



# Community Behavior Change Strategies for Plastic Waste Reduction: 10 Key Questions



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# Executive Summary



**"When discussing solutions to reduce plastic waste, developing information, education, and communication activities and materials to raise awareness on the issue and promote behavior change is often identified."**

Using plastic has many benefits: It keeps our food fresh for longer, protects fragile items, and makes furniture and appliances light and sturdy, among others. Plastic has made our lives more comfortable, easier, and safer. The availability and accessibility of plastic has influenced our consumption patterns, as it is often viewed as a convenient and reliable material.

However, the increase in plastic production and consumption has led to an increase in plastic waste, which has become a growing global problem. Plastic pollution harms wildlife, communities, livelihoods, and economies.

Various studies have been conducted identifying the Philippines as a major contributor to ocean plastics. When discussing solutions to reduce plastic waste, developing information, education, and communication activities and materials to raise awareness on the issue and promote behavior change is often identified.

While raising awareness is critical in providing information on the growing plastic waste crisis and explaining why current behaviors need to change, higher awareness does not always lead to behavior change. This paper aims to explore these barriers and motivations, and offer recommendations to promote behavior change at the community level (i.e., a village, barangay, or municipality/city). It is intended for national and local government officials and policymakers, project managers, community organizers, and campaigners who are working on or wish to work on behavior change elements to reduce plastic waste in communities.



The paper presents 10 key questions that are often raised in the context of plastic waste reduction and behavior change at the community level:

- |  |   |   |   |
|--|---|---|---|
|    | 1. Why is it so hard to change plastic waste reduction behaviors?           |    | 6. How long does behavior change take?                            |
|    | 2. What are the enabling factors for plastic waste reduction?               |    | 7. How do incentives promote plastic waste reduction?             |
|    | 3. Who should be the target audience for behavior change campaigns?         |    | 8. How do disincentives promote plastic waste reduction?          |
|    | 4. What are the key messages that could be used to promote behavior change? |    | 9. Which comes first: behavior change or systemic change?         |
|  | 5. Does behavior change happen top-down or bottom-up?                       |  | 10. How do we measure behavior change in plastic waste reduction? |

The answers include recommendations, but the paper concludes with five key recommendations, supported by additional case studies:

- Create an enabling environment that would change the default behavior.
- Establish necessary policies, systems, and infrastructures to support behavior change.
- Use the power of joy and positivity and create a rewarding environment.
- Encourage public commitments and develop feedback mechanisms.
- Think like a designer.
- Digitize waste management operations.

The answers are not intended to be prescriptions for success, but an invitation for discussion, analysis, and reflection. Case studies from the Philippines and other countries in Asia are also included.

# 1. Introduction

## Plastic waste: global context

Plastic production started in the 19th century. Its production and consumption rose in the 20th century, from only 2 million metric tons in 1950 to 348 million metric tons in 2017.<sup>1</sup> These figures are expected to double by 2040. Using plastic has many benefits: It keeps our food fresh for longer, protects fragile items, and makes furniture and appliances light and sturdy, among others. Plastic has made our lives more comfortable, easier, and safer. The availability and accessibility of plastic has influenced our consumption patterns, as it is often viewed as a convenient and reliable material.

However, the increase in plastic production and consumption has led to an increase in plastic waste, which has become a growing global problem. It has been estimated that up to 150 million metric tons of plastic enter the ocean every year,<sup>2</sup> harming wildlife, communities, livelihoods, and economies.

## Plastic waste: Philippine context

Various studies have been conducted identifying the Philippines as a major contributor to ocean plastics.<sup>3</sup>

In 2021, the Philippines topped the list of countries contributing to global pollution through riverine plastic waste emissions, amounting to 356,371 metric tons per year.<sup>4</sup> These studies have helped spark a national discussion on the country's solid waste management issues.

In 2019, the Department of Environment and Natural Resources-Environment Management Bureau (DENR-EMB) estimated that the country generated 21,016,523 metric tons of waste. This is a 56% increase from the 2010 data (13,481,326 metric tons). According to DENR-EMB's 2008-2018 Solid Waste Management report, the municipal waste composition by weight was 52.31% biodegradable, 27.78% recyclables, 17.98% residuals, and 1.93% special wastes.<sup>5</sup> While the data did not show how much of the residuals and recyclables are plastic, it is clear that waste generation is increasing.

”

*Various studies have been conducted identifying the Philippines as a major contributor to ocean plastics.*



<sup>1</sup>The Pew Charitable Trusts, SYSTEMIQ. (2020). *Breaking the Plastic Wave*. Retrieved November 29, 2021, from Pewtrusts.org website: [https://www.pewtrusts.org/-/media/assets/2020/10/breakingtheplasticwave\\_distilledreport.pdf](https://www.pewtrusts.org/-/media/assets/2020/10/breakingtheplasticwave_distilledreport.pdf)

<sup>2</sup> Ocean Conservancy, McKinsey Center for Business and Environment. (2017). *Stemming the Tide: Land-based strategies for a plastic-free ocean*. Retrieved November 30, 2021, from Oceanconservancy.org website: <https://oceanconservancy.org/wp-content/uploads/2017/04/full-report-stemming-the.pdf>






<sup>3</sup> Department of Environment and Natural Resources-EMB. (2021). *Philippine National Plan of Action for the Prevention, Reduction, and Management of Marine Litter*.

<sup>4</sup> Meijer, L. J. J., van Emmerik, T., van der Ent, R., Schmidt, C., & Lebreton, L. (2021). *More than 1000 rivers account for 80% of global riverine plastic emissions into the ocean*. *Science Advances*, 7(18). <https://doi.org/10.1126/sciadv.aaz5803>

<sup>5</sup> Department of Environment and Natural Resources-EMB. (2019). *National Solid Waste Management Report*. Retrieved November 30, 2021, from <https://emb.gov.ph/> website: <https://emb.gov.ph/wp-content/uploads/2019/08/National-Solid-Waste-Management-Status-Report-2008-2018.pdf>

To date, there are no definitive and comprehensive studies to determine national baselines on the volume, leakage, and impacts of plastic waste. A report estimates that Filipinos collectively use 164 million sachets and 57 million plastic *sando* bags (plastic bags with handles) daily. The same report also estimates that 16.5 billion plastic *labo* bags (thin plastic bags without handles) are used annually.<sup>6</sup> References on domestic consumption and disposal of plastic waste in recent years are summarized in Table 1 below.

TABLE 1. PLASTIC WASTE ESTIMATES IN THE PHILIPPINES BY VARIOUS GROUPS

Data Criteria	Estimates	Base Year	Reference
 <b>Single-use plastic shopping bags consumed in the PH</b>	17.5 B pieces/yr ~48 M pieces/day	2019	GAIA, 2019
 <b>Sachet usage in the PH</b>	164 M pieces/yr ~1.6 M pieces/capita/day	2019	Statista, 2018
 <b>Packaging usage in the PH</b>	65.78 B pieces/yr ~3 M pieces/day	2018	E-READI, 2019
 <b>Diaper waste usage in the PH</b>	1.1 B pieces/yr ~3 M pieces/day	2019	UN Comtrade, 2018
 <b>Plastic scrap/waste exports</b>	65,000 tons/yr ~2.5% of plastic waste generation	2018-2019	UN Comtrade, 2018 E-READI, 2019
 <b>Plastic scrap imports</b>	11,800 tons/yr	2018	UN Comtrade, 2018

FROM THE PHILIPPINE NATIONAL PLAN OF ACTION FOR THE PREVENTION, REDUCTION, AND MANAGEMENT OF MARINE LITTER

## Raising awareness and behavior change

When discussing solutions to reduce plastic waste, developing information, education, and communication (IEC) activities and materials to raise awareness on the issue and promote behavior change is often identified. The Philippines' Ecological Solid Waste Management Act of the Philippines (Republic Act 9003) mandates the national government to coordinate with relevant government agencies, non-governmental organizations (NGOs), and private institutions to strengthen the integration of ecological solid waste management and environmental concerns in formal and non-formal education to promote awareness and action.<sup>7</sup> One of the 10 strategies identified in the *Philippine National Plan of Action for the Prevention, Reduction, and Management of Marine Litter* (NPOA-ML) is to "develop and implement strategic and targeted social marketing and communications campaigns using various media."<sup>8</sup>

<sup>6</sup> Global Alliance for Incinerator Alternatives (Philippines). (2020). *Regulating single-use plastics in the Philippines - Opportunities to move forward*. Retrieved November 30, 2021, from No-burn.org website: <https://www.no-burn.org/wp-content/uploads/Philippine-Policy-Brief-on-SUPs-Ban-1.pdf>

<sup>7</sup> Republic Act 9003: *The Ecological Solid Waste Management Act of the Philippines*. (2001). Retrieved November 30, 2021, from the Official Gazette: <https://www.officialgazette.gov.ph/2001/01/26/republic-act-no-9003-s-2001/>

<sup>8</sup> Department of Environment and Natural Resources-EMB. (2021). *Philippine National Plan of Action for the Prevention, Reduction, and Management of Marine Litter*.

In a Knowledge, Attitude, and Practices (KAP) baseline survey conducted in five cities under UN-Habitat’s Healthy Oceans Clean Cities Initiative (HOCCI), results showed that respondents had high awareness on marine plastic litter. Nearly all respondents (94%) knew that they were supposed to segregate biodegradable from non-biodegradable wastes. The majority of respondents (84%) were also aware that marine plastic litter could leak into the environment when not disposed of properly, harming marine life and contributing to flooding. When asked what their motivations were for complying with waste management practices, respondents shared that it was rooted in their desire to help their community manage solid waste.<sup>9</sup>

While raising awareness is critical in providing information on the growing plastic waste crisis and explaining why current behaviors need to change, higher awareness does not always lead to behavior change. For example, a study conducted in the province of Sorsogon, Bicol revealed that 69% of the households surveyed had an average level of knowledge in solid waste management issues, but anecdotal evidence showed that open burning of trash (or the illegal practice locally known as *pagsisiga*) and dumping of trash in rivers were ongoing.<sup>10</sup>

## Objectives

Behavior change normally does not have a linear progress.<sup>11</sup> It is complex, with various motivations and barriers for an individual and/or society to make changes. This paper aims to explore these barriers and motivations, and offer recommendations to promote behavior change at the community level (i.e., a village, barangay, or municipality/city). It is intended for national and local government officials and policymakers, project managers, community organizers, and campaigners who are working on or wish to work on behavior change elements to reduce plastic waste in communities. This paper does not identify one specific behavior to change, but different collective behaviors relevant to plastic waste reduction, referred to as desired behaviors. Reducing plastic waste requires a set of behaviors from the entire community. For these behaviors to succeed, other stakeholders in the public and private sectors must also contribute to creating a conducive environment for these behaviors. Table 2 provides stakeholders and examples of desired behaviors to reduce plastic waste.

