

Environmental Protection: Regulations to Reduce and Eliminate Single-use Plastic in Response to Climate Change

IIMS Journal of Management Science
15(2) 224–246, 2024
© The Author(s) 2024
DOI: 10.1177/0976030X241258241
journal.iimshillong.ac.in



Joy Lynn R. Legaspi¹ 

Abstract

This article examines how the Philippines' numerous legislations address the problem of single-use plastic pollution in accordance with the concepts of sustainable development. By examining scholarly and related literature on plastic manufacturing and use, plastic ban and restrictions, and other policies connected to plastic pollution, the study found that the national government agencies worked together to address a wide range of climate change solutions to significantly reduce plastic production as well as usage. Plastic usage regulations have been enacted in each of the 17 local government units that fall under Metro Manila's authority. Individual cities and municipalities, however, may impose varying restrictions due to the fact that their legislation may permit the inclusion of a large variety of different types of plastic compounds. Given this complexity, the rationale behind gradually reducing the consumption of single-use plastic products becomes paramount. Local government agencies require reliable data and effective programs to prevent plastic pollution as global plastic production grows. Regardless of their economic situation, more Philippine cities and municipalities are participating in projects that show their ability to have a global impact on environmental preservation.

¹ Department of Accountancy, De La Salle University Manila, Philippines

Corresponding Author:

Joy Lynn R. Legaspi, Department of Accountancy, De La Salle University Manila, Manila 1004, Philippines.

E-mail: joy.legaspi@dlsu.edu.ph



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed.

Keywords

Environment, plastic pollution, plastic ban and restriction, single-use plastic

JEL Classification: Q53, Q56, Q58

Received 14 January 2024; accepted 06 May 2024

Introduction

Global efforts to combat climate change have intensified in recent years, with the Paris Agreement of 2016 highlighting the imperative to limit temperature increases to less than 2°C (3.6°F) compared to the point before industrialization by the year 2030, necessitating a 45% reduction in emissions (IPCC, 2018). Sustainable development principles have become significant frameworks for consideration of climate change, emphasizing long-term decision-making, interdisciplinary approaches, and local community engagement (Widhalm et al., 2021).

The United Nations–established 2030 Agenda for Sustainable Development delineates a collection of 17 Sustainable Development Goals (SDGs) aimed at fostering global peace and prosperity (UN, 2015).

Human activities, particularly the release of greenhouse gases, are identified as the principal catalysts behind climate change, aggravating global warming beyond natural levels (Widhalm et al., 2021). Of significant concern is the role of plastic pollution, which contributes to greenhouse gas emissions and poses severe environmental threats throughout its lifecycle, from production to disposal (Liang et al., 2021).

While numerous countries have implemented measures to mitigate plastic pollution, the effectiveness and coherence of these efforts vary. The Philippines, in particular, faces significant challenges, with studies highlighting its disproportionate contribution to global plastic waste (CCC, 2021; Braganza et al., 2017; McKinsey, 2015; Schachter & Karasik, 2022). As such, this study aims to analyze the Philippines' legislative initiatives in addressing single-use plastic pollution within the framework of sustainable development principles.

The escalating threat of climate change necessitates urgent and comprehensive action to mitigate greenhouse gas emissions and address environmental degradation. Despite global commitments and initiatives, challenges persist, particularly regarding the proliferation of single-use plastics and inadequate legislative responses. This study focuses on the Philippines, where significant gaps exist in addressing the environmental impact of plastic pollution, threatening both local ecosystems and global climate goals.

The urgency to address plastic pollution stems from its multifaceted environmental consequences, including greenhouse gas emissions, marine pollution, and ecosystem disruption. By examining the Philippines' legislative efforts, this study seeks to identify opportunities for enhancing policy coherence and effectiveness in combating single-use plastic pollution in the wider framework of sustainable development. Such insights are crucial for informing targeted interventions

and fostering international cooperation to reduce the detrimental effects of plastic pollution at both local and global scales.

This study contributes to the ongoing discourse on mitigating climate change and promoting sustainable development by providing a comprehensive analysis of the Philippines' legislative response to single-use plastic pollution. By clarifying the strengths and weaknesses of existing policies, it offers valuable insights for stakeholders, specifically policymakers and environmental advocates seeking to enhance the efficacy of plastic waste management strategies. Moreover, the results of this study have consequences for global efforts to attain the objectives specified in the Paris Agreement and the SDGs, emphasizing the interconnectedness of environmental conservation and sustainable development objectives.

Review of Literature

International Agreements and Policies

International agreements and policies encompass critical frameworks aimed at addressing climate change, notably those exemplified by the Kyoto Protocol and the Paris Agreement. The Kyoto Protocol, established on December 11, 1997, and effective from February 16, 2005, binds industrialized nations to regulate and lower the release of greenhouse gases, operationalizing the United Nations Framework Convention on Climate Change (UNFCCC). Implementation requires meticulous monitoring, review, and verification to ensure transparency and accountability (UNFCCC, 2015a).

Similarly, in the Paris Agreement, ratified on December 12, 2015, and enacted on November 4, 2016, the objective was to restrict the increase in global temperatures, emphasizing progressively ambitious climate action through nationally determined contributions (NDCs). This multilateral agreement highlights the importance of financial assistance and transparency, especially for vulnerable nations (UNFCCC, 2015b). Moreover, both agreements stress mitigation strategies and adaptation efforts, highlighting the need for comprehensive policies across various sectors such as energy, transportation, and agriculture. In this endeavor, nations commit to mitigating adverse impacts on lower-middle income countries and fostering international collaboration through forums such as the Conference of the Parties (COP). These agreements mark significant milestones in combating climate change, emphasizing collective responsibility and concerted action on a global scale (UN, 2015).

United Nations Environmental Sustainability

The 17 SDGs were developed by the United Nations in 2015 with commitments from 193 governments, to guide global sustainability efforts by 2030. These goals, outlined in the 2015 UN Sustainable Development Report, target various challenges, including climate change, waste management, and sustainable economies (UNDP, 2023). They emphasize key areas such as sanitation and water quality

(SDG 6), community development that is sustainable (SDG 11), ethical purchasing and manufacturing (SDG 12), combating climate change (SDG 13), and life beneath the water (SDG 14). Each goal advocates for specific actions, such as promoting citizen engagement, reducing plastic usage, and mitigating emissions, while noting the importance of collaboration among governments, civil society, and the business community for achieving universal sustainability and addressing interrelated global challenges (UNDP, 2023).

Definition and Environmental Impact of Single-use Plastics

Single-use plastics, commonly referred to as SUPs, encompass packaging or consumer products designed for one-time use before disposal, recycling, or destruction. The European Commission defines them as items rarely recycled, leading to significant waste accumulation (EU, 2021). The United Nations Environment Programme (UNEP) elaborates on SUPs as disposable plastics extensively utilized in packaging, including items such as plastic bags, food containers, bottles, straws, cups, and cutlery, contributing to environmental degradation (UNEP, 2018). The pervasive use of SUPs reflects a throwaway culture, posing grave threats to ecosystems and human health. Their persistence in the environment leads to water pollution, marine life fatalities, drainage obstruction, and the emission of harmful gases during production and disposal. These plastics persist for centuries, breaking down into microplastics that infiltrate the food chain, ultimately impacting human health (CCC, 2021).

