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Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH



POLICY OPTIONS REPORT

Study on policy options for the reduction of single-use plastics in food consumption, delivery and takeaway



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Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH



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EXECUTIVE SUMMARY

Driven by rapid urbanization, economic development and changing consumption and production patterns, the amount of single-use packaging and plastic items is rapidly increasing in the Philippines and at the same time, waste management systems still lack effectiveness in terms of environmentally sound collection, sorting, recycling, energy recovery and disposal of packaging waste.

The WWF Philippines (2020) estimated that 760,000 tonnes or 35% of the total plastic consumption in the Philippines is uncollected or leaked to the environment while 706,000 tonnes or 33% goes to the landfill, and only 9% (183,000 tonnes) are recycled. Majority of the plastic packaging waste is not utilized (uncollected and disposed to the landfill), thus, most of the efforts done in the Philippines are still focused on improving overall waste collection and management. This shows the linearity of the current life cycle of the plastic material, following the production – consumption – disposal approach.

This report is a background document with a focus on plastic items used in food takeaway, delivery and consumption in the Philippines to be used for development of a policy brief. The policy brief is presented in the document entitled *Reducing Single-Use Plastics in Food Consumption, Takeaway and Delivery: The Way Forward to Better Plastics Circularity* (Delta Tierra Consultants Inc., 2022). A review of existing policies, legal and institutional framework surrounding single-use plastics (SUPs) and the current state of plastic waste management in the Philippines has led to determining four (4) major interlinked issues on plastic waste management in the country as follows: *poor waste segregation, poor waste collection & low recycling rate, low incentive to produce products with recycled plastic content, and low incentive to reduce consumption of SUPs and shift towards non-SUP packaging materials.*

The Philippines needs to set a strategic vision towards addressing the plastic waste situation through a circular economy approach. The 4 major issues on plastic waste management can be turned into opportunities to improve plastic circularity throughout the plastic's life cycle. Key objectives towards achieving this goal are as follows:

- Improve design and support innovation to make plastics and plastic products easier to recycle
- Improve reuse rates and collection of plastic wastes for recycling along the whole value chain (wholesale, food preparation, restaurant/takeaway point, delivery, consumption)
- Increase the share of recycled plastics in the plastics sector
- Increase use of non-SUP/multi-use alternatives

Realizing these objectives will require greater efforts and cooperation from various players in the plastic value chain, from plastic producers/manufacturers, retailers, food service activities industry,



consumers, waste management service providers, recyclers, and other key stakeholders such as the national government agencies, local government units, the scientific institutions (i.e., academe and research and development institutions), business enterprises and the general public.

A summary of the recommended policy measures, clustered together according to the recommended timeline of its planning and implementation, showing also the lead government agencies and corresponding stakeholders that can work together in achieving the goal of reducing single-use plastics in food, takeaway, delivery and consumption throughout the plastic life-cycle is presented in the succeeding table.

	SHORT TEM ACTIONS (2022 – 2024)	MEDIUM TERM ACTIONS (2024-2030)	LONG TERM ACTIONS (2030-2040)	LEAD AND COOPER- ATING ORGANIZA- TIONS
1	<i>Establish baseline data</i> <ul style="list-style-type: none"> Mandate producers, importers and retailers of food packaging, cutleries, cups, straws to report data on the types and amounts of packaging they place in the market 			DENR-EMB with DTI, BoC, and representative from plastic industry, i.e., producers, importers, distributors, and retailers of plastic products and packaging
2	<i>Improve design and support innovation</i> <ul style="list-style-type: none"> Establishing laboratory and testing facilities for R&D of plastic alternatives Build local capacity on LCA and Design for the Environment <p>More R&D activities on green packaging technologies, design for highly reusable, recoverable and recyclable plastics</p>			
		<ul style="list-style-type: none"> Design for Recycling” standards for food packaging Guidelines for the selection of more sustainable packaging design 		DTI – BPS, with DOST, Plastic industry, PCEPSDI, Private sector, Academe
		<ul style="list-style-type: none"> Partnership programs between government and private sector to review and redesign existing and new packaging/ plastic products 		DTI with DOST, DENR, Academe, Plastic industry, PCEPSDI, Private sector including FMCG, Academe
		<ul style="list-style-type: none"> Rewards scheme for innovative packaging/ alternative materials to SUPs 		DENR and Plastic industry with DOST; Academe, Private sector, Development cooperation agencies

	SHORT TERM ACTIONS (2022 – 2024)	MEDIUM TERM ACTIONS (2024-2030)	LONG TERM ACTIONS (2030-2040)	LEAD AND COOPER- ATING ORGANIZA- TIONS
3		<p><i>Expand and strengthen the plastic recycling industry</i></p> <ul style="list-style-type: none"> • Develop policies and standards that allow recycled plastics in food-contact applications • Develop recycled plastic content targets and standards for reusable packaging for food and beverages 		DTI – BSP with DOST; FDA; Plastic industry sector; FMCGs; Academe
4	<i>Develop and strengthen local capacity to conduct LCA</i>			DOST with Academe, DENR, DTI, Plastic industry; PCEPSDI; Development cooperation agencies
5	<i>Conduct more locally adapted Life Cycle Assessment (LCA) of proposed alternatives</i>			
	<i>Reducing the unnecessary use of SUPs and improving reuse rates of plastic products and SUP alternatives</i>			
	Adopt a circular business model for alternative food packaging and delivery systems			LGUs with DTI, DOST, DENR, Academe, Food industry associations, NGOs, Development co-operation agencies
	Online platform for an inventory of businesses offering commercially available non-SUPs and multi-use SUP alternatives, and implementing circular business models			NSWMC-DENR with DTI, DOST, LGUs, Plastic industry sector, FMCGs, Academe, DILG; LGUs, DENR, Procurement Service – DBM
		<ul style="list-style-type: none"> • Require food service providers offering dine-in services to only use reusable food ware • Mandatory or voluntary agreements for restaurants and takeaway vendors to provide reusable containers, cups and cutlery as an option besides SUPs, and for online food delivery platforms to include in their ordering program the option for customers to opt out of disposable cutlery”, or pay additional fee for opting to use SUPs. • Discounted price for customers who bring their own reusable cups/ food containers for takeaway orders, instead of using SUPs 		
		<ul style="list-style-type: none"> • Reward mechanisms for government offices with improved or excellent environmental performance, where GPP is included in the performance assessment 		Department of Finance (DoF), DTI, DILG, DOST, DENR

	SHORT TERM ACTIONS (2022 – 2024)	MEDIUM TERM ACTIONS (2024-2030)	LONG TERM ACTIONS (2030-2040)	LEAD AND COOPERATING ORGANIZATIONS
			<ul style="list-style-type: none"> • Tax on single-use plastic packaging or plastic products at the import or manufacturing stage. • Tax for plastic packaging applications without minimum recycled content • Tax benefits for plastic packaging applications meeting the recycled content standards 	DoF with DTI, DOST, DENR, plastic industry, i.e., producers, importers, distributors, and retailers of plastic products and packaging
6	<i>Improving collection of plastic wastes for reuse and recycling</i>			
	Set targets for plastic waste collection and plastic recycling			Local government units
	LGUs' enhanced implementation of RA 9003			
		<ul style="list-style-type: none"> • Extended Producer Responsibility (EPR)/ Extended Stakeholders Responsibility (ESR) • Take back with deposit-refund scheme 		DENR with Plastic producers and manufacturers, DILG, LGUs, Community organizations, Waste management service providers, recyclers, Food service sector, Retailers, NGOs
		<ul style="list-style-type: none"> • Formalize the informal waste sector (waste pickers and recycles) 		NGOs and Community organizations in cooperation with LGUs, Waste management service providers, Recyclers, Retailers
7	<i>Intensify IEC campaigns</i>			DENR and LGUs with CCC, DILG, Private sectors, Industry and business associations, Academic institutions, Community organizations, NGOs, Media organizations



ABBREVIATIONS

BoC	Bureau of Customs
BPS	Bureau of Philippine Standards
DENR	Department of Environment and Natural Resources
DoF	Department of Finance
DOST	Department of Science and Technology
DTI	Department of Trade and Industry
CCC	Climate Change Commission
EMB	Environmental Management Bureau
EPR	Extended Producer Responsibility
FMCG	Fast moving consumer goods
HB	House Bill
HDPE	High density polyethylene
IEC	Information, education and communication
LCA	Life Cycle Assessment
LDPE	Low density polyethylene
LGU	Local Government Unit
Micron	Micrometer
MRF	Materials Recovery Facilities
NEAP	Non-Environmentally Acceptable Products and Packaging Materials



