

Zero Waste Cities Project

Cities Waste Assessment and Brand Audit (WABA) Methodology and Toolkit



Volume I: For Households

Prepared by the Global Alliance for Incinerator Alternatives and Mother Earth Foundation



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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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Mother Earth Foundation (MEF) is a non-profit organization actively engaged in addressing waste and toxic pollution, climate change, and other health, and environmental justice issues in the Philippines. It is best known for its advocacy of Zero Waste through the systematic reduction and proper waste management.

Note: This methodology 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 audit (found under 4. 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.

This manual will focus on the methodology of conducting a household Waste Assessment and Brand Audit (WABA)¹ for cities and communities. WABA is a methodical process of collecting and analyzing

¹ GAIA is grateful to Mother Earth Foundation for its pioneering methodology on accounting household waste by material type and brand, as part of their Zero Waste Cities work. Likewise, War on Waste Negros Oriental

waste to determine the amount and types of waste generated by the households in your locality, which in this case is your city, and which brands are responsible for producing certain percentages of this waste. The methodology only covers audits on households of a city or a community. Opportunities to expand WABA to non-household waste generators such as schools, restaurants or government offices may be explored in future opportunities.

Conducting a waste assessment for your city will be the first step in understanding your waste problem as well as informing your localized Zero Waste Program. Moreover, the waste assessment component of this two-part process will help you answer the following questions:

1. How much waste does your community produce?
2. What is the appropriate design and size of the materials recovery facility (MRF) for your community?
3. What is the appropriate method to manage the organic waste of your community? What is the appropriate composting method?
4. How often do you need to collect waste? How many collectors are needed? What is the appropriate collection vehicle (e.g. what is the best size of the vehicle to enable you to collect from every household within your community)?
5. How much waste can be potentially diverted through source-separated collection, composting, and recycling?
6. How much should your community allocate for the budget of your Zero Waste Program?
7. How much is the possible income that you can expect to generate from your Zero Waste Program?

Conducting a brand audit in relation to this two-part process enables cities to identify which brands, products, or companies are most commonly found in the area and accountable for a particular percentage of these waste. Moreover, it will guide your city or community in developing or strengthening ordinances or policies aimed at managing and regulating problematic products and packaging such as single-use disposable shopping bags, plastic straws, and other disposable products. Implementers may use WABA findings from a community as representative data for another site, provided that the latter has a similar profile. This proxy option, however, is discouraged for cities.

Limitations

Part of the preparations to conducting a WABA is choosing a community to participate in the audit. This process includes assessing the households in a community according to a list detailing the type of housing which can be obtained from the barangay, and from there a certain number of households

(Dumaguete, Philippines), Citizen Consumer and Civic Action Group (Chennai, India) and Yayasan Pengembangan Biosains dan Bioteknologi (Bandung, Indonesia) have made contributions to improve the WABA process.

will be chosen based on certain criteria (this process is expounded on in section 1.2). However, in the case of some barangays, not all data on the households are available or are accurate. This would require the project implementers to make their own data through the process of creating a profile of the entire barangay.

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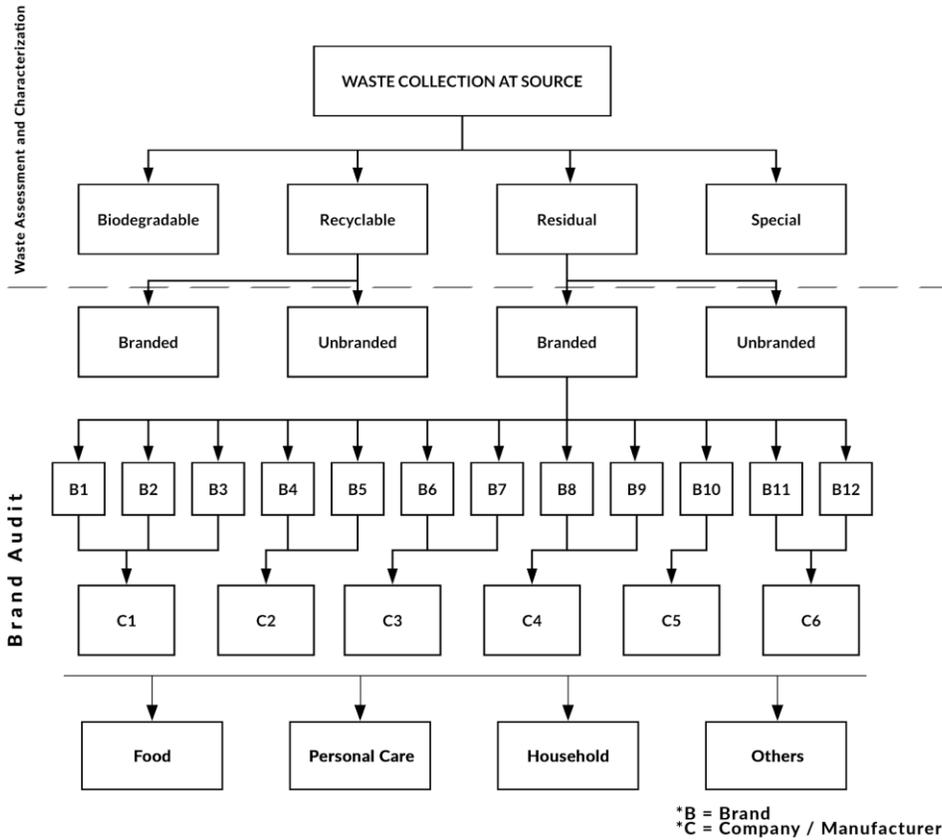
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Figure 1. Waste Assessment and Brand Audit Framework



1. Preparation

1.1 Identify Your Community

To begin the preparation, you must first identify a community (*barangay* or *kelurahan*²) or portion of a community (*purok/sitio/rukun warga/subdivision*) within your city. Ideally, the size of the community should be at least 500 households.

For communities that have at least 500 households, the ideal sample size for the audit is 10%, or at least 60 households. If the community has less than 500 households, setting the number of participating households at 50 would be the strict minimum.³

² A *barangay* is the term used for the smallest administrative unit in the Philippines, and *kelurahan* is the term used for Indonesia

³ From previous experience, there had been no difference in the waste assessment results when the participating number of households was above 50 (e.g. 80 or 100). However, there had been a significant difference when the number of participating households was under 50. To conserve resources and time, MEF has set the minimum number of participating households at 50 to ensure data validity. The recommended sample size is 60 households to make room for the event that some households may back out, however unlikely.