Worldwide Regulations and Initiatives

- **Bans:** Across 27 countries, legislation prohibits the manufacturing, distribution, import, or consumption of single-use plastics to varying extents (UNEP, 2018). Particularly prevalent in small island states, these bans target specific items, such as tableware, cutlery, and polystyrene products (UNEP, 2018). Countries like Canada integrate such bans into broader environmental initiatives, lacking detailed enforcement mechanisms (UNEP, 2018).
- **Taxes:** 29 nations implement taxes on single-use plastics, aiming to reduce waste, manage plastic disposal, and promote recycling (UNEP, 2018). Europe leads in the number of countries with such taxation systems, followed by the Asia-Pacific, Africa, and Latin America (UNEP, 2018).
- **Extended producer responsibility (EPR):** A total of 63 nations have implemented EPR rules specifically targeting single-use plastics, with Europe having the highest adoption rate (UNEP, 2018). EPR focuses on reusing plastic packaging and single-use items, varying in implementation across countries and sometimes placing responsibility on retailers or distributors (UNEP, 2018).
- **Deposit-refund mechanisms:** 23 countries have deposit-refund systems mandating the return of single-use plastic products, primarily targeting beverage bottles (UNEP, 2018). Most prevalent in Europe, these

mechanisms incentivize recycling but lack representation in other regions (UNEP, 2018).

- Recycling mandates: 51 countries enforce recycling regulations, with the majority setting explicit recycling goals (UNEP, 2018). European nations lead in implementing recycling mandates, often aligned with EU directives on packaging waste (UNEP, 2018). Policymakers worldwide turn to market-based instruments such as taxes and bans to address single-use plastics, reflecting growing global efforts toward environmental conservation (UNEP, 2018).

Management of Plastic Waste in the Philippines

- Overview of plastic pollution issue: Plastic contamination is a substantial concern to the Philippines, with the country being a major contributor to marine plastic contamination. Annually, the Philippines generates 2.7 million metric tons of garbage, with 0.5 million metric tons of plastic waste leaking into the environment. Between 70% and 90% of illegally disposed waste ends up in water bodies, exacerbating the problem (Braganza et al., 2017; McKinsey, 2015; Schachter & Karasik, 2022). A study by the World Wide Fund for Nature (WWF) Philippines in 2020 revealed that out of 2.15 million tons of plastic consumed annually, 35% (760 thousand tons) is lost to the open environment and 33% (706 thousand tons) ends up in landfills and dumpsites (Business World, 2022; WWF, 2020). The sachet economy, characterized by the extensive use of single-use plastic packaging, worsens the plastic pollution crisis. The Philippines consumes 164 million sachets daily, leading to substantial environmental degradation. Additionally, disposable diapers further compound the issue, as they are challenging to manage and dispose of (GAIA, 2019).
- Challenges faced: Several challenges hinder the effective management of plastic waste in the Philippines. The prevalence of single-use plastic packaging, particularly in the sachet economy, contributes significantly to pollution. Moreover, the lack of proper disposal mechanisms for items such as sachets and diapers exacerbates the problem. Despite efforts by local governments to implement zero-waste initiatives, inadequate infrastructure and limited resources hamper effective solid waste management (GAIA, 2019).
- Policy recommendations: Addressing the plastic waste crisis includes implementing a nationwide ban on single-use plastic bags, enforcing regulations on products packaged in single-use plastics, compelling diaper companies to expand recycling programs and develop alternatives to single-use diapers, strengthening regulations against waste burning, and holding companies accountable for their plastic packaging waste, particularly multinational corporations, by encouraging innovative product design and distribution strategies (GAIA, 2019). These recommendations aim to address the fundamental factors contributing to plastic pollution in the Philippines and promote sustainable waste management practices.

Plastic pollution and climate change are two interconnected global challenges that require urgent attention and coordinated action at international, national, and local levels. While plastic waste poses significant threats to marine ecosystems and human health, climate change aggravates environmental degradation and threatens the livelihoods of millions worldwide. In response to these challenges, international agreements, policies, and sustainable development goals have been established to mitigate greenhouse gas emissions, promote sustainable practices, and address plastic pollution (UNDP, 2023; UNEP, 2018).

Methodology

The research methodology employed a comprehensive approach to understand and evaluate the policies related to plastic pollution and single-use plastics in the Philippines only.

Figure 1 illustrates the sequential steps in the research methodology. The following steps were undertaken:

1. Literature review: The researcher conducted an extensive review of academic and relevant literature, focusing on plastic pollution in the Philippines and legislative measures addressing this issue. The selection criteria included articles relevant to plastic pollution and existing legislation.
2. Policy evaluation: The methodology involved assessing policy effectiveness by analyzing recent news articles related to policies discussed in the literature. Despite not every policy having news coverage, the available

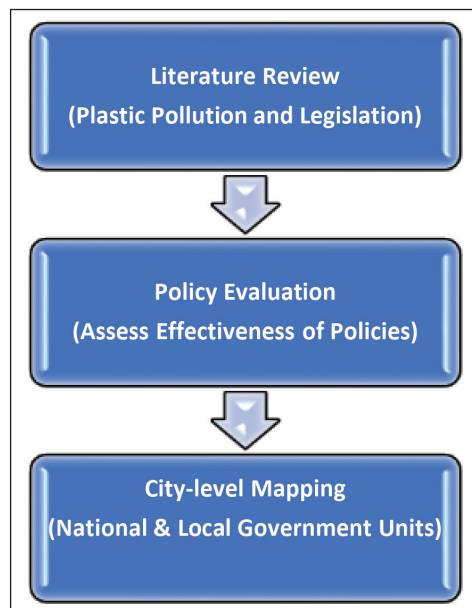


Figure 1. Sequential Steps in the Research Methodology.

information provided valuable context. Secondary and tertiary sources were utilized for deeper understanding.

3. City-level mapping: A detailed mapping of policies introduced by both national and local government units within Metro Manila was presented. Specific ordinances and projects for various cities were identified, including: Caloocan: Ordinance No. 0503, S-2013; Las Piñas: Ordinance No. 1036–11; Makati: Ordinance No. 2003–095; Mandaluyong: Ordinance No. 523, S-2013; Manila: Ordinance No. 8282, S-2012; Marikina: Ordinance No. 18, S-2012; Muntinlupa: Ordinance No. 10–109; Pasig: Ordinance No. 9, S-2010; Parañaque: Ordinance No. 18–40, S-2018; Pasay: Ordinance No. 4647, S-2011; Quezon: Ordinance No. 2876, S-2019; Malabon: Ordinance No. 01–2013; Navotas: Ordinance No. 2015–14; Pateros: Ordinance No. 2011–10; San Juan: “Kuha sa Tingi” Project—A Zero Waste Campaign; Taguig: “Zero Waste Plan”; and Valenzuela: “May Balik sa Plastik Program.”

Results and Discussion

National Government Unit’s Plastic Bans and Regulations

On March 12, 2021, in the city of Manila, during the inaugural session of the Cabinet Cluster on Climate Change Adaptation, Mitigation, and Disaster Risk Reduction (CCAM-DRR), the Technical Working Group (TWG) on Circular Economy, Sustainable Consumption and Production, and Single-use Plastics, the Climate Change Commission (CCC) put forth a proposal advocating for the adoption of waste avoidance and reduction as the primary strategy, which entails the gradual elimination of single-use plastics (CCC, 2021).

