



COMMUNITY PARTICIPATION IN SOLID WASTE MANAGEMENT

The Waste Warriors of Barangay Potrero,
Malabon City



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On the cover: Maricel Zamora, a member of the Waste Warriors of Barangay Potrero, does house-to-house trash collection.

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Executive Summary

In 2016, the world generated approximately 2.01 billion tons of waste (World Bank, 2018), or the equivalent in weight of one billion average-size cars. In the Philippines, solid waste generation was estimated at 13.48 million tons in 2010 and is expected to reach 18.05 million tons by 2020 (DENR, 2018).

As populations grow, so will the amount of waste. Proper solid waste management (SWM), thus, is an urgent undertaking.

This is a critical issue in disaster-prone countries like the Philippines – ranked third most at-risk to disasters in the 2018 World Risk Index – and where poverty levels are high. This is because ecosystem degradation and disasters disproportionately affect the poor. They will also bear the brunt of climate change impacts, which may be aggravated by increased greenhouse gas emissions brought about by improper disposal of waste. In the context of waste management, they are “often unserved or have little influence on the waste being disposed of formally or informally near their homes” (World Bank, 2018). Many also work in the informal waste sector, relying on meager, volatile incomes and exposed to unsafe working conditions.

However, urban poor communities and informal settler families are typically characterized as polluters and waste generators, citing their tendency to buy products in sachets, i.e., in smaller, cheaper quantities. These claims are made despite the fact that, around the world, consumption patterns point to higher spending capacity being positively correlated with higher waste generation. Still, they are usually seen as part of the problem. This study argues that they are also a vital part of the solution.

Good Practice: The Waste Warriors of Barangay Potrero

Barangay Potrero’s Waste Warriors is a good example of an SWM practice that supports the case for increased community participation.

Prior to 2015, Barangay Potrero’s solid waste was unsegregated, and collection was mostly uncoordinated and conducted only twice a week, using trucks that would pick up bags of trash discarded by residents by the side of the road. Because of this collection schedule, and because some roads are too narrow for the trucks to pass through and some areas are only accessible by foot, piles of garbage would often accumulate by the curbside.

It was only in 2015 that their SWM practice took on a more formal, structured process. The Waste Warriors is a group of waste collectors and waste monitors from the local community in Barangay Potrero, Malabon City, whose participation in SWM was made official by the barangay in 2015. Currently, it is composed of 40 waste collectors and 15 waste monitors. The group receives an allowance from the local government – PHP 120 a day for 3-4 hours of work, Mondays through Saturdays – and waste collectors get all the profits from selling the recyclables they collect – which can range from PHP 400 to PHP 2,000.

To date, Barangay Potrero's compliance with R.A. 9003, or the Ecological Solid Waste Management Act, is at 95%, according to Potrero Councilor Khate Nolasco. The barangay is a recognized leader in SWM, having won the Best in Solid Waste Management Award at the 2015 Barangay Power contest hosted by the Metro Manila Development Authority (MMDA). In the same year, Potrero also received the Gawad Kalasag Award for Best Barangay Disaster Risk Reduction Committee from the Office of Civil Defense.

Findings: The Benefits of Engaging Communities in Solid Waste Management

By presenting the good practices of Barangay Potrero in the area of SWM, as embodied by the Waste Warriors, this study highlights how engaging, capacitating, and mobilizing local communities to participate in SWM benefits the environment, the individuals, and the community as a whole.

This study found that several interrelated factors contributed to the success of Barangay Potrero's SWM:

- 1) Their noteworthy SWM practice is a good illustration of what concerted, well-coordinated action between the government, civil society organizations, and communities can achieve. Because there was proper coordination, the process of managing the barangay's solid waste became more efficient.**
- 2) It shows that strong LGU support and prioritization is an important factor in the success of any program.**
- 3) It highlights how enabling community participation in SWM creates a sense of ownership among community members, which in turn contributes to the sustainability of SWM programs and lets the barangay widen its reach as community members become advocates for proper SWM themselves.**

4) It not only leads to improvements in environmental conditions but also improves the livelihoods and social positions of communities who have traditionally been excluded from formal programs and processes. This, in turn, makes their community a more just, inclusive, and resilient one overall.

Particularly for those who have been historically disadvantaged, the formalization of community members' participation in SWM facilitates social inclusion, or the process of "improving the terms on which individuals and groups take part in society – improving the ability, opportunity, and dignity of those disadvantaged on the basis of their identity" (World Bank, 2018). The program does so by giving them improved livelihoods and thus better access to basic services, opportunities for participation and integration into the formal sector, and an overall higher chance of living a more dignified life. Community members get a sense of accomplishment and improved self-worth, and a sense that they have a voice in their community. Through the related capacity building opportunities, they also become more aware of their rights and are able to assert them, especially when faced with discrimination.

Barangay Potrero's approach is consistent with the principles of Integrated Risk Management (IRM). Because IRM stresses that people are a vital part of ecosystems, protecting the environment must also mean protecting people. In the area of SWM, as the case of Barangay Potrero shows, this could mean tapping and enriching local capacities and allowing for the formal participation of the most vulnerable. This not only ensures the protection of the environment but also increases the resilience of the community members individually and their community as a whole.

However, in the MBSDMP, there is scant mention of programs, activities, or projects that involve tapping and strengthening the capacities of local communities, particularly the urban poor and informal waste workers, or even of consultations with communities in order to arrive at problem definitions and solutions that are grounded in the reality of the targeted localities. But as the case of Barangay Potrero illustrates, there are many benefits to encouraging the participation of community members in SWM initiatives. Moreover, increased community participation in SWM respects the vital role that people play within ecosystems and recognizes them as a crucial part of the solution. Thus, this study argues that the MBSDMP would do well to draw from the good practices of Barangay Potrero and incorporate SWM programs that enable community participation and maximize their capacities.



The Waste Warriors were formed in 2015 by Barangay Potrero to implement their solid waste management program on the ground. It is currently composed of 40 waste collectors and 15 waste monitors.

I. INTRODUCTION

In 2016, the world generated approximately 2.01 billion tons of waste (World Bank, 2018), or the equivalent in weight of one billion average-size cars. High-income countries, which account for just 16% of the global population, generated 34% of the world's waste or 638 million tons, whereas low-income countries, which house 9% of the population, generated just 5% or 93 million tons – an unsurprising imbalance, given that higher income levels and rates of urbanization correlate to higher rates of waste generation. In the Philippines, solid waste generation was estimated at 13.48 million tons in 2010 and is expected to reach 18.05 million tons by 2020 (DENR, 2018). Metro Manila and other highly urbanized cities produce the most waste.

