping bags prohibitions and many others like Tanzania have followed suit recently. Philippines went further by imposing a total plastic bag ban in 2011which forced retailers to sell or offer biodegradable or paper bags to their customers (Martin, 2015). Punishments like revocation of business license, fines and/or serving jail terms in some occasions befell those who went against the ban (Xanthos &Walker, 2017). China imposed similar ban in 2008 that decreased consumption of mono-use plastic bags for urban, local and foreign- owned supermarkets by 60% and 80% respectively (Martin, 2015). However, the situation is different in rural China where over three quarters of supermarkets provide free mono-use plastic shopping bags to their customers with impunity because of enforcement and control related difficulties attributed to the hugeness of the country (Block, 2013).

It is worth noting that bans on mono-use plastic shopping bags are normally predicated on the use of alternative carrying materials in the form of paper shopping bags. Paper shopping bags are a product of trees which are renewable resources which entail a better environmental resource choice to using non-renewable ones (ACC, 2015). However, the energy used in the production of one paper shopping bag is fourfold the energy needed to produce a mono-use plastic shopping bag (Wagner, 2017). Similarly, the fuel used for transporting the paper bags is seven times higher than transporting plastic ones of the same amount; and the volume of water needed to manufacture paper shopping bags is higher than the water required for making plastic ones as well (ACC, 2015). Furthermore, despite the fact that paper shopping bags result from a renewable source, if all plastic bags are to be replaced by paper ones, undoubtedly pressure will be put on forests (Danielsson, 2017).

2.3.3 Recycling Mono-use Plastic Bags and Bottles

Recycling mono-use plastic shopping bags and bottles is carried out to reduce the degree to which plastics find their way in the eco-system. However, since plastic bags and bottles are of different varieties, their recycling processes are complex compared to recycling other materials used to create bags and bottles such as papers, glasses or aluminium (Tolinski, 2012). In the main, the complexity revolves around the multitude of forms of plastics used to create plastic bags and bottles as it entails tedious processes of collecting and sorting of the collected plastic bags and bottles as per the type of plastic used to create them, cleaning and delivering them to a manufacturer to reproduce bags and bottles or other plastic products (Xanthos & Walker, 2017). Apart from the complexities of recycling plastic bags and bottles, it is worth noting that even when the two are appropriately recycled they still manage to harm the environment as litter because of their light nature which makes it possible to be simply picked up by the wind (Danielsson, 2017).

Imposing Tax or Fees

Imposing tax or taxes to mono-use plastic shopping bags and/or bottles consumption is dissimilar to charging a fee on the same. The former customarily entails an introduction of taxes on retailers, which will be ultimately transferred to consumers indirectly; while the later involves a fee directly imposed on consumers and required to be paid when they purchase a product. In both cases penalties can be imposed on those who avoid paying the taxes while no bags or product bottled in plastic bottles will be accorded to those who can't pay the fees (Clapp & Swanston, 2009). While a number of countries have imposed such taxes and fees to curb excessive consumption of mono-use plastic shopping bags and bottles, Danielsson (2017) suggests that voluntary actions can equally do what fees are expected to on reducing mono-use plastic bag consumption.

Container Deposit Schemes (CDS)

CDS refers to a system whereby people return drink containers to manufacturers and receive a refund for the containers returned normally through retailers, reverse vending machines, or designated collection depots (Evangelista, 2018). Canada, US, Sweden Australia, Denmark, South Korea, Belgium, Germany, Israel, Finland and Estonia are but just few countries that implement CDS (Weisfeld, 2012). CDS are expected to decrease waste spreading into the environment, create jobs, increase plastic bottles recycling rates, reduce the consumption of natural resources required to produce more plastic bottles as well as monetary incentives (Evangelista, 2018). It is widely believed that bottle plastic bottle users are greatly committed to a CDS that offers lucrative economic incentives. For instance, in Estonia, Denmark and Finland where CDS has attracted plastic bottles return rates of around 96%, 93% and 89%, respectively compared to the very low return rates (40%) in Sweden where the incentives are not as lucrative as in the best performing countries (Weisfeld, 2012).

In view of the above theoretical and conceptual literature review, this article questions Morogoro inhabitants' mono-use plastic consumption behaviours, the ramifications thereof and their willingness to tune their consumption behaviours towards decreasing negative environmental impacts resulting them. Analysis is banked on people's consumption habits particularly with regard to using multi-use plastics, awareness of environmental impacts resulting from their use of mono-use plastic shopping bags and bottles as well as people's readiness to lessen consumption of such plastic carriers.