NEDA	National Economic Development Authority
NPOA-ML	National Plan of Action for the Prevention, Reduction and Management of Marine Litter
NSWMC	National Solid Waste Management Commission
PAP4SCP	Philippine Action Plan for Sustainable Consumption and Production
PCEPSDI	Philippine Center for Environmental Protection and Sustainable Development, Inc.
PE	Polyethylene
PET	Polyethylene terephthalate
PNS	Philippine National Standard
PP	Polypropylene
PRO	Producer responsibility organization
PS	Polystyrene
PVC	Polyvinyl chloride
RA	Republic Act
R&D	Research and development
SB	Senate Bill
SMEs	Small and Medium Enterprises
SUPs	Single-use plastics
TPY	Tonnes per year

1. INTRODUCTION

1.1. Project Background

Driven by rapid urbanization, economic development and changing consumption and production patterns, the amount of single-use packaging and plastic items is rapidly increasing in the Philippines and other East and Southeast Asian countries. At the same time, waste management systems still lack effectiveness in terms of environmentally sound collection, sorting, recycling, energy recovery and disposal of packaging waste. These trends significantly contribute to marine littering – a growing local, national, regional and global threat to marine ecosystems and fisheries as well as the tourism sector. Governments, businesses, academia and civil society increasingly recognize that a switch towards a circular economy approach to plastic waste is necessary to tackle these challenges.

The project “Rethinking Plastics – Circular Economy Solutions to Marine Litter”, which is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and Expertise France, supports the transition towards a circular economy for plastics and sustainable plastic consumption and production in the Philippines and other East and Southeast Asian countries to contribute to a significant reduction of marine litter. In support of the Philippine government’s initiatives in implementing the government’s circular economy and plastic waste management strategies, GIZ has contracted a policy options study on reducing single-use plastics (SUPs) in food takeaway, delivery and consumption.

1.2. Objectives

This report is a background document with a focus on plastic items used in food takeaway, delivery and consumption in the Philippines to be used for development of a policy brief. The policy brief is presented in the document entitled *Reducing Single-Use Plastics in Food Consumption, Takeaway and Delivery: The Way Forward to Better Plastics Circularity* (Delta Tierra Consultants Inc., 2022). The result will provide practicable policy recommendations to reduce single-use plastics in the food delivery and consumption sector within the context of the available market, of existing institutional frameworks and of forthcoming legal developments.

1.3. Methodology

A desktop study was initially conducted to illustrate the current state of plastic waste management in the Philippines and review the existing policies, legal and institutional framework surrounding SUPs in the country. This includes reviewing publicly available reports from government agencies like the Department of Trade and Industry (DTI), Department of Environment and Natural Resources (DENR), the plastic industry associations, and studies by various international funding agencies such as World Wild Fund for Nature (WWF), World Bank (WB) and GIZ, among others.

The review has led to determining the most relevant gaps and challenges, and identifying policy options that could address these issues eventually leading to the reduction of SUPs for food takeaway, delivery and consumption. The proposed policy options were subjected to assessment and evaluation based on its effectiveness, efficiency, equity, technical feasibility and social acceptability. These were also presented to various stakeholders in the plastic value chain, e.g., plastic producers/manufacturers, retailers, food service activities industry, waste management service providers, recyclers, and key stakeholders such as the national government agencies, local government units, scientific institutions (i.e., academe and research and development institutions), and business enterprises practicing the new circular business model. The stakeholders’ consultation was conducted to obtain their views on the workability and social acceptability of the policy options. In addition, examples of SUP policies implemented in other countries are provided, which may serve as benchmark for the new policies in the Philippines.

2. PLASTIC PRODUCTION AND CONSUMPTION IN THE PHILIPPINES

2.1. Overview of the Plastic Industry in the Philippines

The Philippine petrochemicals industry contributed Php 113 billion (bn) to the Philippine Gross Domestic Product (GDP) in 2018 (*Philippine Board of Investment, 2018*). The petrochemicals industry, which produces monomers as by-products from oil refinery, serves as the upstream sector for the plastics industry. Only two (2) companies represent the upstream sector in the Philippines, Petron Corporation and JG Summit Olefins Corporation.

The midstream sector has 8 industry players which produce plastic resins or polymers from monomers to the downstream plastics industry to form different products. The midstream industry has a combined production capacity of 655,000 tonnes per year (TPY) of polyethylene (PE), 350,000 TPY of polypropylene (PP), 160,000 TPY of polyvinyl chloride (PVC), and polystyrene (PS) at 30,000 TPY (*Petrochemicals, n.d.*). There is no production of polyethylene terephthalate (PET) in the Philippines.

There are more than 1,000 companies in the downstream industry, which represents the local plastic fabricators and converters. They use plastic resins to manufacture packaging, industrial and consumers' plastic products. There are a few large downstream facilities, but majority are small and medium scale enterprises. Due to the insufficient domestic supply of plastic resin materials, the downstream industry has to import much of its plastic resin demand.

2.2. Consumption of Plastic Packaging and Plastic Items

According to the 2021 World Bank's Market Study for the Philippines: Plastics Circularity Opportunities and Barriers, the country consumed an estimated 1.1 million TPY of PET, PP, and PE resins combined in 2019. Of this consumption, only 292,000 TPY (27%) are collected for recycling and the remaining 73% either goes to the landfill or is leaked to the environment (World Bank Group, 2021). The application of PET, PP and PE resins is widely used in the packaging industry, as presented in Annex A.

Most of these plastic products and packaging applications are used as SUPs, commonly referred to as disposable plastics, are items that intended to be used only once before being thrown away or recycled. SUPs can be plastic packaging, plastic items or service ware, such as food containers, plates, cups, drinking straws, coffee stirrers, spoons, forks, knives, and thin-filmed *labo/sando* (refers to thin, translucent plastic bags and thin-filmed carrier bags which are lower than 15 microns in thickness) bags.

2.3. Plastic Material Flow and Life Cycle

Based on the plastic material flow analysis of the Philippines conducted by Consortium Cyclos and AMH-MWTS for WWF Philippines, out of the 2,150,000 tonnes of plastic wastes that are available for local consumption, 760,000 tonnes or 35% of the total plastic consumption is uncollected or leaked to the environment while 706,000 tonnes or 33% goes to the landfill. Approximately 16% (345,000 tonnes) are stored and in-use, 2% (54,000 tonnes) are used as alternative fuel for energy recovery, around 9% (183,000 tonnes) are recycled and 5% (107,000 tonnes) of the plastic wastes are exported.

This scenario shown in Figure 1, is generally applicable to Metro Manila and major urban cities such as those located in Regions 3 and 4. In other provinces in the country, the percentage of wastes that are uncollected and disposed to dumpsites can be higher due to the unavailability of recycling and energy recovery facilities, and sanitary landfills.

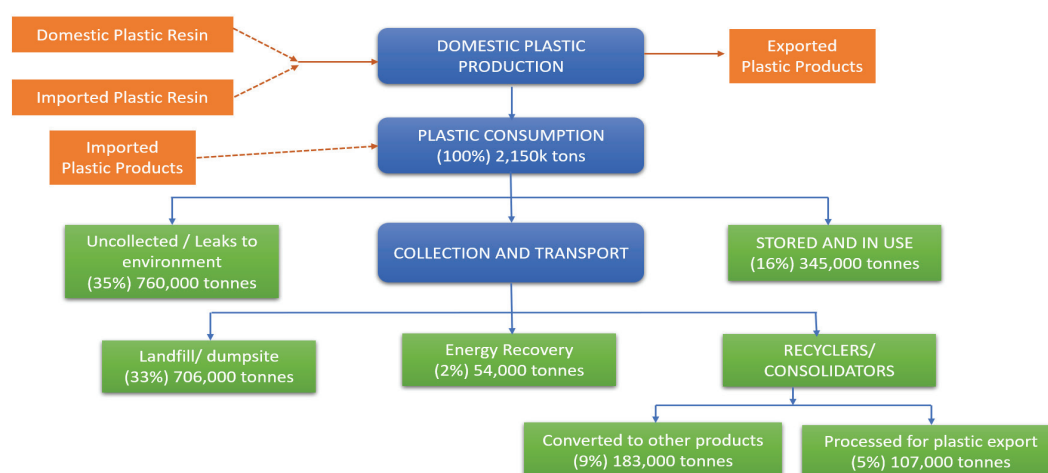


Figure 1. Plastic Packaging Material Flow in the Philippines (WWF Philippines, 2020)

As illustrated in Figure 1, the life cycle of the plastic material is still very linear, which follows the production – consumption – disposal approach. Majority of the plastic packaging waste is not utilized (uncollected and disposed to the landfill), thus, most of the efforts in managing plastics is still at the post-consumption stages of the plastics life-cycle, which are focused on improving overall waste collection and management.

