

# A 10-STEP MANUAL TO IMPLEMENTING A COMMUNITY ZERO WASTE PROGRAM



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Quezon City, Philippines



GAIA is a global network of more than 800 grassroots groups, networks, 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.



Mother Earth Foundation (MEF) is an NGO of men and women from the Philippines who seek to raise the level of public awareness on environmental issues and mobilize people to act positively on the resolution of these issues. Mother Earth is an active member of Eco Waste Coalition, GAIA (Global Alliance for Incinerator Alternatives), PNCC (Philippine Network for Climate Change), Partnership for Clean Air, ZWIA (Zero Waste International Alliance) and IPEN (International POPs Elimination Network).

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## LIST OF ABBREVIATIONS

AIP	Annual Investment Plan
APP	Awareness, Perception, and Practices
BDP	Barangay Development Plan
BESWMC	Barangay Ecological Solid Waste Management Committee
CENRO	City Environment and Natural Resources Office
CO	Community Organizer
DA	Department of Agriculture
DENR	Department of Environment and Natural Resources
DILG	Department of Interior and Local Government
EMB	Environmental Management Bureau
ESWM	Ecological Solid Waste Management
HOA	Homeowners Association
IEC	Information, Education, and Communication
IRR	Implementing Rules and Regulations
ISF	Informal Settler Family
LGU	Local Government Unit
MEF	Mother Earth Foundation
MENRO	Municipal Environment and Natural Resources Office
MoA	Memorandum of Agreement
MRF	Materials Recovery Facility
NEDA	National Economic and Development Authority
NSWMC	National Solid Waste Management Commission
PIA	Philippine Information Agency
PWD	People With Disabilities
RA 9003	Republic Act 9003
SLF	Sanitary Landfill
SWM	Solid Waste Management
TODA	Tricycle Operators and Drivers' Association
NHA	National Housing Authority
WABA	Waste Assessment and Brand Audit
WACS	Waste Analysis and Characterization Survey

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# FOREWORD

Establishing Zero Waste Communities seemed like a very daunting task some 10 years ago. Thanks to the determination and commitment of the Mother Earth Foundation (MEF) team led by its president, Mr. Froilan Grate, the steps to achieve this are now available in the 10 Steps in Establishing a Community Ecological Solid Waste Management (ESWM) Program Manual. Many publications on how to implement an ESWM program have been published, but this is a first of its kind as it is presented in a detailed, step-by-step format.

This manual guides the stakeholders through the process, which, if followed, will make the implementers and local government leaders realize how doable it is. The Ecological Solid Waste Management Act of 2000, also known as RA 9003 provides the framework for this 10-Step Program.

Many complain that the law has many defects and that's why it hasn't been fully enforced 20 years since its enactment. But MEF has proven that it is implementable. As they say, "*Kapag ayaw gawin, maraming dahilan; kapag gustong gawin, maraming paraan,*" (When someone doesn't want something done, there will be many excuses, but when there is genuine interest to see a plan through, there are many ways to solve the problem).

The 10-Step Program espouses the Zero Waste principles of establishing a system that conserves our finite resources for the future generation, providing better livelihood for community workers, creating healthier, cleaner, and greener surroundings, and reducing waste management costs.

Through the MEF Team composed of Program Managers Maricon Alvarez, Raphaelo Villavicencio, Shelley Carbonel; Project officers Elizabeth Biagcong, Praxedes Rivera, Sherra Cervantes, Rannie Winona Lebria; Senior Community Coordinators Lucila Sandoy and Segundina Catapang; and the community organizers and waste workers that are on the ground every day, the 10 Steps to answer several *WHY* questions were developed:

*Why do we have to be responsible for the waste that we generate?  
Why do we have to conserve resources for our children and their children's children?*

To answer this, we need to reach the inner minds and hearts of the stakeholders. The *HOW* is easier to teach. But the success of this advocacy happened because of the focus on the *WHY*.

Communities have told us that they have attended so many seminars on solid waste management that haven't really helped. People became tired of hearing the *HOWs* without having support systems, like segregated collection and an operational MRF in place. Many residents segregate at home but when the garbage trucks come, the segregated waste gets mixed in the trucks. This becomes frustrating, which makes people give up on segregating completely.

By showing the *WHY* of waste management, MEF is confident that this 10-Step Program Manual will guide all the other local government units and its constituents in implementing RA 9003 and it will be an effective tool for solving the solid waste problem in the country.

Sonia S. Mendoza  
**Chairman**  
*Mother Earth Foundation*



# INTRODUCTION AND THE SALIENT POINTS OF RA 9003

The 10 Steps in Establishing a Community Solid Waste Management Program was designed by Mother Earth Foundation (MEF) to streamline the process of implementing the Ecological Solid Waste Management Act of 2000, also known as Republic Act 9003 (RA 9003). It serves as a systematic and simple framework to guide local governments in enforcing the law.

The passing of RA 9003 was prompted by the Payatas Landslide that happened on July 10, 2000. This landslide of the Payatas open dumpsite killed more than 200 people, caused the disappearance of several more persons, and displaced at least 3,000 informal settlers living around its vicinity in Lupang Pangako, Quezon City.

## 1. CLOSURE OF DUMPSITES

Consequently, Article 6, Section 37 of RA 9003 mandated the closure of all open dumpsites in the country “within three (3) years after the effectivity of the Act.” In areas where open dumpsites still existed from 2001 to 2004, the city or municipality must have declared the eventual phaseout and closure of this dumpsite. Instead, all residual waste of a city/municipality or cluster of cities and/or municipalities are to be brought to a sanitary landfill (SLF) for final disposal:

**Section 37. Prohibition Against the Use of Open Dumps for Solid Waste.** No open dumps shall be established and operated, nor any practice or disposal of solid waste by any person, including Local Government Units (LGUs), which constitutes the use of open dumps for solid wastes, be allowed after the effectivity of this Acts: Provided, That within three (3) years after the effectivity of this Act, every LGU shall convert its open dumps into controlled dumps, in accordance with the guidelines set in Sec. 41 of this Act: Provided, further, That no controlled dumps shall be allowed five (5) years following the effectivity of this Act.

As of May 2021, the Department of Environment and Natural Resources (DENR) completed the closure of all 335 open dumpsites in the country, with more than 200 operational SLFs servicing 399 LGUs.



Open dumpsite in Tacloban. PHOTO BY SHERMA BENOSA

## 2. DECENTRALIZED WASTE MANAGEMENT

Ultimately, RA 9003 provides a framework for a comprehensive ESWM program to be enacted by LGUs. The aim of the 10 step process is to highlight and operationalize the critical sections of RA 9003 to make it easier for barangays to effectively administer the law within their jurisdictions.

One such vital section of RA 9003 is Section 10: Decentralization of Waste Management. This transfer of responsibility on waste management from the city-level to the lower administrative units allows for a more localized approach when it comes to dealing with the city’s waste. Under a decentralized system, barangays, through their respective councils and multi-sector ESWM committees, are empowered to develop their own waste management plans, design collection systems, and recovery/treatment facilities, and earmark appropriate resources for their waste management programs.

Based on barangay-level waste audits conducted by MEF, as much as 80% of domestic waste can be managed at the community level, through segregation-at-source, composting, and aggregation of high-value recyclables for selling. By capturing the majority of municipal waste at the barangay level, solid waste management becomes easier and less costly. However, cities and municipalities are still mandated to handle waste produced by bulk generators (such as condominiums, malls, markets, and offices) either directly or through private waste contractors.



Waste collectors going door-to-door in Tacloban City.

<sup>1</sup> Peña, R., 2017. Peña: Payatas landfill is permanently closed. [online] Sunstar. Available at: <<https://www.sunstar.com.ph/article/160425>>.

<sup>2</sup> Ramos, M., 2020. QC gov’t found liable for Payatas ‘trash-slide’. [online] Inquirer. Available at: <<https://newsinfo.inquirer.net/1214288/qc-govt-found-liable-for-payatas-trash-slide>>.

<sup>3</sup> “DENR Shuts down 100% of All Illegally Operating Dumpsites Nationwide.” Department of Environment and Natural Resources. May 23, 2021. <https://www.denr.gov.ph/index.php/news-events/press-releases/2606-denr-shuts-down-100-of-all-illegally-operating-dumpsites-nationwide>.

