

Assessment of the Implementation of the Plastic Bag Reduction Ordinance in Quezon City (2012-2016)

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The Plastic Bag Reduction Ordinance has been implemented in Quezon City since 2012 to regulate the use of plastic bags in an attempt to address plastic pollution. This study assessed the implementation of the ordinance. Customers' use of recyclable bags was directly observed in four retail stores in the District 4 of Quezon City. A survey was also conducted among 120 residents from six barangays comprising Area 24, District 4 of the city to gather data on awareness of and compliance to the ordinance. Focus group discussions and interviews with city government officials and store managers, among other stakeholders, were also conducted to enrich quantitative data. Survey results showed high level of awareness of the ordinance, but lower level of awareness of the green fund. Results of the chi-square test of independence revealed that awareness significantly differed across barangays. It is also revealed that the ordinance affects stakeholders in different ways, and that it may have somewhat reduced the percentage of plastic waste collected from households in the city. Lastly, retail stores face administrative challenges in translating green fund into meaningful environmental programs.

Keywords: *Plastic Bag Reduction Ordinance, green fund, policy implementation, Quezon City*

Introduction

Plastic pollution is among the most pressing environmental problems in the world today. This is partly due to population growth, which contributes to the increasing amount of plastic debris being trapped in the world's oceans.

Plastic pollution is the accumulation of plastic products on land and in oceans and waterways, affecting animals and humans. It destroys habitats and wildlife. Sea creatures and other animals are at risk of ingesting or being entangled in plastic waste. Plastic also clogs sewerages/waterways, which leads to flashfloods and outbreak of communicable diseases.

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According to Ocean Conservancy and McKinsey Center for Business and Environment (2015), five countries contribute around 60% of plastic waste in bodies of water. All of them are in Asia: China, Indonesia, Philippines, Thailand, and Vietnam. The Philippines ranked third, having generated 2.7 million metric tons of plastic garbage each year, with 20% ending up in the ocean (Ocean Conservancy & McKinsey Center for Business and Environment, 2015).

Efforts to solve this problem have been initiated in different parts of the world. These include the promotion of 3Rs (reduce, reuse and recycle), innovative control or reduction measures, and even total ban of plastic use. Likewise, cities in the Philippines have started implementing initiatives to manage the plastic consumption of their respective constituents. Some have crafted policies for totally banning plastics in their city, whereas others, like Quezon City, chose reduction measures. At present, Quezon City has three ordinances addressing the plastic problem: Ordinance No. SP 2103, s.2011, Ordinance No. SP 2127, s.2012, and Ordinance No. 2140, s.2012. This article shall focus only on the implementation of the third ordinance, also known as the Plastic Bag Reduction Ordinance.

Solving the Global Problem

Mitigating plastic pollution requires addressing attitudinal, behavioral, social, and technical factors. It also entails providing sound policies, firm leadership, effective enforcement of laws, greater awareness and understanding, and disciplined citizens.

The technical aspect of solid waste management includes policies, resources, and manpower. It also entails finding alternative ways to reduce waste, such as expanding collection services and adoption of modern technologies (Ocean Conservancy & McKinsey Center for Business and Environment, 2015). Meanwhile, equally important is the social aspect, which includes people, leaders, commitment, and dedication (Rebullida, 2002).

Recuenco (2010) claimed that positive attitudes towards nature are deeply rooted in one's childhood experiences. Building the values of an individual starts at home, where parents play an important role in honing one's personality, discipline, and attitude. However, exposure to the natural environment, people, education, negative experiences, and membership in different organizations, media, and other factors may also influence an individual's inclination towards issues and concerns related to the environment. For instance, in the report by the Organization for

Security and Co-operation in Europe (2009), gender equity is deemed essential in opening up opportunities for both men and women to help address sustainable development challenges, particularly in the use of natural resources and in environmental protection.

Plastic pollution is also a problem of management and governance. Gold, Mika, Horowitz, Herzog, and Leitner (2013) identified global mismanagement as one of the causes of plastic pollution. Conversely, the Ocean Conservancy and McKinsey Center for Business and Environment (2015) identified six points in creating a program for global action: political leadership and commitment; development of local approaches to integrated waste management; expansion of these approaches to high-priority cities and regions; creation of an enabling environment for funding; support for technology implementation; and prioritization of plastic pollution in the policy agenda.

Global Initiatives

Plastic pollution has affected different countries in different ways. Rayne (2008) mentioned that plastic pollution has led to malaria outbreaks in countries in Africa, particularly in Kenya. Meanwhile, in Bangladesh, the Philippines, and Cameroon, plastic pollution has contributed to heavy flooding by clogging waterways and drainage systems.

Governments put up measures to address this problem by totally banning the use of plastic bags, regulating its use, or even charging taxes. For instance, in Australia, the government implemented plastic bag ban in 2003 to protect the migrating whales in Tasmania. Likewise, the state government of Texas, as well as India, Mauritania and the United Arab Emirates, banned the use of plastic bags, which were considered as choking and ingestion hazards for livestock animals (Larsen & Venkova, 2014). Another example is the principle of extended producer responsibility, a model developed by European nations, wherein governments put the responsibility on the producers of plastic (Tibbetts, 2015).

Meanwhile, the World Economic Forum (2016) has proposed a paradigm shift on the use of plastics, the “New Plastics Economy,” which involves creating a circular economic model that bridges the gap between production and after-use of plastics. It aims to maximize value, strengthen the plastic economy, and more importantly, to make plastic production more environmentally sustainable.