3. POLICIES, LEGAL AND INSTITUTIONAL FRAMEWORK SURROUNDING SINGLE-USE PLASTICS IN THE PHILIPPINES

There are several laws and regulations that are relevant to solid waste management in the Philippines. The main legal framework for solid waste management, prevention, recycling and disposal at the national level is the Republic Act (RA) 9003 or the Ecological Solid Waste Management (ESWM) Act. The Department of Environment and Natural Resources (DENR) is designated to be responsible for the implementation of RA 9003.

The National Solid Waste Management Commission (NSWMC), chaired by the Secretary of DENR is the main government agency that is responsible for the formulation of policies, implementation and monitoring of the ESWM Act. While there are no specific national rules yet regulating single-use plastics, there are local ordinances enacted in cities or municipalities that have a ban or restrict the use of plastic bags.

This section summarizes the existing policies, legal and institutional frameworks that contain relevant provisions that impact the management of single-use plastics in the Philippines.

3.1. Existing and Policies, Legal and Institutional Frameworks and Active Bills Related to SUPs

3.1.1. National Action Plans

Chapter 20 of the *Philippine Development Plan (PDP) 2017-2022* released by the National Economic Development Authority (NEDA) specifically promotes sustainable consumption and production through the 1) formulation and implementation of a “polluters pay” policy, 2) establishment of a sustainable market for recyclables and recycled products, 3) strengthening the certification and establish information systems for green products and services, 4) strengthening the implementation of Philippine Green Jobs Act, 5) promotion of green procurement in the public and private sectors, and 6) strengthening of the promotion, development, transfer, and adoption of eco-friendly technologies, systems, and practices in the public and private sectors by increasing access to incentives and facilitating ease of doing business and other related transactions. One of the targets that the PDP 2017-2022 aims to achieve through the implementation of these measures is 80% solid waste diversion by 2022.

Furthermore, NEDA published the *Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP) 2020 to 2022*, which includes plastics circularity and waste minimization in its priority legislative actions (SDS Admin, 2020). PAP4SCP emphasizes the need for extended producer responsibility to make producers responsible for the recycling and disposal of post-consumer products, green public procurement, study and development of alternatives to single-use plastics to support phase-out, and the creation of business models for waste minimization (e.g., refilling stations for fast moving consumer goods (FMCGs) as alternative to buy-and dispose/sachet approach).

The DENR also recently developed the *National Plan of Action for the Prevention, Reduction and Management of Marine Litter (NPOA-ML)*. An overarching goal of the NPOA-ML is to achieve zero waste to Philippine waters by 2040. Among the strategies in the NPOA-ML are to establish science and evidence-based baseline information on marine litter, mainstream circular economy and SCP initiatives, enhance recovery and recycling coverage and markets, prevent leakage from collected or disposed waste, enhance policy support and enforcement for ML prevention and management, and strengthen Local Government Unit (LGU) capacities and local level implementation of the NPOA-ML.

3.1.1.1. Department of Environment and Natural Resources (DENR)

RA 9003 – Ecological Solid Waste Management Act of 2000

- Key provisions of RA 9003 are as follows:
- Mandatory segregation, segregated collection, transfer and transport of waste
- Mandatory solid waste diversion starting at 25%
- Segregation and collection of solid wastes shall be conducted at the barangay level (the smallest political unit in the Philippines) specifically for biodegradable and recyclable wastes; establishment of Materials Recovery Facilities (MRFs) in each barangay or cluster of barangays, for further sorting, resource recovery, and storage
- Regular classification of wastes should be carried out for each LGU
- Mandatory preparation of a local 10-year Solid Waste Management Plans by the LGUs for the collection, re-use, recycling, composting of wastes and disposal of solid wastes generated in their respective jurisdictions
- Provision of an incentive scheme to encourage LGUs, enterprises, or private entities including NGOs to develop or undertake an effective solid waste management. Incentives for the private sector to promote recycling include (1) fiscal incentives such as tax/duty

exemption and tax credit, (2) non-fiscal incentives such as simplified procedures for the importation of equipment, and (3) financial assistance programs by government financial institutions such as Development Bank of the Philippines and Landbank of the Philippines.

- Mandatory closure and rehabilitation of all dumpsites and their replacement with sanitary landfills (SLFs) as the main disposal method for residual wastes

NSWMC Resolution No. 19 of 2009 - Adopting the Guidelines on the Phasing-out of Non-Environmentally Acceptable Products and Packaging Materials

NSWMC Resolution No. 19 of 2009 mandates the NSWMC under RA 9003 to prepare and update a list of Non-Environmentally Acceptable Products and Packaging Materials (NEAP) to be prohibited according to a schedule and as long as NEAP alternatives cost no more than 10% of the cost of disposable products. To date, the NSWMC has declared plastic soft drinks straw and plastic coffee stirrer as NEAP. Any decision to prohibit NEAP should be supported by available scientific, environmental, technical and economic information and scientific studies.

NSWMC Resolution No. 1363 of 2020 – Resolution directing DENR to prepare and implement the banning of the use of unnecessary SUPs by National Government Agencies, LGU offices and all other government-controlled offices

This resolution bans the following SUPs in government offices: plastic cups (< 0.2 mm thickness), plastic coffee stirrers, plastic spoons, forks and knives, and plastic labo and sando bags (< 15 microns).

Department Administrative Order (DAO) 2010-06 – Guidelines on the Use of Alternative Fuels and Raw Materials in Cement Kilns

DAO 2010-06 states that segregated MSW, including residual plastics, can be accepted for co-processing, provided that guidelines/ standards on waste delivery control, waste acceptance criteria, occupational health and safety requirements, co-processing operations, emission limits and monitoring, and documentation and reporting, are followed.

3.1.1.2. Climate Change Commission

The Climate Change Commission (CCC) implements programs aimed at climate resilience and sustainable economy. Among its programs is the Anti-Single Use Plastic Campaign, which is in line with the *Resolution of the Cabinet Cluster on Climate Change Adaptation, Mitigation and Disaster Risk Reduction of 27 January 2021 to “Adopt the principles of circular economy and sustainable consumption and production, towards regulation and phaseout of single-use plastics and a responsible transition to the use of environment-friendly products”* (Cabinet Cluster TWG Convened on Circular Economy, Sustainable Consumption and Production and Addressing Single-Use Plastics, 2021). The program promotes ways to reduce plastic pollution and raise awareness on the negative impacts of SUPs on public health, environment and the climate.

3.1.1.3. Department of Trade and Industry – Bureau of Philippine Standards (DTI - BPS)

The following existing standards for plastics/ plastic products are associated with the management of SUPs:

- Philippine National Standards (PNS) 2028:2003 – Provides a coding system for plastic packaging, which classifies these into seven groups (PET, HDPE, PVC, LDPE, PP, PS, and Others)
- PNS 2164:2021 “Plastics – Environmental aspects – General guidelines for their inclusion in standards” – Provides guidelines for the inclusion of environmental aspects in standards for plastics products, aimed at minimizing adverse environmental impacts without detracting

from the plastic product's primary purpose.

- PNS 2102:2013 “Specifications for compostable plastics” - Specifies procedures and requirements for the identification and labelling of plastics, and products made from plastics, that are suitable for recovery through aerobic composting.
- PNS 2104:2011 “Standard specification for plastics that degrade in the environment by a combination of oxidation and biodegradation” - Covers plastics and products made from plastics that are designed to degrade in disposal environments such as in soil and in sanitary landfill by a combination of oxidation and biodegradation.
- In anticipation of House Bill (HB) No. 9147 mandating the NSWMC, Department of Science and Technology (DOST) and DTI, through BPS, to develop standards for compostable plastic products, the Technical Committee on Plastics and Plastic Products are working on standards related to biodegradability and compostability of plastics, and standards for plastics recycling and recovery, and its environmental aspects.

3.1.1.4. Department of Education

RA 9512 - National Environmental Awareness and Education Act of 2008 states that environmental education shall be integrated in the school curricula at all levels, whether public or private, including in barangay daycare, preschool, non-formal, technical vocational, professional level, indigenous learning and out-of-school youth courses or programs.

