



ASEANO

Study on Plastics Use and Waste Management in the Food Service Industry

DASMARIÑAS CITY, CAVITE



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Foreword

This report is prepared by Step Forward and commissioned by Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) which manages the Philippine component of the ASEAN-Norwegian cooperation project on local capacity building for reducing plastic pollution in the ASEAN region (ASEANO) Project. It aims to assess and understand plastics use and waste management approaches in the food service industry (both dine in and take out services) and identify a broad range of interventions that will help minimize plastics use and address waste management at source. The target site of the report is Dasmariñas City in Cavite Province, which is traversed by the Imus River that drains in Manila Bay.

Acknowledgements

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Disclaimer

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Acronyms and Abbreviations

3UBs	–	Unregistered, Unregulated and Unreported Businesses
ASEAN	–	Association of Southeast Asian Nations
ASEANO	–	ASEAN Norwegian Cooperation Project
BPLO	–	Business Permits and Licensing Office
CAGR	–	Compound Annual Growth Rate
DOST	–	Department of Science and Technology
EPR	–	Extended Producer Responsibility
FSE	–	Food Service Establishments
FSI	–	Food Service Industry
ICC	–	International Coastal Clean Up
LCA	–	Life Cycle Assessment
LGU	–	Local Government Unit
Mt	–	Metric Tons
MPW	–	Mismanaged Plastic Wastes
MSME	–	Micro, Small and Medium Enterprises
PEMSEA	–	Partnerships in Environmental Management for the Seas of East Asia
QR Code	–	Quick Response Code
QSR	–	Quick Service Restaurants
RA	–	Republic Act
SLF	–	Sanitary Land Fill
SUP	–	Single Use Plastics
UNEP	–	United Nations Environment Program
USDA-FAS	–	United States Department of Agriculture – Foreign Agriculture Service

Definitions

Food grade plastic. Containers, tools or other supplies made of plastics that are cleared to be used for food preparation, handling, and service.

Food Service Establishments. Any fixed or mobile entity engaged in the Food Service Industry or the provision of food service whether onsite or offsite. This includes restaurants, coffee shop, cafeteria, luncheonette, grill, “carinderia” and other pop-ups or kiosks. Catering services also fall under food service establishments.

Food Service Industry (FSI). Sector involved in the businesses essential to the preparation of food products outside of the home to be served or distributed for consumption onsite or offsite.

Marine Litter/Debris. Any persistent, manufactured or processed solid material discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; or discarded or lost at sea. Marine litter poses environmental, economic, health, aesthetic and cultural threats, including degradation of marine and coastal habitats and ecosystems that incur socioeconomic losses in marine-based sectors. (UNEP)

Mismanaged Plastic Wastes. Plastic material littered, ill-disposed, or from uncontrolled landfills.

Plastic Pollution. The accumulation of plastic trash in the environment causing harm to people, animals and the ecosystem

Recycling. The treatment of used or waste materials through a process of making them suitable for beneficial use and for other purposes, and includes any process by which solid waste materials are transformed into new products in such a manner that the original products may lose their identity, and which may be used as raw materials for the production of other goods or services: Provided, That the collection, segregation and re-use of previously used packaging material shall be deemed recycling (RA 9003).

Single Use Plastics. Plastic containers, tools or other supplies made of plastics that are cleared to be used for food preparation, handling, and service.

Solid waste. All discarded household, commercial waste, non-hazardous institutional and industrial waste, street sweepings, construction debris, agricultural waste, and other non-hazardous/non-toxic solid waste.

Waste. Any material, substance, or byproduct that is eliminated or discarded as deemed unwanted or no longer useful or required after usage or completion of a process.

Executive Summary

Introduction

Project Context. The East Asian Seas region is a hotspot for the leakage of plastic wastes into the oceans, with many countries including the Philippines listed as major contributors. Based on the 2019 coastal waste assessment conducted by the International Coastal Clean Up-Philippines across 61 provinces, most of the plastic wastes recovered were food-related such as food packaging, take-away containers, and straws. While the national and local governments are increasingly giving serious attention to this issue, there remains substantial knowledge and capacity gaps to provide effective interventions, particularly at the local levels. The ASEAN-Norwegian Cooperation Project on Local Capacity Building for Reducing Plastic Pollution in the ASEAN region (ASEANO) identified this as a critical gap and commissioned this Baseline Study to address waste issue at source. This Baseline Study examines the status of plastic use and waste management in the food service industry in Dasmariñas City and recommends interventions to address plastics pollution problem at source.

This Baseline Study covers food service establishments (FSEs) in Dasmariñas categorized as (i) full-service restaurants, with full menu and waiting service, (ii) limited-service restaurants or quick service restaurants (QSR), with full menu but pay-as-you-order (iii) cafes/bars/pop-ups (selected menu with few chairs and tables), (iv) kiosks and stalls (purely retail, to be consumed elsewhere), and (v) catering or 100% home delivery. It excludes those unreported, unregulated and unregistered FSEs. It also covers the 6 types of food-grade plastics: (1) Polyethylene Terephthalate, (2) High Density Polyethylene, (3) Polyvinyl Chloride, (4) Low Density Polyethylene, (5) Polypropylene, and (6) Polystyrene.

Methodologies used included surveys conducted of local government units (LGU) and FSEs, field observations, focus group discussions and stakeholder meetings, desk research and interviews. An inception meeting with PEMSEA and the provincial and local government of Cavite was conducted on November 8, 2021. It was followed by a stakeholders' meeting with public and private stakeholders including the academe was held on November 25, 2021 upon project commencement to agree on the objectives, expected outputs and timelines as well as gather valuable inputs that shaped the contents of this Baseline Study. Follow-on Interviews were also conducted as needed. Considering the pandemic situation, research relied heavily on online data and information as well as reports from institutions. The surveys on FSEs and the Local Government Units ("LGUs") were conducted from January 21 to February 10, 2022. The surveys determined 'on the ground' the sentiments, perceptions and practices of the FSEs. LGUs were also surveyed to determine challenges they faced in addressing the plastic waste issue and implementing their respective plastic waste ordinances.

The Baseline Study also benefited from the institutional support of the relevant LGUs. Research activities however, were affected by the Christmas holidays and the travel restrictions due to the pandemic.

Plastic Pollution Crisis

Over the years, the transition to plastics generated a total cumulative production of plastics globally at 9.2bn mt in 2017. Of these, only 21.3% have been recycled; and the rest end up as trash that went straight to landfills, or end up in rivers and oceans. It is estimated as population grows exponentially, a total of 300 million tons of plastics will be added each year, with about 8.8 million expected to end up in the ocean.¹ Since plastics are non-biodegradable,² the world now faces severe environmental consequences: the plastic pollution crisis.

Food Service Industry and Plastic Use

Philippine FSI had been consistently growing from 2015 and reached its peak at US\$15.19 billion in sales in 2019. The market is dominated by full-service restaurants with an approximate market share of 31.8% (2017). The 100% home delivery sub-segment is the fastest growing segment followed by the street stalls/kiosks during the period. Increasing population means increasing demand. The increasingly rising affluence, busy lifestyles, and desire for convenience, drive the growth of FSI. With the entry of several international brands of FSEs also come the emergence of value-conscious groups of consumers who are willing to try new and foreign brand restaurants.

The Philippines FSI market has a strong preference for chained restaurants which expand through franchise or joint ventures. This mode of starting a business capitalizes on the brand value and marketing as well as the time-tested standard of operations of successful businesses. A franchisee is licensed to use the trade mark, service mark, trade name/business name. On the other hand, the franchisee had to comply with standard operating procedures and mandated use of uniform tableware, utensils, and packaging.

For FSEs, plastics present a cost-effective solution that protects food from contaminants, and extends shelf life. It is the ideal packaging for food on-the-go and addresses an important environmental and economic issue of food waste. Plastic packaging is intended for single use in FSI where distribution is from business-to consumer. Plastics ushered a global lifestyle trend for Quick Service Restaurants (QSR) and food to-go or take-aways. FSI service is shifted from dine-in

¹ World Atlas, referencing a 2015 study titled Plastic Waste Inputs from Land into the Ocean, by Jenna R. Jambeck et. al. <https://www.worldatlas.com/> accessed 10 January 2022.

² It takes more than 10 years for plastics to biodegrade.

to take-away and further shifts from reusable containers to single use to single-use, throw-away plastic containers and stuff as well as plastic packaging.

The FSEs are biased to plastic use in many aspects of its service like packaging and delivery, storing, and serving food and drinks. The plastic material is chemically resistant and protects food and beverage from outside and inside contamination. Plastics also help protect foods from damage or spoilage, provide food safety and extend the freshness of food, and facilitating safe transit. They are lightweight compared to traditional packaging, convenient to carry and do not easily break, which is important for food establishments to minimize breakage costs. In addition, plastic is cheaper than wood, metal, or glass. The FSI bias for plastics will remain unless the FSE will have access to more affordable plastic alternatives.

Due to the growing FSI industry and the increase in the amount of single use plastic (SUP) packaging and other items, plastic waste is mounting. The big environmental issue of plastics is the mismanaged plastic waste (MPWs) or plastic materials littered, ill-disposed, or from uncontrolled landfills, that create an environmental crisis.

In the Philippine Coastal Clean-Up in 2019, majority of recovered trash is mostly plastics, specifically, single-use plastics ("SUP") used for food packaging and container and such other related use for food distribution for final consumption.

FSI Dasmariñas City Baseline Assessment

Dasmariñas City is a first class (income classification) component city of Cavite Province, composed of 75 barangays. The city, located 30 kms south of Manila, has a land area of 90.13 square kilometers, which constitutes 5.91% of Cavite's total area. The city is landlocked but traversed by six rivers – San Pedro River, and Imus River, Zapote River, and YlangYlang River, which drain into Manila Bay.³ Its population (2020) was 703,141, representing 16.18% of the total population of Cavite province.

Dasmariñas City has 2,001 registered FSEs engaged in the food service industry. It represents about 12% of the total registered businesses in Dasmariñas City according to BPLO report as of December 31, 2021. For purposes of this Report, 87% of FSEs can be classified as micro enterprises, 12% are small and medium, and 1% is large scale.⁴ The main forms of ownership is single proprietorship (75.8%) followed by corporations (9.7%), partnerships (7.3%) and some are registered as cooperatives (3.3%).

⁴ PhilAtlas Website at <https://www.philatlas.com/lists/physical/rivers-r04a.html> accessed 20 January 2022.

⁵ Classification does not follow the MSME classification but for purposes of discussion only.

The survey on FSEs was conducted from January 21 to February 10, 2022. The sample size for a population of 2001 FSEs with 95% confidence level and 5% confidence interval was determined at 322 respondents. Due to restrictions of mobility, the survey area was confined to 4 barangays where most FSEs are operating even during Covid-19 pandemic. These include Barangays Burol I; Salawag; Sampaloc I; and Salitran II.

At least 68% (225) of the respondents are aware of the existence of the plastics use ordinance issued by the Province of Cavite or Dasmariñas City. However, further analysis indicates that awareness does not guarantee compliance. Despite such awareness, only 25% (80) of FSEs do not use plastics in their services. The rest still use plastic items for dine-in and take-out orders/ services.

There are several sources of plastics in the FSEs. Food ingredients and supplies, purchased or delivered from commissary come in plastic packages or containers. 56% of respondents said that food ingredients, food and kitchen supplies, and beverages supplies, either supplied by the commissaries or sourced from local suppliers, markets or groceries, are contained/packed in plastic. For “clean up” activities, majority of the FSEs (79%) use hand washing soaps and detergents that come in disposable plastic packaging. Dishwashing soaps are a must-have in all stages especially during the clean-up. 66% of the FSEs purchase dishwashing soaps in plastic jar or pouch. With the on-going Covid-19 pandemic and strict adherence to health and medical safety protocol, FSEs are advised to ensure that their premises and customers are safe from any contamination by using disinfectants. Only 40% of the surveyed FSEs purchase disinfectant solutions in plastic bottles and jars.

Dine-in and Take-out Food service also contribute to the amount of plastic used and waste generated. There are only 38 FSEs with dine-in service that do not use disposable plastics. The rest use disposable plastics in food service including plastic cutlery, sachets or containers for sauce and other seasoning, straws, plastic cups and saucers. Some also offer bottled waters as may be requested by the clients. Almost all (surveyed) FSEs with take-out services use disposable plastics such as plastic bags for handling and packaging, food containers, plastic cutleries (spoon, fork, knife or chopsticks), cups, stirrers and straws. For take-aways (left-overs or additional purchase), FSEs also use microwavable food containers (27% of FSE) and plastic bags (50% of FSE).

Based on the estimate of FSEs on the percentage of their plastic wastes vis-a-vis entire solid wastes generated in their business operations, the majority of them or nearly 60% produce plastic wastes not exceeding 30% of their entire solid wastes. A minimal percentage (6.5%) of respondents have plastic trash component from 80% and above. Looking closely at each cluster, the data suggest that large scale FSEs accumulate plastic wastes above the average (37.7%) while the small and medium scale are below average (29.3%). Micro scale FSEs are

within the average having 34.4% of their wastes made up of plastics. Plastic items in the FSE trash are mostly plastic bags, followed by disposable cups, drinking bottles, plastic spoons, straws, soft drink bottles, bottle caps and food containers.

The most common steps being taken by FSEs in managing their plastics wastes is segregation. Plastics are segregated from other wastes; then further segregating SUPs from other types of plastics that can be recycled, reused or repurposed. The SUPs are then discarded and disposed of along with other trash that are not recyclable. The effectiveness of recovery and recycling activity depends on the location of the FSEs. Those located inside the malls are required to segregate their wastes prior to collection by mall waste handlers. For FSEs outside the malls, it is up to the owners, managers and personnel to implement the segregation of waste and plastics. Effectiveness then depends on the level of strictness of the LGU when it comes to collecting unsegregated waste.

Institutional Review and Assessment

The City has one composting facility, the Eco-Center Composting Facility located at the Central Market. However, the city has no centralized Materials Recovery Facility (MRF) and only a few barangays have their own MRFs. The City operates its own sanitary landfill (“SLF”) located in Barangay Salawag consisting of about 6.0 hectares. Waste collection is contracted to a private sector.

While there is no law or ordinance in Dasmariñas City that is specific to plastic use in the Food Service Industry, there are national and local laws that deal with solid wastes and plastic use in general. Cavite has provincial ordinance 007-2012 entitled “An Ordinance Prohibiting, Regulating and Prescribing Certain Uses of Plastics for Goods and Commodities that End Up as Residual Wastes” (Plastics Ordinance). The City also adopted City Ordinance 03-S2012 on Regulating the Use of Plastic Bags and Styrofoam in the City of Dasmariñas.

Majority of the respondents working in the barangays are aware of the Plastics Ordinance and have concern for the impact of plastic wastes in the city as well as other waste management issues. However, respondents have minimal knowledge on the type of plastics, and which can be reused, recycled or are biodegradable. There are respondents from barangays who do not know the existing ordinances. They also do not know about alternatives for plastics.

The City government and its barangays are interested in building their capacities to address plastic waste issues, including project identification and management; updating its SWM plan, design, management and operations of recycling plants, and zero waste management system; forging partnerships and alliances with relevant stakeholders for financing, Q&M of technical

solutions to address plastic wastes, design, management and operations of MRF; access to finance and advisory for such technology in zero wastes management .

The Plastic Ordinance needs to be revisited to strengthen its enforcement and compliance monitoring in order to gauge if the ordinance is the best way to encourage stakeholders to contribute their share in solving plastic waste pollution in the city. Provisions should be simple, clear, and concise without room for interpretation. It should also provide guidance and technical support on how to implement, and provide examples and alternative solutions like procedures for reporting non-compliance, giving incentives to compliance, facilitating access to alternative solutions, putting up seed money for R&D on available low hanging technology, etc.

Global Trends and Best Practices

There are various global trends and best practices that can be studied to determine applicability in the City. Government interventions and support include: (a) Banning or replacing plastic use - including banning certain plastics or a total ban on plastic bags, plastic cups, plates, and cutlery; (b) Tax or extra charges on single use plastic bags to discourage the use; (c) Extended producer responsibility (EPR) scheme that makes the manufacturers of the product responsible for the entire life cycle of the product; (d) Regulated use of plastics by enforcing rules on the storage, manufacture, and use of some single-use plastics in lieu of a nationwide ban; (e) Labeling and IEC that requires FSEs or manufacturers of food containers or packaging to inform its customers which containers are recyclable or reusable; (f) LGU Support including provision of Waste Management Facilities and set up of drop-off and collection points or hubs for sharewares in their existing facilities accessible to customers.

Best practices implemented by FSEs include: (a) Reduction of plastic waste that includes replacing plastics with other materials such as paper and carton boxes and using paper straws; stricter implementation of solid waste segregation in the dine-in, kitchen and prep areas to reduce waste at sanitary landfill; and collaboration on waste reduction and plastic elimination; (b) Replacing plastics with biodegradable plastic (bioplastics) - alternative to fossil-based plastics are plastics based on biomass (such as sugar); (c) Up-cycling - by reusing discarded objects or materials in such a way as to create a product of higher quality or value than the original; (d) Chemical Recycling of Plastics which allow plastics to be recycled, that are difficult or uneconomic to recycle mechanically. by turning plastic waste back into base chemicals and chemical feedstocks; (e) other innovative practices in FSE includes Provision of Customer Incentives for using reusable or returnable cups and containers; Change in Servicing; Developing Your Own Packaging Tool; Extra Charge for Bags; and others innovative practices and approaches; and (f) FSEs partnership with NGOS, Consortiums and Alliances.

Recommendations

Legal Reform and Institutional Support. The Provincial Government of Cavite and Dasmariñas City need to revisit their respective plastic ordinances and ensure that the provisions are clear and sufficient for enforcement. The FSEs, the sector that will be heavily affected, should be involved in drafting the legislation.

The LGUs need to strengthen IEC on the plastic use ordinance. This can be done by publishing the relevant ordinances in the website of the city and the province for public access; linkage with the BPLO is proposed to ensure that every annual business permit to be issued to FSEs will include as attachments the plastic use ordinance and some examples of awareness-creating notices complying to the ordinance which are required to be posted on the establishments.

- Visualization will help FSE owners and staff identify prohibited plastics and help promote compliance. LGUs can include as guidance the visual representation or pictures of the prohibited or regulated plastic items instead of listing.
- LGUs should strengthen enforcement. LGUs should brief their respective enforcement staff on how to monitor, gather evidence and file complaints against violators on one hand, and incentivize compliance on the other hand.
- The LGUs should catalyze the organization of FSEs. Organized FSEs help LGUs increase understanding on the challenges faced by the industry and improve policies on plastics use as well enhance the contribution of the FSI to economic welfare.
- LGUs and FSEs can work together to seek better alternatives to plastic. Banning or prohibiting something will only be successful if there is available better alternative.
- The City and Cavite Province can organize capacity building activities to address the needs and interest of the different Barangays identified during the conduct of institutional review and assessment of this project.

Organizing the Food Service Industry. FSEs can establish the FSI Green Network (FGN) to provide an important mechanism and platform for a collective voice for individual FSEs – from the ambulant food peddlers and Carinderia to quick service and fine dining restaurants. Collective actions can identify and leverage on solutions and interventions to address issues affecting the industry. The FGN will serve as a venue for creating awareness and understanding of plastic issues. The FGN can be a public-private network where governments, FSEs, packaging manufacturers, recyclers, and waste management companies as well as the consumers can work together to achieve zero-wastes. FGN can work with packaging manufacturers to encourage them to produce better or similar alternatives to plastic at an

affordable price. The FGN will also work with recyclers to ensure a backward linkage. In terms of institutional support, the City can tap into its Local Development Fund or other available funds to provide institutional support such as training and other technical support.

Developing the FSI Zero-Plastics Roadmap 2030 (The “Roadmap”). An output of the development of the FGN is the establishment of the FSI Zero-Plastic Roadmap 2030 (The “Roadmap”). The proposed Roadmap is a strategic plan for zero-waste in the FSI, commencing with Dasmariñas City. It establishes goals and targets for waste reduction, **aligned with SDG 12**, and desired outcomes that are measurable, and major steps or milestones needed to reach it. It also serves as a communication tool, a high-level document that helps articulate strategic thinking—the why—behind both the goal and—the how—for getting there. A roadmap is important for stakeholders to track the progress, status and their contribution to zero-plastics.

The roadmap should provide concrete steps in achieving the set goals and targets with the aim of progressive and gradual phasing out of plastic. Targets can be set as follows:

- *near-term targets* are the low hanging fruits for immediate implementation. These are strategic actions that have minimal to no costs to the FSEs but have impactful and realizable benefits. Examples are no-straw policy, by-request take-away ketchups, or plastic waste collection station.
- *mid-term targets* pertain to replacement of plastic containers for sauces, plastic utensils and cups with already available biodegradable or recyclable alternatives.
- *long-term* will involve continuing research and development on best alternatives for plastics, recycling of wastes from FSI.

The activities of the Roadmap shall include the implementation of best practices that are evaluated for applicability, cost efficiency and acceptability for FSE implementation. The Roadmap also includes results monitoring and verification. To fully measure the success of any intervention, a system for monitoring, verifying and reporting results should be in place. The FGN can set up mechanisms for uniform reporting in an integrated information platform. The targets should come with appropriate indicators and target numbers.

INTRODUCTION

1 Project Brief

1.1 Project Context⁵

The East Asian Seas region is a hotspot for the leakage of plastic wastes into the oceans, with many countries including the Philippines listed as major contributors. Based on the 2019 coastal waste assessment conducted by the International Coastal Clean Up-Philippines across 61 provinces, most of the plastic wastes recovered were food-related such as food packaging, take-away containers, and straws. While the national and local governments are increasingly giving serious attention to this issue, there remains substantial knowledge and capacity gaps to provide effective interventions, particularly at the local levels. The ASEAN-Norwegian Cooperation Project on Local Capacity Building for Reducing Plastic Pollution in the ASEAN region (ASEANO) identified this as a critical gap (was launched to help address these gaps) and commissioned this Baseline Study to address waste issue at source.

1.2 Objective

This Baseline Study presents the status of plastic use and waste management in the food service industry in Dasmariñas City and recommends interventions to address plastics pollution problem at source.

1.3 Scope and Coverage

- a. **Covered Establishments.** This Report focuses on the Food Service Industry (FSI)⁷, which refers to the business of preparation of food products to be served or distributed for

⁵ The Project Context is lifted from PEMSEA's Call for Tender or Expression of Interest, Business and Plastic Waste Management: Dasmariñas City

⁶ ICC Results 2019 @ https://drive.google.com/file/d/1qUQLZ7gKiYCHn6xEfla_Ypay1sCU_nFI/view

⁷ The overall Food and Beverage Sector value chain includes food production, processing, manufacturing, packaging, food service, and distribution (wholesale or retail).

consumption onsite or offsite. Food Service Establishments (FSE) refers to the business engaged in the Food Service Industry. For purposes of the survey, the FSE is segmented into:

- full-service restaurants, with full menu and waiting service;
- limited-service restaurants or quick service restaurants (QSR), with full menu but pay-as-you-order such as fast food or *turo-turo* type⁸;
- cafes/bars/pop-ups (selected menu with few chairs and tables);
- kiosks and stalls (purely retail, to be consumed elsewhere); and
- catering or 100% home delivery.

Full-service restaurants, limited-service restaurants and cafes/bars/pop-ups may also offer “to go” or “take away” services.



Figure 1. FSI Segmentation

- b. Plastic.** The Baseline Study looked into the extent of Plastic use of FSEs in Dasmariñas City. Plastics are categorized by food grade.⁹ The six food grades are 1) Polyethylene Terephthalate: clear, tough plastic such as soft drinks, juice and water, (2) High Density Polyethylene: white or colored plastic such as milk containers, (3) Polyvinyl Chloride: hard rigid clear plastic such as cordial bottles; (4) Low Density Polyethylene: soft, flexible such as squeezable bottles; (5) Polypropylene: hard but flexible plastics such as microwave ware; takeaway containers, some yogurt or jam containers and hinged lunch boxes, and (6) Polystyrene: rigid, brittle plastics such as small tubes and margarine or butter container. See Figure 1. Plastic litter found in the rivers are of categories 1-6. There are also other plastics that do not fall under food grade 1-6.

⁸ Filipino word for restaurants where a menu of cooked or ready-to-eat food are on display and clients point to their choice of food and pay as they take their food to their tables or ask for take-out packaging.

⁹ Food grade plastics refer to plastic containers, tools or other supplies made of plastics that are cleared to be used for food preparation, handling, and service.

					
PET Polyethylene Terephthalate	HDPE High Density Polyethylene	PVC Polyvinyl Chloride	LDPE Low Density Polyethylene	PP Polypropylene	PS Polystyrene
					
• Drinking bottles • Microwavable packaging • Softdrinks bottles • Food jar for butter • Jelly • Plastic films	• Milk jugs • Detergent • Oil bottles • Garbage bags	• Clear plastic food wrapping • Frozen food stretch films • Cooking oil bottles • Plastic pipes • Bank cards • School IDs	• Squeezable bottles • Plastic packaging for bread • Disposable cups, utensils, glasses • Grocery bags	• Pails, plastic bottle caps • Containers for margarine, yogurt • Potato chip bags • Straws, packing tape and rope	• Food container • Egg cartons • Clamshell takeouts • Picnic cutlery • Medicine bottles • Straws • Cups

Figure 2. Types of Plastics

1.4 Methodology, Approaches and Limitations

- a. **FSE Survey and Field Observations.** A survey of FSEs was conducted between January 25, 2022 to February 10, 2022 (Survey Period) to gather information on their challenges, perceptions, understanding and practices on plastic use and waste management. Field Observation was also conducted to supplement the survey. It consists of visits to FSE premises and observing how food was served as well as compliance with the local ordinances. The Survey Team visited the premises of the FSEs and made the observations. In case of franchised FSEs, substitute visit was done to similar franchisees in Quezon City, given that franchisees follow standard service operations including similar food containers and packaging.
- b. **Local Government Unit (LGU) Survey.** A survey of LGUs was conducted during the Survey Period with respondents from the Provincial Government of Cavite and the Dasmariñas City and its relevant barangays. The survey is aimed at determining the government perception of plastic wastes, and the institutional support and interventions through policies and programs to help minimize plastics use and improve waste management in the FSI.