1.2 Selection of Respondents

In selecting household respondents, project implementers are advised to request for a household list from local authorities governing the community. The list will be divided into categories depending on the profile of the community. Common categories are:

- a. High-income households
- b. Low-income households
- c. Households with with cottage businesses such as small stores or eateries.

The numbers for each category are then matched with the target sample size for WABA. A community of 500 households, for example has 335 low-income households, 150 high income households and 15 households with cottage businesses. Setting 60 as the target number of household respondents, the WABA will have 40 from small houses, 18 from large houses, and 2 from houses with cottage businesses. Apply random sampling methods for selecting respondents based on the target samples. Ordinal selection, for instance, means picking every n th house from the list of each category until the desired number of respondents is reached. The team may add 2 or 3 more for each list in case the selected households are not available during the WABA collection.

1.3 Identify Location of Sorting Area

An appropriate venue within this area must also be selected as the location for the sorting activity. Commonly used venues are spacious public spaces such as community basketball courts or multi-purpose halls of the barangay or locality. Recommended floor space for the activity is 200 to 400 sqm (size of a half to full-sized basketball court). Covered spaces are ideal to protect your volunteers from weather changes or from too much sun, but if a covered space is not available, at least provide a covered space (such as a tent) where volunteers can rest.



Image 1. Sample layout of sorting area under the Waste Assessment section.

1.4 Identify Length of Activity

Door-to-Door Orientation

The door-to-door household orientation can be accomplished in one day. This task can be completed by several volunteers working simultaneously which is recommended to maximize the time of the volunteers in the area. The exact contents of this orientation will be further described in the next section.

Waste Collection

The length of time for the collection of waste for the WABA is fixed at 8 days. The current framework of Mother Earth Foundation is based on the practice of auditing a weeks-worth of waste. This is typically done to ensure that they are able to cover the fluctuations of waste generated by the households over the 7 days of the week. As will be further expounded on in section 3, the first day of collection will not be included in the WABA.

Waste Assessment and Brand Audit

As will be further elaborated on in the latter section of this manual, the length of the WABA can take up to eight hours, thus you may opt to allot one whole day to accomplish this activity. It is worth noting, however, that the length of this activity may also be adjusted based on the number of volunteers and their familiarity with conducting the WABA (the more experienced volunteers, the quicker you will accomplish the activity).

1.5 Identify Post-Audit Management and Disposal Plan

Coordinate with the local government or community officials about the disposal of sorted waste. You can offer the recyclable materials to local collectors to sell. As for residual and hazardous waste, check if there is a nearby MRF that can accommodate the discarded materials. Otherwise, arrange transfer of residuals to a designated sanitary landfill.

2. Orientation

Households participating in the audit will be oriented on the purpose of the study in relation to its significance to the Ecological Solid Waste Management (ESWM) program. Households will also be informed on proper waste management at the household-level, including the six types of waste to be segregated for collection. If available, include images or show actual samples of waste types.

1. Kitchen/Food Waste
2. Garden Waste
3. Recyclables
4. Residual Waste
5. Residual-Special Waste
6. Hazardous Waste

After the orientation, the households will be provided pails or other available containers (for the 2 types of biodegradable waste) and sacks (old rice or cement sacks, labeled according to the 4 types of non-biodegradable waste) to be used for the disposal of their waste.



Image 2. Waste workers in Navotas go around the neighborhood to collect waste sorted into five categories: organic, recyclables, residuals, special residuals and hazardous.

The households must also be reminded to give their segregated waste only to the official collectors for the study on the agreed upon time of collection (usually first thing in the morning).

When the target household agrees to become a respondent for the WABA, he/she is requested to sign an agreement form to manifest intent to sort their waste at the household level for the next 8 days and hand them to the designated collector. For households withdrawing in the middle of the collection period, please refer to the next section for recommendations.

WACS PILOT
HOUSEHOLD NUMBER:

Mother Earth Foundation
Ecological Solid Waste Management Program
AGREEMENT

I am willing to participate on the current project of Mother Earth Foundation and
Barangay _____, _____ City
to conduct **Waste Assessment and Brand Audit** (WABA). I understand that the WABA is
one way to study or assess the volume and kind of waste generated in a community. The result of
the WABA will determine the Ecological Solid Waste Management Program that our Barangay will
adopt and implement.

For eight (8) days, we will give all the waste we generate inside our
household/establishment, segregated in each container accordingly.

Name and Signature

Date

A copy of the this agreement can be downloaded [here](#), and is also available in [Filipino](#) and [Bisaya](#).

3. Collection

Facilities needed:

1. Temporary storage area for recyclables, residuals, residual-special, and hazardous waste (Materials Recovery Facilities, if available is ideal, but any enclosed and secure space may be used)
2. Composting facility for kitchen and garden waste (on site composting or off-site processor of organic waste)

The collection of waste for the WABA will take place over eight successive days and will be accomplished by the assigned waste collectors. The waste collectors will then take the segregated waste from each household and place them in their designated sacks and containers in their collection vehicle. It is recommended to invite representatives from the barangay, city government and the local community to participate in the collection. The exercise will help them understand the significance of the WABA, particularly in the design of the solid waste management plan.

After every collection day, the waste will be brought to the temporary storage area where the sacks of waste will be separated and organized according to the day it is collected. This means that the sacks of waste collected from the first day should be clearly labeled or designated as the waste from day 1. The same will apply to the sacks of waste collected from the day 2, then day 3, and so on. The separation of waste collected from each day is done for the purpose of measuring the amount of waste generated per day.



Image 3. Sacks of household waste are grouped together according to the day of collection. Waste collection from Day 1 are excluded from the actual sorting to minimize historical waste, or discards that were not produced in the last 1-3 days.

The timeline of the collection is detailed as follows:

- Day 1 of Collection The segregated waste will be collected at the household and weighed. Follow-up orientations will be given if the household was unable to follow the instructions on how to properly segregate their waste. The waste collected on the first day is not included in the audit as it may include historical waste.⁴
- Days 2-8 of Collection Segregated waste from participating households is collected and weighed, and data from waste collected are recorded in a Daily Collection Form (Appendix A.). Collected waste are brought to the temporary holding facilities.
- Day 8 of Collection (last day) All waste bins, sacks, and containers are collected from each participating household and are brought to the temporary holding facilities.

The sorting of the waste takes place the day after the last day of the collection.

