

Solutions and Strategies to Reduce Damaging Impact of Single-Use Plastic Bag in Toledo City

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Article history :

Submitted : 23 Feb 2022

Approved : 11 Mar 2022

Published : 18 Mar 2022

Abstract: *The goal of this study is to gain a better understanding of residents' personal concerns about improper plastic disposal and to give voice to their thoughts about the Toledo City Government's prospective ideas and approaches for minimizing the city's plastic pollution. Residents of Magdugo, Toledo City, Cebu, Philippines, have been subjected to increasing levels of plastic pollution. The vast number of discarded plastic items that eventually end up in canals, drainage systems, and city streets, generating flooding that poses a severe challenge in agriculture, health, and sanitation. According to the findings, the city's inefficient waste management system has resulted in a massive accumulation of durable plastics. Toledo City, on the other hand, has improved waste management, restored cleanliness, and minimized the environmental effect of plastics through regulatory initiatives. The majority of citizens in Toledo City have enthusiastically embraced the city's ordinance prohibiting the use of plastic bags. Plastic bag littering has been shown to decrease throughout the city, resulting in a cleaner and healthier environment. The city's achievement might serve as a model for other places that have yet to abolish plastic bags. As a result of a cleaner and healthier environment, people have become more productive, and tourists have returned to the city, contributing to the city's economic growth. Policy management in the reduction of plastic pollution.*

Keywords: *environmental impact; plastic waste pollution; policy management; single-use plastic bags; Toledo City Government.*

Introduction

Plastic bag contamination is expanding consideration throughout the planet with territorial, public, and worldwide systems (Jambeck et al., 2018; Xanthos & Walker, 2017). Plastic bag pollution is hazardous to the environment and has a significant influence on the benefits that people may derive from nature, for example, biological system administrations (Beaumont et al., 2019; Nurhidayati, 2020; van Emmerik & Schwarz, 2020; Worm et al., 2017). Plastic pollution, notably the high permeability of disposable plastic bags, and their growing political impact have spurred a number of political solutions to regulate their production and usage in order to make better use of resources (Haward, 2018).

In nations like India, rules for expendable plastic packs have been presented throughout the planet. Plastic bag frameworks are filling quicker in emerging nations than in created nation (Knoblauch et al., 2018) and African Landmass is driving the way in plastic bag approaches (Livni, 2019; Nwafor & Walker, 2020). Plastic reusing is relied upon to stand out as it influences metropolitan expectations for everyday comforts and human wellbeing during floods (Adam et al., 2020). In 2015, a review by Gall and Thompson (2015) assessed that almost 700 marine biota species were antagonistically impacted by plastic contamination. As plastic contamination turns out to be more significant at the public and worldwide levels, further nations are presenting rules for expendable plastic bags. Nonetheless, supposedly, these rules have not been surveyed at the territorial level in southern Africa. This paper studies happening rules for decreasing dispensable plastic bags in Cebu, Toledo City, Philippines.

This study aimed to assess the environmental impact of single-use plastic bags, as well as to analyze and propose alternative solutions of Toledo City Government for a cleaner environment and to reduce the amount of plastic in waste streams.

Methods

The study employed qualitative research which seeks to take note of the Magdugo, Toledo City residents' perspectives on the city's plastic bag ban and thus give voice to those perspectives. The gathering of data was conducted between the 15th of October and 12th of December in 2021. The researchers do not collect data all at once; they seek responses from participants whenever they have questions or require additional information in order to complete the study. Obtaining the essential data has become easier as the researchers have built a good rapport with the participants.

Collecting data from participants in Toledo City, Cebu Philippines, the researchers purposely selected thirty (30) residents of Toledo City which consist of ten (10) government employees, ten (10) regular consumers, five (5) product vendors, and another five (5) from the students. The 30 participants voluntarily participated in the study and agreed on the interview processes. Furthermore, they were verbally informed that they have the right to withdraw

from the study at any time without any adverse consequences. Lastly, the researchers ensured the anonymity and confidentiality of the participants' responses.

Semi-structured interviews were used as the primary data collecting tool in this study, with researchers also relying on notes taken during the interviews. The researchers devised a semi-structured interview approach with eight open-ended questions after reviewing relevant literature.