<sup>4</sup> “DENR Aims to Build 300 More Sanitary Landfills by 2022.” Department of Environment and Natural Resources. December 30, 2020. <https://www.denr.gov.ph/index.php/news-events/press-releases/2140-denr-aims-to-build-300-more-sanitary-landfills-by-2022>.

<sup>5</sup> Department of Environment and Natural Resources. Handbook on the Ecological Solid Waste Management Act of 2000 and Its Implementing Rules and Regulations. Quezon City, Metro Manila: The Philippine Environmental Governance Program, Department of Environment and Natural Resources, Manila, 2003.

<sup>6</sup> Guerrero, Lea. Tech. Enabling Sustainable Cities through Zero Waste: A Guide for Decision- and Policy-Makers. Quezon City, Metro Manila: Global Alliance for Incinerator Alternatives, 2019.



### 3. MANDATORY WASTE DIVERSION

Another section of RA 9003 provides a directive for the reduction of waste generated and waste disposed under Section 20: Mandatory Waste Diversion. In this section, a goal of a 25% rate of waste diversion or waste to be averted from ending up in sanitary landfills was set for the years 2001-2005. According to the Philippine Development Plan 2017-2022 of the National Economic and Development Authority (NEDA), this number was updated to a rate of 80% waste diversion for the years 2015-2020.

These goals of waste diversion are supported by the succeeding Section 21: Mandatory Segregation of Waste which mandates at-source segregation and the implementation of a “No Segregation, No Collection” policy by all LGUs. Moreover, this section prohibits cities and municipalities from collecting mixed or unsorted waste and mixing segregated waste. Local governments can achieve higher diversion rates, even meeting Philippine Development Plan (PDP) 2017-2022 targets, after adopting Zero Waste strategies such as source segregation, composting of organic waste, and increased recovery of recyclables.



Door-to-door waste collection in Navotas City. PHOTO BY VEEJAY VILLAFRANCA



Figure 1. Proper attire of a waste worker on duty

### 4. NO IMPROPER DISPOSAL

RA 9003 also strictly prohibits the disposal of waste along the curbside, bringing out household waste during non-collection days, littering along waterways and canals, and burning all types of waste, including dried leaves (Section 48: Prohibited Acts).

Other such essential points of RA 9003 include the correct and safe collection of solid waste by designated waste collectors. Under Section 23, Requirements for Collection of Solid Waste, the minimum standards state that all collectors are to receive 1) adequate personal protective equipment (such as gloves, face masks and proper footwear, and 2) mandatory training on the proper handling of waste. Under this point, an emphasis is placed on the importance of strict compliance with the segregation of hazardous and infectious waste from the other types of domestic waste generated by households, as stated under RA 6969, or the Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990.



## 5. INSTALLATION OF MATERIALS RECOVERY FACILITY IN EVERY BARANGAY

Additionally, the law also mandates the installation of a Materials Recovery Facility (MRF) in every barangay or cluster of barangays detailed under Section 32: Establishment of an LGU MRF. Ideally, the MRFs are located in a barangay-owned (or -leased) land that is easily accessible by the barangay residents and by the chosen collection vehicle, such as unused lots, public markets, school compounds, and multi-purpose community spaces. Local governments are also advised not to build MRFs near water bodies or flood-prone areas because of the potential contamination of stored waste should water levels rise and flooding occur within the vicinity. According to the Water Code of the Philippines (PD 1067 s1976), the construction of permanent structures three meters away from esteros and 10 meters from rivers is prohibited.

The existence of MRFs within a community also signifies that decentralized collection is being implemented within the barangay, or cluster of barangays, since these facilities receive segregated waste for final sorting, composting, and recycling. MRFs are also utilized to temporarily store residual, hazardous, and special waste which are to be handled and transferred by the city or municipality to another long-term disposal facility or SLF.



Materials Recovery Facility in Apo Island, Dauin, Negros Oriental. PHOTO COURTESY OF MOTHER EARTH FOUNDATION

## 7. LEGAL FRAMEWORK TO PENALIZE VIOLATION OF ANY OF THE PROVISIONS OF THE ACT

Lastly, RA 9003 also stipulates the right of citizens to file an appropriate civil, criminal, or administrative case against anyone who violates the provisions of the law and public officials who fail to fulfill their mandated duties and responsibilities under Section 52: Citizens Suit.

Aside from the aforementioned details, encompassing RA 9003 are stipulations on the creation of institutional processes and incentives for the local government units' ESWM programs. MEF aimed to translate these stipulations through a fixed set of activities by creating their 10 Step program. This manual describes the 10 Step process from the perspective of MEF as the key implementing partner of the program.

Implementing partners can modify the steps according to their own community's needs and contexts.





# THE 10 STEPS TO IMPLEMENTING A COMMUNITY ZERO WASTE PROGRAM



Figure 2. The 10 Steps to Implementing a Community Zero Waste Program at a Glance

# STEP 1

## Green Profiling

Before implementing the activities stated in RA 9003, a comprehensive assessment of the barangay's existing SWM practices needs to be accomplished. This first step is called Green Profiling, and it consists of three components: a) the solid waste awareness, perception and practices (APP) baseline survey; b) barangay profiling; and 3) the waste assessment and brand Audit (WABA).

### 1.1 Solid Waste Awareness, Perception, and Practices (APP) Baseline Survey



The solid waste awareness, perception, and practices or APP baseline survey is an examination of your target households' current awareness, perceptions, and practices when it comes to managing their waste.

One of the questions looks into the household's knowledge about waste identification (e.g. if they know what residual waste is), while another question aims to determine whether the household knows their garbage collection schedule. MEF generally targets 10% of the households of the barangay and employs the stratified random sampling approach to identify the target interviewees for the APP survey. Ideally, these respondents are the heads of their households as those in charge of managing the household would be the best informants to describe their waste management practices.

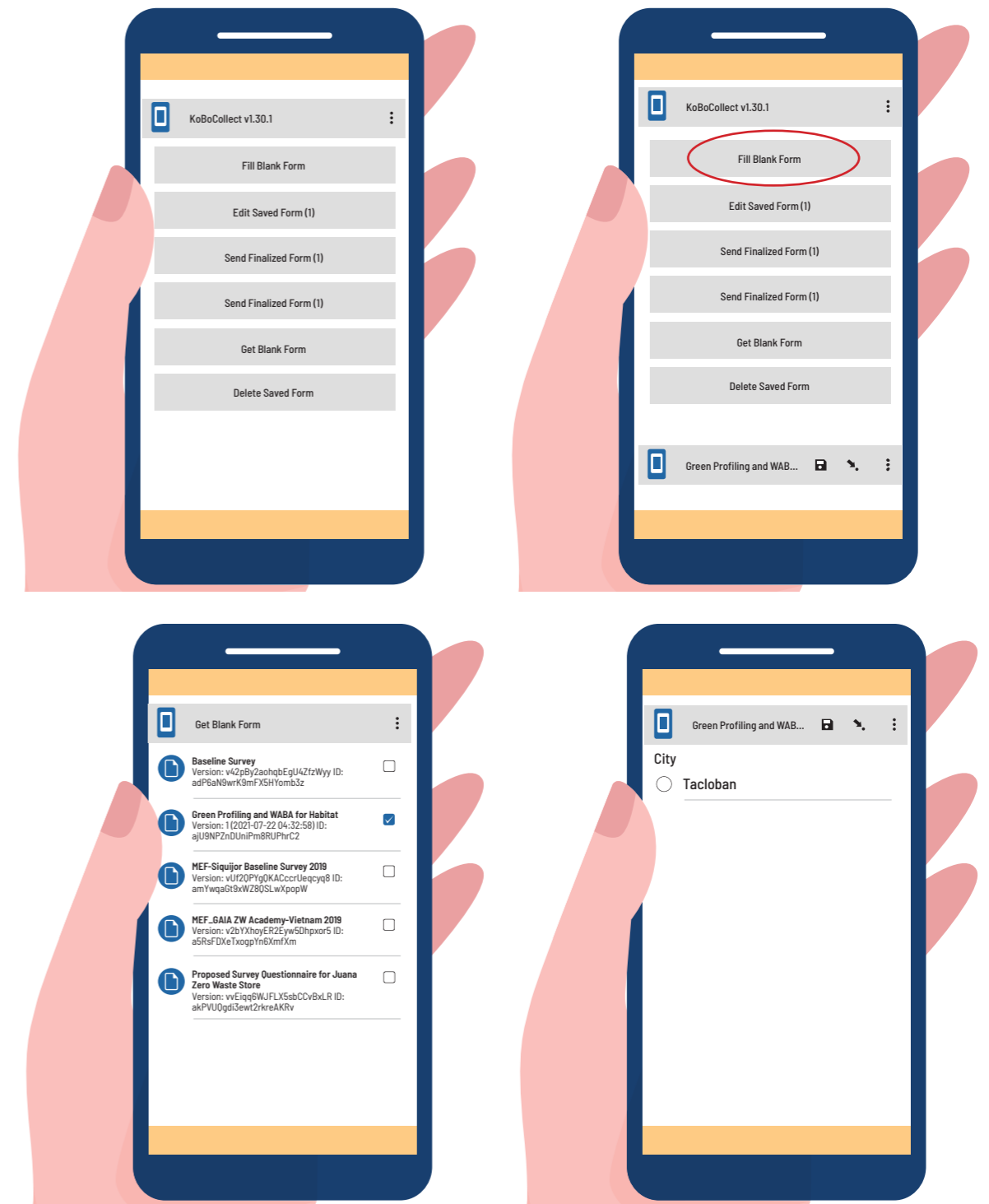
**TABLE 1.** Sample APP Survey Questions