Table 1. Sample Timeline of Waste Collection

⁴ Historical waste refer to discards that remain uncollected prior to the WABA collection. In some cases, household-respondents take this opportunity to take out waste that have accumulated, likely due to the irregular waste collection schedule in the community. Ideally, the waste that should be included in the WABA collection are those that that were generated during the day or the previous one.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Day 0: - Orientation of households	Day 1: - Collection and weighing of segregated waste at households - Follow-up orientation if necessary - Collected waste is brought to temporary storage facility	Day 2: - Collection and weighing of segregated waste at households - Collected waste is brought to temporary storage facility	Day 3: - Collection and weighing of segregated waste at households - Collected waste is brought to temporary storage facility	Day 4: - Collection and weighing of segregated waste at households - Collected waste is brought to temporary storage facility	Day 5: - Collection and weighing of segregated waste at households - Collected waste is brought to temporary storage facility	Day 6: - Collection and weighing of segregated waste at households - Collected waste is brought to temporary storage facility
Day 7: - Collection and weighing of segregated waste at households - Collected waste is brought to temporary storage facility	Day 8: - Collection and weighing of segregated waste at households - Collected waste, along with all bins, sacks, and containers, is brought to temporary storage facility	Day 9: - Collected waste from the last 8 days in the temporary storage facility is brought to sorting area for the Waste Assessment and Brand Audit				

TIP: In the case that a household completely withdraws their participation midway into the collection period (due to unforeseen circumstances), you can incorporate the practice of Yayasan Pengembangan Biosains dan Bioteknologi (YPBB)⁵ of sorting the waste from the households per 3 types of waste (residual, recyclable, and hazardous) in their own separate sacks per day and labeled accordingly per household number (e.g. Residual Waste - Day 2 - Household #30). This practice would make it easier for the sorting and/or removal of a household's waste should they back out from the audit. Right after collection of these separate sacks, they will be weighed and recorded in the same bag, and then transferred into the collectors bag and weighed and recorded again. This strategy can be implemented to ensure continuity and consistency of your data.

4. Waste Assessment

4.1 Significance

As previously mentioned, conducting a Waste Assessment will help inform you of the waste problem in your city. Particularly, it will inform you on the composition of waste that your community produces.

⁵ YPBB, one of GAIA's member organizations, is Indonesia's leader in zero waste implementation

The significance of identifying what types and how much of each type of waste is produced by your community is that the results can indicate how much of this waste can be potentially diverted from landfills through regular collection, composting, and recycling:

1. **Biodegradable Waste** (Kitchen/food/garden waste). Identifying what percentage of waste your community produces is biodegradable tells you how much waste can automatically be diverted from landfills and managed in composting facilities. Furthermore, knowing how much biodegradable waste is being produced by your community can inform the size that is appropriate for your composting facility.
2. **Recyclable Waste**. Identifying how much household waste can be recycled or sold to waste markets enables implements to project potential income for the community. Local leaders may opt to keep sales from the recyclables as additional income for the community or give them away to waste collectors.
3. **Residual Waste**. Identifying what percentage of waste your community produces is residual can inform the size of your MRF. The MRF will serve as temporary storage for residual waste, until the city government collects them for landfilling, based on an agreed pickup schedule.
4. **Residual-Special Waste**. Residual-special waste refer to disposable hygienic products such as diapers and sanitary pads. While these discards are bound for landfills, communities are encouraged to set up a collection and disposal system for special residuals as part of their waste management plans.
5. **Toxic and Hazardous Waste**. While toxic and hazardous waste comprise the least amount of waste in a community or city, identifying their composition will help inform the local government on treatment and disposal options.

Biodegradable waste will not be part of the actual sorting process. During the door-to-door collection, kitchen and garden waste will be weighed and later sent to the community MRF or a central composting facility.

4.2 Actual Sorting

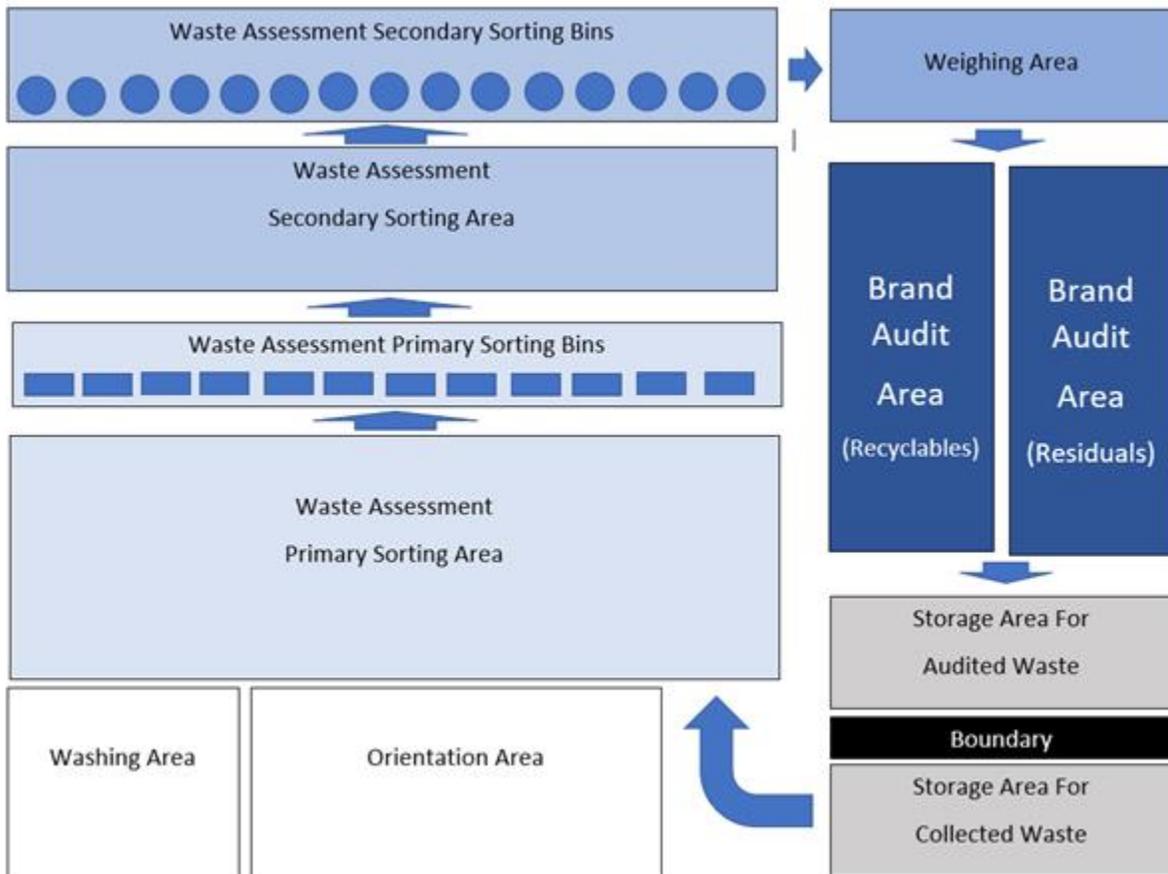


Image 4. Mats are laid in the general sorting area to make cleanup easier after the waste audit.