In addition, alternatives such as producing biodegradable plastic bags have surfaced in the international scene. Avani Eco, a company based in Bali, Indonesia, has helped address this problem by producing biodegradable plastics or “bioplastics” as alternatives to traditional plastic bags. Examples of these bioplastics are plastic bags made from cassava, takeaway food containers made from sugar canes, and straws made from cornstarch. Bioplastics biodegrade and do not contain toxic residue (Sutherland, 2017).

However, according to the 2015 report of the United Nations Environment Programme (UNEP), plastics made from biodegradable polymers are more expensive than those derived from fossil fuels and will hardly make a dent in reducing plastic pollution, since the degree to which these biodegrade is still debatable. For instance, oxo-degradable polymers do not fragmentize rapidly (UNEP, 2015). The process of biodegradation depends on environmental factors and on the properties of the polymer (Sekiguchi et al., 2011 and Pemba et al., 2014, as cited in UNEP, 2015). UNEP senior official Habib El-Habr recognized that these biodegradable plastics could be part of the long-term solution but also said, “We don’t know enough about this (biodegradable plastics) technology” (as cited in Sutherland, 2017).

Philippines and the Plastic Pollution

Southeast Asia, where Philippines is situated, was listed by Greenpeace as the “most vulnerable [to] and least prepared” for climate change impacts. Citing a study conducted by the Asian Development Bank (ADB) in 2009, Greenpeace also highlighted the economic costs of climate inaction, and encouraged states in the region to adopt environmentally sound solutions (Greenpeace, 2010). Aside from technology, government and policies play an important role in ushering these solutions.

A number of localized solid waste management programs aimed to address plastic pollution through the 3Rs approach. For instance, at the local level, an assessment of the solid waste management in Cavite City Public Market in 2004 revealed that the market generates 18.6 cubic meters of plastic waste per day, which constitute 10% of the total solid waste of the city. The study also found that no waste segregation and recycling practices were done in the market. The results became the basis for developing a solid waste management plan, which included waste reduction, segregation and processing of materials (Apostol, 2004).

Another case study, conducted in Bayawan City, Negros Oriental, aimed to analyze the characteristics and effects of various economic instruments applied in the area. It noted, among the success factors of the

local government unit (LGU) in implementing its community programs, the strong political will and interest of leaders (Paul, 2012). Mendoza (2001) wrote about the community-based solid waste management project in Lipa City, Batangas, where a task force was formed to develop and implement their solid waste management plan and to monitor and evaluate the program. Moreover, a project in Cebu City sought to develop a plan to convert plastic wastes into recycled products (UNEP, 2007).

On the other hand, the national government, as well as a number of city and municipal governments, sought to ban the use of plastic bags. Senator Loren Legarda drafted Senate Bill 2759, which proposed the total ban of the use of non-biodegradable plastic bags in groceries, restaurants, public markets, fast food chains, department stores, and other establishments. However, this bill has not yet been approved.

In Metro Manila, Muntinlupa City was the first city to regulate the use of plastic bags as primary packaging by way of Ordinance No. 10-109, s.2010 (EarthJustice, n.d.). Other cities in Metro Manila then followed suit: Caloocan (Ordinance No. 0503, s.2013), Las Piñas (Ordinance No. 1036-11, s.2012), Makati (Ordinance No. 03-095), Mandaluyong (Ordinance No. 523, s.2013), Manila (Ordinance No. 8282, s.2013), Marikina (Ordinance No. 18, s.2012), Pasay (Ordinance No. 4647, s.2011), Pasig (Ordinance No. 09-2010, s.2011), Quezon City (Ordinance No. SP 2103, s.2011; Ordinance No. SP 2127, s.2012; and Ordinance No. SP 2140, s.2012), Taguig (Ordinance No. 59-11) and the municipality of Pateros (Municipal Ordinance No. 2011-10). These ordinances are focused on regulating and not on totally banning the use of plastic bags. This is because the city governments did not want to kill the plastic industries.

Presently, out of 17 cities, five have not regulated or banned the use of plastic bags: Malabon, Navotas, San Juan, Parañaque and Valenzuela. According to the Valenzuela City Planning and Development Office, around 224 plastic and rubber manufacturing companies employing thousands of workers were operating in Valenzuela City as of 2012. As such, only ordinances on regulating the use of plastic bags will be feasible in the future (Arcangel, 2013).

Quezon City Initiatives

Quezon City has three ordinances that regulate use of plastic bags: Ordinance No. SP 2103, s.2011, Ordinance No. SP 2127, s.2012, and Ordinance No. SP 2140, s.2012. Ordinance No. SP 2103, s.2011 aimed to address plastic pollution by promoting the use of recyclable or reusable bags. The ordinance requires establishments in the city that use plastic bags as packaging to display the signage, "Save the Environment, Bring

your Own Recyclable/Reusable Bags.” Meanwhile, to encourage employees and concessionaires of city government offices to take part in the solution, Ordinance No. SP 2127, s.2012 banned the use of non-biodegradable packaging, such as plastic and styrofoam, in the City Hall and other government buildings in Quezon City.