Part 2. Practices		Always Palagi	Rarely Minsan	Never Hindi
2.01	We segregate our trash before disposal. Among gi bulag-bulag ang among mga basura usa namo gi labay. (Bisaya) Pinaghihiwalay namin ang aming mga basura bago itapon. (Tagalog)			
2.02	We burn mixed waste, including plastics. Gi sunog namo ang mga nagka-lainlaing mga basura kauban ang mga plastic. Nagsusunog kami ng halo-halong basura, kasama ang plastic.			
2.03	We sell recyclable wastes to junk shops/collectors. Nag baligya mi og laing basura nga pwede ma resaykel sa junk shop og kolektor. Nagbebenta kami ng ibang basura sa junk shop o kolektor.			

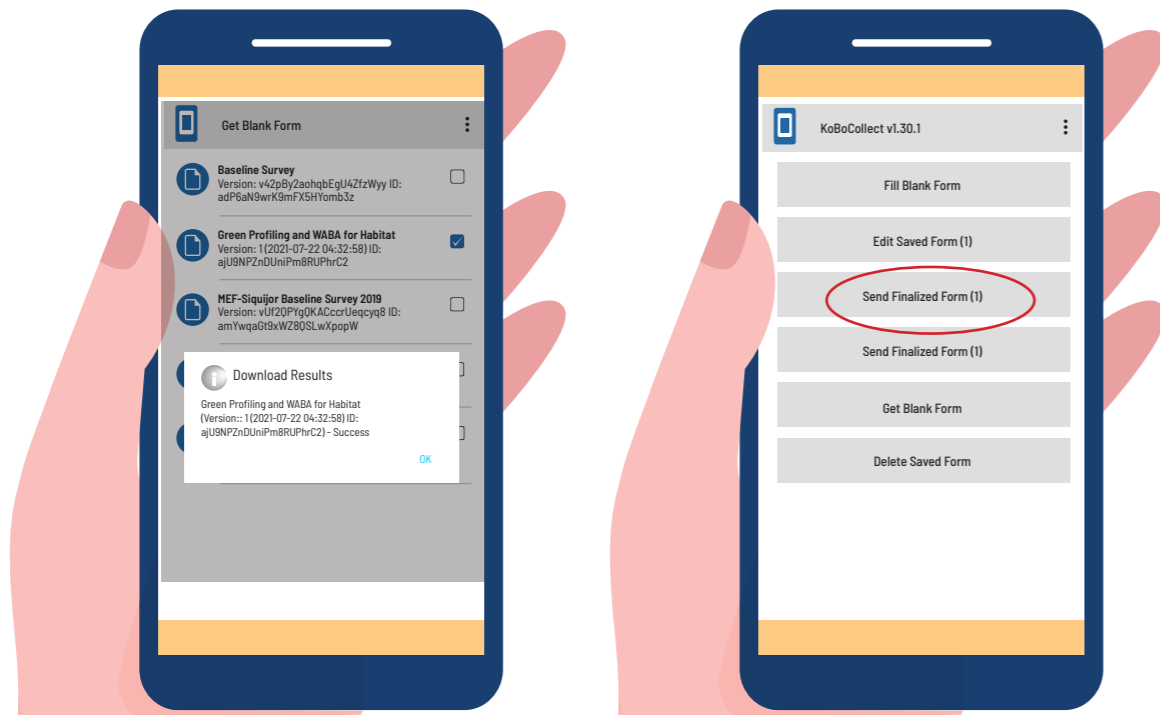
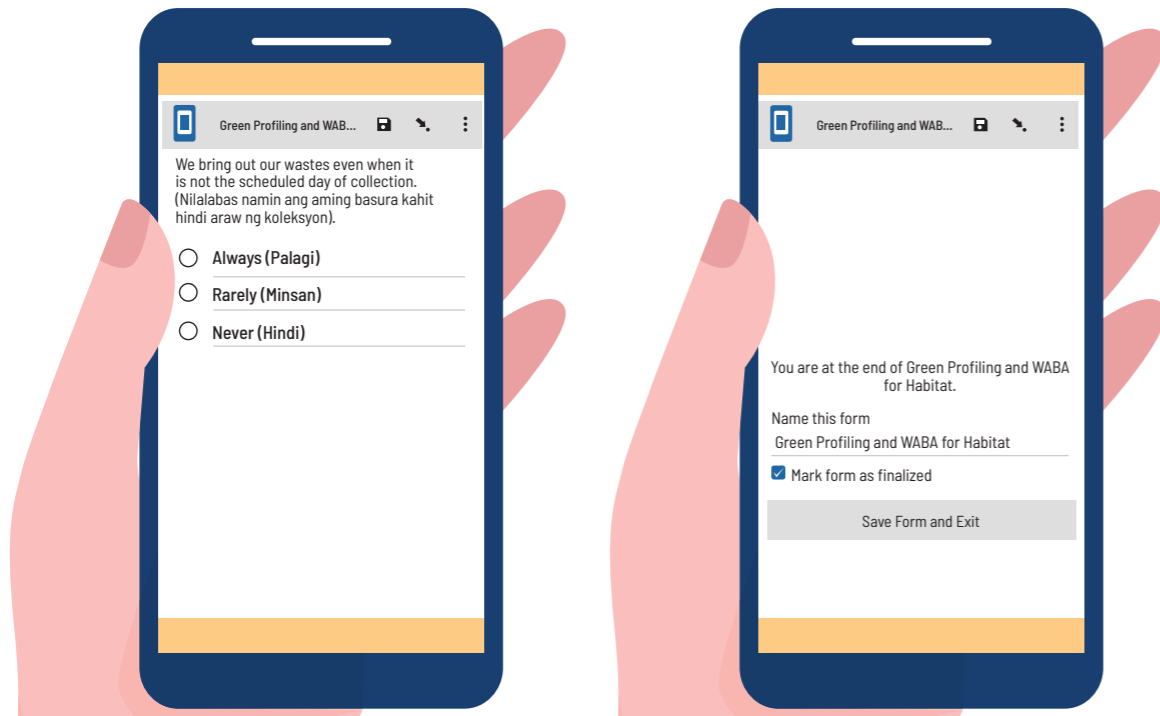
<sup>7</sup>Stratified random sampling is a methodology of taking a sample of a target population wherein the population is further divided into subgroups and informants are randomly selected within these subgroups respective of their size (e.g. more informants will be chosen within a larger *purok*, and less informants will be selected from a smaller *purok*).

Typically, MEF conducts the APP Survey through a mobile application called KoBoToolbox (currently only available for Android). This tool is often used by development workers to compile information from interviews or other forms of primary data. KoBoToolbox is the chosen tool in conducting the APP survey not only because it is paperless (the entire survey can be conducted through the mobile app), but also because it includes a feature where the data collected are automatically processed, once uploaded online, and produced into easy-to-read and ready-to-use charts.