- c. **Stakeholder Meetings.** An inception meeting with PEMSEA and the provincial and local government of Cavite was conducted on November 8, 2021. A stakeholders' meeting with public and private stakeholders including the academe was held on November 25, 2021 upon project commencement to agree on the objectives, expected outputs and timelines as well as gather valuable inputs that shaped the contents of this Baseline Study.
- d. **Desk Research and Reviews.** Considering the pandemic situation, research relied heavily on online data and information as well as reports from institutions.
- e. **Institutional Support.** Support from the City Government of Dasmariñas and the Provincial Government of Cavite are vital to establish authority and credibility of the study. Government endorsement letters helped lend credence to the related activities.

1.5 Limitations

- a. **The Christmas Holidays and the pandemic constrained the conduct of interviews and general stakeholder engagement.** The Christmas Season proved to be a busy day that FSEs find it difficult to respond to the surveys with clients coming in and out until the last hours of business. Come January, Cavite province itself was placed on Alert Level 3 because of the spread of COVID 19 pandemic, forcing some offices and FSEs to limit their operations, with some closing temporarily. Our enumerators were also restricted in moving around Dasmariñas City to conduct the survey, with the first batch of enumerators withdrawing from the task. The team was constrained to organize and brief a second batch of enumerators for the survey.
- b. **The team exerted efforts to get and use the most recent data available – 2019-2020.** Most of the 2021 data are not yet available at the start of the conduct of the study in November 2021.

2 The Plastics Pollution Crisis

2.1 Plastic Pollution Issue

Since the market entry of plastics in the 1950s, its production multiplied following increased supply and demand for plastic products and packaging, including single-use plastics (SUP) that are intended to be discarded after use. Since then, the total cumulative production of plastics globally has reached 9.2bn mt in 2017.¹⁰ Of these, only 21.3% have been recycled;¹¹ the rest end up as trash that went straight to landfills, or end up in rivers and oceans. See Table 1. It is estimated that a total of 300 million tons of plastics will be added each year, with about 8.8 million expected to end up in the ocean.¹² Since plastics are not biodegradable,¹³ the world now faces severe environmental consequences: the plastic pollution crisis.

PLASTIC PRODUCTION WORLDWIDE 2020

367 Mmt

CUMULATIVE PLASTIC PRODUCTION 1950-2017

9.2bn mt

PLASTIC WASTE RECYCLED WORLDWIDE 2018

21.3%

Figure 3. Plastic Statistics

Table 1. Top 10 Countries Contributing to Plastic Pollution

Country	Tons
China	59,079,741
United States	37,825,550
Germany	14,476,561
Brazil	11,852,055
Japan	7,993,489
Pakistan	6,412,210
Nigeria	5,961,750
Russia	5,839,685
Turkey	5,596,657
Egypt	5,464,471

¹⁰ Statista website at www.statista.com accessed 13 January 2022.

¹¹ Statista website at www.statista.com accessed 13 January 2022.

¹² World Atlas, referencing a 2015 study titled Plastic Waste Inputs from Land into the Ocean, by Jenna R. Jambeck et. al. <https://www.worldatlas.com/geography/10-countries-producing-the-most-plastic-waste.html> accessed 10 January 2022.

¹³ It takes more than 10 years for plastics to biodegrade.

Although high-income countries generate the most plastics per capita,¹⁴ it is the mismanagement of plastic wastes that causes environmental plastic pollution. The World Population Review listed the following as the top 10 countries that contributed to plastic pollution in 2021: China, United States, Germany, Brazil, Japan, Pakistan, Nigeria, Russia, Turkey and Egypt. See *Table 1*.

The Philippines' contribution to plastic pollution in 2021 was at 2,565,766 tons.¹⁵ The Philippines is also one of the world's major contributors of marine plastic pollution, with 0.28 – 0.75 million tons per year of plastic entering to oceans from coastal areas in Manila Bay.¹⁶

2.2 Food Service Industry Trends

Bias for Plastics. The Philippine FSI has a strong bias for plastics. FSEs use plastics in many aspects of its service – packaging and delivery, storage, and food service. For FSEs, plastics present a cost-effective solution that extends the freshness of food and protects food from damage or spoilage. Plastic containers and packaging are ideal to facilitate safe transit of food-on-the-go and deliveries. Plastics are lightweight compared to traditional packaging, convenient to carry and do not easily break, which is important for FSEs to minimize breakage costs. In addition, items made of plastic are more accessible in the market and cheaper than those made of wood, metal, or glass.

Online, food delivery and take-away services market domination. The increase in internet penetration, quick access to smartphones, and simplified e-banking systems resulted in more purchases through online channels. This has propelled several food chains in the country to open online portals to take orders and provide service by offering improved convenience, transparency, and security to the customers. Online food delivery service providers rely on social media platforms to run their service promotions and campaigns to increase consumer engagement and create brand awareness. Increased online food delivery and take-away services meant more Single Use Plastic (SUP) food containers and packaging were being used and carried away offsite to be discarded after use. Managing SUP waste is placed in the control of the consumers.

COVID 19 Pandemic. For the past 2 years from March 2020 until February 2022, the FSI was hit hard by the government's knee-jerk response to the pandemic. The FSI was caught off-guard

¹⁴ See <https://worldpopulationreview.com/country-rankings/plastic-pollution-by-country>.

¹⁵ <https://worldpopulationreview.com/country-rankings/plastic-pollution-by-country>

¹⁶ www.sea-circular.org/country/philippines/

when the government immediately enforced strict lockdown measures, and travel restrictions. Dine-in in enclosed spaces was prohibited for some time. The FSEs had no time to strategize nor the adequate resources for a just transition. Many FSEs were forced to close shop to prevent further losses like rental and salaries expense. Only those FSEs that had take-away and delivery services pre-pandemic, or had the means to transition to such platform survived the pandemic.

The United States Department of Agriculture-Foreign Agricultural Service in Manila (USDA-FAS Manila) projected for 2021-22 that Philippine food service industry sales would drop by \$1.111 billion from last year's \$8.547 billion. Projected sales from the full-service restaurants may plunge by 20 percent year-on-year while the income of limited-service restaurants and cafes/bars may decline by 10 percent and 15 percent, respectively. Sales of stalls and kiosks could decline by 15 percent year-on-year.¹⁷

FSI Growth, Pre-COVID. Based on USDA-FAS (United States Department of Agriculture-Foreign Agricultural Service) Manila Research and Euromonitor International, the Philippine food service industry had been consistently growing from 2015 and reached its peak at US\$15.19 billion in sales in 2019. The pandemic years 2020-2022 saw the FSI plunge but is now starting pick up from where it left off as the restrictions ease out beginning March 2022.

Rise of the Chained FSEs. Chained restaurants are expanding through franchise or joint ventures. This mode of starting a business capitalizes on brand value and marketing as well as the time-tested standard of operations for successful businesses. A franchisee is licensed to use the trade mark, service mark, and trade name/ business name of the franchisor. It also has to comply with standard operating procedures for service and mandated use of uniform tableware, utensils and packaging. Food supplies like seasonings, sauces and ready-to-cook food items are often provided the chain restaurant's commissary for quality control. This minimizes use of plastics in the food preparation stage. The majority of the share in the food franchise market is held by some of the leading chain players, such as US brands McDonald's and Starbucks Corporation as well as the local Jollibee Foods Corporation.

¹⁷ Arcalas, Jasper Y. Food Service Industry Sales Seen Falling 13%. Business Mirror, October 5, 2021 At <https://Businessmirror.Com.Ph/2021/10/05/Food-Service-Industry-Sales-Seen-Falling-13/> Accessed 20 January 2022.

¹⁸ Philippines Foodservice Market - Growth, Trends, And Forecast (2018 - 2023). Market Reports World. 2018. At <https://www.marketreportsworld.com/philippines-foodservice-market-12347375>

The Philippine FSI is highly fragmented. Independent restaurants are rapidly growing with a market share of 39% (2017). Foreign brand restaurant chains continue to grow through franchises or joint ventures with the local foodservice companies, which prefer to hold the franchise of a foreign brand to capitalize on its existing brand value rather than create their own. Among chain players, local operator Jollibee Foods Corporation leads through its wide portfolio of leading fast food brands. The industry is dominated by full-service restaurants with an approximate market share of 31.8% in (2017). The 100% home delivery sub-segment is the fastest growing segment followed by the street stalls/kiosks.¹⁸

Consumer Market. The FSI continued to grow with rising population, currently estimated at 112,508,994 (2022)¹⁹ and increasing consumer demand. Consumption patterns change with rising incomes and busy lifestyles. Consumers dine in restaurants and other FSEs to enjoy food prepared outside the home as a special treat. Dining out is always considered as a social activity among friends, families and even business associates. For people living in the fast lane or with busy lifestyles, on-the-go consumption is preferred, especially coffee and meals, salads, cut-up fruits and vegetables, fresh juices, and other takeaways, which are often contained or packed in single-use plastic containers. Finally, people are buying their groceries at supermarkets, and online sales of food and drinks are also on the rise. Consumer choices will play a critical role in shaping the sustainability of any economic recovery or change.

2.3 Plastic Wastes from FSI

Mismanaged Plastic Wastes (MPW). The FSI significantly contributes to the generation of plastic wastes, particularly SUPs, such as food packaging, containers and other food-related items. Both the FSEs and the consumers take responsibility for managing their wastes. However, there is evidence of a mounting MPW mostly food-related, giving rise to plastic pollution crisis. The MPWs are plastic materials littered, ill-disposed, or discharged from uncontrolled landfills. The Philippines is third top contributor of mismanaged plastic wastes worldwide(2019).²⁰ See Figure 4.

¹⁸ Philippines Foodservice Market - Growth, Trends, And Forecast (2018 - 2023). Market Reports World. 2018. At <https://www.marketreportsworld.com/philippines-foodservice-market-12347375>

¹⁹ World Population Review at <https://worldpopulationreview.com/countries/philippines-population>

²⁰ Statista at <https://www.statista.com/statistics/1270965/mismanaged-plastic-waste-worldwide-by-country/> accessed December 20, 2021.

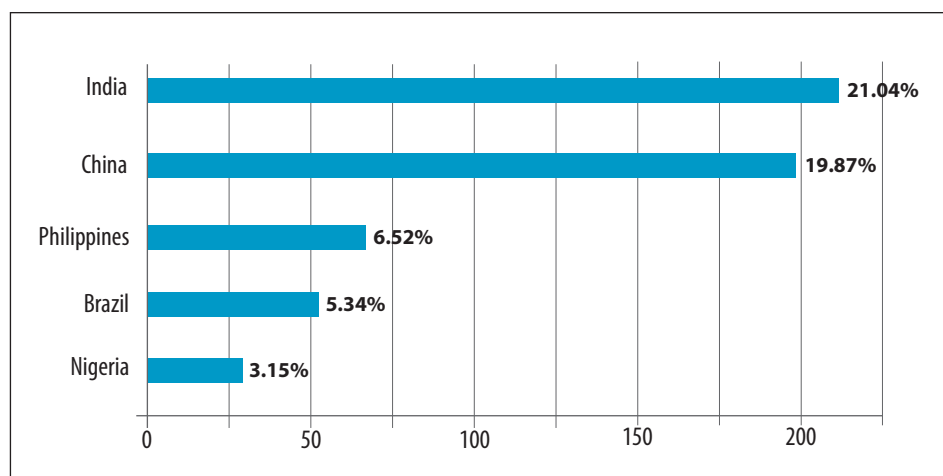


Figure 4. Top 5 MPW Contributing Countries

Waste Management. FSEs continuously generate plastics that recycling facilities find it difficult to cope with the vast amount of plastics. SUPs, in particular are neither recyclable nor reusable and automatically end up as trash that ends up in the ocean if not disposed properly. Global estimates in 2015 show that more than 8.3 billion tons of plastics have been produced since the early 1950s. Only 9% of all plastic waste ever produced has been recycled; about 12% has been incinerated, while the rest — 79% — has accumulated in landfills, dumps or the natural environment.

Environmental Pollution by MPWs. Based on the report of the International Coastal Clean Up-Philippines,²¹ their coastal clean-up activity in 2019 in 61 participating provinces recovered mostly plastic trash. The trash consisted mainly of SUPs used for food packaging and container and such other related food and drinks plastic items.²² Among the items collected were food wrappers, plastic bottle caps, plastic beverage bottles, straws and stirrers, take-away containers, plastic bags, and other plastic packaging. See Figure 5.

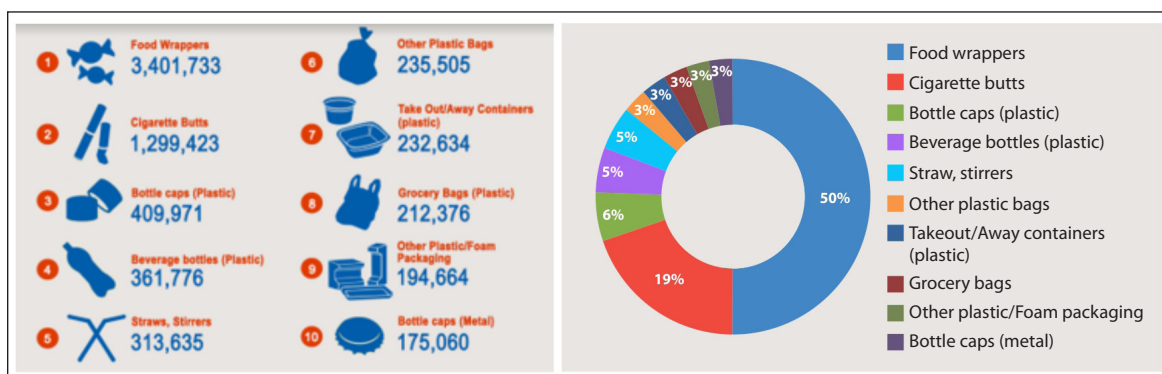


Figure 5. Plastic Trash

²¹ ICC Philippines at https://drive.google.com/file/d/1qUQLZ7gKiYCHn6xEfla_Ypay1sCU_nFI/view (Accessed December 5, 2021).

²² ICC Philippines at <https://sites.google.com/site/iccphilippines/downloads> Accessed December 5, 2021. 2022.

FSE Green Recovery. The pandemic caused the shift from dine-in to take-aways and deliveries that resulted in increased SUP containers and packaging for disposal. For FSEs, however, activities will focus on recovery of business losses in the past two years. Interventions for plastic reduction will be undertaken if there is a ***strong business case for cost savings***. Their priority investments will be those that provide higher return on investments.

BASELINE ASSESSMENT

3 Dasmariñas City Landscape

3.1 Land, People and Economy

Dasmariñas City is a first-class (income classification) component city of Cavite Province, composed of 75 barangays. The City, located 30 kms south of Manila, has a land area of 90.13 square kilometers, which constitutes 5.91% of Cavite's total land area. *See Table 4.* The City is landlocked but traversed by six rivers – San Pedro River, and Imus River, Zapote River, and YlangYlang River, which all drain into Manila Bay.²³ Its population is 703,141 (2020), representing 16.18% of the total population of Cavite province, with a population density of 7,801 inhabitants per square kilometer.²⁴ The City has an annual population growth rate of 2.48%, higher than the country's average of 1.34%.

Table 2. Fast Facts on Dasmariñas City

Dasmariñas City	
Province	Cavite
Barangay Count	75
Coastal/Landlocked	landlocked
Marine waterbodies	none (landlocked)
Area (2013)	90.13 km ² (34.80 sq mi)
Population (2020)	703,141
Density (2020)	7,801/km ² (20,205/sq mi)
Coordinates	14° 20' North, 120° 56' East (14.3270, 120.9370)
Income Classification	1 st Class
Estimate elevation above sea level	88.8 meters (291.1 feet)

Source: <http://www.philatlas.com/>

Dasmariñas City is recognized as one of the most competitive cities in the country. Its income sources are services, commerce, trade and industries.²⁵ It houses three (3) ecozones, namely 1) First Cavite Industrial Estates (FCIE), 2) Molave Compound and 3) Dasmariñas Technopark.

²³ PhilAtlas Website at <https://www.philatlas.com/lists/physical/rivers-r04a.html> accessed 20 January 2022.

²⁴ PhilAtlas Website at <https://www.philatlas.com/luzon/r04a/cavite/Dasmariñas.html> accessed 20 January 2022.

²⁵ Cavite Province Website at <https://www.cavite.gov.ph> accessed 20 January 2022.

3.2 FSI Statistics

Dasmariñas City had 16,811²⁶ registered businesses in 2021, based on the data from the City’s Business Permit and Licensing Office. The list has no general category for businesses engaging in the food service industry. However, there are establishments that are clustered under several sub classifications or sub nature that provide food services. There were 2,001 registered FSEs engaged in the food service industry, representing about 12% of the total registered businesses. Canteen, Carinderia and Eatery had the most number of establishments at 560 (27.98%). Food stands or kiosks and stalls come 2nd at 351 (17.54%) followed closely by food retailers at 329 (16.44%). The combined no. of cafés and refreshments including those serving “buko” juice, milk tea and shakes, total 210 (10.49%). See Table 3.

Table 3. Registered FSES in Dasmariñas City

Sub-nature of Business	FSI segment	Number of FSEs
1. Restaurant and Fast Food	Full Service, Limited Service	288
2. Cafe/Cafeteria	Full Service, Limited Service	69
3. Canteen, Carinderia or Eatery	Limited Service	560
4. Refreshment	Cafe, Bars and Pop ups	141
5. Bar	Cafe, Bars and Pop ups	32
6. Bakery	Kiosks and Stalls	191
7. Food Retailers	Kiosks and Stalls	329
8. Foodstand	Kiosks and Stalls	351
9. Catering Services/Food Caterer	Catering	40
TOTAL	5,464,471	2,001

The concentration of these FSEs (668) are found in 4 barangays: Barangay Sampaloc (314); Salawag (128); Zone IV (125); and Langkaan I (101). See Figure 5. These 4 barangays encompass the large portion of Dasmariñas City where most of the population are residing and/or working. The majority of registered FSEs in Brgy. Sampaloc I is located inside the malls (SM Dasmariñas 161; Robinson’s Place 70). Restaurants (113) and Food stands (94) dominate the FSEs in Brgy. Sampaloc I while one-third (107) FSEs are situated along major roads of the barangays.

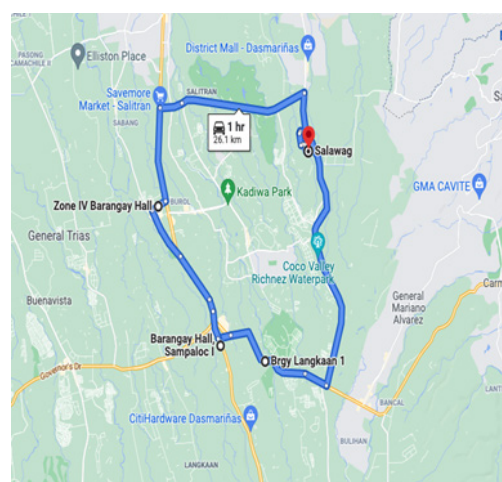


Figure 6. FSE Concentration

²⁶ The number excludes unregistered, unreported and unregulated FSEs.

4 FSE Study

4.1 Methodology and Approaches

- a. **FSE Survey.** A survey of FSEs was conducted from January 25 to February 10, 2022 (Survey Period) to gather information on their challenges, perceptions, understanding and practices on plastic use and waste management. Sample size is 322, with 5% margin of error and 95% confidence level.²⁷ Only registered FSEs were included in the survey. The survey excluded the unregistered, unregulated, and unreported businesses (3UBs) such as the ambulant, online, and home-based sellers.

Initially, a survey sheet was prepared online where FSE respondents can key in their responses. However, the list provided by the BPLO did not have email addresses. The questionnaires were then printed out for distribution to FSEs. Due to restrictions on mobility, Survey Teams from Barangays Salawag, Burol 1, Sampaloc and Salitran II to distribute the survey forms and to key in the responses online. Each team is composed of a Survey Coordinator and 3 Enumerators/ Encoders. A briefing was conducted for the team and enumerators were instructed to explain the context and objectives of the survey. Survey Forms for FSEs were given along with the request that the survey be accomplished by either the owner, manager or operation-in-charge of the establishment

Accomplished surveys were collected after a day or two. The enumerators encoded all the answers in the on-line database for real time consolidation and updating. 332 respondents or 16.8% of the FSEs accomplished the survey by the end of the extended survey period. Each FSE had only one respondent. See list of participants in Annex 1. There are some respondents who wanted to remain anonymous and there are some who skipped certain questions.

- b. **Field Observation.** To supplement the surveys, field observations by the Survey Teams were conducted to observe actual plastics use in dine in and take-away services as well as determine compliance with the provincial ordinance on posting notices on plastic regulation. Further, in view of the travel restrictions due to Alert Level 3 Status in the City during the Survey Period, the findings were based on the observations done on similar franchisees in various locations in Quezon City²⁸ as substitutes. This operates on the premise that franchisees comply with uniform

²⁷ Confidence level determines how certainty of results, which means that if the experiment is run 20 times, the same results (within a certain margin of error) will be generated 19 times. Slovin's formula is written as: $n = N / (1 + Ne^2)$, Where: n= the number of samples N=the total population.

²⁸ Quezon City has similar ordinance regulating plastic use.

standard operations as well as in the use of tableware, utensils, cups and saucers, and other items for dine in or take-aways. Franchisees need to seek the approval of their franchisors before they can implement any measure or change in their service.

4.2 Results of the Field Observation

a. **Bubble Tea, Milk Tea/Coffee Shops.**

The Bubble/Milk Tea, Coffee, Pearl Shakes and other refreshment shops represent 10.49% of FSEs in the City. The number is for stand-alone refreshment shops and does not include the FSEs that serve refreshments on the side. Some



Plastic cups for cold drinks

of the franchised FSEs include Chatime, Dakasi, Farron Cafe, Gong Cha, Infinitea, Macao Imperial Tea, Serenitea, Coffee Bean and Tea Leaf, Avocadoria, Buko Juan, Coco Fresh Tea and Juice, Baskin and Robbins, Starbucks. Many of these FSEs use transparent or clear cups and tumblers for their cold drinks, with plastic lids and straws, which are all SUPs. Some FSEs like Macao Imperial use recyclable plastic cups, which makes their products pricey compared to other milk tea companies. Other FSEs, like Zagu use paper cups with plastic film lids and straws. Still, other FSEs like Starbucks offer for sale reusable tumblers and cups.

- b. QSR.** QSR or Fast-food chains have replaced plastics in their dine-in service though still offer plastic items in their take-aways. Some QSRs (such as Burger King, Chowking, Greenwich, Jollibee, Kenny Rogers Roasters, KFC, Mang Inasal, McDonald's, Pepper Lunch Express, and Bacolod Chicken Inasal) have introduced plastic reduction measures. For dine-in services, the majority phased out SUPs such as Styrofoam, straws and plastic cups and replaced them with reusable plates (melamine wares, dinner plates, metal forks and spoons), baskets and laminated food boxes. For take-aways or delivery, all use brown paper bags or laminated boxes as packaging. There are still QSRs that use plastic cutlery and plastic containers for dips and sauces for both dine-in and take-aways. Some FSEs like Burger King will not include ketchup sachets with every order unless the client asks for it.

- c. Retail, bake shop and Pop Ups.** Retailers, bakeshops and Pop Ups such as R. Lapid's Chicharon, Red Ribbon, Famous Belgian Waffle, Waffle Time, Potato Corner, and Turks Shawarma offer limited or no dine-in and a significant percentage of its operation is take-away. For retail, products are pre-packed in plastics like chicharon, cakes and pastries, tasty breads and pans. Pop Ups use laminated paper to contain products like shawarma, French fries and waffles.

- d. **Full Service or Fine dining** is the least problematic since food is served on dinner plates, melamine or fine china plates with reusable metal utensils. For take-aways, some use paper boxes though there are some that use plastic bags or foils to wrap the food, with plastic sauce containers for take-aways. Some of these FSEs include Pizza Hut, Banapple, Barrio Fiesta, Botejyu, Cabalen, Savory, Contis, Gerry's Restaurant and Bar, Giligan's, Gringo Chicken Ribs, Hap Chan, Kuya J, Max's, Mesa, North Park, Ramen Kuroda, Shakeys, Yakimix, Zark's Burger.