The movement has garnered extensive support, as seen by the significant number of cities, municipalities, and provinces, totaling at least 489, that have enforced prohibitions and restrictions on disposable plastics. According to Commissioner Rachel Herrera of the CCC, there is an urgent need for a nationwide prohibition in order to bolster their initiatives focused on climate-resilient recovery and environmental preservation, as well as to mitigate the escalating carbon emissions originating from the country (CCC, 2021).

The government agencies showcased ongoing efforts and analyses conducted in collaboration with the commercial sectors. These efforts were established subsequent to an address made to the cabinet group regarding the resolution titled “Adopting the Principles of Sustainable Consumption and Production, Towards Regulation and Phaseout of Single-use Plastics, and a Responsible Transition to the Use of Environment-Friendly Products” on January 27, 2021 (CCC, 2021).

The purpose of the gathering was to synchronize and integrate resilient and sustainable initiatives within the governmental framework. Pollution from plastic is undeniably a matter of significant concern with regard to public health, waste management, and climate change. Assistant Director Vizmindia Osorio of the Department of Environment and Natural Resources-Environment and

Management Bureau (DENR-EMB), who presided over the TWG meeting, emphasized the pressing necessity to advance the concepts of circular economy and environmentally conscious consumption and manufacturing concepts within their management and community frameworks (CCC, 2021).

Following the enactment of RA No. 9003, the National Solid Waste Management Commission (NSWMC) was formally established as an inter-agency body responsible for overseeing the implementation of solid waste management plans and crafting policies aligned with the law's objectives (Republic of the Philippines—Republic Act No. 9003, 2021). The commission comprises 14 government sector members and 3 commercial sector members. Notably, the government sector representation includes heads of key agencies such as the Department of Environment and Natural Resources (DENR), Food and Drug Administration (FDA), and Department of Trade and Industry (DTI), along with other crucial entities. Additionally, the private sector representation encompasses individuals from non-governmental organizations (NGOs) focusing on recycling and environmental protection, the recycling industry, and the manufacturing or packaging industry (RA No. 9003).

Section 2 of Republic Act No. 9003 establishes the policy of the state to implement a methodical, all-encompassing, and environmentally conscious system for managing solid waste. This system aims to establish standards and objectives for controlling the amount of waste material produced by techniques such as source reduction and waste minimization (NSWMC Resolution 1363, 2020).

In accordance with Section 8(f) of Republic Act No. 9003, it is stipulated that DENR is tasked with the responsibility of proposing policies aimed at removing obstacles hindering trash reduction initiatives. In consideration of the prevailing circumstances, it is essential to recognize that certain materials are widely acknowledged as unnecessary single-use plastics, including: (a) plastic cups with a thickness below 0.2 mm; (b) disposable plastic straws; (c) plastic coffee stirrers; (d) plastic spoons; (e) plastic forks; (f) plastic knives; and (g) plastic bags for laboratory use and thin-film bags (less than 15 microns thick) (NSWMC Resolution 1363, 2020).

Given the need to provide precise directives for national government agencies (NGAs), local government unit (LGU) offices, and other government-controlled entities, it is essential to implement a ban on the use of superfluous plastic that is used only once as a means to mitigate and prevent solid waste (NSWMC Resolution 1363, 2020).

Resolution No. 1363, Series 2020, enacted by the NSWMC, proposes that the DENR be instructed to develop and execute a plan to prohibit the use of non-essential disposable plastics by NGAs, LGU offices, and all other government-controlled offices (NSWMC Resolution 1363, 2020).

The DENR has implemented several strategies and programming efforts with the objective of preventing, reducing, and managing marine litter. Director Osorio placed significant emphasis on the overarching goal of attaining the complete eradication of waste in the waters of the Philippines by the year 2040, with a notable focus on the principles of responsibility and accountability.

The aforementioned statement was made at the formal unveiling of the National Plan of Action for the Prevention, Reduction, and Management of Marine Litter (CCC, 2021).

Also, a diverse group of legislators from both the Senate and the House of Representatives have individually introduced their own iterations of a legislative proposal with the aim of addressing the escalating issue of plastic waste and pollution in the nation under House Bill 9147, "Single-use Plastic Product Regulation Act." The House of Representatives has approved a resolution aimed at gradually eliminating single-use plastic items while also imposing a prohibition on their manufacturing, importation, sale, distribution, availability, and use for a span of four years (CNN Philippines, 2021; Devio, 2021; House Bill 9147, 2021).

Section 3 of the proposed legislation pertains to the gradual elimination of single-use plastic products. The Act stipulates that the elimination of non-compostable single-use plastic items should be implemented over a span of four years, commencing from the date of its enactment. The items that fall under the scope of this study include: (a) ceramic dishes such as plates and saucers; (b) cups, bowls, and lids; (c) utensils such as spoons, forks, knives, and chopsticks; (d) containers for food and beverages made from expanded polystyrene; (e) plastics that are designed to degrade through oxidation, known as oxo-degradable plastics; (f) thin films, packaging materials, or bags with a thickness of less than 50 microns; and (g) multilayered sachets and pouches that incorporate other materials (House Bill 9147, 2021).

The following items will be gradually discontinued within a timeframe of one year from the commencement of this legislation: (a) drinking straws; (b) stirrers; (c) sticks for candy, balloons, and cotton buds; (d) buntings; (e) confetti; and (f) packaging or bags having a thickness of less than 10 microns. Subsequently, a prohibition shall be imposed on the manufacture, importation, sale, distribution, supply, or use of the aforementioned plastic items. The use of appropriately labeled, flexible, and disposable plastic drinking straws for individuals with certain medical issues should be permitted in cases where viable alternatives, such as reusable or compostable options, are not readily accessible (House Bill 9147, 2021).

Section 5: Implementation Strategy for the Gradual Elimination of Single-use Plastic Products by the DENR), in collaboration with the NSWMC, will develop a phase-out plan, hereafter referred to as the plan. This will be done in cooperation with pertinent government departments and agencies, as well as stakeholders. The plan must be completed within six months from the day this Act takes effect (House Bill 9147, 2021).

The DTI, in collaboration with the DENR, the Department of Science and Technology (DOST), and the FDA under the Department of Health (DOH), will develop a *consumption, reduction, and recovery program*. This program aims to achieve a substantial decrease in the consumption of single-use plastic products and promote increased recovery through recycling, treatment, or appropriate disposal methods. The formulation of this program will involve consultations with relevant stakeholders and align with the phase-out period specified in the legislation. These measures encompass national initiatives aimed at reducing consumption,

setting targets for waste recovery, and implementing other strategies to ensure the availability of reusable and compostable alternatives to single-use plastic products. Additionally, these measures stipulate that such products should not be provided free of charge to the final consumer at the point of sale (House Bill 9147, 2021).

The formulation of *producer responsibility schemes* is necessary to effectively achieve the goals outlined in Section 7 of this Act. During the phase-out periods, these programs also act as temporary solutions to reduce the environmental harm that single-use plastic products cause (House Bill 9147, 2021).