To prepare for the sorting of the segregated waste, you would need to ensure that you have the following tools and equipment:

- | | | |
|--|---|--|
| <p>1. For sorting area</p> <ul style="list-style-type: none"> a. Sorting mat b. Pails c. Labels d. Weighing scale (kilogram scale and digital scale) e. Sacks | <p>2. For volunteers</p> <ul style="list-style-type: none"> a. Tongs b. Gloves c. Face masks (optional) d. Alcohol e. Soap f. First aid kit | <p>3. For recording data</p> <ul style="list-style-type: none"> a. Clipboard b. Pen/pencil c. Tally sheet (See Table 2) d. WABA Form (See Table 3) e. Waste chart |
|--|---|--|

Figure 2. Sample Sorting Area



Part of doing a brand audit requires you to conduct a waste assessment prior to the actual audit. A waste assessment or the sorting and characterization of waste is done for the purpose of 1) identifying the percentage that each type of waste makes up and 2) further sorting waste into their specific classifications to make for a more efficient brand audit.

During the waste assessment, the sacks of waste will be laid out and organized according to the day they were collected. These sacks of waste will be located in the storage area (bottom-right section of Figure 2).

You will be needing at least 30 volunteers to accomplish both the waste assessment and the brand audit. Prior to starting anything, the volunteers are to be oriented on the 91 primary and secondary waste classifications to avoid errors in sorting.⁶ This will be done in the Orientation Area (bottom-center section of Figure 2). After the orientation, the volunteers will be able to start sorting through the waste collected during days 2 to 8 using the tools listed above.

The volunteers and participating project implementer staff will be divided into 2 groups -- one group (at least 20 people) will be assigned to do the sorting and waste assessment and another group (10 people) will be assigned to do the brand audit. The group designated to do the sorting and waste assessment will be further divided into two sub-groups: one will be comprised of those tasked to conduct the basic sorting of waste (based on the primary classifications listed below), and the other will be assigned to conduct the secondary sorting of waste (based on the secondary classifications listed below). Preferably, assign the former sub-group to volunteers or those who are new to doing a waste assessment. Designate project implementers / staff to the latter sub-group as they are more familiar with the secondary classifications of waste. This distinction of responsibilities is done for the purpose of minimizing the sorting errors and thus making the sorting process more efficient.

⁶ The 33 primary and 86 secondary waste classifications can be found under section 4.3

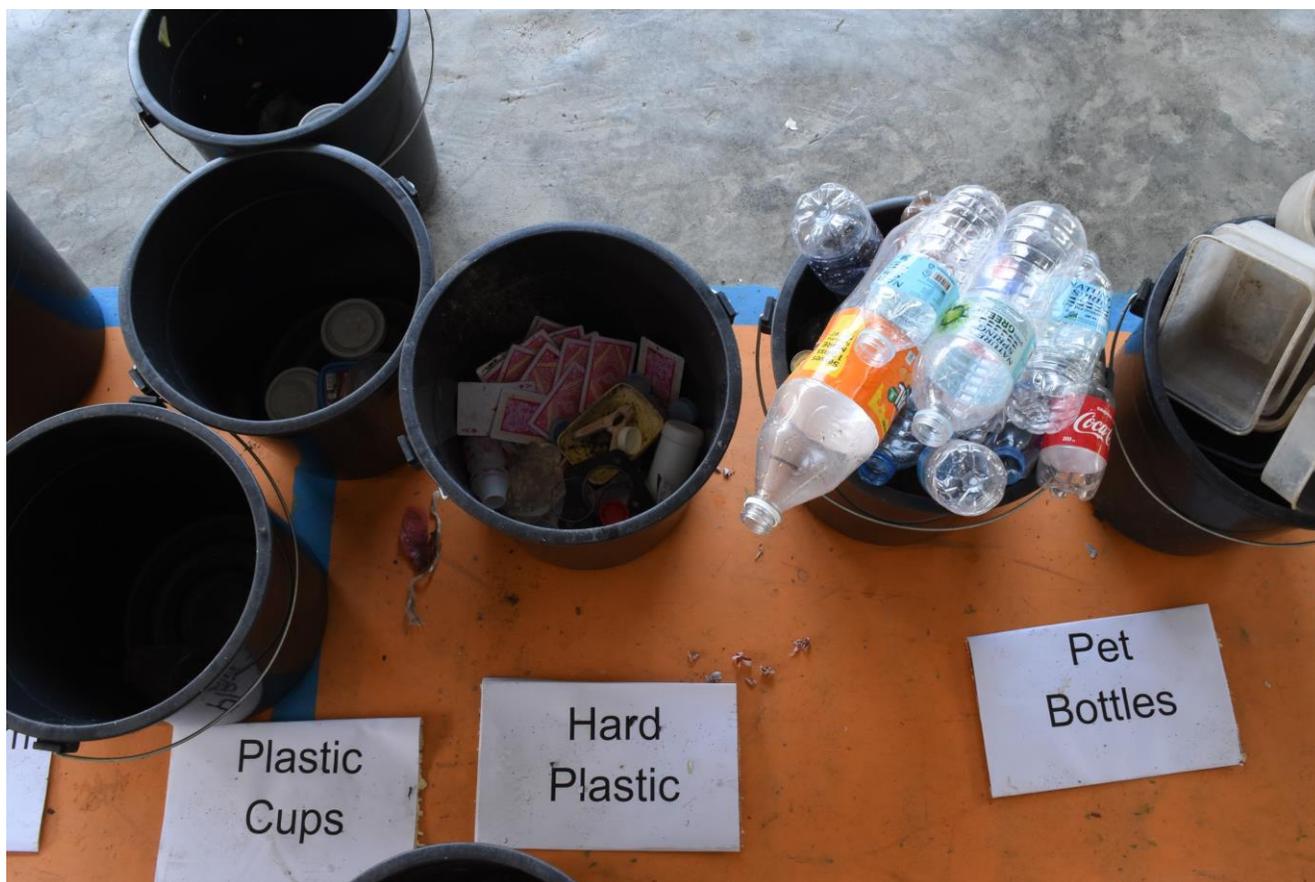


Image 5. Containers should be labeled based on 91 primary and secondary categories. **Photo:** Natasha Kunesch

