

PLASTICS EXPOSED

How Waste Assessments and Brand Audits are Helping Philippine Cities Fight Plastic Pollution





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GAIA is a global network of more than 800 grassroots groups, NGOs, and individuals. We envision a just, Zero Waste world built on respect for ecological limits and community rights, where people are free from the burden of toxic pollution, and resources are sustainably conserved, not burned or dumped. We work to catalyze a global shift towards ecological and environmental justice by strengthening grassroots social movements that advance solutions to waste and pollution.

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PLASTIC SOLUTIONS FUND



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EXECUTIVE SUMMARY

Single-use disposable plastic is the greatest obstacle to sound waste and resource management. Inadequate waste management systems and human negligence are often cited as the main contributors to plastic waste leakage into terrestrial and marine environments—but waste and brand audit data in many parts of the world are helping reveal that the unfettered production of disposable plastic is the actual problem. As long as the mass production of throwaway plastics continues unabated, cities and countries will find it harder and harder to cope. Put simply, disposable plastic is a pollution problem, and the only way to prevent it is to stop it at source.

This report gives a snapshot of the plastic pollution problem with a focus on the Philippines, where a number of cities are trying to implement sustainable Zero Waste strategies. Their complete success, however, is being hindered by the proliferation of plastic bags, sachets, and other disposable plastic packaging and products. Using data gathered from the Global Alliance for Incinerator Alternatives' (GAIA's) Zero Waste Cities project sites, this research provides new quantitative evidence to support the global call for the plastics industry and manufacturing companies to immediately reduce and eventually stop producing single-use plastics as the primary solution to end plastic pollution.

The data in this report was gathered through the waste assessment and brand audit (WABA) tool developed by the NGO Mother Earth Foundation (MEF), a group implementing GAIA's Zero Waste Cities project in the Philippines. Currently, there is a lack of extensive data in the country regarding the production, consumption, and disposal of single-use



plastics and plastic packaging. For example, there is no data on the total sachet production of companies, which make up a significant portion of throwaway plastics in dumps, waterways, and beaches. Traditional waste assessment and characterization surveys (WACS) also do not distinguish between the different types of plastic packaging, preventing effective policy making for their proper management. This report therefore also highlights the importance of WABAs as a vital tool to give detailed information about the types, volume, and number of plastic waste in cities and municipalities, and to support strategies to deal effectively with this problematic waste stream.

As a tool, WABAs help 1) expose the role of specific corporations in the global proliferation of plastic waste; 2) unmask how the industry has passed on the blame for the waste they produce to the consumers of their products, and the responsibility for clean-up of their packaging to governments¹; and 3) reinforce the need for corporations to accept liability for the full life-cycle impacts of their products and the packaging in which their products are sold.

This report compiles data from 21 waste assessments conducted in six cities and seven municipalities across the Philippines by MEF



MEF volunteers sort branded plastic residuals during a waste audit in Quezon City
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and local government project partners, with the support of GAIA and funding from the Plastic Solutions Fund. Results from the 21 waste assessments were used to extrapolate national data, including estimates about the use and disposal of different types of plastic residuals. Among the 21 sites where waste assessments were conducted, 15 sites have additional brand audit data. These data provide a snapshot of how much plastic waste, particularly those with branded packaging, are discarded by households.

Based on WABAs conducted in areas across the Philippines, findings highlighted in this report confirm that:

1. Organic waste comprise more than 50% of generated waste in the Philippines, affirming that organic waste management is an important strategy that will create substantial waste reduction for local governments.
2. Disaggregating data on the different types of plastic residuals gives a clearer picture of waste generation, providing valuable information on policy actions needed to substantially reduce this highly problematic waste stream.
3. The strict implementation of plastic bag regulations produces dramatically significant results in lowering plastic bag use. However, the existence of a plastic bag regulation in a city or municipality does not automatically equate to lower plastic bag use.
4. Almost 164 million pieces of sachets are used in the Philippines daily, equating to around 59.7 billion pieces of sachets yearly. With the absence of policies mandating liability and accountability for the production of this problematic waste stream, cities and municipalities are left to deal with this problem using taxpayers' money.
5. While more attention should be given to ensure the reusability of packaging and products, it is important to acknowledge that within current waste management systems, recycling plays an important role in supporting livelihoods, and creating additional income for households, villages and/or municipalities and cities.
6. More than 50% of all unrecyclable residual waste discarded in the country is branded waste, and only 10 companies are responsible for 60% of all branded waste in the study sites. This highlights the urgent need for interventions that involve manufacturers in taking responsibility for their plastic waste, primarily by drastically reducing production of throwaway plastic packaging.



MEF staff and Zero Waste Academy participants weigh recyclables during a waste assessment and brand audit in Dumaguete City.
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Using WABA data, this research extrapolates national estimates on annual per capita use of plastic shopping bags, plastic labo, and sachets in the Philippines. Findings show that:

1. The average Filipino uses 591 pieces of sachets, 174 shopping bags, and 163 plastic labo bags, yearly.
2. Everyday, almost 57 million shopping bags are used throughout the Philippines, or roughly 20.6 billion pieces a year.
3. Plastic labo bag use throughout the Philippines is at 45.2 million pieces per day, or 16.5 billion pieces a year.
4. Around three million diapers are discarded in the Philippines daily, or 1.1 billion diapers annually.

These figures show that the sheer volume of residual waste generated daily is beyond the capacity of barangays, cities and municipalities to manage: the problem is the huge amount of single-use plastics being produced, not the way the waste is managed. Experiences in GAIA's Zero Waste Cities project sites show that after implementing Zero Waste strategies (for example establishing working materials recovery facilities or MRFs, conducting door to door segregated collection, composting organics, and maximizing recycling of high-value materials, etc.) cities can only achieve

a maximum of 70-80% waste diversion (i.e. maximizing the sustainable management of discards to avoid landfilling and other final disposal methods) compared to their pre-Zero Waste program baseline. Despite expanding Zero Waste strategies, cities and municipalities will be left with around 20% of waste that they cannot manage—sachets and other single use plastics—preventing them from fully achieving Zero Waste goals.

Clearly, plastics are a global problem with local repercussions, and it is the cities and municipalities, as well as ordinary citizens, who bear the brunt of the problem. But the plastic crisis can be tackled, starting with using WABA as a tool.

Several case studies of Zero Waste Cities project sites in the Philippines featured in this report show how WABA data was used in waste and resource management planning to:

1. Maximize waste diversion rates;
2. Create a system to efficiently collect segregated waste from previously hard-to-reach areas while creating jobs for informal waste workers;
3. Design eco-sheds for materials recovery facility;
4. Design community composting facilities;

5. Predict landfill capacity and lifespan, and support investment in Zero Waste strategies; and
6. Reveal trends in plastic use in a city and municipality for monitoring and improvement of regulations.

While this report is focused on examples from the Philippines, the experiences related here are not unique, and the recommendations in this report are applicable in other countries. Cities all over Asia and in the developing world in general are faced with the same problem of plastic residuals, most of which have been identified as branded plastic packaging from multinational corporations (MNCs) based in the global north. This points to the need for a global plastic regulation to reduce and eventually eliminate the production of single-use plastic products and packaging.

Based on the findings, this report gives the following recommendations:

1. WACS protocols should include disaggregated data on different types of plastic bags and packaging.
2. Cities and municipalities should include brand data in waste assessments.
3. The Philippine government should institute a comprehensive national plastic bag ban that promotes reusable bags.
4. Governments should regulate other single-use plastic products, and mandate companies to redesign products and packaging and put in place alternative delivery systems.
5. Governments should mandate diaper companies to improve recovery options for, and present viable alternatives to, disposable diapers.
6. Waste incineration is an unsustainable practice that abets plastic pollution and must be stopped. In the Philippines, the government must retain and strengthen the ban against waste incineration.
7. Corporations must be transparent about the plastic packaging they produce, assume accountability and liability for the packaging, and immediately stop producing throwaway plastic packaging through innovations in redesign and product delivery.

ACRONYMS AND ABBREVIATIONS

EPR	Extended Producer Responsibility
DENR	Department of Environment and Natural Resources
DOF	Department of Finance
FMCG	Fast-moving Consumer Goods
LGU	Local Government Unit
MEF	Mother Earth Foundation
MMDA	Metropolitan Manila Development Authority
MRF	Materials Recovery Facility
NSWMC	National Solid Waste Management Commission
PSA	Philippine Statistics Authority
RA 9003	Republic Act No. 9003 (Ecological Solid Waste Management Act of 2000)
SWM	Solid Waste Management
WACS	Waste Analysis and Characterization Study
WABA	Waste Assessment and Brand Audit

CURRENCY EQUIVALENTS

(As of 18 February 2019)²

USD 1.00 = PHP 52.2963

PHP 1.00 = USD 0.01912

INTRODUCTION



Plastic waste littering Manila Bay
© GAIA/PAULA DE CASTRO

It is estimated that more than **8,300 million metric tons of virgin plastic have been produced globally.** Cheap to produce, plastics have been used for a variety of purposes, from car parts to product packaging. However, its end-of-life management, particularly for plastics that are single use in nature, is currently in question: only around **9% of discarded plastic have so far been recycled.** The rest are either burned, landfilled, or released into the environment (e.g. waterways, streets, etc.)³.

Inadequate waste management systems and human negligence are often cited as the main contributors to plastic waste leakage into terrestrial and marine environments⁴. This misinformation continues to be promoted by the plastics industry, allowing it to deflect responsibility and liability for plastic waste⁵. In the meantime, the same industry, together with manufacturers of fast-moving consumer goods, continues unimpeded in their plans to expand the production of disposable packaging and products.

The unfettered production of materials created in order to be discarded is sending a global wake-up call that single-use, disposable plastic—not the way it is managed—is the problem.

This report provides new quantitative evidence to support the global call for the plastics industry and manufacturing companies to immediately reduce and eventually stop producing single-use plastics, as the primary solution to end plastic pollution.

This report provides new quantitative evidence to support the global call for the plastics industry and manufacturing companies to immediately reduce and eventually stop producing single-use plastics, as the primary solution to end plastic pollution. Using data gathered from the Global Alliance for Incinerator Alternatives' (GAIA's) Zero Waste Cities⁶ project sites in the Philippines, this report demonstrates how disposable plastic is the greatest obstacle to achieving sustainable resource and waste management.

Since 2016, GAIA has been working with cities in the Asia-Pacific region to strengthen resource and waste management programs. However, household waste assessments conducted for these projects show that because of the massive amount of throwaway plastics, cities still struggle with waste management—despite the implementation of ecological waste and resource management systems.

Zero Waste Cities project areas in the Philippines, for example, manage to recover and divert from landfills 70-80% of their solid waste by composting organic waste and selling recyclable discards to waste markets. However, these cities still spend a considerable amount of taxpayers' money to haul non-recyclable

plastic waste—which can make up as much as 30% of waste generated—to landfills, or worse, open dumpsites. For example, the 17 cities and municipalities in the Philippine's biggest metropolis, Metro Manila, spent PHP4.221 billion (~ USD80.7 million) for waste management in 2012.⁷ This amount does not include costs shouldered by the Metropolitan Manila Development Authority (MMDA⁸) for waste management and tipping fees.

At present, little concrete data is available on the extent of plastic packaging as well as other problematic plastics in the waste streams of Philippine cities. Using existing data from an innovative tool, the Waste Assessment and Brand Audit (WABA), this report provides information about the amount of plastics being discarded by Philippine households. The report estimates how many sachets (e.g. instant coffee, shampoo, etc), plastic shopping bags, and other plastic packaging are discarded in the country. Extrapolated figures show a per capita estimate of plastic consumption for the whole Philippines.

Data and findings in this report are significant not just to local and national audiences in the Philippines. Other governments in the Asia-Pacific region and beyond who are struggling with huge amounts of plastic waste and branded packaging waste, may find use and application for the WABA methodology, findings, and recommendations proposed here.



Currently, many inter-governmental bodies at regional and international levels are looking for collaborative solutions to the global plastic crisis. Information in this report may be useful to give details about local realities of plastic waste—particularly branded plastic waste peddled by multinational companies—in countries in the global south. Case studies and recommendations presented in this report show examples of local solutions and initiatives that would give developing country perspectives in international discussions.

Nationally, the findings of this report are relevant in informing the Philippine government, local governments, corporate actors, other non-government organizations, and Filipino consumers about the severity of the plastic problem and their roles in addressing it.

Based on the findings of this report, GAIA is proposing recommendations for international bodies and governments of countries where multinational corporations are headquartered to heed and address the realities in developing countries; for the Philippine government to institute policies to reduce and regulate plastic production and use; and for manufacturing corporations to first and foremost reduce plastic production and packaging, and redesign their products and delivery systems.

This report additionally seeks to highlight the importance of WABAs as a vital tool in informing governments about the plastic packaging waste problem in cities and municipalities. WABA data may serve as reference in pursuing policy actions such as

Data and findings in this report are significant not just to local and national audiences in the Philippines. Other governments in the Asia-Pacific region and beyond who are struggling with huge amounts of plastic waste and branded packaging waste, may find use and application for the WABA methodology, findings, and recommendations proposed here.

bans or selective regulations, and measures to compel corporate actors to acknowledge their liability for the harm caused by plastic pollution (including historical plastic pollution) and drastically reduce plastic production.

Finally, in this report, GAIA shines the spotlight on cities that are pursuing Zero Waste programs in order to show how local authorities have effectively used WABA information to strengthen regulations, improve waste management services, and reduce waste volume and its corresponding management costs.



Context

Background about Waste Assessment and Brand Audits (WABAs)

Currently, there is a lack of extensive data in the Philippines regarding the production, consumption, and disposal of plastics and plastic packaging. For example, data on the total sachet production⁸ of companies, which make up a significant portion of throwaway plastics in dumps, waterways, and beaches, are absent and continues to be undisclosed because they are considered confidential industry information. Traditional waste assessment and characterization surveys (WACS) also do not distinguish between the different types of plastic packaging disposed (for example, between plastic “sando” shopping bags, transparent or plastic “labo” bags, flexibles, multi-layer packaging, and sachets)⁹. Absence of such valuable data that considers the number, volume and types of plastic waste produced can prevent effective policy making for their proper management. WABAs address this gap.

Developed by the non-government organization (NGO) Mother Earth Foundation (MEF), WABA is an innovation of the traditional WACS. WACS is an activity where project implementers sort and catalogue waste according to its material type (for example, biodegradable, recyclable, residual) in order to identify the volume and percentage composition of the waste generated in a certain area (for example, in a barangay¹⁰ or a municipality). The data is used to estimate waste generation per type and per person at local and national levels in order to guide policies on waste management. In the Philippines, WACS is a prerequisite for the preparation of a local government unit’s (LGU) 10-year solid waste management plan, which is mandatory under Section 17(b) of the Republic Act 9003, or the Ecological Solid Waste Management Act of 2000.

For the last two decades, MEF has been helping LGUs conduct WACS as part of Zero Waste initiatives being implemented in their project areas. But noticing the large volume of sachets and other single-use plastics in waste streams, MEF included brand classification in their methodology in order to catalog packaging waste according to brand, packaging type, and producer, thus providing additional information on discarded branded packaging that cannot be recycled, or is of little value in waste markets.

MEF developed a WABA toolkit in 2018¹¹.



Volunteers count pieces of thin, transparent plastic bags (also called plastic labo bags in the Philippines) during a waste assessment and brand audit in Dumaguete City.

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Two years ago, from 8 to 16 September 2017, GAIA, MEF, EcoWaste Coalition, Greenpeace, and Health Care Without Harm, working together under the banner of the global movement Break Free From Plastic, conducted a massive brand audit during a beach clean-up in Freedom Island, Manila Bay. The brand audit was a follow-up to a similar MEF-led audit at the same location the previous year. These were the first activities of its kind to sort residual plastic waste according to brand and manufacturers in order to expose the extent of “branded pollution” in the waste stream.

The impact of the Freedom Island Brand Audits was global, putting multinational companies—identified as major sources of pollution—on the defensive. With their brands directly associated with trash, manufacturers of fast moving consumer goods (FMCGs), makers of processed food and drinks, fast foods, and coffee franchises have reacted by pledging commitments for reduction and recyclability of their packaging. In the months that followed, over 20,000 GAIA and Break Free From Plastic members and volunteers would conduct more than 240 brand audits in 42 countries across six continents.



A materials recovery facility (MRF) in Malabon City. Functioning MRFs typically have composting areas for biodegradables and temporary storage rooms for recyclables.
© GAIA/SHERMA BENOSA

As a tool, WABA helps 1) expose the role of corporations in the global proliferation of plastic waste; 2) unmask how the industry has passed on the blame for the waste they produce to the consumers of their products, and the responsibility for the clean-up of their packaging to governments¹²; 3) reinforce the need for corporations to accept liability for the full life-cycle impacts of their products and the packaging in which their products are sold.

Waste assessment and brand audit data used in this report

This report compiles data from 21 waste assessments conducted in six cities and seven municipalities across the Philippines by MEF together with local government authorities, with the support of GAIA and funding from the Plastic Solutions Fund. Data from these 21 waste assessments were used to extrapolate national data, including estimates about the disposal of different types of plastic residuals. Among the 21 sites where waste assessments

were conducted, 15 barangays have additional brand audit data¹³. This data provides a snapshot of how much plastic waste, particularly those with branded packaging, are discarded by households. This household data provides detail that cannot be gleaned from beach clean-up brand audits¹⁴. All waste and brand audits were done as a component of GAIA's Zero Waste Cities Project¹⁵.

The WABAs in this report are intended to inform local authorities about the waste generation in their areas in order to support policy, guide their solid waste management plans, and help design waste management infrastructure (for example, MRFs). Under the Zero Waste Cities project, the data was further used to help LGUs design and improve their Zero Waste systems.

The brand audit component of the waste assessments complements the work of GAIA and BFFP to call on manufacturing companies to immediately phase out non-recyclable packaging in their production and instead invest in alternative delivery systems.



The WABAs in this report are intended to inform local authorities about the waste generation in their areas in order to support policy, guide their solid waste management plans, and help design waste management infrastructure (for example, MRF).