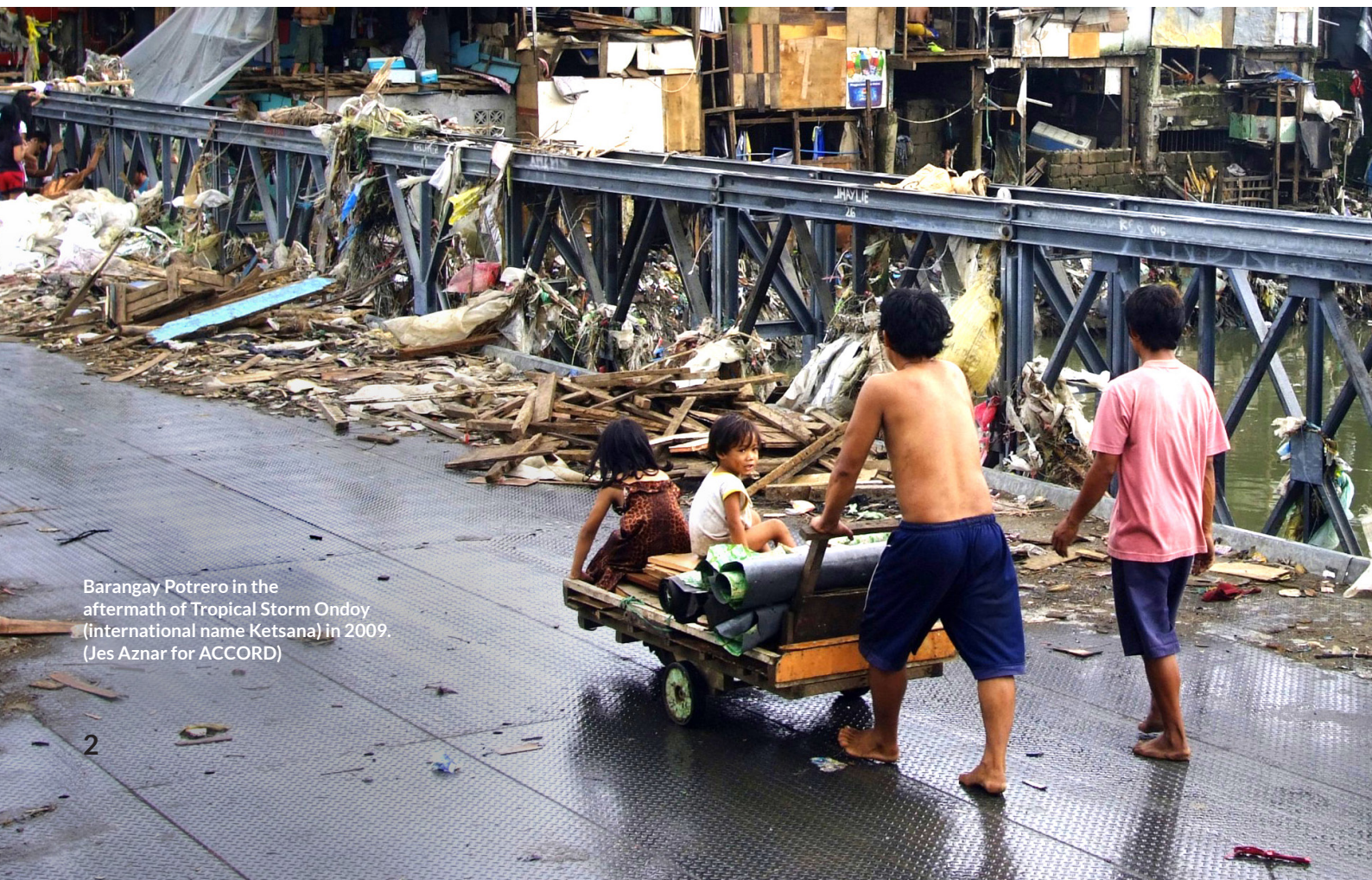
As populations grow, so will the amount of waste. In fact, “the world is on a trajectory where waste generation will drastically outpace population growth by more than double by 2050,” predicts a 2018 World Bank report.

Proper solid waste management (SWM), thus, is an urgent undertaking. The poor management of waste will lead to the contamination of oceans and groundwater tables, the clogging of waterways which could in turn worsen flooding, the transmission of diseases, and a host of

negative impacts on plant and animal life (World Bank, 2018; DENR, 2018). And as cities get increasingly crowded, solid waste management will become even more challenging and complex.

The is a critical issue in disaster-prone countries like the Philippines – ranked third most at-risk to disasters in the 2018 World Risk Index – and where poverty levels are high. This is because ecosystem degradation and disasters disproportionately affect the poor. They will also bear the brunt of climate change impacts, which may be aggravated by increased greenhouse gas emissions brought about by improper disposal of waste. In the context of waste management, they are “often unserved or have little influence on the waste being disposed of formally or informally near their homes” (World Bank, 2018). Many also work in the informal waste sector, relying on meager, volatile incomes and exposed to unsafe working conditions. In the Philippines, this sector is made up of:

individuals, families, groups or small enterprises engaged in the recovery of waste materials either on a full-time or part-time basis with revenue generation as the motivation. It consists mainly of itinerant



Barangay Potrero in the aftermath of Tropical Storm Ondoy (international name Ketsana) in 2009. (Jes Aznar for ACCORD)

waste buyers, paleros (garbage trucks crew), 'jumpers' (those who jump into collection trucks to recover recyclables), waste pickers in dumpsites and communal waste collection points, informal waste collectors, waste reclaimers and small junkshop dealers. (NSWMC, 2016, p. 19)

However, urban poor communities and informal settler families are typically characterized as polluters and waste generators, citing their tendency to buy products in sachets, i.e., in smaller, cheaper quantities. These claims are made despite the fact that, around the world, consumption patterns point to higher spending capacity being positively correlated with higher waste generation. Still, they are usually seen as part of the problem. This study argues that they are also a vital part of the solution.

Barangay Potrero's Waste Warriors is a good example of an SWM practice that supports the case for increased community participation. The Waste Warriors is a group of 40 waste collectors and 15 waste monitors from the local community in Barangay Potrero, Malabon City, whose participation in SWM was made official by the barangay in 2015. The group receives an allowance from the local government, and waste collectors get all the profits from selling the recyclables they collect.