The sorting area should have at least 1-3 sorting mats laid out on the ground as they will be used as the surface on which the waste will be sorted (see Image 4). Since there are 31 primary classifications of waste, there should also be 31 corresponding pails labeled respectively. These pails are usually placed along the Primary Sorting Bins area (center-left section of Figure 2). Likewise, there should also be 76 pails corresponding to the 76 secondary classifications placed along the Secondary Sorting Bins area (top-left section of Figure 2)

After the area has been prepared, all equipment has been laid out, and all volunteers have been oriented on the sorting process, the waste assessment can begin. Depending on the number of volunteers, sorting through seven days of waste can take up to eight hours. The general flow of the sorting is as follows:

1. Waste from sacks in the Storage Area for Collected Waste are emptied onto the sorting mats in the Primary Sorting Area (bottom-left section of Figure 2)
2. Volunteers assigned to sort according to the primary classification will sort through the waste and start segregating each piece and placing them into the corresponding pails.

3. Once these pails get filled to the brim, those assigned to sort through the secondary classification will further segregate the waste inside the containers according to the second layer of categories in the Secondary Sorting Area (top-left section of Figure 2). *When filling the containers, avoid compressing the materials to fit more packaging.*
4. Next, these pails containing the waste segregated according to their secondary classification will be weighed⁷ and recorded according to the Waste Characterization forms (see Table 1 below) at the Weighing Area (top-right section of Figure 2). *Make sure the pails are calibrated to measure volume. They can be labeled using markers or masking tape to indicate volume in liters.*
5. The waste in the pail that has just been weighed will be placed into a sack (labeled to correspond to the waste contained). Pails are later emptied and brought back to the sorting area for the next batch of waste that will be measured.
6. Once all the sacks from the daily collection have been sorted through and all pieces of trash have been weighed and recorded, those assigned to do the brand audit will be left to conduct the next step of the process (Brand Audit Area, right section of Figure 2)

All in all, this WABA is made up of 3 layers of sorting: first is through the primary classification, second is through the secondary classification, and third is through the brand audit proper.

⁷ For lightweight materials such as sachets or plastic bags, it is recommended that you use a digital weighing scale to produce more accurate results

Table 2. Sample waste characterization tables

WASTE ASSESSMENT AND BRAND AUDIT																									
WASTE ASSESSMENT TALLY FORM																									
		Weight Per Container																							
TYPE OF WASTE	PRIMARY CATEGORY	SECONDARY CATEGORY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	TOTAL		
BIODEGRADABLE WASTE	Garden Waste	Garden Waste																							
	Kitchen Waste	Kitchen Waste - Animal Feed																							
			Kitchen Waste - Compost Only																						
RECYCLABLE WASTE	Other Organics	Other Organics																							
	Metal	Tin Can																							
		Iron Sheet (yero)																							
		Aluminum Cans																							
		Other aluminum																							
		Nails																							
		Stainless steel																							
		B.I. (Wires)																							
		Other Metals																							
	Glass	Glass Bottles - Ketchup																							
		Glass Bottles - Gin																							
		Glass Bottles - Longneck																							
		Broken Glass - clear																							
		Broken Glass - colored																							
		Garapa (wide-mouth brown bottle)																							
		Glass Bottle - brown (beer)																							
		Glass bottles - green																							
		Glass bottles - other colors																							
		Carton	Corrugated Box																						
	Glazed Carton																								
	Paper	White Paper																							
		Glossy Paper																							
		Assorted/Colored Paper																							
Newspaper																									
Hard Plastic	#1 PET Bottles - transparent																								
	#1 PET Bottles-colored																								
	#2 HDPE																								
	#4 LDPE																								
	#5 Polypropylene																								
	#6 Polystyrene																								
	Plastic Lid																								
	Assorted Unidentified (including #7)																								
	#3 PVC																								
	Textile																								
	Textile trimmings																								
	Leather Trimmings																								
		Rubber (for disposal)																							

Full copy of the Waste Assessment Tally Form can be downloaded [here](#).

4.3 Classification of Waste

Each classification of waste will be used to label the pails. The classifications listed here may be adjusted according to the existence of certain categories of waste for different localities/contexts.⁸ In this manual, there are 5 main categories of waste listed, 34 categories of primary classification, and a total of 76 secondary classifications according to each type of waste.⁹ All in all, there are 91 classifications of waste.

Biodegradable Waste			
			
Garden/Agricultural Waste	Kitchen Waste - Animal Feed	Kitchen Waste - Compost	Other Compostables
Recyclable Waste			
<u>Primary Classification: Metal</u>			
<u>Secondary Classifications:</u>			
			
Tin cans	Tin bottle caps	Aluminum cans	Other aluminum
			
	Stainless steel		

⁸ The uncommon types of waste that are rarely found in waste assessment activities can be found in Annex B

⁹ Note: there are some primary classifications that no longer need any further/secondary specification.

<p>Iron sheet (<i>yero</i>)</p>		<p>Metal Wire</p>	
 <p>Nails</p>			
<p><u>Primary Classification:</u> Glass</p>			
<p><u>Secondary Classifications:</u></p>			
 <p>Glass bottles - Catsup¹⁰</p>	 <p>Glass bottles - Gin</p>	 <p>Glass bottles - Long neck</p>	 <p><i>Garapa</i> (colored bottle)</p>
 <p>Glass bottle - brown (beer)</p>	 <p>Glass bottles - green</p>	 <p>Glass bottles - other colors</p>	 <p>Broken glass - clear</p>
 <p>Broken glass - colored</p>			

¹⁰ When doing the first and second layer of sorting, not remove the label from the bottle to maintain the brand identification for the brand audit proper. The same rule applies to all bottles with labels