3.1.1.5. National Government Agencies

Executive Order No. 301 of 2004 - Establishing A Green Procurement Program for All Departments, Bureaus, Offices and Agencies of the Executive Branch of Government promulgates that all government departments, offices and agencies should establish and implement their respective “Green Procurement Program”. The Philippine Green Public Procurement (GPP) Roadmap Until 2022 and Beyond includes food and catering services in its priority scope for the GPP. It specifies that the procurement of service supplier of food and catering services should consider the use of non-essential disposable products like plastic single-use utensils and the use of recycled materials where possible (Aviso et al., 2017).

3.1.1.6. Department of Labor and Employment (DOLE)

Relevant provisions of the *RA 10771 of 2016 – Philippine Green Jobs Act* include incentives and assistance programs for business enterprises to generate and sustain green jobs as certified by the CCC. Incentives are in the form of tax deduction from the taxable income for skills training, and associated research and development (R&D) expenses of business enterprises. Exempt importation tax of capital equipment will also be provided for such equipment used in promoting, generating, and sustaining green jobs.

3.1.1.7. Local Government Units

Based on NSWMC, since 2011, 489 LGUs have passed ordinances banning or regulating the sale and use of plastic bags and polystyrene foams due to their perceived role in the clogging of waterways, increased flooding and water pollution. Most of these LGUs prohibit the sale and utilization of plastic bags (*sando* bag-type) as packaging material for dry goods.

The extent of the ban in terms of plastic types and end-use applications to which the ban applies vary among LGUs. Some bans place an exemption on plastic bags used for fresh goods and cooked food, while other policies allow the use of “biodegradable” plastics. Most also imposed bans rather than a levy on the consumers.

A notable implementation of plastic regulations is in Quezon City (21st Quezon City Council, 2019), where the full implementation of its plastic bag ban resumed last March 2021 after temporarily lifting the ban in May 2020 following the declaration of community quarantine. Quezon City also now prohibits the use and distribution of SUPs for dine-in purposes. For food delivery and take away orders, food establishments are encouraged to adopt a “By-request protocol”, where customers are given the choice to opt-out of single-use cutleries and condiment sachets.

Solid waste diversion rates of 78% in 2017 in San Fernando, Pampanga, and 92% in Fort Bonifacio, Taguig City were reported in published news (Alegado, 2020). These LGUs have implemented regulations on single-use plastics but it is not clear how much of the reported diversion rates can be attributed to the imposition of SUP regulations. The lack of uniformity of the policies across the country and the monitoring of the effectiveness of these plastic ordinances is not yet fully documented. Hence, data on the achievement of targets of these policies is limited.

LGU ordinances imposing bans on plastics will be considered superseded by the draft HB 9147, discussed in more detail in the section below, once the bill is approved.

3.1.2. Active Legislations in the Senate and House of Representatives

At present, there are over 50 House and Senate Bills that are aimed at addressing the problem on SUPs and other plastic products, and are at various stages of the legislative process. In July 2021, the Philippine House of Representatives approved in its third reading the *HB 9147, an Act regulating the production, importation, sale, distribution, provision, use, recovery, collection, recycling, and disposal of single-use plastic products*, or in short, the “*Single-Use Plastic Products Regulation Act*”. The draft HB 9147 recommends the consolidation of 41 related draft bills filed by different members of the House (Committee on Ecology and the Committee on Ways and Means, 2021). The approved bill was transmitted to the Senate for concurrence.

House Bill 9147 – An Act Regulating the Production, Importation, Sale, Distribution, Provision, Use, Recovery, Collection, Recycling, and Disposal of SUPs

- Tiered phase-out of specific SUPs
- Prohibits the importation of SUPs one year from the effectivity of the Act
- Mandates producers and importers of SUPs to establish and implement within 2 years, Extended Producer Responsibility (EPR) programs such as recovery schemes for plastic wastes, proper transportation of recovered plastic wastes to composting, recycling and other waste diversion or disposal facilities
- Requires commercial establishments to promote use of highly reusable, recyclable and retrievable products, charge the customer a minimum fee of Php 5 for every SUP provided, and encourage in-store recovery program to encourage return of used plastic products
- Mandates the promulgation of PNS for compostable plastics within 6 months of effectivity
- Compels every producer and importer to recover or off-set 100% of their plastic footprint within 5 years, and label their packaging to facilitate proper recovery after use
- Allows producers and importers to deduct from their taxable income such expenses that are necessary for the recovery and diversion of their plastic footprint

Senate Bill 2425 or Extended Producers Responsibility Act of 2021, authored by Senators Villar, Revilla Jr., Pimentel III, Cayetano, and Angara, is an act institutionalizing the practice of extended producer responsibility on plastic packaging waste, which will amend RA 9003. SB 2425 was passed on third and final reading on January 31, 2022 to institutionalize EPR, which will make manufacturers and producers accountable for proper management of their plastic packaging waste.

3.1.3. International commitments/ agreements

In May 2019, parties to the *Basel Convention (Basel Convention Plastic Waste Amendments, n.d.)*, of which the Philippines is a signatory, amended the regulations on the transboundary movement of hazardous wastes to include certain plastic wastes that will require special control such as plastic wastes mixed with other types of wastes and contaminated plastic wastes (including with food residue and contaminated with hazardous wastes). These amendments aim to make global trade in plastic waste more transparent and better regulated.

There are also international policies or agreements that address plastics pollution, such as the *2019 United Nations Environment Assembly (UNEA) Resolution 4/6 "Marine Plastic Litter and Microplastics"* and the *2019 UNEA Resolution 4/9 "Addressing Single-Use Plastic Products Pollution"*. These resolutions call for member states, Philippines included, to address the problem on marine litter and microplastics, and the environmental impacts of SUPs. Existing local strategies related to these international resolutions are currently embedded in the PAP4SCP and the draft NPOA-ML.

At a regional level, the Philippines as an Association of Southeast Asian Nations (ASEAN) member State has adopted "the *Bangkok Declaration on Combating Marine Debris in the ASEAN Region*" and "the *Framework of Action on Marine Debris*" in 2019. Through these commitments, ASEAN member states propose an integrated approach to address marine plastic pollution in ASEAN over the next five years (2021-2025) through strategies that will reduce waste inputs into the system, enhance debris collection and minimize leakage, and create value for waste reuse.

3.2. Current Plastic Management Situation in the Philippines

Various reports and studies on circular economy and waste management, focusing on plastics in the Philippines and in other countries in Asia and Europe were reviewed to determine gaps, challenges and opportunities in addressing issues associated with plastic waste management in the country.

Based on the review of the current plastic waste situation in the Philippines, four (4) major interlinked issues on plastic waste management surfaced, as discussed below. Determination of the root causes of the major issues, documented in Annex C, shows that the plastic waste problem in the Philippines stems from a combination of governance or policy-related issues, economic, social and infrastructural issues.

Poor wastes segregation

In spite being mandated by the law (RA 9003), source separation of waste is still not widely practiced. Poor waste segregation has a negative impact on the recycling rate and consequently the landfill diversion rate. The weak implementation of waste segregation stems from the lack of enforcement of local ordinances to implement RA 9003. LGUs have insufficient financial resources to implement legislation, systems and infrastructures, such as collection system equipped for separate collection, MRFs, and organic waste treatment facilities (Akenji, 2019). Moreover, the diversion of the government's focus on coronavirus disease (COVID-19) measures has compounded the lack of prioritization of the growing plastic waste problem.

Poor waste segregation is also driven by the generally low public awareness on the impacts of poor waste management. From a governance standpoint, many LGUs still have the "end-of-pipe" mentality when it comes to waste management. There is lack of mandatory recycling targets for the public sector to work towards to. Instead, the Philippines has a target to achieve a rate of 80% solid waste diversion by 2022. There is also little incentive for the LGUs to segregate waste due to the low tipping fees at sanitary landfills.

The NSWMC cites the demonstration of best practices in solid waste management in a number of LGUs (Alegado, 2020), which provides an opportunity for other LGUs to replicate in their respective jurisdictions.

Poor waste collection & low recycling rate

There is a lack of systematic collection scheme for reuse and recycling of plastics because of the lack of producer responsibility requirements and the lack of incentives for consumers to avoid or reduce SUPs, and to take back packaging wastes for reuse and recycling.

Plastics recycling capacity in the Philippines is very low. The World Bank Group study (2021) reported that problems attributed to the low recycling capacity are as follows:

- The recycling industry is dominated by small and medium enterprises (SMEs) and is unable to meet multinational buyers' requirements in terms of scale, quality, management systems and process demands.
- They find it hard to fulfil eligibility criteria and documentary requirements to avail of financial incentives and bank loans as mandated by RA 9003.
- There is limited adoption of advanced recycling technologies that are more efficient because of high initial investment costs and because these have not yet been fully evaluated or demonstrated. Recycling technologies currently used have lower efficiency.