4.3 Results of the Survey

- a. **Profile of Respondents.** There were 332 FSE-respondents. Of this, 204 respondents (61.4%) are owners/operators, another 14% are in managerial positions, the rest are service crew, operations officers and other staff members. 60.7% of the respondents are involved in the operations.
- b. **Profile of FSE organizations.** The main form of FSE organization is single proprietorship 76.2% (253), followed by corporations at 11.7% (39) partnerships at 7.3% (24), and cooperatives at 3.3%. About 74.4% (247) are businesses established by the owners while 17.8% (59) are franchisees. Majority of the respondents operate inside the malls – either in their own enclosed premises or food cart (41.4%). 71% operates on leased property while 29% are operating on the property they own.

The breakdown of the types of meals served by FSE-respondents are: 48.2% full meal; 45.2% snacks; 29.8% beverages. For the nature of service: 62.1% serve dine-in; 68.7% have take-out/drive-thru/to-go services. Of the total FSE respondents, 85.2% serve less than 100 customers/day; 12.3% have more than 100. See Table 4.

Table 4. FSE Categorized by Capacity and Customer Traffic

by Customer Traffic			by Store Capacity		
Customer Traffic	Business Size	Respondents (% of total)	Seat Capacity	Business Size	Respondents (% of total)
1 to 100 customers/day	Micro	85%	1 to 20 seating capacity	Micro	87%
101 to 1,000 customers/day	Small to Medium	13%	21 to 50 seating capacity	Small	7%
			51 to 100 seating capacity	Medium	3%
More than 1,000 customers/day	Large	2%	more than 100 seating capacity	Large	3%
TOTAL		100%	TOTAL		100%

- c. **Awareness of Regulations.** There are owners, managers and crew who are not aware of existing local and national waste and plastic regulations. While majority of the respondent owners are aware of the local and national waste management regulation (53.8-66.9%) and plastic waste regulation (54.5% to 68%), it is alarming that there are still owners (46.9%) who are not aware of any such regulations. Less than half of the managers and crew are aware of such regulations. See *Table 5*.

Table 5. Awareness of Regulations

AWARENESS ON POLICIES			WASTE MANAGEMENT POLICIES									
BUSINESS ROLES	Count	%	BRGY		CITY		PROVINCIAL		NATIONAL		NONE	
			145	43.9%	130	39.4%	141	42.7%	81	24.5%	49	14.8%
OWNER	205	62.1%	97	66.9%	70	53.8%	93	66.0%	44	54.3%	23	46.9%
MANAGER	50	15.2%	17	11.7%	25	19.2%	19	13.5%	13	16.0%	11	22.4%
CREW	75	22.7	31	21.4%	35	26.9%	29	20.6%	24	29.6%	15	30.6%
AWARENESS ON POLICIES			WASTE MANAGEMENT POLICIES									
BUSINESS ROLES	Count	%	BRGY		CITY		PROVINCIAL		NATIONAL		NONE	
			128	38.8%	134	40.6%	144	43.6%	84	25.5%	50	15.2%
OWNER	205	62.1%	83	64.8%	73	54.5%	99	68.8%	47	56.0%	24	48.0%
MANAGER	50	15.2%	16	12.5%	22	16.4%	18	12.5%	13	15.5%	12	24.0%
CREW	75	22.7%	29	22.7%	39	29.1%	27	18.8%	24	28.6%	14	28.0%

- d. **Awareness of Company Policies.** Majority of the respondents are aware of their company rules on plastic use and waste management. More than 80% of the respondents are aware of the company rules and regulations on waste and plastics management (written and unwritten rules).
- e. **Awareness of Plastic Wastes Issues.** Majority of the respondents are aware of the Plastic Wastes Issue, particularly on SUP. Majority of the respondents (52.7%) have fair knowledge of plastic waste issue; yet again, nearly half of the respondents (47.3%) are indifferent to the issue. This explains why only a small percentage (33%) of respondents are in favor of banning SUPs. About 8.7% of respondents are not in favor of banning SUPs. The rest are either unsure, (34.5%), don't know (9.1%) or needs to understand more about SUPs (14.5%). See *Figure 7*.

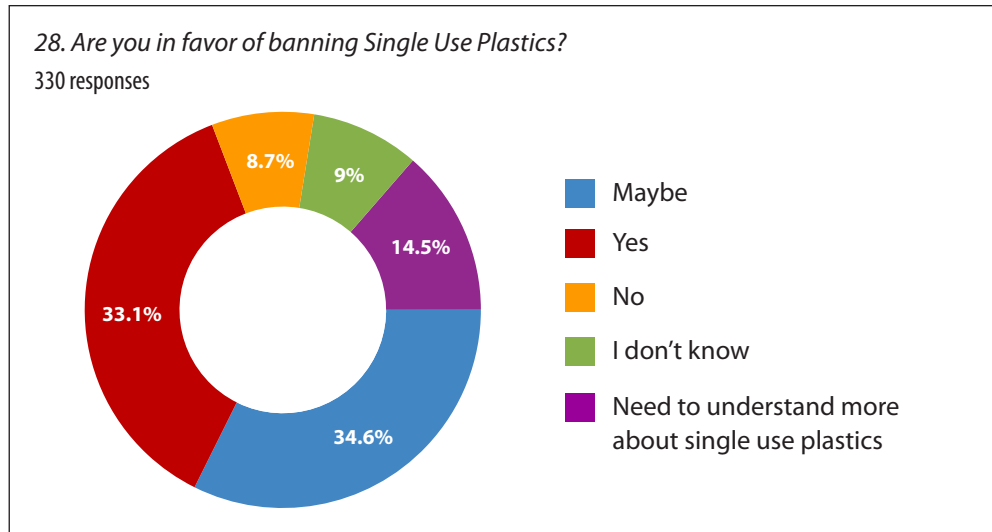


Figure 7. Opinion on SUP Ban

- f. **Plastic Bias.** FSEs has bias for plastics for food packaging, container and other plastic items. Respondents admittedly use plastics in their food service operations for variety of reasons. Convenience is the primary for using plastics (66.6%), durability (51.5%), light weight (34.3%), clean (22.3.5%), and safe (22%). See Figure 8 below. Respondents also identified other reasons for continued plastic use such as i) Better storage, ii) portable and easy to transport, iii) by tradition and "nakasanayan na," best for take away because they sell wet foods, iv) cheaper, and v) company rules to lessen the number of dishes.

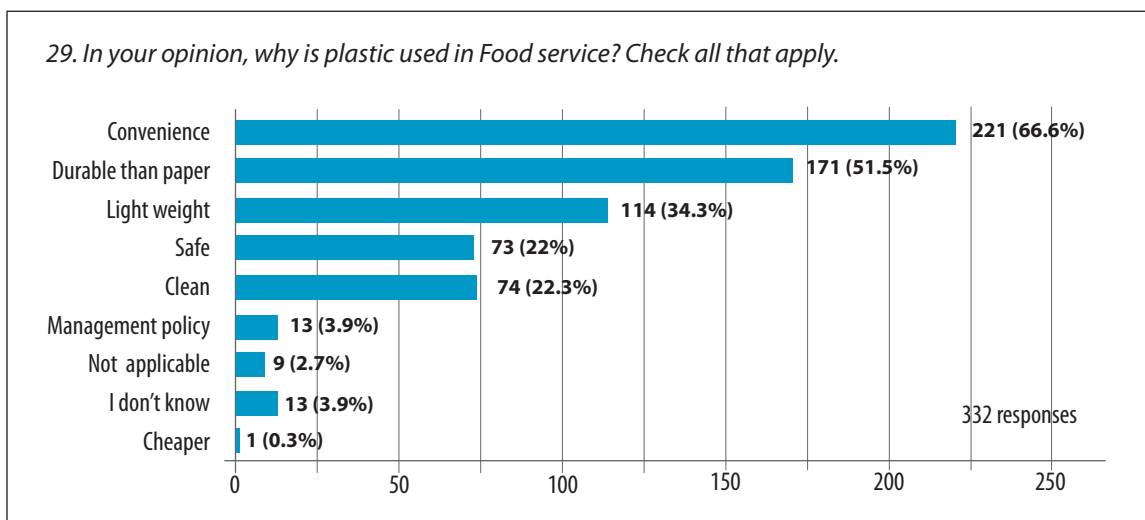


Figure 8. Reasons for Plastic Use in FSEs

FSEs use disposable plastic items for their dine-in service operations. Respondents use plastic bags and packaging for take-aways of leftovers (46.1%), cutleries (29.8%), straws (25%), drinking cups and glasses (24.1%) and food packaging and containers (22.6%). Other uses include dinnerware, dessert containers, stirrers, sauce packaging, and containers different plastic items in their food service. Packaging and bags for take-away come first (71.6%), then cutlery (40%), drinking cups and glasses (34.34 %), food packaging and container (27.4%), dinner plates and saucers (13%) and desert containers (9.8%). Other plastics used are stirrers, straws, sauce packaging, placemats, chopsticks, and plastic bottles. There are 98 FSEs that do not use any plastic items for their dine-in services. See Figure 9.

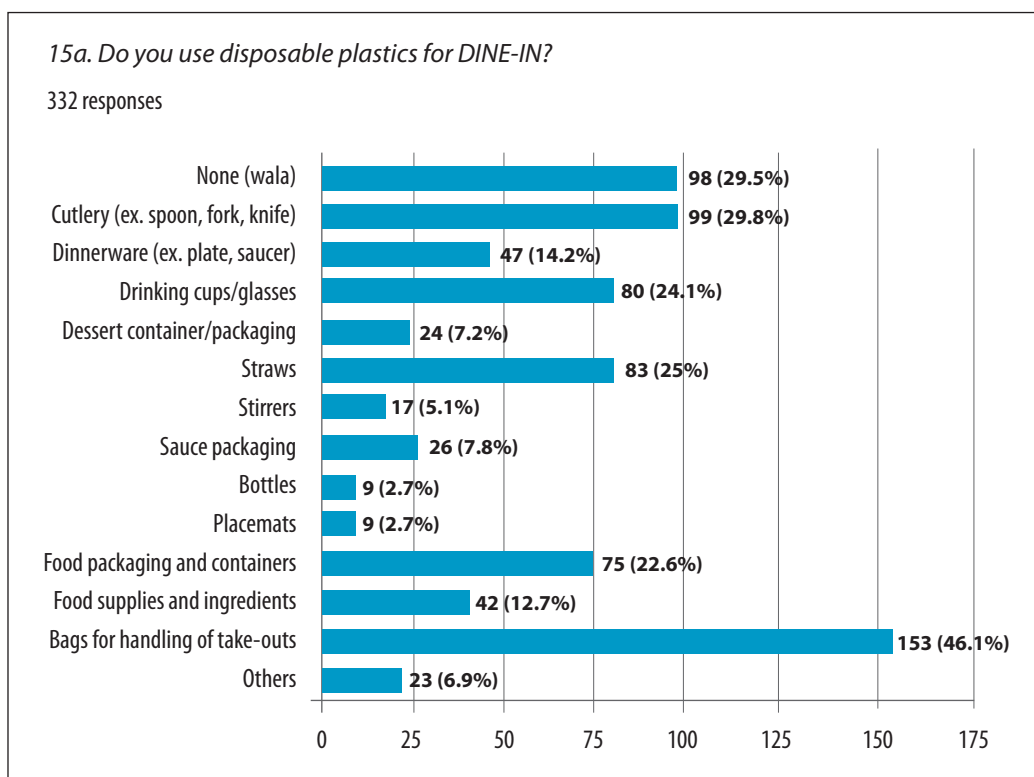


Figure 9. Use of Plastics for Dine-in

FSEs also use disposable plastic items for their Take-out/Pick-Up/Delivery services. For their take-out or delivery services, FSEs use plastic bags for take-out (63.6%), cutlery (32.1%), drinking cups and glasses (28.8%), food packaging and containers (27.6%). Other plastic items used include drinking glasses/cups, straws, stirrers, sauce packaging, placemats, and dessert container and packaging. Only 39 FSEs do not use plastic items for take-out/delivery. See Figure 10.

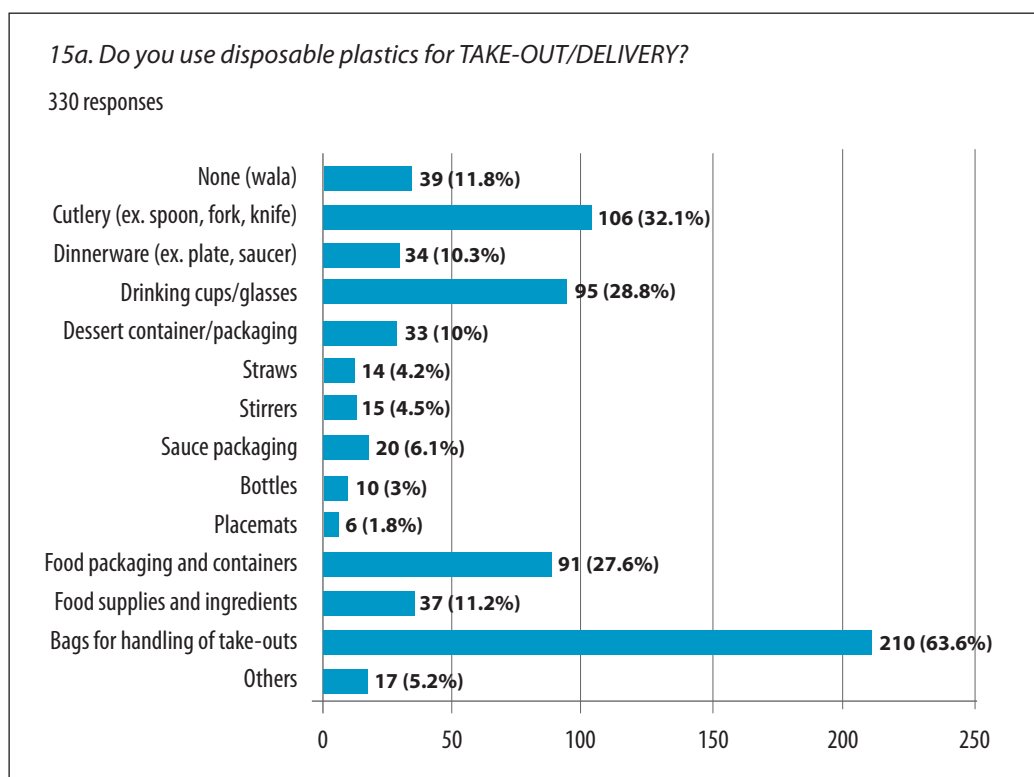


Figure 10. Plastic Use for Take-out/Delivery

- g. Bias and Market Behavior.** The FSEs bias for plastics is a response to market behavior. FSEs also mirrors the attitude of the consumers as shown in the study conducted by DLSU for the “Assessing Knowledge, Attitudes and Practices Concerning Plastic Waste and the Ability and Willingness to Pay for Measures Tackling Plastic Pollution of Imus River, Cavite Philippines.” The DLSU study indicated that the public (DLSU Study-respondents) often purchase plastic or plastic-wrapped products because it is free, and accessible; it is the only one available. See Table 6.

Table 6. Stakeholder Assessment, DLSU Study

DLSU-STUDY: Assessing Knowledge, Attitudes and Practices Concerning Plastic Waste and the Ability and Willingness to Pay for Measures Tackling Plastic Pollution of Imus River, Cavite Philippines.

Reasons for buying plastic-wrapped products

Reasons for buying plastic-wrapped products	Frequency*	Percent of responses	Percent of cases
It's free	732	45.13	62.51
Easy access	514	31.69	43.89
They are the only ones available	358	22.07	30.57
Others	18	1.11	1.54

* multiple responses

- h. Waste Generation.** FSEs also generate plastic wastes in the course of their food preparation and clean-up operations. For food preparation, FSE supplies come in plastic packaging such as: food ingredients, oil and seasoning (49.4%), rice (30.7%), meat (30.7%), milk, coffee and sugar (26.5%) and vegetables (25%). *See Figure 11.* For clean-up, their clean up supplies are contained in plastics such as soap (77.7%), dishwashing (69.3%), trash bags (74.7%) and disinfectants (41%). *See Figure 12.*

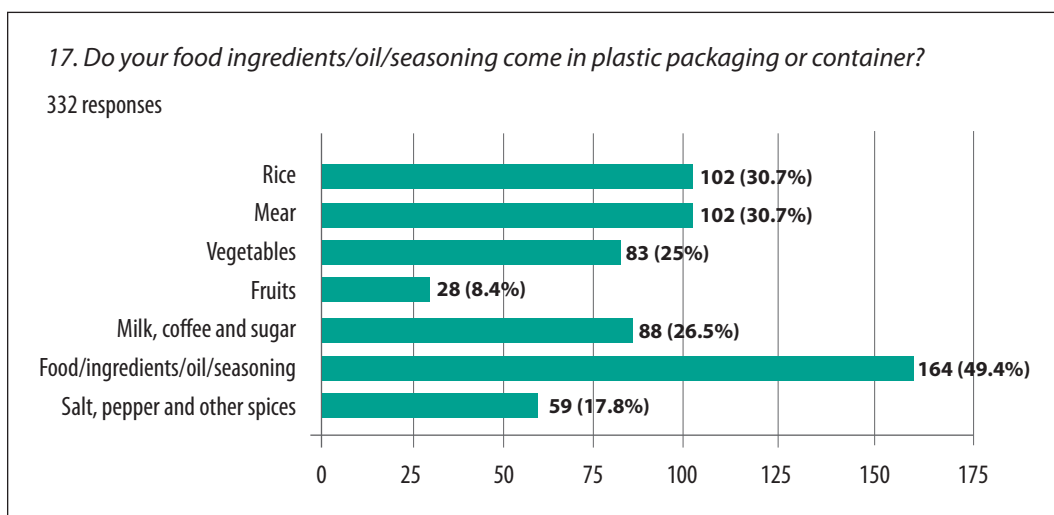


Figure 11. Plastic Packaging for Food Preparation Supplies



Figure 12. Plastic packaging of clean up materials

There are FSEs that do not have a choice in the selection of food supplies and cleaning materials. About 26.8% of the FSEs cannot shift to the use of other food supplies which are not packed in plastic. *See Figure 13.*

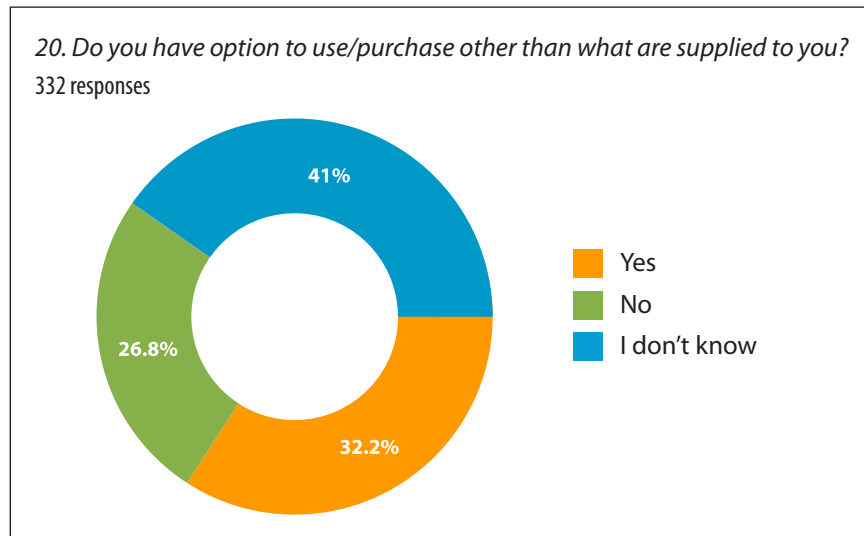


Figure 13. FSEs Option to Choose

i. **Plastic Reduction Initiatives of FSEs.** There are FSEs that already have introduced initiatives to shift away from plastic use. The respondents listed the following initiatives:

- Use paper bag/brown bag, paper take out boxes, eco bags
- inform customers about waste management, and that plastic bags are not allowed;
- Limit to 1 plastic bag only
- use cornstarch lunchbox for take-out, containers made of eco-friendly materials
- use biodegradable, recyclable or reusable wares, containers
- give cutlery upon request
- the only plastic used for take out is bundle packs.
- use of paper plate, paper cups
- ask customers to bring their own containers, steel straw and cutlery
- refuse to offer straw because they can drink without straw
- encourage customers to dine -in instead of take out.
- just following franchise advice
- encourage customers to try edible product sugar cone and waffle cone for take outs instead of plastic cups with spoon for ice cream

j. **Plastic Trash of FSEs.** Majority of the FSEs have 10-50% plastic components in their entire trash. About 23.8% of respondents have 10% plastic component in their trash. The rest of the respondents have 17.8% have up to 20%, 18.4% have up to 30%, plastic component in their trash. See Figure 14.

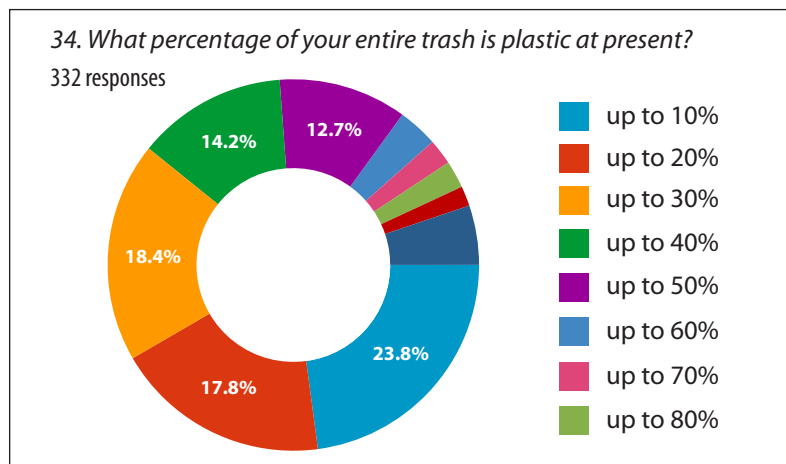


Figure 14. Percentage of Plastic Component in the Trash

FSE trash is littered with different types of plastic items and materials. The respondents identified and ranked several types of plastic items found in their trash. The top seven (8) Plastic items in the FSE trash are plastic bags (70.2%), followed by disposable cups (40.4%), drinking bottles (38%), plastic spoons (34.6%), straws (30.7%), soft drink bottles (27.7%), bottle caps (19%) and food containers (18.1%). See Figure 15.

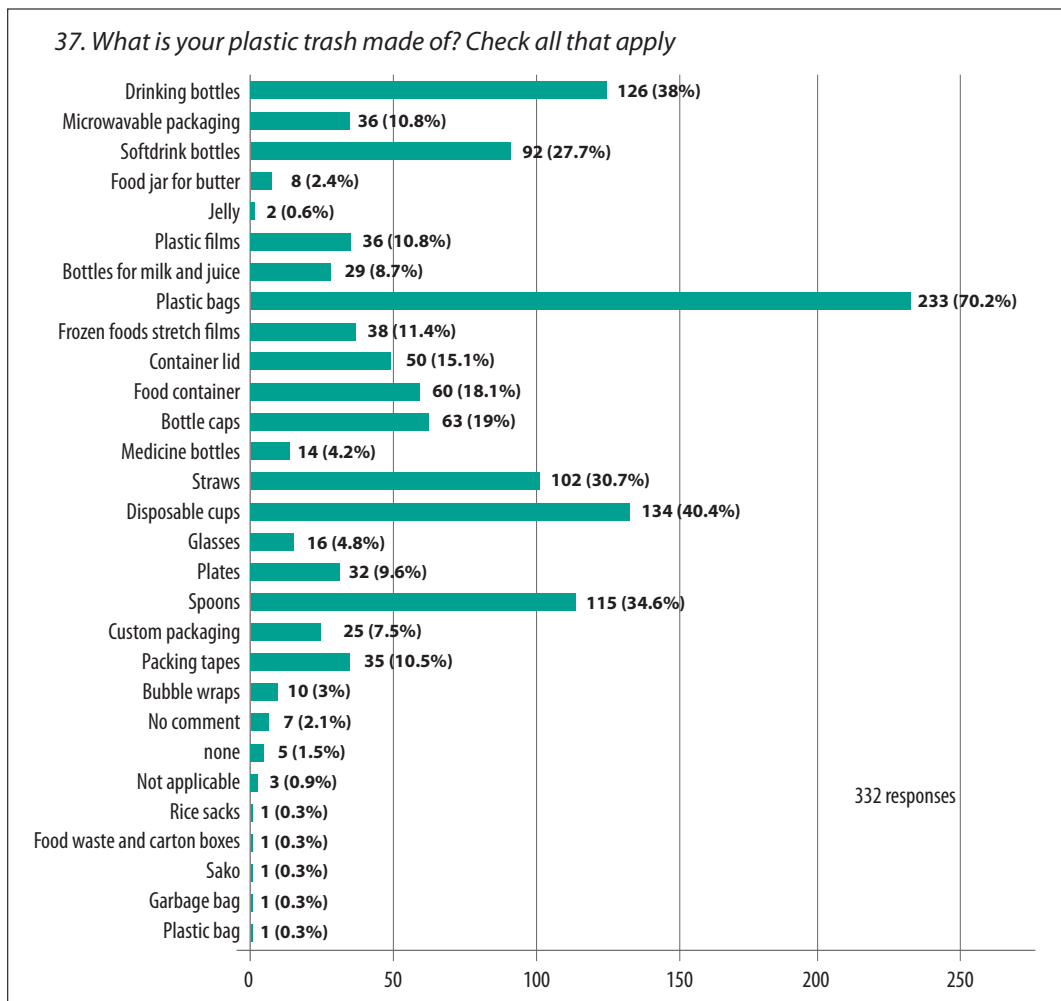


Figure 15. Types of Plastic Trash

Forty-one percent of FSEs do not reuse or repurpose plastic food containers.