Lastly, Ordinance No. SP 2140, s.2012, or the Plastic Bag Reduction Ordinance, enjoins the business sector in stemming the “throw-away attitude” of consumers towards plastic bags. The policy prohibits duly registered retail business establishments that have been regularly operating in Quezon City from using plastic bags with thickness below 15 microns. Meanwhile, the translucent plastic bag, also known as plastic *labo*, is only allowed for wrapping fresh foods and vegetables. Retail stores are also mandated to implement a green fund scheme, where they charge two pesos for every plastic bag issued to consumers, the proceeds of which go to environmental programs.

The policy also encourages retail stores to provide reusable bags/recyclable bags/eco bags for a minimal fee, and to incentivize the use of these bags. It also taps some malls as waste markets where residents of the city can bring their collected plastic bags at a particular schedule. Barangay officials and the Environmental Police of the Environmental Protection and Waste Management Department (EPWMD) of the Quezon City Government were tasked to monitor its implementation.

A study by Razon, Diola, Bundoc, Huelva and Gamboa (2015) looked into the implementation of the said ordinance in Barangay UP Campus, Quezon City. Findings of the waste analysis and characterization study (WACS) in selected areas in the barangay found that the volume of plastic wastes was significantly reduced a year after the implementation of the Plastic Bag Reduction Ordinance. However, at certain collection schedules, some communities also saw a rather significant rise in the volume of plastic wastes. This suggests the lack of effective waste recycling and segregation.

This study aims to assess the Plastic Bag Reduction Ordinance implementation in Quezon City in a wider scope, looking at key stakeholders, impacts, and implementation mechanisms of the policy. It also looks into how the green fund is being used by the city government.

Statement of the Problem

This study investigates the implementation of the Plastic Bag Reduction Ordinance in Quezon City from 2012-2016. In line with this, it asked the following questions:

- 1) How aware are the Quezon City residents of the implementation of this ordinance?
- 2) What is the Impact of the Plastic Bag Reduction Ordinance to: (a) grocery shoppers; (b) stall/store owners; (c) Quezon City residents; and (d) junk shops?
- 3) What are the factors that influence its implementation?
- 4) How is the green fund (fees collected for plastic bag users) being utilized by the Quezon City Government?

Conceptual Framework

Figure 1 illustrates the framework used in this study. It specifically looks into the Quezon City residents' awareness of the Plastic Bag Reduction Ordinance, its implementation, and the collection and utilization of the green fund.

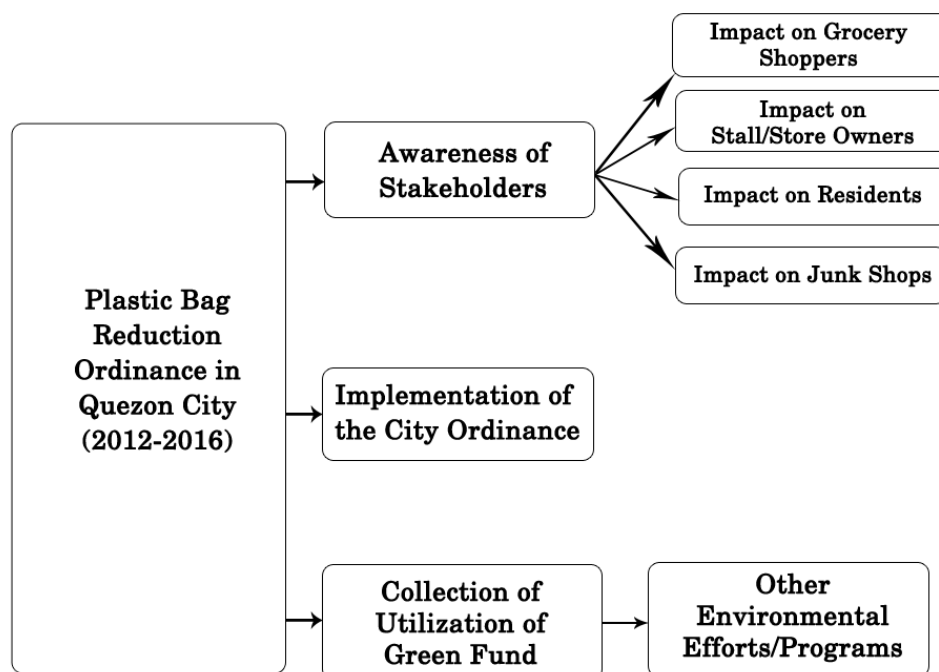
Methodology

The implementation of the Plastic Bag Reduction Ordinance from 2012-2016 was assessed through the mixed methods approach. The study involved collection and analysis of both quantitative and qualitative data to provide an in-depth understanding of the policy implementation from the perspective of various stakeholders.

Direct observation of check-out/packaging counters was conducted in four selected stores in District IV, Quezon City. Meanwhile, a survey questionnaire designed to collect insights on awareness of the policy and the utilization of the green fund, as well as on the use of alternatives to plastic bags, was developed and pilot-tested on ten individuals. It was then administered to 120 residents of Area 24 of District IV, which is composed of six barangays: Sikatuna, Pinyahan, Krus na Ligas, Botocan Central and Malaya. In each of the barangays, 20 individuals were randomly selected as survey respondents.

Chi-square test for independence was used to analyze if there is a relationship between the sociodemographic profile of the respondents, their level of awareness of the ordinance, and use of the green fund.

Figure 1. Conceptual Framework



Interviews were also conducted with store supervisors, concerned offices at the Quezon City Hall (EPWMD and the Planning Division), and junk shop owners/*mangangalakal*. Public documents and pamphlets related to the implementation of the three ordinances provided by the EPWMD and Planning Division were also gathered and analyzed. These included data from the WACS conducted in Quezon City in 2003 and 2013. News clips, videos, photographs, website pages were also collected.