Mother Earth Foundation, a non-profit working in the area of SWM, was pivotal in the establishment of the Waste Warriors and helped barangay officials and community members understand and implement R.A. 9003, or the Ecological Solid Waste Management Act of 2000. Among other things, R.A. 9003 calls for a "systematic, comprehensive, and ecological solid waste management program" that will prioritize waste avoidance and volume reduction and ensure the proper segregation, collection, transport, storage, treatment, and disposal of solid waste. It prohibits the open burning of solid waste and open dumping in flood-prone areas. It also requires the formulation of a 10-Year Solid Waste Management Plan at the provincial and city / municipal level, and the creation of one materials recovery facility (MRF) in every barangay, or cluster of barangays, if applicable. Aside from Mother Earth Foundation, ACCORD also assisted in the establishment of Barangay Potrero's MRF and helped the community appreciate the link between solid waste and disaster risk.

To date, Barangay Potrero's compliance with R.A. 9003 is at 95%, according to Potrero Councilor Khathe Nolasco. The barangay is a recognized leader in SWM, having won the Best in Solid Waste Management Award at the 2015 Barangay Power contest hosted by the Metro Manila Development Authority (MMDA). In the same year, Potrero also received the Gawad Kalasag Award for Best Barangay Disaster Risk Reduction Committee from the Office of Civil Defense.

By presenting the good practices of Barangay Potrero in the area of SWM, as embodied by the Waste Warriors, this study highlights how engaging, capacitating, and mobilizing local communities to participate in SWM benefits the environment, the individuals, and the community as a whole.

The analysis is then used to support the recommendation to include more SWM activities that tap the capacities of urban poor communities in the Manila Bay Sustainable Development Master Plan (MBSDP), a long-term coastal management and development plan with programs, activities, and projects intended to be implemented until 2040. It is currently being prepared by the National Economic and Development Authority and several local consulting firms, with technical assistance from the Dutch government. Among other issues, it aims to improve solid waste management in the areas around Manila Bay in order to uphold citizens' right to a "healthful and balanced ecology," as espoused in art. II, § 16 of the 1987 Philippine Constitution.



Objectives of the study

This study aims to:

- a. Provide a brief overview of solid waste management in the Philippines**
- b. Identify good practices in SWM, with a particular focus on a community that successfully implements an SWM program that actively capacitates and mobilizes the local community**
- c. Discuss how the good practices related to enabling community participation facilitate social inclusion and are consistent with the principles of integrated risk management (IRM)**
- d. Propose general recommendations for Measure 2 (Improving Solid Waste Management) of the Manila Bay Sustainable Development Master Plan**

Methodology

Barangay Potrero, Malabon was selected as a study site because it is a recognized leader in SWM, having received accolades for its practices, and because it has an ongoing SWM program that capacitates and mobilizes local communities. ACCORD has also been working with Barangay Potrero since the first phase of the Partners for Resilience Project in 2011 and continues to engage the LGU to this day. This shared history and familiarity facilitated the collection and analysis of data.



Primary qualitative data was collected through two key informant interviews (KIIs) and one focus group discussion (FGD) session with two groups of participants. Participants were purposively selected based on their familiarity with the subject matter.

The KIIs were conducted separately with Councilor Khate Nolasco of Barangay Potrero, and with Elizabeth Gutierrez, senior environmental management officer at the Malabon City Environment and Natural Resources Office (CENRO). The FGD was conducted in one session with two groups from the Potrero Waste Warriors, each composed of 9-11 participants.

The following documents were also reviewed: Republic Act 9003 or the Ecological Solid Waste Management Act of 2001; the National Solid Waste Management Strategy 2012-2016; and the Malabon City 10-Year Solid Waste Management Plan.

The principles of IRM and social inclusion aided the analysis of the findings, and provided the foundations on which the recommendations for the MBSDMP are being made.

Scope and limitations

This study details the experiences of Barangay Potrero's Waste Warriors and does not examine the SWM practices of other barangays or cities in the Philippines. It likewise does not detail SWM practices among high-income households, commercial establishments, and industries, because waste collection by the Waste Warriors only covers low- to middle-income households.

This study also presents an overview of R.A. 9003 and Malabon City's 10-Year SWM plan but does not analyze the said documents for any gaps or weaknesses. Discussion of the said documents serves only to describe the context in which Barangay Potrero's SWM practices are situated.

Lastly, although it argues for increased participation of communities in SWM programs and broadly recommends that the MBSDMP consider SWM activities that tap the capacities of local communities, this paper does not put forward specific programs, activities, or projects that the MBSDMP can adopt. Instead, emphasis is placed on the benefits of actively engaging communities in SWM.

II. SOLID WASTE MANAGEMENT IN THE PHILIPPINES



Republic Act 9003, or the Ecological Solid Waste Management Act of 2000

R.A. 9003 is the foundational legal document guiding SWM policy and practice in the country. It defines “solid waste” as “all discarded household, commercial waste, non-hazardous institutional and industrial waste, street sweepings, construction debris, agriculture waste, and other non-hazardous/non-toxic solid waste.”

Among other things, the Act calls for “the adoption of a systematic, comprehensive, and ecological solid waste management program that will ensure the protection of public health and environment,” and sets guidelines and targets for waste avoidance and reduction through composting, recycling, recovery, re-use, green charcoal process, and other processes. It also ensures the proper segregation, collection, transport, storage, treatment, and disposal of waste. Segregation at source is mandatory and waste is categorized into the following types: compostable, non-recyclable, recyclable, and special waste.

The Act identifies several activities that it expressly prohibits, including the open burning of solid waste, littering and dumping of waste in public places,

open dumping in flood-prone areas, and the mixing of source-segregated recyclable materials with other types of solid waste upon collection or disposal.

It also required the closure of open dumpsites by 2004 and a ban on controlled dumpsites by 2006 at the city or municipal levels, and mandates the creation of one MRF in every barangay, or cluster of barangays, if applicable.

It reiterates that local government units (LGUs) have the primary responsibility for enforcing and implementing R.A. 9003 within their jurisdictions; this is consistent with R.A. 7160 or the Local Government Code, which stipulates that LGUs are responsible for the provision of basic services and facilities.