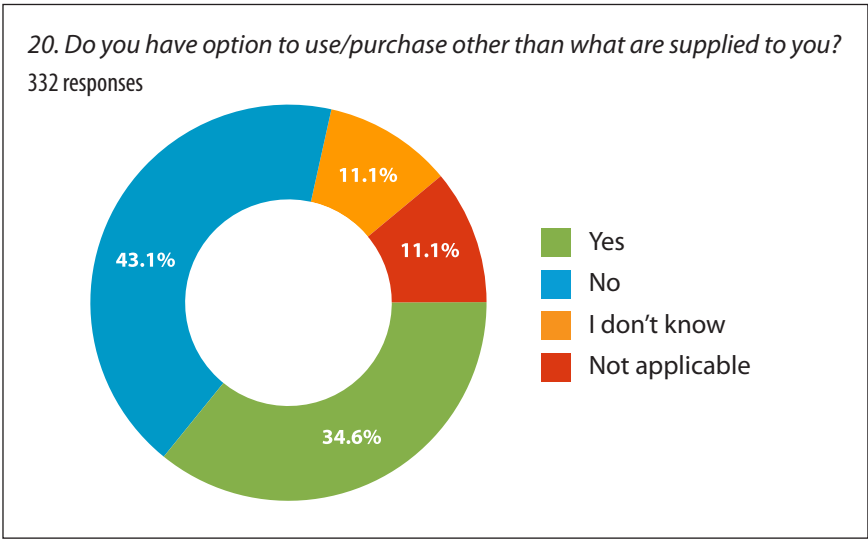


Figure 16. Reuse or Repurpose by FSEs

- k. **Managing wastes.** FSEs segregate their plastic wastes (59.6%), recycle their plastics (32.8%), reuse or recycle plastics (32.2%), reuse plastics (16.6%), and repurpose plastics (13.6%). See Figure 17.

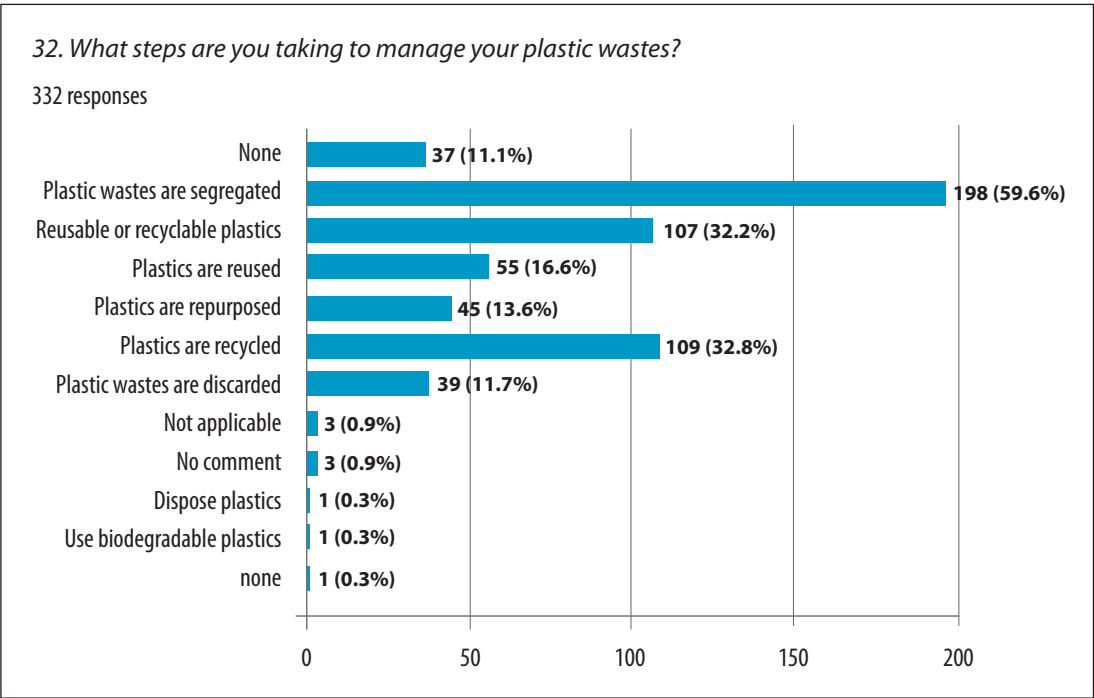


Figure 17. FSE Plastic Waste Management

Plastic wastes of respondents are collected by the city government (57%) and barangays (19%). Others responded that their wastes are collected by private individuals (12%) and mall housekeeping management (10%). Some respondents (42%) indicated that there is a separate collection of plastic wastes. Wastes are segregated at source before being picked up by collectors.

Out of 213 dine-in FSEs, 171 FSEs segregate their plastic waste prior to collection; 50% (of the 171 FSEs) practice recycling and re-use of plastics recovered from segregation activities. Out of the 42 dine-in full-service restaurants 40 are practicing waste segregation prior to disposal; while 70% (of the 40 FSEs) indicated practice recycling and re-use of plastics recovered from segregation activities. Take-Out/Pick-up FSEs that segregate their wastes prior to collection by waste handlers. Out of 116 Take-Out/Pick-Up/Delivery FSEs, 98 FSEs segregate their plastic waste prior to collection. 68% (67 of the 98 FSEs) indicated practice recycling and re-use of plastics recovered from segregation activities.

Other modes of waste disposal identified by respondents include:

- Plastic recycling
- Sale to junk shop
- Segregate plastics and give to trash collector
- Collected by commissary delivery trucks
- Bring and dispose trash in the trash bins of SM

4.4 Analysis

- FSI is a growing industry and the increase in plastic waste generation will be directly proportional to the increase in the number of FSEs at a business as usual (BAU) scenario.** Currently, the registered FSEs represent 12% of the total registered businesses in Dasmariñas City. FSEs comprise different segments from full service, limited service, kiosks or food stands, retail and catering. The concentration of these FSEs can be found in 4 barangays, which cover the large portion of Dasmariñas City where most of the population are residing and/or working. There is no organization for FSEs in the City that encourage self-regulation.
- The City has one of the fastest population growth rates, which means an expanding market and demand for food service.** The City's population is 703,141 (2020), representing 16.18% of the total population of Cavite province, with a population density of 7,801 inhabitants per square kilometer. The City has an annual population growth rate of 2.48%, higher than the country's average of 1.34%.
- Awareness of plastics regulation, does not guarantee compliance.** At least 68% (225) of the respondents are aware of the existence of the plastics ordinance issued by Cavite or

Dasmariñas City. However, despite such awareness, only 80 FSEs do not use plastics in their services. The rest still use plastic items for dine-in and take-out.

- d. **FSEs have bias for plastics.** FSEs prefer plastics over other materials for convenience - better storage, light and easy to carry, affordable and accessible. Plastics also help keep the food from spoiling thus avoiding food wastage. Other reasons given were by practice or accustomed to which show resistance to change; and economy for minimizing dishes to wash. Other FSEs think that there are no suitable alternatives for plastics. The FSI bias for plastics will remain unless there is strong FSE sensitization and access to better or comparable plastic alternatives. The alternative should provide the same convenience, affordability, accessibility and food safety provided by plastic materials.
- e. **Despite the existence of an ordinance banning the use of plastics, FSEs still use plastic items.** Some of these items include transparent plastic cups or tumblers with lids and straws for refreshments, milk tea, frappe and iced coffee, pearl shakes and other drinks. For restaurants, carinderias and canteens, take-aways use plastic bags, plastic sauce containers or sachets, and plastic cutlery. Retailers have plastic pre-packed products and plastic bottled water or sodas. Retail FSEs offer their products in plastic packs. Some FSEs receive delivery of the products from their commissary already pre-packed in plastics. Others like Lapid's chicharon, though cooked onsite, still pack their products in plastic.
- f. **FSEs operating under a franchise agreement (local or international) have no choice but to comply with the franchisor's direction.** Food ingredients and supplies, purchased or delivered from commissary come in plastic packages or containers, contribute to plastic accumulation in the FSEs. Some of the ingredients and food supply that are packed in plastics include rice grains, fruits, vegetables and meat products (fresh/ frozen), cooking oils, seasonings and spices.

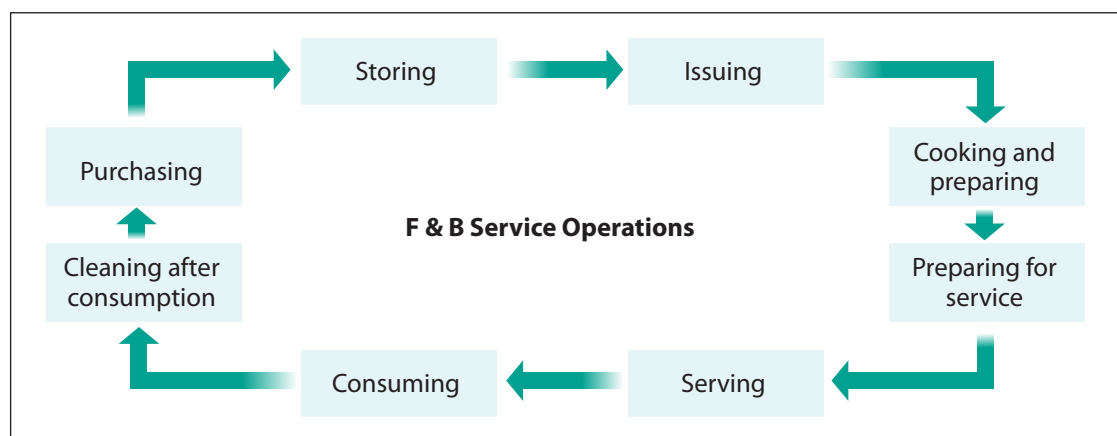


Figure 18. Stages of Food Service Operation

- g. **Majority of FSEs use disposable plastic items for their services, whether dine-in or takeout.** There are only 38 FSEs with dine-in service that do not use disposable plastics. Among these are big restaurants and QSRs such as Maxs (3 branches), Pizza Hut, Mesa, Classic Savory, KFC, Samgyupsalamat (eat-all-you-can) as well as canteens, eateries and carinderias. Almost all FSEs with take-out services use disposable plastics such as plastic bags for handling and packaging, food containers, plastic cutleries (spoon, fork, knife or chopsticks), cups, stirrers and straws.
- h. **For clean-up, FSES purchase cleaning materials, mostly with plastic packaging. (Clean).** Majority of the FSEs use hand washing soaps and detergents that come in disposable plastic packaging. Dishwashing soaps are must-haves in all stages especially during the clean-up. With the on-going Covid19 pandemic and strict adherence to health and medical safety protocol, FSEs are advised to ensure premises and customers are safe from any contamination by using disinfectants.
- i. **The most common steps being taken by FSEs in managing their plastics wastes is segregation.** Plastics are segregated from other wastes; then further segregating SUPs from other plastics that can be recycled, reused or repurposed. The SUPs are then discarded and disposed of along with other trash that are not recyclable. The plastic items (depending on the implementation of the control measure by the FSEs) , may end-up in the coastal environment as indicated in the DLSU study: "Survey on Plastic Litters Along Imus River, Cavite, Philippine."²⁹ Potential scenarios can be: a) that the plastic waste may come from the waste generated by the FSEs; b) the plastic waste may come from the customers of the FSE; and c) plastics may come from unsegregated waste collected by the LGUs. However, it has to be noted that the control on plastic items/ waste can only be done by the FSEs within on their own facility/area under their control. FSEs cannot control the handling and disposal of plastic items that were provided to the customers (more often during Take-Out service).
- j. **An average of 30% plastic wastes is generated by FSEs vis-s-vis their entire trash.** Based on the estimate of FSEs on the percentage of their plastic wastes vis-a-vis entire solid wastes generated in their business operations, the majority of them or nearly 60% produce plastic wastes not exceeding 30% of their entire solid wastes.
- k. **Some FSEs have adopted plastic waste management interventions.** The effectiveness of recovery and recycling activity also depends on the location of the FSEs.

²⁹ DLSU-STUDY: Survey on Plastic Litters Along Imus River, Cavite, Philippines.

Those located inside the malls (SM Mall, Robinsons Place, Vista Mall, Ventura Mall, and others) are required to segregate their wastes prior to collection by mall waste handlers. For FSEs outside the malls, it is up to the owners, managers and personnel to implement the segregation of waste and plastics. Effectiveness then depends on the level of strictness of the LGU when it comes to collecting unsegregated waste. There are some FSEs located near the malls that throw their trash in the bins of the malls.

- l. Consumer Behavior.** After sales, FSEs no longer have control on how consumers manage the wastes. However, FSEs can print reminders so consumers to segregate or throw waste in the bins.
- m. Awareness of regulations.** A relatively higher percentage of respondents have knowledge of the Barangay (41.35%), City (40.0%) and Provincial (43.5%) ordinances. Apparently only a quarter (25%) of the respondents know of the national laws. There should be regular briefing or awareness raising on plastic pollution as well as the SUP issues. This will encourage the managers and owners to take on the plastics advocacy and implement appropriate measures to reduce plastics.
- n. Despite the existence of an ordinance banning the use of plastics, FSEs still use plastic items.** Some of these items include transparent plastic cups or tumblers with lids and straws for refreshments, milk tea, frappe and iced coffee, pearl shakes and other drinks. For restaurants, carinderias and canteens, take-aways use plastic bags, plastic sauce containers or sachets, and plastic cutlery. Retailers have plastic pre-packed products and plastic bottled water or sodas. Retail FSEs offer their products in plastic packs. Some FSEs receive delivery of the products from their commissary already pre-packed in plastics. Others like Lapid's chicharon, though cooked onsite, still pack their products in plastic.
- o. Franchised or chained restaurants need approval of franchisor for any deviation from service standards.** Many FSEs are franchisees of chain restaurants and their agreement requires compliance with standard service procedures including brand packaging and service. To introduce any measure or policy, franchisees should seek approval of the franchisor.
- p. Plastic materials and packaging are also generated in the food preparation.** Food supplies, ingredients and other consumables are packed in plastics whether for dine-in or take-out/delivery options. About 8% of the FSEs also receive delivery of their food products already pre-packed in plastic ready for consumption.

- q. **Plastics constitute 10-50% of majority of the FSE's solid waste volume.** Majority of the FSEs have 10-50% plastic components in their trash (majority of FSEs: nearly 60% produce plastic wastes not exceeding 30% of their entire solid wastes). Some FSEs generate from 89% and over. This shows that the ordinances have little effect on the operations of the FSEs as they generate significant amount of plastic wastes. Large scale FSEs have plastic trash component at 37.7% while the small and medium scale FSEs are at 29.3%. Micro scale FSEs are within the average having 34.4% of their wastes made up of plastics.
- r. **FSEs located inside malls effectively manage their wastes.** Management of the malls (SM Dasmariñas, Robinsons Place, Vista Mall, Ventura Mall) require their tenants to segregate recyclable wastes to non-recyclables. For independent FSI stores, it is up to the owners, managers and personnel to implement the segregation of waste and plastics in coordination with their respective barangays.

INSTITUTIONAL REVIEW AND ANALYSIS

5 Laws, Policies and Programs

5.1 National Laws and Policies

- a. **Republic Act 9003, or the Ecological Solid Waste Management Act of 2000 (ESWM).** In a nutshell, the ESWM provides for the institutional mechanisms and policy framework to effectively reduce solid waste by 25%. The LGUs are mandated to develop their respective local solid waste management plans at the provincial, city and municipal levels. The plans will emphasize implementation of all feasible re-use, recycling, and composting programs while identifying the amount of landfill and transformation capacity that will be needed for solid waste which cannot be reused, recycled, or composted. Features are segregation of wastes at source, segregation upon collection, establishment of Materials Recovery Facility (MRF) and closure/conversion of open dump. Pursuant to RA 9003, Dasmariñas City is responsible for collection of non-recyclable materials and special wastes. Each barangay, on the other hand, is responsible for the first-level waste collection specifically for biodegradable, compostable and reusable wastes.³⁰
- b. **The National Economic Development Authority prepared the Philippine Action Plan for Sustainable Consumption & Production (PAP4SCP).** The PAP4SCP serves as a guiding framework to influence and steer sustainable behavior and practices across sectors and levels of government by implementing programmatic policy reforms and set of actions over the short- (2020-2022), medium- (2022-2030), and long-term (2030-2040).³¹ It aims to increase the uptake of green products and services to shift to sustainable and climate-smart practices and lifestyles. Its priority legislation include (i) extended producer responsibility (EPR) to make producers responsible for the recycling and disposal of post-consumer products; and (ii) green public procurement to enhance compliance of procuring entities in integrating green criteria in procurement guidelines, bidding documents and technical specifications.

³⁰ RA 9003 Ecological Solid Waste Management Act of 2000.

³¹ PHILIPPINE ACTION PLAN FOR SUSTAINABLE CONSUMPTION AND PRODUCTION (PAP4SCP) at <https://sdg.neda.gov.ph/philippine-action-plan-for-sustainable-consumption-and-production-pap4scp/> accessed June2, 2022.

- c. **The Department of Environment and Natural Resources (DENR) has adopted a national plan of action for the reduction of marine litter (NPoA-ML) aimed at achieving zero waste in Philippine waters by 2040.** The NPoA-ML presents opportunities to revisit current efforts in municipal solid waste management, particularly reduce, reuse, recycle or 3Rs approaches, and eventually, help localize the NPoA-ML.³²
- d. **There were two bills on SUPs that were filed in the 18th Congress of the Philippines but were not enacted at the close of the 18th Congress but worth noting should this be filed in the next Congress.** The two bills were:
 - **House Bill 9147 or the Single Use Plastics Regulation Act.** that seeks to eventually phase out single-use plastic products and to promote circularity through the reduction, reuse, and recycling of plastic trash. Specifically, it proposes to phase out within a year the production, importation, sale, distribution, provision, and use of single-use plastics such as drinking straws, stirrers, candy sticks, and packaging or bags less than 10 microns thick.
 - **Senate Bill 2425 or An Act Institutionalizing the Practice of Extended Producer Responsibility on Plastic Packaging Waste.** This bill seeks to institutionalize extended producer responsibility where companies are expected to be responsible for the “proper and effective recovery, treatment, recycling or disposal of their products after they have been sold or use with the objective of reducing plastic packaging waste and improving their recyclability or reusability.

5.2 Local Laws

- a. **Cavite Provincial Ordinance 007-2012.** The Provincial Ordinance 007-2012 or “An Ordinance Prohibiting, Regulating and Prescribing Certain Uses of Plastics for Goods and Commodities that End Up as Residual Wastes”³³ prohibits, regulates and prescribes certain uses of plastic for goods and commodities that end-up as residual wastes. It also promotes the use of eco-bags and other environment friendly practices. Use of plastics as containers for food or packaging materials is prohibited. However, plastic “labo” may be used as a container for wet goods. Use of other plastics such as Styrofoam for food and drinks and plastic utensils such as fork, knife and spoon, drinking straws and

³² Quote from the Statement of Usec Jonas Leones of the DENR. DENR adopts national plan of action for the reduction of marine litter. November 16, 2021. Manila Times at <https://www.manilatimes.net/2021/11/16/public-square/>

³³ As amended by Provincial Ordinance 2013-21; currently being updated.

plastic pouches for dine in or takeout is also prohibited. Some of these plastics that are prohibited include:

- Polyethylene terephthalate: used for fizzy drink, water bottles, salad trays
- High Density Polyethylene: milk bottles
- Low density polyethylene: packaging films, liners
- Polypropylene: margarine tubs, microwaveable milk trays
- Polystyrene plastic: yogurt pots, hamburger cartons, egg cartons, cutlery, including styrofoams. It includes polystyrene paper as styrofoam boxes, trays and containers; high impact polystyrene that are 100% dense plastic for plastic cups, cutlery and lids that are recyclable.

All establishments including FSEs are required to post the information on plastics prohibition. Fines and penalties will be meted to the violators – individuals and establishments. Implementation will be with Dasmariñas, which will receive 75% of the collection. 25% goes to any one reporting the violation. The PG ENRO monitors the implementation of the ordinance by cities and municipalities.

- b. Dasmariñas City Ordinance 03-S2012.** Dasmariñas City Ordinance 03-S2012 on “Regulating the Use of Plastic Bags and Styrofoam in the City of Dasmariñas” (City Ordinance). prohibits using plastic bags as secondary packaging and Styrofoam as containers for food and similar products. Plastic packaging though is allowed as primary packaging. All plastics and Styrofoam’s will have to be segregated, cleaned and dried prior to submission to the barangays. Penalties for violation of the provision starts at Php 1,000 for the first offense, Php 2,000 for the second offense and Php 3,000 for the third offense. With 6 months imprisonment and closure of business upon the discretion of the court. The City will conduct a massive quad-media awareness campaign on the ordinance. The City Environment Officer was tasked to monitor the implementation of the ordinance and to provide programs on livelihood projects for the manufacturing of eco-friendly plastic bags and containers.

6 LGU Survey Results

A survey was conducted among the LGUs between January 25 to February 10, 2022 to assess the status of implementation of the two plastic ordinances as well as identify challenges to monitoring compliance and enforcement.

6.1 Background of Respondents

- a. **Profile.** There were 23 respondents: 6 from the Provincial Government, 1 from Dasmariñas City, and 1 respondent each from barangays Salawag, Salitran II, Zone IV, Sto. Niño 1, San Simon, San Roque, San Mateo, San Isidro Labrador II, San Andres II, Sampaloc I, Sampaloc II, St. Peter 1, Fatima II, Emmanuel Bergado-1, H-2, and Buro 1. The respondents were barangay staff (3), barangay chairpersons (9), Sangguniang Barangay Members (4), Provincial Environment Officers (6) and City Environment Officer (1).
- b. **Awareness of Plastics issue.** All respondents have concern for the environment and are aware of the impact of plastic wastes. Respondents agree that plastic wastes can block the drainage (100%), pollute rivers and water bodies (71.9%), cause human health problems (69.6%) and destroy the beauty of the environment (69.6%). *See Figure 19.*

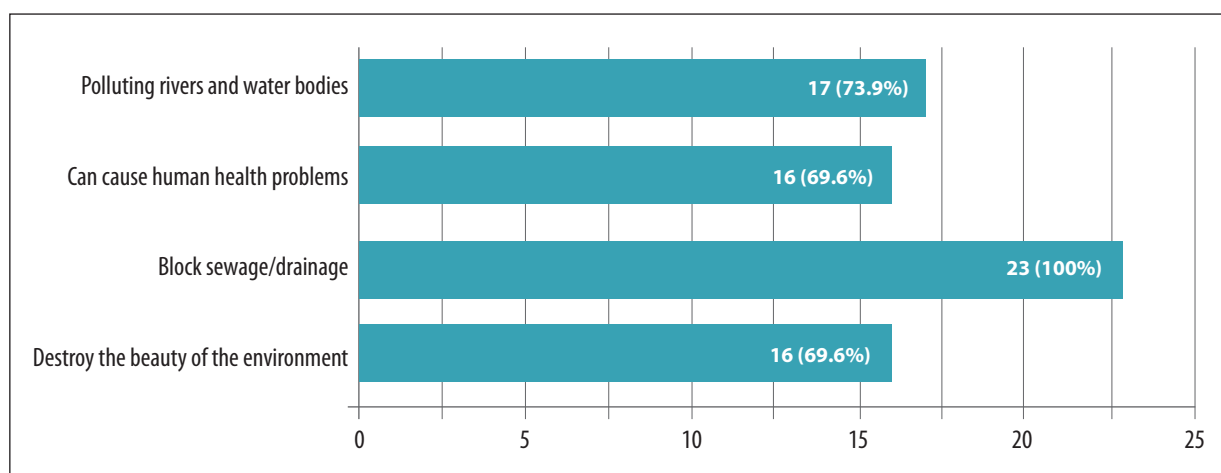


Figure 19. Perception on the Impact of Plastic Wastes

- c. **Knowledge of Plastic Types.** Most respondents have minimal knowledge of the types of plastics used in the FSI for food services and packaging. Only 34% (8) are knowledgeable on plastics, 63.2% (15) have minimal knowledge and 82.6% (11) are

very much interested to know more about plastics as well as the plastics types that can be reused or recycled. Almost all respondents (87.8%) are interested in approaches to recycle plastics. 87% (20) are interested in improving waste management systems in their LGUs.

- d. **Awareness of Plastics Ordinance.** About 68% of respondents know that there is a city ordinance on plastics, while 52% are aware of the provincial plastic ordinance. 9% do not know of any ordinance and 17% do not know whether or not there is a plastic ordinance. In the same way, only 70% knows of the implementation of an ordinance regulating or prohibiting Single Use Plastics. 30% of the respondents are not aware of the ordinance.

6.2 Waste Management

- a. **Waste Management Fee Collection.** At the Barangay level, only 5 respondent barangays - Sampaloc II, H-2, Salitran-II, San Roque-Sta. Cristina II, and Salawag - collect waste management fees.
- b. **Waste Management Budget.** Majority of the respondents (44%) do not know the budget allocation of their LGUS for waste management. 12% of respondents replied that their LGUs have no allocation for waste management while 32% of respondents replied that their budget allocation is below 5% of their LGU budget. Only 8% of respondents replied that their budget allocation for waste management is between 10-20% if the LGU budget. See Figure 20.