The data was collected using a variety of methods and approaches. The data were examined utilizing a six-step thematic analysis approach, which included: 1. Familiarization, 2. Coding, 3. Generating themes, 4. Reviewing themes, 5. Defining and naming themes, and 6. Writing up.

The recordings were initially transcribed verbatim, then a final transcribed version was obtained, and researchers thoroughly analyzed the full data set before coding it. The data was then coded using Nvivo as well as descriptive coding (using a word or phrase provided by the participants) (using a word or short phrase developed by the researcher). Following that, emerging codes were investigated and patterns were discovered, resulting to the final themes. Two researchers looked at the data set separately, came up with different hypotheses, and then spoke about them until they came to an agreement.

The study was conducted in Toledo City. A 3rd class component city in the province of Cebu, Philippines (Figure 1). Toledo became a character city under Republic Act No. 2688 on June 18, 1960. Toledo is composed of 38 barangays', a district ward and a 3rd district with zip code 6038 and according to the 2020 census, it has a population of 207,314 people (Britannica, n.d.).



Figure 1. Aerial view of Toledo captured last March 31, 2016, category photos by P199
(Wikimedia commons c. Toledo Cebu 1.JPG, 2016)

The study was conducted in Juan Climaco Sr, formerly known as Magdugo, which is one of the barangays in the city of Toledo, in the province of Cebu (Figure 2). Its population as determined by the 2020 Census was 8,581. However, this represented 4.14% of the total population of Magdugo. The latitude and longitude of Magdugo Toledo City are 10.3506, 123.6 676 (10°.21' North, 123° 0' East) respectively (Philatlas, n.d.).

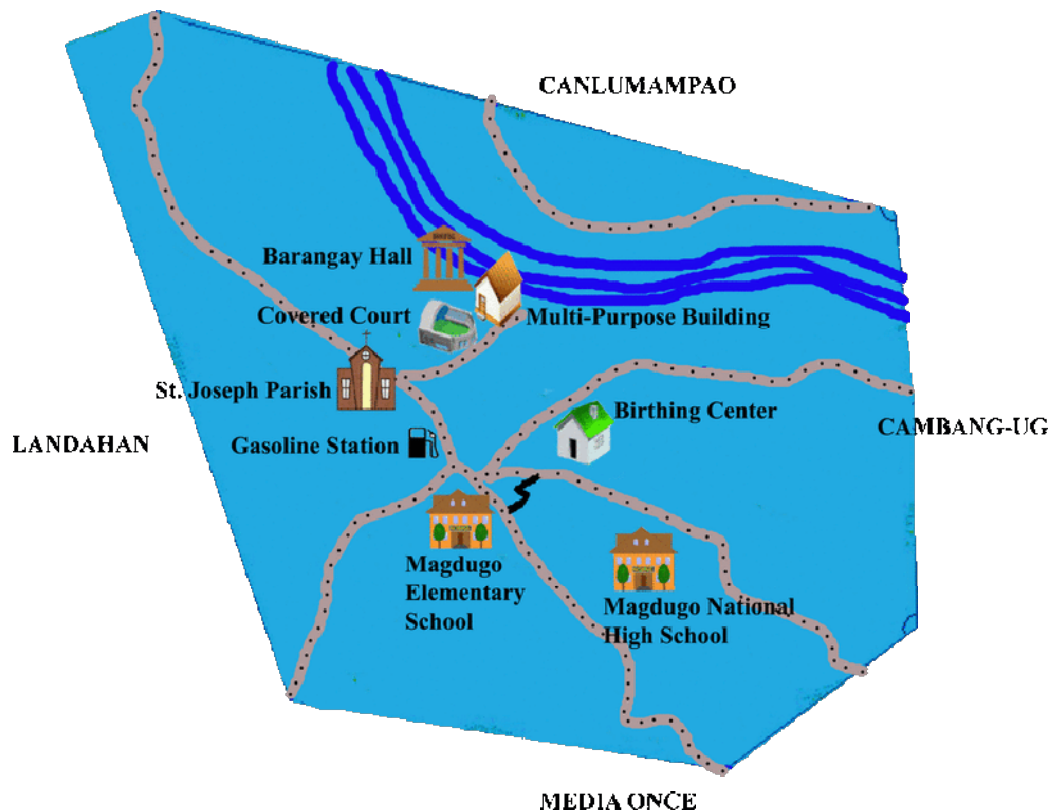


Figure 2. Juan Climaco Sr (Magdugo), Toledo City, Cebu, Philippines Map (source ToledoCPDO)