The Act also established the necessary institutional arrangements to implement proper SWM. It created the National Solid Waste Management Commission (NSWMC), which acts as the primary national body tasked with implementing R.A. 9003. The NSWMC is chaired by the Department of Environment and Natural Resources, and is composed of 13 other members from the government sector, plus three from the private sector, specifically, one representative from a non-government organization (NGO), one from the recycling industry, and another from the manufacturing or packaging industry.

It also calls for the establishment of a Provincial Solid Waste Management Board in every province; a City or Municipal Solid Waste Management Board in every city or municipality, to be headed by the city or municipal mayor; and a Barangay Solid Waste Management Committee in all barangays. In Metro Manila, the Provincial SWM Board is chaired by MMDA and composed of all mayors of component cities and municipalities, and representatives from the NGO sector, the recycling industry, and the manufacturing or packaging industry, among other members.

The City and Municipal SWM Boards are responsible for developing a 10-Year City or Municipal SWM Plan that incorporates the SWM plans and strategies of their barangays. This is submitted to the NSWMC for review and approval and, thereafter, updated annually. The Provincial SWM Boards also develop 10-Year SWM Plans based on those submitted by their cities and municipalities. For their part, the Barangay SWM Committees are responsible for formulating SWM programs that are consistent with the city or municipal plan, allocating barangay funds for SWM activities or looking for sources of funds, establishing MRFs, and ensuring the proper segregation and collection of biodegradable, compostable, and re-usable wastes, among other tasks.

As of 2010, only a few provinces in Regions 2, 5, and 8 have yet to set up a Provincial SWM Board, and 68% of those that have been established are active; 60% or 996 out of 1,634 cities and municipalities have created SWM Boards, out of which 61% are active; and 43% or 18,144 out of 42,026 barangays have created SWM Committees, although only 30% of these are active (NSWMC, 2013). However, as of 2018, only 1,350 SWM plans have been submitted to the NSWMC for review and approval (NEDA, 2018).

Compliance in terms of facilities has likewise been low so far, with many areas still unserved by SWM facilities and MRFs, according to data in the Philippine Development Plan 2017-2022 (NEDA, 2018). Only 31.28% of barangays have access to SWM facilities, and just 30.92% have MRFs, way below the 2016 targets of 67.39% and 77.10%, respectively. As of 2018, only 37% of all city, municipal, and provincial LGUs are compliant with all aspects of the R.A. 9003.

Nevertheless, there has been a drop in the number of illegal disposal sites, from 1,172 in 2010 to just 546 by

mid-2016. The remaining sites are made up of 337 open dumpsites and 209 controlled disposal facilities (NEDA, 2018).

SWM in Malabon City

Malabon is a first-class city composed of 21 barangays. Solid waste remains an issue because of population growth, rapid urbanization, and its location in the “catch basin” of the Malabon-Navotas-Tullahan-Tinajeros River System, which causes waste from the upstream cities of Quezon City, Valenzuela, and Caloocan to flow downstream into Malabon’s waterways (CENRO, 2015). The city recognizes that unmanaged and unsegregated waste leads to health issues and contributes to perennial flooding. Aside from flooding, the city is also prone to storm surges, liquefaction, and tsunamis.

In 2014, the city, through their CENRO, conducted a Waste Analysis and Characterization Study (WACS) in order to establish a baseline in terms of waste generation, which would then serve to guide policy and implementation. This entailed gathering information about the quantity, composition, and types of solid waste generated by various sources including residential, commercial, institutional, and industrial. This is the first step in the formulation of a 10-Year SWM Plan. They found that:

- **Each person in Malabon generates an average of 0.833 kg of waste every day**
- **The city generates an average of 299.22 tons of waste per day; by 2024, this is expected to rise to 312 tons per day**
- **Residential sources are the biggest waste contributors (accounting for 76.80%), followed by commercial (5.69%), institutional (2.42%), and industrial sources (15.09%); this is consistent with current land use conditions, as Malabon City is mostly residential**
- **Residential and commercial sources generate mostly kitchen waste, whereas institutional and industrial sources contribute mostly plastics**
- **Biodegradables make up bulk of the waste (41.94%), followed by recyclables (22.10%), residuals with potential for recycling (22.50%),**

waste for outright disposal (6.21%), and special waste (7.25%; this includes infectious/healthcare waste, junk cars, waste oil, construction debris, etc.)

- A maximum estimate of 86.53% of waste may potentially be diverted away from disposal facilities through recycling, re-use, composting, and other resource recovery activities

Malabon's current 10-Year SWM Plan covers 2015 to 2024 and is an update of the 2005-2015 SWM Plan and the City Environmental Management and Sanitation Plan 2009-2018. It presents four major strategies: source reduction and segregation at source; collection, transfer, and transport of waste; storage, processing, and recovery, which includes the construction of MRFs; and final disposal in a proper site. By the end of its implementation in 2024, the city expects to reach a total waste diversion rate of 270,031 kg/day or 86.54% of total waste generated, and hopes to only have to dispose of 41,999kg/day or 13.46% of total waste.

In 2014, the total expenditure for environmental activities and programs, including SWM, was approximately PHP 111 million or 10.52% of the total annual city budget, up from 6.3% in 2012 and 9.58% in 2013, showing an upward trend in the city's budget allocation for environmental activities.