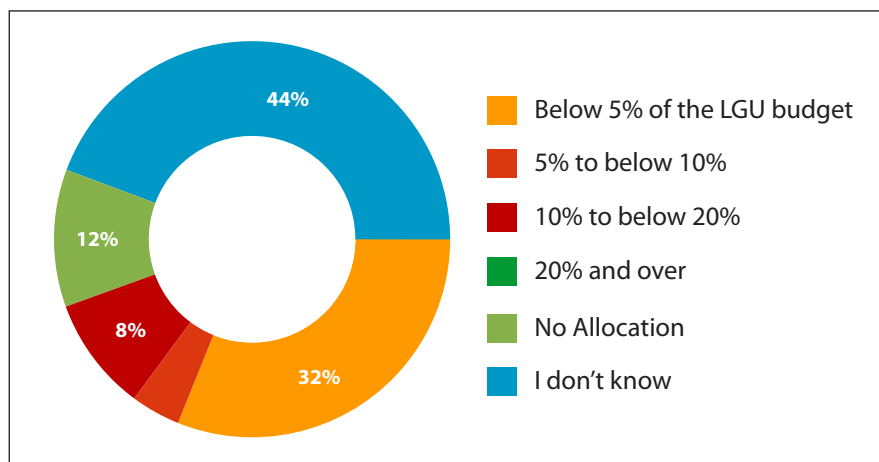


Figure 20. Percentage of LGU Budget Allocated for Waste Management

- c. **Waste Collection and Segregation.** For 70% of the respondents, wastes are collected by the city government. 35% responded that barangays collect their wastes and still,

17% answered that PG-ENRO also collects wastes. For 56% of the respondents, wastes are collected once a week, 26% responded that waste collection is on a daily basis, 13% responded twice a week and 4% responded every other day. See Figure 21.

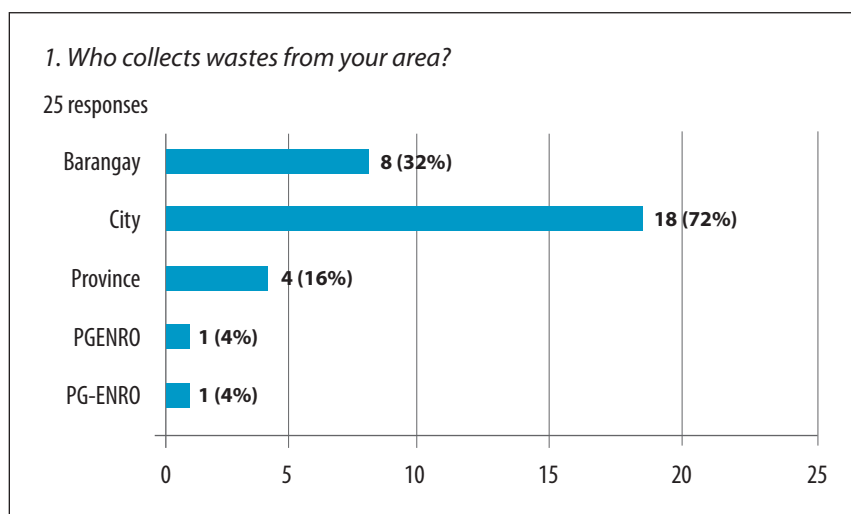


Figure 21. Waste Collection

- c. **Separate Plastic Waste Collection.** 32% of respondents confirm that their barangays have separate plastic waste collection by the LGUs though a larger percentage responded that there is no separate collection for plastic wastes. In a follow-on response, some respondents said that while there is no separate collection for plastics, wastes are already segregated at source before they are dumped in the garbage truck. See Figure 22.

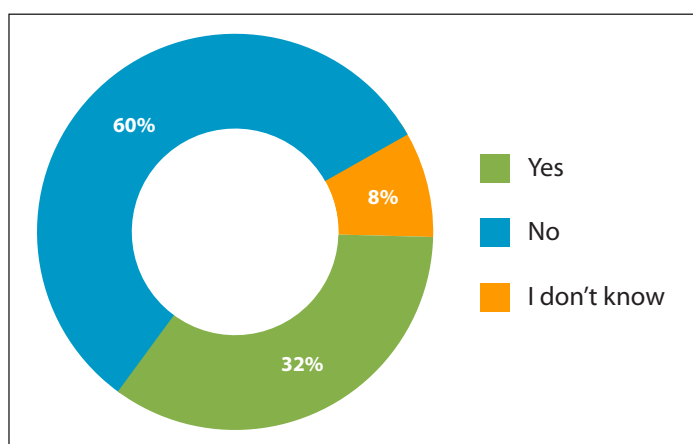


Figure 22. Percentage of LGUs Plastic Waste Collection

- d. **Majority responded that trash is collected once a week.** 24% responded that trash is collected every day. 34% responded that there is a separate collection for plastic wastes; while the majority at 56% answered no and still 9% did not know.

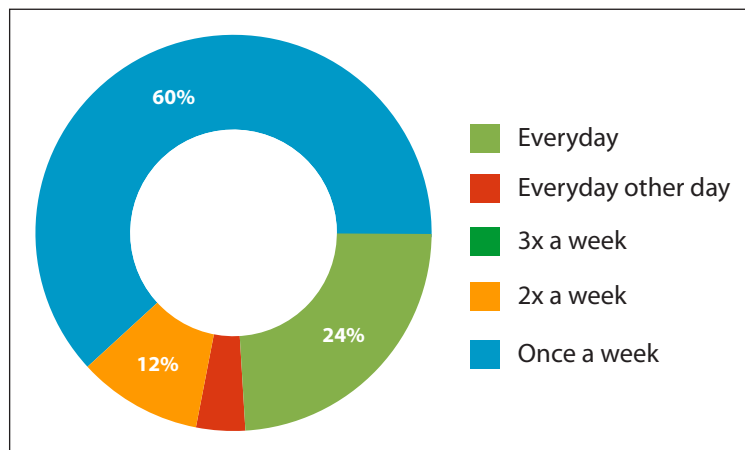


Figure 23. Waste Collection Schedule

- e. **MRF.** 52% of the respondents replied that their LGUs have their own MRFs, while 35% (7 barangays) responded that they do not have MRFs. 39% responded that their LGUs have materials recycling facilities and another 39% responded that their LGUs do not have recycling facilities. See Figure 24.

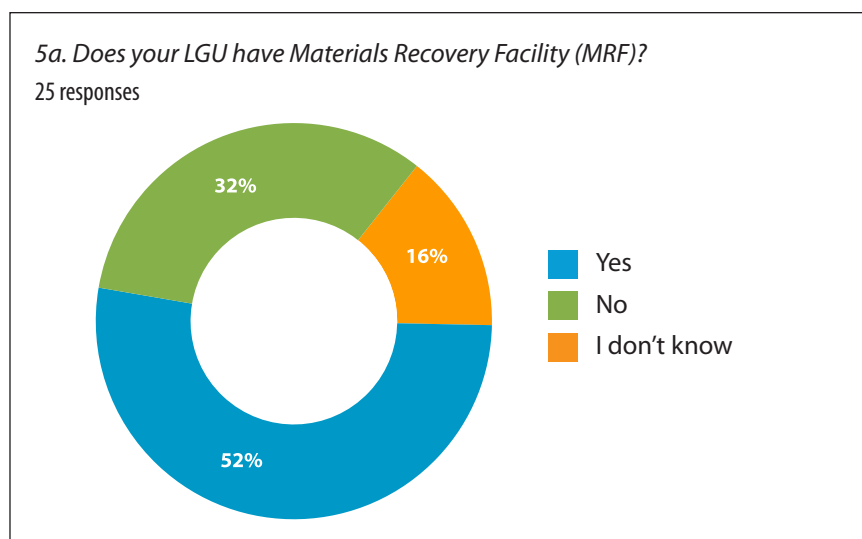


Figure 24. MRF of LGUs

6.3 Capacity Building

Respondents are interested to know more about plastics recycling (88%) and improving waste management systems in their respective jurisdiction. There is a need to build their capacities in the following identified priority areas:

- Plastic Waste Management – IEC (83%)
- Product Identification and Management (83%)
- Updating SWM (78%)
- Design, Management and Operations of Recycling and zero waste system (74%)
- Forging partnerships and alliances (70%)
- Design, Management and Operations of MRF (61%)
- Design, Management and Operations of Recycling Facility (61%)
- Access to finance for SLF (61%)
- Access to advisory for SLF (52%)

7 Local Finance for Waste Management

7.1 Internal Revenue Allocation (IRA, now renamed National Tax Allocation)

The IRA is the unconditional, formula-based inter-governmental fund transfer and biggest source of operating revenues of LGUs. LGUs can use the IRA to finance any of their activities and initiatives including plastics waste reduction, subject to some imperatives. The Mandanas³⁴ ruling will increase the IRA base to Php billion in 2022, Php 382 billion in 2023, Php 420 billion in 2024 and Php 466 billion in 2025. Dasmariñas City generates its own income and is not fully dependent on its IRA. From *Table 7*, it can be deduced that there is increasing income generation of the City to augment the IRA.

Table 7. IRA Dependency of City, 2010-2018

2018	2017	2016	2015	2014	2013	2012	2011	2010
50%	51%	52%	54%	57%	57%	58%	65%	62%

7.2 Local Development Fund

In relation to the IRA, Sec. 287 of the Local Government Code requires LGUs to allocate 20% of their respective annual IRA to the Local Development Fund in a separate or special account. The purpose of this fund is to finance the LGU's priority development projects. DILG-DBM Joint Memorandum Circular 2017-01 provided that 20% of the LDF will be utilized to finance the LGU priority projects that support the Philippine Development Plan and Public Investment Program. Such programs and projects partake of the nature of investments or capital expenditures and contribute to the attainment of desirable socio-economic development as well as the target environment and management outcomes of the LGUs. MRF and other environmental projects can be financed under the LDF. However, with the declaration of the State of a Public Health Emergency due to COVID-19, the DILG and Department of Budget and Management (DBM) through a Joint Memorandum Circular No. 01 dated March 27, 2020, allowed the use of the Fund to curtail threats of COVID-19. Data from 2019 shows that City has only utilized 8% of its LDF. It bears stressing though that the City failed to fully utilize its LDF in 2019, with only 8% utilization.

³⁴ The Mandanas Doctrine clarifies that the share from the Internal Revenue Allotment (IRA) of the local government units (LGUs) does not exclude other national taxes like customs duties

Table 8. LDF Utilization of City

Region	Province	LGU Name	Internal Revenue Allotment		20% Actual Local Development	Utilization Rate
			Actual IRA	20% of IRA		
Region IV-A	Cavite	Cavite City	403,693,698	80,738,739.60	74,435,631.64	92%
Region IV-A	Cavite	Dasmariñas City	1,370,226,810	274,045,362.00	22,375,617.82	8%

7.3 Local Income Generation

LGUs have the power to create and broaden their own sources of revenue and establish an organization responsible for the efficient and effective implementation of their development plans, program objectives and priorities. LGUs can generate funds as follows³⁵:

- levy taxes, fees, and charges;
- create indebtedness, and avail of credit facilities from government or private banks and lending institutions;
- issue bonds, debentures, securities, collaterals, notes and other obligations to finance self-liquidating, income-producing development;
- borrow from proceeds of loans contracted by the national government with foreign financial institutions or international funding agencies and relent to LGUs through government financial institutions or other lending institutions;
- enter into public private partnership arrangements; and
- secure and negotiate financial grants or donations in kind, in support of the basic services or facilities, from local and foreign assistance agencies without necessity of securing clearance or approval therefor from any department, agency, or office of the national government or from any higher local government unit.

7.4 Access to Finance

Dasmariñas City can access funds to support plastics reduction initiatives including setting up of MRF or Recycling facilities.

National Government Financing. National Governments, from time to time, offer financing grants or subsidies to LGUs which undertake national priority activities. The Local Government Support Fund (LGSF) is an allocation for LGUs provided in the General Appropriations Act, which seeks to equitably assist LGUs in the delivery of basic services including infrastructure such as flood control. The LGSF is provided as financial assistance for the implementation of priority programs and projects.

³⁵ Local Government Code.

The People's Survival Fund (PSF) was created by Republic Act 10174 as an annual fund intended for local government units and accredited local/community organizations to implement climate change adaptation projects that will better equip vulnerable communities to deal with the impacts of climate change.

The following funds of the Department of Interior and Local Governments may be accessed by the LGUs subject to terms and conditions:

- The Performance Challenge Fund (PCF) is program that provides incentives to high performing LGUs to support their high-impact local development projects identified in their AIP. A "50-50" counterpart sharing scheme between the PCF and the eligible LGU is applied. This encourages the alignment of local development initiatives with national government development agenda and priorities and rationalizes intergovernmental fund transfers to LGUs.
- Conditional Matching Grant to Provinces (CMGP) provides incentives to provinces that demonstrate good performance in the implementation of reforms by providing funds for the rehabilitation, upgrading, and improvement of core provincial roads. It addresses challenges in road management in the provinces and contributes to the realization of Ambisyon Natin 2040 and the Build, Build, Build Program of the Administration.
- Assistance to Municipalities the Local Government Support Fund aids municipalities in the delivery of basic services by providing subsidies for the implementation of their priority programs and projects.

8 Institutional Analysis

8.1 Implementation of the Local Plastic Ordinances

- a. **Despite the plastics regulations of Cavite Province and Dasmariñas City issued as early as 2012,** food-related plastic items still flood the rivers. See Table 9 below.³⁶ Sources of these plastic items are not just the FSEs. Households also contribute to food-related plastic trash.

Table 9. Number of Food-related Plastics Recovered

Use	Resin Materials	Stations	
		Sampaloc 2	Salitan 1
Plastic Bottles	Soda/Water bottles (PET)	35	46
	Bottle caps (PP)	74	445
	Shampoo/condiments bottles (PP)	1	3
Plastic Packaging	Sachet/candy wrappers (HDPE)	80	445
	Styrofoam (PS)	45	35
	Bubble wrap (LDPE)	1	5
Plastic Bags	Thin-filmed bags (LDPE)	90	145
	Grocery bags (HDPE)	77	64
Other Plastics	Disposable coffee bags (PS)	47	49
	Disposable cups and plates (PP)	24	51
	Disposable spoons and forks (PP)	3	2
	Drinking straw (PP)	1	5

- b. **FSEs still use plastic items in their food service because of weak monitoring and implementation of the ordinances.**
- c. **Unless there is a good alternative or replacement, FSE's will still use plastic because it is convenient packaging and container for food.** It is lightweight, transportable, cheap, of food-grade safety, and extends freshness of food.

³⁶ Unpublished Study of DLSU-

8.2 City Ordinance

- a. **The provisions of the City Ordinance on plastic prohibition and regulation are inadequate to make a deep cut in plastic use reduction.** The ordinance focused only on two items. It prohibits the use of plastic bags as secondary packaging and styrofoam as containers for food and related items. Even then, there were respondents that admitted in the survey that they are still using plastics as secondary packaging.
- b. **The IEC campaigns of the city on the ordinances are inadequate and ineffective to ensure compliance.** Despite the ordinance mandate to undertake a quad-media awareness campaign, only 68% of LGU respondents know that there is an existing city ordinance on plastics. Likewise, in a survey of food service establishments, only 40.6% are aware of such city ordinance. Thus, 210 FSEs out of 332 respondents (63.6%) admitted that they still use plastic bags for handling³⁷ and 70.2% of respondents have plastic bags in their trash.
- c. **There is weak implementation of the ordinance.** Secondary plastic packaging is prevalent especially in quick service restaurants or kiosks. This is no need rocket science; a mere field observation can already provide evidence for non-compliance or violation of the ordinances. Many of these establishments would have been closed. Plastic bags were also recovered from collection stations in two barangays of Dasmariñas City near Imus River.
- d. **The penalty clause under the City will be effective only if there is a demonstration of strict enforcement.** The penalty clause of fine and imprisonment including business closure failed to curb use of secondary plastic bags. Since a number of FSEs admitted using plastic bags for handling, the city government must have failed to perform its compliance monitoring and enforcement duties. While the penalty of fine seems also low (ranging from Php 1,000 to Php 3,000, the cancellation of business to operate and imprisonment could be enough deterrent if only the ordinance is fully enforced.
- e. **Enforcement and prosecution of violators is not enough; this needs to publicly communicated.** In a focused group discussion of barangays, one barangay was able to enforce the ordinance and had actually put the violator behind bars. This would have been a good deterrent if only this was brought to the attention of the FSEs and the public.

³⁷ FSE Survey conducted in Jan-Feb 2022.

8.2 Provincial Plastic Ordinance

- a. **The IEC campaigns of the province on the ordinances are inadequate and ineffective to ensure compliance.** Only 43.6% (144/332) of the respondent FSEs know of the existence of the provincial ordinance. Only 54% (12/23) of the LGU staff and officers are aware of the provincial ordinance. FSE Compliance and LGU compliance monitoring may be difficult if both the FSEs and LGUs are not aware of the ordinance.
- b. **Some provisions in the Provincial Ordinance are not clearly stated.** a) One of the mandatory provisions is Section 7 which requires the positing of IEC materials in FSE premises. Section 7 failed to give specific requirements for the IEC material that needed to be posted. FSEs were unsure of what the IEC will contain – whether this would be about the ordinance or the use of eco-bag, or other environment-friendly practices. Thus, on the field observation, there were no visible signs of the required notices posted in the FSEs.

Section 7. Use of ecobags and other environment-friendly practices

1. Posting of information and Education Campaign (IEC) materials shall be mandatory on all commercial establishments such as sari-sari stores, convenient stores, grocery stores, market stalls, food establishments like eateries, fast-food chains, restaurants, bar and grills, general merchandizers like school supplies, hardware stores or any trading business establishments that will require containers and packaging materials for the product they trade.

Figure 25. Provincial Plastic Ordinance, Section 7

The Provincial Ordinance mandates all proprietors, managers and officers of business establishments to train their personnel but may not have access to technical knowledge. Thus, in the FSE survey, only 19% of the respondents have been trained on plastic wastes management. Majority of the FSE respondents answered that there is no regular briefing (35.8%) and the rest do not know if there is such briefing (45.2%).

- c. **Incentives for individual complaints against the FSE violators are inadequate.** The Provincial Ordinance provides incentives of 25% of penalty to individuals who file a complaint against FSEs or anyone for violation of the plastics ordinance. However, there

is hesitation in individual because of Community and neighbor relationships, or simply a “don’t care” attitude. It can also stem from their lack of awareness of the provincial ordinance.

- d. **The provincial government failed to enforce the ordinance.** FSEs still use plastics in their operation but remained operating despite manifest violation. It does not take rocket science to clearly identify violations among the FSES, prosecute and penalize with fines and closure of business.

8.3 Local Development Fund

- a. **Not all barangays have their own MRFs and Recycling Facilities.** The development of the MRF, can be funded through the LDF. They need capacity building in identifying and developing viable project proposals to use their cities LDF. Cities have one of the lowest LDF utilization at 8% effectively depriving the people of the benefit of development projects that could have been implemented. The joint Memorandum Circular issued by the DILG and the Department of Budget and Management (DBM) on April 13, 2011, stresses the “responsibility of every provincial governor, city and municipal mayor, and *punong barangay* to ensure that the 20% of the IRA is optimally utilized to help achieve desirable socio-economic development and environmental outcomes.”
- b. **There is a need to build local capacities particularly in project identification, implementation and management of environmental projects.** To optimize utilization of the LDF, LGU officers should be capacitated to identify projects and prepare project proposal such as plastics recycling.

8.4 Engaging Food Service Establishments

- a. **FSEs need to have a common mouthpiece to lobby with the government for their interests.** There are 2001 registered FSEs in Dasmariñas City, accounting for 12% of the total business establishments. The FSEs are not organized which makes it challenging for the LGUs to gather the general sentiments of the industry. and in the same way, it would be easier for the LGUs to engage FSE support and cooperation in its plastic use reduction and waste management programs.

- b. Plastics reduction will benefit from a roadmap.** The roadmap provides the complete picture of the direction, pathways, approaches and methodology to arrive at the set targets.
- c. With the growing deliveries and takeout services, waste management responsibility is shifted to the customers.** Reducing plastics at source, i.e., at the level of the FSEs should be coupled with a more responsible behavior of the consuming public.

BEST PRACTICES

9 Strategic Direction

Food Service Enterprises (FSEs) generate plastic wastes from single use containers and packages. The move to a circular economy is a key strategy to address plastic wastes. See Figure 26.

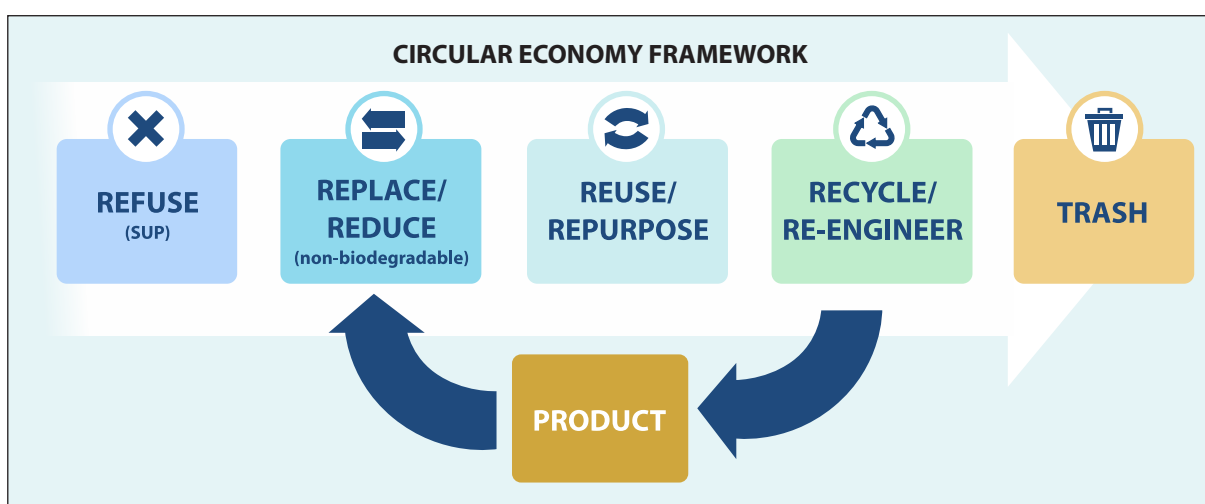


Figure 26. Circular Economy Framework

- **REFUSE:** Before thinking of shifting to recyclables or sustainable materials, the first step is to assess the necessity of using an item for food service. For example, are straws required for drinks served onsite? People usually drink directly from their cups or glasses at home, suggesting straws are often not essential to enjoy drinks and can totally be reduced or eliminated.
- **REPLACE OR REDUCE:** If an item is essential for food service, there is a need to shift to recyclable or sustainable materials, such as biodegradable materials. For example, plastic cups can be replaced by cups made of paper, starch or other biodegradable materials. Plastic cups usage can also be reduced by serving drinks using a customer's reusable cup.
- **REUSE OR REPURPOSE:** If the use of plastic items is unavoidable, these plastic items should be reusable or able to be repurposed. Bottles of mineral water are intended for single use and thus, are often not reusable for drinking water. However, these bottles can be repurposed for other uses such as vases or pots.

- **RECYCLE/RE-ENGINEER:** Plastic items that are not reused or repurposed can be recycled or re-engineered, which will involve physical or chemical changes that can be re-designed and/or blended with sustainable materials to make another item. The only caveat here is whether the new products would be safe for food.
- **TRASH:** Only non-recyclable plastic materials should go to the Trash.

9.1 Government Interventions and Support

The public sector plays an important role in implementing solutions to waste pollution issues through the adoption of relevant regulations that can accelerate behavioral changes in waste management.³⁸ In 2019, 170 nations, including the Philippines, pledged to significantly reduce the use of plastics by 2030.³⁹ Below are some of the interventions adopted by national and local governments to reduce plastic use in FSEs.

- Banning/Restrictions and Replacement** directly prohibit the production, importation or exportation, distribution, sale or use of one or more single-use plastic products. Seattle was the first US city to enact a ban on plastic straws and single-use plastic utensils. Kenya, parts of Australia (South Australia, the Australian Capital Territory, Tasmania, Queensland, and the Northern Territory), Morocco, Rwanda, and China have also banned single use plastic bags. Kenya further required the use of more sustainable alternatives to plastic. Zimbabwe introduced a ban on polystyrene food containers in 2017 and violators are fined between 30 to 5,000 USD. The UK and Canada banned the sale of products containing microbeads. The UK and China also banned single use plastic straws and stirrers in the FSI. Taiwan enacted a far-reaching restriction on the use of single-use plastic bags, straws, utensils, and cups. built on existing regulations like recycling programs. Malibu banned the sale, distribution, and use of SUP straws, stirrers, and cutlery.⁴⁰ France introduced a total ban on plastic bags, plastic cups, plates, and cutlery.

In the Philippines, the city of Pasig has already compelled “quick-service restaurants” (QSRs) to use alternatives to plastic bags since 2011. The most popular alternative was paper bags. As of 2021, very few chains—if any at all—still use plastic bags. Cavite province and City⁴¹ also banned the use of certain plastics in 2012. In 2019, Quezon City issued Ordinance No. 2876, S. 2019 prohibiting restaurants and hotels from distributing SUP/disposable materials to dine in customers, including plastic spoons, forks and knives, plastic or paper cups and plates, plastic or paper straws and coffee stirrers, and Styrofoam.