<u>Primary Classification: Hard Plastic</u>			
<u>Secondary Classification:</u>			
 <p>Polyethylene Terephthalate (PET) Bottles (transparent)</p>	 <p>PET Bottles (colored)</p>	 <p>High-Density Polyethylene (HDPE)</p>	 <p>Polyvinyl Chloride (PVC)</p>
 <p>Low-Density Polyethylene (LDPE)</p>	 <p>Polypropylene (PP)</p>	 <p>Plastic bottle caps/lids</p>	 <p>Hard Plastic</p>
 <p>Assorted Plastic</p>			
<u>Primary Classification: Paper</u>			
<u>Secondary Classification:</u>			
			

Glossy paper	White paper	Colored paper	Newspaper
<u>Primary Classification: Carton</u>			
<u>Secondary Classification:</u>			
 <p data-bbox="224 768 409 800">Corrugated box</p>	 <p data-bbox="561 768 737 800">Laminated box</p>	 <p data-bbox="902 768 1062 800">Glazed carton</p>	 <p data-bbox="1214 758 1422 789">Multi-layer carton</p>
3. Residual Waste			
<u>Primary Classification: Textile, Leather, Rubber</u>			
<u>Secondary Classifications:</u>			
 <p data-bbox="183 1398 448 1430">Textile/cloth trimmings</p>	 <p data-bbox="545 1356 756 1388">Leather trimmings</p>	 <p data-bbox="862 1356 1105 1419">Trimmings of rubber, tires, and interiors</p>	 <p data-bbox="1198 1398 1438 1461">Worn out shoes and slippers</p>
 <p data-bbox="228 1682 407 1713">Worn out bags</p>	 <p data-bbox="618 1682 683 1713">Rags</p>		

Primary Classification: Sachets

Secondary Classification:



Shampoo & laundry sachet without foil lining



Shampoo & laundry sachet with foil lining



Laminates/multi-layered

Primary Classification: Plastic Labo (Plastic Film)

Secondary Classification:



Polyethylene (PE) plastic (vegetable/plastic labo)



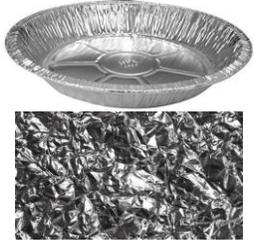
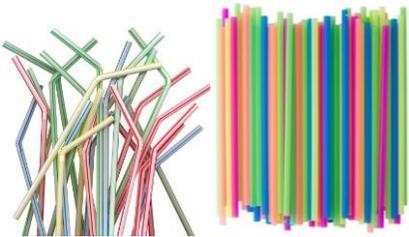
Ice bag



Ice candy bag

Primary Classification: Plastic/Sando Bags

Secondary Classification:

 <p>Oxo-biodegradable sando bags</p>	 <p>Colored sando bags</p>	 <p>Plain sando bags</p>	 <p>Branded plastic bags</p>
<p><u>Primary Classification:</u> Small Plastic Packaging</p>		<p><u>Primary Classification:</u> Foil</p>	
<p><u>Secondary Classification:</u></p>		<p><u>Secondary Classification:</u></p>	
 <p>Polypropelene(PP)plastic (e.g.candy/biscuit wrappers)</p>	 <p>Jelly ace packaging</p>	 <p>Metallic Foil</p>	 <p>Aluminum Foil</p>
<p><u>Primary Classification:</u> Styrofoam</p>		<p><u>Primary Classification:</u> Drinking Straw</p>	
			
<p><u>Primary Classification:</u> Drinking Cups</p>		<p><u>Primary Classification:</u></p>	

<u>Secondary Classification:</u>			Doy Pack
 Transparent drinking cup	 Colored drinking cup	 Multi-layered drinking cup	
<u>Primary Classification:</u> Primary Plastic Packaging		<u>Primary Classification:</u> Nets	
<u>Secondary Classification:</u>		<u>Secondary Classification:</u>	
 Non-Printed	 Printed	 Fish nets	 Hair nets
<u>Primary Classification:</u> Foam		 fruit net bag	
<u>Secondary Classifications:</u>			
 Fruit packaging	 Sponge (plastic)		
<u>Primary Classification:</u> Cigarettes			
<u>Secondary Classification:</u>			
 Cigarette butts		 Cigarette box	

	Cigarette <i>palara</i>		
<u>Primary Classification:</u> Plastic Seal	<u>Primary Classification:</u> Ceramics	<u>Primary Classification:</u> Inerts	<u>Primary Classification:</u> Sacks
			
Toxic/Hazardous Waste			
<u>Primary Classification:</u> Bulbs		<u>Primary Classification:</u> Electronics and Appliances	
<u>Secondary Classification:</u>		<u>Secondary Classification:</u>	
 Light bulbs	 Tubes, lamps	 Worn out appliances	 Batteries
<u>Primary Classification:</u> Health Care Waste			
<u>Secondary Classification:</u>			
 Containers of disinfectants, sanitizers, insecticides, etc.	 Expired drugs and chemicals	 Medical waste	 Face mask
Special Waste			



5. Brand Audit and Analysis

5.1 Steps to Conduct a Brand Audit

After finally segregating the waste collected into their primary (if no secondary classification) and secondary classifications, you would need to separate the residual-special waste, toxic/hazardous waste, and recyclable waste so you will only be left with the residual waste. From here, you should now be left with 41 types of residual waste segregated in their respective containers. The brand audit section of the activity will focus only on residual waste, which will be later sorted according to brands (and those with no brands).

The following steps to conducting the Brand Audit proper will be handled by the 10 project implementer staff/more experienced volunteers. From this group of 10 people, eight will be focused on sorting the residual material per product, one will be designated as the tallyman and one will be responsible for recording all the data on the data sheet. The choice to assign just one person to record the data for the whole audit is to ensure uniformity of documentation as well as to minimize errors when collating data recorded by different people.

1. Each person from the group of eight can start sorting by choosing what product he/she wants to gather first. For example, he/she will choose to collect sachets without foil lining, specifically the product Surf with Fabcon (Calamansi, 500g) produced by Unilever Philippines.
2. Once he/she has collected all Surf with Fabcon of this specific variant (*Note: including the particular weight of the product*), he/she will pass it on to the tallyman for them to count the total number of pieces.
3. Once the tallyman has accounted for all the pieces of the product with the specific variant, he/she will call out the name of the (1) product, (2) variant, (3) size, (4) material, (5) manufacturer, and (6) the total number of pieces. Going back to the previous example, the tallyman would call out the following to the designated recorder: “*Surf with Fabcon, Calamansi, 500g, sachet without foil lining, Unilever Philippines, 35 pieces.*”
4. The recorder will write this down on the Brand Audit Form (see Table 3 below)

5. The recorder will write the count in tally marks instead of numbers (e.g. writing IIII instead of 10 + 1 + 2) to avoid confusion in the final calculation.
6. In the case that a product is discarded as a fragment (e.g. only half of the sachet was captured), the product will be recorded as half the piece. Furthermore, sachets that come as a “double pack” will be considered as a specific variant and should be distinguished from its “single pack” version
7. After each product has been documented, they will be put back into sacks according to their primary classifications.