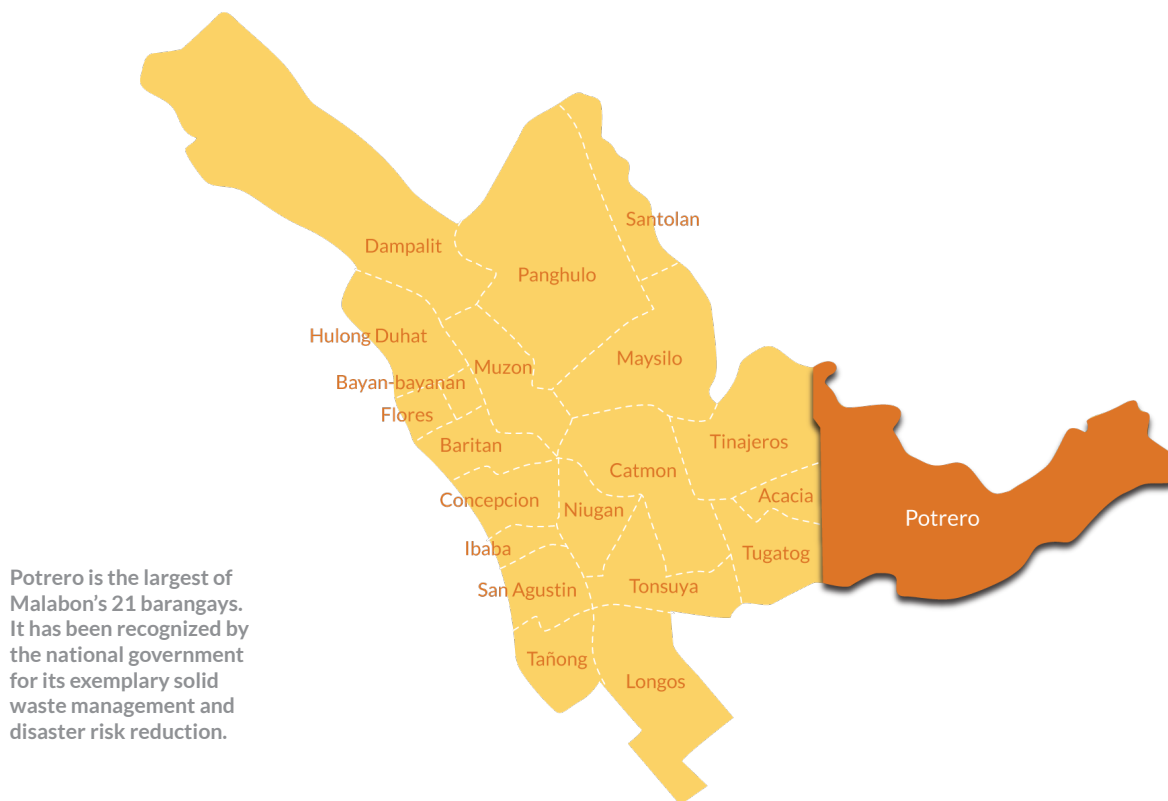
Waste collection methods around the city vary and include hauling by a private company, Leonel Waste Management, using trucks; door-to-door collection with the aid of pushcarts; and having waste collection points where residents may leave their trash to be picked up by a truck. The private hauler and the barangay



Malabon is a city in the National Capital Region of the Philippines. It is prone to flooding, and waste management remains challenging because of population growth, rapid urbanization, and its location in the "catch basin" of a river system.

dump trucks then transfer the waste to two main facilities: the Tugatog Transfer Station in Barangay Tugatog, Malabon, and the PhilEco Marine Transfer Station in Barangay Tanza, Navotas City. Processing is done in MRFs. Barangay Hulong Duhat operates its own MRF, and all 21 barangays and 42 home owners associations also have existing arrangements with private junkshops that function as materials recovery systems (MRS), a solution that addresses the lack of space in urban areas for the construction of MRFs. Finally, waste is disposed of at the Navotas Sanitary Landfill in Barangay Tanza using a barge. The landfill, owned by private company PhilEco Marine Corporation, began operations in 2006 and has a 15-year lifespan. It covers 55 hectares and handles approximately 1,000 tons of solid waste every day.

III. CLEANING UP POTRERO'S SOLID WASTE MANAGEMENT PROGRAM



Barangay Potrero is Malabon's largest barangay, covering approximately 300 hectares or 19.26% of the city's land area (CENRO, 2015). It is composed of 16 sitios and is home to 42,768 people or 10,917 households as of 2015 (PSA, 2016). It is located in the westernmost portion of the city and is bounded by the Tullahan River to the north, Reparo to the south, the North Diversion Road to the east, and Daang Bakal to the west (PfR, 2014).

The barangay has been recognized for its exemplary SWM practices, winning the Best in Solid Waste Management Award at the Barangay Power contest hosted by the MMDA in 2015. Their good practices in SWM have received considerable media coverage and have drawn researchers from around the world who go to Potrero on learning visits.

Compliance with R.A. 9003 has remained steady at 95% since 2015. In the four years since Mother Earth Foundation and ACCORD helped the barangay implement R.A. 9003, participants report that they have seen considerable progress, and that there have been positive changes not just in the environment but also in the knowledge, attitudes, and behavior of residents. People now have a better appreciation of the

importance of proper SWM and its link to flood risk and health issues. They now know how to segregate, and why segregation-at-source is one of the most cost-efficient and responsible ways to manage waste. Before segregation and daily (except Sunday) waste collection was implemented, participants say that floodwaters were higher and awash with floating garbage, which would then be left scattered about once the floodwaters recede. But now, floods recede faster and floodwaters are not as murky. The overall cleanliness of the streets of Potrero has likewise improved.

Some residents also used to pay informal waste collectors to collect their trash; now, the service is rightfully provided free of charge.

There was also a change in mindset among the Waste Warriors themselves. One participant says that they have learned that some types of waste need not be just waste; food scraps, for instance, can be repurposed as fertilizer or even pet food.

The LGU has likewise made considerable savings from making their SWM more systematic and more efficient by changing its waste collection method –

from trucks plying Potrero's streets to waste collectors with pushcarts going house-to-house – and collection schedule – from just twice a week to six days a week.

How the Waste Warriors were formed

Prior to 2015, Barangay Potrero's solid waste was unsegregated, and collection was mostly uncoordinated and conducted only twice a week, using trucks that would pick up bags of trash discarded by residents by the side of the road. Because of this collection schedule, and because some roads are too narrow for the trucks to pass through and some areas are only accessible by foot, piles of garbage would often accumulate by the curbside.

It was only in 2015 that their SWM practice took on a more formal, structured process. Community members were tapped to form the Waste Warriors, which is currently composed of 15 waste monitors – collectively called the “Ladies Monitoring Brigade” – and 40 waste collectors. The “ladies,” as they are usually referred to, started out as volunteers for the current barangay captain, Sheryl Nolasco, helping her out during elections and other events. The LGU saw that they were hardworking and possessed leadership skills, since they were also the ones acting as leaders of their respective *puros* or districts, and the barangay decided to engage them in an official capacity and provide them with a monthly allowance.

Many of the waste collectors hired, on the other hand, used to work as informal waste pickers, earning meager incomes that were unreliable, and getting exposed to unsafe working conditions. In one of the FGD groups, there were six participants who all came from one family and who all currently work as waste collectors; a few of them, including the grandmother, previously worked as informal waste pickers. As part of the Waste Warriors, waste collectors also started receiving allowances from the LGU in 2015, and they got to keep all the profit from the sales of the recyclables that they collect. Today, on top of the profit from recyclables, which can range from PHP 400 to PHP 2,000, they are paid PHP 120 a day for 3-4 hours of work, Mondays through Saturdays.