In order to comply with the provisions outlined in Sections 6 and 14 of this legislation, it is necessary to develop suitable approaches that will aid local manufacturers in the adoption of the necessary technology and sustainable materials for the creation of *reusable or compostable options* to replace single-use plastic products. These alternatives should also possess high recoverability and recyclability attributes (House Bill 9147, 2021).

Methods of Raising Public Awareness

The DENR, in collaboration with the Department of Education and the Department of Interior and Local Government (DILG), is tasked with creating an information dissemination plan for the Information and Education Campaign (IEC) mandated by Section I of this Act, with the goals of informing consumers about (a) the environmental effects of using and disposing of single-use plastic products; (b) waste reduction, reuse, recycling, and recovery systems; and (c) other best practices (House Bill 9147, 2021).

In accordance with current law, the Department of Finance (DOF), the DILG, and the DTI will work together to establish mechanisms that provide financial or non-fiscal rewards and incentives. These incentives aim to encourage manufacturers, importers, sellers, and end users to actively engage in programs designed to accomplish the objectives outlined in the plan (House Bill 9147, 2021).

The Act imposes penalties for intentional infringements of Sections 3, 4, 6, 7, 8, 14, and 15, as well as for the fabrication of papers mandated by the Act. Additionally, misrepresentation by individuals engaged in the production, importation, or distribution of single-use plastic items, as well as by commercial premises, will also be subject to penalties (House Bill 9147, 2021).

The imposition of a plastic prohibition in the office activities of the CCC has already been implemented by Office Order No. 2020-010, titled “Office Waste Management System,” which was issued on January 24, 2020. According to the office order, the use of disposable plastics, including plastic straws, stirrers, utensils, food wrappers, shopping bags, instant food packing, lids, drinking bottles, and caps, is not allowed on the office premises during official meetings, conferences, and other events (CCC—OWMS Order 2020-010).

In line with President Ferdinand Marcos Jr.’s pledge to reduce ocean pollution, the Philippine Senate has passed a bill that will impose tariffs on single-use plastics. To discourage use and safeguard the environment, the law proposes a tax of 100 pesos (\$1.75) per kilogram on the production and import of single-use plastics, which would increase by 4% per year beginning in 2026. There is a projection

to generate a yearly income of 9.3 billion pesos to finance solid waste management initiatives (Reuters, 2022).

Local Government Units' Plastic Bans and Regulations

Different LGUs have been enforcing plastic limits since 2011, with varying degrees of success. According to 2019 data from NSWMC, 489 cities and municipalities (30% of all cities and municipalities in the nation) have implemented some policy to limit the distribution and usage of plastics, most notably plastic bags, except for the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM). Local governments nationwide regulate the use of plastics (CCC, 2021; Teves, 2021).

Metro Manila has plastic regulations in its 17 local government units. But various cities and towns may have different restrictions since their rules may cover different types of plastic, as briefly discussed below.

Caloocan: Ordinance No. 0503, S-2013

The scope of this ordinance encompasses all retail and commercial enterprises that are subject to its regulations under the territorial authority of Caloocan City. These enterprises are prohibited by law from engaging in the sale, supply, and utilization of materials that are not biodegradable, such as polystyrene and bags made of secondary packaging involving dry and wet commodities (Republic of the Philippines, 2013a).

The scope of this law excludes the principal packaging of items and any additional packaging that is integral to the product itself, since viable alternative packaging options are not now accessible in the market. These products include a range of commodities, including but not limited to snack foods, food that is frozen, hardware items, water in bottles or soda, fruit juices, oil for cooking, plastic sachet products containing soap, shampoo and conditioner, cosmetics, and similar items.

The plastic materials used for the packaging of fresh, wet items that are directly acquired from wet marketplaces are classified as secondary packaging. Consequently, it is essential that these materials possess biodegradable or oxo-biodegradable properties.

Any businesses found to be in breach of this code will be given an ordinance violation receipt (OVR) and will face penalties such as the following: The first violation carries a penalty of 1,000 pesos (PHP1,000). The second infraction carries a penalty of PHP3,000. In the event of a third offense, the offender will be subjected to a monetary penalty of up to PHP5,000 and the termination of the company's permit for at least one year (<https://drive.google.com/file/d/1JJ3dnDQPxtknkJNyVLAAYmG11s1cI9Ww/view>).

Las Piñas: Ordinance No. 1036-11

City Ordinance No. 1036-11, enacted in 2011, is a legislative measure that prohibits the use and dissemination of thin film, one-time-use plastic bags, as well as polystyrene foam (commonly known as Styrofoam or Styropor), by commercial

enterprises within the jurisdiction of the City of Las Piñas. The ordinance also outlines the penalties to be imposed for non-compliance with its provisions (Republic of the Philippines, 2011a).

In the event that any establishment fails to comply with the ordinance, they will be liable to face the following penalties: An initial violation results in a penalty of PHP1,000. The second violation would result in a penalty of PHP3,000. The third violation entails a penalty of a PHP5,000 and/or a maximum prison sentence of six months, as determined by the court. In the event of a commercial establishment, their operating license may be revoked for a period of one year (<https://laspinascity.gov.ph/publications?page=2>).

Makati: Ordinance No. 2003-095

The purpose of this legislation is to officially adopt the Makati City Management of Solid Waste Code and establish penalties for any violations. It is important to note that these penalties are subject to all applicable laws as well as existing legal rules and regulations (Republic of the Philippines, 2003).

All food establishments, including food service chains, restaurants, supermarkets, eateries, and similar businesses located in the City of Makati, are required to eliminate their existing inventory of plastics, Styrofoam, and similar materials used for food and product packaging within a period of nine years. These items should be replaced with biodegradable alternatives such as paper plates, bags, mugs, and food packs.

The proposed strategy involves implementing a gradual decrease in stocks over a period of five years, with a yearly reduction rate of 5% throughout this time frame. Over the course of three consecutive years, there was a consistent decline of 20% each year. Over the course of the last year, there has been a decline of 15%.

Individuals who fail to adhere to any of the provisions outlined in these ordinances will be subject to penalties as follows: An individual may be subject to a penalty of PHP1,000 or a period of imprisonment ranging from 5 to 30 days, or both, as determined by the court's discretion. A corporation or establishment may be subject to a penalty of PHP5,000 or a period of imprisonment ranging from 30 days to 1 year, or both, as determined by the court's discretion (<https://www.makati.gov.ph/content/resolutions-and-ordinances/search>).

Mandaluyong: Ordinance No. 523, S-2013

The purpose of this ordinance is to further reduce the use of bags made of plastic and Styrofoam in business enterprises within the City of Mandaluyong. It aims to promote environmental sustainability and encourage the adoption of more eco-friendly alternatives. By revising Sections 1, 2, and 4 of Ordinance No. 479, S-2011, this regulation strengthens the previous efforts made toward phasing out plastic bags and Styrofoam in the city (Republic of the Philippines, 2013b).

Individuals found using or violating Section 2 materials or this ordinance will face penalties such as a fine of PHP500–5,000, cancelation or termination of a permit or license, or being imprisoned for 1–3 months. The penalty will be levied on the owner or operator of the establishment, the manager, or the

person in charge. If the violator is a corporation, a partnership, or an association, the punishment is going to be enforced on the president, general manager, or managing partner (<https://mandaluyong.gov.ph/download/ordinance-no-523-s-2013/>).