Community Perceptions on the Ramifications of Mono-use Plastic Shopping Bags and Bottles Consumption on the Environment in Morogoro Municipality, Tanzania

Methodological Issues

A mixed method research design, blending quantitative and qualitative methods of gathering and analysing data was employed in this study. Much of the knowledge in this article was obtained from quantitative research elements. However, qualitative approaches were used to complement the quantitative findings. The combination of quantitative and qualitative data collection and analytical methods accorded the researchers room for overcoming the deficiencies and/or essential biases associated with the application of a single research approach (Theodory, 2021).

The sampling frame involved wards in Morogoro Municipal Council whereas two wards of Kiwanja cha Ndege and Kihonda Maghorofani were purposively selected for the study. These wards were purposively selected from 29 wards found in Morogoro Municipal Council because both wards have high population, which is increasingly using plastic bags and bottles. Moreover, the households were the unitss of analysis in the study as the main users of mono-use plastic shopping bags and bottles are harboured within such units. A total of 110 heads of households from Kihonda Maghorofani and Kiwanja cha Ndege were randomly selected as a sample size for this study. The random selection meant to ensure a true reflection of the studied population. In Kihonda Maghorofani Ward, every 12th household on street register was incorporated into the sample. In Kiwanja cha Ndege Ward, every 10th household was selected. All of the household heads from the selected households turned up and filled out the questionnaires for this study. Household heads were the preferred informants in each selected household. In some cases, purposive selection of respondents was done where the household head lacked knowledge on the topic studied because of perpetual absence from the household.

In addition, the purposive selection technique was applied to select five key informant interviewees and four focus group discussions (FGDs) participants involving women only and men only in the two wards. The participants of the FGD were between six to 10 people who were selected with the help of the community leaders. The selection criteria were based on the participants' hands on experiences regarding the study under investigation.

Primary and secondary data were used in this study to gain information regarding people's perceptions of mono-use plastic shopping bags and bottles consumption and the influence those perceptions have on dissuading excessive mono-use plastic shopping bags and bottles usage for purposes of limiting its related environmental ramifications. The former type of data was gathered from Morogoro residents and local government officials dealing with environmental management through administration of questionnaires. The latter was gathered from reviews of government policies, Non-governmental Organisations' reports and previous studies relevant to the study in question, as well as Key Informant Interviews (KIIs) with people vested with knowledge of waste management among the government circles, academia and NGOs, FGDs and observations. The application of varied information sources meant to complement the sources, check the information against each other and enhance the validity and reliability of the study's findings.

With regard to data analysis, both qualitative and quantitative techniques of data analysis were employed in the current study. The data of quantitative nature gathered from household survey was subjected to analysis using IBM statistics software for social science to determine frequencies. Qualitative data from recorded interviews were transcribed, translated and then subjected to Atlas ti computer software for analysis. Atlas ti software was used to organize and analyse qualitative data and data to examine relationships thereof.

Results and Discussion

Multi-use Bottle Usage and Bottle Material Preference and Size

The current study endeavoured to unveil the degree of usage of multi-use plastic bottles and bags in the study area. As for the bottles, it was established that a total of 68% of the respondents claimed to have often used multi-use bottles; whereas 31% claimed not have ever used such bottles. These results indicate that the degree of using multi-use bottles in the study area is high, Wagner (2017) suggests that such situation positively impacts mitigation of plastic related negative consequences if the bottle materials preferred are not plastic and if the plastic ones are well disposed. Since the study is about social consumption patterns of mono-use plastic bottles, the disposal element is not taken care of. The study embarked on establishing respondents' bottle material preference to point out the level of usage of plastic bottles among the respondents.

To gauge bottle material preferences, the researcher provided respondents' four different materials for beverage packaging to choose from: glass, plastic, cardboard and can (aluminium). It was expected that the less respondents prefer plastic bottles the more the possibility of mitigating the negative impacts resulting from the use of such bottles. 47% of all respondents preferred plastic bottles to other kind of bottles, 30% went for bottles made by glass; while cans were singled out by 17%. A sum of 4% of the respondents chose cardboards. The choices presented depict a positive attitude towards plastic bottles compared to other types of bottles which infers greater potential of plastic bottles exposed to the environment. In this regard, the general inference of the positives of multi-use bottles is muted. Such standpoint can be further delineated by analysis of respondents' preferred size of bottle consumption bottle size have implications on the potential of plastics that

can affect the environment. The assessment of bottle size preferences in this study is founded on the supposition pointed out by Tolinski (2012) that consumption of small bottled beverages enhances the likelihood of more bottles thrown onto the environment because the small quantity of beverage will require more bottles to equal the quantity carried by bigger ones. Specific reference to beverages consumed was used as a reference since many consume them.

