

Breaking Free from Plastic: The Philippines' Journey Towards Sustainable Consumption and Production

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Abstract. Plastic pollution presents a significant threat to global ecosystems, with the Philippines being a major contributor to ocean plastic waste. This environmental challenge endangers marine life, public health, and sustainability. The Philippines' No Plastic Policy is a strategic initiative aligned with Sustainable Development Goal (SDG) 12, which promotes responsible consumption and production. SDG 12 aims to enhance resource efficiency, develop sustainable infrastructure, and reduce waste through prevention, recycling, and reuse. This study examined the No Plastic Policy implementation progress in the Philippines, focusing on Cabanatuan City. Data were collected from 260 participants, primarily adults and females, using a quantitative descriptive research design. A researcher-made survey questionnaire facilitated data collection, which was analyzed using descriptive statistical tools. The findings indicate that residents largely adhere to the policy, motivated by the penalties imposed. However, challenges such as inefficient garbage collection, drainage maintenance issues, inadequate garbage trucks, and poor adoption of eco-friendly practices like using eco-bags persist. Despite the penal provisions, the study found that the penalties were not stringent enough to deter violations effectively. A comprehensive information campaign is necessary to improve waste management and disposal systems. The lack of funding was a critical barrier to systematic program management and implementation. Recommendations include enhanced enforcement, regular monitoring, and the promotion of biodegradable alternatives to strengthen policy efficacy. Stricter penalties and collaboration between barangay officials and local government units are essential for better compliance. The study underscores the importance of addressing the identified issues to optimize the impact of the No Plastic Policy, reduce plastic waste, and mitigate pollution. Future research should explore plastic waste management across various sectors to develop holistic, impactful solutions for local and national contexts.

Keywords: No plastic policy; Waste management; Zero waste; Plastic waste; SDG 12.

1.0 Introduction

Plastic pollution is an urgent environmental problem that impacts ecosystems globally, including the Philippines. As a major producer of ocean plastic garbage, the Philippines faces a substantial peril to its marine life, public health, and overall environmental sustainability. This matter requires immediate attention and innovative solutions. Within this framework, the country's efforts to implement a No Plastic Policy align significantly with Sustainable Development Goal (SDG) 12, which seeks to promote responsible consumption and production patterns.

SDG 12 aims to advance resource and energy efficiency, sustainable infrastructure, and access to vital services to create environmentally friendly employment opportunities and enhance the overall well-being of all individuals. The objective is to achieve sustainable management and optimal utilization of natural resources by lowering per

capita global food waste by 50% and substantially decreasing waste generation through prevention, reduction, recycling, and reuse. Enforcing a No Plastic Policy in the Philippines is a crucial measure in line with international endeavors to promote sustainable consumption and production, contributing significantly to these goals. In recent years, the anti-plastic bag norm and associated policies in most countries have seen a growing emergence, which could be interpreted as the product of assessment and studies. The United Nations and other organizations encouraged local movements influencing communities worldwide to level up their approach to applying best practices in dealing with this plastic problem. Moreover, despite the internationalization, campaigns to change behavior and legislation regarding plastic shopping bags remained largely localized. Localities around the globe are still in search of local policies that can be adopted as model cities in terms of plastic pollution management (Clapp & Swanston, 2009).

According to the 2021 report of the World Bank Organization, the Philippines generates a staggering 2.7 million tons of plastic waste annually, 20 percent of which winds up in the ocean, much of it in the form of unrecyclable, single-use sachets (www.greenmatch.co.uk). Plastic pollution has been a growing concern for decades. Single-use plastics (plastic bags and microbeads) are a significant source of this pollution. Although research outlining plastic pollution's environmental, social, and economic impacts is growing, few studies have examined policy and legislative tools to reduce plastic pollution, particularly single-use plastics. (Xanthos and Walker, 2017)

Today, there is no doubt that plastic debris contaminates aquatic (marine and freshwater) habitats and animals globally. The growing scientific evidence demonstrates widespread contamination from plastic debris, and researchers are beginning to understand the material's sources, fate, and effects. As new scientific understanding breeds new questions, scientists are working to fill data gaps regarding the fate and effects of plastic debris and the mechanisms that drive these processes. At the same time, policymakers are working to mitigate this contamination (Rochman et al., 2016).