Residual	11.1%	283.14
Special Residual	10.1%	257.4
Hazardous	1%	25.74

Like most residential-dominated barangays in the Philippines, more than half of household waste in Barangay Looc, or 52%, is organic waste. To address the amount of organic waste, the barangay has designated two spaces - an MRF and a composting area. It also repurposed two box-type concrete containers as storage for collected recyclables.

Waste Study Findings

Table 7. Percentage of Materials that Can be Diverted from Landfills

Method of Diversion	Diversion Rate Potential
Composting	52%
Recycling	25%
Total Possible Diversion	77%

Conclusion: Composting and recycling would enable Barangay Looc to divert more than **70%** of their waste from ending up in landfills and dumpsites.

Table 8. Projection on tipping fee cost for Barangay Looc

Total Population	3,900
Per capita waste generation (in kg)	0.66
Total waste generation (in kg)	2,574
Total waste generation (in ton)	2.75
Tipping fee per ton (in Php)	500
Total tipping fee per day (in Php)	1,287
Total tipping fee per month (in Php)	36,610
Total tipping fee per year (in Php)	463,320
Percent of internal revenue allotment (IRA) to be used on Tipping Fee alone <i>(based on 4,000,000 Php barangay IRA)</i>	11%

WABA findings show that as much as 77% of household waste in Barangay Looc can be diverted from landfills through composting and recycling. Seventy-seven percent diversion means Looc can save over Php 356,000 a year in tipping costs (tipping fee in Dumaguete City costs Php 500 per ton), assuming that the barangay spends Php 463,320 in dumping 1,003 tons of waste annually to the city dumpsite in Barangay Candau-ay.

Table 9. Potential Income from Recyclable Waste in Barangay Looc

Total cost of recyclables for 55 households (in Php, for 7 days)	Php 660.00
Total number of households in Barangay Looc	780
Total cost of recyclables per household	12.00
Total cost of recyclables per household per month	48.00
Total possible income for Barangay Looc (per month, in Php)	Php 37,440.00
Total possible income for Barangay Looc (per year, in Php)	Php 449,280.00

Table 9 shows potential income from recyclables in Barangay Looc, based on the WABA data. Recyclables, which account for 25% of total household waste in Looc, can be diverted from landfills by selling them to junk shops or waste markets. A Looc household can earn Php576 per year from selling recyclables, or Php449,280 for all 780 households in the barangay. The community can decide whether to set aside recyclables sales as additional budget, or redistribute it as additional income for their collectors. During house-to-house visits, residents are asked if they are willing to give away their recyclables. In most cases, they are more than happy to donate their recyclables to waste workers in appreciation of their collection services.

Table 10. Projection on Tipping Fees from Residual and Special Waste

Total waste generation per day (in kg)	2,574
Residual and special waste percentage	21%
Total weight of residuals for the barangay (in kg)	540
Cost per tonne (in Php)	500.00
Total cost on tipping fees per day (in Php)	270.00

Total cost on tipping fees per year (in Php)	98,648.00
Possible savings from tipping fees after composting and recycling	453,472.00 per year

To reiterate the significance as mentioned in the introduction of this manual, conducting a waste assessment for your city/community will help you determine the extent of your city's waste problem so that you can design your localized Zero Waste Program accordingly.

The following questions which were also posed in the introduction will be answered according to the sample summary of results presented from the audit conducted in Dumaguete City. These will serve as an example of how you can answer for your own specific context.

Question: What is the appropriate design and size of the materials recovery facility (MRF) for your community?

Answer: *An MRF should be able to accommodate all organic and recyclable waste generated by the community. In the Philippines, all barangays are mandated to establish their own MRFs that can handle all types of waste, except for residuals and hazardous -- which both fall under the responsibility of cities and municipalities. MRFs should have space for temporarily storing recyclables for selling; for handling organic waste; and for maintaining a transfer station for residuals. Barangays may also utilize idle government properties, such as community parks or wide sidewalks to daily waste volume. In Looc, the barangay renovated its old MRF that was turned into a storage area of Bantay Dagat (community-based sea patrol organization) and an old bodega. Both facilities are hosting composting spaces for organic waste that are unused for feeding animals or for backyard composting.*

Question: What is the appropriate method to manage the organic waste of your community? What is the appropriate composting method?

Answer: *In the food waste hierarchy, it is recommended to use organic waste, particularly leftovers, as animal feed for pets or livestock. The remaining scraps can be managed through composting, or if available, anaerobic digesters. As much as possible, avoid mixing organic waste into landfill-bound waste. Organic waste that decompose in landfills produce methane, a greenhouse gas more than potent than carbon dioxide. In Barangay Looc, the collectors applied above-ground composting techniques such as box, tower tires, windrow, clay pot and heap. It is important to account the potential amount of organic waste when assigning composting areas in the community. In the case of Barangay Looc, the community generates about 1.3 tons of organic waste. With limited space in the MRFs, waste collectors encourage households to do backyard composting and feed leftovers to animals.*

Question: How frequent should the collection be? How many collectors are needed? What is the appropriate collection vehicle (e.g. what is the best size of the vehicle to enable you to collect from every household within your community)?

Answer: *Barangay Looc has 780 households with 4,717 residents (2015 Census). It assigned four waste collectors, including two sweepers that double as collectors, to cover daily waste collection. The collectors use push carts to allow them to enter narrow alleys around puroks.*

Question: How much waste can be potentially diverted through source-separated collection, composting, and recycling (25%).

Answer: *As much as 77% of household waste can be diverted from the Candau-ay landfill through composting (52%) and recycling. As of February 2019, the barangay has achieved a 67% diversion rate from its decentralized collection system.*

Question: How much should your community allocate for the budget of your Zero Waste Program?