Ultimately, these WABAs are not just helping cities and municipalities in formulating policies toward sustainable resource and waste management; equally important, they are supporting the work to call for plastic waste accountability and reduction from companies.

For this report, GAIA and MEF have extrapolated the findings to produce national estimates for waste types, particularly plastic, that are discarded by households in the Philippines. The extrapolated data was reviewed by researchers from the University of Santo Tomas' Research Center for Social Sciences and Education. Brand audit data from the selected locations presented here have not been extrapolated nationally. However, as initial research on household plastic packaging disposal, these figures provide valuable insights into the problem of plastic waste. GAIA hopes to catalyze engagement from more cities and municipalities to undertake more WABA initiatives, with particular focus on brand audits, in order to contribute to broadening and deepening the availability of data.

Overview

This report begins with a discussion of the methodology used in extrapolating data from the waste assessments to compute national estimates on the types of wastes, and specific kinds of plastic waste discarded by households. The results section presents both the extrapolated data and actual brand audit data. Analysis of the data highlights salient points that the government, organizations, other bodies concerned with waste management can consider. The report closes with specific recommendations based on the results, geared toward enhancing waste management assessments, and the immediate reduction of the most problematic types of plastic waste.

To illustrate the numerous benefits of WABAs for city waste management planning, the case studies section features examples of how the Zero Waste Cities project sites referred to in this report used the results of their WABAs to facilitate smarter, enhanced, and more sustainable waste management systems.

METHODOLOGY

The figures in this report are based on the results of waste assessments conducted

in 21 barangays in six cities and seven municipalities.

These sites are the project areas of MEF under their Zero Waste Cities project implemented with GAIA: LGUs from each of these sites were partners in the project implementation and participated in the audits.

Not all waste assessments cited in this research had a brand audit component. The brand audit data cited here have been gathered from 15 sites where this component was part of the project.

MEF included brand audits in their waste assessments starting January 2016; except for Barangay Baliti in Batangas, all waste assessments done before 2016 had no brand audit. Note that the waste assessments counted the weight of the waste per category, while the brand audits further counted the number of branded and unbranded plastic residuals.

The complete WABA methodology (Cities Waste Assessment and Brand Audit Methodology) used in this report is available online at www.no-burn.org/wabatoolkit.

Table 1 lists the barangays and municipalities where waste assessments were conducted, as well as the dates when these activities were held. The table also indicates whether a waste assessment or a brand audit, or both, was conducted in the site.

Table 1. Cities and municipalities whose waste assessment and brand audit data were used for this report

Region, province	City/municipality	Barangay/s	Date of waste assessment	Waste assessment only or includes brand audit
NCR	Quezon City	Barangay Paraiso	December 2018	with brand audit
		Barangay Talayan	July 2017	with brand audit
	Navotas City	Barangay East	June 2018	with brand audit
		Barangay North Bay Boulevard North (NBBN)	August 2018	with brand audit
		Barangay Tanza 2	September 2018	with brand audit
	Malabon City	Barangay Flores	June 2017	with brand audit
		Barangay Baritan	May 2017	with brand audit
CALABARZON	Batangas City	Barangay Cuta	January 2016	with brand audit
		Barangay Baliti	February 2016	waste assessment only
	San Fernando City	Barangay San Juan	August 2017	with brand audit
	Municipality of	Barangays	August 2014	with brand audit
Valley, Nueva Vizcaya	Solano	Poblacion North and Tocal	(updated with brand audit in 2016)	
		municipal-wide	December 2015	waste assessment only
	Municipality of Bagabag*	municipal-wide	December 2015	waste assessment only
	Municipality of Bambang	Barangay Aliaga	September 2014	waste assessment only
	Municipality of Santa Fe*	municipal-wide	November 2015	waste assessment only
	Municipality of Bayombong	Barangay District 4	May 2014	waste assessment only
	Municipality of Villaverde*	municipal-wide	November 2014 (updated with brand audit in 2016)	with brand audit
Eastern Visayas	Tacloban City	Barangay Lower Nula-Tula (also known as Barangay 74)	June 2017	with brand audit
		Barangay Santo. Niño (also known as Barangay 106)	June 2017	with brand audit
		Barangay San Jose (also known as Barangay 86)	September 2018	with brand audit
		Barangay Suhi (also known as Barangay 105)	October 2018	with brand audit

**Municipal-wide waste assessments were conducted in municipalities with fairly small populations*

Barangay-level data

The barangays where the waste assessments were conducted were either representative of different kinds of barangays in the city or municipality, or in the case of generally homogenous cities, representative of a typical urban (or rural) barangay. For Tacloban City, a mix of urban, rural, coastal, and upland barangays were chosen, whenever applicable. For Quezon City, and the cities of Navotas, Malabon, Batangas, and San Fernando (Pampanga), the barangays chosen were typical urban barangays.

For some municipalities in Nueva Vizcaya, barangays can be described as homogenous, thus no longer requiring multiple samples to satisfy variations (e.g. urban, rural, etc). Municipality-wide waste assessments were conducted in areas with smaller populations. For these assessments, selection of household samples

was distributed across different barangays.

At least nine days (per barangay) were spent on the waste assessment. MEF's waste assessment methodology calls for eight days of waste collection and one day for sorting and characterization. Waste collected from Day 1 are excluded from the sorting to avoid inclusion of historical waste. Implementers may designate additional days prior for planning WABA, distributing notices and orientation for respondent-households, and consolidating data from WABA sorting (see Table 2 below).

Waste assessments in sites without brand audits were conducted prior to the institutionalization of waste assessments in the formal WACS by MEF. The results of the waste assessments and brand audits from each of these sites are detailed in Annex 1.

Table 2. Summary of MEF's WABA methodology

Pre-WABA	Planning with the local government
Day 1	Notices are issued to randomly selected 50-55 households, informing them of the waste assessment in their community. Household-respondents are advised to sort their waste into five categories: ¹⁶ organic, recyclable, residual, special residual, and hazardous.
Day 2-9	Sorted waste is collected for 8 days. Waste collected on Day 1 is not included in the waste assessment as this set may likely include historical waste or discards from previous days.
Day 10	Waste collected from Days 3-9 are sorted into 56 categories; plastic residuals are further catalogued based on brands.
Post-WABA	Data encoding and processing



Waste workers use push carts in collecting segregated waste from house to house in Dumaguete (left) and Malabon (right). Left photo © WOW NEGROS ORIENTAL/NATASHA KUNESCH. RIGHT PHOTO © GAIA/THEEBAN GUNASEKARAN.

City- and municipality-level data

The results of the barangay waste assessments were averaged per city/municipality in order to yield estimates for city- and municipality-level data. In cities/municipalities with only one barangay as a sample site, the data from that barangay was used. In places where the audit was municipal-wide, the actual data was used.

Extrapolated data from the waste assessment

To arrive at the extrapolated figures estimating waste generation and plastic use nationally, the report used the resulting city- and municipality-level waste data based on the audit sites.

First, the cities and municipalities of the barangay waste assessment sites were classified into eight categories according to economic profile and geographic location, as follows:

1. "Top 10 Cities" based on the Philippine Commission on Audit's 2017¹⁷ *Annual Financial Report for the Local Government*;
2. Cities and municipalities in the National Capital Region outside of the "Top 10 Cities";¹⁸
3. Class 1–4 cities in mainland Luzon (i.e. excluding outlying islands)¹⁹
4. Class 1–4 cities in Visayas and Mindanao, and non-mainland Luzon (i.e. outlying islands)
5. Class 5–6 cities (nationwide)²⁰
6. Class 1 municipalities (nationwide)²⁰
7. Class 2–3 municipalities (nationwide)²⁰
8. Class 4–6 municipalities (nationwide)²⁰

The corresponding city- and municipality-level data from the project sites were used to represent waste assessment data for each category. If more than one city or municipality corresponded to a category, their waste assessment data were averaged and that average was assigned as the data for the category.

Each category was also assigned weights in terms of the fraction of the total Philippine population it represented. The average waste generation data for each category was then computed against the category's percentage weight in population to estimate the waste generation data per category. The resulting figures were used to calculate national waste generation per capita. (See Table 3).

In the table 3, WABA data from Quezon City was used as basis for waste data for the top 10 richest cities in the Philippines in terms of assets. Data from Malabon and Navotas Cities were used to calculate waste for cities and municipalities in Metro Manila that are not included in the top 10 list. To compute for data from first to fourth class cities located in mainland Luzon, the WABA results from Batangas City and the City of San Fernando, Pampanga, were used. WABA data from Tacloban City was used to quantify first to fourth class cities in Visayas, Mindanao, and non-mainland Luzon (e.g. Puerto Princesa, Masbate City), excluding those in the Top 10. Results from Solano, a first class municipality in Nueva Vizcaya, was used to estimate data from fifth and sixth class cities in the country because it is the sample with the closest profile to the clustered cities. The rest of the municipalities were used to quantify data from class 1 (Bayombong and Bambang), class 2–3 (Bagabag and Santa Fe), and class 4–6 (Villaverde and Ambaguio) municipalities. As mentioned earlier, weights in percentage are assigned to each category, based on the total population of cities or municipalities that are part of the category. The Top 10 Cities, for example, have a combined population of 11,869,669, which is 11.75% of the Philippines' total population²³. To compute for waste generation, the total population for each category was multiplied by the waste generation per capita per day. In Category 1, 11,869,669 was multiplied by 0.33 kg (from sample site for Category 1) to arrive at 3,857.64 tons per day.

Table 3. MEF and GAIA waste assessment sites, categorization based on economic profile and geographic location, and population percentage of each category

City/municipality where waste assessments were conducted	Category based on city/municipality classification ²¹	% of Philippine population ²²
Quezon City	Top 10 Cities	11.75%
Malabon and Navotas Cities	NCR cities and municipality outside of the Top 10 Cities	3.92%
Batangas City and City of San Fernando	Class 1–4 cities in mainland Luzon	11.72%
Tacloban City	Class 1–4 cities in Visayas and Mindanao, non-mainland Luzon	12.10%
Municipality of Solano	Class 5–6 cities (nationwide)	1.31%
Municipalities of Bayombong and Bambang	Class 1 municipalities (nationwide)	26.09%
Municipalities of Bagabag and Santa Fe	Class 2–3 municipalities (nationwide)	18.28%
Municipalities of Villaverde and Ambaguio	Class 4–6 municipalities (nationwide)	15.10%



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The computations are as follows:

Population ratio for category n

$$\text{Population Ratio for Category } n = \frac{\text{Combined Population for Category } n}{\text{Total Philippines Population}}$$

$$\text{Population Ratio for Category 1} = \frac{\text{Combined Population for Category 1}}{\text{Total Philippines Population}}$$

$$\text{Population Ratio for Category 1} = 11,869,669 \div 100,979,303$$

$$\text{Population Ratio for Cluster 1} = 11.75\%$$

NWG = national waste generation

$$\text{NWG per capita} = (\text{Population Ratio for Category 1} * \text{WG per capita in Category 1 Sample}) + (\text{Population Ratio for Category 2} * \text{WG per capita in Category 2 Sample}) + (\text{Population Ratio for Category 3} * \text{WG per capita in Category 3 Sample}) \dots + (\text{Population Ratio for Category 8} * \text{WG per capita in Category 8 Sample})$$

$$\text{NWG per capita} = (11.75\% * 0.33 \text{ kg}) + (3.92\% * 0.36 \text{ kg}) + (11.72\% * 0.26 \text{ kg}) + (11.83\% * 0.30 \text{ kg}) + (1.31\% * 0.43 \text{ kg}) + (26.09\% * 0.48 \text{ kg}) + (18.28\% * 0.26 \text{ kg}) + (15.10\% * 0.30 \text{ kg})$$

$$\text{NWG per capita} = 0.30 \text{ kg}$$

Potential income from recyclables

$$\text{Potential income} = \frac{\text{gross sales from recyclables identified in the waste assessment}}{\text{number of household respondents}}$$

$$\text{Potential income (weekly) in Category 1} = \frac{\text{sales from waste assessment recyclables in Category 1}}{\text{number of household respondents}}$$

$$= (\text{Php } 642.95 \div 55 \text{ households})$$

$$= \text{Php } 11.69 \text{ per week}$$

$$\text{Potential income (annual)} = \text{Potential income (weekly) in Category 1} * 52 \text{ weeks per year}$$

$$= \text{Php } 11.69 * 52 \text{ weeks}$$

$$= \text{Php } 607.88 \text{ per year}$$

Brand audit data

Conducting a household brand audit²⁴ as the next step to a waste assessment enables cities to identify which brands, products, or companies are commonly used in the area and are accountable for a particular percentage of the waste. In a brand audit, waste, particularly plastic residuals, is classified into branded (according to brand name and producer) and unbranded packaging. Unbranded packaging is further classified according to plastic material such as plastic *labo* bags (thin film), plastic *sando* shopping bags, and generic plastic packaging (those without labels), among others. Branded packaging is additionally classified according to type of material (laminates or single-layer plastic) and manufacturer information.

Table 1 above lists the sites where brand audits were conducted in connection to the brand audit research. No national extrapolation of data on branded packaging was conducted.



Assumptions and limitations

In extrapolating data used in this report, the calculations assume that waste data is relatively consistent among similar barangay classes within a city or municipality, and throughout municipalities of the same income size. This assumption is consistent with WACS protocols recommended by the Department of Environment and Natural Resources (DENR), with regard to adopting representative data. DENR recommends cities or municipalities which are unable to conduct their own WACS to adopt the waste data of another LGU with similar socio-economic conditions²⁵, but clarify that there should be awareness of possible variations in using representative data.

This research is also limited to household waste, and is not representative of the entire municipal waste stream (which includes other waste generators such as businesses, schools, markets, hospitals, etc). However, data from the Philippine National Solid Waste Management Commission (NSWMC), the government agency tasked with overseeing the implementation of the Philippine Ecological Solid Waste Management Act, confirms that household waste typically comprise 57% of the total waste of a city or municipality²⁶. In looking at household waste, this report is confined to analyzing waste at source, instead of in transit (for example, waste from trucks) or at disposal (waste from dumpsites or landfills). This is because the focus of the report is data on waste generation. Comprehensive city waste assessments include WACS for waste in transit and at disposal sites to help cities detect, calculate, and address leakage, etc²⁷. However, in MEF's experience, household-sourced waste assessments and brand audits have been helpful in developing local waste management plans which include collection routes, size of the MRFs, and number of waste collectors.

The sample size of 50-60 households for barangay-level surveys is more than the standard recommended by the DENR WACS manual²⁸ (which requires at least 30 households for the whole city or municipality). Sample areas used for this research were limited to the project sites of MEF and GAIA, and selection of the specific barangays per city or municipality was based on different factors such as economic and geographical profile, barangay size, readiness of particular barangays, etc.

This report uses data from the 21 above-mentioned areas to extrapolate national data to serve as an estimate of plastic waste generation in the Philippines. GAIA recommends that sample size be improved in future research, with more cities and municipalities adopting WABAs for their respective waste generation profiles to gather a more complete picture of plastic waste in the country.



Plastic waste that has leaked that has leaked into the environment
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RESULTS

Waste assessment results

Results presented in this section offer estimates using data extrapolated from the 21 waste assessments conducted. Currently, there are no accurate and updated waste data covering all cities and municipalities in the country, owing to the difficulty and complexity of conducting waste generation data and assessment. Even the NSWMC uses consolidated information from selected WACS data sets dating back to 2010²⁹. NSWMC puts the national waste generation per capita at 0.40 kg. It estimates that waste generation rates range from 0.10 kg per person per day in municipalities outside Metro Manila, to 0.79 kg per person per day in Metro Manila and highly-urbanized cities.

Under RA 9003, NSWMC is required to publish a National Solid Waste Management Status Report every two years. The last status report was issued in 2015 (using data from 2010). It is important to have current data about waste generation and to have these updated regularly, to ensure that existing waste management programs are able to accurately respond to changing needs and situations.

Highlights

1 Organic waste comprise more than 60% of household waste in the Philippines. This confirms that organic waste management is an important strategy that will create substantial waste reduction for local governments.

NSWMC municipal waste data from 2010 shows that waste generation rates in the country vary from a low of 0.10kg per capita/day to a high of 0.79 kg, resulting in an average per capita generation of 0.40kg³⁰. World Bank estimates for the Philippines are almost the same: 0.39 kg per person/day³¹. Synthesized government data show a higher per capita average for different LGU classifications (for example, Metro Manila cities, provincial cities, etc.) compared to the results of this report. However, the extrapolated national average for household data shown in table 4 is consistent with the 2010 government waste generation data.



Table 4. Per capita waste generation*

Categories	Percent of population	Per capita household waste generation (in kg / day)
National average	100.00%	0.30
Top 10 richest cities	11.75%	0.33
National Capital Region (excluding top 10 cities)	3.92%	0.36
Cities with income class 1-4 in mainland Luzon	11.72%	0.26
Cities with income class 1-4 in Visayas, Mindanao and non-mainland Luzon	11.83%	0.30
Cities with income class 5-6	1.31%	0.43
Municipalities with income class 1	26.09%	0.48
Municipalities with income class 2 and 3	18.28%	0.26
Municipalities with income class 4, 5 and 6	15.10%	0.30

*Extrapolated from MEF and GAIA waste assessment data.

Philippine government data (on municipal waste generation) show the typical composition of waste streams in most local government units in the country. Compostables or biodegradables comprise more than half of all waste streams (52.31%), while recyclables make up almost a third of waste streams analyzed (27.78%). Residual waste is estimated at 17.98%, and special waste including health care and hazardous waste make up the rest at 1.93%³²

This research, although limited to household waste, shows similar overall findings for compostables and hazardous waste: compostables make up more than half of the waste generated in all the study areas, and hazardous waste is at the bottom of the list. However, MEF and GAIA waste assessments show that there is a higher amount of residuals (residuals and special residuals combined, see Figure 1), than recyclables. The difference may be due to the fact that special residuals, such as diapers and napkins, are heavier in weight than recyclables which are typically made up of plastic materials which are lighter. This data may also signify that plastic products and packaging that are not considered recyclable is increasing.