TABLE 2. TARGET AUDIENCE AND EXAMPLES OF DESIRED BEHAVIORS TO REDUCE PLASTIC WASTE



TARGET AUDIENCE	EXAMPLES OF DESIRED BEHAVIORS
 <p data-bbox="204 1720 515 1836"><b>Public sector (national government, local government units)</b></p>	<ul data-bbox="651 1592 1449 1836" style="list-style-type: none"> <li>• Developing policies, regulations, and action plans</li> <li>• Promoting compliance and enforcement of policies</li> <li>• Implementing the “no segregation, no collection” rule in communities</li> <li>• Investing in waste management infrastructure</li> <li>• Investing in capacity-building activities for government staff and waste collectors</li> </ul>

<sup>9</sup> UN-Habitat and Healthy Oceans and Clean Cities Initiative. (2021). *Knowledge, Attitude, and Practices (KAP) Results of the Non-waste Baseline Survey on HOCCI Partner Cities*.

<sup>10</sup> Jhazel Ivy Jeremias, F. M. D. F. (2019). *Knowledge, Awareness, Perceptions, and Practices on Solid Waste Management of Households in Selected Urban Barangays in Sorsogon City, Sorsogon, Philippines*. Retrieved November 30, 2021, from <https://ovcre.uplb.edu.ph/> website: <https://ovcre.uplb.edu.ph/journals-uplb/index.php/JHE/article/view/425>

<sup>11</sup> Edmund Seto, R. B. (2014). *Modeling Physical Activity Behavior Change*. Retrieved November 30, 2021, from Scienedirect.com website: <https://www.sciencedirect.com/science/article/pii/B9780124186620000167>.



TARGET AUDIENCE	EXAMPLES OF DESIRED BEHAVIORS
 <p><b>Private sector</b> (multinational companies, social enterprises)</p>	<ul style="list-style-type: none"> <li>• Providing services to repair items that are broken</li> <li>• Providing alternative delivery systems for goods (e.g., refilling and reuse systems)</li> <li>• Providing services and spaces for reverse logistics</li> <li>• Redesigning disposable packaging to make it reusable, recyclable, or biodegradable</li> </ul>
 <p><b>Civil society (communities with residents and consumers)</b></p>	<ul style="list-style-type: none"> <li>• Reducing, limiting, or eliminating the purchase of items packaged in unnecessary single-use plastics</li> <li>• Cleaning and drying recyclables</li> <li>• Bringing plastic containers to refilling stations for food and/or home care products</li> <li>• Segregating waste at the household level and proper waste disposal</li> </ul>

## The paper presents 10 key questions that are often raised in the context of plastic waste reduction and behavior change at the community level.

The questions are as valuable as the answers. The answers are not intended to be prescriptions for success, but an invitation for discussion, analysis, and reflection.

The answers presented are also meant to guide relevant stakeholders in mounting a variety of solid waste management campaigns aimed at curbing plastic waste (e.g., plastic reduction campaigns).

Case studies from the Philippines and other countries in Asia are included. The case studies are not exhaustive, but instead provide additional insight and examples at the local level.



## 2. Key Questions





### 2.1. Why is it so hard to change plastic waste reduction behaviors?

The word “behavior change” implies that the current behaviors are not favorable and need to change. Fundamentally, people do not favor change.<sup>12</sup> This attitude is embedded in human DNA as a strategy for self-preservation. To advance human society, challenging the status quo and changing are necessary. Strategies that aim to drive behavior change should take into account baseline behaviors and an acceptable range of change. Each change has a different magnitude of effort and resources required from an individual and community. For instance, bringing a reusable bag to the public market, cleaning and drying plastic waste for recycling, and purchasing household products in bulk sizes all have different scales of challenges.

There are several barriers in adopting behavior change. Each community’s barriers can be a combination of the barriers identified below. To develop an effective behavior change campaign, the specific barriers and their underlying causes must be understood and addressed.

TABLE 3. BARRIERS TO PLASTIC WASTE REDUCTION BEHAVIOR CHANGE

BARRIERS	DESCRIPTION
 <p><b>INSTITUTIONAL</b></p>	<ul style="list-style-type: none"> <li>• <u>Lack of political will</u>: Plastic waste reduction often falls below other competing development priorities, such as health and education.</li> <li>• <u>Poor law compliance and enforcement</u>: Compliance to the seminal waste management policy, RA 9003, has been bleak.</li> <li>• <u>Inadequate knowledge</u>: Government officials still need to be trained and informed on a wide range of topics, such as (i) environmental laws; (ii) how to commission and/or interpret life-cycle assessments, enabling the comparison of waste treatment options, recycling scenarios, and alternatives to single-use plastics; (iii) climate impacts and chemical risks of plastics; (iv) health and economic impacts of waste mismanagement; and (v) economic benefits of proper waste management.<sup>13</sup></li> </ul>
 <p><b>FINANCIAL</b></p>	<ul style="list-style-type: none"> <li>• <u>High volume of low-value plastics</u>: More than half of the plastic packaging used in the Philippines are multi-layer flexible packaging (e.g., sachets). These are hard to recycle, and thus have low value.<sup>14</sup></li> <li>• <u>Upfront investment</u>: Efficient plastic waste reduction requires financial investment for infrastructure and logistics, and consumer goods such as reusables.</li> </ul>

<sup>12</sup> Kanter, R. M. (2012). *Ten Reasons People Resist Change*. Retrieved November 30, 2021, from Hbr.org website: <https://hbr.org/2012/09/ten-reasons-people-resist-change>

<sup>13</sup> DENR-EMB. (2019). “Update on RA 9003: 10-year Progress Report.” Reimagine Recycling.

<sup>14</sup> World Bank Group. (2021). *Market Study for the Philippines: Plastics Circularity Opportunities and Barriers*. Washington DC: Marine Plastics Series, East Asia and Pacific Region.

BARRIERS	DESCRIPTION
 <p data-bbox="204 674 400 775"><b>TECHNICAL, PHYSICAL, AND SPATIAL</b></p>	<ul data-bbox="520 338 1406 898" style="list-style-type: none"> <li>• <u>Design</u>: Majority of plastic products are designed to be disposable or phased out.</li> <li>• <u>Lack of waste management infrastructure</u>: As of mid-2020, the number of Materials Recovery Facilities (MRFs) in the Philippines only service 34% of local government units (LGUs), while the number of sanitary landfills only cover 24% of LGUs.<sup>15</sup></li> <li>• <u>Lack of space</u>: Segregating and storing wastes requires space for different bins, which residential or commercial structures may not have.</li> <li>• <u>Inconsistent/irregular waste collection services</u>: The waste collection rate in Metro Manila is reportedly at 85%,<sup>16</sup> but this number drops significantly in rural areas and in island communities. When waste collection is low or non-existent, residents resort to burying and/or burning plastic wastes.</li> <li>• <u>Lack of alternatives to plastics</u>: When alternatives are available, they are often costly and/or are not yet mass produced.</li> </ul>
 <p data-bbox="193 1442 408 1503"><b>SOCIAL AND PSYCHOLOGICAL</b></p>	<ul data-bbox="520 981 1430 1843" style="list-style-type: none"> <li>• <u>Perceived role of the younger generation</u>: The younger generation is becoming more aware of their impact to the environment. They are also educated on the importance of solid waste management practices through formal education. However, their perceived passive role in the household prevents those learnings from being passed on to the elder members of their households.<sup>17</sup></li> <li>• <u>Lack of immediate consequences</u>: Due to low compliance and enforcement of policies, people do not see the consequences of not segregating waste.</li> <li>• <u>Lack of social proof</u>: People look at others to see how to behave. If other people in the community are not actively reducing plastic use and disposal, there is little to no motivation for others to do so.</li> <li>• <u>Changing social norms</u>: Before the height of consumerism and industrialization, the social norm in the Philippines was to conserve and reuse materials out of necessity, even those items deemed as single-use, such as plastic bags. This has changed in the advent of cheaper plastic, changes in socio-economic status, and the need to prioritize convenience.</li> <li>• <u>Lack of behavioral nudges</u>: Behavioral nudges are indirect suggestions to promote desired behaviors, such as placing different bins to encourage waste segregation versus having one bin for all wastes. Communities generally lack behavioral nudges due to compounding factors listed above: institutional; financial; and technical, physical, and spatial barriers.</li> </ul>

<sup>15</sup> DENR-EMB. (2019). *Update on RA 9003: 10-year Progress Report*. Reimagine Recycling.

<sup>16</sup> Senate Economic Planning Office. (2017). *Philippine Solid Wastes At A Glance*. Retrieved November 30, 2021, from senate.gov.ph website: [http://legacy.senate.gov.ph/publications/SEPO/AAG\\_Philippine%20Solid%20Wastes\\_Nov2017.pdf](http://legacy.senate.gov.ph/publications/SEPO/AAG_Philippine%20Solid%20Wastes_Nov2017.pdf)

<sup>17</sup> Save Philippine Seas. (2021). *Qualitative Research - Change The Current Climate Action Training*.



## Case study

### Challenges in promoting refilling behavior

Philippine Reef and Rainforest Conservation Foundation, Inc.'s (PRRCFI) project Sea Waste Education to Eradicate Plastic (SWEEP) pioneered the Wala Usik campaign in 2018. *Wala usik* is a Hiligaynon phrase that translates to “nothing is wasted.” Under Wala Usik, PRRCFI conceptualized and implemented micro-refilling stations in eight Wala Usik *Sari-Sari* Stores (WUSSS) in Negros Occidental.

*Sari-sari* stores are found in residential communities and sell fast-moving consumer goods (FMCGs) in small quantities (10-50ml), mostly packaged in sachets and thin clear plastics. They reflect the Filipino culture of *tingi* (little/smallness), and purchasing behavior and capacity, making *sari-sari* stores a major but unintentional contributor of plastic wastes.<sup>18</sup>



Over the course of seven months, the Wala Usik *Sari-Sari* Stores were able to prevent the use of 45,000 pieces of plastic through micro-refilling systems.

The WUSSS were implemented in partnership with business groups, designers, and *sari-sari* store owners. The owners could decide and commit to what items to sell. Among the items they chose were fabric conditioner, shampoo, sugar, salt, soy sauce, cooking oil, and powdered coffee. Over the course of seven months, the WUSSS were able to prevent the use of 45,000 pieces of plastic through micro-refilling systems.

The project's monitoring and evaluation results showed that the loyalty of the consumer to owner was a major factor in the continuous patronage of the store despite the changes in the delivery model. The WUSSS model faced challenges in changing habits of the consumer and owner alike. Both parties must deal with cleaning, drying, and bringing containers; irregular replenishment of stocks; and the consumer's strong preference for commercial brands that were not always available or cannot be sold through refilling models. Overcoming and sustaining behavior changes are imperative for the financial sustainability of the micro-refilling model.<sup>19</sup>

<sup>18</sup> Philippine Reef and Rainforest Conservation Foundation, Inc. (2020). *Wala Usik - Redesigning Sachet Culture in Community Convenience Stores in the Philippines*. Retrieved from YouTube. <https://youtu.be/aecPPJcOdec>

<sup>19</sup> Philippine Reef and Rainforest Conservation Foundation, Inc. (2020). *The Journey of Wala Usik Sari-Sari Stores: Evaluation of Zero Waste Prototypes Following Startup and Operations*.