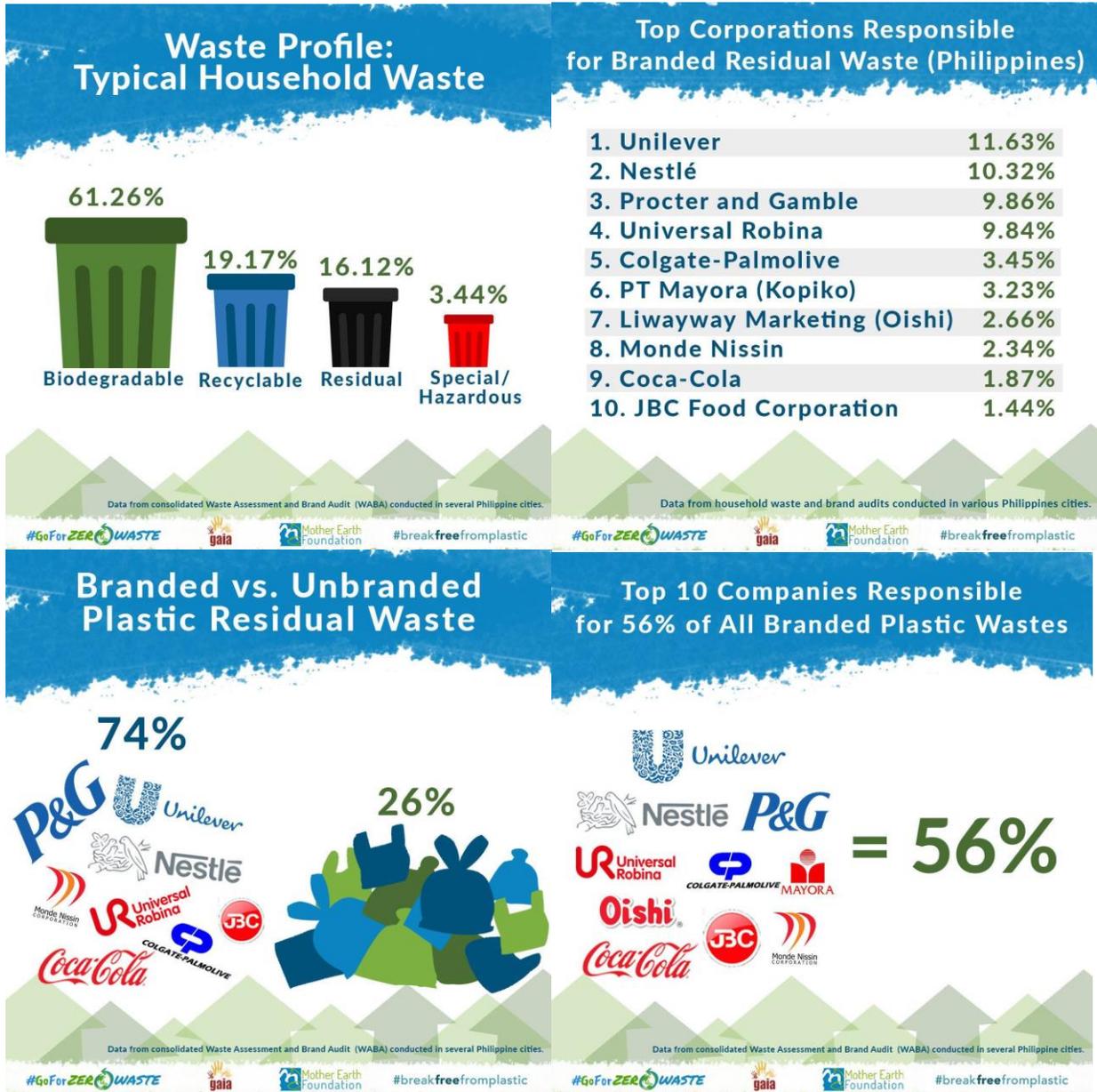
Answer: *If Barangay Looc manages to reach a 77% diversion rate for its household waste, it will only need to spend Php98,648 a year in hauling costs, compared to Php463,320 if it were to bring all of its household waste to the landfill. If Looc maintains its diversion rate at 67%, the barangay can reduce its tipping fees to only Php155,019.15. To pay for the collectors' salaries, Barangay Looc has started charging a monthly user's fee of Php30 for each household.*

Question: How much is the possible income that you can expect to generate from your Zero Waste Program?

Answer: *Barangay Looc can earn as much as Php449,280 per year from selling recyclables, which account for 25% of total household waste in the community. It can either set aside the proceeds as additional incentive for the collectors or include them as part of the barangay budget. In addition to the potential income, Barangay Looc reduce hauling costs to as low as Php98,648 annually, compared to Php469,755, if it were to revert back to its collect-and-dump collection system.*

5.3 Sample Publication Materials on WABA Results

The following publication materials illustrate the results based on a series of Waste Assessment and Brand Audits conducted during the first half of 2018 in Malabon and Quezon City in the National Capital Region; the City of San Fernando, Pampanga in Region 3; Batangas City in Region 4-A; Nueva Vizcaya in Region 2; and Tacloban City in Region 8:



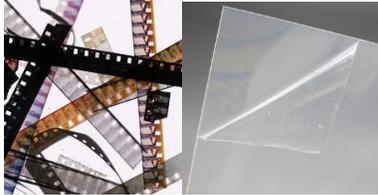
Appendix A. Sample WABA Daily Collection Table

Monitoring Sheet for Waste Assessment and Brand Audit (WABA)

Brgy. _____, _____ City

WACS Household Number:	Biodegradable Kitchen Waste	Residual Waste	Recyclable Waste	Garden Waste	Special Waste	Hazardous Waste	Total Kg
Name of Owner: Point Person: Total # HH members:	(Leftover foods, fruit & vegetable peelings, etc.)	(candy wrappers, junk foods, sachets, styrofoam, rubber, ceramic, etc.)	(Glass bottles, PET bottles, papers, newspapers, metals, tin cans, hard plastic, etc.)	(leaves, grass, trimmings/branches, etc.)	(diapers, sanitary napkins, used tissue)	(busted bulbs/lamps, batteries, worn out appliances, etc.)	
Day 1 (DATE)							
Day 2 (DATE)							
Day 3 (DATE)							
Day 4 (DATE)							
Day 5 (DATE)							
Day 6 (DATE)							
Day 7 (DATE)							
Day 8 (DATE)							
Total Kg							

Appendix B. Uncommon types of waste

Residual Waste		
Thin film plastics (including X-Rays)		
		
Toxic/Hazardous Residual Waste		
Containers of rugby, paints, thinners, proof cement, and other solvents		
		
Grease and Oil	Electronic Waste	Cosmetic Waste
		
Asbestos materials		
		

Other resources available online

Sample filled up WABA forms can be downloaded [here](#).