Focusing on compostables, MEF and GAIA data show that this waste stream comprises 62% of household waste. Managing this properly (through household or community composting programs, for example), will immediately translate to a 62% reduction on waste collected by cities and municipalities, with corresponding reduction to waste management costs, including hauling and landfilling fees, and also reducing the amount of waste that goes to landfills.

2 Disaggregating data on the different types of plastic residuals gives a clearer picture of waste generation.

This data is necessary given the projected exponential increase in plastic waste generation globally. More importantly, it provides valuable information on policy actions needed to substantially reduce this highly problematic waste stream.

Waste assessment protocols described in the DENR WACS manual used in the Philippines do not require a distinction between the different types of residuals although these residuals vary very widely in terms of form and material. These residuals may be composed of multi-layered composite plastic packaging typical of processed food and other goods, sachets, shopping bags, thin film bags, utensils such as cutlery, straws, etc., and other packaging and disposable plastic-based materials. This disaggregation is included in the MEF and GAIA waste assessments.

Figure 1. Waste characterization of household waste in the Philippines*



Table 5. Number of pieces and percentage share of the types of plastic residuals from the 21 study sites

Material	Actual pieces	Percentage share
1. Sachets (all kinds)	25,147	52.29%
1.1. Multi-layer, multi-material sachets (as a subset of sachets, item 1 above)	15,581	32.40%
2. Plastic <i>labo</i> bags	11,526	23.97%
3. Plastic shopping bags	7,246	15.07%
5. Others ³³	4,161	8.65%
TOTAL	48,080	100%

Raw data on the types of plastic residuals above show that plastic sachets are the most prevalent kind of plastic residuals in households in all the areas surveyed, regardless of whether the location was highly urbanized or rural. This result is consistent with the results of previous clean-up audits where sachets also dominated the plastic residuals collected.

Multi-layer, multi-material sachets comprised most of the sachets collected (32.40% of all sachets). These kinds of plastic residuals usually contain a thin layer of aluminum, adhesives, and other layers of various kinds of plastic (e.g. PVC or polyvinyl chloride, polystyrene, etc). Because of their composite nature, these sachets are not recyclable, and are the most problematic type of packaging in waste streams.

Plastic *labo* bags comprised the next most prevalent kind of plastic residuals, when totalled. However, by area, the number of plastic *labo* bags varied greatly depending on the area where the plastic *labo* bags were counted. Plastic *labo* bag use ranged from a low of around six pieces per capita per week in sites in Nueva Vizcaya (rural), to a high of 43 pieces per week per capita in sites in Quezon City (highly urbanized).

3 The strict implementation of plastic bag regulations produces dramatically significant results in lowering plastic bag use. However, the existence of a plastic bag regulation in a city or municipality does not automatically equate to lower plastic bag use.

A wide disparity in plastic *sando* shopping bag data was also seen in the waste assessment sites. Plastic bag use varies depending on whether the site was highly urbanized, urban, or rural, and whether or not a plastic bag regulation is in place (see Table 6). While plastic bag use is low in rural areas, such as in the two municipalities in Nueva Vizcaya (at 5–6

per person per week), use is substantially lower in cities where the plastic bag regulation is strictly implemented, such the City of San Fernando, Pampanga. Both Navotas City and Quezon City have plastic bag regulations (once a week in Navotas City), but they represent the first and third biggest plastic bag users among the surveyed sites. Tacloban City is the second biggest user, but there is no plastic bag regulation in place.

Plastic *labo* bags use is also higher in urban areas than rural areas and it is highest in Quezon City and Navotas City which both regulate plastic bags but identify plastic *labo* bags as a substitute, therefore presenting an acceptable loophole in the plastic bag regulation.

Data on plastic *sando* shopping bags and plastic *labo* bags in Quezon City and Navotas City (which both have plastic bag regulations) do not vary widely from figures for Tacloban City where no plastic bag regulation is in place. Meanwhile, in the City of San Fernando, Pampanga, where the plastic bag regulation is strictly implemented, plastic bag use is among the lowest. This potentially indicates that the difference may lie in the implementation of the ban, where strict implementation gives dramatic results, but less stringent implementation may mean little difference between having a regulation or not.



Table 6. Plastic sando shopping bags and plastic labo bags discarded per capita per week in the selected project sites*

*Data below are from the barangays in the listed cities where waste assessments were conducted. For the Municipalities of Solano and Villaverde in Nueva Vizcaya, actual municipal data was used.

	With or without plastic bag ban or regulation	Classification	Estimated pieces discarded per capita per week	
			Plastic <i>sando</i> shopping bag	Plastic <i>labo</i> bag
Navotas City**	With regulation	Highly urbanized	39	24
Tacloban City	None	Urban	32	15
Quezon City*	With regulation	Highly urbanized	25	43
Batangas City*	With ban	Urban	15	9
Solano (Nueva Vizcaya)	None	Rural	6	7
Villaverde (Nueva Vizcaya)	None	Rural	5	6
Malabon City**	With regulation	Highly urbanized	2	11
City of San Fernando	With ban	Urban	2	12

*full regulation **regulated, only one day per week

***Plastic bag bans, as in the case of the City of San Fernando, prohibits the use of plastic bags at all points of sale, subject to a few exemptions. Plastic bag regulations, as in the case of Quezon City, allows the use of plastic bags subject to a fee.

4 Almost 164 million pieces of sachets are used in the Philippines daily, which equates to around 59.8 billion pieces of sachets yearly.

With the absence of policies mandating liability and accountability for the production of this problematic waste stream, cities and municipalities are left to deal with this problem using taxpayers' money.

In Table 8, GAIA has extrapolated data to show estimated plastic residual use (disaggregated into different types) per capita per year and for the entire Philippines per day. Based on the data, the average Filipino uses a little less than 600 pieces of sachets per year, or around 1.64 pieces a day, a modest figure compared to urban consumption, for example in Quezon City, which can reach as much as six pieces per person per day. Included in the sachet count are: shampoo, conditioner, detergent, fabric softener, condiments, coffee and other drinks, processed food, etc.

Extrapolated figures show that almost 164 million pieces of sachets are used daily nationwide, equating to around 59.7 billion pieces of sachets per year. These sachets represent billions of pesos in profits for manufacturing companies. However, these companies are not mandated to manage sachet waste once they have sold these to Filipino consumers. All these sachets are unrecyclable and represent waste that has to be managed by cities and municipalities using taxpayers' money.

Disposable diapers (classified as special residuals because of the special handling needed) is included in Table 8 to show this growing waste stream that is also problematic to handle. Around three million diapers are used daily in the country, or around 1.1 billion pieces a year. As in the case of sachet waste, no policies are in place for proper disposal, nor for mandatory standards for compostability.

Table 7. Estimated number of sachets, plastic sando shopping bags, plastic labo bags, and disposable diapers used per person per year, and for the entire Philippines per day

	Per capita per year	Entire Philippines per day
1. Sachets (all)	591	163,732,476
1.1. Multi-layer sachets	426	117,875,583
2. Plastic <i>sando</i> shopping bags	174	48,125,813
3. Plastic <i>labo</i> bags	163	45,228,043
4. Disposable diapers	76	3,010,025

These figures show that the sheer volume of residual waste generated daily is beyond the capacity of barangays, cities and municipalities to manage: the problem is the huge amount of single use plastics being produced, not the way the waste is managed. Experiences in GAIA’s Zero Waste Cities project sites show that after implementing Zero Waste strategies (for example establishing working materials recovery facilities or MRFs, conducting door-to-door segregated collection, composting

organics, and maximizing recycling of high-value materials, etc.) cities can only achieve a maximum of 70-80% waste diversion (i.e. maximizing the sustainable management of discards to avoid landfilling and other final disposal methods) compared to their pre-Zero Waste program baselines. Despite expanding Zero Waste strategies, cities and municipalities will be left with around 20% of waste that they cannot manage—sachets and other single use plastics—preventing them from fully achieving Zero Waste goals.



Sachets collected during a brand audit. GAIA estimates that almost 164 million pieces of sachets are used daily in the Philippines.
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5 While more attention should be given to ensure the reusability of packaging and products, it is important to acknowledge that within current waste management systems, recycling plays an important role in several ways:

in supporting livelihoods of millions of people around the world, as a potential source of income for households through the sale of recyclables, and in reducing the need for raw materials extraction by recovering precious finite resources and putting these back into production.

The best way to solve the world's plastic pollution crisis is to produce less plastic. Recycling is often touted by the plastic industry and corporations as the primary solution to address the plastic crisis, but in reality recycling is not enough to address the enormous amount of plastic waste existing in the environment, most of which are low-value non-recyclable products and packaging. Also, many of today's plastic packaging materials contain thousands of chemicals to alter or enhance the properties of the packaging. Because of this, recycling has been known to endanger the health of workers, from collectors to recycling workers, particularly if the recycling facility or recycling practices are below certain standards. The process of recycling itself uses energy and can produce toxic pollution that contaminates air, water and land.

However, it is important to acknowledge that within current waste management systems existing in most countries, recycling plays an important role in 1) recovering precious finite resources such as high-value plastics, metals, glass, paper, and wood, and diverting these from incinerators and landfills; 2) supporting the livelihoods of millions of people around the world, most of whom belong to the informal waste sector whose daily income depend on collection and recycling systems; and 3) providing a potentially significant source of income for households, local governments, and local waste industries if proper source separation and collection are implemented, and if recycling is maximized.

Table 8 shows potential income from recyclables per study site, based on the waste collected from the waste assessment areas. The old saying, "one man's trash is another man's treasure," holds true in the amount of recyclables that can be recovered from household waste. Recyclables, which range from 11% to 23.87% of the total household waste in the sample sites, can be diverted from landfills by bringing these to junk shops or waste markets. A household in Quezon City in the National Capital Region, for instance, can

earn PHP11.68 (~USD0.22) a week from selling recyclables to junk shops. The amount might not be significant to a household of four people, but it could mean additional income for a waste collector assigned to 200 households. The figure could translate to PHP9,352 (~USD178.81) a month for that waste collector.

Capturing projected income for recyclables is also useful in preparing waste management plans for a city or barangay. Barangay Paraiso, one of the sample sites in Quezon City, has a total population of 3,790 or 816 households. Using the weekly income rate, Barangay Paraiso can collectively generate PHP495,605.76 (~USD9,476) in recyclable sales in a year. Likewise, the barangay can decide either to set aside sales as additional budget for the community, or redistribute it as additional income for their collectors. In the case of Barangay Potrero, Malabon City, waste workers receive about PHP2,000 to 3,000 (~USD38-57) a month, on top of their wages, for selling recyclables collected from households. Households are more than happy to give away their recyclables to waste workers in appreciation of their collection services.

Table 8. Projected income from recyclables, per study site³⁴

	Potential value of recyclables (per household per week, in PHP)
Quezon City	11.69
Malabon City	13.54
City of San Fernando/Batangas City	11.20
Tacloban City	8.22
Municipality of Solano	7
Bayombong/Bambang Municipalities	6
Bagabag/Santa Fe Municipalities	5.5
Villaverde/Ambaguio Municipalities	5

At the same time, the recycling sector in the country is underdeveloped due to a variety of factors. The sector is largely influenced by the international market, which can greatly affect supply and demand, as well as price. The sector is also dominated by informal waste workers and small-to-medium businesses whose status of development depends on the types of materials they handle, and where they are located³⁵. Island cities and provinces and other remote areas either do not have recycling infrastructure or lack access to recycling markets, so that even if a certain material is technically recyclable (such as PET or glass bottles), they have very little value (or no value) in remote areas where transport will add significantly to the cost of recycling. For example, in the municipality of El Nido

in Palawan Island in western Philippines, thousands of PET bottles are used by the tourism industry. However, these PET bottles are not collected by junk shops and end up in the waste dump. In order to recycle PET bottles, these have to be shipped first to the provincial capital, and from there, around 600 kilometers by sea to Manila. The shipping costs greatly reduce any value the material would have had ³⁶.

In addition, poor source separation in most cities result in contaminated waste streams, reducing the recoverability of recyclable materials even further. At-source segregation, although mandated in RA 9003, is not well-implemented nationwide and recyclables are usually mixed with other household waste. These gaps need to be addressed to ensure that recycling is maximized in the country.

Brand audits

6 More than 50% of all unrecyclable residual waste analyzed is branded waste.

In the WABAs conducted, 10 companies are responsible for 60% of all branded waste, and four multinational companies are responsible for 36% of all branded waste. This highlights the need for interventions that mandate manufacturers to take responsibility for their plastic waste, primarily by drastically reducing production of throwaway plastic packaging.

Sites where the brand audits were conducted are listed in Table 1 in the earlier section (Methodology). The results of these brand audits have not been extrapolated to estimate city/municipality or national figures. There are too many kinds of packaging waste found all over the Philippine cities and municipalities, with hundreds of brands and products sold only locally.

In a brand audit, every single piece of waste collected must be identified, counted, and classified. For this reason, several categories were developed to classify different materials. (Please see www.no-burn.org/wabatoolkit for more details about implementing brand audits.)

Branded residuals refer to products and packaging with identifiable brands and manufacturer information. These include shampoo sachets, junk food wrappers, juice packs, and the like. (Due to the popularity of certain products and brands whose packaging are commonly found in waste streams, brand audit implementers are able to identify torn product packaging during waste surveys.)

Unbranded residuals, meanwhile, refer to plastics that are unmarked, with no printed brands, or manufacturers, such as cellophane wrappers and plastic labo bags. Unidentifiable residuals are those that are too worn or torn to be clearly identified.

Among the residuals analyzed for the brand audit were sachet packaging, other flexible packaging, straws, plastic sando shopping bags, and plastic labo bags, cigarette butts, diapers, napkins, etc.

The waste assessment and brand audits in the selected sites yielded a total of 48,808 pieces of residual plastic. More than half of the residual plastic waste collected was branded. This result is consistent with other brand audits previously conducted, during clean-ups, for example, the Freedom Island clean-up and brand audit in 2017, as well as clean-up and brand audits in India³⁷, where the number of branded residual waste is higher than that of unbranded waste (which includes plastic shopping bags and other plastic packaging).

Figure 2. Branded vs Unbranded Plastic Residuals

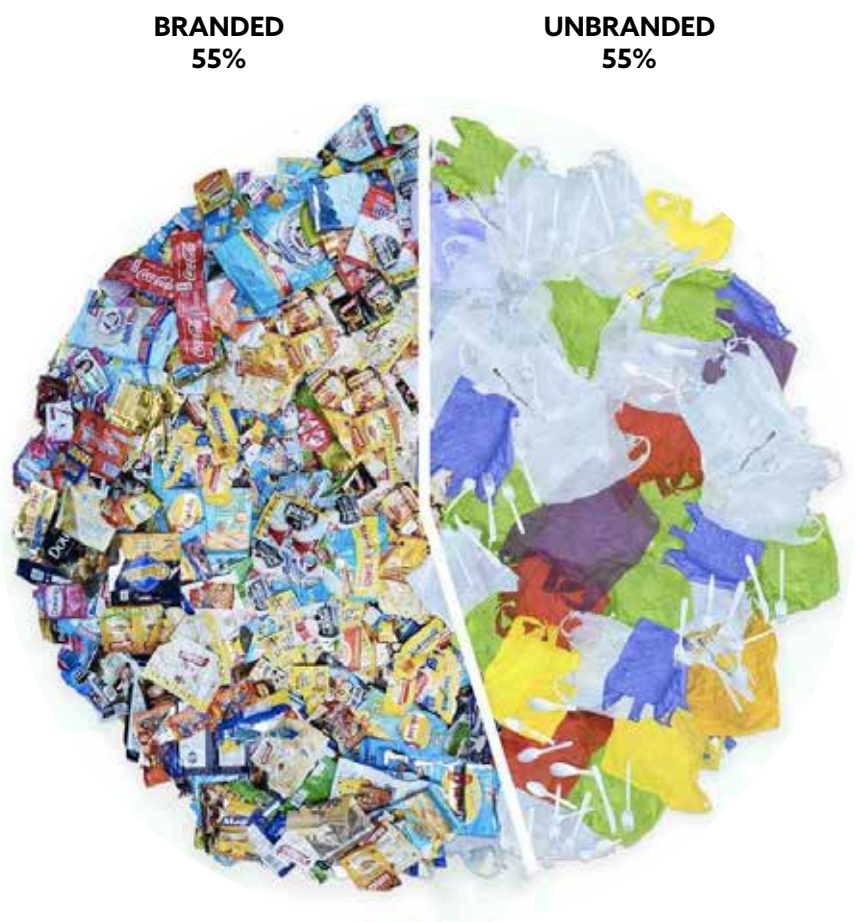


Table 9. Number of pieces of plastic residual waste*, according to whether the plastic waste was branded or not

*based on data from the sites where the brand audits were conducted (see Table 1 above).

Category	Total number of pieces	% of residual waste
Branded	26,291	54.67%
Unbranded	21,604	44.93%
Unidentifiable	193	0.4%
Total	48,088	100%

In the Philippines, with the absence of a national policy on plastics, some LGUs have put in place ordinances that ban or regulate the use of plastic bags which mostly covers plastic *sando* shopping bags and the like. However, what is not generally covered in these ordinances are branded plastics that include sachets and other primary packaging used by some of the world's largest food, personal care, and household products. As seen in Table 9, cities and municipalities deal with a greater number of branded plastic residual waste than unbranded waste. If manufacturers were mandated at the national level to reduce production of throwaway plastic packaging, for example through innovations such as alternative delivery systems or reusable packaging, this would address a large part of the country's plastic waste problem, including plastic waste leakage to rivers and seas.

From the brand audits conducted, all data were compiled and ranked to produce a list of companies identified as the sources of the most number of residual plastic waste found in these areas.

Table 10 lists the companies with the most number of branded residual waste identified in the household brand audits, and the corresponding percentage share of the company's residuals compared to the total number of residual waste (branded and unbranded) audited, and compared to the total number of branded waste. This and other lists from previous brand audits aim to reveal which companies are the top sources of single-use, disposable packaging in the areas where the brand audits were conducted.