Even though several cities have approached the problem of plastic pollution using regulatory and information-based strategies, managing waste is still deficient, and plastic waste accumulation remains high. Accordingly, the response to the plastic problem seems to be lacking on a national scale, and therefore, there is likely insufficient capacity and support to address this problem comprehensively. It will be important to continue to observe the effects of these policies so that a continued array of actions can be initiated, strengthen investment in solid waste management, and capacitate the regions from vulnerability to climate change resilience (Schachter & Karasik, 2022).

In a study on plastic bag consumption habits in the Northern Philippines, Crowley, J. (2020) recommends conducting further studies on plastic policy to explore additional details using various variables in diverse contexts. Furthermore, managing plastics necessitates long-term perspectives and moral considerations. Kunesch and Morimoto (2019) argue that action to reduce temporal and discounted elements of trash through tactics like the precautionary principle is vital to "taming" leftover waste.

No Plastic Policy is one of the moves several local government units in the Philippines have implemented to mitigate the negative impact of improper waste disposal in the environment, leading to global warming and other related catastrophes and disasters. It is a timely answer to our compounding problems regarding garbage and waste based on a mosaic of literature. The data identified gaps, suggesting the need for an evidence-based approach for effective implementation and deeper investigations into the operationalization of the policy.

Van Ryan Kristopher, Jaraula, and Paler's (2021) study demonstrated a lack of exploration in the study of plastic policies, highlighting the urgent need to focus on the quantity of data required to address the analysis's deficiency in profile determination.

These justifications underscore the necessity of conducting research on the effectiveness of the policy, enabling the creation of solutions and suggestions for policy development and the implementation of innovative strategies. This study explored the progress made by the Philippines in reducing its dependence on plastic, analyzing the problems, impacts, and potential solutions of implementing and enforcing the No Plastic Policy. This study, therefore, aligns with the objectives of SDG 12 and serves as a model for other countries facing comparable

environmental challenges. This study sought to describe the status of the implementation of the No Plastic Policy in one of the cities in the Philippines, which will significantly provide bases for enhancing approaches, developing new strategies, building awareness for policy direction, and polishing the implementation of policies to attain the maximum benefit towards accountability and sustainability through responsible consumption and production of goods and products with minimal negative impact on pollution.

2.0 Methodology

2.1 Research Design

This study used a quantitative research method, specifically the descriptive design. According to Bhandari (2021), gathering and studying numerical data may be applied to extrapolate results to larger groups, search for patterns and averages, and make forecasts. In this study, the descriptive design was used to gather data on the following: implementation, problems, impact, suggestions, and recommendations related to the "No Plastic" Policy.

2.2 Research Locale

The study was conducted in one of the Philippines' cities, known as the "Tricycle Capital of the Country." Its strategic location along the Cagayan Valley Road is the City's edge, which makes it a major economic, educational, medical, entertainment, and transportation center in the province and nearby areas in the region. It is also known as the "Gateway to the North."

2.3 Research Participants

There were 260 participants in the survey. They belong to different demographics, mostly adults (136), while teenagers constitute 124. Respondents are mostly female (146) since this sector showed interest in voluntarily submitting themselves to the survey. Males account for 114. Simple random sampling is used in this study to select the respondents. This study also obtained data with the aid of purposive sampling, where exclusion and inclusion criteria were considered to complement the integrity of data gathering. Only residents of the City are qualified to participate, and those of legal age have complete knowledge of the topic under investigation.