In addition, a focus group discussion (FGD) composed of nine Quezon City residents was conducted to assess the impact of the Plastic Bag Reduction Ordinance on Quezon City residents, particularly those living in Area 24 of District 4. The conduct of the FGD also aimed to countercheck or validate the survey results and to solicit inputs, comments and suggestions from the group. Outputs from the FGD may help the city evaluate the ordinance for it to better address plastic pollution. Nine

participants represented each of the following groups: mothers (two attendees); fathers (three attendees); youth (two attendees); and barangay captains (two attendees). Due to time constraint, the survey was only administered to residents of the six barangays under Area 24, District 4 of the city.

Results and Discussion

Sociodemographic Characteristics of Respondents

Survey results revealed that, out of 120 respondents, almost 60% (71 respondents) are female. In terms of age distribution, most respondents are middle-aged; 40% of the respondents are aged 40-59, while around 24% are 26-39 years old. Almost 68% are married.

Awareness of the Ordinance and Green Fund Utilization

Findings showed that, while respondents were aware of the Plastic Bag Reduction Ordinance, only some of them were aware of one of its provisions, the green fund utilization. A wide majority (82.5%) of the respondents claimed that they were aware of the Plastic Bag Reduction Ordinance. However, only 59 respondents (49.2%) were aware of the green fund. In contrast, 103 respondents (85.8%) were aware of the amount of the plastic recovery system fee, which essentially forms part of the green fund. Moreover, 68 respondents (56.7%) related that the two-peso fee was enough. Other respondents suggested that the fee be increased from Php5 to as high as Php100.

Use of Plastic Bags among Store Customers

Direct observations were done in Grocery Store A and Convenience Store B, with the researcher being a passive, third-party observer. It mainly aimed to determine which type of shopping bag or packaging the customers commonly preferred in the check-out counters.

In Grocery Store A, observation took place in three counters coded as 3A, 3B and 2A. Out of 94 customers, 39 availed of plastic bags being sold at two pesos each. Eighteen were given plastic *labo*, while eight preferred using boxes. Nine customers hand-carried their goods. It should be noted that only two customers brought recycled paper bags while 18 of the 94 customers brought their own eco bags. No one availed of the ten-peso eco bags sold at Grocery Store A (Table 1).

**Table 1. Number of Customers in Grocery Store A,
per Type of Bag Used for Purchased Goods**

<i>Type of Bag</i>	<i>3A</i>	<i>3B</i>	<i>2A</i>	<i>Total</i>
Plastic Bag	8	20	11	39
Plastic Labo	4	6	8	18
Box	2	2	4	8
Hand-carry	1	8	0	9
Recycled Paper Bag	2	0	0	2
Recycled Eco Bag	8	0	10	18
New Eco Bag	0	0	0	0
Total	25	36	33	94

Eco bags worth Php10 each were displayed in stands at the entrance of the store. Each counter also had a promotional sample. However, the researcher noted that, in the three counters, neither the bagger nor the cashier promoted the eco bags in lieu of the plastic bags. The cashier and bagger were also observed to have the following script:

Cashier: “Sir/Ma’am, total amount is ____.”

Bagger: “Sir/Ma’am, plastic charge?”

Through this script, shoppers are reminded of the fee for the use of plastic bags. Nevertheless, during the observed transactions, some still preferred to use plastic bags despite being advised of the additional charge. Other customers even bought two to three plastic bags per transaction.

It was also observed that the type of bag used depended on the quantity of goods bought, as well as the size and the kind of the goods. Customers who bought several items, and those who bought wet goods, preferred using plastic bags. Meanwhile, those who purchased lightweight dry goods tend to hand-carry the goods instead or place these in their bags. The store also offered free plastic *labo* even for dry goods, despite the provision in the ordinance limiting the use of plastic *labo* only for wet goods.

Meanwhile, Convenience Store B store only opened one counter every morning, making all the transactions centralized. At the time of the observation, 22 customers entered the store, 13 of whom bought medicines. The remaining nine bought groceries. None of them bought or asked for a plastic bag. The staff of the store did not ask, “Plastic, paper bag or hand-carry?” Instead, they automatically put the goods inside a white/brown paper bag. It was not clear whether the customers of the store were aware that plastic bags were available. Mimicking behavior was

also noted, wherein the customer unconsciously copies the behavior of the one checking out before him/her.

For the next two stores, Grocery Store C and Convenience Store D, the researcher participated as a direct participant/mystery shopper, directly interacting with the cashier or bagger. As the researcher checked out her bought goods in Grocery Store C, the bagger automatically packed the goods inside plastic bags without asking if she had eco bags or if she would want to hand-carry the items. This behavior tends to encourage the customers to use plastic bags. Nonetheless, most of the customers of this store bought goods by bulk, and as such, customers usually preferred having the goods packed in boxes.

In Convenience Store D, the cashier automatically put the goods bought inside a brown paper bag, similar to what has been done at Convenience Store B. As a mystery shopper, the researcher asked the cashier if the store has plastic bags. The cashier told the researcher that the use of plastic bags is strictly prohibited in the city, an indication that the cashier may have been not only aware of the ordinance, but actively informing customers about it.