The question that tapped information on this matter explored respondents' bottle size preference for beverages bought to be consumed at home. The emphasis on drinks bought to be drunk at home is predicated on the assumption that more often than not, people who buy beverages to be consumed on the way prefer smaller bottles. This is chiefly due to two reasons: avoiding carrying large and heavy bottles when they plan to drink it at the material time; and avoiding consuming a drink meant to be consumed several times. The results on beverage packaging size preferences exhibited that respondents' preference for bigger bottles is 59% that connotes less consumption of plastic, which entails an environmentally friendly choice. In contrast, more than one third of the respondents (36%) still preferred small bottled beverages because they are comparatively cheap to buy and/or lack space at their homes to store bigger bottles. While the 59% of big bottles provide solace to the negative impacts of plastic bottles to the environment, the 36% who prefer smaller ones plus those who consume beverages in the streets particularly in hot areas like Morogoro does not warrant meaningful environmental problems associated with plastic bottles.

The data presented above, as well as in the introduction section, indicates that the plastic bottles consumption pattern of the Morogoro community corresponds to the general alarming concern of plastic usage globally. After addressing the bottles related consumption matters, let us turn to consumption issues related to plastic bags.

Multi-use Shopping Bags Consumption

Above average use of multi-use shopping bags to carry merchandise infers less use of mono-use plastic shopping bags for such purpose. Figure 1 establishes respondents' degree of usage of multi-use shopping bags.
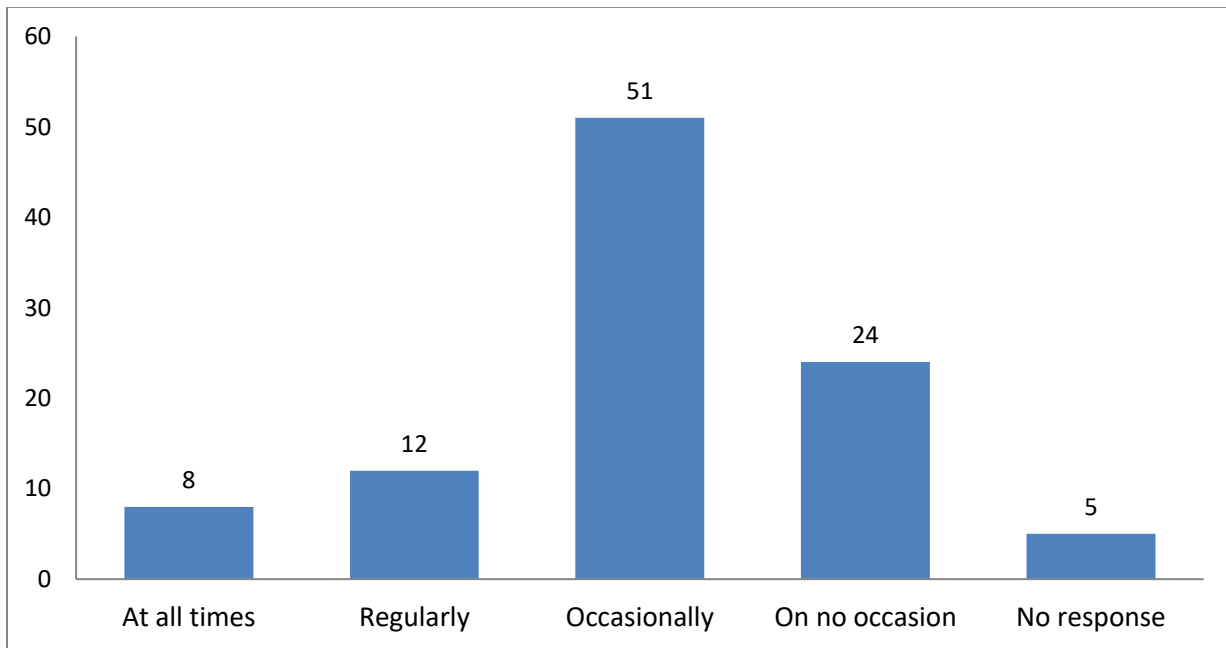

Figure1: Degree of Usage of Multi-use Shopping Bags

Source: Field Data 2020

As the table above points out, a large part of respondents (51%) occasionally use multi-use shopping bags, whereas 12% and 8% regularly constantly use such bags respectively. Conversely, 24% claimed to never have used multi-use shopping bags and 5% decided not to respond to this question. The responses in this section indicate that the degree of respondents' use of multi-use bags is nominal as proven by extreme choices of those who always use the bags (8%) and those who never used such bags (24%). The frequency of usage may rise with those claiming to often use the bags and those indicated that they sometimes use the bags. However, the two categories

also harbour respondents' leaning towards the non-users categories as they sometimes do not use multiple usable plastic bags all of the time. Such data infers that multi-use bags in Morogoro play a miniature role in lessening the use of mono-use plastic shopping bags as people by and large carry their merchandise in mono-use plastic shopping bags. Such finding triggers one to wonder why people in Morogoro limitedly use multi-use bags. Equally, it entices one to be eager to unveil the extent to which the people of Morogoro use mono-use plastic shopping bags to take away bought items from the shopping centres. The reasons for not utilising multi-use bags are summarised in Table 1 below and the use of mono-use plastic shopping bags is provided in the subsequent sub-section.