2.4 Research Instruments

This study used a researcher-made survey questionnaire derived from literature studies and critical observations in the locality. The structured survey questionnaire, administered through Google Forms, was used to collect data. The questionnaire included surveys on the implementation, impact, and problems of the "No Plastic Policy" with suggestions and recommendations. An expert statistician used data taken from sample respondents administered beforehand to determine the instrument's reliability to determine its validity. Experts in Waste Management and Environmental Science conducted face validation. After careful examination by the experts in the field, it was concluded that the instruments' items were clear and the directions were well stated. Pilot testing confirmed the reliability of the questionnaires, obtaining a high correlation coefficient of 0.78 and establishing strong reliability.

2.5 Data Gathering Procedure

The researchers asked their colleagues, students, and parents who are residents of the City to answer the questionnaire sent through the link. Likewise, informed consent was obtained by clearly stating the participants' roles in the study. The proponents ensured voluntary participation without deviating from research ethical considerations. The questionnaires were retrieved and tallied later. The results were later retrieved, recorded, organized, and plotted for computation.

2.6 Data Analysis Procedure

The data gathered were then analyzed using descriptive statistical tools. The weighted mean of the responses was tabulated, computed, and interpreted. The scale serves as a yardstick to determine the descriptive interpretations that become the basis for findings and conclusions.

2.7 Ethical Considerations

This research study followed ethical guidelines, obtaining informed consent from all participants and clearly explaining the purpose of the study, procedures, risks, benefits, and rights of the participants. The identity of the respondents is protected, and personal information is handled securely in compliance with the Data Privacy Act. The study prioritized well-being, minimized potential hazards, and respected their schedules. It promoted equity

and inclusion, avoiding discrimination or bias, and included underrepresented groups. The cooperation of the participants in the study is maintained to ensure an accurate representation of their experiences. The research was conducted with integrity, honesty, and transparency.

3.0 Results and Discussions

3.1 Implementation of No Plastic Policy

Table 1. Descriptive statistics of the level of implementation of No Plastic Policy

Implementation	Mean	Description
1. The City Government punishes any violations of the provisions of the No Plastic Ordinance.	3.50	Excellent
2. Barangay Officials cooperate in the monitoring of proper waste disposal	2.20	Not Satisfactory
3. The residents are compliant with the waste segregation policy	2.20	Not Satisfactory
4. The waste disposal space and container are checked and maintained per household	2.20	Not Satisfactory
5. Cleanliness and beatification at the barangay level are observed	2.30	Not Satisfactory
6. There is minimal use of plastic due to the policy of No Plastic Use	3.00	Satisfactory
7. Household residents in the area follow no plastic policy	3.50	Excellent
8. Residents bring/use Eco bags and biodegradable bags when buying goods and supplies in markets and malls.	2.30	Not Satisfactory
9. There is Government personnel in charge of checking daily adherence to the policy	2.00	Not Satisfactory
10. Violators are penalized/fined for offenses	3.50	Excellent
11. The garbage truck regularly collects garbage	3.00	Satisfactory
12. Garbage collectors wear adequate PPE's	2.30	Not Satisfactory
13. Garbage truck has adequate capacity and is well-maintained	2.00	Not Satisfactory
14. Drainage, canals, and waterways are unclogged, de-silted and cleaned to filter plastic and contaminants	2.00	Not Satisfactory
15. Vehicle owners/ Public transport provide trash bins for the passengers	3.30	Excellent
16. Commercial establishments have proper waste disposal area	3.30	Excellent
17. Schools followed strict compliance with the law on garbage and plastic disposal	2.50	Satisfactory
18. Use of plastic is discouraged and fined.	3.50	Excellent
Overall Mean	2.70	Satisfactory

The outcome suggests (see Table 1) that the residents adhere to the policy, as they face penalties for breaking the law. The residents discourage using single plastics, at least during the initial implementation phase. However, there are significant issues with implementing the proper garbage collection scheme, the declogging of canals and drainage to prevent flooding and mosquito spawning, and the inadequacy of garbage trucks, leading to irregular collection and a lack of adherence to safety protocols. Eco bags, one of the best practices for reducing plastic, are not also practiced.