Manila: Ordinance No. 8282, S-2012

This regulation is designed to tackle environmental issues linked to the use of plastic bags and polystyrene containers. By prohibiting plastic bags for dry goods and regulating their usage for wet goods, it encourages the adoption of more environmentally friendly alternatives. Furthermore, banning the use of polystyrene and similar materials as containers for various products helps reduce non-biodegradable waste and promotes the use of eco-friendly substitutes. The penalties for violations act as a deterrent, promoting compliance with these regulations and fostering a more environmentally aware community.

Penalties for breaching any of the prohibited actions are as follows: for the initial violation, a fine of PHP1,000 and the requirement to display signage outside the establishment detailing the offense; for subsequent violations, a fine of PHP2,500 and similar signage; and for a third offense, a fine of PHP5,000 and/or imprisonment for up to six months, as determined by the court. Additionally, for business establishments, their operating license may be revoked for a period of one year (<https://citycouncilofmanila.ph/wp-content/uploads/2023/02/ORDINANCE-NO.-8282.pdf>).

Marikina: Ordinance No. 18, S-2012

This ordinance restricts the utilization of plastic bags for packaging wet goods while outright banning their usage for dry items. It promotes the transition to alternative packaging materials for wet goods to minimize plastic waste and promote environmental sustainability. Additionally, it acknowledges the detrimental effects of plastic packaging on dry goods and limits its usage to protect the environment further.

Establishments can be penalized as follows: PHP1,000 for a first offense; PHP3,000 for a second offense and temporary closure until complete compliance; and PHP5,000 for a third offense together with permanent closure. Individuals who violate the terms of this agreement will be fined PHP500 or, if they are unable to pay the fine, will be required to perform eight hours of community service or donate 200 cc of blood (<https://bplo.marikina.gov.ph/ordinance/Ordinance%20No.%20018%20Series%20of%202012.pdf>).

Muntinlupa: Ordinance No. 10-109

The ordinance aims to promote environmental sustainability by reducing plastic waste and encouraging the use of more eco-friendly alternatives. It also recognizes the harmful effects of Styrofoam/Styropor on the environment and seeks to eliminate its usage within the city. The penalties outlined in the ordinance serve as a deterrent to ensure compliance and encourage businesses and residents to adopt more sustainable practices (Republic of the Philippines, 2010a).

Violations of prohibited acts by business establishments can result in penalties such as a fine of PHP500 for the first offense, PHP1,000 for the second offense, and PHP2,500 for the third offense. The court may also impose imprisonment for up to six months, or the establishment may lose their license for one year (<http://www.quezoncitycouncil.ph/ordinance/SP/SP-2876,%20S-2019.pdf>).

Pasig: Ordinance No. 9, S-2010

The ordinance bans the use of plastic bags for dry goods, regulates their usage for wet goods, and prohibits the use of Styrofoam and similar materials as containers for food, produce, and other products (Republic of the Philippines, 2010b). Violators, whether businesses or individuals, will face penalties. For the first offense, a fine of PHP500 will be imposed, PHP1,000 for the second offense, and PHP2,500 for the third offense. Penalties may also include imprisonment for up to six months, with the general manager or president being subject to imprisonment. Furthermore, a one-year cancelation of the business license will be enforced (<https://www.foi.gov.ph/requests/aglzfmb2kctcGhyHgsSB0NvbnRlbnQiEVV TQVAtNDU0OTA3ODMzNjA2DA>).

Parañaque: Ordinance No. 18-40, S-2018

The City of Parañaque has taken a significant step toward environmental sustainability by passing Ordinance No. 18-40 in 2018. This ordinance effectively bans the use, provision, and sale of single-use plastic items such as sando bags, stirrers, straws, cups, cutlery and utensils, Styrofoam plates, cups, bowls, and take-away packaging. The implementation of this ban began in January 2021. This ordinance aims to regulate the use of Styrofoam and plastic bags for prepared food and beverage containers and imposes penalties for non-compliance.

The legislation specifies that establishments found to be violating prohibited acts will be subject to penalties, including a fine of PHP5,000 for the first, second, and third violations. Furthermore, the establishment may be temporarily closed and its business license revoked for a period of one year (https://web.facebook.com/cenroparanaque.ph/photos/a.419808598191302/1621099784728838/?type=3&_rdc=1&_rdr).

Pasay: Ordinance No. 4647, S-2011

On September 12, 2011, Pasay City implemented regulations governing the use of non-compostable plastic carry-out bags while also encouraging the adoption of recyclable paper and reusable bags (Republic of the Philippines, 2011b).

The regulations entail penalties, including a warning, a fine of PHP1,000, a fine of PHP3,000, and the possible closure or cancelation of the mayor's business permit for violators. Additionally, tampering with certification, submitting falsified documents, or passing off counterfeit compostable bags as genuine will result in an administrative fine of PHP3,000 for the first infraction and PHP5,000 for subsequent violations (https://www.pasaycitysecretariat.com/_Attachments/Resolutions/2019111201920_RESO-4873-S2019.pdf).

Quezon: Ordinance No. 2876, S-2019

The regulation bans the utilization of single-use plastic or disposable items, such as cutlery, for dine-in services across all hotels and restaurants in Quezon City. Its goal is to mitigate the environmental repercussions associated with single-use plastics and disposable materials within the food service sector. By implementing this ban, Quezon City is taking a proactive step toward promoting sustainable practices and encouraging businesses to adopt more eco-friendly alternatives for dine-in purposes (Republic of the Philippines, 2019).

The ordinance sets forth penalties for violations committed by restaurants and hotels. A first offense carries a fine of PHP1,000, while a second offense incurs a fine of PHP3,000, along with the withdrawal of environmental clearance and an order to halt operations from the Business Permits and Licensing Department. For a third offense, a fine of PHP5,000 is imposed, the business permit is withdrawn, and a closure order is issued (<http://www.quezoncitycouncil.ph/ordinance/SP/SP-2876,%20S-2019.pdf>).

Malabon: Ordinance No. 01-2013

According to recent information from the Philippine Daily Inquirer, Ordinance No. 01-2013, which governs the utilization of plastic bags for wet goods, bans the use of Styrofoam/Styropor bags, and imposes penalties for their usage, has been sent back to the Malabon City Council for revisions. Businesses are required to adhere to “Plastic-Free Days” every Friday, and violations may result in fines. The consequences for breaching the ordinance range from a PHP1,000 monetary penalty, a cautionary notice, and mandatory participation in a seminar for the initial offense to a PHP5,000 monetary penalty and a one-year revocation of their operating license. Individuals who violate the ordinance are subject to fines ranging from PHP500 to PHP1,500, as well as community work and a lecture, the severity of which is determined by the number of violations committed (Melican, 2013).

Navotas: Ordinance No. 2015-14

Navotas City Ordinance No. 2015-14 restricts the use of polystyrene packaging and plastic bags exclusively on Fridays. According to Connie Labay from Navotas CENRO, the legislation is being rigorously enforced in pharmacies and fast food restaurants. However, she stated that the stringent enforcement of this policy is still ongoing in Navotas fish markets, where fish goods are either wrapped or purchased in plastic bags (Cayabyab, 2019).

Pateros: Ordinance No. 2011-10

This regulation imposes a prohibition on the usage of plastic items and imposes restrictions on their utilization for wet goods, while also forbidding the use of Styrofoam products (<https://events.development.asia/system/files/materials/2012/04/201204-rehabilitation-four-river-systems-pateros.pdf>).