## 2.2. What are the enabling factors for plastic waste reduction?

While the previous question identified the barriers, this question explores physical and social systems that precede desired plastic waste reduction behaviors. Any given behavior does not exist independently. Behaviors are part of a complex system of interconnected components, such as cultural and societal norms, group dynamics, and current events. Table 4 identifies enabling factors for effective, sustainable behavior change.

TABLE 4. ENABLING FACTORS FOR PLASTIC WASTE REDUCTION BEHAVIOR CHANGE

ENABLING FACTORS	DESCRIPTION
 <p data-bbox="256 1010 454 1039"><b>INSTITUTIONAL</b></p>	<ul data-bbox="627 831 1385 1039" style="list-style-type: none"> <li>• <u>Science-based, socially just, and enforceable policies</u>: The Philippines already has a number of comprehensive legal frameworks and action plans to reduce plastic waste, ranging from RA 9003, approved in 2001, to the NPOA-ML, which was launched in November 2021. Compliance and enforcement need to be prioritized.</li> </ul>
 <p data-bbox="276 1357 418 1386"><b>FINANCIAL</b></p>	<ul data-bbox="627 1144 1374 1386" style="list-style-type: none"> <li>• <u>Fiscal instruments</u>: The government can provide loans or subsidies to initiatives or organizations that reduce plastic waste. There must also be support to socioeconomic constraints (e.g., purchase of more expensive alternatives to plastic).</li> <li>• <u>Provision of incentives and disincentives</u>: See Questions #6 and #7 for further information.</li> </ul>
 <p data-bbox="197 1742 489 1807"><b>TECHNICAL, PHYSICAL, AND SPATIAL</b></p>	<ul data-bbox="635 1462 1410 1917" style="list-style-type: none"> <li>• <u>Access to convenient and equitable waste management infrastructure, reliable and consistent services, and affordable alternatives</u>: When infrastructure, services, and economically-sound alternatives are in place, the desired behaviors become easier and more intuitive, and thus, less reliant on intrinsic motivation and personal choice.<sup>20</sup></li> <li>• <u>Access to information that builds capacity and leads to action</u>: Communities must have knowledge on how they can reduce plastic waste, what items are recyclable, what incentives and alternatives are available, and where they can recycle, among others. The IEC materials and activities must also integrate instructions, reminders, and feedback mechanisms to improve, sustain, and reinforce the desired behaviors.</li> </ul>

<sup>20</sup> Scott Mouw, Lily Schwartz, and Sherry Yarkosky. (2020). *2020 State of Curbside Recycling Report*. Retrieved November 30, 2021, from Recyclingpartnership.org website: [https://recyclingpartnership.org/wp-content/uploads/dlm\\_uploads/2020/02/2020-State-of-Curbside-Recycling.pdf](https://recyclingpartnership.org/wp-content/uploads/dlm_uploads/2020/02/2020-State-of-Curbside-Recycling.pdf)

## ENABLING FACTORS

## DESCRIPTION


**SOCIAL AND  
PSYCHOLOGICAL**

- Values and beliefs: Behaviors hold meaning. The desired behaviors and corresponding messages must reflect the target audience's identity, values, and beliefs, and make them feel more like themselves. Ownership of the desired behavior is essential.
- Social norms: Household, social, and cultural dynamics influence behavior change. People consciously or unconsciously notice who else is doing the desired behavior, how often, and why. When more people in a community engage in the desired behavior, do so visibly, and create spaces for interaction (e.g., organizing plastic waste collection drop-off days in the barangay basketball court), compliance to the desired behavior is higher. Anecdotal evidence also shows that stricter social norms force Filipinos to have an abrupt behavior change. For example, Filipinos visiting or working in other countries where the social norm is to segregate trash are normally compelled to follow the practices of the local citizens.
- Diverse and inclusive stakeholder engagement: A strong network of communities, businesses, governments, and academic and religious institutions to accelerate societal capacity to reduce plastic waste creates an encouraging environment to sustain behaviors. Relationships between waste collectors and households are also integral. These networks and relationships pave the way for an equitable transition by monitoring who are vulnerable to the system changes and creating initiatives to support them.
- Intuitive and engaging behavior nudges: Designing solutions and alternatives that are attractive, user-friendly, and engaging in the community's context can encourage the desired behaviors. For example, using a mascot of a marine animal that is popular in the community, using the local language/dialect in promotional materials, and placing basketball hoops above trash bins in places with high foot traffic.
- Phased approach: Introducing one key desired community behavior at a time can increase the adoption rate and improve habit formation.



## Case study

# Zero-waste cities in the Philippines

Four cities in the Philippines have begun the transition to zero waste systems in partnership with the NGO Mother Earth Foundation (MEF) and the Global Alliance for Incinerator Alternatives (GAIA). The steps implemented by GAIA and MEF were aligned with the four key enabling factors in plastic waste reduction. GAIA and MEF credit the success of zero waste cities on the following:

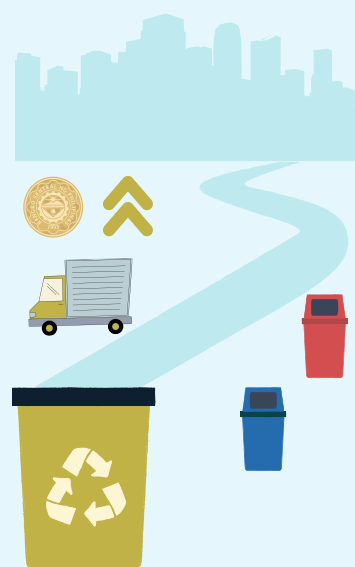
- **institutional:** strong implementation and enforcement of policies; waste prevention and reduction systems; and support for the national ban on incineration;
- **financial:** offering incentives to compliant *barangays*, businesses, and schools (e.g., award-giving events, prize money, additional equipment for waste management);
- **technical, physical, and spatial:** institutionalized organics management systems (e.g., land for composting, small-scale anaerobic digestion); and
- **social and psychological:** decentralization of waste collection from the city-level to the *barangay*-level, enabling waste workers to build relationships at the household level.



Baseline data from San Fernando, Pampanga shows that 90% of its municipal waste went to landfills. The LGU spent PhP70 million per year for hauling and other waste management-related services. Within five years, the city has already achieved a 78% waste diversion record,<sup>21</sup> and reduced its annual budget for waste management to PhP15 million a year.<sup>22</sup>

Tacloban City reduced landfill-bound waste from 175 tons per day in December 2017 to 121 tons per day by December 2018, resulting in PhP21 million in savings from hauling and tipping fees.<sup>23</sup> Barangay Potrero, Malabon City has an almost 90% compliance rate for segregation at source. The system has also benefited the waste workers. From earning PhP1,000-2,000/month, they now earn about PhP6,000 on top of what they earn from selling recyclables collected from households.<sup>24</sup> The model is being replicated in other *barangays*.<sup>25</sup>

Finally, Barangay Fort Bonifacio in Taguig City boasts of an 80% waste diversion rate and a 95% household compliance rate. The *barangay* began with four dump trucks hauling waste. Within a year, the barangay only had one dump truck, yielding 75% savings from hauling.<sup>26</sup>



<sup>21</sup> Froilan Grate, J. A. (2019). "A zero-waste Philippines is possible." Retrieved November 30, 2021, from Inquirer.net website: <https://opinion.inquirer.net/119378/a-zero-waste-philippines-is-possible>

<sup>22</sup> Global Alliance for Incinerator Alternatives (Philippines). (n.d.). *Enabling Sustainable Cities Through Zero Waste: A Guide for Decision and Policymakers*. Retrieved November 30, 2021, from No-burn.org website: <https://www.no-burn.org/wp-content/uploads/ZW-policy-makers-FINAL.pdf>

<sup>23</sup> Global Alliance for Incinerator Alternatives. (2019). *SUNSHINE AFTER THE STORM: A Typhoon-Ravaged City Rises to Become Zero Waste*. Retrieved November 30, 2021, from Zerowasteworld.org website: <https://zerowasteworld.org/wp-content/uploads/Tacloban.pdf>

<sup>24</sup> Benosa, S. E. (2019). "Asia: Home of Zero Waste solutions." Retrieved November 30, 2021, from Zerowasteworld.org website: <https://zerowasteworld.org/zwsolutionsasia/>

<sup>25</sup> Global Alliance for Incinerator Alternatives. (2019). *Route to Zero Waste - A Flood-Prone City Shows How It's Done*. Retrieved November 30, 2021, from Zerowasteworld.org website: <https://zerowasteworld.org/wp-content/uploads/Malabon.pdf>

<sup>26</sup> Global Alliance for Incinerator Alternatives. (2019). *PIIONEER OF ZERO WASTE: The Village that Inspired Cities to Go Zero Waste*. Retrieved November 30, 2021, from Zerowasteworld.org website: <https://zerowasteworld.org/wp-content/uploads/Bonifacio.pdf>

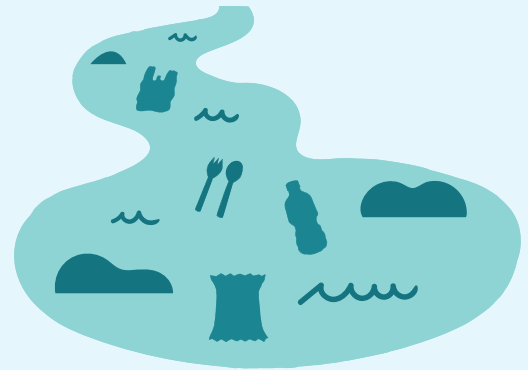


## Case study

# A community-centered solution to the waste problem

Decisive and inclusive community engagement was key to the successful rehabilitation of the Bitan-ag Creek, the biggest creek in Cagayan de Oro City. The local government established the Hapsay Sapa Program or the Waterways Rehabilitation Project of Bitan-ag Creek to address the garbage problem caused by the growing population of informal settlers living along the creek.

The government engaged the residents in a creek waste management, resettlement, and livelihood program, alongside effective information and communication campaign on proper solid waste management.



**The government did not issue eviction notices to the households along the creek. Instead, they were informed, consulted, and heard. It was a longer, more tedious process, but proved to be effective.**

With the whole community engaged in the process, people voluntarily relocated their homes and supported the entire program. As a result, the city government and other stakeholders, together with the community, solved the waste problem and transformed the once garbage-polluted creek into a linear park.

In 2018, CDO received the Asia Townscape Award for its effort to build beautiful, sustainable, resilient, and environmentally-friendly townscapes at the community level.







## 2.3. Who should be the target audience for behavior change campaigns?

People need to understand their roles and how their changes in behavior can address the plastic waste crisis. They also need to understand how improper waste management and an overreliance on plastic impact their lives. To do this, the civil society organizations and the private and public sectors must spend time and resources to thoroughly understand their respective communities and segment them according to a set of criteria that would divide them into sub-groups under a common demographic or interest.<sup>27</sup>

It is tempting to develop one main marketing message for the so-called “general public,” but this is often a waste of time and resources. People differ in many ways: age, gender, social class, purchasing power and patterns, values, and beliefs, among others. Segmentation allows for a more tailored message that appeals to motivations and emotions, making it more compelling.