Giving penalties to those who violate the No Plastic Policy conforms with the findings of Ashrafi et al. (2018) and Landon-Lane (2018), who assert that industries must be regulated by command-and-control policies, including regulation of consumption (e.g., fees) and banning single-use products. The results indicate that imposing penalties for offenses related to plastic use and disposal effectively discourages the accumulation of plastic. Because of the imposition of fines and penalties, residents and end-users of plastic adhere positively to the policy. Eisma-Osorio (2021), however, presented an opposing viewpoint on the complexity of plastic consumption. Plastics are still useful, and attempting to exclude them from the world can lead to discovering that the possible remedy is worse than the ailment. Some argue that treating "plastic" as "waste" is an incorrect approach to the problem. As a result, bioplastics have been developed to compete with other uses of arable land, such as animal and human food production. They may hasten changes in land use, such as deforestation. In this case, the environmental harm remains unabated. It only turns into another kind of damage. Instead, the secret is to turn plastic into a resource by consistently recycling it and treating it as renewable.

Pastorfide (2021), on the other hand, attributes the effective implementation of the policy in Cabanatuan City to the initiative of the local government in disseminating information about the "No Plastic Ordinance" under the law of solid waste management (SWM) in urban areas. However, the effectiveness is not completely observable, as this study indicates salient factors that need further attention to make the implementation plausible to achieve a responsive result. The result of this study concerning the implementation of plastic policy provides a basis for action to be taken, including cooperation and synergy among stakeholders, leveling up in the strict compliance to the policy, and a whole community approach to tackling the menace of plastic pollution onward effective garbage

and pollution management through systematic implementation approach. Concretization of the policy is the key element of a successful policy implementation emanating from public and government support.

3.2 Problems Regarding Implementation of No Plastic Policy

Table 2. Descriptive statistics of problems regarding implementation of No Plastic Policy

Problems	Mean	Description
1. Lack of oversight by a government agency in charge.	3.70	Strongly Agree
2. Lack of cooperation among LGUs and residents	3.32	Strongly Agree
3. Inadequate funds to carry out the program/policy	3.80	Strongly Agree
4. Violations are rampant	3.57	Strongly Agree
5. There is no monitoring and follow-up done by the designated agency	3.50	Strongly Agree
6. There is a lack of information about the negative impact of plastic	3.10	Agree
7. Business establishments are not compliant with the “no plastic policy.”	3.35	Strongly Agree
8. The program should be incentivized for the well-disciplined and obedient barangay/establishment	3.25	Strongly Agree
9. Bringing Eco bags and using biodegradable plastics are not a requirement for buyers/consumers in any market/supermarket/Mall/stalls	3.50	Strongly Agree
10. More stiffer penalties and fines are not imposed	3.90	Strongly Agree
Overall Mean	3.50	Strongly Agree

Findings (see Table 2) implied that, although there are already penal provisions in place, there is a lack of stiffer penalties to discourage offenders from violating the law. The imposed penalty only serves as a minimal deterrent, as the respondents observed that transgressions remain rampant. It also implies the need for a more comprehensive information campaign to enhance the waste management and disposal system, particularly concerning plastic. The lack of funds for the systematic management and implementation of the program is another systemic problem that requires urgent action.