San Juan: “Kuha sa Tingi” Project: A Zero Waste Campaign

San Juan City is dedicated to addressing the challenge of plastic waste in the country. We have already initiated multiple endeavors with the objective of repurposing or recycling plastics. “Communities have the potential to demonstrate that we can decrease, if not completely eradicate, the use of disposable plastics,” stated Mayor Francis Zamora of San Juan City. “Kuha Sa Tingi achieves this by eliminating sachets and other disposable plastics and advocating for the adoption of reusable and refillable systems.” This project not only safeguards the environment and diminishes plastic trash but also generates employment opportunities and promotes a zero-waste circular economy (Greenpeace Philippines, 2022).

Taguig: “Zero Waste Plan”

The Taguig municipal administration has reaffirmed its dedication to environmental preservation. With the introduction of its Zero Waste Plan, an integrated initiative aimed at reducing solid waste and enhancing waste management, the organization plans to achieve an 80% diversion of solid waste from landfills and dumpsites by 2023. The objective of the initiative is to enhance the general health and wellness of Taguig by tackling issues related to water and soil contamination as well as mitigating air pollution. Taguig will also participate in global initiatives to eliminate the use of disposable plastics. Individuals are advised to utilize canvas bags or eco-bags as a substitute for plastic bags while purchasing miscellaneous items such as meat, fruits, and vegetables (Caliwan, 2020).

Valenzuela: “May Balik sa Plastik Program”

The first nationwide initiative in to collect residual waste was the “May Balik sa Plastik” program, which Nestlé Philippines started. The campaign is a combined effort by Nestlé, the Valenzuela City government, the Department of Education, and Green Antz Builders, Inc. Mayor Rex Gatchalian stated that the program holds significance for the city’s citizens as it aims to educate young individuals about the importance of plastic garbage. His approach does not involve banning plastics; instead, it focuses on repurposing and recycling them for other purposes. Although various schools in the city have previously devised their own techniques for managing plastic waste, such as transforming it into furniture, Gatchalian emphasized that the new program will offer further support in efficiently handling these materials. Nestlé’s new program consists of three main components: collection of plastic garbage and cartons from public schools; collection of plastic waste and cartons from barangays; and instructional activities aimed at raising awareness and promoting behavioral change. Through this initiative, individuals who meet the criteria will get rewards from Nestlé and the local government for gathering and surrendering plastic waste and beverage cartons (Garcia & Pedrajas, 2019).

Building upon these findings, a comparative analysis of recent research offers valuable insights into commonalities and disparities in plastic reduction strategies, enforcement practices, and stakeholder engagement approaches. By synthesizing evidence from multiple sources, such as the following:

- **National Government Initiatives:** Recent research might reveal updates on national government initiatives toward plastic waste reduction, including the implementation status of proposed legislative measures and the effectiveness of policies introduced by government agencies such as the CCC and the NSWMC.

Implications: Validation of the effectiveness of national-level policies and legislative proposals can provide insights into their impact on reducing plastic pollution and fostering sustainable waste management practices. Further analysis can identify potential areas for improvement and the need for additional measures to achieve the desired outcomes.

- **Local Government Actions:** Comparative analysis of LGU initiatives from recent studies can highlight variations in approaches, enforcement mechanisms, and outcomes across different regions or municipalities. This analysis can include the evaluation of penalties imposed for non-compliance, the level of public awareness and engagement, and the success of innovative projects aimed at reducing plastic waste.

Implications: Understanding the strengths and weaknesses of local government efforts can inform policymakers and stakeholders about effective strategies for addressing plastic pollution at the community level. Insights from comparative studies can guide the replication of successful initiatives in other areas and the development of tailored interventions to suit specific local contexts.

- **Enforcement and Penalties:** Recent research may provide updated information on the enforcement of plastic ban and regulations, including compliance rates, challenges faced by enforcement agencies, and the impact of penalties on behavior change among businesses and individuals.

Implications: Analysis of enforcement practices and penalty systems can offer valuable insights into the effectiveness of regulatory measures in deterring plastic pollution. Identifying barriers to compliance and exploring strategies to enhance enforcement mechanisms can support the implementation of more robust and equitable enforcement strategies.

- **Collaboration and Awareness:** Comparative studies may examine the level of collaboration between stakeholders involved in plastic waste reduction efforts, the effectiveness of public awareness campaigns, and the role of education in promoting sustainable behavior.

Implications: Assessing the degree of collaboration and awareness-raising activities can help identify synergies and gaps in stakeholder engagement strategies. Insights from such studies can inform the development of holistic approaches to plastic waste management that leverage collective action and foster a culture of environmental stewardship.

Conclusion

Over the years, there have been endeavors to decrease the utilization of plastic with the aim of mitigating environmental damage. Plastic exerts detrimental effects on the natural environment and its inhabitants, encompassing several creatures, particularly humans. The study offers a comprehensive overview in terms of the following:

- **National government initiatives:** The study highlights various initiatives undertaken by the national government, including proposals, resolutions, and legislative actions aimed at reducing single-use plastics. These efforts indicate a concerted approach toward addressing plastic pollution at the national level, aligning with the objective of mitigating environmental degradation.
- **Legislative framework:** The inclusion of relevant laws and resolutions, such as Republic Act No. 9003 and House Bill 9147, demonstrates the legal foundation for plastic waste management. These legislative measures provide a framework for the gradual elimination of single-use plastics and the promotion of sustainable alternatives, reflecting the study's objective of enacting regulations to curb plastic usage.
- **Inter-agency collaboration:** The involvement of multiple government agencies, as outlined in the composition of the NSWMC, and collaborative efforts between departments such as DENR, DTI, and FDA, indicate a coordinated approach toward implementing plastic regulations. This collaboration underscores the study's objective of synchronizing sustainability initiatives within the governmental framework.
- **Local government regulations:** The detailed descriptions of ordinances enacted by various local government units demonstrate the diversity of approaches taken to address plastic usage at the grassroots level. These ordinances impose penalties for non-compliance and encourage the adoption of eco-friendly practices, aligning with the study's objective of promoting sustainable consumption and waste management practices at the local level.
- **Public awareness and engagement:** The inclusion of information dissemination plans, public awareness campaigns, and incentives for compliance highlights the importance of engaging stakeholders and raising awareness about the environmental impacts of single-use plastics. These efforts aim to foster behavioral change and promote community involvement in plastic waste reduction, supporting the study's objective of achieving sustainable consumption patterns.