Table 1: Factors inhibiting the use of Multi-use Bags

Factor	Percentage
Lack of knowledge of its existence	31
They are not found at the nearby shops I mostly buy at	7
Multi-use bags are expensive for them to afford	66
It is common for me to forget to carry mine	4
I prefer to use mono-use plastic shopping bags	2

Source: Field Data 2020

The most common reasons for not using re-usable bags is that "they are expensive" (66%), followed by "did not know that they exist" (31%). 7% claimed "multi-use bags are not found at the nearby shops mostly visited" while 4% contended that they "forget to bring their own while going to shop" and 2% claimed "preference to use mono-use plastic shopping bags". The price and limited factors for not using multi-use plastic bags concur with Danielsson (2017) who further suggests that prices of multi-use bags shall be reduced to motivate its use. This is particularly so because mono-use plastic shopping bags are normally provided for free. Since the data suggests

less use of multi-use bags which impliedly entails use of mono-use plastic shopping bags, let us look at the extent of usage of such bags to establish the danger it poses to the environment.

Mono-use Plastic Shopping Bags Consumption

The amount of mono-use plastic shopping bags used by Morogoro people provides a pointer as to their behaviour towards mono-use plastic shopping bags consumption. In general terms, the lesser they consume mono-use plastic shopping bags, the better it is for the environment. Responses to the number of mono-use plastic shopping bags consumed on weekly basis indicate that consumption of mono-use plastic shopping bags per week is moderate for most people in the study area (between 5 and 10 mono-use plastic shopping bags). However, such fact should not provide solace as 23% consume more than 10 mono-use plastic shopping bags per week compared to 16% who use less than 5 mono-use plastic shopping bags per week. Better yet, 9% were uncertain of the mono-use plastic shopping bags that they normally consume per week, which could easily be expected to be high as one could simply memorise less usage than excess use. With such high usage, it is worth looking into whether they reuse mono-use plastic shopping bags or go for a new one whenever they shop. The following table sheds light on the matter.

Table 2: Usage of Mono-use Plastic Shopping bags after taking shopped items home

Usage	Percentage
I dispose them after using them once	14
I reuse most of them and dispose few after using them once	18
I use more than one mono-use plastic shopping bags	46
I sell mono-use plastic shopping bags to recyclers	2
No response	20

Source: Field Data 2020

The table above substantiates that almost half of the population (46%) affirms that they reuse mono-use plastic shopping bags after carrying their shopping home, which seems to be good for the environment. The 46% gets even higher due to the fact that, 18% unveiled that they reuse most mono-use plastic shopping bags and throw few away. At a glance, the presented facts seem to be positive in subsiding adverse environmental ramifications. However, this does not imply that mono-use plastic shopping bags do not have negative environmental impacts as 14% throw all mono-use plastic shopping bags away after a single use, while 20% chose not to respond, to the question perhaps due to an open fact exposed by Mwenda (2016) that many people in Tanzania households use such bags to lit charcoal for cooking. Generally, there is hope that the Morogoro population could improve their environment by reusing more mono-use plastic shopping bags as many times as possible before throwing them away to avoid plastic related environmental impacts as the rate of recycling is quite low (2%). Such state of affairs is attributable to the lack of recycling plants in the region. Enhancing reuse of mono-use plastic shopping bags can be partly influenced by the deliberate move geared toward creating more awareness on the impacts of throwing away mono-use plastic shopping bags onto the environment (Cooper, 2010).

Environmental Impact Awareness and Importance of Environmental Issues

In this section, we establish respondents' views on negative environmental impacts of mono-use plastic shopping bags and bottles as well as the importance they place on environmental issues. We embarked on seeking this information because of the fact that decisions on consumption; use and disposal of plastics are normally linked to knowledge on environmental issues and the importance placed on environmental issues. Responses on the mono-use plastic shopping bags and