³⁸ Plastic Bans Around the World, WE Forum website at <https://www.weforum.org/agenda/2020/10/>

³⁹ <https://www.weforum.org/agenda/2020/10/canada-bans-single-use-plastics/>

⁴⁰ Plastic Bans Around the World, WEFForum website at <https://www.weforum.org>

⁴¹ As discussed in Part 3.

Phase Out of Single-Use Plastic Products and prohibiting production, importation, sale, distribution, provision or use of the use of the plastic products below after the period from the effectivity of the Act:

Within a period of four (4) years:

- a. Plates and saucers;
- b. Cups, bowls and lids;
- c. Cutlery like spoons, forks, knives, and chopsticks;
- d. Food and beverage containers made of expanded polystyrene;
- e. Oxo-degradable plastics;
- f. Film wrap, packaging, or bags of less than 50 microns in thickness; and
- g. Sachets and pouches that are multilayered with other materials.

Within a period of one (1) year:

- a. Drinking straws;
- b. Stirrers
- c. Sticks for candy, balloon, and cotton bud;
- d. Buntings;
- e. Confetti; and
- f. Packaging or bags of less than 10 microns in thickness

On July 28, 2021, the Philippine House of Representatives passed the Single-use Plastic Products Regulation Act (House Bill 9147), which seeks to ban all single-use plastic products such as plastic cutlery within four years and smaller plastics like straws, stirrers, candy sticks, plastic bags thinner than ten microns, and other small plastics within four years.⁴² The Bill, however, is still pending awaiting Senate approval. In practice, Styrofoam food containers were phased out and replaced by waxed cardboard containers. However, plastic cutlery and cups remain in most chains, especially for take-out orders.

As of March 2021, 489 cities, municipalities, and provinces in the Philippines already have existing ordinances related to single-use plastics.⁴³ In the NCR alone, the cities of Las Piñas, Pasay, Pasig, Makati, Muntinlupa, and Quezon City already have their own bans or other plastic regulations within their jurisdiction.⁴⁴

The ordinances have somehow contributed to the shift towards circular economy and reduce plastic wastes. As observed in Quezon City, all big chain supermarkets like S&R, SM Supermarket, Puregold, Landmark and Robinsons down to convenience stores like All Day and 7-11 have replaced their plastic bags with brown paper bags or boxes, and make available recyclable bags for purchase at a minimal price of P10.00 –20.00. Restaurants - Mcdonalds, Jollibee, Starbucks, Pizza Hut, Mang Inasal - to name a few, already refuse to provide straws. The plastic bags, straws and stirrers that have been avoided already saves the city from tons of plastic wastes annually.

⁴² <https://www.foodpackagingforum.org/news/>

⁴³ Philippine News Agency website at <https://www.pna.gov.ph/articles/1133624>

⁴⁴ <https://www.esquiremag.ph/politics/news/metro-manila-cities-banned-plastic-a00293-20200107>

The World Bank/PEMSEA Assessment of Policies and Regulations to Guide Country Dialogue at National Level to Reduce Plastic Waste in the Philippines indicated:

“Despite these efforts, there seemed to be very limited information that shows the effectiveness of the bans on reducing plastics and litter, or even diversion from landfills in the country. For the majority of LGUs in the country, however, there seemed to be no clear documentation and reporting of progress and updated waste data possibly due to the difficulty and complexity of data generation and assessment. Another possible constraint is that the scope of the LGU ordinances vary and covered different kinds of SUPP, including the exemptions, which makes integration of the various reports, if available, a challenge.”

The World Bank/PEMSEA report also recommended that a baseline assessment be conducted to obtain a better understanding which SUPP are the most prevalent and problematic in the Philippines and to also identify the sources and extent and impacts of mismanagement.

b. Extended producer responsibility (EPR). EPR schemes use a combination of regulatory approaches to extend manufacturers’ responsibility for single-use plastic products throughout their life cycle, including to the end-of-life stage. These schemes are aimed at decreasing the overall environmental impact from a product and its packaging. The primary responsibility under EPR lies with the producer, who makes design and marketing decisions. In most European countries, product manufacturers are charged a fee for every piece of packaging they put onto the market based on the reusability or recyclability of the packaging, supported by technical analysis. These fees are intended to cover some or all of the costs of collection, sorting and recycling. Since the recycling of plastic packaging costs more than it yields, companies will benefit from a more cost-effective system of packaging.

c. Regulated Storage, Manufacture and Use of plastics. India required its states to enforce existing rules on the storage, manufacture, and use of some single-use plastics in lieu of a nationwide ban. Meanwhile, the Department of Environment and Natural Resources (DENR) is yet to issue a list of non-environmentally accepted products (NEAP) as provided in Republic Act 9003 or the Ecological Solid Waste Management Act, passed a decade ago. This will include single use plastics in all product forms per technical advice of the Department of Science and



Figure 27. Soft drinks can with the message “Recycle Me”

Technology (DOST). Recently, for FSI, the National Solid Waste Management Commission (NSWMC) issued Resolution 1428 Series of 2021, in the meantime banning plastic soft drink straws and coffee stirrers as part of NEAP.

- d. Labeling and IEC.** Government may require FSEs or manufacturers of food containers or packaging to inform their customers which containers are recyclable or reusable. Coca Cola has released new packaging with information that the packaging can be recycled.
- e. Economic instruments** may be resorted to accelerate plastic waste reduction. Taxing or charging fees discourages the production or use of plastic bags. The United Kingdom introduced a charge for plastic bags in 2015. Taiwan requires extra charges for plastic bags. On the other hand, tax breaks, subsidies or other fiscal incentives may be offered to encourage the production and use of alternatives to single-use plastic products. Fiscal or non-fiscal incentives will be most welcome to businesses. However, with the ballooning national debt at 12 Trillion and the government wanting to increase taxes, this may not be the time for tax incentives or subsidies.
- f. Product standards and certification** can be designed to target sustainable alternatives to single use plastics or to mitigate the harm caused by single-use plastics. Governments or any credible organization can establish third-party product standards and certifications, or rankings on products that will inform the public that containers are either plastic-free, contain low volumes of plastics, or are composed of secondary plastics.⁴⁵ Such standards and certifications create awareness among consumers who may be searching for greater transparency in the market and potentially shift preferences towards plastic-free alternatives. This can drive market differentiation, and for FSEs product certification can be used as social advocacy marketing or branding.
- g. Stakeholder Consultation.** Stakeholder consultation is a formal process by which the government collects information and views from stakeholders about its proposed regulation. The government can conduct perception surveys to determine the sentiments of the public, particularly those who will be affected by the proposed regulation. Public forums and stakeholder consultation may be organized in order to allow all affected sectors to put their concerns on the table and be considered in the development of the regulation.
- h. Communication.** Laws and regulations should be communicated to the public. It is important that regulations are accessible through the internet or such other means.

⁴⁵ Plastic Smart Cities at <https://plasticsmartcities.org>

People can also be informed by way of posters in conspicuous places. LGUs can design and develop a simple user-friendly web platform for reporting or filing complaints incorporated in their websites for advocacy advertising like what's in Makati MAKATIZEN. And for implementation, LGUs can use media influencers as champions of the advocacy to eliminate plastic use with catchy/impact messages or taglines like BTS' "Let's Rethink Plastic" or maybe a famous well-loved sports star with his tagline "Skip the Stuff" to eliminate unnecessary plastics like straws, stirrers, lids, etc.

- i. **Implementation and Monitoring.** Monitoring compliance is one of the biggest challenges. Laws and regulations are only as effective as their enforcement and implementation. In order to effect their desired behavioral changes, all provisions of the law or regulations should be clearly enforced with relevant fees and penalties. An effective and systematic program for monitoring compliance should be put in place, such as engaging stakeholders to report violations.

Quezon City government passed its first ordinance that provided a win-win situation for the people, the government and the public sector. It started in 2012 with the issuance of Ordinance 2140S of 2012. The ordinance aimed to reduce plastic bags by allowing retailers to charge their customers at point of sale for single use plastic bags that would be carried outside. This generated behavioral change as consumers started to bring their eco bags. Manufacturers supplied eco bags at a lower cost. Further, the government allowed the retailers to do the implementation and monitoring because they are allowed to charge for the plastic use. After 8 years, the QC government find the market transforming and introduced the Ordinance SP 2876 banning single use plastic bags and utensils in restaurants and other businesses. Key to the success is engaging businesses to help implement the ordinance and giving a lead time for the market to transform before the ban.

- j. **A City Action Plan** addresses a wide range of short- and long-term measures, with the aim of preventing plastic from entering the environment, waterways and ultimately, the ocean. It operates as a roadmap to define and set directions and requires a holistic approach that identifies target problems, engages local stakeholders and implements solutions.
 - **The Amsterdam Plastic Smart City Action Plan** contains targets, approaches, and timelines as well as funding sources and partnerships. It encourages initiatives to strive for the highest attainable step according to the R-ladder framework (See Figure 28).

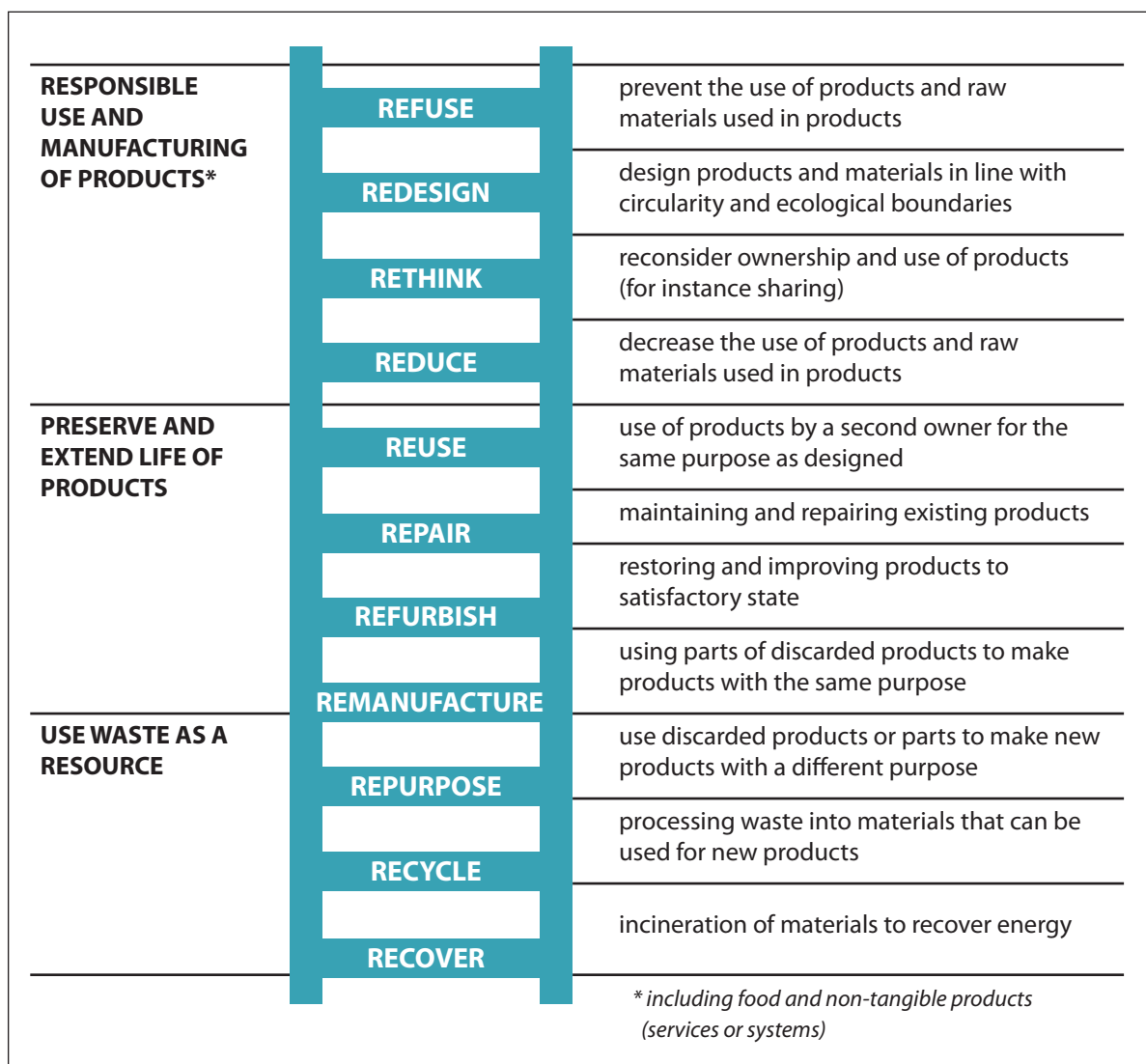


Figure 28. R-Ladder

Some of the initiatives of Amsterdam include:

- “Ontplastic De Pijp” where alternatives to plastic bags are offered through small local entrepreneurs.
- Refillable water bottles are marketed in the shape of the iconic “Amsterdammertje,” which are expected to become a collector’s item
- The city has a large network of water taps, both in buildings and in public spaces to get residents and tourists to tap water “en masse.”
- The Bubble Barrier, located in the *Westerdok*, removes (plastic) waste from the water in an innovative way.
- Initiating a pilot project for private households to use a special filter, attached to their washing machine that collects microplastics in the waste water from the machine.

- A pilot area is designated from which to measure the impact of the activities from the action plan. The (measurable) result of initiatives that take place outside the pilot area also contribute to the achievement of the reduction target. The monitoring is primarily organized by the Plastic Soup Foundation.
 - Conduct data collection and behavioral research to get a picture of awareness, effect and support for (possible) measures and initiatives among residents, entrepreneurs and visitors to improve the effectiveness of relevant programs.
 - Established Green College, an initiative of the Green Office of the Municipality of Amsterdam where important sustainability themes are discussed in a lecture series, including plastic (waste) together with WWF and the Plastic Soup Foundation.
 - The City of Amsterdam offers a training program on litter for the age group of 10 to 14 years. It stimulates third-party initiatives aimed at education and awareness about plastic (waste).
- k. A Knowledge and Information Platform** is crucial to effect behavioral modification and shift to a more responsible and concerned society. Maintaining a website as a venue for sending information, generating inputs, knowledge exchange and communicating progress and successes will be most useful. The website also serves as repository of institutional knowledge. The [ASEANo SeaKnowledge Bank](#) is one good practice of having an interactive online platform, open to all interested and relevant stakeholders.
- l. Waste Management Facilities.** The province of Cavite can only process biodegradable trash. Non-biodegradables are hauled out of the province to a dumpsite in Laguna, which is a significant expense for the province. The LGUS can help barangays establish or strengthen their MRFs and collection of trash, through the following:
- establish a system for collecting & segregating wastes at barangay level which will then be placed in barangay level MRF. This can be done through thorough consultation with residents within the barangay.
 - The MRF construction can be funded by the Brgy development fund.
 - establish a market agreement for the reusables by contracting with recyclers as to volume and frequency of collection so MRF will not overflow & be emitting foul odor.
 - allot budget for bidding for “design & build” for the MRF
 - allot budget for maintenance (tools, equipment, other implements, manpower.
 - establish periodic reporting of MRF operations taking note of volume of waste recycled (put into market) and its peso value vs cost of operation
- m. Drop-off & Collection.** The government can set up drop-off and collection points or hubs for sharewares in their existing facilities accessible to customers like fire stations, traffic outposts, barangay halls, health centers and more. Public places and facilities like parks, stadiums, terminals for public transportation, offer strategic locations for these hubs as well. To make it more effective, the LGUs and FSEs should encourage motorcycle-type TNVS, local motorcycle

riders' associations/clubs, cycling enthusiasts or even individuals to join the program with the task of picking up wares from drop off points and bringing them to respective owner-stores/shops. Incentives or other forms of compensation should be part of the scheme.

- n. **Capacity Building.** Government can provide training to FSEs on how to identify measures to address their plastic problem. LGUs can seek help from relevant NGAs – DENR EMB and the DILG Local Government Academy which is tasked to build capacities of the LGU to enable it to perform its functions. Other NGOs such as Solid Waste Association of the Philippines can also provide capacity building support.
- o. **Behavioral modification.** The public play a major role in plastic pollution, through their attitudes and behavior in relation to segregation, reusing, recycling or managing waste. The government should educate the people on how to properly handle waste. Schools can be a good venue for generating concern for the environment and inspiring the youth to take this on as their civic duty. This was also a key recommendation of the socio-economic assessment report produced by De La Salle, Dasmariñas.⁴⁶
- p. **Livelihood from trash.** The phrases “there is money in trash” and “someone’s trash is another man’s find” have all been given credence. While not all plastics are recyclable, they can be reused or repurposed. Plastics are turned into boxes, furniture, and cutlery.

LGU Initiatives in Cavite

There are several ongoing plastic recycling, reuse and repurpose initiatives being implemented in the different LGUs and barangays in the Province of Cavite, to name a few this includes:

- a) **Eco-bricks Project Silang Cavite** – MENRO of Silang Cavite collects plastic, foils and other residual waste mixing it with cement to produce Eco-bricks that can be used as construction materials.
- b) **BasuraRaffle Imus Cavite** – the LGU of Imus (CENRO), implements a program to obtain plastic waste (bags, sachets, foils, tetra packs, candy and biscuit wrappers) from the different villages of Imus in exchange of raffle tickets that can win prizes (rice, groceries, home appliances)
- c) **War on Waste** – Bacoar Cavite – Ms. Rhodora Sacramento, a school principal from Bacoar, Cavite spearheaded the program to stuff plastic wrappers into bottle bricks. This bottle bricks then traded to Robinsons Hypermart Bacoar for canvas eco-bags. The bottle bricks are the used to build homes for the Yangil tribe in Zambales.

⁴⁶ Available at <https://pemsea.org/publications/reports/aseano-project-report-assessing-knowledge-attitudes-and-practices-concerning>

9.2 FSE Initiatives

FSEs have implemented interventions to reduce plastic, either in compliance with existing laws, due to policy of the head office or franchisor, or for their own advocacy. The following are some of the measures undertaken to reduce use of plastics or replace plastics in accordance with the circular economy framework.

Refuse

- a. **Straw-less/Stirrer-less.** Plastic straws and coffee stirrers are included in the list of non-environmentally acceptable products (NEAP) of the National Solid Waste Management Commission (NSWMC).⁴⁷ The Quezon City ordinance requires FSEs not to provide straws and stirrers for dine-in services. FSEs in QC such as Starbucks provide stainless teaspoons instead of straws and stirrers in serving frappes or coffee.
- b. **Plastic-Free.** There are stores that offer plastic-free food products and services like Ritual, Croft Bulk Food, Happy Earth Store, and others. In these stores, customers are encouraged to bring their own plastic bags, jars, bottles and containers.
- c. **Change in Servicing.** Just Salad, at the start of the lockdown, asks its customers if they want plastic utensils with their pickup or delivery orders, which typically include a slew of single-use plastic products. This saved the FSE money and reduced utensil use by 88%. Burger King Philippines provides ketchup for take-out only upon request.

Replace/Reduce

- d. **Straw-lids.** FSEs introduced straw-lids where mini-straws are built into the lids (although such lids are still made of plastic). McDonalds Philippines and Macao Imperial Tea have started introducing straw less-lids in its stores in a bid to reduce plastic waste. The Strapless-lids replace the flat lids used for iced beverages such as milk tea, juice and soft drinks.
- e. **Replace Plastics with Recyclable Materials.** Plastics can be replaced by material made from polypropylene, a material type that is 100% recyclable. However, recyclable materials should have a forward linkage – a link to a recycler who is willing to take on the recyclables. Paper-based wrappers are another alternative for bagels and sandwiches. Containers and packaging can use plastics with a certain percentage of recycled content and be designed to be recyclable or reusable. However, recyclable packaging is of little benefit if it is not disposed of correctly. The success of a recyclable package is an equal demand from



Figure 29. Straw-Lids, Macao Imperial Tea

⁴⁷ Report world; (Arriane Perez)

recycling companies through improved recyclability of packaging and investments in efficient recycling facilities and systems. This requires investment and innovation since quality and availability are still often a stumbling block for companies to use recycled plastic. The recyclability of plastic packaging can often be improved by:

- choosing a common type of plastic (such as PE, PP or PET);
- choosing a common color (white or transparent); and
- avoiding combinations of materials, such as plastic windows in cardboard packaging. Watermarking technology is also being developed so that packaging can be more easily recognized by sorters.

f. Replace Plastics with Biodegradable materials. An alternative to fossil-based plastics are plastics from biomass (such as sugar), which is still in its nascent stage. Bio-based plastic⁴⁸ is more expensive than fossil-based plastic and FSE and their consumers will only be prepared to pay the price if they see value. Bio-based plastics produce fewer carbon emissions than fossil-based plastics and contribute to the transition to a 'low carbon' society.

- *Paper Food Containers.* Plastics may be replaced with bio-degradable materials such as paper and carton boxes. The country's top fast food chain Jollibee has replaced its Styrofoam food containers with paper food containers. Other FSEs that replaced Styrofoam packaging materials are TGI Fridays, SumoSam, Bananaleaf, Max's Restaurant, Mesa, Maple, canvas, Moon Café, Tsim Sha Tsu, Bigby's, Bon Chon, Figarro, Bo's Coffee, Army Navy, Pancake House, Sbarro, Bread Talk, Krispy Kreme, Dunkin' Donuts, KFC, Red Ribbon, Goldilocks, Chow King and Greenwich; and other restaurants and food chains.⁴⁹
- *Edible straws.*⁵⁰ PH Sustainable founder Adrian Mendoza, has designed edible straws that can replace single-use plastic straws that are used for sodas, milk teas, frappes, pearl shakes and similar refreshments. The straws are made of rice flour and tapioca starch, are able to withstand both hot and cold temperatures, and have a shelf life of two years. Price is comparable to paper straws but with all the added points of longer durability in contact with liquid. And edible straws won't pose toxic hazards unlike paper straws when dissolved since some paper straws also have a plastic component.



Figure 30. Edible Straws

⁴⁸ Biodegradable plastic can, under the right conditions, be broken down by microorganisms into water, gases and biomass. There are both carbon-based and bio-based plastics that are biodegradable.

⁴⁹ <https://styrolessworld.wordpress.com/local-awakening/>

⁵⁰ <https://news.abs-cbn.com/life/08/28/21/look-edible-straws-seen-as-alternative-to-plastic>

- *bio-PET and PolyLactic Acid (PLA).* PET (e.g. for soft-drink bottles) (e.g. used for meat trays and vegetable packaging). The bio-Pet and PLA are already used as common replacement for plastics.
- *Plastic made from milk.* Lactips has developed a milk-based thermoplastic that can be used for packaging material. Cosein, a protein derived from milk, is the key ingredient to this material that can double as edible food packaging. It's both biodegradable and water-soluble, ensuring that it won't take years to degrade like regular plastic.
- *Spoon out of food waste.* Genecis redirects food waste from landfills to their lab in order to create polyhydroxyalkanoates (PHA) bioplastics that are high-quality and fully biodegradable. Not only are their products recyclable but also compostable. Genecis has currently processed 1,880 kilograms of food waste and produced 9,724 bioplastic spoons.
- *Wastewater for plastic.* Aiming to stop energy, food, and materials waste, EggPlant is producing polyhydroxybutyrate (PHB) bioplastic (bio-derived and biodegradable) by reusing wastewater produced from washing dishes or taking a shower. The technology it uses filters water to separate sugar, proteins, purified water, and a bacterium that is essential to forming PHB bioplastic. Seeing as it's bio-derived, the technology can be used as biodegradable food packaging.
- *Light as a feather.* A forgotten by-product of the poultry industry, feathers are the center of Aero powder's technology that transforms feather waste into a repurposed material called "pluumo", which is made from 95 percent waste feathers and 5 percent biobinder. The biodegradable technology can be used to insulate perishable food in groceries.
- *Hive derived.* Humble Bee is studying a masked bee species that creates a nesting material similar in form to cellophane. The material often used for polvorón may soon be replaced by this bee-sourced bioplastic that is resistant to water, high temperatures, and chemicals.
- *Compostable wares.* Yash Pakka, an Ayodhya-based venture, offers compostable products to leading players of the food industry, earning an annual turnover of 183.65 crores (FY 2020-21). Their standout product is Chuk, a 100 percent compostable and biodegradable tableware (bowls, plates, food trays, containers)

sourced from waste sugarcane fiber that helps businesses enable their customers to 'eat safe'. Launched in 2017, Chuk can endure microwaves, ovens and freezers, maintain a sturdy design to ensure your food doesn't fall out but is lightweight enough to ease the packaging process, and stands 'free of toxins', claims the venture. Use of more environmentally friendly materials. Plastics can be replaced with items made from wood for forks, spoons, and stirrers. Plastic sundae cups can be replaced with paper cups thus avoiding the use of plastic lids by introducing paper flap cups.

- *Sustainable Value-Adds.* Some FSEs include additional non-food items as added value like Jollibee's Jolly Kidd's Meal and McDonald's Kiddie Meal. McDonald's has considered to move away from the usual plastic toys that come with their Kiddie Meals. All toy will be made from a more sustainable material like bio-based and plant-derived materials (See Figure 31).