Identifying the right target audience that suits the program or campaign is critical for success. In-depth research methods to determine the audience and develop the key messages could include focus group discussions, key informant interviews, self-administered questionnaires, and observations. Find out what people are currently doing (or not doing, i.e., not segregating wastes), why they are doing/not doing it, what would make them more likely to switch to the desired behavior, what the barriers for change are, and what the impact of making this change will have on them and those around them.<sup>28</sup>



**"The target audience must be persuadable, accessible, and be able to influence and inspire other communities/target audiences."**

Identifying the right audience also allows sectors to prioritize a set of individuals who may have a more direct and bigger influence on driving community behavior change. For example, HOCCI's KAP survey showed that mothers and wives managed household wastes for half of the households surveyed. This provides insight on the role of women in the Philippine waste value chain. Women in the waste value chain are often engaged as street sweepers, own and/or operate junk shops, and are preferred in skilled, repetitive, and time-intensive tasks such as sorting, cleaning, and separating recyclable material. Interventions directed to women in the waste value chain could help remove the stigma of being a waste worker, provide support for their health and safety, and empower them to become behavior change agents and community champions.<sup>29</sup>

To maximize limited resources, it would be ideal to start with a segment of people who are already interested in making the behavior change and just need more support and information. The target audience must be persuadable, accessible, and be able to influence and inspire other communities/target audiences.<sup>30</sup> Providing educational materials, marketing collaterals, and useful information that are relevant to the target audience's needs and interests could also expedite the adoption rate of the desired behavior.

<sup>27</sup> Paul Butler, Kevin Green, and Dale Galvin. (2013). *The Principles of Pride*. Retrieved November 30, 2021, from Rare.org website: <https://www.rare.org/wp-content/uploads/2019/02/Rare-Principles-of-Pride.pdf>

<sup>28</sup> Simon Christmas, David Young, Andrew Skates, Lynne Millward, Mark Duman, Iarla Kilbane Dawe. (2009). *Nine Big Questions about Behaviour Change*. Retrieved November 30, 2021, from Simonchristmas.net website: <https://simonchristmas.net/wp/wp-content/uploads/2020/11/Nine-Big-Questions.pdf>

<sup>29</sup> Ocean Conservancy. (2019). *The role of gender in waste management*. Retrieved November 30, 2021, from Oceanconservancy.org website: <https://oceanconservancy.org/wp-content/uploads/2019/06/The-Role-of-Gender-in-Waste-Management.pdf>

<sup>30</sup> Gay & Lesbian Alliance Against Defamation (GLAAD) and the Movement Advancement Project (MAP). (2008). *Communications Campaign Best Practices*. Retrieved November 30, 2021, from Lgbtmap.org website: <https://www.lgbtmap.org/file/communications-campaign-best-practices.pdf>



## Case study Plastic Battle Philippines

Plastic Battle is a campaign that aims to reduce or eliminate polyethylene (PET) bottles at the source by engaging with business establishments, such as resorts, cafés, hostels, and restaurants, to provide their customers the option to refill reusable bottles for a fee or for free. The campaign began in 2017 as a response to the growing volume of plastic bottles in Siargao Island, Surigao del Norte. Though the PET bottles are highly recyclable, there were no recycling facilities present in Siargao Island then.

The campaigners of Plastic Battle reached out to managers and decision-makers of these business establishments through in-person meetings, letters, and e-mails and explained the benefits of offering refilling stations.<sup>31</sup> They highlighted that the business would save money because they would no longer be providing bottles in hotel rooms. They would also not have to deal with the disposal of the bottles.

The Plastic Battle campaign toolkit included stickers, posters, and signs for the managers to put their business's logo on before printing. By having prepared communication materials, the managers did not have to spend time and effort developing their own.<sup>32</sup>

**The Plastic Battle stations had an impact counter, where staff and customers alike could monitor how many bottles were prevented from being used. By 2019, Plastic Battle already prevented 1 million bottles from being used in tourism establishments and events all over the country.**



## Case study Starting young in waste management

Calapan City recognizes the crucial role that schools play in the success of its IEC programs on proper solid waste management. The LGU established its Search for the Most Eco-Friendly School, a competition that encourages the teaching and engagement of primary and secondary school students in reduce, reuse, recycle (3Rs) activities.

The healthy competition among schools contributed to the city's waste diversion initiatives. Since the program launched in 2007, 50% of non-biodegradable waste inside school campuses were repurposed into plant pots and room decorations. The remaining recyclables were sold to buy-back centers and the proceeds became additional funds for the schools.



<sup>31</sup> Madera, B., 2021. *Plastic Battle*. Personal communication.

<sup>32</sup> Plastic Battle Philippines. Retrieved November 30, 2021, from <https://sites.google.com/view/plasticbattleph>



## 2.4. What are the key messages that could be used to promote behavior change?

”

The delivery of messages should follow an awareness, engagement, and action framework that breaks the strategy down, based on the level of interest of the target audience and where they are at in their plastic waste journey.



Several themes could be used to communicate the issue of plastic waste to drive the desired behavior change. The key messages identified below are some of the prevailing topics that are connected to the growing plastic crisis. The public and private sectors and civil society organizations must ensure that the key message and corresponding action are pitched at the right level for the right target audience, reflecting their needs, values, preferences, and priorities. For instance, business owners are likely to understand the financial implications of reducing plastic instead of its environmental implications. Environment-related messages are more likely to appeal to those who are already interested or concerned about the environmental impacts of plastic waste.

The delivery of messages should follow an awareness, engagement, and action framework that breaks the strategy down, based on the level of interest of the target audience and where they are at in their plastic waste journey. For example, people who are starting to reduce their plastic waste may need to get a broader view of the key theme first (awareness) before engaging them deeper in the waste value chain (engagement and action). Alternatively, those who are fully aware of the implications of our reliance on plastic waste and its mismanagement but are not acting upon it should be further involved in action-driven efforts.

“Humanize” the key message by putting human faces on the campaigns, highlighting the consequences of actions or inactions to the community. Identify one desired behavior and make the request specific and clear. The request must be supported by accurate information, so the communication will be built on accuracy and trust.

TABLE 5. KEY MESSAGES TO PROMOTE PLASTIC WASTE REDUCTION BEHAVIOR CHANGE

KEY MESSAGES	DESCRIPTION
 <p data-bbox="172 562 517 591"><b>CLEANLINESS AND HEALTH</b></p>	<p data-bbox="608 398 1394 607">Managing solid waste properly is related to cleanliness and public health. This is due to the health hazards associated with improper solid waste management that impact communities health, food and water safety, housing, and overall well-being.<sup>33</sup> For example, open burning of plastic releases heavy metal, dioxins, and other pollutants that could result in respiratory disorders.<sup>34</sup></p>
 <p data-bbox="272 1014 414 1081"><b>FINANCIAL BENEFITS</b></p>	<p data-bbox="608 757 1426 1182">Reliance on plastic has financial implications commonly ignored and masked by the affordability of plastic materials and the convenience it offers. However, the accumulated cost of plastic use and external cost of improper disposal are far more expensive than the initial cost associated with them. The financial benefits of reducing plastic waste must be clearly communicated. For example, businesses can save on operation expenses by investing in reusables,<sup>35</sup> while the public sector can maximize its budget for solid waste management by making collection and segregation more efficient (see case study in Question #2).<sup>36</sup> Consumers can also earn money or other types of rewards by selling plastic wastes to junk shops and other waste aggregators.</p>
 <p data-bbox="201 1581 485 1680"><b>COMMUNITY MOBILIZATION AND COLLECTIVE BENEFITS</b></p>	<p data-bbox="608 1413 1437 1693">Adoption of a new behavior is generally higher if individuals have the chance to validate it with their peers and other community members. Seeing others perform a desired behavior captures the attention of those who don't and could influence them to follow the trend. Behavior change is also easily adopted if it is supported and sustained by the wider community, turning it into a new social norm. This creates an environment supportive of change and community-wide mobilization that makes behavior change appealing to everyone.</p>

<sup>33</sup> Kabagani LJ. "Waste management part of basic human rights protection." *Philippine News Agency*. (2021). Retrieved November 12, 2021 from <https://www.pna.gov.ph/articles/1143822>

<sup>34</sup> Alabi OA, Ologbonjaye KI, Awosolu O, Alalade OE. (2019). *Public and Environmental Health Effects of Plastic Wastes Disposal: A Review*. J Toxicol Risk Assess 5:021. doi.org/10.23937/2572-4061.1510021

<sup>35</sup> Diaz C. "These businesses are saving thousands by replacing single-use plastic." *Quartz*. (2021) Retrieved November 12, 2022 from <https://qz.com/2032489/how-businesses-save-thousands-by-replacing-single-use-plastic/>

<sup>36</sup> The World Bank. (2012). *What a Waste*. Retrieved November 30, 2021, from Worldbank.org website:

<https://www.worldbank.org/en/news/feature/2012/06/06/report-shows-alarming-rise-in-amount-costs-of-garbage>



KEY MESSAGES	DESCRIPTION
 <p data-bbox="220 600 464 667"><b>TRANSPARENCY AND CONSISTENCY</b></p>	<p data-bbox="608 331 1410 439">One of recurring findings from surveys and qualitative studies that tackle why communities do not segregate waste at source is due to seeing garbage collectors mixing wastes upon collection.<sup>37, 38</sup></p> <p data-bbox="608 445 1430 741">This casts doubt on the solid waste management process and discourages behaviors such as segregation at the household level. Local solid waste management guidelines must go beyond memorandums and must provide in-depth information on why said guidelines are being set, how the guidelines will be implemented, and how waste will be managed. Updates on how the initiative is going must be constantly communicated to the community to inspire sustained support.</p>
 <p data-bbox="225 1133 461 1162"><b>CLIMATE IMPACTS</b></p>	<p data-bbox="608 846 1414 954">Because plastic is produced from petroleum-based chemicals, it could account for one-fifth of the world's total oil consumption by 2050, further accelerating global warming and climate change.<sup>39</sup></p> <p data-bbox="608 960 1414 1028">Improper disposal of plastic wastes releases ethylene and methane as the material gets exposed to sunlight and breaks down.<sup>40</sup></p> <p data-bbox="608 1034 1414 1256">Incineration of plastic waste also results in carbon dioxide emissions.<sup>41</sup> Explaining the connection between and among plastics, greenhouse gas emissions, and climate change could help improve the awareness on the importance of reducing plastic use and consumption by reaching out to individuals who are also deeply concerned about the climate crisis.</p>
 <p data-bbox="240 1563 445 1630"><b>WILDLIFE CONSERVATION</b></p>	<p data-bbox="608 1339 1434 1693">The discussion on plastic waste and its impacts on wildlife has been one of the most effective themes that emerged to encourage people to reduce their reliance on plastic. For example, the video of a sea turtle with a straw stuck in its nose started a global movement to ban or reduce plastic drinking straws.<sup>42</sup> News about marine fauna or birds dying from ingesting plastic evokes strong emotions that affect people beyond conservationists and advocates. The link between wildlife and plastic waste emphasizes that improper disposal of plastic waste has a negative impact on other species besides humans, which could inspire behavior change.</p>