**Figure 3.** The KoboToolbox







**TABLE 2.** Sample Baseline Survey Results on Waste Management Practices

	Always	Rarely	Never
"We segregate our wastes before disposal."	16%	19%	65%
"We burn mixed wastes, including plastics."	-	1	99%
"We bring out waste even when it is not the scheduled day of collection."	10%	3%	87%
"We sell recyclables to junk shops/collectors."	34%	26%	40%
"We practice composting at home."	5.9%	2.1%	92%
"We have segregated bins inside our home."	13%	16%	70%

**TABLE 3.** Sample Baseline Survey Results on Waste Management Awareness and Perceptions

	Yes	No	Not Sure
"I have heard of R.A. 9003 or the ESWM Act of 2000."	11%	82%	7%
"I know how to segregate my waste."	81%	12%	7%
"I know what residual waste is."	10%	86%	4%
"I know the regular schedule of collection in the barangay."	81%	13%	6%
"I know where the waste collected in my barangay is being dumped."	9%	88%	3%

The responses to the APP Survey can help the project implementer identify the appropriate strategies for improving household compliance to their *barangay's* waste management program, and their understanding of proper household waste management.

For example, 65% of the respondents said that they never segregate their waste before disposal (see Table 2) despite 81% of the respondents saying that they know how to do it (see Table 3). This discrepancy is further highlighted by 86% of respondents saying that they do not know what residual waste is (see Table 3). This response points to the question of how factual their concept of waste segregation actually is.

Results such as these show the importance of conducting an APP survey. These responses will inform exactly what the project implementer's strategy needs to address, such as providing accurate information about what proper waste segregation is, and how to put their awareness into action to ensure compliance.

**TABLE 4.** SAMPLE BASELINE SURVEY RESULTS ON WASTE MANAGEMENT COMMITMENTS

	Yes	No	Not Sure
"I am willing to bring my own waste to the MRF."	64%	11%	25%
"I will support an ordinance banning single-use plastics."	92%	4%	4%
"I will complain if they stop the distribution of free plastic bags in markets."	4%	95%	1%
"I will support my barangay if they implement a 'No Segregation, No Collection' policy."	91%	3%	6%

Table 4 reveals that the respondents were consistent in their commitment to support ordinances banning plastics and mandating segregation at source. Based on these results, the local government should expect that their residents will be willing to comply with the proposed policies and that they are aware of why such policies are necessary.

## 1.2 Barangay Profiling

Indicated under Section 17 of the RA 9003: The Components of the Local Government Solid Waste Management Plan is the inclusion of a city or municipal profile. The information under this component comprises of background information on the locality (which in this case is the barangay) such as its geographic features, estimated total population, an illustration of the area (including the layout of the roads, houses, green spaces, commercial and industrial spaces, existing infrastructure, solid waste facilities, and so on) and potential spaces for SWM facilities, estimated waste generation (if available), and an inventory of existing waste disposal sites or waste processing facilities.

Moreover, the step on Barangay Profiling is also designed to determine the level of compliance of the target barangay when it comes to their implementation and enforcement of RA 9003. This component further assesses (if it exists) the barangay's SWM plans, budget, committees and officers assigned to manage the SWM program of the barangay, all of which barangays are mandated to have under RA 9003.

In essence, the Barangay Profiling is also a way of corroborating the results of the APP survey to the data given by the local officials. For example, if there is a functioning and effective ESWM program being implemented by the barangay, the response of the residents should show a higher compliance rate of waste segregation at-source.

In the case that the barangay has no existing or functioning SWM plan, MEF as the implementing partner will guide them with the following activities:

- **Community Mapping.** This includes 1) determining the number of people, households, subdivisions, streets, and (if applicable), informal settler families (ISFs); 2) identifying problematic areas (if any) such as spaces where open dumping and/or burning occurs; 3) studying the layout of the barangay to find out what type of collection vehicle would be the most appropriate (e.g. if households are far apart from each other, it would be more efficient to use tri-bikes rather than pushcarts); and 4) surveying potential and adequate spaces for building the community MRF.
- **Financial Assessment.** Prior to formulating a functioning SWM plan, MEF would need to assess the financial capacity of the barangay to afford certain services or purchase facilities and materials required in the implementation of a SWM program.



**Figure 4.** Community Map

## 1.3 Waste Assessment and Brand Audit (WABA)

The waste assessment and brand audit (WABA) is a methodical process of collecting and analyzing waste to determine the amount and types of waste generated by the households in your target community, and which brands are responsible for producing certain percentages of this waste. Essentially, the WABA builds on the waste analysis and characterization study (WACS) but adds the element of brand identification to be able to use the results in campaigns calling for corporate accountability and redesign of such problematic products.

<sup>8</sup> For example, part of this process includes identifying the type of materials available and appropriate for building the barangay MRF, such as if it's more appropriate to use wood versus metal for the frames of the eco shed.



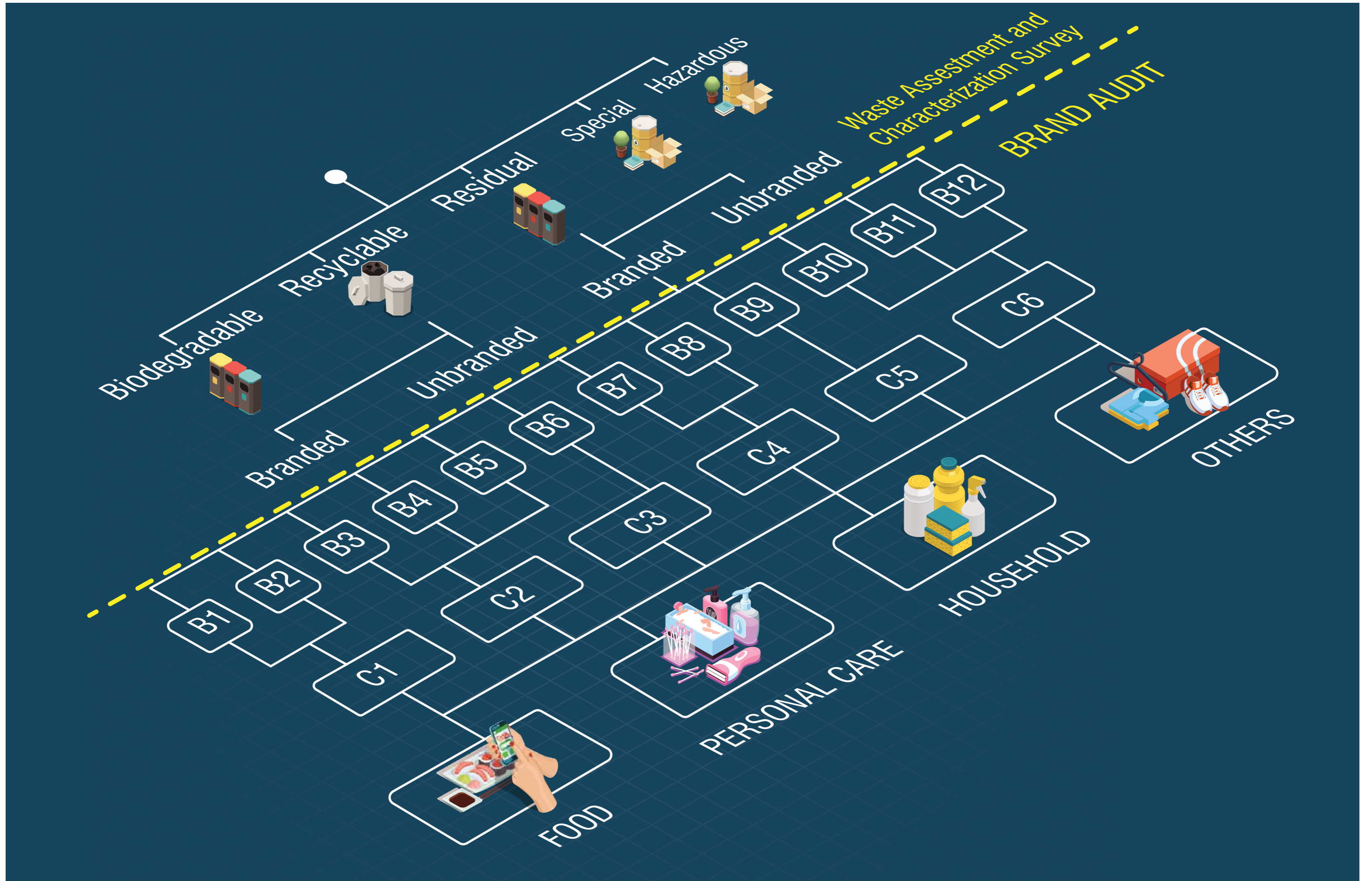


Figure 5. Suggested Layout for the Waste Assessment and Brand Audit

# STEP 2

## Multi-Sectoral Training and Consultation

The objective of this step is to educate members from different sectors, not limited to the local officials, on RA 9003 and proper SWM practices.