Despite the insufficient recycling capacities of the Philippines for the domestically generated and high-value recyclables, some recyclers and aggregators still import and process plastic recyclables. The plastic recyclables collected locally are often dirty and damaged, which makes the recycling process more capital intensive and less economically attractive for the recyclers.

Likewise, the archipelagic geography in the Philippines makes it expensive to collect and transport wastes (WWF Philippines, 2020). Furthermore, recycling facilities and disposal sites are lacking, especially in remote island communities. Consequently, collection for recycling is less economically attractive. As such, recyclable and residual wastes often end up in dumpsites, burned together with other wastes, or are dumped in the ocean.

The recycling industry has demonstrated that there is a market for plastic waste recyclables (World Bank Group, 2021). It shows that there is great opportunity to increase the recycling rate given that an appropriate collection system for recyclables is in place. This is also an opportunity for the producers and retailers to implement circular business practices and incorporate recovery of materials in their business models.

The informal sector can also be seen as a manpower resource that can be tapped and integrated in a formal waste management model to improve waste collection and resource recovery.

Low incentive to produce products with recycled plastic content

The Philippines is strongly dependent on imports of virgin plastic resin for manufacturing of plastic items to meet the domestic demand. There is little incentive to use recycled plastic resin since most plastic converters and brands prefer to use virgin plastic due to its cheaper price (World Bank Group, 2021). Furthermore, there are no existing policies that require industries to use recycled content.

Also related to using plastic products with recycled content is the untapped local market for food-grade recycled plastics. Food-grade recycled plastics offer the highest margins among all the major grades of recycled plastic products, yet the Philippines currently does not use recycled resins for food-grade applications. Moreover, major multinational companies have set targets to use up to

50% recycled resin in their packaging by 2025 and beyond, providing market opportunity for food-grade resins in the Philippines (World Bank Group, 2021).

Low incentive to reduce consumption of SUPs and shift towards non-SUP packaging materials

From a commercial standpoint, SUPs remain widely available in food products and services, with very little choice of alternatives. The cost of SUPs is mainly included in the overhead cost and are provided “free” to consumers, offering little incentive for plastic use reduction. The current linear system of make-use-dispose in the plastics industry also does not encourage the use of multi-use products. Likewise, the “sachet economy” or “tingi culture” (the preference of Filipinos to use products contained in smaller packs, usually made of single-use multiple layered plastics/materials) remains prevalent because these products have low upfront costs and experienced as more convenient.

Regarding the development of locally available green packaging alternatives by research institutions and by the industry, alternative non-plastic packaging materials have yet to be fully commercialized. Product design for circularity, including reuse, needs to be embedded in the R&D efforts to avoid burden shifting of environmental impacts.

The restrictions and safety concerns induced by COVID-19 have further reduced reusable and recycled plastic demand. Some food service providers like coffee shops and milk tea sellers which used to allow the option to “bring-your-own-tumbler” before the pandemic had stopped allowing this due to health and safety concerns. Furthermore, the consumer shift to online purchasing equated to the generation of more take away plastic packaging wastes.

These challenges present opportunities for the government, the plastics industry, food service and delivery providers and research institutions to work together to drive up demand for non-SUPs. A combination of trade policies, market-based instruments, informational campaigns and regulatory product standards could help encourage consumers to shift towards non-SUPs, and drive the production of more plastic products with recycled content.

4. RECOMMENDATIONS TO REDUCE SUPs IN FOOD TAKEAWAY, DELIVERY AND CONSUMPTION

It is highly recognized that the primary issue that needs to be addressed is still the proper management not only of plastic wastes but of the total solid waste generation. Secondary to that is to widen and deepen the reach of information, education and communication (IEC) campaign not only regarding proper solid waste management practices but including its economic, social and health impacts, alternative practices and technological solutions. Recognizing the gaps in the full implementation of the existing key provisions of RA 9003, the growing issues on plastics, specifically the use of SUPs in the food takeaway, delivery and consumption should also be tackled simultaneously, to be able to move towards a more sustainable plastic economy.

The Philippines needs to set a strategic vision towards addressing the plastic waste situation through a circular economy approach. The policy options presented in this report focused on addressing the gaps and challenges in plastic waste management and turning it into opportunities to improve plastic circularity throughout the plastic’s life-cycle. Starting with the design and production of plastics, ensuring efficient collection of wastes for reuse or recycling up to proper waste management at end-of-life.

Key objectives towards achieving this goal are as follows:

- Improve design and support innovation to make plastics and plastic products easier to recycle
- Improve reuse rates and collection of plastic wastes for recycling along the whole value chain (wholesale, food preparation, restaurant/takeaway point, delivery, consumption)
- Increase the share of recycled plastics in the plastics sector
- Increase use of non-SUP/multi-use alternatives

Realizing these will require greater efforts and cooperation from various players in the plastic value chain, from plastic producers/manufacturers, retailers, food service activities industry, consumers, waste management service providers, recyclers, and other key stakeholders such as the national government agencies, local government units, the scientific institutions (i.e., academe and research and development institutions), business enterprises and the general public.

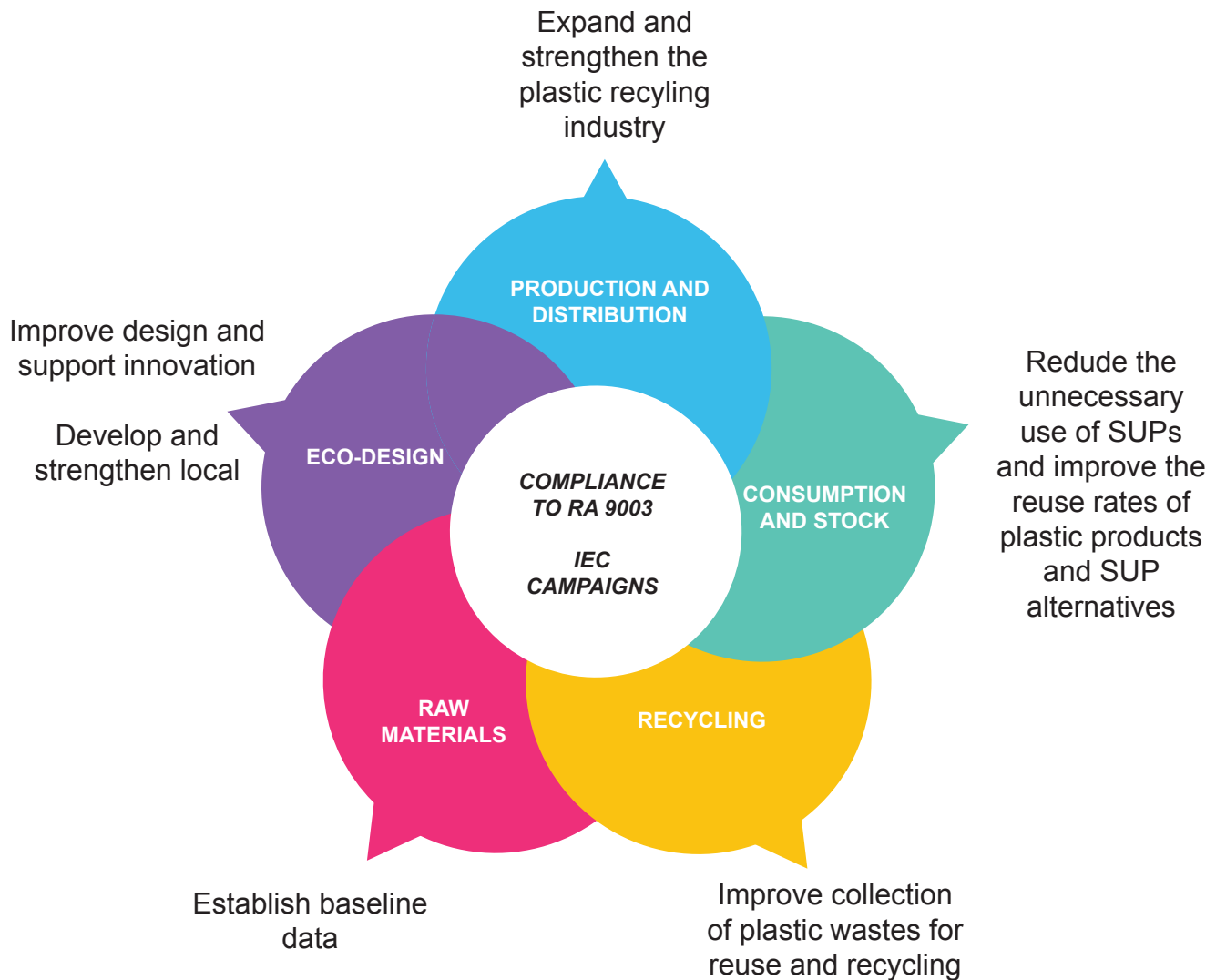
Figure 2 presents an overview of the recommended policy measures for reducing SUPs in food consumption, takeaway and delivery, as can be applied throughout the plastic's life – cycle, and further discussed in the succeeding sections.