<sup>37</sup> Jeremias, H. I., & Fellizar, F. M. D. (2019). *Knowledge, awareness, perceptions, and practices on solid waste management of households in selected urban barangays in Sorsogon City, Sorsogon, Philippines*. *Journal of Human Ecology*, 8(1). Retrieved from <https://ovcre.uplb.edu.ph/journals-uplb/index.php/JHE/article/view/425>

<sup>38</sup> Waste4Change. (2020). *Sorting & Recycling Playbook: A roadmap for creating your behaviour change campaign*. Retrieved 30 November 2021, from waste4change website: [https://drive.google.com/file/d/1LAHfWJERd1WUuXGyazbZzq\\_AeQZZxMNF/view](https://drive.google.com/file/d/1LAHfWJERd1WUuXGyazbZzq_AeQZZxMNF/view)

<sup>39</sup> Ahmad Ghaddar, R. B. (2018). "Rising use of plastics to drive oil demand to 2050: IEA." Reuters. Retrieved from <https://www.reuters.com/article/us-petrochemicals-iea-idUSKCN1ME2QD>

<sup>40</sup> Royer, S.-J., Ferrón, S., Wilson, S. T., & Karl, D. M. (2018). *Production of methane and ethylene from plastic in the environment*. *PLoS One*, 13(8), e0200574. <https://doi.org/10.1371/journal.pone.0200574>

<sup>41</sup> Bauman, B. (2019). "How plastics contribute to climate change." Retrieved November 30, 2021, from Yaleclimateconnections.org website: <https://yaleclimateconnections.org/2019/08/how-plastics-contribute-to-climate-change>

<sup>42</sup> Rosenbaum, S. (2018). "She recorded that heartbreaking turtle video. Here's what she wants companies like Starbucks to know about plastic straws." *Time*. Retrieved from <https://time.com/5339037/turtle-video-plastic-straw-ban>



## Case study

### Plastic, sea turtles, and plastic waste reduction

In 2019, the coastal town of San Isidro in Davao Oriental, Mindanao committed to eliminating plastic waste in 10 years. This declaration was inspired by the need to protect wildlife. At least 10 cases of marine turtles dying from plastic ingestion have been reported in recent years. Its wildlife sanctuary, a refuge for protected and endangered species, was also littered with plastic waste.

The local community and tourists in San Isidro were engaged to ensure that plastic waste reduction would be achieved. Tourists and their tour guides alike could be fined if they left trash behind. The marginalized sector and residents of the town can earn a small amount of money in exchange for collecting plastic waste.<sup>43</sup>



## Strategic use of key messages to avoid degradation desensitization

A known phenomenon called degradation desensitization could occur if the key messages are improperly or frequently used. Degradation desensitization is the loss of sensitivity to a previously aversive degradation stimulus.<sup>44</sup> For example, someone who's exposed to the impacts of marine debris to marine wildlife for the first time may initially feel strong emotions towards the problem. As the individual is exposed to more news about wildlife dying from plastic waste, he or she may become desensitized to the news resulting in apathy and inaction.

Avoiding degradation desensitization requires strategic use of key messages by exploring different narratives and angles, embedding messages in various mediums (i.e., a mix of online and offline campaigning), and focusing not just on the challenges associated with solid waste management but also on how the community progresses.



<sup>43</sup> Sarmiento, B. (2019). "Philippine coastal town leads war against plastic trash in Mindanao." Retrieved November 30, 2021, from Mongabay.com: <https://news.mongabay.com/2019/12/philippine-coastal-town-leads-war-against-plastic-trash-in-mindanao/>

<sup>44</sup> Alhadeff, A. C. (2015). *Numb to the world: Degradation desensitization and environmentally responsible behavior*. Retrieved November 30, 2021, from Yale.edu website: <https://tri.yale.edu/publications/tropical-resources-bulletin/tri-bulletin-archive/tropical-resources-vol-34/numb-world>



## 2.5. Does behavior change happen top-down or bottom-up?

The top-down approach relies on higher authority figures for decision-making, while the bottom-up approach is driven by individuals and grassroots organizations, resulting in changes that are often highly motivated, voluntary, and localized.

The top-down approach involves politicians and policymakers, and leaders and boards of influential organizations and institutions. The advantage of the top-down approach is immediate impact at scale.



### Case study Top-down: Los Baños plastic bag ban

The municipality of Los Baños was the first municipality in the Philippines to regulate the use of plastic through Municipal Ordinance No. 2008-752 “An Ordinance Prohibiting The Use of Plastic Bags on Dry Goods and Regulating Its Utilization on Wet Goods and Prohibiting The Use of Styrofoam in The Municipality of Los Baños and Prescribing Penalties Thereof.” Surveys showed that 86% of the commercial establishments were compliant.<sup>45</sup> The success of the implementation led to Municipal Ordinance No. 2014-1361 “Expanded Plastic Ordinance” to cover the ban and regulation of other single-use plastics, such as straws and plastic bags for ice and drinks.<sup>46</sup>



### Case study Top-down: City of Ormoc

Ormoc City regulates its unnecessary single-use plastic (SUP) through policy instruments implemented in phases to give communities and individuals time to adjust and comply.

In 2017, the city government started regulating SUPs by prohibiting specific single-use plastic packaging every Wednesday and Saturday through the “Ormoc City Plastic Use Regulation Ordinance of 2017”. The city implemented other initiatives to reinforce this policy, including deputization of solid waste management enforcers and community-based IECs campaigns in barangays, institutions, and business establishments. The city observed eventual compliance first of individuals, followed by traders and businesses, and eventually even visitors from neighboring cities and municipalities.

With the success of the 2017 ordinance, the local government deemed the city is ready for total regulation of SUPs. In 2021, the city issued an ordinance regulating SUPs daily. It also added the new SUP items to the prohibited and regulated list which includes polystyrene foam packaging (e.g., Styrofoam), “sando” bags, single-use plastic cups, and plastic drinking straws. While full compliance to the total regulation is yet to be realized, the results are optimistic. Business establishments have even ventured into do-it-yourself packaging that is environmentally acceptable. Some retail stores and pharmacies have started using used magazines and brochures or thermal paper to wrap dry goods.

<sup>45</sup> Delos Reyes J.A, Garcia, A.B.R. (2011). *Assessment of the effects of regulating the use of plastic bags as packaging material in commercial establishments in Los Banos, Laguna*. Retrieved November 30, 2021, from Fao.org website: <https://agris.fao.org/agris-search/search.do?recordID=PH2013000511>

<sup>46</sup> Alcantara, A. J. (2019). *Regulated single-use plastic bag and ban on plastic straw: The Los Baños Experience*. Retrieved from <https://www.nast.ph/index.php/downloads/category/151-single-use-plastics?download=638:dr-alcantara-regulation-on-single-waste-plastics>

<sup>47</sup> Reyes, T. (2018). “It’s a Small World: Living sustainably in the Philippines’ sachet economy.” Retrieved November 30, 2021, from Coconuts.co website: <https://coconuts.co/manila/features/small-world-living-sustainably-philippines-sachet-economy/>

The bottom-up approach is driven by individuals and grassroots organizations, resulting in changes that are often highly motivated, voluntary, and localized. This type of change has more room for creativity and flexibility, and great potential for community-led engagement and buy-in.



## Case study Bottom-up: Brand audits

In 2017, Greenpeace Philippines, Break Free From Plastic, GAIA, and other partner NGOs pioneered the brand audit methodology during a coastal cleanup. In a typical waste audit, the types of items are categorized and counted, while in a brand audit, the brands and companies of the wastes are identified. The brand audit operates on the belief that naming the brands will make them more accountable for their packaging and product waste.

Brand audits have proven to be a powerful tool in catalyzing a response and action from the named corporations, as there is public scrutiny and public pressure. Brand audits have also helped shift the default narrative that consumers are at fault for purchasing non-recyclable items, and that increased recycling rates can solve the plastic problem. The methodology has been replicated around the world. By 2019, it was adopted by 484 cleanups in over 50 countries and six continents.<sup>47</sup>

Both approaches also have disadvantages. The top-down approach faces challenges in bureaucratic processes, politicking, and a limited window of time to pass policies and regulations. Another factor that affects widespread adoption of behavior change proposed by higher authority figures is credibility and trust. If the constituents don't deem their leaders as trustworthy, they are unlikely to follow rules and regulations.

The bottom-up approach, on the other hand, relies on individuals and grassroots organizations, and their priorities can easily change. For example, if donors of an environmental organization leading a plastic waste reduction campaign decide to reallocate funding to another issue, like species conservation, efforts may be discontinued.

Ultimately, the government cannot change people's behavior — people will change their own behavior. What the government can do effectively is create the enabling environment for behavior change by encouraging or rewarding their constituents through incentives; imposing disincentives such as penalties and taxes; increasing compliance and enforcement to existing waste management policies; and developing well-thought out and easy to understand IEC strategies that support and enable other actions. With this conducive environment, people will be more likely to comply with regulations. Cooperation among the LGUs, communities, and private sectors is needed.



## 2.6. How long does behavior change take?

The amount of time it takes for collective behavior change to reduce plastic waste depends on the presence or absence of the barriers and enabling factors (see Questions #1 and #2). The two case studies below show different timelines: the city of Alaminos and its progress over two years, and Japan and its progress over half a century.



### Case study City of Alaminos

In 2009, GAIA and the LGU of Alaminos, Pangasinan began working together to turn Alaminos into a zero-waste city. Both parties supported each other: GAIA provided a staff member, capacity-building activities, legislative support, and financial support for IEC materials, shredders, and mini-grants for villages, while the LGU offered two full-time employees, transportation, logistical support for all activities, technical assistance, and strategic planning support for the villages. Together, they implemented “rapid-fire initiatives,” which included a series of surveys, interviews, workshops, and the development of a complete waste management plan. By 2011, a follow-up survey showed that 88% of residents were segregating at source and 53% were composting. Composting and sorting facilities were operational, and open burning and dumping were significantly minimized.<sup>48</sup>

Policies to reduce plastic waste integrate a transition period to help stakeholders affected by the policy. In July 2021, the Philippine House of Representatives approved House Bill 9147, which seeks to regulate the production, importation, sale, distribution, provision, use, recovery, collection, recycling, and disposal of single-use plastic products.

The transition periods to phase out single-use plastics vary: one year for single-use plastic drinking straws, stirrers, candy sticks, balloon sticks, cotton bud sticks, buntings, confetti, and packaging or bags less than 10 microns thick; and four years for tableware, film wrap, packaging or bags less than 50 microns thick, sachets and pouches, oxo-degradable plastics, and polystyrene food and beverage containers.