This aligns with the findings of a study by Vimal, Mathiyazhagan, Agarwal, Luthra, and Sivakumar (2020), which suggests that the government should take decisive action by providing financial support and recommendations to establish a strategic regulation committee to monitor the issue. Alternative sources of bags also need to be made available to reduce the reliance on single-use plastic bags. The study findings are expected to create a single-use, plastic-free environment. However, implementing zero-waste policies needs strong support from national government agencies and legislators, according to Alegado (2020). He added that curbing plastic pollution requires collective action and proactive collaboration among various sectors and stakeholders. Thus, the government needs to take strong steps in giving financial support and recommendations to form the strategic regulation committee to monitor the issue. Alternative sources of recyclable or eco-friendly bags also need to be made available as alternatives to reduce the reliance on single-use plastic bags. The findings of the study are expected to create a single-use plastic-free environment. More so, a study by Rola (2019) specified that accomplishments indicated a poor level of performance. Complete adherence to the legislation is still lacking as a result of a lack of resources, institutional support at the local level, and capacity. Funds should be allocated to LGUs at the municipal and barangay levels to control plastic garbage. An effective solid waste management system is required to collect separated solid waste.

Non-compliance of stakeholders in implementing the policy, defiance of the violators and continued indiscriminate use of plastic, lack of support from local executives in terms of resources and logistics, and inability to formulate new concepts inviting good practices are elements that make up an imperfect implementation of policy. Most authors see plastic recycling methods and innovations as solutions to contain pollution, but they should be complemented by awareness, enculturation of discipline, obedience, and accountability aside from policy initiatives (Tibbetts, 2015). The problems of plastic policy implementation, as perceived by the respondents, are perennial factors cited as contributing to unresolved and continuing production and accumulation of substances that fester our communities toward a morbid ecosystem.

3.3 Impact of No Plastic Policy

The result (see Table 3) implies that the policy on plastic use is impactful in penalizing violators and making people aware of the existing policy. There are cases where violators are penalized upon committing the offense, which shows the eagerness of the local government to implement the policy and impose penalties. However, it is interesting to note that respondents believed that the use of plastic is still rampant, as we can observe in various

places where no personnel in charge is designated to monitor the transgressions of the residents with the policy and that it has not been reduced. This coincides with the result of the respondents' recommendation that proper monitoring should be done to elevate the policy implementation to its full extent.

Table 3. Descriptive statistics of the impact of No Plastic Policy

Impact of No Plastic Policy	Mean	Description
1. Plastic has been reduced	2.20	Disagree
2. Violators are penalized	3.40	Strongly Agree
3. The volume of garbage collection has been minimized significantly	2.10	Disagree
4. Cluttering of garbage has been avoided	2.30	Disagree
5. City residents follow the rules on the No Plastic Policy	2.10	Disagree
6. Single use of plastic is not rampant	2.00	Disagree
7. Government agency is serious in its implementation of the policy	2.20	Disagree
8. People became more aware of the negative effects of Plastic use	2.50	Agree
Overall Mean	2.35	Disagree

Overall, the result shows that the policy's impact on reducing garbage and its detrimental effect on the environment has not been fully achieved. This is contrary to the conclusion that the “No Plastic Ordinance” in the urban area is properly implemented by the local government unit (LGU) of Cabanatuan City (Alegado, 2020). Wichai-Utcha and Chavalparit (2019) concluded in their study that we can enhance our plastic waste management by enacting new laws or revising existing ones. These measures include imposing plastic bag fees, reinforcing the 3Rs measures, and promoting adopting a circular economy within plastic value chains. Since the study results show that garbage cluttering is still prevalent, we need to implement proper ways to keep pollution at bay or significantly reduce it through the 3 R's and other measures. This means that government agencies should enhance their campaigns to achieve significant results.

According to Bueta (2022), the Philippines is facing unimaginable problems with plastic pollution, with inadequate policies in place to abate this fiasco. Being the third largest contributor to waste products only confirms the inadequacies of the initial government initiatives. Though other Asian countries are beginning to limit their dependence on importing plastics (Liang et al., 2021), it may seem that the opposite is ostensible in the Philippines. The results validated that residents are not fully compliant with the policy and that single-use plastic is still rampant. This further explains why garbage volumes accumulate like mountains. If these problems persist as a vicious cycle, we will later face compound problems of having our landfills filled with trash we cannot cater to anymore. This will eventually put our society at risk, making us vulnerable to calamities and health risks.