Table 10. Companies with the most number of branded residual waste identified in the household WABAs, number of pieces, and percentage as a fraction of all residual waste, and all branded waste collected

Rank	Company	Number of pieces	% of total residual waste	% of all branded residual waste
1	Nestlé	3,906	8.12%	14.86%
2	Unilever	2,729	5.68%	10.38%
3	Procter & Gamble	2,092	4.35%	7.96%
4	Universal Robina Corporation (URC)	1,616	3.36%	6.15%
5	PT Mayora Indah Torabika (Kopiko)	1,405	2.92%	5.34%
6	Republic Biscuit Corporation (Rebisco)	1,365	2.84%	5.19%
7	WL Foods	1,085	2.26%	4.13%
8	Liwayway Marketing Corporation (Oishi)	997	2.07%	3.79%
9	Coca-Cola*	781	1.62%	2.97%
10	JBC Food Corporation	689	1.43%	2.62%
	TOTAL	16,665	34.65%	63.39%

**Residuals from Coca-Cola identified here are labels from their PET bottles as well as sachets for their powdered juices (i.e. this figure does not include PET bottles which is not counted as residual waste, but as recyclable waste).*

WABA data show that only 10 companies are responsible for a third (34.65%) of all residual waste analyzed, and almost two-thirds of the branded residuals (63.39%). Four of these companies are among the biggest multinational companies (MNCs) in the world: Nestlé, Unilever, Procter & Gamble, and Coca-Cola, producing fast moving consumer goods and beverages. These four companies together represent 36.17% of all branded residual waste (19.77% of all residual waste) surveyed. Aside from PT Mayora Torabika, which is an Indonesian company, all the rest are local Philippine companies.

The results of the household brand audit are consistent with the 2017 Freedom Island

clean-up brand audit where Nestlé, Unilever, and Procter & Gamble also figured as the top polluters. Although the results reflect market share of these consumer goods companies, these results are also indicative of the dominant marketing strategy in the country which relies on the delivery of products in throwaway sachet packaging.

Despite the large amount of trash produced by their product packaging, the proliferation of their packaging waste not just in waterways and coastal areas but also in household waste destined for landfills shows that little effort has been made to reduce production of single-use disposable plastics which results in this problematic waste stream.

CASE STUDIES:

HOW WABA DATA WAS USED IN SELECTED ZERO WASTE CITIES PROJECT SITES

1. Maximizing waste diversion rates through regulation of selected residual materials

In the Philippines' Ecological Solid Waste Management Act, "waste diversion" is defined as "activities which reduce or eliminate the amount of solid waste from waste disposal facilities."

Section 20 of the Act further directs each LGU to "divert at least 25% of all solid waste from waste disposal facilities through re-use, recycling, and composting activities and other resource recovery activities..." In the Philippine Development Plan 2017-2022, the national waste diversion target is 80% by 2022³⁹.

In the City of San Fernando, Pampanga, waste diversion strategies have been planned successfully using WABA data gathered as part of the Zero Waste Cities project implementation.

Before starting its Zero Waste Program in 2012, San Fernando's waste diversion rate was a mere 12%. Six months after they implemented a Zero Waste program in partnership with MEF and GAIA, the city was able to increase the rate to 35%. This was achieved through decentralized door-to-door collection of segregated waste, and the establishment of MRFs in every barangay, school, and private subdivision. There are currently more than 80 operational MRFs in the city. Through increased efficiency of segregated collection, composting, and recycling, the city was able to further increase their waste diversion rate to 68% in 2014⁴⁰.

In addition to continuously improving its program to address organic and recyclable wastes, the city also looked at how to reduce its residual wastes. Using waste assessment data, the city was able to determine that plastic bags and polystyrene packaging were two types of residual waste that can be reduced through local regulations. Thus, in 2014, the city passed City Ordinance No. 2014-008 or the Plastic Free Ordinance of the City of San Fernando, Pampanga⁴¹.

Through the strict implementation of the plastic regulation ordinance, the city was able to further increase its waste diversion rate to 80% in 2018⁴².

City of San Fernando,
Pampanga
Province,
Central Luzon

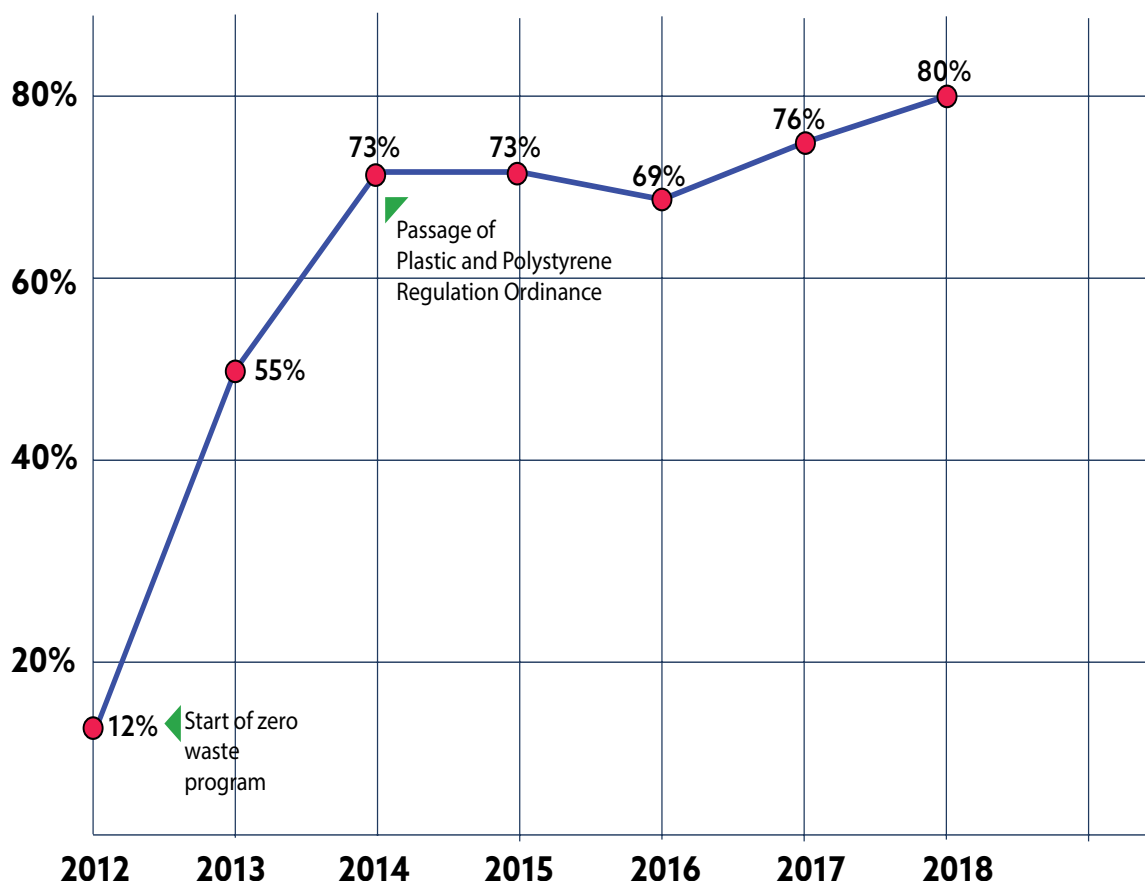


Population density: 4,500/km²
Total land area: 67.74km²



Sample poster used by the City of San Fernando in their IEC campaigns.

Figure 3: Waste diversion rate (2012-2018) in the City of San Fernando, Pampanga



Ordinance No. 2014-008 states that “no store shall utilize or provide free plastic bags as primary and secondary packaging materials on goods to customers except those pre-packed goods by manufacturers,” and mandates all stores “to make available for sale reusable bags and woven bags for the purpose of carrying out goods from the point of sale.”⁴³

Part of the city’s success in implementing the plastic regulation ordinance was its phased

approach: after the ordinance was passed, the first three months were dedicated to education campaigns to inform the public about its provisions. In the next six months, the regulation called for a plastic-free day once a week; no plastic bags were given free every Friday. After the initial nine-month period, another six months were used to pilot the full implementation of the “no free plastic bag policy.” Plastic bags were completely banned in the city after the phased implementation of the ordinance.



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Members of the Ladies Brigade of Potrero, Malabon City pose for a photo during a cleaning activity.
© GAIA/KHATE NOLASCO

2. Engaging informal waste workers as door-to-door waste collectors, generating jobs and servicing areas previously not covered by truck collection

Barangay Potrero, Malabon City, National Capital Region



Map by Eugene Alvin Villar / CC BY-SA 3.0

Population (Brgy. Potrero): 41,407⁴⁴
Population (Malabon City): 365,525⁴⁵
Population density (Malabon City): 23,000/km²
Total land area (Malabon City): 15.71 km²

Barangay Potrero is the largest barangay in Malabon City, with a total population of 42,000 people. Until 2015, the barangay was dependent on garbage trucks owned by a private contractor for daily waste collection. The barangay spends PHP9,099,550.00 (~USD 174,000) annually, or almost PHP26,148 (~USD 500) a day in tipping fees. However, based on the waste assessment conducted, it should only allocate PHP230,104 (~USD4,400) per year for waste management, mainly for collecting residual, hazardous, and special waste.

In 2015, while evaluating the barangay's waste management systems, MEF and GAIA observed that the waste collection routes did not cover all households in the area. Many households were located in areas not accessible to garbage trucks (for example, due to small, or absence of, roads). As a result, waste ended up on curbsides or in rivers.

Under its new waste management program, Barangay Potrero decided to do away with garbage trucks, replacing these with services by the Ladies Brigade committee. (Prior to this new assignment, the Ladies Brigade has been assigned to handle Potrero's day care center, health care services, and information campaigns.) The Ladies Brigade hired 38 waste collectors, most of whom were local waste pickers, to replace garbage trucks. From 6:00 to 9:00 a.m. daily, the collectors, also known as "waste warriors," go from door to door, using push carts to collect sorted waste from the residents, including households previously excluded from the truck routes. Eighteen monitoring personnel, who supervise the implementation of the solid waste management (SWM) program, accompany the collection rounds.

Most of Barangay Potrero's waste collectors are former waste pickers from the community. Vilma Morales, a waste collector assigned in the

Bagong Lote area of Potrero used to rummage through mixed household waste dumped in local curbsides together with her fellow waste pickers. Back then, she earned around PHP1,050–2,100 (~USD20–40) a month from salvaged recyclable materials which she sold to junk shops. According to Vilma, she used to collect recyclables for two weeks before selling them to get a better price.

To compute the potential income waste pickers like Vilma can earn once they became formalized waste collectors, Barangay Potrero used projections generated from the WABA. Calculating potential income from recyclables, program implementers recorded the total sales of recyclables collected from WABA sorting. Sales were then divided by the number of household-respondents,

Today, Vilma and her fellow waste collectors receive a monthly salary of PHP6,000 (~USD114.73) from Barangay Potrero. In addition to their wages, they also get to keep earnings from recyclable materials they collect. Because door-to-door collection facilitated proper waste segregation, the recovery of recyclable materials is now easier and safer. Moreover, waste collectors enjoy other social benefits such as medical assistance, life insurance, and priority slots for scholarship allowances for their dependents.



The Ladies Brigade in action. The group plays a crucial role in the successful implementation of Zero Waste programs in Potrero, Malabon City.

© GAIA/MARICON ALVAREZ



Conducting a household brand audit as the next step to a waste assessment enables cities to identify which brands, products, or companies are commonly used in the area and are accountable for a particular percentage of the waste.

3. WABA and designing community composting facilities

In most cities and municipalities in the Philippines, organic waste comprises at least 50% of total waste generated. In highly dense urban areas, managing organic waste through on-site composting can be challenging. However, to reduce transportation costs and to ensure that organics are kept out of the landfill, it is imperative that organic waste is managed on-site through a mixture of different strategies appropriate for a particular community.

Common strategies employed in communities are composting, biogas, and utilizing food waste as animal feed. Composting can be done in several ways—from the simplest underground composting to several examples of above-ground composting, such as claypot composting, windrow composting, compost heaps, or using drums, pipes and sacks as containers, with variations such as utilizing worms via vermicomposting. Deciding on the appropriate method or mixture of methods require a clear understanding of the type and volume of organic waste produced in the community. This is where data from WABA are beneficial.

In BBN, the barangay allocated most of its MRF space for composting, enough to manage about 553 kg a day of organic waste. The barangay applied above-ground composting methods such as windrow, drum, box, and multi-chamber boxes. Barangay Dampalit, on the other hand, was able to utilize a 250 sqm space for its MRF. Like BBN, it also used above-ground composting methods to address the volume of organic waste from three puroks (community zones). Barangay Dampalit has started preparing new composting areas big enough to accommodate 1.86 tons of organic waste per day—based on its WABA—when the remaining four puroks start their full implementation of decentralized waste collection. In addition, the barangay is exploring the possibility of giving away organic waste to fishpen operators for animal feed.

Composting section of the materials recovery facility in Dampalit, Malabon City.
© GAIA/SHERMA BENOSA

Barangay Bagumbayan North (BBN), Navotas City, and Barangay Dampalit, Malabon City, National Capital Region



Map by Eugene Alvin Villar/CC BY-SA 3.0

Population (Barangay BBN): 2,579⁴⁷
Population (Navotas City): 249,463⁴⁸ (2015)
Population density (Navotas City): 23,000/km²
Total land area (Navotas City): 10.77km²

Population (Barangay Dampalit): 12,124⁴⁹
Population (Malabon City): 365,525⁵⁰
Population density (Malabon City): 23,000/km²
Total land area (Malabon City): 15.71 km²





4. Designing Eco-shed MRFs from WABA data

Pilar Village, City
of San Fernando,
Pampanga
Province,
Central Luzon



Map by Mike Gonzales/ CC BY-SA 3.0

Population (Pilar Village): 3,600⁵¹ (2018)
Population (City of San Fernando): 306,659⁵²
Population density (City of San Fernando): 4,500/km²
Total land area (City of San Fernando): 67.74km²

The Philippine Ecological Solid Waste Management Act (Republic Act 9003) requires all barangays (or a cluster of barangays) to establish MRFs. However, as of 2016, less than half of the more than 42,000 barangays, or 31.3%, in the country have complied with this requirement⁵³.

Although some barangays may have MRFs, a number of these facilities have been found to be ill-equipped to handle the actual waste produced in the community. For example, MEF has observed that barangays classified eco-sheds as MRFs, even though the structure was just a multiple-bin receptacle without a composting area. Moreover, the NGO has observed instances where there is a mismatch between the capacity of the MRF and the type and volume of waste that needs to be processed and stored. This is where it is critical to use localized data from WABAs to design both the community's Ecological Solid Waste Management Program, and the MRF.



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Pilar Village in the City of San Fernando, Pampanga used data from waste assessments to decide on the design of their MRF, especially the eco-shed for recyclables. The projected volume of waste to be processed was correlated with the strategies identified for each waste stream—for example, how often will they be picked up. The village's MRF eco-shed (where recyclables are stored before being picked up by a buyer) has several holding cells of varying sizes to accommodate: 1) high-volume recyclable plastics (enough to store the volume to be collected for 14 days); 2) paper and carton; 3) cans and other metals; and 4) glass (which is low in volume but is also less often collected for sale to junk shops). A separate cell is allocated for special waste; although low in volume, the size of the cell has to consider space enough to store the volume of special waste for six months, given its difficulty for disposal. Incorporated into the design of this MRF is a containment area for residuals, which has a capacity to store waste



5. How WABA data reveals trends on volumes of substitute materials in areas that have instituted plastic bag regulations



Volunteers sort plastic residual waste in Tanza, Navotas.
© GAIA/SHERMA BENOSA

Barangay Tanza 2, Navotas City
National Capital Region



Map by Eugene Alvin Villar/CC BY-SA 3.0

Population (Barangay Tanza 2): 24,917⁵⁴
Population (Navotas City): 249,463⁵⁵
Population density (Navotas City): 23,000/km²
City total area (Navotas City): 10.77km²

Barangay Tanza 2 is a low-lying coastal barangay in Navotas City. With Manila Bay on its western border and Muzon River on its eastern and northern sides, the barangay is prone to flooding caused by heavy rains or rising tides. Further complicating its flooding problems is waste, mostly plastic residuals, washing up on the barangay's streets.

To address this problem, Barangay Tanza 2 encourages residents and store owners to stop using plastic bags, as part of the Navotas City's plastic bag ordinance which bans establishments from giving out plastic bags every Friday. However, WABA findings from Barangay Tanza 2 revealed that the amount of plastic *labo* bags is unusually high. The number of plastic *labo* bags collected during the week-long audit was 1,463 pieces, which is around 27 pieces per person per week. MEF community workers attribute the volume of plastic *labo* bag use to the fact that while Navotas City restricts plastic bags, the use of plastic *labo* bags as a substitute is allowed.

Using this data, MEF and GAIA have started working with officials in Barangay Tanza 2 to include the promotion of reusable bags, and to prevent the shift to plastic *labo* as an alternative to regular plastic bags.

6. Using WABA to project landfill capacity and lifespan, and support investment in Zero Waste strategies

Tacloban City is a first-class highly urbanized city (HUC) that serves as an economic hub for Leyte Province and the Eastern Visayas Region. With a growing population and increasing economic activity in its peripheries, the city is feeling the need for more effective waste management systems.

In the past, the city government provided centralized waste collection services only to selected urban barangays, leaving residents in suburban and rural barangays to resort to open burning or indiscriminate disposal of waste. Waste collected via the centralized system is sent to a dumpsite in Barangay Santo Niño, an open dump that was already ordered closed by the DENR in 2016⁵⁷.

To address these issues, Tacloban City borrowed PHP86 Million (~USD1.64 million) from the Landbank of the Philippines in 2015 for the construction of a new sanitary landfill facility located in Barangay San Roque. The city, which used to generate 174 tons of per day (tpd), estimated that the landfill will only last for five years if it maintains a business-as-usual scenario.