The bill has also tasked the DENR to formulate the phase-out plan within six months of the bill’s passing, which should include the development of alternatives and awareness-raising components.<sup>49</sup>



<sup>48</sup> Larracas, A. (2012). *Alaminos, Philippines - Zero Waste, from Dream to Reality*. Retrieved November 30, 2021, from No-burn.org website: <https://www.no-burn.org/wp-content/uploads/ZW-Alaminos.pdf>

<sup>49</sup> Philippine News Agency. (2021). "House passes bill on single-use plastics." Retrieved November 30, 2021, from <https://www.pna.gov.ph/articles/1148600>





## Case study

### Waste management in Japan

Until the 1950s, it was common practice for the Japanese to litter. The streets were cleaned and collected by men using pushcarts. Open dumping was the only final disposal method up until the 1970s. Waste could be seen everywhere from the streets to the rivers, causing hygiene and environmental problems. Technology and waste management infrastructure were also lacking to support proper waste collection and treatment.

Several policies were passed to address the waste management issue. The 1954 Public Cleaning Law was revised and became the Waste Management Law, which included a waste treatment goals and offered subsidies for the development of waste treatment facilities. In 1991, the law was revised again to add waste reduction goals.

In 2000, the Basic Act for Establishing a Sound Material-Cycle Society or Basic Recycling Act came into force, setting targets to increase recycling and measure progress.<sup>50</sup>

Local governments provide separate collection systems and recycling facilities to support source segregation of waste. Some communities have also developed social norms around segregation and collection.<sup>51,52</sup>

This case study shows that collective behavior change could take at least half a century and must continue to be reinforced.



Bureau of Public Cleaning, Tokyo Metropolitan Government (2000) *The 100 Years' History of Public Cleaning of Tokyo Metropolitan Government*. Tokyo Metropolitan Government.

<sup>50</sup> Ministry of the Environment. (n.d.). *History and Current State of Waste Management in Japan*. Retrieved November 30, 2021, from Env.go.jp website: <https://www.env.go.jp/en/recycle/smcs/attach/hcswm.pdf>

<sup>51</sup> Whiting, K. (2019). "This Japanese word is helping the country recycle and waste less." Retrieved November 13, 2021, from Weforum.org website: <https://www.weforum.org/agenda/2019/08/the-japanese-have-a-word-to-help-them-be-less-wasteful-mottainai/>

<sup>52</sup> Onishi, N. (2005). "How do Japanese dump trash? Let us count the myriad ways." *The New York Times*. Retrieved November 30, 2021, from <https://www.nytimes.com/2005/05/12/world/asia/how-do-japanese-dump-trash-let-us-count-the-myriad-ways.html>







## 2.7. How do incentives promote plastic waste reduction?

Providing incentives is one of the enduring ways of encouraging community participation in plastic waste reduction. Examples of incentives are monetary and non-monetary (e.g., food, school supplies, and awards).

Financial incentives are attractive in encouraging waste segregation at source while enhancing recycling rates, especially to low-income communities and informal waste collectors. In the Philippines, a common monetary incentive is the trash-to-cash model. Citizens and informal waste collectors can sell high-value plastics, such as PET bottles or high-density polyethylene (HDPE) plastic containers, to junk shops and other waste aggregators in exchange for cash based on the material's market price.

This kind of market-based system mostly accepts high-value recyclable plastics. Low-value and multilayer flexible plastics, which include plastic bags, polystyrene food packaging, and sachets, are not usually accepted. Different stakeholders are working to address this gap by expanding the types of plastic accepted and exploring options for non-monetary rewards.

TABLE 6. EXAMPLES OF EXISTING PLASTIC WASTE REDUCTION INCENTIVE PROGRAMS IN THE PHILIPPINES

Initiative and Organization	Plastics accepted	Monetary initiative	Non-monetary initiative	Reward
<b>Trash to Cashback Program and MyBasurero</b> by Basic Environmental Systems & Technologies, Inc. (BEST)	Low- and high-value plastic waste			Environmental points that can be used to purchase grocery items, downcycled plastic products, or could be exchanged as reward points to select food establishments
<b>Kolek Kilo Kita</b> by Unilever	Low-value plastic waste			PhP 10 worth of Unilever products for every 1 kilogram of plastic <sup>53</sup>  Cash incentives are also available through accredited junk shops.

<sup>53</sup> Peralta, J. (2021). "LIST: Where to donate plastic waste." Retrieved November 30, 2021, from CNNPhilippines.com: <https://cnnphilippines.com/lifestyle/2021/6/5/List-where-to-donate-plastic.html>

Initiative and Organization	Plastics accepted	Monetary initiative	Non-monetary initiative	Reward
<b>Aling Tindera</b> by Plastic Credit Exchange	Low-value plastic waste			Waste is purchased at PhP 2.00 per kilo. Value may fluctuate. <sup>55</sup>
<b>Trash to Cash</b> by SM Supermalls	High-value plastic waste			The assigned recycler per mall will assign monetary values based on market prices
<b>Plastics-for-Rice</b> by Bayanan, Muntinlupa City	Low- and high-value plastic waste			Exchanges plastic waste for rice at the exchange rate of 2:1, which means a kilogram of rice will be exchanged for every two kilogram of plastic waste <sup>56</sup>
<b>Search for the Cleanest and Greenest LGU (Model Barangay on Ecological Solid Waste Management)</b> by DENR-EMB	N/A  Criteria are based on compliance to RA 9003 provisions			The winning barangay can receive up to PhP 1 million and a plaque of appreciation. <sup>57</sup>

<sup>54</sup> GMA News Online. (2019). "The City of Manila launches Kolek Kilo Kita to address plastic waste issue." Retrieved November 30, 2021, from GMA News Online website: <https://www.gmanetwork.com/news/lifestyle/hobbiesandactivities/715841/the-city-of-manila-launches-kolek-kilo-kita-to-address-plastic-waste-issue/story/>

<sup>55</sup> Dumlao-Abadilla, D. (2020). "Real-life 'Darna' wages war vs plastic waste." Retrieved November 30, 2021, from Inquirer.net: <https://business.inquirer.net/304226/real-life-darna-wages-war-vs-plastic-waste>

<sup>56</sup> Reuters. (2019). "Filipino villagers swap trash for rice in fight against plastics." (2019). Retrieved November 30, 2021, from Reuters: <https://www.reuters.com/article/us-asia-waste-philippines-rice-idUSKCN1VX2M5>

<sup>57</sup> DENR-EMB. (2017). *Memorandum: Concept Paper for the Search for the Cleanest and Greenest LGU Nationwide*. Retrieved November 30, 2021, from Gov.ph: <https://ncr.emb.gov.ph/wp-content/uploads/2017/08/Search-for-the-Cleanest-and-Greenest-Brgy-Guidelines.pdf>

Because monitoring and evaluation results of waste management programs are not always published in the public domain, it is difficult to confirm with certainty how successful these incentive programs are. There is some data to demonstrate community support: Unilever's Misis Walastik campaign, which came before the Kolek Kilo Kita program, has reportedly collected about 185 million pieces of sachets in two years.<sup>58</sup>

Other incentives to drive behavior change are group incentives where the reward is paid out to all members of a group after meeting their collective target to reduce plastic waste. Lotteries and prize draws are other effective ways to drive collective behavior change. People adopting the desired behavior would have the chance to win an attractive prize if they participate in the collective movement.

Incentives can also come in non-monetary forms. Participating in plastic waste reduction programs can create a sense of belonging and inclusion, which is valuable in tight-knit communities like the Philippines. LGUs can also provide symbolic rewards or public recognition, banking on the intrinsic motivation of communities, social norms, bragging rights, or even peer pressure.<sup>59</sup>



## Case study

### Search for Cleanest and Greenest LGU

In 2012, the Metropolitan Manila Development Authority (MMDA) launched the Search for Cleanest and Best in Solid Waste Management Barangay. Criteria for judging included the absence of litter along sidewalks and streets and adoption of a city/municipal ordinance to prohibit littering, among others. Winners were awarded PhP1 million each.<sup>60</sup>

Similar competitions have been held across the country. In 2016, Cagayan de Oro city established the Oro Kalimpyo Awards, an incentive mechanism awarding barangays with outstanding practices on ecological solid waste management (ESWM). It also aims to raise awareness of the importance and benefits of proper ESWM practices in communities.

The Oro Kalimpyo Awards has three categories: Urban, Sub-Urban, and Hinterland categories, considering the different challenges and solutions for each category. All 80 barangays of Cagayan de Oro City are required to join the search. Winning barangays receive cash prizes, with as much as PHP 250,000 at stake, as well as markers and trophies.



<sup>58</sup> Unilever PLC. (2017). "Unilever strengthens waste recovery efforts." Retrieved November 30, 2021, from Unilever PLC website: <https://www.unilever.com.ph/news/press-releases/2017/MisisWalastikProgramCynthiaVillar.html>

<sup>59</sup> Rare and The Behavioural Insights Team. (2019). *BEHAVIOR CHANGE FOR NATURE: A Behavioral Science Toolkit for Practitioners*. Retrieved November 30, 2021, from Rare.org: <http://rare.org/wp-content/uploads/2019/04/2019-Behavior-Change-for-Nature-Report-digital.pdf>

<sup>60</sup> Metropolitan Manila Development Authority. (2012). "MMDA to Launch Cleanest Barangay Search." Retrieved November 30, 2021. <https://mmda.gov.ph/16-news/news-2012/254-mmda-to-launch-cleanest-barangay-search>

<sup>61</sup> EMB. (2019). "Awarding of the 2019 search for cleanest and greenest LGU (model barangay on ESWM) in NCR." Retrieved November 30 2021, from EMB.gov.ph: <https://ncr.emb.gov.ph/awarding-of-the-2019-search-for-cleanest-and-greenest-lgu-model-barangay-on-eswm-in-ncr/>

While monetary and non-monetary incentives can yield positive results, LGUs should consider foreseeable risks, such as conflict of interest, cheating of purchasing price by recycling vendors, third-party interventions, and bribes. Financial incentives are also dependent on the fluctuating market price of plastic waste. For instance, Plastic Credit Exchange's *Aling Tindera* program, which enables store owners to buy plastic waste for PhP 2.00 per kilogram, could fluctuate depending on the actual market value of plastic waste. The market value is influenced by the demand for recycled plastics mainly dominated by high-value resins. The demand for recycled low-value plastics is much lower, and as the global reliance on virgin plastic grows, more plastic waste will be generated influencing the supply and demand in the recycled plastic market.<sup>62</sup> There is also a risk of people discontinuing the desired behavior once the incentive changes (e.g., lower prices for plastics due to fluctuating markets) and/or is no longer offered (e.g., change in priority and leadership of LGU).



## Case study Indonesia's Waste Bank system

In Indonesia's Waste Bank system, the members of waste banks are given account books, similar to a bank passbook, where the weight of the accepted recyclable waste and their monetary value are recorded for every deposit. The amount of recyclables that are brought by individuals is generally small and it is burdensome to pay such small amounts of cash for every transaction. Thus, the accumulated value is paid in regular intervals such as once every three months.