3.4 Solutions/Recommendations

Table 4. Descriptive statistics of the solutions/recommendations

Solutions/Recommendations	Mean	Description
1. Enforce the law/policy seriously.	3.70	Strongly Agree
2. Impose a stiffer penalty	3.70	Strongly Agree
3. Offending establishments should not be given permits to operate	3.50	Strongly Agree
4. Secure the cooperation of Barangay officials	3.60	Strongly Agree
5. Employ regular and proper monitoring of program implementation	3.80	Strongly Agree
6. Encourage recycling, reuse and reduce culture among consumers/residents	3.80	Strongly Agree
Overall Mean	3.68	Strongly Agree

The results indicate that the respondents consider most of the suggestions significant for effective program or policy implementation. Regular monitoring of the policy is needed, as is the use of alternate materials as a substitute for plastic, which is biodegradable and environmentally friendly. Recycling, reusing, and reducing non-biodegradable materials should be boosted. Business entities should not also be given permits once they violate the policy of non-compliance with the requirements of the law, like illegally selling plastic items that compound the problem of enormous plastic waste that degenerates our ecosystem, our atmosphere, and our environment. According to Nielsen, Holmberg, and Strippel (2019), there have been many examples of policies implemented leading to reduced plastic bag consumption; however, this paper also identifies key challenges, including resistance to the regulations, uncertainty in obtaining the complete scenario, and the disadvantages of the regulations. It is, however, observed that the implementation phase of this policy being carried out by the local and national agencies suggests further revisit and serious attention.

Policymakers must collaborate with academics and NGOs to provide the private sector and consumers with detailed, suitable, short- and long-term strategies that promote pro-environmental behavior by encouraging reuse and discouraging single-use practices, including clear duration times, targets, detailed guidelines, and facilities. Businesses must know their customers' value orientations and avoid penalizing approaches. Combining a ban and a penalty while offering a small fee as an alternative option and maintaining acknowledgment and communication with stakeholders would result in better consumer feedback (Sedtha et al., 2022). In most cities, the cooperation of the community and local officials is crucial to making the policy work. The concerted efforts of all stakeholders are paramount to attaining the program objectives underlying the movement's or cause's success. Alegado (2020) suggests that the city should also focus on training households on recycling their waste in connection with their segregation to continuously reduce the waste collected by the city. To help preserve and maintain the cleanliness and safety of the environment, the residents should continuously follow the city's ordinances.

4.0 Conclusion

The residents are abiding by the no-plastic policy, although it is not implemented well due to inadequate enforcement and monitoring. As a result, some offenders are not penalized, and the policy is not having as much impact as it could. One way to improve policy implementation is to impose stiffer penalties. This would deter people from violating the policy and encourage them to comply. Additionally, barangay officials and local government units (LGUs) should cooperate more fully to ensure the policy is enforced and monitored properly. Another way to improve the policy is to promote the use of eco-bags. This would help reduce the amount of plastic waste generated. Additionally, the barangay officials and LGU could provide residents with discounted or free eco bags. The result entails that the policy implementation is poor, debunking previous studies. The problems identified in the study, such as poor garbage collection, rampant use of plastic, lack of cooperation, lack of oversight and monitoring, and minuscule fund allocation, should be addressed to reduce plastic waste and pollution. The limitation of the study calls for considerations, like a study on plastic waste management implementation in schools, barangays, and other rural areas involving stakeholders using other variables that can be conducted to formulate sound and contextual solutions with a potential impact on solving plastic pollution problems on both local and national scales.

5.0 Contributions of Authors

The lead author, Eduardo K. De Guzman, contributed to the manuscript's conception, design, analysis, and writing. Alfredo M. Esteban Jr., the co-author, contributed to the editing and revisions of the manuscript.

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7.0 Conflict of Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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