Tacloban City,
Leyte Province,
Eastern Visayas,
Central
Philippines



Map by Mike Gonzales/CC BY-SA 3.0

Tacloban City, Leyte Province, Eastern Visayas, Central Philippines
Population: 242,089⁵⁶
Population density: 1,200/km²
Total land area: 201.72 km²
Number of barangays: 168

In 2016, Tacloban entered into a partnership agreement with MEF through a project co-implemented with GAIA, for the establishment of a Zero Waste program in the entire city. After two years, the city was able to increase coverage of waste collection from 30% to 100%, with the barangays providing the primary collection of waste, and the city collecting residual waste from the barangay MRF. Even with the increased collection coverage area, Tacloban has reduced its landfill-bound waste to 105 tpd in 12 months. Using WABA findings, the city hopes to further reduce landfill-bound waste to 50 tpd, thus saving on hauling costs and maximizing storage capacity for the new landfill.

A waste worker collects segregated waste.

© GAIA/THEEBAN GUNASEKARAN



7. WABA data to be used in waste management plans in Indonesia



Segregated waste collection in Bandung, Indonesia.
© GAIA/YPBB



Bandung City, West Java, Indonesia
Population: 2,470,802⁵⁸ (2014 Census)
Population density: 14,736/km²
Total land area: 167.67 km²
Number of villages: 153 *kelurahan*⁵⁹

Bandung City's transfer stations *Tempat Pembuangan Sampah Terpadu* (TPSTs) are operating beyond capacity, as they can only accommodate 40% of the total 1,600 tons of waste generated by 2.4 million people daily. Meanwhile, decentralized waste collection systems have gained ground in eight *rukun wargas*⁶⁰ of the city, with waste collectors recovering about 560 kg of organic waste and 14 kg of recyclables every day⁶¹.

Similar to cities in the Philippines and other Southeast Asian countries, Bandung households struggle with disposal of plastic sachets, which are not accepted in Indonesia's network of *bank sampah* (waste banks⁶²). In brand audits conducted in three villages in Bandung City in 2017, YPBB found that 60.87% of 8,101 pieces of plastic residuals were branded. Unbranded plastic discards comprised 36.19% of residuals, and packaging with no producer information comprised 2.94%. These findings were presented during the Zero Waste Cities Conference 2018 in Bandung, Indonesia, which was attended by more than 300 government officials across the country. The city is now planning to use these waste assessment findings from Kelurahan Sukaluyu and Kelurahan Babakan Sari⁶³ in developing waste management plans for eight other *kelurahan*.

A part from cities in the Philippines, several other cities in the Asia Pacific region have adopted WABA as part of their waste surveys. In Bandung City in West Java, Indonesia, Yayasan Pengembangan Biosains dan Bioteknologi (YPBB, an NGO involved in introducing Zero Waste programs), together with GAIA, conducted waste assessments in three *kelurahan* in Bandung, namely in Sukaluyu, Babakan Sari, and Kabupaten Bandung (Desa Parungserab); as well as an additional village in neighboring Cimahi City, Kelurahan Setiamanah.



Waste pickers gather around a garbage truck dumping mixed waste in the old dump site in Tacloban City.
© GAIA/SHERMA BENOSA

CONCLUSIONS AND RECOMMENDATIONS

The findings presented in this report show how cities and municipalities around the Philippines are all struggling against a common enemy: plastic residuals. Despite firm efforts on the part of many local government authorities to institute Zero Waste programs, these materials remain huge obstacles to sound solid waste management.

With the projected increase in plastic production worldwide (including in the Philippines where plastic production facilities have been newly constructed⁶⁴) national government, as well as local government authorities need robust data and effective strategies to address the looming plastic pollution crisis.

While this report is focused on examples from the Philippines, the experiences related here are by no means unique. Cities all over Asia

and the developing world are faced with a similar problem of plastic residuals, most of which have been identified as branded plastic packaging from MNCs based in the global north. This points to the need for global plastic regulation to reduce and eventually eliminate the production of single use plastic products and packaging.

Plastic is not a litter problem, it is a pollution problem, and it starts as soon as the plastic is made. Faced with no choice but plastic packaging, people are forced to be complicit in the plastic pollution crisis. The huge amount of plastics in Philippine waste streams is a reflection of the reality that when buying necessities in the supermarket, or even in the wet market, single-use plastic is unavoidable for the consumer.

As the WABAs in this report show, plastic is a global problem with local repercussions, and it is the cities and municipalities, and people in these localities, who bear the brunt of the problem. But cities and municipalities can fight back and start confronting the plastic challenge by using WABAs as a tool.

The importance of WABAs

This report discusses the importance of waste assessments and brand audits for cities and municipalities to create sound strategies for sustainable waste management. However, careful planning and detailed data is needed in order to ensure this tool is maximized.

In the Philippines, national government acknowledges the importance of WACS by requiring the tool to be part of developing or updating a city or municipality's 10-Year SWM Plan. Thus, it is imperative for local governments to pursue strategies aimed at addressing problematic waste types or service gaps that lead to leakage. Examples of these strategies include:

- Decentralized waste collection to cover households outside of truck routes;
- Regulations on the use of plastic sando shopping bags, plastic labo bags, and other non-recyclable plastic;
- Expanding and strengthening infrastructure for organic waste;
- Strengthening channels with waste markets to maximize income gains for waste pickers.

As highlighted in the cases throughout the report, waste assessment results have helped cities enhance their waste management services, from drafting plastic waste reduction policies, designing MRF infrastructure to maximizing landfill capacities, to promoting community composting.

Below is a list of recommendations that detail how local government units and national government agencies (in the Philippines and beyond) can maximize and enhance waste assessments, and what plastic reduction policies, based on GAIA and MEF's initial findings, can be immediately put in place to address plastic pollution.

Manufacturing corporations, as primary purveyors of plastic waste, should also act in the interest of people and planet to help stem this crisis. This report provides recommendations that call on companies, particularly MNCs, to acknowledge their responsibility, to provide transparency, and to be part of the solution by drastically reducing plastic production.





Recommendations

1 WACS protocols should include disaggregated data on different types of plastic bags and packaging

Existing WACS protocols should be enhanced to include further detail on types of plastic residuals discarded in cities and municipalities. For example, in the Philippines, under the current protocols prescribed by the DENR, the different types of plastic waste and packaging are not disaggregated. Thus, there is no data on the volume or number of plastic *sando* shopping bags, plastic *labo* bags, sachets, and other plastic waste such as straws, etc. This data can be valuable in providing a baseline for monitoring plastic reduction policies by LGUs. National data on these plastic types can provide guidance on formulating policies for national regulations and bans.

In the Philippines, this data is especially valuable in view of the loophole in plastic bag regulations in certain cities (such as Quezon City), that regulate plastic *sando* shopping bags, but allows the use of plastic *labo* bags, causing a spike in the use of the latter which is equally problematic. Local and national

data on sachet packaging is also critical if no data from corporations on the amount they produce is forthcoming.

2 Local government units should include brand data in waste assessments

Data discussed in this report shows that branded residual plastic waste outnumber unbranded residual plastic waste. This data is consistent with previous brand audits in Freedom Island, Manila Bay⁶⁵, as well as brand audits conducted in 15 cities in India⁶⁶ and Bandung City in Indonesia, in 2018. Even with plastic bag regulations, local governments can only do so much in reducing plastic waste. Additional information in waste assessments, through brand audits, can provide evidence to hold companies accountable for the full life-cycle impacts of their products as well as their packaging. Cities and municipalities, and the national government, can later use brand audit data as reference for instituting policies for alternative delivery systems (such as dispensing stations deposit schemes), and “polluter pays” schemes, and extended producer responsibility (EPR) policies.

3 The Philippine government should institute a comprehensive national plastic bag ban that promotes reusable bags

Data from WABAs cited in this report, as well as waste assessments conducted in previous years by GAIA in partnership with other NGOs, shows that plastic *sando* shopping bags and plastic *labo* bags comprise at least a fourth of residual waste audited⁶⁷. Plastic bags have little to no economic value: they are not recovered by most municipal waste programs and there is very little capacity or incentive to collect them for recycling. Most plastic bags end up in landfills and illegal disposal sites, are burned openly or in cement kiln facilities around the country (creating toxic air emissions) or leak into the ocean.

However, a ban on plastic bags may lead to an increase in the use of other materials such as paper bags (fully recyclable but are also considered disposable), or plastic *labo* bags. It is imperative therefore, for the national government to enact a comprehensive national policy that aims to not only reduce the production and use of plastic bags, but also lays out a process for making sure that the policy is implemented successfully and sustainably.

GAIA strongly urges the national government to implement a national policy that will regulate the use of plastic bags for primary and secondary packaging. This national policy should contain provisions that:

1. Prohibit the free use and distribution of plastic bags in the entire country, including "oxo-degradable," "biodegradable," and "compostable" bags;
2. Implement a comprehensive process of consultation with stakeholders for a gradual phase-out of disposable bags, with the aim of allowing concerned industries and stakeholders to find viable reusable alternatives. Ideally, this process should be implemented not longer than a year, to prevent further pollution; and
3. Encourage the creation of alternative delivery systems and alternative and/or reusable packaging that will promote the development of local enterprises, and support or promote local and indigenous practices. The creation or revival of an alternative packaging industry may also be instrumental in absorbing possible job losses from banning plastic bags. (For example, in the experience of Bangladesh, banning plastic bags led to the



revival of the country's jute industry which languished after plastic bags were introduced in the country.)⁶⁸

4 Governments should regulate other single-use plastic products, and mandate companies to redesign products and packaging and put in place alternative delivery systems

Beyond plastic bags, governments must embark on a comprehensive plastic and single-use/throwaway packaging waste reduction program, covering:

1. Sachets,
2. Other kinds of food and consumer goods packaging (e.g. PET, polystyrene), and
3. Disposable cutlery and containers in food establishments.

All of these can be addressed by putting in place policies to mandate, and incentives to encourage, corporations and business establishments to redesign product packaging and/or their delivery systems.



Plastic packaging polluting Freedom island off Manila Bay
© GAIA/SHERMA BENOSA

The WABAs clearly identify sachets as a major cause of plastic pollution, comprising the biggest portion of residual waste. Regulating, and eventually eliminating the production of sachets will have the biggest impact in reducing the country's residual waste.

In the Philippines, data shows that plastic sachets constitute the biggest share of total plastic residuals. Other single use plastic items, aside from plastic shopping bags that need to be regulated include polystyrene, plastic *labo* bag, and plastic straws. There are many examples globally of existing policies which seek to reduce the production and use (as well as ban or regulate) sachets, other packaging and disposable dinnerware. Southeast Asia tourist destinations like Bali⁶⁹ in Indonesia and

Boracay⁷⁰ in the Philippines, for example, have extended plastic bag regulations to plastic straws and non-recyclable plasticware.

In Berkeley, a city in Northern California in the USA, a new ordinance called Disposable-Free Dining⁷¹ requires restaurants to use plates and silverware for dine-in customers.⁷² In addition, takeout containers should either be compostable or recyclable, while single-use straws and utensils will only be provided upon request. (In the Philippines, several cities have adopted disposable-free dining initiatives, requiring fast-food companies to serve food using silverware and reusable food containers.)⁷³

Another example is the European Union-wide ban on single-use plastic cotton buds, straws, plates, cutlery, beverage stirrers, balloon sticks, oxo-degradable plastics, and expanded polystyrene food containers and beverage cups. The ban includes provisions for extended producer responsibility schemes for manufacturers to pay for the costs of waste management and clean up⁷⁴.

1. Sachets

The environmental impact of sachets is considerable. Because of its small size and negligible weight, sachets are easily dispersed in the environment, clogging waterways and polluting coasts. The WABAs clearly identify sachets as a major cause of plastic pollution, comprising the biggest portion of residual waste. Regulating, and eventually eliminating the production of sachets will have the biggest impact in reducing the country's residual waste.

Policies to reduce and eliminate sachet production should therefore be a priority. However, these policies should go beyond replacing the plastic sachet material (for example with single-layer plastic; or with "oxo-biodegradable" or so-called "compostable" plastics, which have been shown by studies to be unsustainable). The aim of any policy regulating plastic sachets must be elimination, and redesign should be at the level of distribution. Innovations in the sale of small quantities of liquid and powder (e.g. sauces, shampoo, conditioner, powder detergent) products can be in the form of dispensers, where customers are expected to bring their own reusable containers. Zero Waste stores and plastic reduction campaigns such as the government's "Refill Revolution Reloaded"⁷⁵ which targets low-income households, are examples.

The elimination of sachets can be done in a phased manner, but with a deadline for both manufacturers, retailers and consumers. The government can mandate standard dispensing containers and protocols to ensure consumer safety and ease of replication of the system (much like water dispensing stations and their standard water containers, which is the same everywhere in the Philippines). Midway before the deadline, an environmental tax can be levied on the manufacturer, retailer and consumer when producing and buying products in sachets to quicken the adoption of new dispensing systems.

2. Other kinds of food and consumer goods packaging (e.g. PET, polystyrene)

Other kinds of plastic packaging also make up a considerable percentage of plastics discarded from households. Some of them are collected for recycling, such as PET bottles (used for soda, bottled water, jams, etc.); and high density polyethylene or HDPE (used for milk bottles, shampoo, detergent, etc.). Other kinds of packaging are harder to recycle or unrecyclable such as tetra-pack (used for juices, etc.); and polystyrene (used for yogurt, egg containers, etc.). However, whether recyclable or not, all these containers are single-use, and eventually need to be replaced with reusable alternatives.

Aside from standardized dispensing systems, innovations in the retail of both food and non-food products in disposable packaging can include deposit systems (for example, glass bottles which entail a deposit that can be claimed when the container is returned, similar to how soda was sold in until a few decades ago). Some recent innovations on dispensing systems and reusable packaging include Loop⁷⁶ which distributes consumer products such as shampoo and deodorant, in reusable containers.

3. Disposable cutlery and containers in food establishments

Disposable cutlery and containers (plastic-lined paper cups, plates, bowls, etc), are a few examples of problematic waste wherein food establishments pass on the responsibility for clean-up to municipal governments. Instead of spending for cleaning food containers, fastfood establishments, by using disposables, leave the



Several fastfood companies in the country already demonstrate that shifting to reusable dinnerware is possible and practical.

cleaning to local authorities.

Several fastfood companies in the country already demonstrate that shifting to reusable dinnerware is possible and practical. This shows that food establishments can be mandated to easily phase out single-use disposable products.

Take-away food can also be packed in reusable containers, and a deposit system can be instituted. Standardizing containers and protocols for these reusable containers can be mandated to create scale and encourage adoption of the system. One example is already being implemented in Switzerland where reusable lunch boxes are part of a deposit scheme⁷⁷.

As with the previous recommendations, this phase-out can be done in a phased manner, and incentives can be given to early adopters, while disincentives (penalties, etc) can be given to accelerate full implementation.



Single-use plastic packaging litter
(C) GAIA/SHERMA BENOSA

5 Government should mandate diaper companies to improve recovery options for, and present viable alternatives to, disposable diapers

Used diapers are a problematic waste stream that comprise a considerable portion of residual waste in the Philippines⁷⁸. With more than three million diapers estimated to be used daily in the country, putting up policies and systems to manage this waste effectively is another priority. In addition, the problem with disposable diapers is the same as the case of single-use plastics. Diapers are not completely biodegradable and cannot be composted. The absorbent gel (super absorbent polymer or SAP) found in almost all disposable diapers is made of plastic. Diapers are produced by the millions but there is no information on any manufacturer that takes responsibility for the management of the eventual waste. In the end, like other disposable plastics, the burden for managing used diapers is borne by the local government.

As a first step to deal with used diapers, the government should mandate diaper companies to collaborate in a massive awareness raising program on the impacts of the disposal of used diapers—both “improper” and “proper” disposal. For example, diaper packaging can come with a warning about the environmental impacts of the product, as well as proper disposal options for the waste. A comprehensive awareness program on diapers should include information on cost effective and practical alternatives (such as reusable diapers) that families can pursue.

Government should also establish standard waste management policies for diapers, and involve manufacturers in its implementation. One example is constructing collection points for all brands of used diapers which a manufacturer consortium can then manage.

Examples of innovations in alternatives to disposable diapers are pick up and cleaning services for reusable diapers, and establishing donation points in public hospitals for reusable diapers that can be used by other infants and toddlers. Government can also mandate chemical and other standards (for example, standards for compostability) for manufacturers to redesign diapers in the market, for example, to phase out certain chemical or non-biodegradable components in diapers.



Results of the WABAs allow GAIA to identify the sources of plastic pollution and call on them to assume responsibility for their products and dramatically reduce their production and use of single-use plastic.

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6 Waste incineration is an unsustainable practice that abets plastic pollution and must be stopped. In the Philippines, the government must retain and strengthen the ban against waste incineration.

Waste incineration is a dangerous exit strategy for residual plastics. Aside from being harmful to people's health, the environment, climate and local economies, waste incineration justifies the continued production of single-use plastics.

Aside from the inherent problems with incinerators (dioxins and other toxic emissions, particulate matter, and climate-causing greenhouse gases) the costs of incineration outweigh its perceived benefits. Data from the household audits show

that biodegradables and recyclables make up almost 80% of waste in the Philippines. Residuals, including special residuals, comprise around 21.71% of waste disposed. As shown in the case studies of Zero Waste Cities, the amount of residuals can be further lessened through plastic bag and single use plastic bans, as well as improved recovery of recyclables. The small amount of residual waste left shows that incinerators (which are meant to burn residuals) are highly inappropriate for the country.

As seen in the WABAs, waste volume in the Philippines is low, and waste composition is mostly organic. Waste generation in developing Asian countries is also much lower compared to that of developed countries. In Asia, waste generation is around 0.45 to 1.1 kg per capita per day. In developed countries which have traditionally relied on incineration, it is around 2.2 kg per day⁷⁹. Latest World Bank data puts Philippines waste generation at 0.39 kg per per capita per day⁸⁰. Data from this research shows that per capita waste generation in households in the Philippines is a mere 0.30 kg per day. The high portion of organic matter makes waste unfit to be burnt without preparation (which will cost additional resources); and the low portion of residual waste, as well as low energy content of the waste in general, makes burning waste an uneconomic proposition. Moreover, much of the waste can be managed without resorting to landfills and incineration, as prescribed in RA 9003.