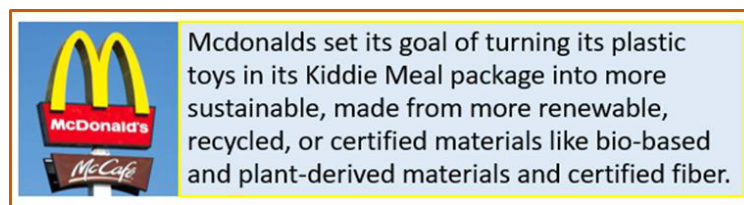


Figure 31. McDonald's Sustainable Kiddie Meals

Reuse/Repurpose

- g. Refilling Stores.** The container for the initial purchase may be reused in the same store for refill or exchange. Clear examples are the water refilling stations where plastic water containers of clients are reused and refilled with water or exchanged for already refilled container.
- h. Customer Incentives.** Tim Hortons, a global brand in the coffee industry pioneered the reusable cup program as early as 1978. Guests who bring in a reusable cup enjoy a discount on their coffee, while guests who dine in the restaurant are served their beverage in a china mug. Starbucks Philippines also provides discounts for reuse of Starbucks tumblers or mugs.
- i. Reusable Tumblers and Cups.** Macao Imperial, a milk tea shop, designed their plastic cups and tumblers to be reusable.

Recycle/Re-Engineer

- j. **Up-cycling** - a process of reusing discarded objects or material in such a way as to create a product of higher quality or value than the original. In 2019, Shakey's has already launched its War on Waste (WOW) Project where they collect all their promotion and advertising materials printed on tarpaulins.⁵¹ Shakey's and its partner community organizations cut and sew used tarpaulins to make purse, bags and other useful materials. This partnership with local communities and non-government organizations not only addresses plastic waste issue but also provides for livelihood projects in a number of communities.⁵²

Taco Bell, a popular snack brand has partnership with TerraCycle. TerraCycle is recycling Taco Bell's hot-sauce packets. In this partnership Taco Bell and its customers sends its empty sauce packets to TerraCycle. The collected sauce packets are cleaned and melted into hard plastic and remolded to make new recycled products, such as park benches and picnic tables. Taco Bell aims to recycle most of the 8.2 billion sauce packets used in the United States each year.⁵³

Ionika, a Netherlands-based tech company, is converting polyethylene terephthalate (PET) plastic (from water bottles and tupperware) into virgin plastic that can be reused for food packaging. They do this by breaking down PET waste to a base molecular level in order to produce a recyclable form of plastic. According to founder and CEO Tonnis Houghoudt, they can recycle waste ranging from ocean plastic pollution to a child's fleece onesie into a water bottle, which can then be recycled (or upcycled) into something else.

- k. **Chemical Recycling of Plastics.** This process is the broad term used to describe a range of emerging technologies in the waste management industry which allow plastics to be recycled, that are difficult or uneconomic to recycle mechanically. By turning plastic waste back into base chemicals and chemical feedstocks, chemical recycling processes have the potential to dramatically improve recycling rates and divert plastic waste from landfill or incineration.⁵⁴ The following are some approaches for recycling and existing upcycling initiatives:
- Aduro refers to its process as Hydrochemolytic™ Technology (HCT). When applied to plastics, it is Hydrochemolytic™ Plastics Upcycling (HPU). And in recent lab runs, HPU

⁵¹ Tarpaulins, also known as polyethylene tarps are made from recycled plastic and designed with a woven mesh fabric that's sandwiched between sheets of polyethylene.

⁵² https://www.shakeypizza.ph/images/asm-2021/PIZZA_ASM_2020_Report.pdf

⁵³ <https://www.npr.org/2021/09/10/1036002327/>

⁵⁴ Chemical Recycling 101, British Plastic Production, <https://www.bpf.co.uk/plastipedia/>

produced 99% pure, diesel-like paraffin oil from polyethylene with a yield above 90%. Though the product could be used as fuel, Aduro CEO Ofer Vicus told me the real prize within reach, thanks to HPU, is efficient chemical recycling of polyethylene (PE) for use in the production of more polyethylene in a fully circular mode. The company anticipates successful results on other members of the plastic family such as polypropylene (PP) and even polystyrene (PS).

The Aduro approach involves the addition of water, naturally occurring metals, and bio-based materials such as glycerol or cellulose. This deconstructs the long molecules (polymers) in waste plastics into smaller molecules. The approach is analogous to the hydrocracking process in a refinery but is conducted at much lower temperatures without the requirement to add hydrogen gas or use exotic, expensive catalysts. In a fortuitous twist, the company's analysis of the waste plastic problem revealed that the source of hydrogen equivalents is also available in waste plastic. In other words, upcycling waste plastics is self-sustaining. When hydrogen equivalents are needed, some waste plastic of the appropriate type, or even foam from the millions of mattresses discarded every year, can be added into the mix. This opens the door to stand-alone, cost-efficient waste plastic processing operations that could best serve the local community the waste is associated with. The Canadian company believes they have found a novel solution to the problems that have plagued the pyrolysis approach. This approach opens the door to options never considered possible before.

- Coca-Cola and Unilever do chemical recycling of their plastic bottles through depolymerization. This process is used to recycle colored PET into new food packaging. Before the end of 2021, Coca-Cola Philippines announced its plan to upgrade its facility in General Trias, Cavite to recycle their used PET bottles to food-grade quality bottles.⁵⁵
- Another process in this category is called pyrolysis. Pyrolysis is the thermal degradation of plastic waste at different temperatures (300–900°C), in the absence of oxygen, to produce liquid oil (Rehan et al., 2017). This is used to recycle multiple plastics and produces oil that can be mixed with virgin material during the production of food grade and non-food grade plastics. A consortium of Sabic, Renew and Plastic Energy working on a project to establish a pyrolysis-based waste-to-energy facility and Unilever is one of the prospective users of the facility towards a more sustainable plastics use.

⁵⁵ Coca-Cola Philippines to open recycling facility early next year, Packaging Gateway, Nov 2021, <https://www.packaging-gateway.com/news/coca-cola-philippines-recycling/#:~:text=Under%20the%20programme%2C%20the%20company,in%20its%20packaging%20by%202030.&text=Apart%20from%20its%20cap%20and,entirely%20from%20plant%2Dbased%20plastic>.

Replace

- I. Replace Plastics with Recyclable Materials.** Plastics can be replaced by material made from polypropylene, a material type that is 100% recyclable. However, recyclable materials should have a forward linkage – link to a recycler who is willing to take on the recyclables. Paper-based wrappers are another alternative for bagels and sandwich papers. Containers and packaging can use plastics with a certain percentage of recycled content and designed to be recyclable or reusable. Highly recyclable packaging is of little benefit if it is not disposed of correctly. The success of a recyclable package is an equal demand from recycling companies through improved recyclability of packaging and investments in efficient recycling facilities and systems. This requires investment and innovation since quality and availability are still often a stumbling block for companies to use recycled plastic. The recyclability of plastic packaging can often be improved by:
- choosing a common type of plastic (such as PE, PP or PET);
 - choosing a common color (white or transparent); and
 - avoiding combinations of materials, such as plastic windows in cardboard packaging. Watermarking technology is also being developed so that packaging can be more easily recognized by sorters.

Trash

- m. Waste Segregation and Segregated Bins.** Shakey's Philippines implementation of waste segregation and 3R (Reduce, Reuse, Recycle) in its corporate office is one good testament of compliance to RA 9003. The country's premier pizza restaurant has installed "Stop Before You Drop" trash bins for the implementation of company-wide proper waste management. The bins are labeled to indicate the different types of waste to aid in proper disposal and culture development of its employees. Waste collected are weighed on a daily basis to aid in monitoring wastages and to map out more waste management initiatives.⁵⁶
- n. In-store Sorting and Recycling Bins.** McDonalds has installed sorting and recycling points in select restaurants in its markets. It also improved its recycling bin signage to make the recycling process easier to understand. McDonald's Germany, Austria, Czech Republic and Slovakia on the other hand, collect customer waste to sort for recycling. initiatives.⁵⁷



Figure 32. In-store Sorting and Recycling Bins, McDonalds

⁵⁶ https://www.shakeyspizza.ph/images/asm-2021/PIZZA_ASM_2020_Report.pdf

⁵⁷ <https://corporate.mcdonalds.com/corpmcd/our-purpose-and-impact/our-planet/packaging-and-waste.html>

McDonalds Philippines will implement stricter implementation of solid waste segregation in the dine-in, kitchen and prep areas to reduce waste at sanitary landfill. Its aim is to convert paper waste to fuel, food waste to fertilizers and plastic waste to repurposed goods, as well as convert used vegetable oil to biodiesel.⁵⁸

- o. No segregation-no collection Policy.** Malls, such as SM in Dasmariñas City, implement no segregation – no collection policy to obligate its tenant FSEs to segregate to help in its material recovery process.

9.3 Other Initiatives

Collaboration on waste reduction and plastic elimination is one of the innovative approaches to reduce waste and eliminate plastics by forging partnerships with advocacy and waste reduction programs and organization. This serves as a driver for the FSI to pursue and sustain its programs for recycling and waste reduction.

- a. Shareware Program.** Many restaurants in the US and Europe have launched their shareware program. The concept is like borrowing books in the library. Customers are encouraged to join the program by signing up. Once a member, customers can use reusable food containers for take-out and return them during their next visit. Restaurants that have this kind of program associate themselves and establish collection or drop-off centers. Some restaurants require a one-time refundable deposit for the wares.
- b. Plastic-free Discounts.** FSEs offer discounts to customers that bring their own wares either for dine-in or take out transactions. In contrast, customers opted to use plastic containers or wares that are charged with extra cost. In doing so, restaurants are not just reducing plastic waste but enjoining their customers to plastic-free campaigns.
- c. Developing Your Own Packaging Tool.** The dairy company FrieslandCampina, aims for sustainability in all aspects of their operations, including the packaging strategy. Its own packaging tool (Respackt) has made it much easier to compare factors such as recycling rates, carbon footprint and the use of fossil fuels. The baseline measurement of the portfolio, which coincided with this, is the starting point for an internal discussion with marketers and designers about what the most suitable packaging is.
- d. Reduction at source.** Many restaurants and food establishments are getting committed to contributing to fighting plastic pollution. One of their approaches is to reduce if not

⁵⁸ <https://www.bworldonline.com/mcdonalds-leads-in-environmentally-sustainable-restaurants-opens-its-second-in-mandaluyong/>

eliminate completely the demand for ingredients and raw materials that come with plastic packaging. Start finding sources for your ingredients and other supplies that use organic components and make them your strategic business partner.

- e. **Support for Research & Development.** FSEs contribute to a bursary to fund research and development on the best alternative to plastics for use in FSEs and provide solutions to other issues that may later crop up.
- f. **Company commitment to sustainability.** McDonald's sustainability policy and commitment are one of the world's biggest restaurant companies to commit to sustainability. It commits to achieve 100 percent of its guest packaging to come from renewable, recycled, or certified sources and to recycle guest packaging in 100 percent of McDonald's restaurants by 2025.

9.4 Strategic Collaborative Approaches

Collaborative approaches harness or leverage knowledge and technology residing in different organizations and undertaking common initiative will make efficient use of financial resources while generating impact. FSEs can also work with NGOs whose activities are normally funded by donor organizations.

- a. **PlasticFreeRestaurants.org (PFR)**⁵⁹ is a US organization launched in 2020 that seeks to eliminate petroleum-based, single-use plastic from restaurants and schools by subsidizing the cost difference between the plastic they currently use and the reusable alternatives they agree to use moving forward. To pursue this advocacy, PFR maintains a database of plastic-free restaurants across the country. To date, their subsidies avoided more than half a million pieces of plastic from landfills and oceans.

PFR does not only subsidize restaurants; it also converted three schools from users of single-use plastic to stainless reusables. The combined average of 440 lunches everyday, PFR eliminated 440 plastic trays, cups, bowls, forks and knives that would have landed in the garbage everyday.

PFR's first case study is **Jersey Joe's Coastside**⁶⁰, a hot local spot to grab a cheesesteak or burger and watch games with friends. The owners had concerns about plastic entering

⁵⁹ PlasticFreeRestaurants.org website at <https://www.plasticfreerestaurants.org>

⁶⁰ PlasticFreeRestaurants.org website at <https://www.plasticfreerestaurants.org>

local waterways and the many other environmental effects of plastic production. They shifted from plastics to metals through the support of PFR resulting in cost savings and avoidance of plastic litter. A more detailed case study sheet is attached as Annex 4.

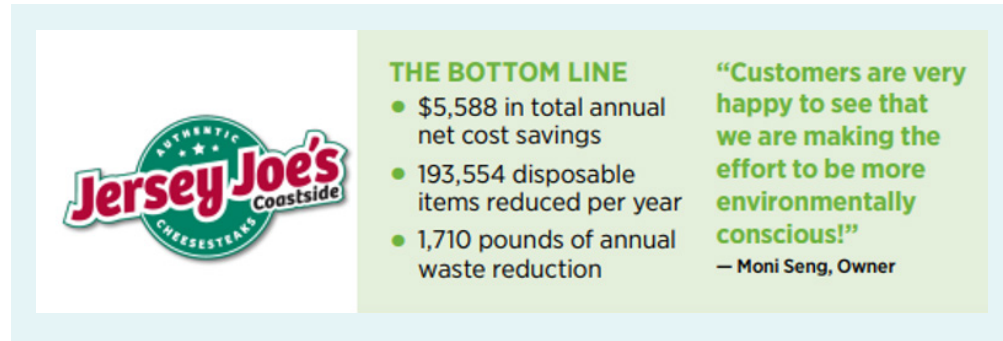


Figure 33. Jersey Joe's Case Study

- b. NextGen Consortium (Next Gen)⁶¹.** The Consortium is a pre-competitive collaboration amongst consumer brands committed to advancing foodservice packaging solutions to address single-use food packaging waste globally. It draws upon the experience and expertise of brands, municipalities, material recovery facilities and manufactures to scale its impact. It addresses the issues of packaging by exploring a variety of packaging innovations, testing reuse & refill models to reduce the overall use of packaging materials, and strengthening the materials recovery & recycling systems to support this transition.⁶²

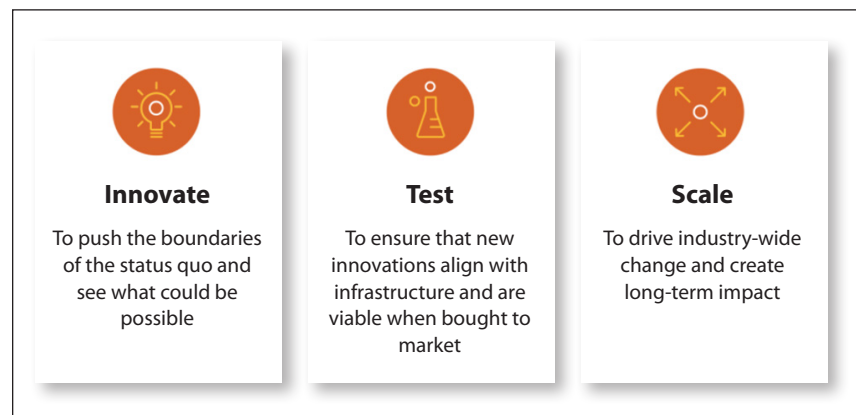


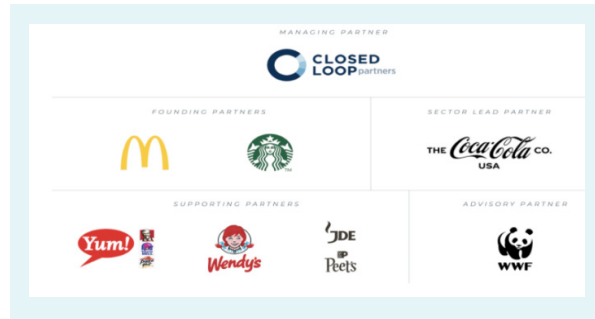
Figure 34. NextGen Approach

⁶¹ <https://www.closedlooppartners.com/nextgen/about/>

⁶² <https://www.closedlooppartners.com/nextgen/about/>

The Consortium launched the NextGen cup, a fiber cup for hot and cold drinks to advance recoverable solutions for the fiber, hot and cold, to-go cup system. It is managed by the Closed Loop Partners' Center for the Circular Economy, Partnerships with suppliers, recyclers and composters help to ensure new cup solutions get successfully recovered at their highest value.

Box 2. Consortium Members



- c. **ReSource Plastic.** WWF brings together a consortium of companies and organizations leading the way to address the plastic waste crisis. The ReSource Footprint Tracker is WWF'S innovative tool to help companies take their ambitious, large-scale commitments to a global scale through meaningful, measurable actions that transform the broken plastic systems. It addresses a critical measurement and reporting gap through common language and set of metrics to understand corporate action on plastic.⁶³ The Tracker measures the plastic footprints and waste mitigation efforts of ReSource: Plastic member companies which are shared in an annual public report to showcase members' progress, individually and collectively, to reach its goal of avoiding 50 million metric tons of plastic waste by 2030.
- d. **#AyokoNgPlastik** is a WWF initiated movement that aims to stop the flow of plastics entering the environment through elimination of unnecessary plastics, doubling reuse, recycling, and recovery, and ensuring remaining plastic is sourced responsibly.⁶⁴
- e. **Zero-Waste Approach.** Mother Earth Foundation and Cavite Green Coalition provides support to the LGUs and private establishments in implementing to zero-waste approach to waste management.
- f. **ReThink Campaign (Plastic).** Rethink is a collaborative movement of individuals, communities and businesses to encourage people to evaluate their habits in terms of their plastic consumption.⁶⁵ They focus on raising awareness to educate people around single use plastic issues and consumption as well as developing new materials to innovate new circular solutions to make a world without plastic pollution. Through EvoWare collaboration, they provide global distributors, and small local businesses with a wide range of plastic-free and compostable products such as Straws, Cutlery, Bags and Packaging made from renewable sources such as seaweed, cassava, rice, sugarcane or palm leaves.

⁶³ <https://resource-plastic.com/footprint-tracker>

⁶⁴ <https://wwf.org.ph/resource-center/story-archives-2020/wwfph-viber-launch/>

⁶⁵ ReThink Campaign at <https://rethink-plastic.com/home/rethinkhome>

RECOMMENDATIONS

10 Institutional Reform

10.1 Laws and Policies

The LGUs (Provincial Government of Cavite and Dasmariñas City) need to revisit their respective plastic ordinances and ensure that the provisions are clear and sufficient for effective enforcement. Some considerations include the following:

- Adopt circular economy which emphasizes eliminating waste; increasing reuse, recycling and recovery of materials.
- Adopt polluter pays principle to instill environmental responsibility and accountability of plastic polluters. Manufacturers may be required to pay for the cost of waste management and clean-up of SUPs.
- Organize stakeholder consultation or public fora ensuring the participation of the sectors that will be most affected. There can be stakeholder groups for households and FSEs, which are the main sources of single use plastics. FSEs can be categorized for the FGDs into 5: fine dining restaurants; quick service restaurants, kiosks and carinderias, catering and ambulant food vendors. or franchises; kiosks, carinderia; will be most affected in the regulation of plastics
- Ensure “just transition” where the move towards a reduced or plastic-free economy mainstreams the higher goals of poverty reduction and sustainable development. This principle considers the impacts of single-use plastic policies on vulnerable social groups.
- Conduct baseline assessment of plastic wastes and obtain an understanding of the prime sources of SUPs and the challenges in implementing the regulation; establishment of a baseline will also facilitate the monitoring of results, which is critical in measuring the effectiveness of a policy intervention in combating plastic waste and pollution.
- The total banning of SUPs should have a transition phase to allow establishments to prepare and make necessary adjustments in their operations. It is also advantageous if the LGUs can help identify alternatives.
- Strictly enforce regulation. Engage the people in monitoring and reporting of violations but this should be fully communicated.

- Economic instruments like taxes, fees and charges as well as subsidies and incentives can help accelerate market transformation.
- Fines and penalties can deter patterns of unsustainable plastic use and waste management.

10.2 Action Plans

Dasmariñas City may wish to prepare an action plan, containing targets and goals, mission, vision, timelines and activities. An action plan can also act as the city road map that sets forth the direction towards a plastic-smart city. It can also provide information on the progress and status of the city in terms of achieving its goals.

10.3 Financing

The LGUs are required to allocate 20% of their respective annual Internal Revenue Allotment (IRA) to their Local Development Fund to finance the LGU's priority development projects, supporting the Philippine Development Plan and Public Investment Program. The development projects that may be included under the 20% DF shall be those that are necessary, appropriate, or incidental to efficient and effective local governance, and those which are essential to the promotion of the general welfare of the people.⁶⁶ Some of these projects include waste management and environmental projects. In 2019 (pre-COVID19),⁶⁷ LDF utilization by Dasmariñas City is one of the worst cities, utilizing only 8% of its LDF, which is way below the national average utilization rate of 73.84 percent.⁶⁸ See Table 10 below.

Table 10. LDF Utilization in 2019

Region	Province	LGU Name	Internal Revenue Allotment		20% Actual Local Development	Utilization Rate
			Actual IRA	20% of IRA		
Region IV-A	Cavite	Cavite City	403,693,698	80,738,739.60	74,435,631.64	92%
Region IV-A	Cavite	Dasmariñas City	1,370,226,810	274,045,362.00	22,375,617.82	8%
Region IV-A	Cavite	Gen. Trias City	805,409,870	161,081,974.00	73,223,137.60	45%
Region IV-A	Cavite	Imus City	1,026,399,552	205,279,910.40	132,971,959.19	65%

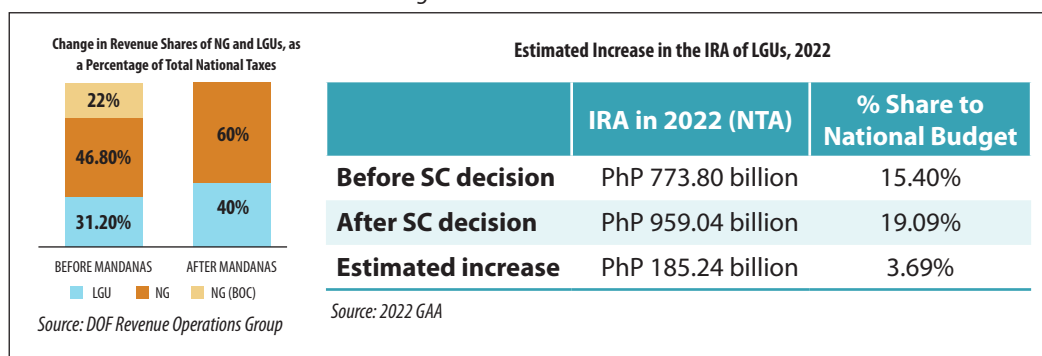
This means that Dasmariñas City could have undertaken projects that could help build its capacity to implement projects that can address the problem solid waste management, including plastics.

⁶⁶ DILG, DBM and DOF Joint Memorandum Circular No. 01 dated November 4, 2020

⁶⁷ DILG and Department of Budget and Management (DBM) Joint Memorandum Circular No. 01 dated March 27, 2020. However, with the declaration of State of Public Health Emergency throughout the Philippines due to COVID-19, indicated that this funding can now be used to curtail threats of said disease.

⁶⁸ IRA in 2022 at a Glance, Senate Economic Planning Office, February 2022.

Table 11. Change in LGU share after Mandanas Rule.



10.4 Institutional Support

a. The LGUs provide FSEs with needed support to help them comply with the plastic regulations.

- The LGUs need to strengthen IEC on the plastic ordinance. The public should be fully informed and have access to relevant information. For this, the city may maintain an email and a website to publish regulations, best practices, actions and progress.
- LGUs, together with the FSEs and relevant stakeholders can develop guidance documents on plastics use and waste management.
- Link with the BPLO to ensure that every annual business permit to be issued to FSEs will include as attachments the plastic ordinance, notices required to be posted in the establishments, as well as the guidance document to be developed with the FSEs.
- The province or city can organize regular briefing on plastic pollution once a month. It can also serve as a platform for disseminating information on new approaches or methodology for plastic use reduction and waste management.
- Visualization will help FSE owners and staff identify prohibited plastics and help promote compliance. LGUs can include as guidance such pictures of the prohibited or regulated items instead of listing (i) Polyethylene terephthalate for fizzy drink, water bottles, salad trays; (ii) High Density Polyethylene for milk bottles (iii) Low density polyethylene for packaging films, liners or (iv) Polypropylene for margarine tubs, microwaveable milk trays.

b. LGUs should strengthen enforcement. Violations of FSEs are evident and in plain view.

- LGUs should brief their respective enforcement staff on how to monitor, gather evidence and file complaints against violators of plastics regulations.
- The provisions on fines and penalties regulations should be strictly enforced.

- c. **The LGUs should facilitate the organization of FSEs.** Organized FSEs help LGUs increase understanding on the challenges faced by the industry and improve policies on plastics use as well enhance the contribution of the FSI to economic welfare.
- d. **LGUs and FSEs can work together to seek better alternatives to plastic.** Banning or prohibiting something will only be successful if there is available better alternative. Take for example the case of the banning of the incandescent lightbulbs. There was favorable response and swift switch because of the availability of better alternatives– the LCD (Liquid Crystal Display) and later the LED (Light Emitting Diodes).
- e. **The Dasmariñas City and Cavite Province can organize capacity building activities.** Barangays are interested in building their capacities in waste management particularly in the following priority areas: (i) Improvement in plastic waste management; (ii) project identification and management; (iii) Design, Management and Operations of Recycling and zero waste system; (iv) Forging partnerships and alliances; (v) Design, Management and Operations of MRF; Design, (vi) Management and Operations of Recycling Facility; and (vii) Access to finance and advisory for SLF.

11 Strengthening the Food Service Industry

11.1 Industry Organization

FSEs can organize themselves. FSEs can establish the FSI Green Network (FGN) to provide an important mechanism and platform for a collective voice for individual FSEs – from the ambulant food peddlers and Carinderia to quick service and fine dining restaurants. Collective actions can identify solutions and interventions to address issues affecting the industry.