Results and Discussion

The Damage of Plastic Bags to the Environment

Plastic accounts for almost 10% of the mass of human trash on land. Plastic pollution in the seas is comparable to 60-80% of litter (Xanthos & Walker, 2017). In any event, plastic bags generate enormous ecological problems in urban areas where wild life is rather constrained. Overflow water collects and transports useless plastic bags last, depositing them in storm drains. Once within these sewers, the pack forms regular bunches with various types of waste, eventually blocking the flow of water. Once in these sewers, the pack routinely forms bunches with various types of waste, eventually blocking the flow of water (Abbas & Sagsan, 2020). Plastic is also responsible for the majority of contamination in the waterway and land, as it adversely affects both water and land species, and wind may also transport plastic debris or litter across the environment (Kumar, 2018).



Figure 3. Inappropriate plastic management in Magdugo, Toledo City, Cebu, Philippines.

Prior to the implementation of the city's plastic bag bans, plastics are thrown over the place (Figure 3). They were dumped in canals, oceans, rivers, and motorways, among other places. Because they are non-biodegradable, they take years to decompose, causing more serious environmental issues. To reduce the problem, Toledo has implemented a single-use plastic bag ban throughout the city.

Urban flooding has been a major issue for Toledo City residents, particularly in Barangay Luray II and Don Juan Climaco Sr. According to the Toledo's LGU locals, this occurred as a result of poorly maintained drains and canals (interview, November 22, 2021). Furthermore, the improper disposal of plastics is a serious issue. Plastics clog drains, resulting in floods. Water flow in local watersheds can be disrupted by clogged storm sewers, which eventually lead to highways. In fact, Typhoon Odette (internationally known as Rai) caused massive floods in Toledo just in December 2021 (Department of Public Works and Highways, 2021).

Furthermore, Toledo City fisherman name Petacio Manguilimotan, one of the participants of the study, claimed that he thinks due to plastic contamination in the waters, they are having difficulty locating fish these days (interview, December 1, 2021). They claim that because of the floating plastic, numerous marine species, primarily fish, have died as a result of the pollution.

Countless plastics are produced each week, according to some estimations. Residents of Toledo legally dispose of plastics by isolating and reusing them. Some participants claim to use 5-15 plastic bags each week, while others claim to use 200 plastic bags per week. Out of the 30 people we interviewed, 28 of them agreed that Toledo City's plastic bag ban is a good idea since it minimizes plastic waste, preserves Mother Nature, reduces plastic waste pollution, and keeps our existing condition clean, green, and safe. The two disagreed because every barangay should first develop criteria and procedures for appropriate waste disposal.

Unlike paper bags, which are great for light items, plastic is undeniably significant. Plastic bag bans, on the other hand, are effective in lowering or limiting our current problem of plastic waste contamination and waste reduction. Additionally, prohibiting the use of plastic bags has significant advantages in terms of reducing the problem and the amount of plastic used. Furthermore, each and every respondent stated that such plastics are detrimental to human health.

To lessen the detrimental effects of plastic pollution, people must take responsibility and properly dispose of their waste. Citizens must be environmentally sensitive and approach the problem with caution and rigor. Furthermore, the government should have the right to impose tight regulations on the public regarding the reduction, reuse, and repurposing of plastic bags.

Toledo City Government's Implementation to Banning of Plastic Bags

In 2019, Toledo City, Cebu's local government, passed a constitution prohibiting the use of single-use plastics in the city (Tan, 2019). Among the prohibited items were disposable cutlery, tableware, plastic bags, and Styrofoam. Furthermore, Amador Cavan, the Toledo City Environment & Natural Resources Office (CENRO) an officer in-charge (OIC), highlighted that one of the driving causes for the regulation's approval was the city's drainage systems, which were primarily reconstructed using single-use plastics, and which resulted in ongoing floods in low-lying regions (Cavan, 2021). Moreover, the restriction was justified by the fact that single-use plastics ended up in the sea, causing several fishing companies in the country's coastal barangays to suffer.