### 2.1: Prepare and Modify Your Materials/Presentation Content

The data collected from the first step will be assessed, and MEF's module on ESWM (including a presentation on the salient points of RA 9003, the barangay scorecard, and ESWM training proper) will be modified to include the highlights of the results of the APP survey and WABA data. The presentation of MEF's module will first be given to barangay officials, barangay staff, and existing waste workers.

### 2.2: Identify Your Target Audience

After the initial presentation to the barangay officials, there will be a public launching of the project (usually a half day event) where MEF will present an overview of the project, along with highlights of the baseline survey and WABA data. The target audience of the public launching is all sectors of the barangay, the partner LGU, a city/municipal representative, the project funder (ideally, if available), a DENR or an environmental agency representative, and a CENRO/MENRO representative. After the public launch event, MEF will reach out to the different sectoral representatives in attendance to schedule their sector-specific ESWM training as part of their ongoing contact building initiative.

The advantage of including multiple sectors in ESWM discussions is being able to get the perspectives of each sector when it comes to waste management. For example, barangay officials may suggest certain strategies for waste collection that can be revised to a more appropriate and efficient approach by the waste workers who would know the experience of implementing this strategy on the ground.

The consultation also provides an opportunity to identify new/additional members of the Barangay Ecological Solid Waste Management Committee (BESWMC).

**TABLE 5.** Key Government and Sectoral Representative

Group/Organization/Office	Common Examples
National Agencies present in the Community	Department of Environment and Natural Resources (DENR), Environmental Management Bureau (EMB), National Housing Authority (NHA), Department of Agriculture (DA), Philippine Information Agency (PIA), and other related agencies
Local Offices	City/Municipal Environment and Natural Resources Office (CENRO/MENRO), Barangay officials
Key Sectors	School leaders, junk shop owners, business establishment owners, senior citizens, youth groups, religious groups, transport groups (e.g. TODA), private subdivision representatives, Homeowners Association (HOA) representatives, and other sectoral/district leaders not represented but existing under the jurisdiction of the barangay.

It is vital to the effectiveness of the project to actively engage with the different offices and agencies that exist in the community. From MEF's experience, there were some cases where residents of a barangay were concerned as to why they were being asked to segregate their waste when this same practice was not being followed by the government offices in their locality. Local officials are therefore highly encouraged to set an example for their community by demonstrating proper ESWM practices in their offices and workplaces.

### 2.3: Go with the Right Flow for the Trainings and Consultations

If there are no available multi-purpose facilities or offices that can host the consultations, project implementers are encouraged to be creative and flexible when choosing their venue. For example, MEF has experienced giving their presentations to their target sectors/groups outdoors, under mango trees, using makeshift projector screens. Ensure that the proper clearance or approval forms are obtained beforehand, if applicable. If physical gatherings are prohibited or not possible given logistical constraints, presentations may be conducted online over Messenger, Zoom, Google Meet, or any other available video call applications.





# STEP 3

## Establishment of the Barangay Ecological Solid Waste Management Committee (BESWMC)

In many cases, barangays qualify its council (e.g. chairman and seven kagawads) as their BESWMC. RA 9003, however, requires a multi-sector committee, pursuant to RA 9003 IRR Rule VI Sec. 7, ideally composed of the following sectors and departments:

- a) One kagawad (often the head of the environment committee);
- b) Sangguniang Kabataan chair;
- c) The presidents of Homeowners Association (HOA);
- d) Public/private school principals or representative;
- e) One Parents and Teachers Association (PTA) president or representative;
- f) One religious organization representative;
- g) One business sector representative;
- h) One environmental NGO (non-governmental organization) representative;
- i) The president of the Market Vendors Association; and
- j) One representative from the junk shop owners' association

In other cases where some of these sectors are not present, the barangay can nominate representatives from the waste workers, community/purok leaders, the elderly, transportation groups, PWD organizations, or the LGBTQIA+.

There have been instances where the barangay already has an existing BESWMC Committee. If this is the case, the tasks of the barangay, with the support of the Implementing Partner, are to update the current members (if they are still active), reactivate the Committee and their roles, and to re-evaluate the current commitments of the Committee (if any). Once the BESWMC has finalized their members, MEF will give them a refresher on ESWM and an overview on their project.

According to RA 9003 IRR Rule VI Sec. 6; DILG Memorandum Circular No. 2018-112, the duties and responsibilities of the BESWMC falls under the mandate to lead the implementation of the ESWM program, and serve as an institution in the implementation and monitoring of its relevant projects and activities. Specifically, the tasks designated for the BESWMC are:

- a) Formulate a community solid waste management program consistent with that of the city or municipality;
- b) Develop a system for sorting and collecting domestic waste;
- c) Establish a Materials Recovery Facility within the barangay or cluster of barangays - whether barangay-owned or leased, or any suitable open, accessible space;
- d) Allocate or source funds for implementing the waste management of the barangay;
- e) Organize a group of area or street coordinators to assist BESWMC in the implementation of activities;
- f) Integrate the ESWM Program in the Barangay Development Plan (BDP) or Annual Investment Plan (AIP); and
- g) Submit monthly reports on the progress of the barangay ESWM program to the city or municipal-level ESWM committees.

In addition to these tasks, MEF identified the following duties to also be performed by the BESWMC:

- a) Find alternative sources of funds for the ESWM program outside of the barangay budget; and
- b) Implement policies and plans on (i) education, (ii) engineering, (iii) enforcement, and (iv) enterprise development.
  - i. Education
    1. Develop and disseminate IEC campaign materials (such as brochures and leaflets) on SWM to every household, business establishment, and other existing institutions within the barangay;
    2. Conduct community training sessions and seminars on ESWM, particularly on household waste segregation, composting, and reduction of waste for disposal and recycling; and
    3. Issue community policies that will patronize more environmentally-friendly products and packaging.
  - ii. Engineering
    1. Provision of support mechanisms for segregated collection (such as pushcarts and other appropriate waste collection vehicles); and
    2. Set up redemption centers or MRFs within the barangay for recyclable materials before they are sold in bulk to junk shops.
  - iii. Enforcement
    1. Enact barangay ordinances on the establishment of an award system or other similar incentives and sanctions in the barangay, along with other mandated tasks under the IRR of RA 9003.
  - iv. Enterprise Development
    1. Establish a system of buying and selling of recyclable and organic waste (such as compost);
    2. Promote livelihood activities that make use of waste materials;
    3. Network with the private sector/business establishments within the barangay; and
    4. Put up micro-financing opportunities for livelihood products made from waste.
      - a) (boxed) Disclaimer: This fourth category is not as pronounced in MEF's interventions. This is because when the focus is shifted to income-generating activities, the BESWMC tends to forget the essence and foundation of SWM. Instead, this fourth category can be introduced towards the end of the establishment of the ESWM program. Income-generating livelihood programs will only be possible with the effective implementation of an ESWM program.
- c) A Barangay ESWM Secretariat (from the community or Barangay Development Council) shall be formed to assist the BESWMC in the performance of its functions. It shall provide technical and administrative support to the BESWMC whenever necessary.

### THINGS TO CONSIDER IN ESTABLISHING A BESWMC

1. **Determine all sectors present within a barangay are represented.** Ensuring proper representation from various sectors creates a more consultative environment for the barangay in implementing its SWM program. Sector representatives can cross-check compliance on waste sorting (e.g. between waste workers and HOA representatives), as well as align the SWM program with other sector-based initiatives (e.g. youth, women and children) of the barangay.
2. **Conduct public consultations and awareness campaigns.** It would also be beneficial for the BESWMC to conduct a public consultation and awareness campaign to determine the specific issues that their community faces when it comes to waste management so they could best come up with appropriate solutions to address these concerns from the ground.
3. **Ensure the availability of data (results of WABA, status of ongoing programs, inventory of equipment, manpower available, and existing ordinances or policies related to waste management).** The BESWMC must also guarantee that the pertinent data aforementioned is available to them as it will be key to informing their waste management plans and/or policies.