To establish a baseline that would inform the SWM programs to be implemented, the barangay conducted a weeklong WACS in 2015. Together with Mother Earth Foundation, members of the Ladies Monitoring Brigade also went house-to-house teaching residents about R.A. 9003 and how households could comply with the said law. They distributed brochures containing information on how to segregate, and made sure to thoroughly explain the contents to the recipients in order to facilitate understanding.



Barangay Potrero conducts a waste assessment and characterization survey, one of the first steps in the development of a solid waste management plan.

Current practice and future plans

At present, the Waste Warriors only cover low-income and middle-income households. A private company, Leonel Waste Management, collects waste from commercial establishments, industries, and high-income households. Collection is from 6:00 am – 10:00 am, Mondays through Saturdays, but some waste collectors prefer to start as early as 5:00 am when it's cooler and the streets are less crowded. Collection is conducted from house-to-house with the aid of barangay-supplied pushcarts. There is a “no segregation, no collection” policy in place, but sometimes the waste collectors decide to segregate the mixed waste themselves, if feasible, or they would collect it but report to the waste monitors the households that did not segregate. These households may face fines starting at PHP 500 for the first offense.

Every day, the Waste Warriors update a monitoring sheet that covers a time period of one month and contains the names of all the households covered by the collectors, with checkboxes indicating whether or not they segregated for each day of the month. Every collection day, the collectors also report to the monitors how much they collected, e.g., how many sacks of biodegradables, how many sacks of recyclables, and so on.

The transfer station in Barangay Tugatog closes at around 10:00 – 11:00 am, so the collected waste must be brought to the designated pick-up points before then. From these pick-up points, barangay-operated dump trucks transport the waste to Barangay Tugatog.

As aforementioned, waste collectors receive PHP 120 a day for 3-4 hours of work, plus all the profits from recyclables, which can range from PHP 400 to PHP 2,000.

For 2019 and the coming years, Nolasco has several things she wants to pursue, such as the inclusion of factories in the collection and monitoring process to ensure that they practice segregation; the hiring of additional waste collectors to ease the workload of the current team and make collection more efficient; the establishment of a composting facility; and a possible ordinance banning plastic and Styrofoam products, which she admits may be unlikely to be passed, given that there are several factories of plastic in Malabon City.

Challenges

The LGU and the Waste Warriors encounter several difficulties that impede implementation, with some challenges affecting only the collectors, and others affecting the whole SWM program. These are:

1. Waste collectors experience discrimination

The attitudes and behaviors of some residents towards the waste collectors subject the collectors to unnecessary distress and pose a significant challenge to proper implementation. It seems, among some people, there is social stigma attached to waste collection as a profession.

All the collectors report having experienced discrimination while performing their duties. This typically happens when they reprimand residents who do not segregate. The residents would get mad and hurl insults at them, and would yell, “you’re just garbage collectors,” intending to demean the collectors. Some residents even toss bags of garbage at them, and at least one participant reports being hit on the head with a bag of trash. It is understandable that some of the collectors respond with anger, but members of the Ladies Monitoring Brigade advise them to keep calm and let the LGU take care of the errant residents. Still, some collectors have been capacitated enough that they know to cite R.A. 9003 when reminding people that segregation is mandated by law.

2. Difficulties in instilling discipline among residents who litter or do not segregate

Even four years into the implementation of their improved SWM program, Nolasco and the Waste Warriors report that there are still people who do not properly dispose of their waste. Both monitors and collectors say they have experienced running after people who litter on the streets. Also, after being reprimanded for failing to segregate, some residents reason out that they just forgot, or that they don't have enough containers. Collectors say that they sometimes see bags of mixed waste that also contain human and animal feces, dead rats or cats (they try to bury these if they can), and bottles of urine from houses that do not have proper toilets.



Maricel Zamora and the rest of the Waste Warriors use a pushcart to collect and haul household waste. Many of Potrero's streets are too narrow for garbage trucks to pass through, which had made garbage collection difficult prior to 2015.

REDUCE RE-USE RECYCLE

Nolasco and the Waste Warriors say that they acknowledge that there will always be people who are *pasaway* or rule-breakers, which is why they must be strict with implementation and continuously conduct public awareness and information, education, and communication (IEC) activities.

3. Difficulties with public awareness and education

The turnover of tenants in apartment buildings poses a challenge to teaching proper segregation. Because there are always new tenants that are unaware of the barangay's SWM policies, the Waste Warriors have had to be more diligent and thorough with conducting IEC activities. They do acknowledge, however, that educating the residents about proper SWM is a continuous process, regardless of whether or not there are new tenants, because sometimes long-time residents also need to be reminded once in a while.

4. Not enough waste collectors

Waste collection is a physically taxing job, says the participants, and due to a lack of workers, waste collectors have had to take on a significant amount of work. Each collector covers 200 to 500 households, on foot, with the aid of a pushcart. If there are multi-story apartment buildings located in the areas assigned to them, the amount of waste that needs to be collected goes up substantially, and, in some apartments, they would need to enter the building and go door-to-door to collect the waste.