bottles related environmental impacts and importance placed on environmental issues are presented in Figure 2 and Table 5 below respectively.
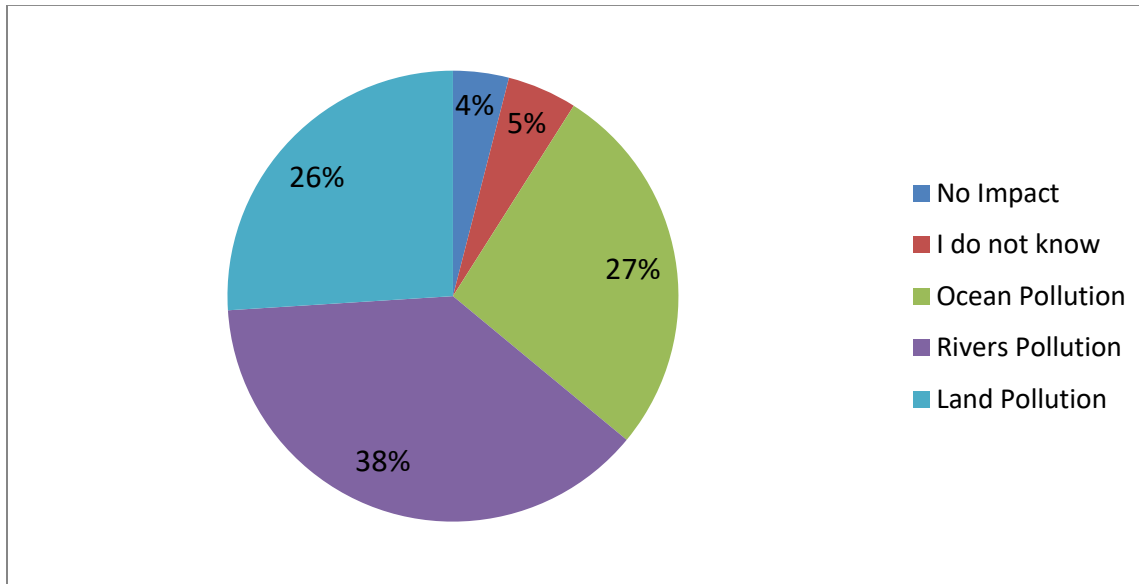

Figure 2: Awareness on Environmental Impacts

Source: Field Data 2020

As presented above, most respondents were aware of harmful impacts of mono-use plastic shopping bags and bottles to the environment. Such a situation in the views of Mwenda (2016) partially presents a positive trend in suppressing the negative impacts of mono-use plastic shopping bags and bottles. The most frequented environmental impact picked by respondents was river pollution (38%), followed by ocean pollution and land pollution by 27% and 26% respectively. On the other hand, very few respondents (a sum of 9 %) were of the view that mono-use plastic shopping bags and bottles have no harm to the environment or did not know whether they do or do not. The high frequency on river and ocean pollution is in line with the Tibbets (2015) who contends that mono-use plastic shopping bags pollute marine ecosystems and harm marine lives through ingestion and/or entanglement.

As for the importance placed on environmental issues, a 5-point Likert scale ranging from not important to extremely important was deemed relevant for garnering information on this issue. The results were as follows:

Table 3: Importance of Environmental Issues

Level of Importance	Percentage
Not important	10
Somewhat Important	6
Important	8
Very Important	16
Extremely important	59
No response	1

Source: Field Data 2020

As it was the case for awareness of the negative environmental impacts of plastics, the importance that the people of Morogoro place on environmental issues is equally high. This is vividly substantiated by the fact that 56% of the respondents view environmental issues as extremely important compared to the meagre 10% viewing the same not important at all. In between the two extremes, 16% considers environmental issues as very important, 8% important and 6% as somewhat important. No-response rate remains very low with only 1% of the respondents. The data presented in the preceding two tables clearly points out high awareness and significance placed on environmental issues by the people of Morogoro. This suggests a positive trend on reducing the negative impacts of mono-use plastic shopping bags and bottles. As said earlier, decisions on consumption, use and disposal of plastics are normally linked to knowledge on environmental issues and the importance placed on the same. The pertinent question that this article attempts to answer in the subsequent subheading is whether the knowledge and importance exhibited is reflected in making decisions pro-reducing negative impacts of excessive use of mono-