These initiatives align with the objective of the study, which is to achieve sustainable plastic waste management and environmental preservation. However, to contribute to more effective and sustainable plastic waste management practices, ultimately mitigating environmental damage and protecting the well-being of current and future generations, stakeholders may consider the following recommendations:

- **National government:** Strengthen and enforce existing initiatives aimed at reducing single-use plastics, ensuring that they are implemented effectively across all regions of the country. Allocate sufficient resources and funding toward the research and development of sustainable alternatives to single-use plastics. Implement nationwide awareness campaigns to educate the public about the environmental impacts of plastic pollution and promote sustainable consumption practices. Consider revising and updating existing legislation to address emerging challenges and incorporate best practices in plastic waste management.
- **Legislative framework:** Review and amend existing laws and regulations related to plastic waste management to ensure they are comprehensive and enforceable. Collaborate with relevant stakeholders, including environmental experts, industry representatives, and NGOs, to draft effective legislation that balances environmental conservation with economic considerations. Continuously monitor the implementation and enforcement of plastic waste management laws to address any loopholes or shortcomings.
- **Inter-agency collaboration:** Strengthen coordination and communication among government agencies responsible for environmental protection, waste management, trade, and health to ensure a holistic approach to plastic pollution mitigation. Establish clear roles and responsibilities for each agency within the inter-agency collaboration framework to avoid duplication of efforts and streamline decision-making processes. Foster partnerships with international organizations and other countries to exchange best practices and leverage resources for addressing trans-boundary plastic pollution issues.
- **Local government regulations:** Encourage local governments to adopt and enforce ordinances banning or restricting the use of single-use plastics in their respective jurisdictions. Provide technical assistance and capacity-building support to local government units to develop and implement effective waste management systems, including recycling and composting facilities. Facilitate knowledge-sharing and peer learning among local governments to showcase successful initiatives and encourage replication of best practices.
- **Public engagement:** Launch public awareness campaigns to educate individuals and communities about the environmental impacts of single-use plastics and empower them to take action to reduce their plastic footprint. Implement incentive programs to encourage consumers and businesses to adopt eco-friendly alternatives to single-use plastics, such as reusable bags, containers, and utensils. Foster partnerships with civil society organizations, schools, and businesses to mobilize grassroots support for plastic waste reduction initiatives.
- **Future research:** Conduct further research to assess the effectiveness of existing plastic waste management policies and initiatives in achieving their intended objectives. Explore innovative technologies and strategies for plastic recycling, upcycling, and waste-to-energy conversion to reduce

the environmental burden of plastic pollution. Investigate the socio-economic impacts of plastic pollution on vulnerable communities, including informal waste pickers and coastal populations, to inform targeted interventions and policy responses. Monitor and evaluate trends in plastic production, consumption, and waste generation to inform evidence-based decision-making and policy formulation.

Overall, regardless of their economic condition, it is promising to see a growing number of cities and municipalities in the Philippines actively participating in programs that demonstrate their capacity to play a significant role on a global scale in the field of environmental preservation.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Joy Lynn R. Legaspi  <https://orcid.org/0000-0003-3475-1147>

References

- Braganza, P. (2017). Assessment of the implementation of the Plastic Bag Reduction Ordinance in Quezon City (2012–2016). *Philippine Journal of Public Administration*, 61(1–2), 20–42.
- Business World*. (2022, January). WWF-Philippines proposes three-year roadmap to reduce plastic waste. <https://www.bworldonline.com/sparkup/2022/01/21/424947/sparkup-wwfphilippines-proposes-three-year-roadmap-to-reduce-plastic-waste/>
- Caliwan, C. L. (2020). *Taguig shows love for environment via “zero waste plan.”* Republic of the Philippines, Philippine New Agency. <https://www.pna.gov.ph/articles/1093923>
- Cayabyab, M. J. (2019). Caloocan plastic ban nets hundreds of violators. *One News. The Philippine Star*. <https://www.onenews.ph/articles/caloocan-plastic-ban-nets-hundreds-of-violators>
- City of Environment and Natural Resource Office. (2018). *City of Parañaque Ordinance No. 18-40 s, 2018, bans single-use plastic. sando bags, stirrers, straws, cups, cutlery/ utensils, Styrofoam plates, cups, bowls, take away packaging effective January 2021.* https://web.facebook.com/cenroparanaque.ph/photos/a.419808598191302/1621099784728838/?type=3&_rdc=1&_rdr
- CNN Philippines. (2021, July). *House passes bill banning single-use plastics.* <https://www.cnnphilippines.com/news/2021/7/29/House-bill-plastics-ban.html>
- Devio, L. (2021, July). House passes bill banning single-use plastics. *The Manila Times*. <https://www.manilatimes.net/2021/07/30/news/national/house-passes-bill-banning-single-use-plastics/1808987>

- Environmental Ordinances and Resolution. (2011). *Municipality of Pateros Ordinance No. 2011-10. Banning the use of plastic products and regulating its use on wet goods and prohibiting the use of Styro products*. <https://events.development.asia/system/files/materials/2012/04/201204-rehabilitation-four-river-systems-pateros.pdf>
- European Commission. (2021). Energy, climate change, environment. *Single-use plastics*. https://environment.ec.europa.eu/topics/plastics/single-use-plastics_en
- Garcia, P., & Pedrajas, J. A. (2019). Plastic recycling program launched in Valenzuela City. *Manila Bulletin*. <https://mb.com.ph/2019/06/10/plastic-recycling-program-launched-in-valenzuela-city>
- Global Alliance for Incinerator Alternatives (GAIA). (2019). *Plastics exposed: How waste assessments and brand audits are helping Philippine cities fight plastic pollution*. <https://www.no-burn.org/wp-content/uploads/PlasticsExposed-3.pdf>
- Government of the Philippines. (2001, December 20). *Department of Environment and Natural Resources—DENR Administrative Order No. 2001—34. Implementing rules and regulations of Republic Act 9003*. https://eeci.ph/wp-content/uploads/2021/03/DENR_DAO-2001-34-IRR-of-RA-9003.pdf
- Government of the Philippines. (2020). *National Solid Waste Management Commission—NSWMC. Department of Environment and Natural Resources. NSWMC Resolution No. 1363, Series of 2020*. <https://emb.gov.ph/wp-content/uploads/2020/02/2020-NSWMC-RESO-NO.-1363-SERIES-OF-2020-SINGLE-USE-PLASTICS.pdf>
- Greenpeace Philippines. (2022). *San Juan City spearheads sari-sari store refill system in bid to address plastic pollution*. <https://www.greenpeace.org/philippines/press/53564/san-juan-city-spearheads-sari-sari-store-refill-system-in-bid-to-address-plastic-pollution/>
- House Bill No. 9147, 18th Congress, Senate of the Philippines. (2021, July). *Single-use plastic products regulation act. An act regulating the production, importation, sale, distribution, provision, use, recovery, collection, recycling, and disposal of single-use plastic products*. https://legacy.senate.gov.ph/lis/bill_res.aspx?congress=18&q=HBN-9147
- IPCC. (2018). Summary for policymakers. In V. Masson-Delmotte, P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P. R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, & T. Waterfield (Eds), *Global warming of 1.5°C. An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* (p. 32). World Meteorological Organization.
- Liang, Y., Tan, Q., Song, Q., & Li, J. (2021). An analysis of the plastic waste trade and management in Asia. *Waste Management*, 119, 242–253.
- McKinsey Center for Business and Environment. (2015, September). *Stemming the tide: Land-based strategies for a plastic-free ocean*. <https://www.mckinsey.com/~media/McKinsey/Business%20Functions/Sustainability/Our%20Insights/Stemming%20the%20tide/Stemming%20the%20tide%20Land%20based%20strategies%20for%20a%20plastic%20free%20ocean.ashx>
- Melican, N. R. (2013). Malabon's anti-plastic ordinance withdrawn for further review. *Philippine Daily Inquirer*. <https://newsinfo.inquirer.net/479367/malabons-anti-plastic-ordinance-withdrawn-for-further-review>