Meanwhile, survey results revealed various reasons why respondents resort to using plastic bags for packing their purchased goods. Most of the respondents admitted that they use plastic bags because they forget to bring eco bags with them. In particular, some respondents said:

“Dahil minsan tinatamad magdala ng eco bag.” (Sometimes, I am lazy to bring eco bag with me.)

“Nakakalimutan kong magdala ng eco bag.” (I tend to forget to bring an eco bag.)

“Nasanay na gamitin.” (I got used to using plastic bag.)

Meanwhile, other respondents also cited affordability and availability:

“Madaling makabili ng plastic bags dahil abot-kaya. Mas mura kaysa eco bag.” (It is easier to buy plastic bags because it is affordable [and] cheaper than the eco bag.)

“Wala kasing eco bag minsan sa store.” (Eco bags are sometimes not available at the store.)

“Dahil mayroon parating plastic sa counter.” (Plastic bags are always available at the counter.)

Some of the respondents also said that plastic bags are convenient to use and reuse:

“Pwede kasing lagayan ng basura.” (It can be used as a garbage container.)

“Mas madaling bitbitin, magaan din.” (It is easier to bring and is light.)

Meanwhile, some who preferred to hand-carry their goods or have them packed in eco bags or boxes reasoned that the practice is a long-time investment, is convenient, saves more money, and helps save the environment:

“We can use it all over again.”

“Tipid at hindi na laging bibili at hindi na darami ang basura dahil sa plastic.” (It saves us more money [because] we no longer need to buy [plastic] often, and there will be no more plastic wastes.)

“Walang hassle na masira o mabutas ito.” (It will not be destroyed or torn.)

“Makakatulong din upang mapanatili ang kalinisan ng ating kapaligiran dahil wala ng plastic na itatapon na basura sa kanal.” (This will help the city maintain cleanliness since no one will be throwing plastic in the canal.)

“Para hindi na magbabara ang kanal. Mas eco-friendly ito.” (Canals will no longer be clogged [and] it is more eco-friendly.)

“Expensive. But I can help conserve our environment and we can use it again.”

“Pwede siyang malabhan at hindi mabilis mapunit.” (It can be washed and [it is] not easily torn.)

Trend is also a factor:

“Ito ang usong gamitin.” (This is the latest trend.)

During the FGD, the participants agreed that cost made a difference in the use of eco bags over plastic bags. The focus group pointed out that eco bags were much more expensive (priced at Php10) than plastic bags (priced at Php2). Hence, more customers preferred buying plastic bags than eco bags.

Influence of Sociodemographic Characteristics on Awareness and Type of Bag Used

Survey data was analyzed using chi-square test of independence to determine whether the type of bag used (plastic bag, eco bag and others), awareness of the ordinance, and awareness of the green fund, relate to their gender, age, civil status, and barangay of residence. Contingency tables plotting sociodemographic data against awareness and usage variables, as well as the chi-square statistics, were generated in SPSS. A p-value equal to or lower than 0.05 indicates a significant relationship between the two variables being compared.

Table 2 shows the cross-tabulation between gender and the type of bag used by the respondent, as well as their level of awareness of the ordinance and of the green fund. Based on the table, an equal number of males and females (12 respondents each) used plastic bags, while more females (59 respondents) used eco bags/boxes than males (37 respondents). More females were aware of the ordinance (60 respondents) and the green fund (36 respondents) than males. However, more females were likewise unaware of the green fund than males.

Table 2. Gender vs. Awareness and Type of Bag Used

<i>Gender</i>	<i>Bag Type</i>		<i>Awareness to the Ordinance</i>			<i>Green Fund Awareness</i>		
	<i>Plastic</i>	<i>Eco Bag/Box</i>	<i>Yes</i>	<i>No</i>	<i>No Answer</i>	<i>Yes</i>	<i>No</i>	<i>No Answer</i>
Female	12	59	60	8	3	36	31	4
Male	12	37	39	9	1	23	24	2
Total	24	96	99	17	4	59	55	6

In all barangays, more respondents used eco bags/boxes than plastic bags, albeit in varying margins of difference. In Barangays Krus na Ligas and Malaya, 18 respondents used eco bags/boxes, while only two respondents used plastic bags. In Barangay Pinyahan, eight respondents used plastic bags, while 12 respondents used eco bags/boxes.

Meanwhile, more respondents were generally aware of the ordinance, again in varying degrees of difference. All of 20 respondents from Krus na Ligas were aware of the ordinance. In contrast, only 11 from Barangay Botocan knew about the policy. Even fewer respondents were aware of the green fund; two respondents from Pinyahan, and only half (ten respondents) from Barangay Sikatuna, were aware of such fund. Most (13) respondents from Malaya, on the other hand, were aware of the Green Fund (Table 3).

As shown in Table 4, most respondents who used eco bags/boxes and who were likewise aware of the ordinance were married. However, more married respondents were relatively unaware of the green fund. It should be noted that a few respondents did not indicate their civil status.