use plastics. However, before dealing with such question, we were interested in knowing the sources of the knowledge since the level of knowledge on environmental impacts and the importance people place on it was high. Establishing the sources of respondents' information on environmental impacts of mono-use plastic shopping bags and bottles could help us identify more effective channels for spreading information on such knowledge in Morogoro. Such information is provided in the subsequent figure.
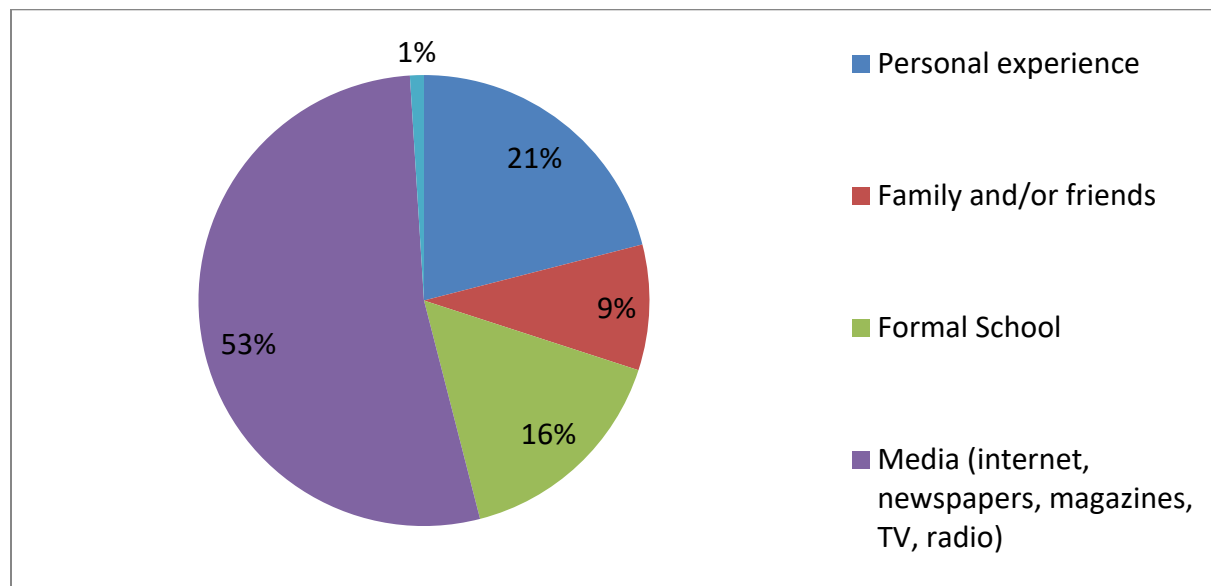

Figure 3: Sources of Information on Environmental Issues

Source: Field Data 2020

The table above exemplifies how mass media including internet, newspapers, magazines, TV and radio are the most common source of information of environmental issues attracting 53% of the respondents. Mass media was followed by participant's own experiences, formal school and family and/or friends with 21%, 16% and 9% respectively. Last of all, 1% of the respondents picked "other" sources of information without specifying which one. The results undoubtedly suggest that any fight against the single-plastic bags and bottles related negative environmental impacts has to

make use of the mass media, as it is the most important source of information among the Morogoro people. This in no way belittles the importance of other sources but reinforces the fact that the mass media's reach is comparatively greater than the other media and can reach people of all walks of life.

Readiness to Decrease Mono-use Plastic Shopping Bags and Bottles Consumption

A general question seeking to gather respondents' views on their willingness to reduce their consumption of mono-use plastic shopping bags and bottles attracted 78% positive responses. When the question was posed separately, 93% were ready to decrease mono-use plastic shopping bags usage while 69% were of the same view on mono-use plastic bottles. These results indicate that the people residing in Morogoro Municipality see the urge to immediately address the plastic bags related negative environmental impacts compared to those associated with bottles. This is understandable as the impacts of the bags are more evident and fatal compared to the bottles. Aside from such fact, the bottles provide income opportunities through recycling and can be comparatively easily reused than mono-use plastic shopping bags. Such state of affairs is in line with the respondents' views on their acceptance to a return bottle system where some money will be paid back once a plastic bottle is returned to a shop as most of the respondents (56%) were not moved by the idea of returning bottles to shops to recover some of their money back compared to 17% who would. In addition, 18% would 'maybe' accept to return the bottles and 9% would do so depending on the amount of money to be gained upon returning a used plastic bottle. Such data exemplifies general unwillingness to reduce plastic bottles environmental impacts. The overwhelming refusal to a system of plastic bottles is mainly (76%) banked on the fact that they are just recovering their own money and nothing more. The refusal of the system that has been

used elsewhere as indicated in the literature review suggests that superimposition of solutions from other countries could not be applied in others in wholesale. This takes us to solicitation of views on how the adverse impacts of mono-use plastic shopping bags and bottles on the environment can be mitigated. Results on the matter are summarised in the following table.