BESWMCs complement the work of their respective city and municipal SWM boards, where the president of the Association of Barangay Councils (all barangay chairpersons in a city or municipality form a local association of barangay councils), sits as a board member, along with a) one representative of the Sangguniang Panlungsod or the Sangguniang Bayan; b) chairperson of the Sangguniang Kabataan Federation; c) a representative from NGOs involved in recycling and environmental issues; d) a recycling industry representative; e) representative from the manufacturing or packaging industry; and g) a technical or marketing expert determined by the Board. The city or municipal mayor sits as chair of the SWM Board.



## STEP 4 Formulation of Barangay Ordinance and SWM Plan

The mandate for cities, municipalities, and provinces to create a 10-year SWM plan is listed under Section 16: Local Government Solid Waste Management Plans. According to Section 16, the plan will “place primary emphasis on implementation of all feasible re-use, recycling, and composting programs while identifying the amount of landfill and transformation capacity that will be needed for solid waste which cannot be reused, recycled, or composted.” This step will focus on the former directive.

The specific components that are to be covered by this plan are further elaborated on under Section 17: The Components of the Local Government Solid Waste Management Plan. Such components include, but are not limited to:

1. A plan for the Information, Education, and Communication (IEC) campaign (what exactly it will contain and how it will be disseminated);
2. The engineering overview of the Materials Recovery Facility (MRF) construction and function (detailed further in Section 33);
3. An implementation plan for the ESWM program (including estimated schedule of the dry-run and the collection system); and
4. The monitoring and evaluation strategy.

Alongside all of these components, this step also requires identifying the target date of implementation per activity, the actual date completed, person/s or group/s involved, materials/facilities and information required, total budget, and budget source. See the sample Ten-Year Solid Waste Management Plan of the City of San Fernando, Pampanga here.

On the other hand, the Barangay Ordinance is essentially a more detailed version of the action plan. While it is not mandated by law that the barangay must have its own ordinance (the law only mandates cities and municipalities to create ordinances, similar to the 10-Year SWM plan), it is still considered a best practice for barangays to develop one of their own that covers at least three years to ensure sustainability of the ESWM program.





# STEP 5

## Formulation of Systems and Collection Schedule

Included in the action plan of the barangay is a timeline for the dry run and full implementation of the ESWM program. Using the data collected from the WABA, the barangay, with the help of the BESWMC, would be able to design a more appropriate localized collection scheme.

A collection scheme consists of the following information:

1. How many waste collectors are needed
2. Which collection route the waste collectors will cover during collection day(s)
3. What type of waste collection vehicle(s) will be used by the waste collectors
4. What materials (type of containers) will be used by the waste collectors in their collection vehicles
5. How often the waste collectors will collect waste from households
6. What day(s) the waste collectors will collect waste from households

### 5.1 Number of Waste Collectors

On average, the formula used for determining the number of waste collectors needed is 200 households per collector. However, this calculation may not be appropriate for all barangays due to some physical characteristics, such as distance between households and the type of terrain of the area (e.g. steep roads). In addition to these factors, you must also consider the total number of households within the collection service area or barangay to better estimate the number of manpower required.

Based on MEF's experience, to decide on the most suitable number of waste collectors per number of households, it is best to consult directly with the existing waste collectors of the area. They would have a better idea regarding how many collectors are needed to effectively service the barangay. The waste collectors employed by the barangay's ESWM program are usually identified by the barangays themselves who typically recommend their existing street sweepers or the informal waste pickers in the area.

For the dry run stage of the ESWM program, employing just one waste collector per collection route would be acceptable. However, if the barangay can provide enough resources to employ more collectors, MEF recommends employing two waste collectors per collection route for the full implementation of the ESWM program. The reason for this recommendation is two-fold. First, the additional collector can take the place of the monitoring officer. Second, the additional collector will be able to help transport the waste collection vehicle when/if it becomes too heavy to push by just one person (especially if the roads are steep).

### 5.2 Collection Route

The different collection routes within a barangay are usually based on officially designated barangay zones, kagawads per purok, or by calculating the number of streets divided by the total population of the barangay. This is where the baseline information (barangay map, household list, barangay profile) obtained during the baselining process will be utilized.

<sup>9</sup>The dry run stage will be covered in Step 8.

<sup>10</sup>The monitoring officer is typically assigned to a barangay staff/volunteer. More information regarding the role of the monitoring officer will also be covered in Step 8.

The recommended direction and end point for all collection routes, regardless of the starting point, is always in relation towards the barangay's MRF. MEF also recommends assigning waste collectors according to the collection routes that are nearest to their location/place of residence or the area where they were already familiar.

The barangay officials and the ESWM Committee are responsible for the initial design of their collection routes. Once they have a proposed system, they consult with the waste collectors to verify if the routes and assignments are realistic. The initial plan must be revised with the input of the waste collectors.



Waste workers in Pilar Village collect waste from the households. PHOTO BY VEEJAY VILAFRANCA

### 5.3 Types of Collection Vehicles

When it comes to the type of vehicles used, it would be useful to once again assess the physical characteristics of the target area or barangay, such as the distance between households, the type of terrain, and how narrow the streets are. For example, if the houses along one collection route are far apart from each other, using a tri-bike would be more efficient in terms of time and energy. On the other hand, if the streets along the collection route are difficult to access or are very narrow, a customized pushcart would be the more appropriate collection vehicle.

It is possible for a barangay to utilize more than one type of collection vehicle if their collection routes require different types of vehicles due to its varied terrain.

Figure 6. Types of Collection Vehicles



### Type of Collection Containers

Materials used for collection refers to the collection containers. The WABA data will include the percentage and volume of each type of waste generated by households per day. This data will help in determining the size of the sacks (for non-organic waste) and pails (for wet organic waste) needed for collection. Higher rates of organic waste generation would require bigger or more pails to be used for collection. The sacks used for non-organic waste are typically from repurposed rice sacks that the barangay usually sources from rice dealers, junk shops, and other small establishments.

### Frequency of Collection

As mentioned in the previous point, the WABA data will include the volume of each type of waste generated per household per day, and this will also inform the required frequency and schedule of collection. For example, the WABA data will most likely reveal that the highest type of waste generated per capita per day is biodegradable waste (or organic waste), as the average amount of biodegradable waste generated by Filipino households was found to be at 62%. Thus, the recommended frequency of the collection of biodegradable waste is daily (Monday to Saturday). In the same vein, if the WABA data reveal that the residual waste generated per capita per day is low (e.g. 5-15% of total waste generated per capita per day), then the recommended frequency of collection for residual waste is every other day or less.

However, it should also be noted that the initial recommendation for the frequency of collection may still change depending on the result of the dry run of the collection system. For example, MEF has experienced having to reduce the number of collection days for residual waste since the proposed frequency of collecting every other day was more than enough to collect the small volume of residual waste from the households versus a daily collection schedule. Thus, the adjustment was to schedule fewer collection days for residual waste. It is also possible to adjust the collection frequency of organic waste, especially if most households already practice home composting. In Thiruvananthapuram in the state of India, for example, the local government distributed aerobic bins to households and communities. Sanitation workers only do door-to-door visits once a week to collect dry waste and to check aerobic bins if they need fixing.

### Day(s) of the Week

Identifying when the collection days will take place within the week will also depend on the agreement on collection frequency. Typically, the collection schedules that are designed (with the help of MEF) take place within Monday to Saturday, where all the biodegradables, recyclables, residuals and hazardous wastes are collected everyday. At the minimum, MEF highly recommends collecting the biodegradables five times a week or as often as possible. This will prevent unwanted foul smell to occur in the household due to waste decomposition and/or mixing of the organic waste with the other types of waste, causing cross-contamination.

The collection schedule of the dry-run will also be based on the WABA data. For example, MEF usually starts with a two-week trial period of daily collection to determine which collection system (schedule, route, vehicle) works best. There are some cases where not much residual waste is being disposed of every day, thus the collection schedule for residual waste can be adjusted to every other day or twice a week.