The city's ordinance aims to phase out single-use plastics, which are defined as "plastics that are only assumed to be used once before being thrown out or disposed of." Single-use plastic goods will be prohibited, including plastic bags, straws, stirrers, cups, plates, equipment, Styrofoam, plastic toothpicks, and binderies or fliers. Plastics will no longer be able to be manufactured, created, or used. However, the regulation stipulates that this does not apply to items that are already wrapped in single-use plastic equipment and used as regular packaging.

Toledo City approved modified ordinance 2343, prohibiting marketing businesses, particularly welfare and grocery stores, from securing key supply components inside plastic

bags. The proposed proposal, in contrast to the current law, advises that the Toledo City of Plastic Ban be imposed every day of the week, as well as in grocery stores, merchants, and select vendors and cafeterias. Anyone who infringes the legislation is fined 5,000 pesos (PHP 5000) or sentenced to a period of imprisonment ranging from one to thirty days. Even if trade licenses are in dispute, the exchange institutes that fall well short of compliance will prevail.

The ordinance's implementation began in 2020 and progressed over time. It began as a limited ban that was purposefully expanded to include every day of the week. Because the ban on single-use plastics has an impact on people's lifestyles and habits, the city has had its share of implementation and law issues. In the first two months after the rule went into effect, 455 people were caught using single-use plastics, mostly in market areas. Another issue is that consumers who purchased single-use plastics from Cebu LGUs that do not regulate their use are suffering.

Residents of Toledo were told to recycle their plastic bags, net bags, reusable containers (for grocery shopping), and tumblers as alternatives to single-use plastics. Furthermore, Mr. Cavan stated that the local administration utilized to preserve the maintenance packages it distributed to its inhabitants during the peak of the pandemic last year. As a result, the local administration plans to waive CENRO certification costs for enterprises that fully comply with the code, a move it hopes will not only encourage other businesses to do the same but also safeguard the environment.

Alternative Solutions and Strategies

The researchers used a combination of qualitative methodologies, including triangulation, contradicting evidence, respondent validation, and continual comparison, to transcribe the data from the 30 participants in the study, relying on their observation, notes taken during an interview, and phone recording. Different researchers examined the data set independently, developed their own hypotheses, and then held a discussion about the issues that resulted in agreement or a summary of the participants' responses.

Question no. 1: Before the city's ordinance on plastic bag bans, how many plastics did you think you consumed and thrown away every week?

Answer summary: In Toledo City, Cebu, plastic bags are used for transporting goods such as rice, canned goods, fish and poultry products, etc. In short, a plastic bag is one of the easiest and most convenient. The majority of participants stress that they use an average of 10 plastics per week. Few answered that sometimes they exceed 100 plastics a week.

Question no. 2: Based on your observation, how do plastics pollute our land and water?

Answer summary: Without a doubt, plastics are polluting our water and soil. People in Magdugo, Toledo City, have witnessed how plastic pollutes the canals and rivers. Plastic bags

can be seen everywhere, in the market, roads, school, parking lot, church, etc. Plastics are visible everywhere.

Question no. 3: Before the banning of plastic bags in our city, how do you usually dispose of plastic waste?

Answer summary: More than half of the participants said that they properly segregate and throw their plastic in the right place. The rest claimed that they often just burn it or throw it away in the river, canal, or even alongside the road.

Question no. 4: Do you agree with Toledo City's banning of plastic? Why?

Answer summary: Almost everyone agreed with the implemented city ordinance of the Toledo City Government in banning single-use plastic bags. They said that in the last few months, they have observed fewer plastic bags in the city road and even in the parking lot. They also believed that it has a huge impact on solid waste management.

Question no. 5: Do you think that the banning of plastic bags is effective in reducing or minimizing our current problem of plastic waste pollution?

Answer summary: One of the participants said: "It has so much effective use it shows in controlling proper waste management of the people. Through banning it lessens the tendency to pollute the land and the water area which are most being affected." Almost everyone agrees that banning plastic bags helps reduce plastic waste pollution. They believed that implementing this kind of system will help people to minimize their interest in using plastics.

Question no. 6: How do you think plastic waste affects your everyday living?

Answer summary: As we already taught before, plastics have a lot of chemicals robbing them. So, when it becomes a waste, and we neglect it, our health is not the only one to be put at risk but to our environment as well. Plastic waste affects a person's mental/physical health if it is not disposed of properly. During the rainy season, people of Toledo City experience urban flooding, and one of the principal causes is the garbage stock in the drainage.