Table 3. Barangay vs. Awareness and Type of Bag Used

<i>Barangay</i>	<i>Bag Type</i>		<i>Awareness to the Ordinance</i>			<i>Green Fund Awareness</i>		
	<i>Plastic</i>	<i>Eco Bag/Box</i>	<i>Yes</i>	<i>No</i>	<i>No Answer</i>	<i>Yes</i>	<i>No</i>	<i>No Answer</i>
Botocan	3	17	11	7	2	11	7	2
Central	3	17	18	2	0	11	7	2
Krus na Ligas	2	18	20	0	0	12	7	1
Malaya	2	18	16	2	2	13	6	1
Pinyahan	8	12	15	5	0	2	18	0
Sikatuna	6	14	19	1	0	10	10	0
Total	24	96	99	17	4	59	55	6

Table 4. Civil Status vs. Awareness and Type of Bag Used

<i>Civil Status</i>	<i>Bag Type</i>		<i>Awareness to the Ordinance</i>			<i>Green Fund Awareness</i>		
	<i>Plastic</i>	<i>Eco Bag/Box</i>	<i>Yes</i>	<i>No</i>	<i>No Answer</i>	<i>Yes</i>	<i>No</i>	<i>No Answer</i>
Single	10	22	30	2	0	18	14	0
Married	14	67	64	14	3	37	39	5
No Answer	0	7	5	1	1	4	2	1
Total	24	96	99	17	4	59	55	6

On the other hand, most respondents across different age ranges used eco bags/boxes for their purchased goods, and were aware of the ordinance. Most of them were aged 40-59. In addition, all respondents aged 18-25 were aware of the ordinance. Again, fewer were aware of the green fund among different age groups; five respondents below 18 years old and five respondents aged 18-25 were unaware of the fund. Meanwhile, almost half of the respondents aged 40-59 years were unaware of it (Table 5).

Table 5. Age vs. Awareness and Type of Bag Used

Age	Bag Type		Awareness to the Ordinance			Green Fund Awareness		
	Plastic	Eco Bag/Box	Yes	No	No Answer	Yes	No	No Answer
Below 18	3	4	6	1	0	2	5	0
18-25	2	8	10	0	0	5	5	0
26-39	9	20	25	4	0	17	12	0
40-59	7	41	39	6	3	22	21	5
60 or older	6	20	19	6	1	13	12	1
Total	24	96	99	17	4	59	55	6

The chi-square test of independence determined whether the sociodemographic characteristics of the respondents made any difference on their awareness of the ordinance and green fund and the type of bag they used for their purchased goods. The analysis revealed that the respondents' awareness of the ordinance and the green fund is significantly related to their barangay of residence. It may imply that the barangay has a role to play in raising awareness of the city ordinance among its constituents. Table 6 summarizes the test results.

Table 6. Chi-square Test Results: Sociodemographic Characteristics vs. Awareness and Type of Bag Used

Sociodemographic Variables	Bag Type		Awareness of the Ordinance		Awareness of the Green Fund	
	χ^2	p -value	χ^2	p -value	χ^2	p -value
Gender	1.043	0.37	1.532	0.465	0.402	0.818
Barangay	9.375	0.95	23.537	0.009*	23.235	0.010*
Civil Status	4.655	0.98	6.305	0.178	4.228	0.376
Age	4.641	0.326	6.467	0.595	7.641	0.469

*Significant at $p \leq 0.05$.

Some of the points raised in the FGD supported this relationship. The focus group generally asserted the role of the barangay in information dissemination and monitoring the implementation of the ordinances. Likewise, the participants stressed the role of the government in policy implementation.

Impact of Ordinance on Stakeholders and Waste Collection

Interviews were also conducted with store supervisors, concerned offices at the Quezon City Hall (i.e., EPWMD and the Planning Division), and junk shop owners/*mangangalakal*. The interviews aimed to gather firsthand and secondary information about the impact of the Plastic Bag

Reduction Ordinance on stakeholders in Quezon City. One junk shop owner feels that the Plastic Bag Reduction Ordinance does not affect his business since they do not collect plastic bags. On the other hand, the *mangangalakal* mentioned that he collects plastic bags but these constitute only a little amount. Thus, the ordinance does not have a major impact for the *mangangalakal*.

A series of interviews were held with officers and staff in offices tasked to implement and monitor the ordinance—the EPWMD and the Planning and Development Office of the Quezon City Government. During the interviews, the EPWMD chief garbage collector and a staff of the Planning and Development Office referred to results of the WACS in 2003 and 2013. WACS sought to evaluate and monitor the performance of the city and effectiveness of the Plastic Bag Reduction Ordinance. It involved measuring the volume of wastes that arrived at the sanitary landfills.

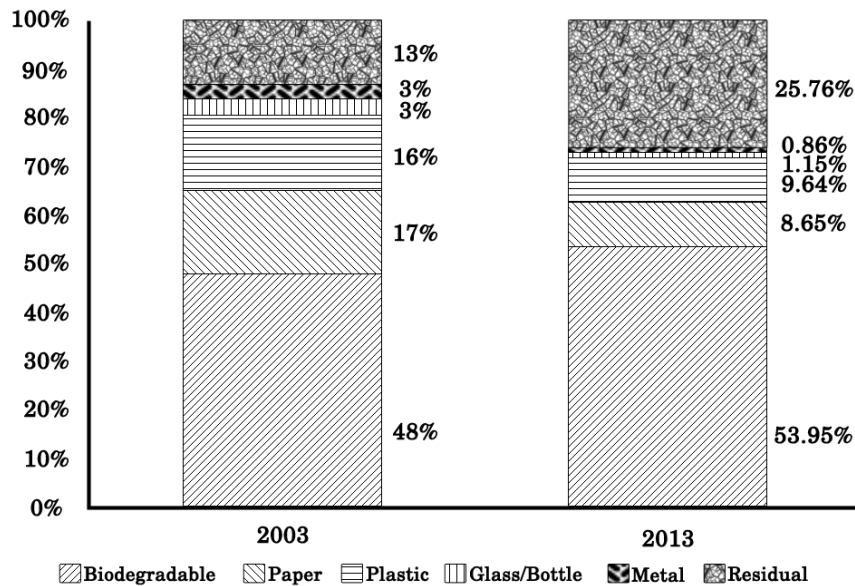
The study classified wastes into three types: biodegradable (e.g., food/kitchen waste, garden waste, human waste, and animal remains), non-biodegradable/recyclable (e.g., paper, plastic, glass/bottles, and metals) and non-biodegradable/residual wastes (e.g., inorganic, hazardous, special and other wastes).