<sup>11</sup>Global Alliance for Incinerator Alternatives, 2019. Plastics Exposed: How Waste Assessments and Brand Audits are Helping Philippine Cities Fight Plastic Pollution. Quezon City: Global Alliance for Incinerator Alternatives.

## STEP 6 Establishment of Materials Recovery Facility (MRF)

The MRF is considered by MEF as the heart and soul of an ESWM program. On top of it being mandated under Section 32: Establishment of LGU Materials Recovery Facility, the MRF is also integral to the effort to implement a barangay ESWM program; waste segregation and waste diversion, for example, would not be possible without the existence of an MRF. One can also say that how well an MRF is being maintained can be representative of how well RA 9003 is being implemented in the barangay.

1. A standard MRF is comprised of eight main components:
2. An eco-shed for recyclables
3. A label for the facility
4. A perimeter fence
5. A space for the storage of the collection cart
6. An organic garden (if the space permits)
7. A compost pit
8. A compost heap
9. A containment area for residuals

A special (covered) container would also be needed in case collection of household hazardous wastes is needed or included in the local collection system.

### THINGS TO CONSIDER BEFORE ESTABLISHING AN MRF

Availability of the appropriate equipment to build the structure, and construction materials that are economical and durable for bad weather and for flood-prone areas. The materials for the MRF don't need to be high-end, so long as they are functional and easily accessible by the barangay. Strategic location of the MRF in relation to its accessibility for the storing, transfer, and hauling of waste.

Ensure the suitable budget allocation for the procurement of said materials, labor, collection vehicles, and monthly operations (electricity and water bills). Prepare and conduct an orientation of barangay eco-aides/collectors and MRF caretakers. Prepare and conduct public consultations and a launching activity for the MRF. Plan for the barangay's annual projected budget computations with the MRF costing. If private land is utilized and leased for the MRF, the LGU or barangay will need to enter into a Memorandum of Agreement (MoA) with the owner of the land for its usage for at least five (5) years.

In order to determine the appropriate size and design of your barangay MRF, you must utilize your WABA data. This data will inform you of the volume of each type of waste being generated by your barangay daily. Thus, this information can be applied when assessing what size to make each compartment for your eco-shed.

Below is a sample design of an eco shed that includes recommended materials used for each part. As aforementioned, it is highly recommended that the materials used are easily accessible (meaning these materials can be found within the locality) and are affordable. Since the MRF of each barangay is meant to be informed by their respective waste data, each MRF must reflect each barangay's needs (in terms of waste management facilities) and capacities. Ideally, the barangay, along with the ESWM committee, will identify the space and location that the MRF can be built on.

To reiterate, Section 32 of RA 9003 stipulates that every barangay or cluster of barangays must have an MRF. But in order to prove the effectiveness of the law, the MRF must be fully functional in its daily operations. Only when it is fully operational can the MRF be considered the heart and soul of RA 9003.



# Materials Recovery Facility (MRF)







Sample MRF in a rural area: Guimaras



Sample MRF in a rural area: Benguet



Sample MRF in a rural area: Nueva Vizcaya



Sample MRF in a rural area: Nueva Vizcaya



Sample MRF in a rural area: Tagaytay





Sample MRF in an urban area: City of San Fernando, Pampanga



Sample MRF in an urban area: City of San Fernando, Pampanga



Sample MRF in an urban area: Marikina City





Sample MRF in an urban area: Fort Bonifacio, Taguig



Sample mobile MRF by MEF

For communities that do not have available land for MRFs, some LGUs consider mobile MRFs, mobile eco-sheds, or mobile composting techniques (e.g. tumbling composter). These MRFs are usually placed beside the barangay hall or an open space (at least 50-70sqm). Make sure to secure necessary permission if the property is privately owned. Residual waste will be brought to the waste collection truck while recyclable waste is placed in the mobile MRFs.

Typically, there is no fixed cost of establishing an MRF as the cost will always be relative to the context of each barangay. For example, the size and design of the MRF is dependent on local information, which can be determined by the results of the baseline survey conducted during the initial barangay profiling.



## STEP 7

# Complete Information, Education, and Communication (IEC) Campaign

An information, education, and communication (IEC) campaign is an information dissemination strategy to connect with and instruct concerned individuals, families, and/or groups about a particular issue, its solutions, and how the informants are to be involved. Educating all the stakeholders within the target community is key in successfully implementing a Zero Waste program. To ensure that this is achieved, MEF as the implementing partner conducts door-to-door IEC campaigns in every project site, in partnership with the LGU.

1. The importance of an IEC campaign is to:
2. Increase the level of awareness and knowledge of the community regarding a particular subject
3. Establish rapport with your community
4. Create an opportunity to dialogue with your stakeholders
5. Help sustain behavioral change.

Some examples of IEC materials include brochures, posters, newspaper ads, banners, radio and television commercials, mobile text brigades, and social media publications.

In practice, MEF staff (IEC Officers) and volunteers go house to house and introduce themselves to a household representative,<sup>12</sup> explain that they are working with the local government to improve the waste collection system in the community, and discuss the importance of households segregating their waste as mandated by the law, and as outlined in MEF's IEC brochure. MEF's IEC brochure is a one-page back-to-back handout that details 1) the major provisions of RA 9003, the proper management of waste, and the role of households and local government, (2) the categories into which household waste needs to be segregated, (3) examples per waste category, and (4) a sample diagram of an MRF and its components.



IEC campaign in Batangas

<sup>12</sup>Ideally the head of the household.

With the aid of this brochure, the volunteers discuss in detail the categories into which households should sort their waste: compostable/biodegradable (nabubulok), recyclable (nareresiklo), residuals (latak), and special/hazardous waste (delikado/nakakalason). After they are oriented, the household representative will receive the IEC brochure to keep as their personal reference. Finally, the representative will be asked to sign a receiving/acknowledgment form that will serve as proof that the household has been oriented on the barangay's waste management program. This signature from the representative will also be taken as a sign that the household will commit to complying with the program.

Even after covering the entire community, it is highly recommended to continue the IEC campaign during meetings, waste collections, and when monitoring and enforcing the waste management program. This continuity is essential in sustaining behavioral change and eventually, normalizing the habit of proper waste segregation and reduction at source.

### THINGS TO CONSIDER BEFORE CONDUCTING AN IEC CAMPAIGN FOR YOUR COMMUNITY ESWM PROGRAM

**Planning and identifying the information needed in the IEC.** When outlining the information that will be included in the IEC material, consider the community's cultural profile, waste data, local ordinances, and the households' waste management practices.

**Identifying and preparing the appropriate IEC materials and approach.** The local officials and volunteers that make up the IEC team should assess the common communication platforms being used within the target community before spearheading the desired IEC activity and/or printing the IEC materials.

**Onboarding and orientation of the IEC team.** A detailed IEC orientation is given to the selected IEC officers and local volunteers who will conduct the house-to-house IEC campaign in the target community. The orientation will cover the overview of the barangay's waste management program, including the IEC strategy, and the salient points of RA 9003.

**IEC campaign proper.** The actual IEC campaign is conducted to formally explain to each target participant/household all about how to practice proper waste segregation; including the explanations on the different types of wastes, the barangay's proposed collection system, and how household waste can be lessened. The IEC campaign also aims to remind households about the provisions of RA 9003 and its prohibited acts.

**Receiving copies and IEC Mapping.** After every IEC is conducted at each household, the team will provide the representative with a receiving copy/acknowledgment form to be signed by the household representative that was oriented. This form symbolizes the commitment of the household to comply with the barangay's waste management program. Records from the receiving copies can also be used to create an IEC map that can help the implementing team and local government strategically design the waste collection program.

## STEP 8

# Dry Run, Evaluation, and Revision of Systems

The goal of this step is to check if the waste management systems developed for the community (following the initial steps) work seamlessly, and if not, make the necessary adjustments before fully implementing the ESWM program of the barangay. This will be done by a monitoring officer who records daily issues that are encountered by waste collector/s during the dry run process.

For the dry run execution, the households within the pilot area identified by the barangay will be informed in advance through another IEC campaign to: (1) segregate their waste and to (2) give their waste only to the designated waste collectors on the scheduled collection day. Households may also be provided with an IEC material to use as reference. For example, households will be informed that a waste collector will collect waste from a number of households within their area from Monday to Saturday, between 6 to 10 am, for two weeks. To ensure household compliance, monitoring officers will have the household representative sign a receiving/acknowledgment form to prove that they were properly informed about the dry run process.