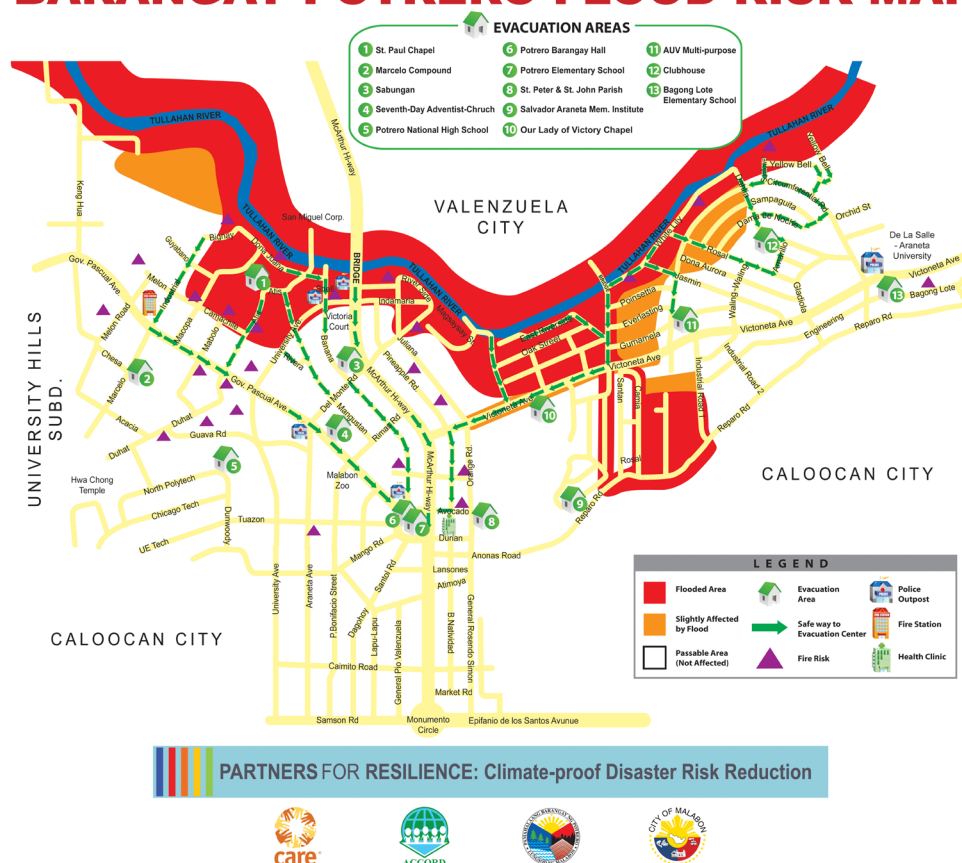
To improve working conditions and make the process more efficient, Nolasco says that they are hoping to hire more collectors.

5. Lack of space for MRFs

The LGU built an MRF in 2015 with the help of Mother Earth Foundation and ACCORD. It was one of only three barangay-operated

MRFs in Malabon. Nolasco reports that they were, unfortunately, unable to maintain it. But this year, the LGU has set aside some funds for the construction of an MRF with the help of the DENR, and is currently looking for a suitable space for it. However, Potrero is having a hard time looking for space because there are rarely any suitable open plots of land on which to construct an MRF. This is a common concern in urban settings, where bulk of the land has been turned into built-up areas. And for a barangay as big as Potrero, Nolasco says they would need three to four MRFs to properly serve the community.

BARANGAY POTRERO FLOOD RISK MAP



Created with the help of Partners for Resilience, the map shows the village's flood-prone areas and paths to evacuation sites.

IV. GOOD PRACTICES: WHY POTRERO'S SWM IS SUCCESSFUL

Asked what she thinks is the most important thing she has learned from implementing their SWM program, Councilor Nolasco says: “[This taught me that] no matter how big your barangay is, as long as the local government has enough of a political will and the people you hire are passionate about changing the barangay for the better, it’s really possible to implement R.A. 9003. Even if your population is big, you’re in an urban setting, and you don’t have enough people [to work on it], you will succeed if you devote enough time to it every day, especially in the beginning. Because people learn eventually.”

The success of Barangay Potrero in SWM is the result of several interrelated factors. It is a product of cooperation between the different stakeholders, and is sustained by the hard work of the Waste Warriors and institutional support from the LGU. Most importantly, capacitating and enabling the participation of local community members in the official SWM program led to improvements in Barangay Potrero’s SWM process, its overall environmental conditions, and its people’s livelihoods. The following are SWM good practices that were gleaned from their experience:

1. Community participation in SWM builds on and strengthens local capacities, and contributes to program sustainability

Nolasco believes that it is people that are key to the success of Barangay Potrero’s SWM. She describes the Waste Warriors as exceptionally industrious and passionate about their work; particularly noteworthy is Barangay Executive Officer Maridel Barbin, who stands as the leader of the Ladies Monitoring Brigade. “Without them, the practice will not be sustainable,” she shares.

As one participant from the Ladies Monitoring Brigade says, “Never mind if we get into fights [with residents who

“No matter how big your barangay is, as long as the local government has enough of a political will and the people you hire are passionate about changing the barangay for the better, it’s really possible to implement R.A. 9003. Even if your population is big, you’re in an urban setting, and you don’t have enough people [to work on it], you will succeed if you devote enough time to it every day, especially in the beginning. Because people learn eventually.”

*— Barangay Councilor
Khathe Nolasco of Potrero*

don’t follow the rules] as long as we do what’s right. If you love your job, and you have compassion for people, it doesn’t matter if the job is difficult.”

Even back in 2015 when the barangay’s new SWM practice was just beginning, Nolasco says the “ladies” were very eager to learn new things in order to better themselves and better serve their fellow community members. They were always present during seminars and trainings, diligently performed the tasks assigned to them, and even went above and beyond what is expected of them. Their leadership skills were honed, and through their personal development efforts, they, in turn, were able to capacitate others. For instance, because they became knowledgeable about SWM and its legal basis, they were able to improve the capacities of the waste collectors by sharing how the collectors could more effectively explain segregation to households.



Non-government organization Mother Earth Foundation conducts a training on ecological solid waste management in the barangay hall. The organization was instrumental in improving Potrero's waste management system.

Moreover, because the capacity building initiatives of the LGU and civil society organizations (CSOs) have ingrained in community members an appreciation of the importance of proper SWM, and because it is the community members themselves who are directly implementing the program, a sense of ownership over the initiative is created. As a result, their motivations for helping the program succeed become deeper and more personal, and this, in turn, helps ensure the sustainability of the program. They also act as force multipliers for the LGU: because community members are able to internalize the value of proper SWM and get to experience its benefits, they become advocates for the cause as well, effectively helping extend the reach of the barangay in terms of educating the rest of the community.

2. The establishment of the Waste Warriors improved the livelihoods of community members

Most of the waste collectors were previously either of the informal waste sector or unemployed. One middle-aged woman says she used to just stay at home and did not have much to occupy her time; others relied on whatever odd-jobs came their way. Those who had worked as informal waste collectors did not have a standard, reliable income and had not been capacitated on proper SWM.

Now, all collectors receive an allowance from the barangay, get all the profits from selling the recyclables they collect, and have been given pushcarts to make

collection easier. More importantly, they have become part of the formal sector, which legitimizes their work and provides them with the necessary support system to do their job. Despite the discrimination that they sometimes face, participants say they are grateful that the LGU decided to engage them in an official capacity. Having more reliable incomes has given them better access to essentials, and some say having a job gives them a sense of accomplishment and improved self-worth. They also receive other types of assistance from the LGU once in a while. For instance, the barangay captain had the home of one family of collectors renovated to make it sturdier. It was previously made of light materials.