Figure 2 summarizes the composition of wastes covered in the 2003 WACS, which served as the baseline data for implementation of the Plastic Bag Reduction Ordinance, and those covered in the 2013 WACS. The marked increase in the percentage of biodegradable waste after ten years suggests the lack of other means for disposal at the household or barangay level.

The said increase was accompanied by a decrease in proportion of recyclable waste. For instance, the percentage of plastic went down by more than ten percentage points. Meanwhile, the proportion of residual wastes reached up to more than 25%, which may also indicate there were no other means for disposing the waste in households or barangays.

Collection and Use of Green Fund

Data on the collection and use of green fund were gathered from interviews with the officials and staff from EPWMD and the Planning and Development Office of the Quezon City Government, as well as other stakeholders involved in the collection of green fund, such as storeowners and managers. The chief garbage collector from EPWMD pointed out that Quezon City is the pioneering LGU of the green fund.

Figure 2. Composition of Waste, Quezon City, 2003 and 2013

Source: Quezon City Government (2003, 2013)

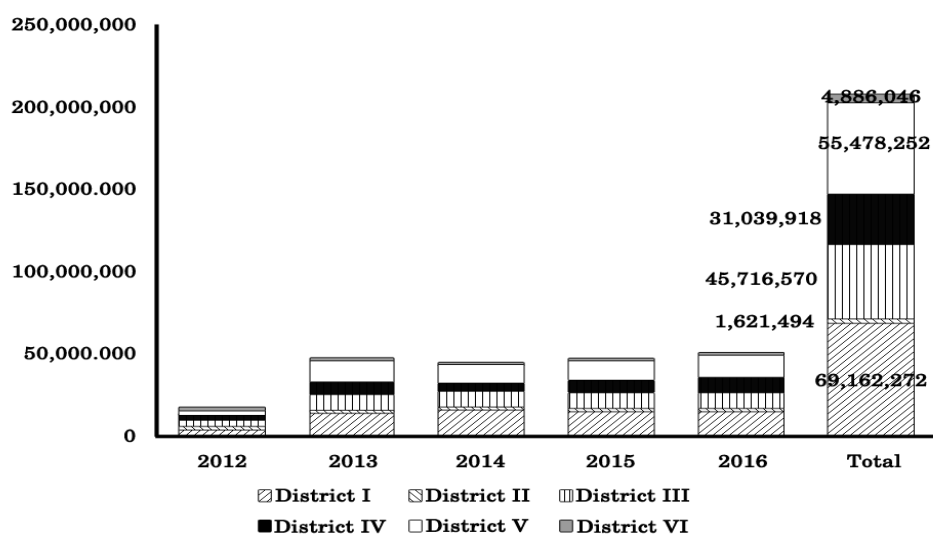
Representatives from EPWMD and the Planning and Development Office discussed how the city government monitors the green fund. The staff from the Planning Division remarked, “*Lumalabas ito sa official receipt kaya madaling i-track ang collected green fund. Lalo pa na may quarterly reporting ang mga stores. Meron kaming ibinigay sa kanila na form na sasagutan nila para transparent ang green fund* ([The Plastic Recovery System Fee] is indicated in the official receipt, so the green fund collection is easy to track, especially because stores report [their collections] quarterly. We ask them to fill up a form to make the green fund collection more transparent).”

One of the store managers interviewed mentioned that their current task is to think of an environmental project they would want to do for the community using the green fund. The manager added that cooperation of the stores is important to the success of the program; being able to interact directly with the customers, store managers and staff are in the best position to promote the use of eco bags instead of plastic bags. However, it must be noted that eco bags are sold for profit by the store.

From 2012 to 2016, the accumulated green fund is around Php207 million. The Green Fund collection has been steadily increasing,

experiencing only a slight decline in 2014. District 1 has the highest collection in four years, while District 2 has the lowest collection in the same period (Figure 3). The accumulation of green fund over the four-year period may imply that imposing a two-peso fee to regulate plastic bag may not likely stop the residents from buying plastic bags. The staff from the Planning and Development Office added that the ordinance does not keep customers outside Quezon City from buying them as well.

Figure 3. Green Fund Collection per District in Quezon City, in Philippine Pesos (Php), 2012-2016



Source: Quezon City Government (2017)

It is interesting to note that the green fund does not go to the city government; instead, the stores keep the fund for use in planning for and implementing environmental programs. According to the chief garbage collector of the EPWMD, his office strictly monitors retail businesses in this aspect. He remarked that “we just oversee what their plans are for the fund and approve [the project] if we see that the project is feasible and [will] contribute to the welfare of the community.” However, translating green fund into environmental programs may be difficult, as proposals need to undergo review by the city government before approval. Table 7 shows the status of various environmental projects proposed and implemented by businesses in Quezon City, and those approved by the city government.