Table4: Strategies for Reducing Plastic Shopping Bags and Bottles Related Environmental Impacts

Strategy	Percentage
Mono-use plastic shopping bags and bottles shall be banned	61
Multi-use plastic shopping bags and bottles shall be sold at Stores	17
Voluntary actions	18
CDS	3
Other (mention)	1

Source: Field Data 2020

Most respondents (61%) viewed ban on mono-use plastic shopping bags and bottles as a useful way of reducing the environmental impacts caused by the said plastic products. The choice entails that shoppers should carry with them or purchase multi-use shopping bags and/or bottles whenever they go to shop. The first choice was followed by 18% of the respondents who thought voluntary actions can mitigate the impacts of plastic related negative environmental impacts. This view were closely followed by17% of the respondents who believe that stores should sell multi-use plastic bags and bottles at a lower price to reduce environmental problems associated with plastic bags and bottles. In a much lesser frequency, 3% and 1 % thought a CDS and other strategies like increasing environmental impacts awareness were considered key in reducing mono-use plastic shopping bags and bottles.

The choice of the ways to combat the negative impacts of mono-use plastic bags and bottles as observed by Danielsson (2017) resonates with the notion that the ban of the said plastic carriers and promotion of the use of multi-use ones is key. Such outlook informed the Tanzanian government's decision to ban mono-use plastic bags in 2019.

Concluding Remarks

Since the fundamental question that this research intended to address was to determine whether the Morogoro inhabitants are willing to resolutely tune their mono-use plastic consumption behaviours towards decreasing negative environmental impacts, we can conclude that the studied population seems to harbour greater negative perceptions of mono-use plastic shopping bags and bottles compared to positive ones. For instance, it was established that the degree of preference to consume bigger mono-use plastic bottles is high, usage of mono-use plastic shopping bags is generally moderate and more interestingly a half the people reuse the said bags. All this said, it is still not clear whether environmental awareness and concerns motivate such negative perception to the use of mono-use plastic shopping bags and bottles. However, informed by the extreme importance placed on environmental concerns by most respondents regarded, it suffices to infer that it is the case. Conversely, a relatively reasonable proportion of the people of Morogoro exhibit habits that lean towards a positive perception regarding plastics. As such, consumption habits need to be changed to improve the harmful effects of excessive consumption of mono-use plastic shopping bags and bottles to the environment. Interestingly, media has proven to be the leading but the channel for spreading environmentally related education. As such, it is imperative to increase environmental education on the negative impacts of excessive use of plastics by exploiting

all media particularly to the few respondents unwilling to lessen their mono-use plastic shopping bags and bottles consumption.

The education initiatives suggested for reversing the negative impacts of mono-use plastics shall be coupled with concerted efforts geared towards enhancing consumption of multi-use plastic shopping bags and bottles. This is essentially crucial because the recycling rates in Tanzania are generally low and public as well as private companies offering recycling infrastructure are still enormously underdeveloped. As such, we believe that in the short-term deliberate attention put on plummeting and reusing mono-use plastic shopping bags and bottles could prove to be comparatively effective to recycling. Some organisations, companies and individuals are making strides towards this outlook by developing portable multi-use plastic shopping bags to decrease the likelihood of leaving them at home because they are not handy which would entail buying a new one at every shopping. Likewise, deliberate initiatives meant to ensure that multi-use plastic shopping bags are widely available and affordable to most people at markets and stores are needed. Economic incentives in the form of tax cuts to those selling multi-use plastic shopping bags could enhance affordability.

References

Ajzen, I. (2005). Attitudes, Personality, and Behaviour, London: McGraw-Hill International

American Chemistry Council (ACC) (2015). Lifecycle of a Plastic Product, retrieved from http://plastics.americanchemistry.com/Life-Cycle#production, accessed on 12th April 2020

Barnes, D., Galgani, F., Thompson, R. & Barlaz, M. (2009). Accumulation and Fragmentation of Plastic Debris in Global Environments, Philosophical Transactions of the Royal Society, 364 (1526), 1985–1998.

Becker, C., Ayscue, E., Brockett, S., Scarola, G., & Kelley, T. (2014). Initiating Sustainable Behaviour: Feel Good for Doing Good, Electronic Green Journal, 1(37), 1-12.

Bello, I., Ismail, M., & Kabbashi, N. (2016). Solid Waste Management in Africa: A Review, International Journal of Waste Resources, 6(2), 1-4.

Block, B. (2013) China Reports 66-Percent Drop in Plastic Bag Use, World Watch Institute, retrieved from http://www.worldwatch.org/node/6167 , accessed on 15th April 2020

Brooks, A., Wang, S., & Jambeck, J. (2018).The Chinese Import Ban and its Impact on Global Plastic Trade, Science Advances, 4(6), 1-7.

Clapp, J. & Swanston, L. (2009). Doing Away with Plastic Shopping Bags: International Patterns of Norm Emergence and Policy Implementation, Environmental Politics, 18(3), 315–332.

Cooper, T. (2010). Longer Lasting Products: Alternatives to the Throwaway Society, New York: Routledge.