Incineration also directly contradicts much-needed plastic waste reduction efforts that, as the previous recommendations show, would be more beneficial for the country to pursue. WABA results presented in this report show that residual waste is almost wholly comprised of problematic plastics. These non-recyclable plastic waste streams are better addressed via plastic reduction policies. Addressing the problem of waste effectively means "turning off the tap"—making sure that less and less volumes of waste are produced. Incineration, including WTE incineration, and its variations (gasification, pyrolysis, and plasma arc, etc) are waste burning methods that encourage the generation, and not the minimization, of waste. Further abetting waste generation, incinerators are feasible only when they are designed as large-scale centralized facilities. Because of this large-scale design, facility operators are dependent on large amounts of waste to be burnt to make the facility financially viable. This system locks cities and municipalities into 30-year contracts where they are obliged to generate and deliver large quantities of waste, or essentially be penalized.

The Philippine government must retain and strengthen the ban against waste incineration in the country and focus on waste reduction and diversion strategies. In upholding the ban, the DENR should refrain from including so-called “waste-to-energy” (WTE) incineration in the WTE guidelines currently being drafted, and together with other government agencies such as the Department of Energy and Department of Public Works and Highways, refrain from promoting waste incineration. Cities and municipalities should also focus on implementing RA 9003, and refrain from entertaining proposals for the construction of waste incinerators.

7 Corporations must be transparent about the plastic packaging they produce, assume accountability and liability for the packaging, and immediately stop producing throwaway plastic packaging through innovations in redesign and product delivery

Single-use plastics and other plastic packaging are among the most problematic kinds of waste. Even with a ban on plastic bags and packaging at the local or national levels, communities in the Philippines with Zero Waste ambitions are still left with an estimated 20% of residual waste, about half of which is branded, which they have no way of managing on their own.

Corporations produce and profit from these plastic materials, and therefore should be ultimately responsible and accountable for the negative impacts to human health and environment at any stage of its life cycle. Because specific plastics require specific waste management interventions, corporations need to disclose production, consumption and disposal data as well as the kinds of plastic materials they are using to be able to sufficiently and effectively address the plastic pollution problem.

Recent global developments indicate that big corporations recognize that plastic pollution is a global problem but prefer to keep the focus on improving recycling efforts instead of redesigning product, packaging and delivery system. However, their solution seems to focus more on improving recycling efforts instead of redesigning product, packaging and delivery systems. Single-use

plastics must be eliminated and replaced with new systems of delivery such as container-return systems⁸¹, refill stations, and other innovations that fall within a sustainable circular economy framework where materials are safely brought back into the production cycle as raw material, are durable, reusable, do not contain toxic additives, and do not result in pollution.

As part of the Break Free From Plastic movement, GAIA is calling on companies to:

1. Commit to a plastic footprint reduction policy to dramatically reduce single-use plastic production and usage—with a publicly available action plan and timeline that shows measurable, independently audited results by 2020. They must demonstrate clear accountability by transparently reporting on their plastic footprint—the plastics they use, as well as reduction, reuse, recycling and disposal rates of their own products around the world;
2. Re-envision a delivery system that dis-incentivises single-use, throwaway packaging; prioritizing significant investments in reusables and refill systems;
3. Redesign their products to end the use of microplastics, including microbeads, and other sources of microplastics and microfibres;
4. Collaborate with retailers, government and NGOs to create scalable solutions to plastic pollution—including support for ambitious legislation that rewards plastics reduction and penalizes plastics overuse.
5. Reject false and unproven solutions including waste incineration and thermal waste-to-energy technologies, chemical recycling, plastic-roads or construction materials using residual plastics and other back-end replacements which are not durable, multi-use, further recyclable and non-toxic. In the absence of strong upstream commitments and measures to reduce and eliminate problematic plastics, such approaches perpetuate business as usual, and allow companies to produce and use more of the plastic materials and products that have brought us to this crisis in the first place.
6. Avoid regrettable replacements, such as bioplastics and apply the precautionary principle—banning hazardous chemicals, prohibiting and preventing toxic recycling, and avoiding the switch to alternative single-use products and materials.

ANNEX

Zero Waste Cities Project

Zero Waste, in essence, is a cost-efficient approach to resource management. It replaces the “take-make-waste” economic model, in which waste infrastructure is designed as large-scale, expensive and centralized facilities that are heavily dependent on large quantities of waste for disposal. Zero Waste, on the other hand, facilitates a more sustainable cycle of production and consumption, emphasizing collective responsibility and waste prevention.

Over a year ago, GAIA—in collaboration with the other Break Free From Plastic movement members and generous support from the Plastic Solutions Fund—launched the Zero Waste Cities to promote and propagate Zero Waste models in Southeast Asia. Working initially with 16 cities, GAIA and nine other organizations have committed to help local governments implement Zero Waste systems. The concept of ‘Zero Waste Cities’ is not a new: more than 400 cities and municipalities in the European Union have pledged to transition or work towards Zero Waste in partnership with Zero Waste Europe which has produced a Zero Waste Cities Masterplan for decision makers, city planners and project implementers. Across the United States, cities such as Boston, Berkeley, San Francisco, San Diego, and New York have implemented Zero Waste strategies focusing on curbside collection, plastic use regulation and mandatory composting. The Philippines, likewise, has institutionally embraced Zero Waste, through Presidential Proclamation No. 760, declaring January as

“Zero Waste Month.”

In Southeast Asia, Zero Waste Cities partners have conducted waste assessments that not only provided crucial data for their respective waste management plans, but also enabled Break Free From Plastic—a 1,500-strong movement campaigning against plastic pollution—to engage companies that produce single-use plastic. Now on its third year, the Zero Waste Cities project has expanded to 25 cities and opened more opportunities to amplify Zero Waste solutions across the region.

Cities and municipalities that are part of the Zero Waste Cities project are: Bandung, Denpasar, Cimahi, Soreang, Surabaya, and Medan in Indonesia; Mumbai, Chennai, Pune, and Trivandrum in India; mainland Penang, and Penang Island in Malaysia; San Fernando-Pampanga, Malabon, Navotas, Tacloban, Quezon City, Batangas City, Dumaguete City, Siquijor, Nueva Vizcaya Province, Marikina, General Mariano Alvarez, Tagaytay City, Mendez, Indang, Trece Martires City, Tanza, and Naic in the Philippines; and Cat Ba, Ha Long, and Hoi An in Vietnam.

The following GAIA members are collaborators on this project: Citizen consumer and civic Action Group (CAG), Hasiru Dala, Stree Mukti Sanghatana (SMS), and Thanal in India; Balifokus, Diet Kantong Plastik, Ecoton (Ecological Observation and Wetlands Conservation), Yayasan Pusat Pendidikan Lingkungan Hidup Bali (PPLH Bali), Yayasan Pengembangan Biosains dan Bioteknologi (YPBB), and Wahana Lingkungan Hidup Indonesia (Wahli) in Indonesia; Consumers Association of Penang (CAP) in Malaysia; and EcoWaste Coalition, Healthcare

Waste and brand audit data sheets

WABA DATA -WASTE AUDIT

	Quezon City	Malabon/ Navotas	Batangas/ San Fernando	Tacloban	Solano	Bayombong / Bambang	Bagabag/ Santa Fe	Villaverde/ Ambaguio
Waste Generation								
Per Capita/Day	0.33	0.36	0.26	0.30	0.43	0.48	0.26	0.30
Recycling Potential								
Sale of recyclable/HH/wk	11.69	13.54	11.20	8.22	7.00	6.00	5.50	5.35
Waste Profile Summary								
Compostables	58.86%	53.24%	56.46%	44.60%	70.77%	64.59%	67.64%	73%
Recyclables	16.50%	16.68%	15.00%	23.87%	11.90%	13.58%	13.53%	11%
Residuals	11.51%	16.03%	10.54%	17.63%	16.83%	14.86%	12.35%	10%
Special Residuals	11.29%	12.89%	17.04%	10.65%	0.37%	7.02%	5.15%	4%
Hazardous	1.85%	1.17%	0.91%	3.60%	0.13%	0.04%	1.37%	2%
Total	100%	100%	100%	100%	100%	100%	100%	100%
Organics								
Garden Waste	19.21%	9.82%	18.44%	30.30%	43.43%	25.16%	37.84%	42%
Kitchen Waste	39.65%	43.43%	38.03%	14.30%	27.34%	39.43%	29.81%	31%
Total	58.86%	53.24%	56.46%	44.60%	70.77%	64.59%	67.64%	72.98%
Recyclables								
Tin Can	1.37%	1.29%	1.39%	1.71%	1.60%	0.67%	0.66%	1%
Aluminum Can	0.06%	0.13%	0.18%	0.65%	0.02%	0.12%	0.21%	0%
Other Metals	0.54%	0.23%	0.61%	0.28%	0.07%	0.09%	0.23%	0%
Glass Bottles	3.23%	3.86%	3.27%	4.22%	4.31%	5.19%	1.77%	3%
Broken Glass	0.39%	0.31%	0.78%	1.71%	0.21%	0.02%	0.78%	0%
Garapa	0.41%	0.12%	0.08%	0.31%	0.26%	0.08%	0.33%	1%
PET Bottles	1.25%	1.15%	1.13%	2.64%	0.34%	0.44%	1.03%	1%
Hard Plastic	1.78%	1.75%	1.42%	2.24%	1.73%	2.00%	1.20%	1%
Plastic Cup	0.43%	0.47%	0.39%	1.09%	0.29%	0.08%	0.81%	0%
White Paper	0.65%	1.11%	0.79%	1.35%	0.79%	0.59%	0.55%	1%
Glossy Paper	0.20%	0.22%	0.33%	0.37%	0.21%	0.56%	0.34%	0%
Assorted/Colored Paper	1.48%	1.42%	1.07%	0.97%	0.88%	1.47%	1.69%	1%
Newspaper	0.37%	0.18%	0.28%	0.82%	0.17%	0.18%	0.19%	0%
Corrugated Box	2.88%	2.25%	2.19%	2.37%	0.05%	1.31%	2.48%	2%
Glazed Carton	1.15%	0.85%	0.74%	1.29%	0.19%	0.16%	0.83%	0%
Others	0.35%	1.34%	0.37%	1.86%	0.78%	0.62%	0.46%	0%
Total	17%	17%	15%	24%	12%	14%	14%	11%
Residuals								
Textile, trimmings, etc	2.83%	2.62%	1.61%	1.49%	3.31%	0.68%	0.72%	0%
Rubber	0.53%	0.07%	0.13%	0.36%	0.02%	0.00%	0.00%	0%
Thin film plastics	0.00%	0.05%	0.01%	0.54%	0.01%	0.08%	0.02%	0%
Worn out shoes & slippers	0.47%	0.74%	0.97%	0.97%	1.67%	0.32%	0.30%	0%
Worn out bags	0.14%	0.66%	0.37%	0.28%	2.13%	0.24%	0.50%	1%
Leather Trimmings	0.21%	0.17%	0.28%	0.39%	1.23%	0.08%	0.11%	0%
Styrofoam	0.37%	0.28%	0.09%	0.53%	0.10%	0.24%	0.29%	0%
Laminates, composites,tetra packs	0.48%	0.89%	1.02%	1.19%	0.22%	2.50%	1.83%	2%
Other Plastic Packaging	1.17%	1.37%	0.60%	1.09%	1.37%	1.99%	1.40%	1%
Plastic/Sando Bag	1.23%	1.71%	0.12%	2.43%	0.88%	4.27%	1.96%	2%
Straw (Drinks)	0.04%	0.12%	0.09%	0.54%	0.02%	0.24%	0.49%	0%
Straw (Plastic twine)	0.03%	0.10%	0.09%	0.55%	0.03%	0.08%	0.59%	0%
plastic labo and the likes	1.63%	1.61%	0.94%	1.66%	2.45%	0.83%	1.70%	1%
Candy & biscuit wrappers,etc	0.71%	1.35%	1.62%	1.42%	0.19%	2.00%	1.33%	1%
Shampoo & laundry sachet	0.17%	1.73%	0.49%	1.10%	0.10%	0.56%	0.36%	0%
Shampoo sachet with foil	0.21%	1.27%	0.55%	1.55%	1.20%	0.24%	0.12%	0%
Cigarette butts	0.02%	0.06%	0.06%	0.40%	0.88%	0.16%	0.16%	0%
Inerts	1.25%	0.82%	0.80%	0.66%	0.68%	0.04%	0.31%	0%
Broken ceramics	0.02%	0.31%	0.67%	0.35%	0.26%	0.19%	0.11%	0%
Metallic Foils	0.03%	0.07%	0.06%	0.15%	0.02%	0.12%	0.08%	0%
Foam	0.01%	0.02%	0.00%	0.00%	0.06%	0.00%	0.00%	0%
Total	12%	16%	11%	18%	17%	15%	12%	10%
Special Residuals								
Diapers	9.88%	12.33%	16.47%	9.86%	0.30%	7.02%	3.71%	3%
Sanitary Pad	1.03%	0.40%	0.54%	0.49%	0.03%	0.00%	0.89%	1%
Used tissue	0.38%	0.17%	0.03%	0.31%	0.04%	0.00%	0.56%	0%
Total	11%	13%	17%	11%	0%	7%	5%	4%
Special /Bulky/ Hazardous								
Busted bulbs, tubes & Lamps	0.08%	0.04%	0.05%	0.45%	0.00%	0.01%	0.07%	0%
Containers of paints & thinners & c	0.57%	0.06%	0.10%	0.44%	0.00%	0.01%	0.11%	0%
Grease and oil	0.02%	0.06%	0.03%	0.04%	0.00%	0.00%	0.09%	0%
Containers of disinfectants, sanitiz	0.18%	0.09%	0.13%	0.57%	0.00%	0.00%	0.16%	1%
Cosmetic waste	0.09%	0.21%	0.13%	0.54%	0.00%	0.00%	0.13%	0%
Batteries	0.02%	0.05%	0.06%	0.12%	0.02%	0.00%	0.32%	1%
Medical Waste	0.22%	0.39%	0.16%	0.99%	0.03%	0.01%	0.19%	0%
Worn out appliances	0.00%	0.07%	0.05%	0.12%	0.00%	0.00%	0.00%	0%
Other E Wastes	0.77%	0.26%	0.23%	0.44%	0.00%	0.00%	0.23%	0%
Others	0.00%	0.05%	0.05%	0.35%	0.08%	0.01%	0.05%	0%
Total	2%	1%	1%	4%	0%	0%	1%	2%

WABA DATA -BRAND AUDIT

	QC		Malabon		Navotas		Batangas	
	Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage
Summary - Formula	Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage
Branded	3,473	33.51%	4,615	77.62%	5,439	51.59%	3,543	67.27%
Unbranded	6,725	64.89%	1,331	22.38%	5,090	48.28%	1,710	32.47%
Unidentified	165	1.59%	0	0.00%	14	0.13%	14	0.27%
Total	10,363	100.00%	5,946	100.00%	10,543	100.00%	5,267	100.00%
Overall	Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage
Nestle	372	3.59%	1,010	16.99%	596	5.65%	757	14.37%
Unilever	371	3.58%	577	9.70%	351	3.33%	410	7.78%
Procter and Gamble	312	3.01%	171	2.88%	319	3.03%	305	5.79%
Universal Robina	265	2.56%	135	2.27%	214	2.03%	145	2.75%
PT Mayora/Torabika	117	1.13%	274	4.61%	154	1.46%	128	2.43%
Rebisco Republic Biscuit Corp.	75	0.72%	42	0.71%	778	7.38%	239	4.54%
Mayorga, WL Foods	59	0.57%	19	0.32%	604	5.73%	356	6.76%
Liwayway	51	0.49%	14	0.24%	412	3.91%	169	3.21%
Coca Cola	166	1.60%	81	1.36%	226	2.14%	126	2.39%
JBC Food Corporation	55	0.53%	100	1.68%	84	0.80%	48	0.91%
Monde Nissin	169	1.63%	73	1.23%	153	1.45%	58	1.10%
Colgate Palmolive	89	0.86%	196	3.30%	75	0.71%	57	1.08%
Green Cross	50	0.48%	109	1.83%	64	0.61%	48	0.91%
Peerless Products	41	0.40%	95	1.60%	98	0.93%	42	0.80%
Zest-O Corp	0	0.00%	35	0.59%	203	1.93%	43	0.82%
Columbia	51	0.49%	0	0.00%	131	1.24%	57	1.08%
RC Cola	0	0.00%	0	0.00%	207	1.96%	0	0.00%
San Miguel Brewery	91	0.88%	0	0.00%	12	0.11%	8	0.15%
Nutri Asia	47	0.45%	38	0.64%	42	0.40%	39	0.74%
Bayer Thai Co.	8	0.08%	90	1.51%	0	0.00%	1	0.02%
SC Johnson	0	0.00%	44	0.74%	73	0.69%	46	0.87%
Del Monte	49	0.47%	56	0.94%	0	0.00%	21	0.40%
Suncrest	70	0.68%	0	0.00%	0	0.00%	4	0.08%
Century Pacific Foods	53	0.51%	0	0.00%	0	0.00%	3	0.06%
Croley Foods	0	0.00%	0	0.00%	88	0.83%	46	0.87%
Mighty Clean Corp.	0	0.00%	45	0.76%	56	0.53%	38	0.72%
Unitrade Merchandize	70	0.68%	69	1.16%	0	0.00%	0	0.00%
Lamoiyan	4	0.04%	47	0.79%	0	0.00%	3	0.06%
Puresnacks	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Pepsi	0	0.00%	67	1.13%	33	0.31%	7	0.13%
Ricoa	70	0.68%	0	0.00%	0	0.00%	0	0.00%
Yakult	81	0.78%	0	0.00%	0	0.00%	0	0.00%
New Foods	0	0.00%	0	0.00%	54	0.51%	21	0.40%
Purefoods	59	0.57%	0	0.00%	0	0.00%	3	0.06%
Mcdo	71	0.69%	0	0.00%	0	0.00%	2	0.04%
Joker's Food Industry	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Johnson & Johnson	18	0.17%	12	0.20%	0	0.00%	12	0.23%
Big E Corporation	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Jack N' Jill	0	0.00%	44	0.74%	0	0.00%	6	0.11%
Leslie's Corp	47	0.45%	0	0.00%	0	0.00%	4	0.08%
Cobra	0	0.00%	0	0.00%	51	0.48%	0	0.00%
Fiberland Industries	39	0.38%	14	0.24%	0	0.00%	0	0.00%
Unilab	23	0.22%	14	0.24%	0	0.00%	16	0.30%
Simple	0	0.00%	0	0.00%	39	0.37%	0	0.00%
Pfizer	11	0.11%	28	0.47%	0	0.00%	5	0.09%
Frabelle	41	0.40%	0	0.00%	0	0.00%	2	0.04%
ACS	4	0.04%	18	0.30%	0	0.00%	9	0.17%
Ritemed	11	0.11%	4	0.07%	0	0.00%	4	0.08%
Sando bag (various brands)	71	0.69%	27	0.45%	0	0.00%	6	0.11%
Other Brands	1,075	10.37%	1,067	17.94%	678	6.43%	249	4.73%
UNBRANDED/UNIDENTIFIED								
Styrofoam	138	1.33%	45	0.76%	83	0.79%	52	0.99%
Drinking Straw	258	2.49%	163	2.74%	207	1.96%	169	3.21%
Foil	41	0.40%	0	0.00%	0	0.00%	4	0.08%
Ice Bag	32	0.31%	140	2.35%	254	2.41%	136	2.58%
Icecandy Bag	1,500	14.47%	160	2.69%	109	1.03%	128	2.43%
Plastic Labo	2,388	23.04%	620	10.43%	1,463	13.88%	453	8.60%
Sandobag	1,308	12.62%	88	1.48%	2,369	22.47%	768	14.58%
Cigarette butts	277	2.67%	115	1.93%	249	2.36%	0	0.00%
Unidentified	165	1.59%	0	0.00%	14	0.13%	14	0.27%
Total	10,363	100.00%	5,946	100.00%	10,543	100.00%	5,267	100.00%