The management body of waste banks vary and may include community members and individuals, private companies, or local governments. In 2014 there were 1,172 waste banks in the country. The number of waste banks grew to 7,488 at the end of 2018.<sup>63</sup> These decentralized waste collection facilities recovered 2.37% of total waste generation in Indonesia in 2018.<sup>64</sup>



<sup>62</sup> Karisalov, M. (2021). "The future of the plastics industry is green." Retrieved November 30, 2021, from Weforum.org website:

<https://www.weforum.org/agenda/2021/03/future-plastics-industry-green/>

<sup>63</sup> Statista Research Department. (2022). "Number of waste banks in Indonesia 2014-2018." (2019). Retrieved November 30, 2021, from Statista.com website:

<https://www.statista.com/statistics/1125826/indonesia-number-of-waste-bank/>

<sup>64</sup> Ministry of Environment and Forestry - Republic of Indonesia. (2020). *National Plastic Waste Reduction Strategic Actions for Indonesia*. Retrieved November 30, 2021, from UNEP.org: <https://wedocs.unep.org/bitstream/handle/20.500.11822/32898/NPWRSL.pdf>





## 2.8. How do disincentives promote plastic waste reduction?

Another common strategy to drive behavior change is disincentives. These include taxes and penalties. At the national level, RA 9003 has provisions penalizing households/individuals who do not manage waste properly. Violators could be imprisoned for one to 15 days. At the local level, businesses caught violating Quezon City's ban on plastic bags and single-use plastics will be penalized for up to PhP 5,000 depending on the number of offenses.<sup>65</sup> Some cities created ordinances imposing costs on the use of plastic bags. Consumers are asked to pay PhP1-2 for every plastic bag used in an attempt to remove the burden of phasing out single-use plastic bags on enterprises and pass it on to consumers who are encouraged to bring their own bags.

Non-financial penalties for violating existing plastic bans are also in place in some cities in the Philippines. For example, establishments violating Quezon City's plastic ban could result in business permits being revoked. Non-monetary penalties can also come in the form of association with the waste problem and negative perception towards the violator. For example, some IEC campaigns deliberately tag violators as the cause of waste problems in the community. However, these methods must be reviewed to ensure that they deliver the desired behavior change instead of ostracizing the violator.

The effectiveness of disincentives depends on the enforcement and systems in place. For instance, Kenya outlawed the manufacturing, distribution, and sale of single-use plastics and imposed penalties up to \$40,000 (≅ PhP 2,000,000) to violators in 2017.<sup>66</sup> Despite the ban, the plastic problem persists due to the commercial interventions from big companies that use plastic in their products' packaging. In the Philippines, communities lack the intrinsic motivation to comply with the no-segregation, no-collection provision knowing that there are no immediate consequences to their inaction, having observed poor enforcement at the municipal level.<sup>67</sup>



### Case study Shutdown of two stores for violating the plastic bag ban in Muntinlupa

In 2010, the city of Muntinlupa passed City Ordinance 10-109, which bans the use of plastic bags. It also prohibits establishments from selling and using plastic and polystyrene as secondary packaging materials for wet and dry goods. It came into force in January 2011. By July 2011, the LGU ordered the shutdown of two commercial establishments, a bread store and a fast food stall, for committing three violations.<sup>68</sup>

<sup>65</sup> Quezon City Government. (2021). "QC to resume ban on plastic bags, single use plastics." Retrieved November 30, 2021, from <https://quezoncity.gov.ph/website: https://quezoncity.gov.ph/qc-to-resume-ban-on-plastic-bags-single-use-plastics/>

<sup>66</sup> Mpungu, P. (2020). "Despite pioneering ban, Kenya is drowning in single-use plastic." Retrieved November 30, 2021, from Al Jazeera website: <https://www.aljazeera.com/economy/2020/12/4/despite-pioneering-ban-kenya-is-drowning-in-single-use-plastic>

<sup>67</sup> Gozum, I. (2020). "Communities bear the weight of the Philippines' plastic waste problem." Retrieved November 30, 2021, from Rappler.com: <https://www.rappler.com/environment/tackling-plastic-waste-from-communities>

<sup>68</sup>See, A. B. (2011). "Muntinlupa shuts down 2 stores for plastic ban violation." *The Philippine Star*. Retrieved from <https://www.philstar.com/metro/2011/03/08/663764/muntinlupa-shuts-down-2-stores-plastic-ban-violation>



## 2.9. Which comes first: behavior change or systemic change?

Plastic waste reduction is a complex system that involves different steps and stakeholders. It does not work well if the components are not well-connected and functioning harmoniously.

### Downstream and upstream innovations

Downstream innovations are solutions meant to address problems at the end of the value chain, such as improving the collection and recycling of waste products. On the other hand, upstream innovations are centered on tracing the root causes of the plastic problem and addressing them at their core, such as redesigning products to minimize over-reliance on plastic. Downstream and upstream innovations and initiatives must complement each other to create lasting systemic change.

For example, providing affordable plastic alternatives to consumers can help reduce plastic waste. Using resources for research and development, supporting private sector especially micro, small, and medium enterprises, and provision of financial instruments that enable equitable transition are also significant strides in improving market accessibility of the plastic alternatives, resulting in a lower waste generation by addressing the problem from its roots.

Upstream efforts must also include education and engagement efforts to raise awareness about the growing plastic problem and how to mitigate it from worsening with the end goal in mind – plastic waste reduction. Employing the effective use of key messages that could resonate to different audiences is crucial in translating the education and engagement measures into tangible actions and behavior changes among the citizens.

### The case of waste segregation at source

One of the common failures of source segregation programs is the lack of preparedness in the system for separate collection and intermediate treatment of recyclable waste. Without these mechanisms, the separated waste will be mixed again and dumped in the landfills. This discourages communities who are willing to segregate at source. Thus, collection mechanisms and treatment facilities should be in place before asking communities to cooperate in source segregation.

Communities' behavior change in waste segregation does not occur immediately and requires time, so the design should anticipate low separation rate at the initial stage and fluctuation of performance before it stabilizes and grows to a satisfactory level. In addition, it is unlikely that the waste collection system and intermediate treatment facilities will function perfectly at the onset. Pilot testing source segregation and the corresponding waste facilities at a small scale is essential. This can be done in clusters, such as a select number of households in a *barangay*.

## Planning for long-term sustainability

Plastic waste reduction strategies must incorporate long-term sustainability and financing to operationalize systems. It is crucial that continuous and strategic IEC activities are planned and followed according to the LGU's 10-year solid waste management plan, because the plastic waste crisis cannot be solved by short-term, one-off campaigns. Developing well-thought out IEC strategies must be done with other initiatives that support, enable, and reinforce the key messages, such as passing ordinances, building infrastructure, and monitoring and evaluation activities.

Driving systemic change may appear overwhelming due to multiple moving parts, but it is the more sustainable solution that creates impact at scale. It is also more inclusive, especially to those who have limited resources to adopt the new behavior. Without systemic change, plastic waste will remain to be a resource that is at the wrong place and time.



## Case study The impact of a systemic change

For almost 20 years, Legazpi City used an open dumpsite for the disposal of their mixed waste. Through technical and financial support from the World Bank-Global Environmental Facility through DENR-EMB, the open dumpsite was safely closed in 2015.

The safe closure of their open dumpsite and building of their sanitary landfill facility was key to promoting waste segregation at source. The construction and operation of their Category 2 sanitary landfill facility enabled a system that would facilitate segregation at source, including a "no segregation, no collection" policy at a household level, segregated waste collection, and diversion of recyclable waste to *barangay* MRFs.

With the system set in place, they conducted consistent IEC campaigns among households promoting waste segregation and 3Rs to reduce the residual waste ending up in their landfill.





## 2.10. How do we measure behavior change in plastic waste reduction?

The culture of monitoring and evaluation in the environmental sector is not as widespread compared to other fields in development, such as poverty alleviation, education, and public health.<sup>69, 70</sup> When designing behavior change programs or campaigns, or policies with behavior change components, it is necessary to integrate baseline data collection and monitoring and evaluation methods. Results of monitoring and evaluation activities will not only reveal what is working and not working, but also improve program effectiveness by enabling implementers to make the necessary adjustments and inform future program design.

The specific success indicators will depend on the objectives of the program, policy, or campaign, and the desired behaviors, but the following four key metrics<sup>71</sup> may serve as a starting point:

**Participation rates:** This refers to the percentage of people engaging in the desired behavior (e.g., the number of households bringing their clean and dry plastic waste to junk shops and waste aggregators, or the number of households bringing out source-segregated wastes for collection over the number of households in the *barangay*, multiplied by 100).

**Capture rates:** This refers to the percentage of plastic waste separated for recycling at source over the total amount of plastic waste generated at the household level (e.g., if a household uses three bottles of laundry detergent a month and brings all three empty, clean, and dry bottles to a recycling center, this means that the household's capture rate is at 100%).

**Contamination rates:** This refers to the percentage of compliance to the waste segregation categories per household (e.g., clean and dry plastics further segregated into soft plastics and rigid plastics.). This could also be factored in by monitoring the centralized segregation bins allocated to each community.

**Waste generated:** This refers to the overall amount of waste generated by a municipality in metric tons for a certain period of time (e.g., month or year). This could be further segmented into different waste categories based on an LGU's sorting mechanisms and systems (e.g., how many tons of waste end up in landfills monthly or annually).

The measurement of the success indicators must be carefully carried out by data and environmental specialists to ensure that relevant data points are identified and monitored. The data points could include resource recovery facilities, material recovery facilities, landfill data, and the informal waste collection sector. It is crucial that this data is saved and backed up by the responsible national or regional agency in an external hard drive and/or cloud system to avoid data loss. Having data stored properly also ensures that future administrations will have access to it and long-term evaluations can be conducted to identify trends and other observations.

<sup>69</sup> Ferraro, P. J., & Pattanayak, S. K. (2006). *Money for nothing? A call for empirical evaluation of biodiversity conservation investments*. PLoS Biology, 4(4), e105.

<sup>70</sup> Margoluis, R., Stem, C., Salafsky, N., & Brown, M. (2009). *Design alternatives for evaluating the impact of conservation projects*. In M. Birnbaum & P. Mickwitz (Eds.), *Environmental program and policy evaluation: Addressing methodological challenges*. *New Directions for Evaluation*, 122, 85–96.

<sup>71</sup> Scott Mouw, Lily Schwartz, and Sherry Yarkosky. (2020). *2020 State of Curbside Recycling Report*. Retrieved November 30, 2021, from Recyclingpartnership.org website: [https://recyclingpartnership.org/wp-content/uploads/dlm\\_uploads/2020/02/2020-State-of-Curbside-Recycling.pdf](https://recyclingpartnership.org/wp-content/uploads/dlm_uploads/2020/02/2020-State-of-Curbside-Recycling.pdf)

Behavior change can also be measured qualitatively to better understand how key stakeholders perceive the existing systems in place, gauge their level of support, and measure the effectiveness of the plastic waste reduction strategy. The qualitative measurement can be carried out through public consultations and meetings, surveys, and key informant interviews among the relevant stakeholders. Suggested factors for assessment can be found on Table 7.