Table 7. Status of the Proposed Environmental Projects of Different Business Establishments in Quezon City as of August 2017

<i>Name of Establishment</i>	<i>Project</i>	<i>Project Cost (Php)</i>	<i>Status</i>
Robinsons Supermarket	Ecosavers: Mixed Soft Plastic Conversion into School Chairs	2,000,000.00	Implemented
Puregold Price Club Inc.	Shoot that Kalat	1,571,572.80	Approved Project Proposal
Robinsons Handyman	Clean Drive: One Trash Bin, One Cleaner Future	880,000.00	
Goldilocks	Kapit Bisig Para sa Ilog Pasig (KBPIP) Program for the Environment in partnership with ABS-CBN Lingkod Kapamilya Inc. (ALKFI)	900,000.00	Proposed Project
Mercury Drug	E-bike for QCPD		
SM Supermarket	Street Art, Public School Donations, Library Donations, Monobloc classroom chairs and trash bin	2,599,660.00	
Daiso Japan	Clean and Green: Reuse, Reduce and Recycle	103,000.00	

Source: Quezon City Government (2017)

Suggested Measures

Various stakeholders offered recommendations on how plastic pollution can be better addressed in Quezon City. Survey respondents suggested that Quezon City residents must strictly follow the Plastic Bag Reduction Ordinance, bring eco bags with them, and segregate and dispose of garbage properly in the designated places. They also suggested that residents must avoid using plastic bags only once, and reuse, reduce, and recycle them. On the other hand, respondents clamored for stricter implementation of the ordinance and better coordination among stakeholders. They also mentioned increasing the plastic recovery system fee charged for the use of plastic bags. As suggested by one of the respondents, *“Dapat itaas ng 200% ang halaga ng plastic para hindi na ito bilhin* (The cost of the plastic [bag] should be increased by 200% so that no one will ever buy it).

The respondents also suggested totally banning the use of other plastic containers and utensils, and imposing higher amount of penalties. Some of the respondents added that plastic bags should no longer be available in the groceries. They also recommended that the government consider closing factories that make plastics. Other respondents suggested education through the media, information dissemination campaigns, lectures, seminars, and school discussions.

Meanwhile, some FGD participants suggested that a common, systematic waste disposal scheme be implemented in the city, similar to that in Sydney, Australia. Others mentioned the importance of the Filipino slogans, “*tapat ko, linis ko*” (my frontage, my responsibility) and “*bayanihan*” (communal unity or cooperation).

Recommendations

Now in its fifth year, the Plastic Bag Reduction Ordinance needs to be revisited based on the policy outcomes in the past four years. Low level of awareness of the green fund suggests the need for more intensive awareness campaigns and information dissemination drives among customers. Frontline staff in retail stores may be tapped for these campaigns. It is also imperative to make the collection of plastic waste more systematic. Centralized areas for disposing plastic wastes may be installed, particularly in strategic areas in villages or shopping centers where households or customers usually converge. Designation of waste markets and green lanes in retail stores, e.g. supermarkets, may be made mandatory.

The city government may also consider consulting barangays with regard to adjusting the plastic recovery system fee to make it at par with the minimum price of eco bags sold in retail stores. The government may also consider adjusting the price of eco bags to make them more affordable. Lastly, the use of local products, such as the traditional *bayong*, baskets, and fish net, in carrying goods needs to be encouraged.

Conclusion

This study looked into the implementation of the Plastic Bag Reduction Ordinance in Quezon City from 2012-2016, a policy that mainly aimed to regulate the use of plastic bags as packaging. It specifically measured the level of awareness of the ordinance and one of its provisions, the green fund. It also attempted to determine the perceived and actual impact of the ordinance on different stakeholders, and the factors that influence its implementation. The study also investigated the collection and use of the green fund.

Survey findings showed that most of the respondents were aware of the Plastic Bag Reduction Ordinance. However, only around half of them were aware of the green fund, which is provided by the ordinance. This indicates that respondents may only be partially aware of the specifics of the ordinance. The level of awareness of the ordinance and the green fund

significantly differed across barangays, suggesting that the barangay, to a certain extent, may influence one's awareness of the ordinance.

The ordinance affects grocery shoppers, storeowners, residents, and junk shops in different ways. Despite the increasing use of eco bags/boxes, most shoppers still preferred using plastic bags mainly because they are readily available, reusable, affordable, and convenient to use relative to alternatives such as eco bags. Meanwhile, the ordinance has given retail establishments a renewed responsibility to discourage the use of plastic bags among their customers.

Decline in the volume of plastic collected from households, as shown in the WACS of 2003 and 2013, may reflect, at least partially, the effectiveness of the ordinance in addressing plastic pollution. The following factors may have influenced its effectiveness: support from the different stakeholders, especially the stores and their shoppers, which is largely determined by market preferences; and coordination, supervision and monitoring by the city government.

The green fund, collected from the plastic recovery system fees charged to customers for using plastic bags offered by retail stores, has gradually increased from 2012 to 2016. Retail stores are mandated to collect the plastic recovery system fee to be set aside as the green fund and encouraged to use the fund in planning for and implementing environmental programs. In return, they are accountable to the city government for collection and use of the fund, mainly through submission of collection reports and project proposals, among other documents. The greater challenge is in translating the collected fund into meaningful environmental programs in the city.

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