Question no. 7: Do you think plastic pollution is dangerous for one's health?

Answer summary: Plastic pollution or pollution, in general, is lethal. Plastics are made environment friendly but it doesn't mean that it is that environment and health-friendly. Plastic materials contain chemicals that can kill not just animals but the environment itself. When microplastics enter the human body via direct exposures through ingestion or inhalation can lead to an array of health impacts, including cancer, cardiovascular diseases, and many more.

Question no. 8: What do you think is the role of the citizens in the reduction of plastic pollution?

Answer summary: All citizens should pay attention since plastic is a terrible material because it does not decompose on the earth. As a result, I recommended that all citizens

refrain from using plastic. Please bring a bag to the market to transport your fruits and vegetables. One of the participants remarked that citizens have a great role in reducing plastic pollution by first being aware of the harm that pollution can cause to the ecosystem and then developing strategies to address the existing pollution issues. Citizens are accountable for developing broader solutions to trash reduction, such as waste management, because they are the primary contributors.

Question no. 9: Do you think the government must strictly impose the reducing, reusing, and recycling of plastic bags on the public?

Answer summary: The majority strongly agree that the government must strictly impose the banning of plastic bags.

Question no. 10: What recommendations can you share to minimize or reduce plastic waste pollution?

Answer summary: The majority of the participants give similar opinions on the question above. To sum up:

1. Never leave any waste on the street, in nature, on the beach.
2. Avoid pre-packed fast food or dispose of the packaging in the waste bin.
3. Bring your water bottle.
4. Use reusable bags and pouches
5. Avoid the use of plastic disposable materials.

Petr Schmied (2019) advocates the use of "reusable bags," which are more durable and environmentally beneficial than cotton or paper bags, in his study on Barriers and Motivators to Using Reusable Shopping Bags in Armenia. According to his current findings, 92.73 percent of customers only used light plastic bags, 4.55 percent of customers used their own bag and a provided light plastic bag at the same time, and 2.73 percent of customers exclusively used their own bag based on observations done in selected stores. He also suggested that we modify the reusable shopping bags to make them appear more fashionable and enticing.

Conclusion

Individuals may be able to limit their plastic usage if they have the desire. This demands them to change their daily routines, such as continuing to use plastic when a better choice exists and only using plastic when absolutely required. According to the participants, plastic bags are a big cause of concern, and they suggested alternatives such as cloth, paper, and fiber bags. However, all of the participants agreed that increasing public knowledge of the issue would aid in its resolution.

Keeping community exposure to harmful plastic garbage to a minimal would improve the chances of a healthy environment and society. Environmental laws that would regulate the manufacture, usage, and disposal of plastic had to be established and implemented right once by government agencies and health permissions. Researchers in the field of plastic waste management have repurposed a variety of waste plastics into useful things. Nonetheless, because plastic bags are used and discarded all around the world, we are endangering ourselves by continuing to use them.

Recycling, landfill disposal, incineration, microbiological degradation, and conversion into useful materials are the five fundamental strategies for dealing with plastic waste. All of the options have disadvantages, prompting more study into the most effective methods of managing plastic waste. Plastic bags also have an influence on a variety of individuals, including shoppers, the environment, and animals. Plastic bags have significant environmental consequences since they not only damage the environment but also animals and humans.

Furthermore, the source of plastic bags continues to manufacture plastic bags for its customers. Citizens can be persuaded to stop from using or accepting plastic bags from stores in order to avoid having to buy them. Participating in cleaning activities, voluntary home trash recycling, litter prevention, and illegal dumping of plastic shopping bags are all ways that can help to lessen the environmental effect of plastic bags. As a result, a broad public awareness campaign will be required to discourage the use of plastic bags, and the local government will be required to oversee the sale and manufacturing of plastic bags.

A preponderance of people living in Toledo City is aware of the pollution issues that plastic bags generate. Consequently, plastic bags are resulting in environmental problems in Toledo City. As a result, the city commission is considering enacting a plastic bag ban, which the residents agreed with its implementation and remembered that we exist all to be blamed for the rising in plastic pollution. If humans practice self-control in a means that honors their connection with nature. Nonetheless, there would theoretically exist no plastic in the environment. We use compacts in the same way as our city does to avoid contamination. 3Rs are the most efficient way to cut down on plastic waste production (Reduce, Reuse, Recycle).

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