Danielsson, M. (2017). The Plastic Bag Ban in Rwanda: Local Procedures and Successful Outcomes, MA Dissertation, Uppsala University.

Davisa, R., Campbell, R., Hildona, Z., Hobbsa, L. & Michiea, S. (2015). Theories of Behaviour and Behaviour Change across the Social and Behavioural Sciences: A Scoping Review, Health Psychology Review, 9(3), 323–344.

Evangelista, A. (2018). The Effects of Culture on Consumers' Response to a Carbon Tax and Container Deposit Scheme: A Sustainable Consumption Study, The IAFOR International Conference on Sustainability, Energy & the Environment − Hawaii 2018 Official Conference Proceedings.

Ferronato, N. & Torretta, V. (2019).Waste Mismanagement in Developing Countries: A Review of Global Issues. International Journal of Environmental Research &. Public Health, 16(6), 1-28.

Geyer, R., Jambeck, J. & Law, K. (2017). Production, Use, and Fate of all Plastics Ever Made, Science Advances, 3(7), 1–5.

Jambeck, J., Geyer, R., Wilcox, C., Siegler, T., Perryman, M., Andrady, A., Narayan, R., &

Lavender, K. (2015). "Plastic Waste Inputs From Land into the Ocean, Science, 347(6223), 768-771.

Liddick, D. (2011). Crimes against Nature, California: Greenwood Publishing Group.

Martin, J. (2015). Social Perceptions of Plastic Consumption of the Balinese Population, BA Thesis, Roseborg.

Muthu, S., Li, Y., Hu J., Mok, P., Ding, X. (2012) Eco-impact of Plastic and Paper Bags, Journal of Engineered Fibres & Fabrics, 7(1),26–37.

Mwenda, J. (2016). Recycling of Plastic Waste Materials as an Income Generating Activity: The Case of Hananassif Ward in Kinondoni, MA Thesis, Open University of Tanzania.

Pearson, M. (2019). Discouraging the Use of Single-use Plastics through Graphic Design Strategies, MA Thesis, Iowa State University.

Petty, R. & Cacioppo, J. (2018). Attitudes and Persuasion: Classic and Contemporary Approaches, New York: Routledge.

Poortinga, W., Whitmarsh, L. & Suffolk, C. (2012). The Introduction of a Single-use Carrier Bag Charge in Wales: Attitude Change and Behavioural Spillover Effects. WSA Working Paper Series ISSN 2050-8522.

Rochman, C., Browne, M., Underwood, A., Franeker, J., Thompson, R., & Amaral-Zettler,V.(2016). The Ecological Impacts of Marine Debris: Unraveling the Demonstrated Evidence from what is Perceived, Ecology, 97(2), 302–312.

Stahel, W. (2016). "The Circular Economy", Nature, 531 (7595), 435-38.

Tibbetts, J. (2015). Managing Marine Plastic Pollution: Policy Initiatives to Address Wayward Waste. Environmental Health Perspectives, 123(4), 90-93.Dahlbo H, Poliakova V, Mylläri V, Sahimaa O, & Anderson R. Recycling Potential of Post-Consumer Plastic Packaging Waste in Finland. Waste Management 71,52-61.

Tolinski, M. (2012). Plastics and Sustainability: Towards a Peaceful Coexistence between Bio-based and Fossil Fuel-based Plastics. New Jersey: Scrivener.

Theodory, F. T. (2021). Triangulation Technique: Combining Varied Methodological Approaches in Researching Local Level Adaptation Practices to Climate Change among the Haya people in Tanzania. Methodie 1, 47-62.

Wagner, T. (2017). Reducing Single-use Plastic Shopping Bags in the USA, Waste Management,70, 3–12.

Weisfeld, S. (2012). Container Deposit Legislation in Ireland: A Proposed Deposit and Refund Scheme, Ireland, VOICE.

Worm, B., Lotze, H., Jubinville, I., Wilcox, C., & Jambeck, J. (2017). Plastic as a Persistent Marine Pollutant, Annual Review of Environment and Resources, 42(A), 1–26.

Xanthos, D. & Walker, T. (2017). International Policies to Reduce Plastic Marine Pollution from Single-use Plastics (Plastic Bags and Micro beads): A Review. Marine Pollution Bulletin, 118,17–26.

Md-Jalil, A., Md-Mian, N., Rahman, M (2013). Using Plastic Bags and Its Damaging Impact on Environment and Agriculture: An Alternative Proposal. International Journal of Learning & Development. 3: 1–14.

Thiel, M., Eriksen, M., Maximenko, N., Cummin, A., Lattin, G., Wilson, S., Rifman, S (2013). Plastic pollution in the South Pacific subtropical gyre. Marine pollution bulletin 68(2). pp: 71–76.