CSFP			Tacloban		NV 1		NV 2		TOTAL	
Actual	Percentage		Actual	Percentage	Actual	Percentage	Actual	Percentage		
Actual	Percentage		Actual	Percentage	Actual	Percentage	Actual	Percentage		
2,154	67.17%		3,583	47.06%	1,770	67.48%	1,714	67.85%	26,291	54.67%
1,053	32.83%		4,030	52.94%	853	32.52%	812	32.15%	21,604	44.93%
0	0.00%		0	0.00%	0	0.00%	0	0.00%	193	0.40%
3,207	100.00%		7,613	100.00%	2,623	100.00%	2,526	100.00%	48,088	100.00%
Actual	Percentage		Actual	Percentage	Actual	Percentage	Actual	Percentage		
62	1.93%		531	6.97%	287	10.94%	291	11.52%	3,906	8.12%
68	2.12%		280	3.68%	340	12.96%	332	13.14%	2,729	5.68%
63	1.96%		351	4.61%	286	10.90%	285	11.28%	2,092	4.35%
151	4.71%		397	5.21%	158	6.02%	151	5.98%	1,616	3.36%
0	0.00%		480	6.31%	129	4.92%	123	4.87%	1,405	2.92%
51	1.59%		149	1.96%	14	0.53%	17	0.67%	1,365	2.84%
12	0.37%		0	0.00%	16	0.61%	19	0.75%	1,085	2.26%
65	2.03%		227	2.98%	33	1.26%	26	1.03%	997	2.07%
59	1.84%		26	0.34%	49	1.87%	48	1.90%	781	1.62%
117	3.65%		236	3.10%	24	0.91%	25	0.99%	689	1.43%
9	0.28%		108	1.42%	37	1.41%	25	0.99%	632	1.31%
20	0.62%		30	0.39%	53	2.02%	51	2.02%	571	1.19%
109	3.40%		0	0.00%	46	1.75%	47	1.86%	473	0.98%
5	0.16%		17	0.22%	19	0.72%	17	0.67%	334	0.69%
4	0.12%		24	0.32%	6	0.23%	5	0.20%	320	0.67%
0	0.00%		0	0.00%	4	0.15%	1	0.04%	244	0.51%
4	0.12%		0	0.00%	0	0.00%	0	0.00%	211	0.44%
90	2.81%		0	0.00%	0	0.00%	0	0.00%	201	0.42%
4	0.12%		10	0.13%	9	0.34%	8	0.32%	197	0.41%
90	2.81%		0	0.00%	0	0.00%	0	0.00%	189	0.39%
7	0.22%		0	0.00%	6	0.23%	5	0.20%	181	0.38%
0	0.00%		23	0.30%	14	0.53%	12	0.48%	175	0.36%
0	0.00%		76	1.00%	2	0.08%	0	0.00%	152	0.32%
0	0.00%		77	1.01%	8	0.30%	9	0.36%	150	0.31%
0	0.00%		0	0.00%	1	0.04%	1	0.04%	136	0.28%
4	0.12%		0	0.00%	0	0.00%	0	0.00%	143	0.30%
0	0.00%		0	0.00%	0	0.00%	0	0.00%	139	0.29%
4	0.12%		59	0.77%	6	0.23%	4	0.16%	127	0.26%
0	0.00%		111	1.46%	0	0.00%	0	0.00%	111	0.23%
2	0.06%		0	0.00%	0	0.00%	0	0.00%	109	0.23%
0	0.00%		17	0.22%	0	0.00%	0	0.00%	87	0.18%
2	0.06%		0	0.00%	0	0.00%	0	0.00%	83	0.17%
0	0.00%		0	0.00%	2	0.08%	1	0.04%	78	0.16%
0	0.00%		0	0.00%	6	0.23%	5	0.20%	73	0.15%
0	0.00%		0	0.00%	0	0.00%	0	0.00%	73	0.15%
0	0.00%		67	0.88%	0	0.00%	0	0.00%	67	0.14%
1	0.03%		0	0.00%	9	0.34%	9	0.36%	61	0.13%
0	0.00%		60	0.79%	0	0.00%	0	0.00%	60	0.12%
0	0.00%		0	0.00%	3	0.11%	5	0.20%	58	0.12%
0	0.00%		0	0.00%	3	0.11%	4	0.16%	58	0.12%
4	0.12%		0	0.00%	0	0.00%	0	0.00%	55	0.11%
0	0.00%		0	0.00%	0	0.00%	0	0.00%	53	0.11%
0	0.00%		0	0.00%	0	0.00%	0	0.00%	53	0.11%
3	0.09%		0	0.00%	3	0.11%	2	0.08%	47	0.10%
3	0.09%		0	0.00%	0	0.00%	0	0.00%	47	0.10%
0	0.00%		0	0.00%	1	0.04%	0	0.00%	44	0.09%
2	0.06%		11	0.14%	0	0.00%	0	0.00%	44	0.09%
0	0.00%		0	0.00%	0	0.00%	0	0.00%	19	0.04%
0	0.00%		187	2.46%	34	1.30%	12	0.48%	337	0.70%
1,139	35.52%		29	0.38%	162	6.18%	174	6.89%	4,573	9.51%
23	0.72%		0	0.00%	12	0.46%	10	0.40%	363	0.75%
0	0.00%		0	0.00%	95	3.62%	89	3.52%	981	2.04%
0	0.00%		0	0.00%	0	0.00%	0	0.00%	45	0.09%
115	3.59%		0	0.00%	85	3.24%	86	3.40%	848	1.76%
62	1.93%		0	0.00%	34	1.30%	33	1.31%	2,026	4.21%
743	23.17%		2,320	30.47%	340	12.96%	325	12.87%	8,652	17.99%
110	3.43%		1,710	22.46%	287	10.94%	269	10.65%	6,909	14.37%
0	0.00%		0	0.00%	0	0.00%	0	0.00%	641	1.33%
0	0.00%		0	0.00%	0	0.00%	0	0.00%	193	0.40%
3,207	100.00%		7,613	100.00%	2,623	100.00%	2,526	100.00%	48,088	100.00%

	QC		Malabon		Navotas		Batangas	
	Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage
Per Category	Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage
Food (Non Liquid)								
Nestle	199	48.77%	554	110.58%	512	107.11%	625	202.27%
Rebisco Republic Biscuit Corp.	75	18.38%	42	8.38%	778	162.76%	239	77.35%
Universal Robina	178	43.63%	79	15.77%	169	35.36%	96	31.07%
WL Foods	59	14.46%	19	3.79%	604	126.36%	356	115.21%
Liwayway	51	12.50%	14	2.79%	412	86.19%	165	53.40%
PT Mayora	0	0.00%	76	15.17%	111	23.22%	86	27.83%
Monde Nissin	169	41.42%	73	14.57%	153	32.01%	54	17.48%
JBC Food Corporation	55	13.48%	100	19.96%	84	17.57%	44	14.24%
Unilever	17	4.17%	45	8.98%	113	23.64%	98	31.72%
Columbia	51	12.50%	0	0.00%	131	27.41%	57	18.45%
Century Pacific Foods	53	12.99%	0	0.00%	0	0.00%	3	0.97%
Croley Foods	0	0.00%	0	0.00%	88	18.41%	46	14.89%
Suncrest	70	17.16%	0	0.00%	0	0.00%	4	1.29%
Puresnacks	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Ricoa	70	17.16%	0	0.00%	0	0.00%	0	0.00%
New Foods	0	0.00%	0	0.00%	54	11.30%	21	6.80%
Purefoods	59	14.46%	0	0.00%	0	0.00%	3	0.97%
Joker's Food Industry	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Big E Corporation	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Colgate Palmolive	0	0.00%	0	0.00%	0	0.00%	4	1.29%
Coca Cola	0	0.00%	0	0.00%	0	0.00%	4	1.29%
Leslie's Corp	47	11.52%	0	0.00%	0	0.00%	4	1.29%
Jack N' Jill	0	0.00%	44	8.78%	0	0.00%	6	1.94%
Frabelle	41	10.05%	0	0.00%	0	0.00%	2	0.65%
Others	0	0.00%	412	82.24%	92	19.25%	57	18.45%
Total	408	100.00%	501	100.00%	478	100.00%	309	100.00%
Per Category	Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage
Food (Liquid) and Drinks								
Unilever	62	6.57%	114	8.80%	4	0.38%	46	7.69%
Nestle	173	18.33%	456	35.21%	84	8.08%	132	22.07%
Coca Cola	166	17.58%	81	6.25%	226	21.75%	118	19.73%
PT Mayora	117	12.39%	198	15.29%	43	4.14%	38	6.35%
Universal Robina	87	9.22%	56	4.32%	45	4.33%	49	8.19%
Zest-O Corp	0	0.00%	35	2.70%	203	19.54%	43	7.19%
RC Cola	0	0.00%	0	0.00%	207	19.92%	0	0.00%
San Miguel Brewery	91	9.64%	0	0.00%	12	1.15%	8	1.34%
Nutri Asia	47	4.98%	38	2.93%	42	4.04%	39	6.52%
Del Monte	49	5.19%	56	4.32%	0	0.00%	21	3.51%
JBC Food Corporation	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Pepsi	0	0.00%	67	5.17%	33	3.18%	7	1.17%
Yakult	81	8.58%	0	0.00%	0	0.00%	0	0.00%
McDo	71	7.52%	0	0.00%	0	0.00%	2	0.33%
Cobra	0	0.00%	0	0.00%	51	4.91%	0	0.00%
Others	0	0.00%	194	14.98%	89	8.57%	95	15.89%
Total	944	100.00%	1,295	100.00%	1,039	100.00%	598	100.00%
Per Category	Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage
Household								
Procter and Gamble	215	48.31%	118	8.89%	194	28.53%	216	37.89%
Unilever	123	27.64%	266	20.03%	137	20.15%	118	20.70%
Green Cross	50	11.24%	109	8.21%	64	9.41%	48	8.42%
Peerless Product	41	9.21%	78	5.87%	70	10.29%	36	6.32%
Colgate Palmolive	0	0.00%	134	10.09%	49	7.21%	0	0.00%
Bayer Thai Co.	8	1.80%	90	6.78%	0	0.00%	1	0.18%
SC Johnson	0	0.00%	44	3.31%	47	6.91%	41	7.19%
Mighty Clean Corp	0	0.00%	45	3.39%	56	8.24%	38	6.67%
Lamoiyan	4	0.90%	47	3.54%	0	0.00%	3	0.53%
ACS	4	0.90%	18	1.36%	0	0.00%	9	1.58%
Others	0	0.00%	379	28.54%	63	9.26%	52	9.12%
Total	445	100.00%	1,328	100.00%	680	100.00%	570	100.00%

CSFP		Tacloban		NV 1		NV 2		TOTAL	
Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage		
Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage		
62	17.32%	522	126.70%	142	119.33%	159	130.33%	2,775	22.69%
51	14.25%	149	36.17%	14	11.76%	17	13.93%	1,365	11.16%
151	42.18%	397	96.36%	96	80.67%	93	76.23%	1,259	10.29%
12	3.35%	0	0.00%	16	13.45%	19	15.57%	1,085	8.87%
65	18.16%	227	55.10%	26	21.85%	19	15.57%	979	8.00%
0	0.00%	480	116.50%	67	56.30%	65	53.28%	885	7.24%
9	2.51%	108	26.21%	30	25.21%	18	14.75%	614	5.02%
8	2.23%	236	57.28%	17	14.29%	18	14.75%	562	4.59%
12	3.35%	4	0.97%	36	30.25%	35	28.69%	360	2.94%
0	0.00%	0	0.00%	4	3.36%	1	0.82%	244	1.99%
0	0.00%	77	18.69%	8	6.72%	9	7.38%	150	1.23%
0	0.00%	0	0.00%	1	0.84%	1	0.82%	136	1.11%
0	0.00%	76	18.45%	2	1.68%	0	0.00%	152	1.24%
0	0.00%	111	26.94%	0	0.00%	0	0.00%	111	0.91%
0	0.00%	17	4.13%	0	0.00%	0	0.00%	87	0.71%
0	0.00%	0	0.00%	2	1.68%	1	0.82%	78	0.64%
0	0.00%	0	0.00%	6	5.04%	5	4.10%	73	0.60%
0	0.00%	67	16.26%	0	0.00%	0	0.00%	67	0.55%
0	0.00%	60	14.56%	0	0.00%	0	0.00%	60	0.49%
0	0.00%	0	0.00%	7	5.88%	7	5.74%	18	0.15%
0	0.00%	0	0.00%	7	5.88%	7	5.74%	18	0.15%
0	0.00%	0	0.00%	3	2.52%	4	3.28%	58	0.47%
0	0.00%	0	0.00%	3	2.52%	5	4.10%	58	0.47%
0	0.00%	0	0.00%	1	0.84%	0	0.00%	44	0.36%
346	96.65%	0	0.00%	39	32.77%	47	38.52%	993	8.12%
358	100.00%	412	100.00%	119	100.00%	122	100.00%	12,231	100.00%

Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage		
12	1.98%	0	0.00%	43	10.64%	41	10.85%	322	5.99%
0	0.00%	9	8.33%	145	35.89%	132	34.92%	1,131	21.05%
59	9.72%	26	24.07%	35	8.66%	34	8.99%	745	13.87%
0	0.00%	0	0.00%	55	13.61%	51	13.49%	502	9.34%
0	0.00%	0	0.00%	62	15.35%	58	15.34%	357	6.64%
4	0.66%	24	22.22%	6	1.49%	5	1.32%	320	5.96%
4	0.66%	0	0.00%	0	0.00%	0	0.00%	211	3.93%
90	14.83%	0	0.00%	0	0.00%	0	0.00%	201	3.74%
4	0.66%	10	9.26%	9	2.23%	8	2.12%	197	3.67%
0	0.00%	23	21.30%	14	3.47%	12	3.17%	175	3.26%
109	17.96%	0	0.00%	0	0.00%	0	0.00%	109	2.03%
2	0.33%	0	0.00%	0	0.00%	0	0.00%	109	2.03%
2	0.33%	0	0.00%	0	0.00%	0	0.00%	83	1.54%
0	0.00%	0	0.00%	0	0.00%	0	0.00%	73	1.36%
4	0.66%	0	0.00%	0	0.00%	0	0.00%	55	1.02%
317	52.22%	16	14.81%	35	8.66%	37	9.79%	783	14.57%
607	100.00%	108	100.00%	404	100.00%	378	100.00%	5,373	100.00%

Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage		
48	8.78%	258	70.49%	189	42.76%	186	42.86%	1,424	29.59%
12	2.19%	91	24.86%	123	27.83%	119	27.42%	989	20.55%
109	19.93%	0	0.00%	46	10.41%	47	10.83%	473	9.83%
4	0.73%	17	4.64%	16	3.62%	15	3.46%	277	5.76%
11	2.01%	0	0.00%	0	0.00%	0	0.00%	194	4.03%
90	16.45%	0	0.00%	0	0.00%	0	0.00%	189	3.93%
4	0.73%	0	0.00%	5	1.13%	4	0.92%	145	3.01%
4	0.73%	0	0.00%	0	0.00%	0	0.00%	143	2.97%
4	0.73%	0	0.00%	6	1.36%	4	0.92%	68	1.41%
2	0.37%	0	0.00%	0	0.00%	0	0.00%	33	0.69%
259	47.35%	0	0.00%	43	9.73%	45	10.37%	841	17.48%
547	100.00%	366	100.00%	442	100.00%	434	100.00%	4,812	100.00%

	QC		Malabon		Navotas		Batangas	
	Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage
Per Category	Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage
Personal Care								
Unilever	169	20.63%	152	29.98%	97	23.15%	148	38.64%
Procter and Gamble	97	11.84%	53	10.45%	125	29.83%	89	23.24%
Colgate Palmolive	89	10.87%	62	12.23%	26	6.21%	53	13.84%
Unitrade Merchandize	70	8.55%	69	13.61%	0	0.00%	0	0.00%
Lamoiyan	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Simple	0	0.00%	0	0.00%	39	9.31%	0	0.00%
Johnson & Johnson	18	2.20%	12	2.37%	0	0.00%	12	3.13%
Peerless Manufacturin Corp.	0	0.00%	17	3.35%	28	6.68%	6	1.57%
Fiberland Industries	39	4.76%	14	2.76%	0	0.00%	0	0.00%
Unilab	23	2.81%	14	2.76%	0	0.00%	16	4.18%
Pfizer	11	1.34%	28	5.52%	0	0.00%	5	1.31%
SC Johnson	0	0.00%	0	0.00%	26	6.21%	5	1.31%
Ritemed	11	1.34%	4	0.79%	0	0.00%	4	1.04%
ACS	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Others	292	35.65%	82	16.17%	78	18.62%	45	11.75%
Total	819	100.00%	507	100.00%	419	100.00%	383	100.00%
Per Category	Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage
Others + Unbranded								
Plastic Labo	2,388	35.14%	620	45.66%	1,463	28.74%	453	26.40%
Sandobag	1,308	19.25%	88	6.48%	2,369	46.54%	768	44.76%
Icecandy Bag	1,500	22.07%	160	11.78%	109	2.14%	128	7.46%
Drinking Straw	258	3.80%	163	12.00%	207	4.07%	169	9.85%
Ice Bag	32	0.47%	140	10.31%	254	4.99%	136	7.93%
Cigarette Butts	277	4.08%	115	8.47%	249	4.89%	0	0.00%
Styrofoam	138	2.03%	45	3.31%	83	1.63%	52	3.03%
sando bag (branded)	71	1.04%	27	1.99%	0	0.00%	6	0.35%
Foil	41	0.60%	0	0.00%	0	0.00%	4	0.23%
Others	783	11.52%	0	0.00%	356	6.99%	0	0.00%
Total	6,796	100.00%	1,358	100.00%	5,090	100.00%	1,716	100.00%
Unidentified	165		0		14		14	

Additional Resources Online

Zero Waste Stores and Markets: <http://bit.ly/ZeroWasteStores2019>

Waste and Brand Audits (WABA) a key component of corporate campaigning work: <http://bit.ly/WABAandCorporate>

India Brand Audit 2018: <http://bit.ly/IndiaBAResults>

BFFP Corporate Manifesto and Brand Audit Results 2018: <http://bit.ly/BFFPManifestoBA2018>

NOTES AND REFERENCES

1 <https://corporateeurope.org/power-lobbies/2018/11/plastic-pressure>

2 Via <https://www.oanda.com/currency/converter/>

3 Geyer, R., Jambeck, J., and Law, K. L. (2017). Production, use, and fate of all plastics ever made. Science Advances 19 Jul 2017: Vol. 3, no. 7, e1700782. DOI: 10.1126/sciadv.1700782.