4.1. Establish baseline data

There is generally a lack of sufficient data on SUP consumption, specifically packaging and packaging products, post-use collection, and treatment. The collection of these data is not mandated by the government at present. Data collection is an essential component in effective policy development, monitoring and evaluation of sustainable plastic waste management, and for encouraging investments specifically in the plastics recycling sector.

It is recommended to ***mandate producers, importers and retailers of packaging and packaged products to collect data on the types and amounts of packaging*** they place in the market each year by end-use sector and report the packaging data to either a relevant industry-led producer responsibility organization (PRO) or to the government. This is in-line with the action plan of the NPOA-ML to establish a science-and evidence-based baseline information on marine litter. A technical working group may be created and lead by DENR through its Environmental Management Bureau (EMB) together with other government agencies, such as the Bureau of Customs (BoC), DTI, and with representation from the plastic industry, i.e., producers, importers, distributors, and retailers of plastic products and packaging.

Figure 2. Overview of policy options for reducing single-use plastics in food consumption, takeaway and delivery throughout the plastic life-cycle



As an example, Singapore introduced mandatory packaging reporting in 2020. All companies putting packaging into the country are required to declare the plastic resin type and tonnage from 2021 onwards. Obligated companies are also required to submit their plans to reduce, reuse or recycle packaging waste. This information is collected and being studied by Singapore's National Environment Agency to develop targets for managing packaging waste including plastics to be in place by 2025 (Akenji, L.,2019).

Having an accurate understanding of plastic products entering the country each year will facilitate implementation of appropriate actions and measuring its effectiveness in tackling the plastic waste and pollution.

4.2. Improving design and supporting innovation to make plastics and plastic products easier to recycle

From a commercial standpoint, the choice of design for packaging materials today is driven by market branding and functionality. Multiple layers, dyes, light-weighting, single-serving products, PVC labels as contaminants to recycling and other design choices reduce the feasibility of both collection and recycling.

Design for recycling standards for food packaging and other plastic items can help with this barrier, to enable better recyclability of the plastics. Likewise, **guidelines for the design and selection of more sustainable packaging design** will help product developers from the industry and research and development institutions in considering the environmental, technical, economic and social aspects of the plastic product value chain. This can be developed and implemented by the Department of Trade and Industry through the Bureau of Product Standards (DTI-BPS) together with the Department of Science and Technology (DOST), and in consultation with the plastic industry sector. The guidelines can also be useful for product developers to review the existing and new packaging and other plastic products to identify opportunities for improving environmental performance of plastic products.

In Australia, a Sustainable Packaging Guidelines (SPGs) was established by the National Environment Protection (Used Packaging Materials) Measure 2011 and the Australian Packaging Covenant (APCO) to support Australian organizations to integrate the sustainable packaging principles into their operations. The SPGs is a comprehensive, publicly available resource to assist the design and manufacture of packaging that balances the demands of the market, consumer protection and the environment (Australian Packaging Covenant Organisation, 2020).

Beyond design for recycling, a **design for the environment** approach should also be considered to tackle not only design for recycling but also reduction of environmental impacts of the plastic over its entire life cycle. This includes design for material efficiency, use of renewable materials, and design to minimize littering, among others.

Partnership programs can be created with local and multinational companies in the Philippines to re-evaluate packaging design and the use of target SUPs listed in HB 9147 and those declared NEAP by the NSWMC. This program can be initiated by the government, through the leadership of DENR, supported by DOST, DTI, academic institutions, and in cooperation with plastic industry and the FMCGs. A similar program was done in Thailand, where an agreement was established with the five largest drinking water producers to stop using cap seals for drinking water bottles from 1 April 2018 (Thai PBS, 2018).

Grants, subsidies or tax relief shall be available for private companies and R&D institutions for conduct of studies and technology transfer **on green packaging technologies, design for highly reusable, recoverable and recyclable plastics**. Private companies and business associations will support SUP alternatives if backed by scientific evidence. The government and private sectors must work hand-in-hand to make available in the Philippines the much-needed laboratory and testing facilities for R&D of plastic alternatives.

The government could launch ***rewards scheme for innovative packaging systems and alternative materials to SUPs***, and facilitate wide-scale adoption of winning solutions.

4.3. Increase the share of recycled plastics in the plastics sector

The Philippines' dependency on imports of virgin plastic resin and the preference of most plastic converters and brands to use virgin plastic due to cost of raw material make it challenging to promote processing and use of recycled plastic among the industry. Furthermore, there are no existing policies that require plastic industry to use certain percentage of recycled plastic as raw material.

Moreover, the local market for food-grade recycled plastics is yet untapped. Food-grade recycled plastics offer the highest margins among all the major grades of recycled plastic products, yet the Philippines currently does not use recycled resins for food-grade applications. Furthermore, major multinational companies have set targets to use up to 50% recycled resin in their packaging by 2025 and beyond, providing market opportunity for food-grade resins in the Philippines.

Setting standards that allow recycled plastics in food-contact applications, such as food utensils, containers and packaging will enable more private sector investments in this activity. Once standards are existing, ***setting recycled plastic content targets and standards for reusable packaging*** for food and beverages, as well as other plastic products used in food consumption can be implemented. Policies and standards will help guarantee a domestic demand and encourage investments in plastics recycling.

To further strengthen the demand for recycled plastic material in plastic packaging, market-based instruments such as ***tax for plastic packaging applications without minimum recycled content***, and/ or ***tax benefits for plastic packaging applications meeting the recycled content standards***, which was discussed in the Section 4.2, can be imposed.

As a large consumer base, ***government offices can set recycled content specifications for plastic products in the existing GPP policy*** already in place. Setting recycled content targets in government procurement can help the plastic recycling industry achieve economies of scale, resulting in more cost-efficient operations.

4.4. Reducing the unnecessary use of SUPs and improving reuse rates of plastic products and SUP alternatives

Refusing or none-use of SUPs should still be the most important alternative towards reducing the unnecessary use of SUPs. This practice can be embedded to the public through the use of massive information, education and communication campaign.

The HB 9147 proposes the imposition of ban on certain “unnecessary” SUPs used in the food packaging, food delivery and takeaway such as drinking straws, stirrers, packaging bags that do not meet standard thickness, oxo-degradable plastics, cutlery and film wrap.

Before banning any SUP, policymakers should determine whether alternatives are environmentally acceptable, readily available and affordable, through a life cycle assessment, for example, as specified in the NSWMC Resolution No. 19 of 2009 - Adopting the Guidelines on the Phasing-out of Non-Environmentally Acceptable Products and Packaging Materials. ***More locally adapted Life Cycle Assessment (LCA) of proposed alternatives*** to plastic products should be conducted to ensure that burden shifting and trade-offs are recognized and avoided. ***Local capacity on LCA and how to correctly interpret such studies should be strengthened***. DOST in partnership with academic institutions can spearhead the capacity building since available LCA studies on NEAP in the Philippines are commissioned and conducted by DOST.