Households participating in the dry run are also given temporary containers where they will put their segregated waste: one pail for the kitchen waste and one sack each for recyclables, garden waste, residuals, and special/hazardous waste (four sacks in total). The segregated waste is collected every day for a duration dependent on the appropriate and agreed upon schedule for the community. Local governments may adjust the frequency of collection for clean, non-organic waste (recyclables, residuals), depending on the quality of source separation among households.

As mentioned in Step 5, MEF starts the dry run within a two-week trial period of daily collection. Every morning, a waste collector, accompanied by a monitoring officer, collects waste from each of the households participating in the dry run. The schedule of collection should be consistent according to the information disseminated to the households the week prior. The result of the data collected from the daily monitoring form will inform which collection system would work best for the full implementation of the ESWM program.

Ideally, the waste that is given by the households to the waste collectors has already been segregated at source. However, as this is only the dry run, it is common that a high percentage of the households will not have perfected their waste segregation practices. Thus, they may give waste that has been placed in the incorrect container. Some households may not even bother to comply and refuse to segregate their waste completely. The waste collector and the monitoring officer can take advantage of instances like these to instruct the households on how to correctly and safely segregate their waste, as well as to reiterate the significance of this process (which is to comply with the barangay ESWM program). They can also remind non-complying households that corresponding penalties may be imposed on them if they fail to sort their waste during full implementation (e.g. fines for giving mixed waste to the waste collector).

The waste collected during the dry run period will be brought directly to the MRF. This would test the functionality of the newly-established MRF. Any issues encountered will be recorded by the monitoring officer and addressed at the end of the dry run period.

The dry run is often the most stressful step. Some households vent their frustrations about being made to segregate their waste before collection. To be able to respond effectively, it would be helpful for the waste collector and the monitoring officer to deal with the situation calmly and respectfully as they emphasize the importance of segregating their waste in compliance with the law and their local ordinance. The waste collector and monitoring officer can provide an endorsement letter from the barangay as well as a copy of the barangay ordinance itself to demonstrate to the households the legitimacy of the ESWM program.

The waste collector and the monitoring officer are expected to document how the program is being implemented through their monitoring report forms throughout the duration of the dry run period. At the end of the dry run period, the monitoring report forms will be collated and presented as a report to the barangay council for review. Some possible findings from the dry run monitoring and assessment process may include lowering the frequency of collection days, changing a collection route due to inefficiency, and adapting the approach to corresponding households.

From past experience, MEF would be the one that produced the full report of these findings as the implementing partner of their barangay. Ideally, the development of this report is the responsibility of the BESWMC. This report will be used by the barangay council and the BESWMC to make the necessary adjustments to the ESWM program before its full implementation.



<sup>13</sup>For the duration of the dry run process, having one waste collector per collection route is acceptable.



## STEP 9

### Full Implementation of the System

After conducting a massive IEC campaign and going through the dry run stage, it would be easier for the barangays to administer RA 9003. As mandated in Section 10 of the Act, each household and barangay takes responsibility for handling their waste. In this regard, MEF aimed to translate revisions on the creation of institutional processes and incentives for the LGU ESWM programs. That's why as the key implementing partner of the program, MEF created a set of guide activities through the 10 Step Program.

When undergoing the dry run stage from the previous step, it would be understandable if households had not yet perfected their waste segregation practices. But once adjustments have been made from the recommendations identified during the dry run stage, and households have been reoriented on the importance of proper waste segregation, full implementation of the waste management system can begin.

Full implementation means that all the steps have been accomplished, households practice more ownership of the program and are dutifully managing their waste correctly through proper waste segregation, and waste disposal according to the scheduled collection date, which means that the regular collection schedule of segregated waste is already in place.

## STEP 10

### Monitoring and Enforcement of Penal provisions of the Ordinance

Monitoring your barangay ESWM program is a continuous process that should be covered across all steps. Continuous monitoring is integral to the proper maintenance, sustainability, and improvement of your program. Monitoring your ESWM program requires regular documentation and evaluation of its progress. This allows you to easily identify what is missing, what problems have been encountered, how these problems can be addressed, and points of success based on your data.

First, monitoring your ESWM program entails having standard monitoring forms to be able to track the operation of your program.

MEF uses two types of monitoring forms: one for monitoring household compliance and waste generated per day, and another one for monitoring the broader findings of the program implementation. The latter monitoring form should cover the daily issue/concern identified, when this issue occurred, and what actions have been taken by the barangay. For example, an issue identified could be the discovery of a mini-dumpsite in the neighborhood. The monitoring officer must take note of what the issue is and when the mini-dumpsite was discovered. Next, this information will be brought to the attention of the barangay, who may then respond by administering another door-to-door IEC campaign, or a public service announcement regarding the prohibition of illegal dumping in public spaces within the barangay. Usually this would also be followed by a warning of a monetary fine. The response of the barangay must also be noted in the monitoring form.

Second, as mentioned in Step 8: Dry run, Evaluation, and Revision of Systems, the barangay council is tasked to review the findings from the dry run monitoring forms and make the necessary adjustments to their ESWM program. This includes details about efficiency of the collection schedule, household compliance and feedback about the program, and other glaring issues such as the presence of curbside dumpsites.

As for the role of the city or municipality, they are tasked to review the program after the revisions by the barangay council. BESWMCs, eco police, and waste collectors are reviewed by the DILG and the CENRO/MENRO.

Third, data gathering tools (e.g. APP survey, ESWM scorecard) may be revisited after a prescribed period, usually every five years, to check if there are changes (hopefully positive changes!) in household behavior or improved scores in the community's ESWM program. New information from these monitoring activities will eventually feed into new ESWM plans, which should be updated every five years.

At the end of the ESWM program implementation process, the goal is for the implementing partner to fully transition the program management work to the barangay.

#### Enforcement

As part of the full implementation of the ESWM program, MEF recommends strict enforcement of the local ordinance, which includes strictly imposing fines for violators. Section 48-49 of RA 9003 lists common violations and prescribed fines and penalties. Littering or open burning of waste, for example, warrants a PHP 300-1,000 fine or 1-15 days community service, or both.

In many cases, enforcers issue a verbal warning for the first offense (handing unsorted waste to collectors). In addition to the warning, waste workers refuse to collect unsegregated waste. For the second offense, the violator gets a reprimand from the barangay chairman. Households or businesses that reach the third offense, meanwhile, are fined PHP 500 and PHP 3,000 respectively. The sample amounts are based on recommendations from MEF and can be adjusted within the range stated in RA 9003. MEF has observed that it is rare for households to reach the third offense because of the fine.

#### Deputizing Eco-Police

NSWMC, through the city/municipal government are authorized to deputize individuals or entities as eco/environmental police to enforce RA 9003 and the corresponding local ESWM ordinance. These individuals are tasked to give verbal warnings and issue notices or tickets to erring households and businesses. At the barangay level, eco police duties are often assigned to barangay tanods (village police). Barangays or local governments, however, may also hire additional eco police specifically assigned to the ESWM program if resources are available.



## FOOTNOTES

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6. Guerrero, Lea. Tech. Enabling Sustainable Cities through Zero Waste: A Guide for Decision- and Policy-Makers. Quezon City, Metro Manila: Global Alliance for Incinerator Alternatives, 2019.
7. Stratified random sampling is a methodology of taking a sample of a target population wherein the population is further divided into subgroups and informants are randomly selected within these subgroups respective of their size (e.g. more informants will be chosen within a larger purok, and less informants will be selected from a smaller purok).
8. For example, part of this process includes identifying the type of materials available and appropriate for building the barangay MRF, such as if it's more appropriate to use wood versus metal for the frames of the eco shed.
9. The dry run stage will be covered in Step 8.
10. The monitoring officer is typically assigned to a barangay staff/volunteer. More information regarding the role of the monitoring officer will also be covered in Step 8.
11. Global Alliance for Incinerator Alternatives, 2019. Plastics Exposed: How Waste Assessments and Brand Audits are Helping Philippine Cities Fight Plastic Pollution. Quezon City: Global Alliance for Incinerator Alternatives.
12. Ideally the head of the household.
13. For the duration of the dry run process, having one waste collector per collection route is acceptable.

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  - F. Sample Household Acknowledgment Form (IEC)