3. Strong support and high prioritization by the LGU facilitated the implementation of R.A. 9003 at the barangay level

Gutierrez of the Malabon CENRO says that SWM needs to be a priority of the barangay captain, and that implementation must be strict, for it to be successful. This is the case in Barangay Potrero. The Waste Warriors cited the strong "political will" of barangay captain Sheryl Nolasco, older sister of Councilor Nolasco, as a major contributor to the success of their SWM program. Because SWM was a priority of the barangay, programs related to it received ample institutional support. Even the police support SWM initiatives, according to participants. Says Councilor Nolasco, their SWM practices would not have improved if their barangay captain was not determined to make the necessary positive changes and did not prioritize SWM.

Recently, however, Councilor Nolasco says their priorities have shifted to addressing the issues of flooding and illegal drugs. SWM remains an important matter, but she says these two issues are considered the most pressing. It is thus a testament to the power of capacitating and engaging communities in SWM work that the program remains sustainable despite a slight shift in the LGU's priorities. Because community members themselves have a sense of ownership over proper SWM, the program keeps running because the motivation is internal and they remain committed to the job. Moreover, the fact that the Waste Warriors feel there is still ample support for SWM implies that the LGU was able to effectively formalize and institutionalize their SWM processes that a sudden shift in priorities did not cripple the program.

4. The concerted, well-coordinated action between the LGU, civil society organizations, and community members facilitated the enhancement of Barangay Potrero's SWM program

Barangay Potrero's SWM program illustrates how cooperation between different stakeholders can help facilitate implementation. Their success is the result of the

LGU, CSOs, and community members coming together to confront the problem of solid waste. It was fortunate that Barangay Captain Nolasco was open to working with CSOs such as Mother Earth Foundation and ACCORD, and that there were members of the community who had leadership qualities, were eager to learn, and sought to help their fellow community members.

The Waste Warriors point out that the problem with other places is that they do not have a system in place that promotes proper coordination. "Their process is not systematic. Some just have dump trucks and a microphone. Here, we all have our designated areas to cover, and there is a waste monitoring mechanism. There's coordination," says one participant who is a member of the Ladies Monitoring Brigade.

Councilor Nolasco says that CSOs also played a key role in improving their SWM practices and in helping the barangay become recognized through different awards, the most notable of which are the MMDA Barangay Power Contest and the Gawad Kalasag Award from the Department of Interior and Local Government.



Maridel Barbin, who leads the Waste Warriors, facilitates one of the group's monthly meetings. Aside from reviewing data on volume and types of garbage collected, they also talk about other projects of the barangay they could be part of.

V. APPLYING INTEGRATED RISK MANAGEMENT, ADVANCING SOCIAL INCLUSION

All in all, the success of Barangay Potrero's SWM is the result of several interrelated factors. First, their noteworthy SWM practice is a good illustration of what concerted, well-coordinated action between the government, civil society organizations, and communities can achieve. Because there was proper coordination, the process of managing the barangay's solid waste became more efficient. It also shows that strong LGU support and prioritization is an important factor in the success of any program. Lastly, and most importantly, it highlights how enabling community participation in SWM creates a sense of ownership among community members, which in turn contributes to the sustainability of SWM programs and lets the barangay widen its reach as community members become advocates for proper SWM themselves. It also leads to improvements in environmental conditions, and it creates better livelihoods for, and improves social positions through capacity building of, communities who have traditionally been excluded from formal programs and processes. This, in turn, makes their community a more just, inclusive, and resilient one overall.

Particularly for those who have been historically disadvantaged, the formalization of community members' participation in SWM facilitates social inclusion, or the process of "improving the terms on which individuals and groups take part in society – improving the ability, opportunity, and dignity of those disadvantaged on the basis of their identity" (World Bank, 2018). The program does so by giving them improved livelihoods and thus better access to basic services, opportunities for participation and integration into the formal sector, and an overall higher chance of living a more dignified life. Community members get a sense of accomplishment and improved self-worth, and a sense that they have a voice in their community. Through the related capacity building opportunities, they also become more aware of their rights and are able to assert them, especially when faced with discrimination.



Barangay Potrero's approach is consistent with an ecosystem management and restoration (EMR) approach that values community participation. Proper SWM can be categorized as a type of urban EMR activity; it attempts to prevent and remedy ecosystem degradation and ensures the continued functioning of ecosystem services. That the barangay acknowledges the link between flood risk and proper waste management is likewise consistent with the wider integrated risk management (IRM) approach under which EMR is subsumed, which recognizes the link between ecosystem degradation, disaster risk, and climate change. Because IRM stresses that people are a vital part of ecosystems, protecting the environment must also mean protecting people. In the area of SWM, as the case of Barangay Potrero shows, this could mean tapping and enriching local capacities and allowing for the formal participation of the most vulnerable. This not only ensures the protection of the environment but also increases the resilience of the community members individually and their community as a whole.

VI. GENERAL RECOMMENDATIONS FOR THE MBSDMP

The MBSDMP is composed of eight “measures,” or thematic areas that the proponents have identified as the major factors affecting the water quality of Manila Bay. Measure 2 focuses on improving solid waste management to avoid further polluting the Manila Bay, and aims to address gaps in the implementation of R.A. 9003. They propose a combination of infrastructure solutions, such as increasing the capacity of sanitary landfills, constructing more MRFs, and implementing waste-to-energy projects, as well as “soft” measures such as IEC campaigns promoting waste reduction and segregation, policy on single-use plastics, incentivizing LGUs to increase diversion rates, and institutional capacity building.

There is, however, no mention of programs, activities, or projects that involve tapping and strengthening the capacities of local communities, particularly the urban poor and informal

waste workers, or even consultations with communities in order to arrive at problem definitions and solutions that are grounded in the reality of the targeted localities. But as the case of Barangay Potrero illustrates, there are many benefits to encouraging the participation of community members in SWM initiatives. Moreover, increased community participation in SWM respects the vital role that people play within ecosystems and recognizes them as a crucial part of the solution. The MBSDMP, thus, would do well to draw from the good practices of Barangay Potrero and incorporate SWM programs that enable community participation and maximize their capacities. 🇵🇭



Partners for Resilience conducts a training on disaster preparedness in a Malabon City school.



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This report draws from the experience of Barangay Potrero in solid waste management and disaster risk reduction. Potrero was a partner community of CARE and ACCORD under the Partners for Resilience Project, which is supported by the Dutch Ministry of Foreign Affairs.



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