**TABLE 7. FACTORS THAT AFFECT PLASTIC WASTE REDUCTION BEHAVIOR AND SAMPLE GUIDE QUESTIONS FOR EVALUATION**

FACTORS	SAMPLE GUIDE QUESTIONS
 <p><b>INSTITUTIONAL</b></p>	<ul style="list-style-type: none"> <li>• What are the gaps and opportunities in the implementation of plastic waste reduction policies in the community?</li> <li>• How can these gaps and opportunities be effectively addressed considering the local context and current resources?</li> </ul>
 <p><b>FINANCIAL</b></p>	<ul style="list-style-type: none"> <li>• What financial support is needed by the key stakeholders to become enablers of plastic waste reduction?</li> <li>• What incentives or disincentives are effective in driving behavior change?</li> </ul>
 <p><b>TECHNICAL, PHYSICAL, AND SPATIAL</b></p>	<ul style="list-style-type: none"> <li>• What infrastructures, services, and products/alternatives are supportive of the desired behavior change? Alternatively, which technical and physical factors can be improved?</li> <li>• Does the environment look cleaner? Is there less waste in the natural environment?</li> <li>• How can access to the infrastructures be improved to ensure equitability and easier transition to sustainable behavior?</li> <li>• How can public and private spaces (e.g., buildings, barangay halls) be designed effectively so that proper solid waste management is integrated at the community level?</li> </ul>
 <p><b>SOCIAL AND PSYCHOLOGICAL</b></p>	<ul style="list-style-type: none"> <li>• How has the community's perception of the plastic problem changed after exposure to the local waste management initiatives?</li> <li>• How can the community be better engaged to ensure that local policies are implemented and the desired behavior change is achieved?</li> <li>• Are community members content with the desired behaviors?</li> <li>• Are community members content with the outcome of the desired behaviors?</li> <li>• How has plastic waste reduction and a cleaner environment affected the overall well-being of the community?</li> </ul>



After gathering data and insights, relevant stakeholders driving behavior change must assess the strengths, gaps, and opportunities and existing systems. Once these are identified, the plans must be flexible enough to accommodate the key findings to drive desired behaviors to reduce reliance on plastic, and ultimately, plastic waste generation.



## Case study Plastic Bank

The Plastic Bank is a scaled-up model of waste banks powered by digital technology to reduce plastic waste. It incentivizes plastic waste collection by exchanging it with cash and blockchain-secured digital tokens, goods or services, or even tuition fees. The digital platform allows for real-time monitoring and evaluation.

According to the block-chain verified app, the Plastic Bank has recycled over 31 million kg of plastic and has over 32 thousand registered collectors across 516 locations as of September 2021. Plastic waste collected through Plastic Bank is recycled and sold as Social Plastic® to companies that care about the environment and social welfare.<sup>72,73</sup>



<sup>72</sup> *Empowering the world to stop ocean plastic - Plastic Bank.* (2021, March 31). Retrieved November 30, 2021, from Plasticbank.com website: <https://plasticbank.com/>

<sup>73</sup> *Plastic Bank is #1 for certified environment & social impact.* (2021, March 12). Retrieved November 30, 2021, from Plasticbank.com website: <https://plasticbank.com/our-impact>



## 3. Recommendations

The answers to the 10 questions already contain some recommendations and points for reflection. Based on the 10 questions and answers, this final chapter offers specific recommendations for consideration when designing and implementing behavior change elements in plastic waste reduction.

### 3.1. Create an enabling environment that would change the default behavior.

One way to curb plastic use is to change the default behavior of a commercial establishment (e.g., cafés, schools, restaurants, supermarkets). The default behaviors could be making single-use plastics available only upon request, providing an opt-in option (versus opt-out) for mobile apps (e.g., customers have to tap a button to request for cutlery for food deliveries), or offering products without packaging.



#### Case study | Single-use plastics upon request

A case study conducted along Katipunan Avenue, Quezon City showed that serving straws upon request instead of serving them by default reduced usage by 70%.<sup>74</sup> Japan increased the refusal rate of plastic bags in selected supermarkets by 72% immediately after retailers introduced mandatory charges for each single-use plastic issued.<sup>75</sup>

### 3.2. Establish necessary policies, systems, and infrastructures to support behavior change.

Ensure that processes, facilities, and other identified need to support behavior change are ready before the implementation of plastic waste reduction elements. This would speed up the adoption rate of the desired behavior and will improve public trust in waste reduction policies and practices. Enforcement of policies and monitoring of any unintended negative impacts of plastic waste reduction measures must also be consistent.



#### Case study | Preparing for behavior change

In 2013, the city of San Fernando, Pampanga ramped up its efforts to curb waste by enforcing RA 9003, focusing on model-building of barangays, institutionalizing waste management practices, intensified IEC efforts, and speeding up the construction of MRFs with the help of incentives. These efforts allowed the city to decentralize waste management, resulting in increasing waste diversion rates up to 76% in 2017.<sup>76</sup>

<sup>74</sup> Espina, Pocholo, 2020. Personal communication re: *The Last Straw Katipunan Project*.

<sup>75</sup> "EDITORIAL: Plastic bag charge still a baby step in cutting plastic waste." (n.d.). Retrieved November 30, 2021, from Asahi.com: <https://www.asahi.com/ajw/articles/14386656>

<sup>76</sup> "Political Will Key to Zero Waste City of San Fernando, Pampanga Mayor Edwin Santos under whose leadership, program implementation of Zero Waste was scaled up." (n.d.). Retrieved January 7, 2022, from Zerowasteworld.org: <https://zerowasteworld.org/wp-content/uploads/San-Fernando.pdf>

### 3.3. Use the power of joy and positivity and create a rewarding environment.

The use of fear, disgust, shock tactics, shame, and guilt have a limited effectivity and appeal, and can even be counterproductive. Messages that evoke positive and empowering emotions such as joy, pride, and gratitude have been demonstrated to contribute to self-image, performance, and pro-environment behavior.<sup>77,78</sup> Positive messaging contributes to creating a rewarding environment.

#### Case study | Basuraffle



Several LGUs have organized a Basuraffle, a portmanteau of “basura” (garbage) and “raffle.” In the Basuraffle, household representatives who bring plastic wastes receive a raffle entry per kilo. Prizes are household appliances and common household goods, such as school supplies and detergent soaps.<sup>79</sup> According to the environment officer of the municipality of Tanay then, the “garbage collectors could no longer fill up trucks” due to the excitement of the residents.<sup>80</sup>

### 3.4. Encourage public commitments and develop feedback mechanisms.

Organizations and institutions that make public commitments are more likely to succeed because there is an audience to keep them accountable. This is in line with the desire to feel a sense of belonging and community. National and local leaders must include sound, measurable, science-based, and equitable strategies in their platforms. Create feedback mechanisms for individuals and communities to share what works and suggests to improve what does not. These feedback mechanisms must be constantly monitored and acted upon, fostering a stronger sense of belonging and community.

#### Case study | Coca-Cola’s World Without Waste progress report



In 2018, The Coca-Cola Company launched its World Without Waste program, which aims to collect and recycle every bottle or can that the company produces by 2030. The launch in the Philippines was held in 2019. Every year since then, Coca-Cola Philippines has organized a media roundtable to update the public on the progress towards their commitments. During the media roundtable in 2021, Coca-Cola Philippines announced that the company would open its recycling facility in 2022 and that it would be phasing out a popular juice beverage packaged in sachets.<sup>81</sup>

<sup>77</sup> Ruiter, R. A. C., Abraham, C., & Kok, G. (2001). *Scary warnings and rational precautions: A review of the psychology of fear appeals*. *Psychology & Health*, 16(6), 613–630. <https://doi.org/10.1080/08870440108405863>

<sup>78</sup> Bennett, R. (1998). *Shame, guilt & responses to non-profit & public sector ads*. *International Journal of Advertising*, 17(4), 483–499. <https://doi.org/10.1080/02650487.1998.11104734>

<sup>79</sup> CEMEX Holdings Philippines. (2019). “CEMEX partners with Unilever for TSEK Clean Community Program.” Retrieved November 30, 2021, from [cemexholdingsphilippines.com website: https://www.cemexholdingsphilippines.com/-/cemex-partners-with-unilever-for-tsek-clean-community-program](https://www.cemexholdingsphilippines.com/-/cemex-partners-with-unilever-for-tsek-clean-community-program)

<sup>80</sup> Cinco, M. (2015). “In Tanay, Rizal, garbage out is very in.” Retrieved November 30, 2021, from [Inquirer.net: https://newsinfo.inquirer.net/705455/in-tanay-rizal-garbage-out-is-very-in](https://newsinfo.inquirer.net/705455/in-tanay-rizal-garbage-out-is-very-in)

<sup>81</sup> Cordero, T., & GMA News. (2021). “Coca-Cola Philippines to phase out unrecyclable sachets by 2022.” Retrieved November 30, 2021, from [GMA News Online website: https://www.gmanetwork.com/news/money/companies/804970/coca-cola-philippines-to-phase-out-unrecyclable-sachets-by-2022/story/](https://www.gmanetwork.com/news/money/companies/804970/coca-cola-philippines-to-phase-out-unrecyclable-sachets-by-2022/story/)

## 3.5. Think like a designer.

Design an environment to make the desired behavior simple and intuitive. Every person has a limited bandwidth, and if intrinsic motivation for pro-environmental behavior is already low, it will be unlikely for that person to adopt the desired behavior. Provide behavior cues to nudge individuals and communities in the right direction.

### Case study | Rebins for beverage cartons



Nestlé and Tetra Pak Philippines launched the Rebins bins, which is a collection point for beverage cartons. There are specific instructions for the correct way to dispose of these bins, summed up in a few words: snip, rinse, pop, and drop.<sup>82</sup> The first iteration of the bin had a large round hole, which allowed people to throw other items besides the flattened beverage carton. Wastes were often contaminated. For the second iteration, the slot for the beverage carton is extremely narrow, which forces customers to follow the steps.

## 3.6. Digitalize waste management operations.

Invest in digital platforms such as websites, databases, and mobile apps to improve data gathering, information dissemination, sorting, and compliance with plastic waste reduction strategies across the waste value chain. Digitalizing waste management must put a premium on the end-users overall experience to increase the adoption rate of the solutions, consequently leading to behavior change.



### Case study | Waste collection with cashback

Trash Panda launched in the Philippines in 2021, offering trash collection services through a mobile app. Users can schedule trash pick-ups at a cost and all recyclable waste materials will be sorted, weighed, and sold to partner recyclers. The amount earned from the trash is credited to the users' Trash Panda account.<sup>83</sup>

<sup>82</sup> Tetra Pak Philippines. (2020). "Nestle Philippines joins the movement for a sustainable future." Retrieved January 7, 2022 from Tetra Pak's Facebook page: <https://www.facebook.com/tetrapakphilippines/photos/nestl%C3%A9-philippines-joins-the-movement-for-a-sustainable-future-snip-rinse-pop-dr/1567257496779631/>

<sup>83</sup> *Circula recon.* (n.d.). Circula Recon. Retrieved January 7, 2022, from <https://circularecoon.com/>

# UN HABITAT FOR A BETTER URBAN FUTURE

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