4 <https://endplasticwaste.org/issue/>; <https://www.marinelittersolutions.com/about-marine-litter/what-causes-marine-litter/>; https://www.iswa.org/fileadmin/user_upload/Calendar_2011_03_AMERICANA/Science-2015-Jambeck-768-71_2_.pdf; <https://orionmagazine.org/article/the-crying-indian/>; <https://www.plasticpollutioncoalition.org/pft/2017/10/26/a-beautiful-if-evil-strategy>; Ocean Conservancy. (2015). Stemming the tide: Land-based strategies for a plastic-free ocean. McKinsey and Company and Ocean Conservancy

5 Corporate Europe Observatory. (2018). Plastic pressure. Retrieved from <https://corporateeurope.org/power-lobbies/2018/11/plastic-pressure>

6 In the Philippines, this project is implemented by Mother Earth Foundation, through the support of GAIA. See Annex for more

CSFP		Tacloban		NV 1		NV 2		TOTAL	
Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage		
Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage		
32	11.27%	185	47.31%	138	40.35%	137	40.41%	1,058	30.37%
15	5.28%	93	23.79%	97	28.36%	99	29.20%	668	19.17%
9	3.17%	30	7.67%	46	13.45%	44	12.98%	359	10.30%
0	0.00%	0	0.00%	0	0.00%	0	0.00%	139	3.99%
0	0.00%	59	15.09%	0	0.00%	0	0.00%	59	1.69%
3	1.06%	0	0.00%	3	0.88%	2	0.59%	47	1.35%
1	0.35%	0	0.00%	9	2.63%	9	2.65%	61	1.75%
1	0.35%	0	0.00%	3	0.88%	2	0.59%	57	1.64%
0	0.00%	0	0.00%	0	0.00%	0	0.00%	53	1.52%
0	0.00%	0	0.00%	0	0.00%	0	0.00%	53	1.52%
3	1.06%	0	0.00%	0	0.00%	0	0.00%	47	1.35%
3	1.06%	0	0.00%	1	0.29%	1	0.29%	36	1.03%
0	0.00%	0	0.00%	0	0.00%	0	0.00%	19	0.55%
0	0.00%	11	2.81%	0	0.00%	0	0.00%	11	0.32%
217	76.41%	13	3.32%	45	13.16%	45	13.27%	817	23.45%
284	100.00%	391	100.00%	342	100.00%	339	100.00%	3,484	100.00%
Actual	Percentage	Actual	Percentage	Actual	Percentage	Actual	Percentage		
743	70.56%	2,320	55.02%	340	38.33%	325	39.44%	8,652	39.43%
110	10.45%	1,710	40.55%	287	32.36%	269	32.65%	6,909	31.49%
62	5.89%	0	0.00%	34	3.83%	33	4.00%	2,026	9.23%
0	0.00%	0	0.00%	95	10.71%	89	10.80%	981	4.47%
115	10.92%	0	0.00%	85	9.58%	86	10.44%	848	3.86%
0	0.00%	0	0.00%	0	0.00%	0	0.00%	641	2.92%
23	2.18%	0	0.00%	12	1.35%	10	1.21%	363	1.65%
0	0.00%	187	4.43%	34	3.83%	12	1.46%	337	1.54%
0	0.00%	0	0.00%	0	0.00%	0	0.00%	45	0.21%
0	0.00%	0	0.00%	0	0.00%	0	0.00%	1,139	5.19%
1,053	100.00%	4,217	100.00%	887	100.00%	824	100.00%	21,941	100.00%
0		0		0		0		193	100.00%

information regarding this project.

7 Commission on Audit Report for 2012 as cited on this report: <https://www.rappler.com/nation/71151-garbage-hauling-expenses-metro-manila>

8 MMDA is the Philippine government agency tasked to undertake planning, monitoring, and coordination of services that encompass Metro Manila.

9 In the Philippines, some of the commonly-used plastic packaging include plastic sando shopping bags, semi-transparent or plastic labo bags, flexibles, multi-layer packaging, and sachets. Plastic sando shopping bags refer to shopping bags with handles, often used to hold groceries. (Several cities have started regulating plastic sando bag use, but others have kept exemptions for non-recyclable alternatives like oxo-degradable plastic bags and non-woven polypropylene bags.) Plastic labo bags refer to very thin (around 5 microns in thickness) semi-transparent plastic bags without handles that are used to wrap produce, meat, fish, and cooked food. Plastic labo bags are often included in the exemption list in plastic regulations due to lack of cheap alternatives for primary food packaging. Multi-layer packaging and sachets are sealed packaging made from lightweight plastic composite and are used as packaging for single-serve or small amounts of food and non-food items.

10 The Philippine "barangay" (village) is the country's smallest political unit.

11 The toolkit is based on Mother Earth Foundation's 10 Steps to Establish a Community Zero Waste Program. The types of waste studied and measured in a waste assessment can vary from city to city. It is, however, recommended to have as many waste types as possible to generate useful data for developing management or disposal plans for a specific type of waste, particularly problematic or residual waste. The toolkit can be accessed at www.no-burn.org/wabatookit.

12 <https://corporateeurope.org/power-lobbies/2018/11/plastic-pressure>

13 Please see the Methodology section for further explanations regarding the waste and brand audit sites.

14 Please see footnote 24.

15 The Zero Waste Cities project is a GAIA initiative in the Asia Pacific region which forms partnerships cities to implement

sustainable waste management systems (including source separation, mandatory composting, and plastic use regulation, etc.) toward a goal of achieving Zero Waste. The project is implemented on the ground by GAIA member-organizations.

16 Organic waste is biodegradable or compostable waste such as food, vegetable and fruit peelings, etc. Recyclables include metal, paper, cardboard and the like, as well as high-quality plastics such as PET (polyethylene terephthalate) bottles and other hard plastics. Residual waste refers to waste that cannot be reused, recycled, or composted, such as junk food wrappers, plastic bags, discarded footwear, cigarette butts, etc. Special residuals are a separate category for residuals added by MEF, as these may require additional treatment before disposal. Examples include disposable diapers and sanitary pads. Hazardous waste includes e-waste, bulk waste, health care waste, and the like, all of which need special handling and management.

17 In its 2017 Annual Financial Report for Local Governments, the Philippines Commission on Audit ranks the following cities as the richest in terms of assets: Makati (Php 196.57 billion); Quezon City (68.33 billion); Manila (Php 38.67 billion); Cebu City (Php 33.86 billion); Pasig (Php 33.703 billion); Taguig (Php 19.64 billion); Caloocan (Php 17.01 billion); Pasay (Php 6.66 billion); Davao City (Php 13.18 billion); and Calamba (Php 12.41 billion).

18 Cities in Metro Manila that are not part of the richest cities list are: Las Piñas, Mandaluyong City, Muntinlupa, Parañaque, Pasay, San Juan, Taguig and Valenzuela. Pateros, a 1st-class municipality located in Metro Manila, is included in the category for Class 1 municipalities.

19 Classification according to the Philippine Department of Finance Department Order No. 23-08. <http://nscb.gov.ph/activestats/psgc/articles/DepOrderReclass.pdf>.

20 Ibid.

21 See explanation on categories in paragraphs above.

22 Philippine Statistics Authority. (2015). 2015 Census of Population. Philippine Statistics Authority.

23 The combined population for Category 1 cities (11,869,669) is based on figures from the 2015 Census of Population (Philippine Statistics Authority, 2015).

24 There are two kinds of waste and brand audits (WABAs): WABAs conducted during clean-ups and WABAs conducted for household waste assessments. A clean-up WABA is typically conducted in public places such as coastal areas or beaches, river banks and other waterways, parks and the like, where groups conduct clean-ups and also capture brand data from the waste gathered. A household brand audit is not connected to a clean-up activity, but is focused on the waste collected from households and is usually conducted as part of a waste assessment. This audit is a comprehensive, multi-day activity usually conducted for at least nine days, excluding preparation and post-audit analysis. It also includes scheduled collection of source-separated waste and a waste assessment, aside from the brand audit.

25 EcoGov Project (2011). Waste Analysis and Characterization Study—A Manual. Philippine Environmental Governance Project, Pasig City, Philippines.

26 DENR draft report here shows 56.7% of municipal waste comes from households. <http://nswmc.emb.gov.ph/wp-content/uploads/2016/06/Solid-Wastefinaldraft-12.29.15.pdf>

27 EcoGov Project (2011). Waste Analysis and Characterization Study – A Manual. Philippine Environmental Governance Project, Pasig City, Philippines.

28 Ibid.

29 National Solid Waste Management Commission (2015). National Solid Waste Management Status Report (2008 –2014).

Retrieved from <https://nswmc.emb.gov.ph/wp-content/uploads/2016/06/Solid-Wastefinaldraft-12.29.15.pdf>.

30 Ibid.

31 World Bank (2018). What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Retrieved from <https://worldbank.org/what-a-waste/>.

32 National Solid Waste Management Commission (2015). National Solid Waste Management Status Report (2008 –2014), retrieved from <https://nswmc.emb.gov.ph/wp-content/uploads/2016/06/Solid-Wastefinaldraft-12.29.15.pdf>.

33 This includes large single use plastic packaging, diapers, feminine pads, and polystyrene products, etc.

34 Based on actual sales of recyclable waste collected as part of the WABAs, subject to local prices and materials accepted by the local junkshop at the time of sale.

35 The Study on Recycling Industry Development in the Republic of Philippines, February 2008, http://nswmc.emb.gov.ph/wp-content/uploads/2018/03/Summary-of-Final-Report-_complete_.pdf

36 From GAIA site visit to El Nido Municipality, May 2018.

37 #breakfreefromplastic (2018). Branded: In Search of the World's Top Plastic Polluters. Retrieved from <https://www.breakfreefromplastic.org/globalbrandauditreport2018/>.

38 Philippine Statistics Authority. (2015). 2015 Census of Population. Philippine Statistics Authority.

39 National Economic and Development Authority (2017). Philippine Development Plan 2017-2022. Retrieved from <http://pdp.neda.gov.ph/>

40 Data from the City of San Fernando, Pampanga.

41 Plastic Free Ordinance of the City of San Fernando, Pampanga. (2014). [Image]. Retrieved from <https://www.facebook.com/CityOfSanFernando/photos/a.276317464565/10152637372219566/?type=3&theater>

42 City of San Fernando, Pampanga.

43 Ordinance No. 2014-008 also known as the plastic-free ordinance of the City of San Fernando, Pampanga can be downloaded here: <http://bit.ly/CSFPPlasticOrdinance>

- 44 Philippine Statistics Authority. (2015). 2015 Census of Population. Philippine Statistics Authority.
- 45 Ibid.
- 46 Schoolchildren of waste collectors may receive up to USD 100 per semester from the scholarship fund established by the Malabon city government.
- 47 Philippine Statistics Authority. (2015). 2015 Census of Population. Philippine Statistics Authority.
- 48 Philippine Statistics Authority. (2015). 2015 Census of Population. Philippine Statistics Authority.
- 49 Ibid.
- 50 Ibid.
- 51 Data from the City Environment Office
- 52 Philippine Statistics Authority. (2015). 2015 Census of Population. Philippine Statistics Authority.
- 53 National Solid Waste Management Commission (2017).
- 54 Philippine Statistics Authority. (2015). 2015 Census of Population. Philippine Statistics Authority.
- 55 Ibid.
- 56 Philippine Statistics Authority. (2015). 2015 Census of Population. Philippine Statistics Authority.
- 57 <http://r8.emb.gov.ph/wp-content/uploads/2016/10/EMB-8-Keeps-Stronger-Ties-with-Tacloban-City-Government-in-Solid-Waste-Management.pdf>
- 58 Badan Pusat Statistik Kota Bandung (2015). Jumlah Penduduk Menurut Jenis Kelamin Dan Kecamatan Di Kota Bandung 2011-2014. Retrieved from <https://bandungkota.bps.go.id/linkTableDinamis/view/id/9>.
- 59 A kelurahan or administrative village is the smallest/lowest level political unit in Indonesia, similar to the Philippines' barangay.
- 60 Rukun warga refer to community subdivisions under an Indonesian village or kelurahan. Each rukun warga or RW is composed of 100-200 households.
- 61 Based on an unpublished case study on Bandung City.
- 62 Waste banks or bank sampah are like regular commercial banks where households can open an account and make a deposit using recyclable waste. Recyclables such as plastic, paper, and metal are assigned with monetary values, based on prevailing markets and neighborhood waste collectors. Sachets are not accepted.
- 63 Kelurahan Sukaluyu and Babakan Sari were the pilot villages under the Zero Waste Cities project in Bandung. The project, which started in 2017, has since expanded to other cities in Indonesia such as Cimahi, Soreang, Medan, Denpasar and Surabaya.
- 64 Adversario, P. (2015). Plastic Kingdom. Retrieved from <https://jgspetrochem.com/plastic-kingdom/#.XGz5l-gzbDc>.
- 65 Conducted in 2016 by Mother Earth Foundation, and in 2017 by GAIA, MEF, Greenpeace, EcoWaste Coalition, and Health Care Without Harm under the banner of the Break Free From Plastic Movement.
- 66 In 2018, 12 civil society groups conducted brand audits in 15 cities in India.
- 67 In the 2006 Manila Bay waste assessment, plastic bags comprise 51.4% of total waste audited; 2010 Manila Bay waste assessment, 27.75%; 2014 Manila Bay waste assessment 23.2%; 2018 WABA of select barangays in Quezon City, Malabon, Navotas, Batangas City, City of San Fernando and Tacloban, and the municipalities of Solano, Ambaguio, Bambang, Santa Fe, Bayombong, Villaverde in Nueva Vizcaya, 24%.
- 68 Khan, K. (2010). Bangladesh jute gets boost from plastic bag backlash. Retrieved from <https://www.smh.com.au/world/bangladesh-jute-gets-boost-from-plastic-bag-backlash-20100620-yotg.html>
- 69 Jakarta Post (2018). Bali bans single-use plastics, targets 70 per cent reduction in 2019. Retrieved from <https://www.straitstimes.com/asia/se-asia/bali-bans-single-use-plastics-targets-70-per-cent-reduction-in-2019>
- 70 Burgos Jr., N. (2018). Boracay reopening: Disposable plastic items banned. Retrieved from <https://newsinfo.inquirer.net/1030090/boracay-reopening-disposable-plastic-items-banned>
- 71 For the full text of the ordinance, see: https://www.cityofberkeley.info/Clerk/City_Council/2018/12_Dec/Documents/2018-12-11_Item_16a_Referral_Response_Berkeley_Single.aspx
- 72 Retrieved from <https://ecologycenter.org/wp-content/uploads/2018/11/Disposable-Free-Dining-Ordinance.pdf>
- 73 The compliance of fastfood companies, however, depend on the cities enforcing such ordinances. In a city without such laws, the same fastfood company still use single-use utensils and other disposables for their dine-in operations.
- 74 European Commission (2018). Single-use plastics. Retrieved from https://ec.europa.eu/commission/news/single-use-plastics-2018-may-28_en
- 75 Reyes-Estropo, C. (2018). Refill revolution reloaded in Bulacan town. Philippine Daily Inquirer. Retrieved from <https://newsinfo.inquirer.net/986317/refill-revolution-reloaded-in-bulacan-town>
- 76 Stinson, L. (2019). New 'zero-waste platform' sells products in reusable stainless steel containers. Curbed. Retrieved from <https://www.curbed.com/2019/1/30/18201277/loop-zero-waste-platform-recycling>.
- 77 Zero Waste Europe (18 July 2018). Recircle: who said that take-away food cannot be zero waste?. Retrieved from <https://zerowasteurope.eu/2018/07/recircle-who-said-that-take-away-food-cannot-be-zero-waste/>.
- 78 In the MEF and GAIA waste assessments, diapers are classified under special residuals.
- 79 Kaza, S., Yao, L., Bhada-Tata, P., & Van Woerden, F. (2018). "What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050." Urban Development Series. Washington, DC: World Bank.
- 80 Ibid.
- 81 <https://endplasticwaste.org/>