- Philippine Climate Change Commission (CCC). (2020, January). *Office Order No. 2020-010, titled "Office Waste Management System," issued on January 24, 2020.* https://climate.gov.ph/public/ckfinder/userfiles/files/Knowledge/MEMORANDUM_WASTE%20MANAGEMENT%20SYSTEM.pdf
- Philippine Climate Change Commission (CCC). (2021, September). *Cabinet cluster TWG convened on circular economy, sustainable consumption and production and addressing single-use plastics.* https://climate.gov.ph/news/449?fbclid=IwAR1_um9Gu-cEiPymzRUrSkstx4A9EkkUtXaoHox30FQzkb0tRxoQLhWJH6Qo
- Republic of the Philippines. (2003). *Sangguniang Panglungsod, City of Makati. Makati City: Ordinance No.2003-095. An ordinance adopting the Makati City solid waste management code and providing penalty for violation thereof, subject to all laws and existing legal rules and regulations.* <https://www.makati.gov.ph/content/resolutions-and-ordinances/search>
- Republic of the Philippines. (2010a). *Sangguniang Panglungsod, Pamahalaang Lungsod ng Muntinlupa Kalakhang Maynila. Ordinance No. 10-109. An ordinance prohibiting the use of plastic bags on dry goods, regulating its utilization on wet goods and prohibiting the use of Styrofoam/Styropor in the city of Muntinlupa and prescribing the penalties thereof.* <https://muntinlupacity.gov.ph/wp-content/uploads/2023/02/blg-10-109.pdf>
- Republic of the Philippines. (2010b). *Freedom of information. City of Pasig, NCR. Pasig City Ordinance No. 09 series of 2010. An ordinance banning the use of any form of plastic bags on dry goods and regulating its utilization on wet goods, as well as the use of Styrofoam and similar materials as containers for food, produce and other products, providing penalties for its violation thereof and for other purposes.* <https://www.foi.gov.ph/requests/aglfzmVmb2kteGhyHgsSB0NvbnRlbnQiEVVtQVAtNDU0O-TA3ODMzNjA2DA>
- Republic of the Philippines. (2011a). *City of Las Piñas Ordinance No. 1036-11 series of 2011. An ordinance banning the use and distribution of thin film, single out, plastic bags, and polystyrene foam (Styrofoam/Styropor) by commercial establishments in the city of Las Piñas.* <https://laspinascity.gov.ph/publications?page=2>
- Republic of the Philippines. (2011b). *City of Pasay Ordinance No. 4647 s. 2011. An ordinance regulating the use of non-compostable plastic carry out bags in Pasay city and promoting the use of recyclable paper carry out bags and reusable carry out bags, prescribing the penalties thereof and thereby totally banning carry out plastic bags in the city of Pasay.* https://www.pasaycitysecretariat.com/_Attachments/Resolutions/2019111201920_RESO-4873-S2019.pdf
- Republic of the Philippines. (2012a). *City of Manila Ordinance No. 8282 s. 2012. An ordinance banning the use of any form of plastic bags on dry goods and regulating its utilization on wet goods as well as the use of polystyrene and similar materials as containers for "food, goods, and other products" and providing penalties for violation thereof and for other purposes.* <https://citycouncilofmanila.ph/wp-content/uploads/2023/02/ORDINANCE-NO.-8282.pdf>
- Republic of the Philippines. (2012b). *City of Marikina Ordinance No. 18 s. 2012. An ordinance regulating the use of plastic packaging bags on wet goods and banning the use of plastic packaging on dry goods.* <https://bplo.marikina.gov.ph/ordinance/Ordinance%20No.%20018%20Series%20of%202012.pdf>

- Republic of the Philippines. (2013a). *City of Caloocan Ordinance No. 0503 s. 2013. An ordinance regulating the use of plastic and polystyrene, providing mechanism for its recovery and recycling, encouraging the use of sustainable biodegradable materials, and providing penalties for violation thereof.* <https://drive.google.com/file/d/1JJ3dnDQPxtnkoJNyVLAAYmG11s1c19Ww/view>
- Republic of the Philippines. (2013b). *City of Mandaluyong Ordinance No. 523 s. 2013. An ordinance regulating the use of plastic bags and Styropors in all commercial and business establishments in the city of Mandaluyong and prescribing penalties thereof and amending sections 1, 2 and 4 of Ordinance No. 479, S-2011 entitled: Ordinance phasing out the use of plastic bags and Styropors in the city of Mandaluyong.* <https://mandaluyong.gov.ph/download/ordinance-no-523-s-2013/>
- Republic of the Philippines. (2019). *Quezon City Ordinance No. 2876 s. 2019. An ordinance prohibiting the distribution and/or use of single-use plastic/disposal materials including cutlery for dine-in purposes in all hotels and restaurant in Quezon City.* <http://www.quezoncitycouncil.ph/ordinance/SP/SP-2876,%20S-2019.pdf>
- Republic of the Philippines—Republic Act No. 9003. (2021, January). *An act providing for an ecological solid waste management program, creating the necessary institutional mechanisms and incentives, declaring certain acts prohibited and providing penalties, appropriating funds therefor, and for other purposes.* <https://www.officialgazette.gov.ph/2001/01/26/republic-act-no-9003-s-2001/>
- Reuters. (2022, November). Philippines lower house approves bill taxing single-use plastics. <https://www.reuters.com/world/philippines-lower-house-approves-bill-taxing-single-use-plastics-2022-11-14/>
- Schachter, J., & Karasik, R. (2022). *Plastic pollution policy country profile: Philippines.* Nicholas Institute for Environmental Policy Solutions. <https://nicholasinstitute.duke.edu/sites/default/files/projects/Plastic-Pollution-Policy-Country-Profile-Philippines.pdf>
- Teves, C. (2021). *Banning single-use plastics to solve PH pollution problem.* Republic of the Philippines, Philippines News Agency. <https://www.pna.gov.ph/articles/1133624>
- United Nations (UN). (2015, September 25). *Historic new sustainable development agenda unanimously adopted by 193 UN members.* <https://www.un.org/sustainabledevelopment/blog/2015/09/historic-new-sustainable-development-agenda-unanimously-adopted-by-193-un-members/>
- United Nations Climate Change (UNFCCC). (2015a). *What is the Kyoto Protocol.* <https://unfccc.int/resource/docs/convkp/kpeng.html>
- UNFCCC. (2015b). *The Paris Agreement. What is the Paris Agreement?* https://unfccc.int/sites/default/files/english_paris_agreement.pdf
- United Nations Development Program. (2023). *Sustainable Development Goals. Background on the goals.* Denmark, SDG Accelerator. <https://www.undp.org/sdg-accelerator/background-goals>
- United Nations Environment Programme (UNEP). (2018). *Single-use plastics: A roadmap for sustainability* (rev. ed., pp. vi, 6).
- Widhalm, M., Salazar, K., Dorworth, L., & McCormick, R. (2021). *Climate change and sustainable development.* Indiana Sea Grant.
- World Wide Fund for Nature Philippines (WWF). (2020, October). *EPR scheme assessment for plastic packaging waste in the Philippines.* <https://support.wwf.org.ph/what-we-do/plastics/wwf-philippines-continues-to-push-for-extended-producers-responsibility-scheme/>