In anticipation of the passing of the bill, the following policy measures, in combination with the ban on unnecessary SUPs, can help reinforce this regulation to curb SUPs:

- Consider longer phase-out period for micro and small business enterprises to comply with the SUP ban. During the consultation with the Philippine Franchise Association, more than 60% of their members are micro, small and medium enterprises (MSMEs). MSMEs are willing to support the shift into sustainable food packaging, however, they are hoping to have a gradual phase out to give them time to adjust and adapt to the changes.
- Adopt a circular business model for alternative food packaging and delivery systems such as the purchase of products in refillable containers or reusable packs and take back mechanisms for reusable food packaging/ containers. The LGUs may create ordinances to incentivise new and existing businesses that are adopting circular business models. It could be through business tax discount or exemptions, ease in securing business permits, or provision of a start-up capital funding institution. This can encourage businesses to adopt a circular business model and to increase awareness of the consumers that there are other ways in avoiding SUPs. Some examples of businesses adopting a circular business model in the Philippines, such as “Wala Usik” project of PRRCFI in Negros Island and retail stores like Back-to-Basics Ecostore and Maginhawa Eco Store both in Quezon City (Delta Tierra Consultants, Inc., 2022), can be used as case model by the LGUs to prepare the incentive ordinance.
- Establish an online platform for an inventory of businesses offering commercially available non-SUPs and multi-use SUP alternatives, or services adopting circular business models. SB 2425, amending RA 9003, has a provision to establish a National Ecology Center (NEC), which shall provide consulting, information, training, and networking service for the implementation of EPR on plastic packaging waste. The NEC can host the online platform for credible information on local suppliers and manufacturers of alternatives to SUPs. Related information, such as the ecolabel database and other private sector market initiatives by various organizations, may also have linked access through this online platform. This platform can be operated by a private sector through a partnership with NSWMC, which has direct supervision of the NEC.
- Require food service providers offering dine-in services to only use reusable food ware; Mandatory or voluntary agreements for restaurants and takeaway vendors to provide reusable containers, cups and cutlery as an option besides SUPs, and for online food delivery platforms to include in their ordering program the option for customers to opt out of disposable cutleries”, or pay additional fee for opting to use SUPs. Provide discounted price for customers who bring their own reusable cups/ food containers for takeaway orders, instead of providing SUPs.
- These options are already being voluntarily practiced by limited establishments and consumers in Metro Manila, but it has not been fully incentivised/disincentivised. Thus, the discount as an incentive or paying for additional fee for using SUPs, may encourage consumers for using SUP alternatives or discourage using SUPs, respectively. Local government ordinances can drive the implementation of this option.
- In China, an online food delivery platform “Meituan Waimai”, launched a no cutlery option, which allows customers to choose to opt-out from chopsticks. In 2019, the company added an incentive to users by giving them 10 virtual points for each order with the “no cutlery” option. Due to this incentive, the opt-out from cutlery has doubled (Li, 2020).
- Strengthen implementation of Green Public Procurement by government offices through reward mechanisms for government offices with improved or excellent environmental performance, where GPP is included in the performance assessment
- Provide tax incentives for the import and local production of SUP alternatives to food packaging and other plastic products with proven environmental advantage over conventional SUPs, as supported by available scientific, environmental, technical and economic information and scientific studies

- Internalize the environmental costs of SUPs by placing a tax on single-use plastic packaging or plastic products at the import or manufacturing stage. The destination of tax revenues and mechanism for access of collected tax should be established to avoid public mistrust on the use of funds. Directing revenues towards environmental projects such as recycling facilities can reinforce the idea of a “green tax”.

An example of this is a Plastic Packaging Tax, which the United Kingdom (UK) is implementing effective April 2022. This tax will apply to plastic packaging manufactured in, or imported into the UK, that does not contain at least 30% recycled plastic. The objective of the tax is to provide a clear economic incentive for businesses to use recycled plastic material in plastic packaging, which will create greater demand for this material and in turn stimulate increased levels of recycling and collection of plastic waste, diverting it away from landfill or incineration (*Introduction of Plastic Packaging Tax from April 2022*, 2021).

A new legislation for this new tax system or charges to tackle single-use plastic waste needs to be drafted in coordination with the Department of Finance (DoF) and in consultation with manufacturer and importers of plastic packaging, business customers of manufacturers and importers of plastic packaging, and the consumers.

4.5. Improving collection of plastic wastes for reuse and recycling

Actions to support the recycling and reuse of SUPs start with source separation and segregated collection. Separate collection prevents waste contamination and increases cost efficiency in recycling.

The LGUs, being the main responsible for the implementation and enforcement of RA 9003 in their respective jurisdictions, have to step up its plans to completely and continuously implement its solid waste management plan (SWMP). Segregation and collection of solid waste shall still be prioritized. A recycling component is one of the programs of the SWMP that the LGU has to create. Hence, **setting targets for plastic waste collection and plastic recycling** is suggested. Having a concrete plastic collection and recycling targets will lead to identifying specific measures to be undertaken to meet the diversion target for plastics and towards Philippines’ general goal of 80% total solid waste diversion from landfill by 2022.

An **Extended Producer Responsibility scheme**, which has recently been institutionalized through SB 2425, will help increase plastic waste collection. The bill mandates producers, in coordination with distributors and retailers to take part in an EPR Program, where obliged companies have the responsibility for the proper and effective recovery, treatment, recycling or disposal of plastic packaging and plastic product wastes after they have been sold and used by consumers. A more encompassing **Extended Stakeholders Responsibility (ESR)** may also be considered as it involves every stakeholder such as the local and national government, private sector and the general public in handling plastic waste.

Take back system with deposit-refund scheme, which has been successfully adopted in many countries, is an incentive for consumers to take part in the EPR system by returning empty packaging or used plastic items.

The informal waste sector which includes waste pickers, junkshops, waste consolidators and recyclers, is responsible for about 90% of the country’s recyclables collection. Hence, there is opportunity to **tap into the informal sector’s manpower resource and integrate them into the EPR system**. This sector can be formalized through non-governmental organization (NGO)-supported microenterprises, cooperatives, private waste management service providers or local public agencies. This will provide them opportunities for training, receiving health insurance and getting fair incomes, while playing a critical role in the recovery of single-use plastic items.

4.6. Massive and strategic information, education and communication programs

Another crucial factor in the success of any policy measures to reduce SUPs is **effective information, education and communication (IEC) programs**. IEC shall be involved in all stages of the planning and implementation towards addressing the plastic waste situation through a circular economy approach. It is important to ensure that the general public are provided with clear and correct information regarding SUPs and its alternatives.

There have been great efforts by the government led by Department of Environment and Natural Resources (DENR), Climate Change Commission (CCC) and various local government units (LGUs) on IEC campaigns. As suggested by a representative from Philippine Reef and Rainforest Conservation Foundation, Inc. (PRRCFI) during the stakeholders' consultation, repetitive advertising has to be done so that the information will be retained by the people. Measures to raise public awareness on plastic issues, benefits, and its environmental and social impacts needs to be continued intensified by taking advantage of social media, television and radio, education and outreach programs in schools and communities.

Moving forward, the following policy actions, grouped together by its specific objectives for reducing single-use plastics in food consumption, takeaway and delivery throughout the plastic life-cycle, are discussed in details in the succeeding section.

4.7. Programming for planning and implementation

Table 1 shows the policy actions clustered together according to the recommended timeline of its planning and implementation, showing also the government agencies and corresponding stakeholders that can work together in achieving the goal of reducing single-use plastics in food, takeaway, delivery and consumption throughout the plastic life-cycle.

Table 1. Summary of policy actions for reducing single-use plastics in food takeaway, delivery and consumption

	SHORT TEM ACTIONS (2022 – 2024)	MEDIUM TERM AC- TIONS (2024-2030)	LONG TERM ACTIONS (2030-2040)	LEAD AND COOPER- ATING ORGANIZA- TIONS
1	<p><i>Establish baseline data</i></p> <ul style="list-style-type: none"> Mandate producers, importers and retailers of food packaging, cutleries, cups, straws to report data on the types and amounts of packaging they place in the market 			DENR-EMB with DTI, BoC, and representative from plastic industry, i.e., producers, importers, distributors, and retailers of plastic products and packaging
2	<i>Improve design and support innovation</i>			
	<ul style="list-style-type: none"> Establishing laboratory and testing facilities for R&D of plastic alternatives Build local capacity on LCA and Design for the Environment <p>More R&D activities on green packaging technologies, design for highly reusable, recoverable and recyclable plastics</p>			DOST with Academe, DENR, DTI, Plastic industry, Philippine Center for Environmental Protection and Sustainable Development, Inc. (PCEPSDI), Private sector
		<ul style="list-style-type: none"> Design for Recycling” standards for food packaging Guidelines for the selection of more sustainable packaging design 		DTI – BPS, with DOST, Plastic industry, PCEPSDI, Private sector, Academe