Target 12.5

By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

Figure 35. SDG 12 Target 12.5

The FGN will serve as a venue for creating awareness and understanding plastic issues. As evidenced by the survey, a significant percentage of respondents, majority of whom are owners, are not apprised of the plastics issue or how to comply with the Plastics Ordinance. The FGN can collect global trends and approaches, establish best practices, and build capacities of FSEs in addressing plastic issues. It can support to FSEs in complying with the Plastics Ordinance or any law or policy that may be eventually passed and help FSEs avoid fines and penalties including potential business suspension or closure.

By working together, FSEs can leverage each other's resources, knowledge and experience to implement a strategy that can contribute to achieving Target 12.5 of Sustainable Development Goal 12 – reduction of waste generation by 2030 through prevention, recycling and reuse.

- **Objectives and Expected Outputs.** The Project objective is to organize the FSEs into the Network for mutual support. The expected outputs are the establishment or constitutional documents and the FGN Zero-Plastics Roadmap 2050.
- **Risks and Opportunities.** It pays for FSEs to transition to zero-plastics. There are two pending bills in Congress. One bill relates to banning and regulating SUPs. The second bill relates to extending producer responsibility for wastes. In addition, the Province of Cavite is revising or updating its Plastics Ordinance and may incorporate more stringent measures and stiffer penalties. All these regulatory developments present transition risk for FSEs. FSEs still have the opportunity to slowly transition to zero-waste in anticipation of the policy /legal interventions. FGN will provide a platform for FSEs to learn best practices

that can be applied in their establishments. Moreover, there is an emerging practice of embedding sustainability in businesses across the FSE value chain. There is a tendency for consumer behavior to shift to more sustainable consumption, preferring green products over products that cause harmful effects to the environment.

- c. **Features.** FGN can be a public-private network where governments, FSEs, packaging manufacturers, recyclers, and waste management companies as well as the consumers can work together to achieve zero-wastes. FGN can work with packaging manufacturers to encourage them to produce better or similar alternatives to plastic at an affordable price. FGN will also work with recyclers to ensure a backward linkage. The recyclable materials that replaced the plastics will have takers. In terms of institutional support, the City can tap into its Local Development Fund or other available funds to provide institutional support such as training and other technical support. FGN can also operate as a wholesaler, leveraging the membership numbers, to get a discount for plastic replacement items.

11.2 FSI Zero-Plastics Roadmap 2030 (The “Roadmap”)

Description. The proposed Roadmap is a strategic action plan for zero-waste in the FSI, commencing with Dasmariñas City. It establishes goals and targets for waste reduction, aligned with the city action plan, SDG 12, and desired outcomes that are measurable, and the major steps or milestones needed to reach it. It also serves as a communication tool, a high-level document that helps articulate strategic thinking—the why—behind both the goal and -- the how-- for getting there. A roadmap is important for stakeholders to track the progress, status and their contribution to zero-plastics.

- a. **Approach.** There are four steps in the preparation of a roadmap:

- Baseline study to determine the extent of the plastic problem in the FSI. This Report serves as the scoping study.
- Identify, understand and agree on which to eliminate when (TARGETS)
- Understand and agree on the measures to eliminate SUPs.
- Identify interventions and assess cost savings.

The roadmap should provide concrete steps in achieving the set goals and targets. Given that many of the FSEs are still trying to recover from their business losses suffered in the past 2 years because of the pandemic, hesitation on adopting measures with cost can be expected. The green or zero- plastic transitioning should be progressive and gradual.

Phasing out of plastics should be gradual. Targets can be set progressively as follows:

- *near-term targets* are the low hanging fruits for immediate implementation. These are strategic actions that have minimal to no costs to the FSEs but impactful and realizable benefits. Examples are no-straw policy, by-request take-away ketchups, or plastic waste collection station.
- *mid-term targets* pertain to replacement of plastic containers for sauces, plastic utensils and cups with already available biodegradable or recyclable alternatives.
- *long-term* will involve continuing research and development on best alternatives for plastics, recycling of wastes from FSI.

b. Example of a roadmap matrix

	Interventions	Milestones
Near term (2023-2024)	ELIMINATE PLASTIC MATERIALS THAT ARE NOT NECESSARY FOR THE PROVISION OF FOOD SERVICE. • Except for drinks where necessary, straws and stirrers are should totally be eliminated for dine-in services. For take-out, implement “on demand” straws and stirrers. • Plastic cutlery should be eliminated for dine in and given only on demand for take-out. • Replace plastic bag for handling with brown bags • Introduce refill stations for sauce and condiments (dine in) • Develop guidance document for FSEs including measurement and reporting tools and taxonomy on unnecessary or problematic plastic: ◦ if its use is avoidable or reusable options are available ◦ if it is not recyclable or hampers the recycling process ◦ if it pollutes out the environment • Agreement on Voluntary Code of Standards	• 80% elimination of drinking straw, stirrer, cutlery for (take out) in all FSEs inside malls, QSRs with own location by year 2023 • Zero-plastic drinking straw, stirrer, cutlery in all FSEs by year 2024 • Zero plastic cutlery for dine in by 2024 • Zero-plastic bag for handling by 2023 • Release of Guidance Document • 100 FSEs commit to Voluntary Code of Standards by 2024 Elimination (e.g. design standards for plastic packaging, identification of the kind of plastics to be eliminated)
Midterm 2025-2027	• Replacement of plastic containers for sauces take out with better alternative • Massive IEC on enforcement of law on prohibition on SUPs • Deposit-return system for better alternatives (metal cutlery)	• Eliminate unnecessary or problematic single-use plastic packaging through redesign, innovation, alternative (reuse) delivery models by 2025
Long Terms 2028-2030	• Switching to plastics that are ◦ Reusable ◦ Recyclable ◦ compostable • Switching to reusable plastics • Smarter Design in packaging e.g. avoiding combination of materials like plastic lid on paper cups, plastic window on paper packaging.	• 100% of plastic packaging and containers to be reusable, recyclable, or compostable by year 2030 • Linkage with recyclers for recyclable plastic materials

	Interventions	Milestones
Long Terms 2028-2030	• Linkage or partnerships with recyclers on potential recycled containers or packaging Recycling materials ◦ <i>Depolymerization</i>. recycling colored PET into new food packaging (Start-up Ionika, with Coca-Cola as one of the investors) ◦ <i>Pyrolysis</i>. recycling multiple plastics and produces oil that can be mixed with virgin material during the production of food grade and non-food grade plastics (consortium of Sabic, Renewi and Plastic Energy) ◦ <i>Gasification</i>. converts domestic waste into bio-methanol. This can be used as a raw material in the chemical industry or as a fuel (consortium of Nouryon, Enkern, Air Liquide, Port of Rotterdam and Shell)	

- f. **Activities.** The best practices identified in the previous chapter can be evaluated to determine applicability, cost efficiency and acceptability for FSE implementation.
- g. **Results Monitoring and Verification.** To fully measure the success of any intervention, a system for monitoring, verifying and reporting results should be in place. The network can set up mechanisms for uniform reporting in an integrated information platform. The targets should come with appropriate indicators and target numbers. Examples of indicators are:
 - Waste avoided (number and weight of plastic items that were avoided)
 - Waste reduction (number of wastes that were recycled)
 - Cost savings (amount of savings generated from implementation of strategies)
- h. **Reporting Mechanism.** Reporting shows the FSE's commitment to sustainability. It presents the values of the FSE as an accountable organization doing its share in achieving the industry targets as well as the SDG. Reporting facilitates transparency and communicates to its clients and stakeholders its benefits and positive impact to the environment. It also enables sharing of experiences and best practices within the industry.
- i. **Challenges.** A significant number of FSEs are not aware of the existing local Plastic Ordinance, nor if the plastic issues. While there are some respondents in favor of banning SUPs, there are also others who against SUP ban. Getting the FSEs to participate may be a challenge. Intensive information dissemination and awareness raising should form part of the roadmap. In addition, since many of the FSEs are still recovering from business losses, it is important to prepare a ***business case for zero-plastics, show cost savings and emphasize what's in it for the FSEs.***

19.3 Collaboration and Coordination

Dasmariñas City can consider engaging in twinning arrangements with cities (local or international) which have showcased best practices in addressing plastic pollution. The city can also join WWFs Plastic Smart City program and learn the tools and approaches that can be applied locally.

Conclusion

In sum, there are three building blocks to achieve plastic-smart Dasmariñas City:

1. Developing a Plastic-Smart Action Plan (or a roadmap) setting forth its targets, timelines and activities;
2. Providing supporting legislations that will effectively shift the behaviour patterns of FSEs and consumers;
3. Coordination and collaboration with an organized FSE industry producers to address challenges and issues relating to plastics;
4. Intensifying IEC not only to inform but also to engage and mobilize consumers and the general public; and
5. Intensify collaboration and cooperation with other organizations or governments for further learning from exchange of experiences in dealing with plastic pollution.

References

A. List of Ordinances and Laws

1. Cavite Provincial Ordinance 007-2012 or “An Ordinance Prohibiting, Regulating and Prescribing Certain Uses of Plastics for Goods and Commodities that End Up as Residual Wastes”
2. Dasmariñas City Ordinance 03-S2012 or “Regulating the Use of Plastic Bags and Styrofoam in the City of Dasmariñas”.
3. Republic Act 9003 or “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 Therefore, And For Other Purposes Ecological Solid Waste Management Act.”

B. Websites

1. Statista website at www.statista.com (accessed 13 January 2022)
2. Jambeck, Jenna R, et al (2015), *Plastic Waste Inputs from Land into the Ocean, World Atlas*, Available at <https://www.worldatlas.com/geography/10-countries-producing-the-most-plastic-waste.html> (accessed: 20 January 2022)
3. Available at <https://worldpopulationreview.com/country-rankings/plastic-pollution-by-country> (Accessed: 2 February 2022)
4. www.sea-circular.org/country/philippines/ (Accessed: February 2, 2022)
5. https://drive.google.com/file/d/1qUQLZ7gKiYCHn6xEfla_Ypay1sCU_nFI/view . (Accessed January 31, 2022.)
6. <https://sites.google.com/site/iccphilippines/downloads> (Accessed Feb 3, 2022)
7. Austria, Jennifer B. (April 11, 2021), *Max's Group posted P1.68B-loss in 2020*, Manila Standard Available at <https://manilastandard.net> (Accessed: January 20, 2022)
8. Science Advances Website at <https://www.science.org/doi/10.1126/sciadv.1700782> accessed January 22, 2022
9. 18th Congress, House Bill 9147, *Single-use Plastic Products Regulation Act*
10. 18th Congress, Senate Bill 2425, *An Act Institutionalizing the Practice of Extended Producer Responsibility on Plastic Packaging Waste, Amending for This Purpose Republic Act No. 9003, Otherwise Known as the 'Ecological Solid Waste Management Act Of 2000'*
11. PhilAtlas Website at <https://www.philAtlas.com/lists/physical/rivers-r04a.html>
12. Cavite Province Website at <https://www.cavite.gov.ph>
13. WE Forum website, *Plastic Bans Around the World*, Available at <https://www.weforum.org/agenda/2020/10/> (Accessed: 20 January 2022)

14. <https://www.weforum.org/agenda/2020/10/canada-bans-single-use-plastics/> (Accessed: January 20, 2022)
15. <https://www.foodpackagingforum.org/news/philippines-house-passes-single-use-plastic-products-regulation-act#:~:text=House%20Bill%209147%20would%20ban,August%205%2C%202021%20Lindsey%20Parkinson>
16. <https://www.pna.gov.ph/articles/1133624> (Accessed January 10, 2022)
17. <https://www.esquiremag.ph/politics/news/metro-manila-cities-banned-plastic-a00293-20200107> (Accessed: January 20, 2022)
18. https://www.shakeyspizza.ph/images/asm-2021/PIZZA_ASM_2020_Report.pdf (Accessed January 13, 2022)
19. <https://corporate.mcdonalds.com/corpmcd/our-purpose-and-impact/our-planet/packaging-and-waste.html> (Accessed January 27, 2022).
20. <https://www.bworldonline.com/mcdonalds-leads-in-environmentally-sustainable-restaurants-opens-its-second-in-mandaluyong/> (Accessed January 27, 2022)
21. <https://www.reportr.world/news/you-no-longer-need-a-straw-with-mcdonald-s-new-lids-a4736-20210611> (Accessed January 27, 2022)
22. <https://styrolessworld.wordpress.com/local-awakening/> (Accessed January 28, 2022)
23. WWF website at <https://wwf.org.ph/resource-center/story-archives-2020/wwfph-viber-launch/> (Accessed January 31, 2022)
24. <https://news.abs-cbn.com/life/08/28/21/look-edible-straws-seen-as-alternative-to-plastic> Accessed (January 10, 2022)
25. https://www.shakeyspizza.ph/images/asm-2021/PIZZA_ASM_2020_Report.pdf. (Accessed January 31, 2022.)
26. <https://www.npr.org/2021/09/10/1036002327/taco-bell-sauce-packets-recycling#:~:text=To%20divert%20those%20packets%2C%20Taco,TerraCycle%2C%20using%20free%20shipping%20labels>. (Accessed January 26, 2022)
27. Chemical Recycling 101, British Plastic Production, <https://www.bpf.co.uk/plastipedia/chemical-recycling-101.aspx#:~:text=Chemical%20recycling%20creates%20value%20in,for%20new%20virgin%2Dquality%20polymers>. (Accessed January 26, 2022).
28. Coca-Cola Philippines to open recycling facility early next year, Packaging Gateway, Nov 2021, <https://www.packaging-gateway.com/news/coca-cola-philippines-recycling/#:~:text=Under%20the%20programme%2C%20the%20company,in%20its%20packaging%20by%202030.&text=Apart%20from%20its%20cap%20and,entirely%20from%20plant%2Dbased%20plastic>. (Accessed January 10, 2022)
29. PlasticFreeRestaurants.org website at <https://www.plasticfreerestaurants.org> (Accessed January 14, 2022)
30. <https://www.closedlooppartners.com/nextgen/about/> (Accessed January 10, 2022)
31. <https://resource-plastic.com/footprint-tracker> (Accessed January 10, 2022)

Annexes

Annex 1. List Of FSE Survey Participants*

Eggdemic	Alfamart	Mg Canteen	Oh Sam Pares	Boks	Julies Bakery	Chef Jef Goto	Pares Kainan
RCIJ	Kheona's Eatery	Hyper Kadiwa	Canteen	Zimba	Master Siomai	Mr. Liempo	Chowking
Paresan	Mf's Eatery	Max's Salitran	Tapsi District	Shakeys	Riden's Hub	Mabel Pares	Billys Canteen
Ministop	Denberts	Alita Canteen	Paz Canteen	Honey Cup	Tea Blends	Danao Eatery	Chrismay
The District	Tonguetied	Maravilla	Ohama	Tapsidobo	Parisan	Amy Food	Mcdo Salitran
Iverence Food Haus	Julies Bake Shop	Bonchon Chicken	Bee Healthy Lemon	Goto Lover Lugawan	Goto Lover Surprise	Mesa Restaurant	Streatfoods By Ann
Mary Ann Padul	Pares Lomi Sa Kadiwa	Amairo Milktea	Pares And Mami	Benzon Grill House	Max's Restaurant	Amai Iro Original	Prime Steak House
Cel And Ed Sari Store	F. Bolea Sari Store	Joco's Cassava	Shawarma Shack	Pasing Canteen	Canteen Kanto Ng Windward	Jollibee SM Dasma	Jek's Carinderia
Raisam Lutong Ulam	Pizza Hut – SM Dasma	Tous Les Jours	Wendy's Hamburger	Gringo Restaurant	Magna Carinderia	John Food House	Mcdonalds Imus
3's Marias Store & Merchandise	Mang Boy Alfredo Lugawan	Pang kabuhayan SM City	Mang Juan Stir Fried Noodles	Home Owners Ph2 Tulong	Amor Butterfly Canteen	Dulay Street Food and Beverages	Sr. Pedro Lechon Manok
Lolo Erpa'ts Sizzling House	Tease Me Food And Beverage	Philippine Seven Corporation	Wend And Amads Pares / Lomi House	Habac Yummy Food Express	Goldilocks Bakeshop Inc – Dasma	Minna-San General Merchandise	Just Lemon Food Kiosk
Rjcjj Food Hub	Claudio's Pares House	Jonskie Sisig Food Cart	Katitay's Takoyaki	Tokyo- Dasma	Kenny Rogers Roasters	Jollibee- New Salawag	2dm Food Corner
Pay Food House	Windrive Bakeshop	The French Baker	Thess And Mar	Julie & Jc Canteen	Guilid Shakes And Burger	May Barbeque	Domino's Pizza
Crispy Pata	Pappers	Ja22 Tea	Dann Andreis	Burger Us	Bulalo World	Bitbitmoto	Sushi Kenzie
Faron Café	Tea Round	Mang Cha A	Ikamasu	Ihawan	Calamares	Buko Bar	Tea Bound
Precy S. Kambingan	Parteacle Milk Tea	Red Ribbon Bakeshop	Teapsy Foodhub	Omie Canteen	El Bonito's Pizza	Hunger Buster	Tokyo Tempura
Zagu	Zaiya Bakery	Wing Shot	Mangnoy's	Shawarma	Classic Savory	Street Foods	Chef JV
Carolina	Pares Reaper	Waffle Time	Dunkin Donut	7/11 Salawag	Ely Store	Pitazza Pizza	KFC
1 (254) 1629 Canteen	Sanfors Marketing Corporation	New Christ King Sari Store	Kt Jambayan Grill/ Resto	Gracelicious Fries And Snack	Kkh's Takoyaki Store	Salawag Milktea Station	Inifinitea Pearl Milk Tea
Chicken Inasal	Lualhati C. Store	Shawarma Station	Gacusana Canteen	Shawarma Shack	Bacolod	Jangnam Restaurant	Savemore Salitran
Paotsin	Jovits Eatery	Mr.Liempo	Serenitea	Tropical Hut	Mangan	Miss Pares	Red Ribbon
Shawarma Treats	Jdv Sweet Delicacies	Andok's Litson	Andre's Bakery	Jejajo Canteen	Boss P 8 Ball Sari Store	Master Siomai	Vja Food Chain
Ben's Halo Halo Restaurant	Masaramon Jennibee Eatery	Kuya Benzon Grill House Pares	Baliwag Lechon Manok Liempo	Vbidas Lugawan, Mami At Pares	Althea's Lutong Bahay Lutong Ulam	Cavite Food Business Supply	Sarap Linamnam Eatery Lugawan
Cm Ice Scramble	Jb & James Eatery	Catherine's Food	Krusty Corn Dogs	Soft Classic Ice Cream	Giligans Restaurant	Kurties Food Kiosk(Turks)	Sven Store Ice Cream Shop
Let'2 Food Hub	Wing And Frios	Bum Bum's Eatery	Lyn's Eatery	Elona Canteen	Kambingan Ni Abitay	Gl Coffee Project	Mella Eatery

Savemore Paliparan	Zias's Lutong Ulam	Susan's Store Lugawan	Sarvida Canteen	Harapin Kitchen	Amie's Sari Store	Gersavil Narias	Zimonitea Fried Chicken
Mcdonald's	Mildrad	Jhu Bakery	Don Benitos	Bebot Kusina	Don Benitos	Eat Street	Cajes Eatery
Kwek-Kwek Sa Ph2	Master Sisig Atbp.	Shwarma Tea Ta	Wilma Palamigan	Ministop – Century C	Mark Chaubukcs	Marky's Shake	Sab & Jade Canteen
Laos Snack House	Zagu & Potato Corner	Papaitan Baka	Momshies Lutong Bahay	Ate Malou's Eatery	Lucy's Canteen	Almusalan Sa Laos	John Mae Canteen
Tagpuan Sa Dasma	Mang Teban Lenchon Manok	Bernz Corndog Station	Lutong Bahay, Sabaw Sabaw	Bern'z Corndog Station	Ken – Ian Catering Services	Chefland Loop Restaurant	Major Pares and Sgt. Porkchop
Yrhel Sari-Sari Store	Joshane Canteen	Kwek-Kwek/Siomai	Masa Milktea Shop	Shelana's Bakery	Rhiane And Shirley Eatery	Eds Kitchenette	Kusina Ni Joshua Mea
Sit & Zip Café	Jess Eatery	Proven Atbp	Mr. Liempo	Royal King	Angels Burger	Don Benitos	Smoked Ant
Shomayan	Ihaw	Kyla Janelle	Carindaria	Ever Food	Retailing Stall	Weng Store	Rd Tapsihan
Rsm Lutong Bahay	Menchie's Store	Nicole's Eatery	Krhg Bulaluhan	Kaon Kit Eatery	Balayong Bakery	Jhenzton Mmj Canteen	Simple Halo Stall
Ilovemilktea	Bhong Sari Sari Store	Samgyupsalamat	'Lutong Ala-Eh'	Rigbys Eatery			

* Some respondents responded on condition of anonymity but contact nos. are available.

CASE STUDY:

Jersey Joe's Coastside



BUSINESS PROFILE

Name: Jersey Joe's Coastside

Location: Half Moon Bay, CA

On-site dining: 50 seats

Take-out: 50%

Warewashing: 3-sink



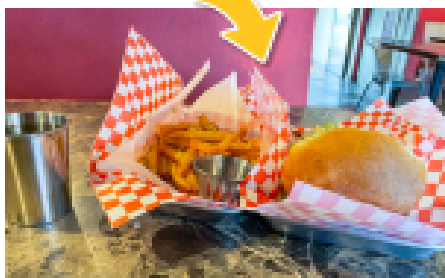
Packaging Practices prior to ReThink Disposable:

- Single-use sauce cup for some sauces
- Single-use water cups
- Single-use utensils
- Plastic reusable baskets that were repeatedly thrown out by customers

Recommendations Implemented:

- Reusable stainless steel sauce cups
- Reusable stainless steel water cups
- Reusable metal utensils
- Stainless steel metal trays that are more recognizable as a reusable product
- Bus tubs and signage indicating where to put dirty reusables

Jersey Joe's Coastside is a hot local spot to grab a cheesesteak or burger and watch the game with your friends. The owners of Jersey Joe's had concerns about plastic entering local waterways and the many other environmental effects of plastic production. Having already switched out plenty of their plastic disposables for more expensive compostable options (stopping 85,167 plastic utensils alone from entering our waterways every year), they were interested in what they could do further.



Before and After: Jersey Joe's replaced single-use water cups and sauce cups with stainless steel versions. Baskets were replaced with stainless steel trays.

In removing plastic single-use sauce cups, water cups, plastic baskets that were being thrown out mistakenly by guests, and by using reusable utensils all for dine-in guests, Jersey Joe's has stopped **193,554 pieces (over 1,700 lbs)** of single-use plastic disposables reaching its trash cans and our waterways every year. By implementing reusable practices, Jersey Joe's saves **\$5,588** per year after a 6-month payback period. Additionally, Jersey Joe's now uses condiment dispensers in order to reduce reliance on individually packed condiment packets; now Jersey Joe's buys them in bulk, further reducing waste and saving more dollars!

THE BOTTOM LINE

- \$5,588 in total annual net cost savings
- 193,554 disposable items reduced per year
- 1,710 pounds of annual waste reduction

"Customers are very happy to see that we are making the effort to be more environmentally conscious!"

— Moni Seng, Owner

RESULTS

Disposable Product Replaced or Minimized	Recommendation Implemented	PACKAGING IMPACTS			COST IMPACTS	
		Percent Disposable Reduction	Annual Quantity of Disposable Product Reduced	Annual Waste Reduction (lbs.)	Payback Period (months)	Annual NET* Cost Savings After Payback Period (\$)
8 oz. Water Cups	Replace with stainless steel reusable alternative	100%	10,429	197	2.1	\$782
Plastic Sauce Cups	Replace with a reusable stainless steel sauce cup for dine-in	50%	45,625	209	1.6	\$572
Plastic Sauce Cup Lid	Eliminate for dine-in	50%	45,625	151	0.0	\$556
Wooden Knives	Replaced with stainless steel reusables for dine-in	50%	26,071	138	0.2	\$925
Wooden Forks	Replaced with stainless steel reusables for dine-in	50%	39,107	260	0.1	\$1,486
Wooden Spoons	Replaced with stainless steel reusables for dine-in	50%	26,071	167	0.2	\$990
Red Plastic Baskets	Metal trays	100%	626	588	38.6	\$277
TOTALS:			193,554 pieces	1,710 lbs	6 months (average)	\$5,588

*Net Cost Savings considers any upfront and ongoing costs associated with the purchase and care of reusable items and capital improvements needed to carry out ReThink Disposable's recommendation, and are based on avoided disposable foodware purchases.

Jersey Joe's invested \$1,147 to purchase bus tubs, signs, stainless steel ramekins, dining trays, and utensils to replace single-use serviceware, which yielded over \$5,500 in annual net savings after the payback period.

Foodware was subsidized by ReThink Disposable, Plastic Free Restaurants, and San Mateo County's Office of Sustainability — additional funding was provided to Jersey Joe's because it is a minority-owned business.

ReThink Disposable is a program of Clean Water Action and Clean Water Fund conducted in partnership with local businesses and government agencies. Generous support is provided by a changing list of public and private funders. To learn more about the program, its partners, and funders, visit: www.rethinkdisposable.org.



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plastic free RESTAURANTS



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