	SHORT TERM ACTIONS (2022 – 2024)	MEDIUM TERM ACTIONS (2024-2030)	LONG TERM ACTIONS (2030-2040)	LEAD AND COOPERATING ORGANIZATIONS
		<ul style="list-style-type: none"> Partnership programs between government and private sector to review and redesign existing and new packaging/ plastic products 		DTI with DOST, DENR, Academe, Plastic industry, PCEPSDI, Private sector including FMCG, Academe
		<ul style="list-style-type: none"> Rewards scheme for innovative packaging/ alternative materials to SUPs 		DENR and Plastic industry with DOST; Academe, Private sector, Development cooperation agencies
3		<p><i>Expand and strengthen the plastic recycling industry</i></p> <ul style="list-style-type: none"> Develop policies and standards that allow recycled plastics in food-contact applications Develop recycled plastic content targets and standards for reusable packaging for food and beverages 		DTI – BSP with DOST; FDA; Plastic industry sector; FMCGs; Academe
4	<i>Develop and strengthen local capacity to conduct LCA</i>			DOST with Academe, DENR, DTI, Plastic industry; PCEPSDI; Development cooperation agencies
5	<i>Conduct more locally adapted Life Cycle Assessment (LCA) of proposed alternatives</i>			
	<i>Reducing the unnecessary use of SUPs and improving reuse rates of plastic products and SUP alternatives</i>			
	Adopt a circular business model for alternative food packaging and delivery systems			LGUs with DTI, DOST, DENR, Academe, Food industry associations, NGOs, Development cooperation agencies
	Online platform for an inventory of businesses offering commercially available non-SUPs and multi-use SUP alternatives, and implementing circular business models			NSWMC-DENR with DTI, DOST, LGUs, Plastic industry sector, FMCGs, Academe, DILG; LGUs, DENR, Procurement Service – DBM
		<ul style="list-style-type: none"> Require food service providers offering dine-in services to only use reusable food ware Mandatory or voluntary agreements for restaurants and takeaway vendors to provide reusable containers, cups and cutlery as an option besides SUPs, and for online food delivery platforms to include in their ordering program the option for customers to opt out of disposable cutleries”, or pay additional fee for opting to use SUPs. Discounted price for customers who bring their own reusable cups/ food containers for takeaway orders, instead of using SUPs 		

	SHORT TERM ACTIONS (2022 – 2024)	MEDIUM TERM ACTIONS (2024-2030)	LONG TERM ACTIONS (2030-2040)	LEAD AND COOPERATING ORGANIZATIONS
		<ul style="list-style-type: none"> Reward mechanisms for government offices with improved or excellent environmental performance, where GPP is included in the performance assessment 		Department of Finance (DoF), DTI, DILG, DOST, DENR
			<ul style="list-style-type: none"> Tax on single-use plastic packaging or plastic products at the import or manufacturing stage. Tax for plastic packaging applications without minimum recycled content Tax benefits for plastic packaging applications meeting the recycled content standards 	DoF with DTI, DOST, DENR, plastic industry, i.e., producers, importers, distributors, and retailers of plastic products and packaging
6	<i>Improving collection of plastic wastes for reuse and recycling</i>			
	Set targets for plastic waste collection and plastic recycling			Local government units
	LGUs' enhanced implementation of RA 9003			
		<ul style="list-style-type: none"> Extended Producer Responsibility (EPR)/ Extended Stakeholders Responsibility (ESR) Take back with deposit-refund scheme 		DENR with Plastic producers and manufacturers, DILG, LGUs, Community organizations, Waste management service providers, recyclers, Food service sector, Retailers, NGOs
		<ul style="list-style-type: none"> Formalize the informal waste sector (waste pickers and recyclers) 		NGOs and Community organizations in cooperation with LGUs, Waste management service providers, Recyclers, Retailers
7	<i>Intensify IEC campaigns</i>			DENR and LGUs with CCC, DILG, Private sectors, Industry and business associations, Academic institutions, Community organizations, NGOs, Media organizations

As shown in the recommended timeline, establishing baseline data is essentially the primary action that needs to be implemented. Having a science-and evidence-based baseline information will aid in an effective policy development, monitoring and evaluation of sustainable plastic waste management. DENR-EMB, with its mandate to implement RA 9003, is the appropriate government agency to lead in the planning and implementation of this recommended policy action.

DOST, which is mandated to provide central direction, leadership and coordination of scientific and technological efforts, will lead the R&D activities related to plastics and its alternatives, and green packaging technologies, as well as in capacity building and conducting LCA and Design for Environment. DTI - BPS, mandated to develop and implement standards for all products in the Philippines, is the government agency that will lead the development of policies and standards that will help expand and strengthen the plastic recycling industry.

LGUs, on the other hand, must continue to improve and enhance its collection, segregation, treatment and disposal of solid wastes in their respective jurisdictions. This must include adopting and integrating new business approaches in reducing unnecessary use of SUPs and improving reuse rates of plastic products and SUP alternatives.

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ANNEX A

Plastic Applications and Opportunities for Recycling

PLASTIC TYPE	APPLICATIONS	RECYCLING OPTION	Collected for Recycling	Landfill, leakage
PET <1>	<ul style="list-style-type: none"> <input type="checkbox"/> Plastic bottles for soft drinks, water, juice, sports drinks etc. <input type="checkbox"/> Food jars for peanut butter, sauces, condiments etc. <input type="checkbox"/> Ovenable film and micro-wavable food trays <input type="checkbox"/> Textiles, monofilament, carpet, strapping, films and engineering moldings. 	<ul style="list-style-type: none"> <input type="checkbox"/> Fiber: Fiber for carpet, fleece jackets, comforter fill, bags, etc. through rPSF (Recycled Polyester Staple Fiber) and rPOY (Recycled Partially Oriented Yarn) <input type="checkbox"/> PET (food-grade): Containers for food, beverages bottles <input type="checkbox"/> PET (non-food-grade): Films, sheets, strapping 	40-55%	45-60%
HDPE <2>	<ul style="list-style-type: none"> <input type="checkbox"/> Packaging Applications: shampoo bottles, milk jugs, plastic shopping bags <input type="checkbox"/> Automotive Applications: fuel tanks, inner and outer protective covers 	<ul style="list-style-type: none"> <input type="checkbox"/> HDPE for packaging applications: shampoo bottles, plastic bags <input type="checkbox"/> HDPE for industrial application: automotive and electronics components 	25-35%	65-75%
LDPE <4>	<ul style="list-style-type: none"> <input type="checkbox"/> Meat and poultry wrapping <input type="checkbox"/> Dairy products <input type="checkbox"/> Snacks and sweets <input type="checkbox"/> Frozen food bags <input type="checkbox"/> Baked goods 	<ul style="list-style-type: none"> <input type="checkbox"/> Plastic lumber, furniture <input type="checkbox"/> Trash bags, sheeting, films (for agriculture) 	5-10% Recycling	85-95%
PP <5>	<ul style="list-style-type: none"> <input type="checkbox"/> Packaging Applications: used for both rigid and flexible packaging <input type="checkbox"/> Automotive Applications: battery cases and trays, bumpers, fender liners, interior trim, instrumental panels and door trims <input type="checkbox"/> Fibers and Fabrics: A large volume of PP utilized in strapping, filament and staple fibers 	<ul style="list-style-type: none"> <input type="checkbox"/> PP for packaging applications <input type="checkbox"/> PP for industrial application: auto, electronics and furniture industries 	25-35%	65-75%

PLASTIC TYPE	APPLICATIONS	RECYCLING OPTION	Collected for Recycling	Landfill, leakage
MULTILAYER FLEXIBLES	<ul style="list-style-type: none"> <input type="checkbox"/> Packaging use as a means of distributing products to the general population, (e.g. sachets, pouches, etc.) <input type="checkbox"/> Nearly all multilayer flexibles are used in film packaging applications, which includes food packaging 	<ul style="list-style-type: none"> <input type="checkbox"/> Co-processing at cement plants for energy recovery <input type="checkbox"/> Processed to make consumer products, such as Eco-bricks, lumber, furniture etc. <input type="checkbox"/> Processed for use with bitumen in road construction 	<p>3-7% Co-processing</p> <p>1-2% Recycling</p>	91 – 96%

Source: World Bank Group. (2021). *Market Study for the Philippines: Plastics Circularity Opportunities and Barriers*. Marine Plastics Series, East Asia and Pacific Region. Washington DC.

IMPRINT

This publication was produced with support of the 'Rethinking Plastics – Circular Economy Solutions to Marine Litter' project. 'Rethinking Plastics' is funded by the European Union and the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by GIZ and Expertise France. The contents of this publication are the sole responsibility of the author and do not necessarily reflect the views of the European Union, the BMZ, GIZ or Expertise France

Project:

Rethinking Plastics – Circular Economy Solutions to Marine Litter
<https://beatplasticpollution.eu/rethinking-plastics/>

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Design/ layout: Flor Ian Louie Bantawig

Photo credits/sources: LuiChan Creatives

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As of October 2022