CIRCULARITY ASSESSMENT PROTOCOL
Manila, Philippines

Circularity Informatics Lab – Jambeck Research Group
University of Georgia in Collaboration with Save Our Philippine Seas

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Executive Summary

Developed by the Circularity Informatics Lab at the University of Georgia, the Circularity Assessment Protocol (CAP) is a standardized assessment protocol to inform decision-makers through collecting community-level data on plastic usage and management. Grounded in materials flow and systems thinking concepts, the CAP uses a hub-and-spoke model to holistically characterize how consumer plastics flow into a community, are consumed, and flow out, either through waste management systems or leakage into the environment. The model, shown below, is comprised of seven spokes: input, community, material and product design, use, collection, end of cycle, and leakage. At the center, the system is driven by policy, economics and governance with key influencers including non-governmental organizations, industry and government.

Between January and March 2021, a team from Save Philippine Seas (SPS) in Metro Manila, which served as the local implementing partner (LIP) for this project [the UGA team was unable to travel due to the COVID-19 pandemic] with guidance and support from the Circularity Informatics Lab, conducted fieldwork in three cities within Metro Manila, Philippines. The CAP was conducted with support from the city’s local government and local USAID contractor and Municipal Waste Recycling Program implementer, DIG. Field work included product and packaging assessments in stores across the city; key stakeholder interviews with government, industry, and non-profit organizations; material type characterizations for consumer plastic items; cost analysis
of reusable products and alternatives to plastic available in the city; visual audits of recycling contamination; identification of public waste and recycling collection bins; and litter transects in three categories of population. Key findings from each spoke are summarized in the following table.

**Key Opportunities**

<table>
<thead>
<tr>
<th>INPUT</th>
<th>There is a mix of local and international sources for plastic manufacturers. All international companies have local distributors, which provides an opportunity to engage the local counterparts for proper collection, alternate delivery systems, and education campaigns.</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMUNITY</td>
<td>There is a general acknowledgement and recognition of Metro Manila’s plastic pollution crisis. Respondents from dining establishments, stores, and local governments have mixed reactions to a proposal for a single-use plastic ban, citing cost implications and lack of alternatives and resources as barriers for implementation.</td>
</tr>
<tr>
<td>PRODUCT DESIGN</td>
<td>The majority of the product packaging from dining establishments and stores were designed to be single-use (e.g., to-go cups and utensils, plastic bags, sachets). In recent years, governments, the private sector, and civil society organizations have promoted the switch to paper-based packaging and reusable bags.</td>
</tr>
<tr>
<td>USE</td>
<td>The majority of the product packaging from dining establishments and stores came in single-use plastic packaging and in multi-layer film. Volumes of single-use plastic packaging increased due to impacts of COVID-19 (e.g., prohibition of dining in, food delivery services, and concerns for cross-contamination). Plastic bags and glass and plastic containers (PET) are commonly reused, but multilayer film used for household goods are disposed of.</td>
</tr>
<tr>
<td>COLLECTION</td>
<td>The waste collection rate in Metro Manila is reportedly at 85%. These services are free for all Metro Manila residential and commercial areas as part of the government mandate. Compliance to the “no segregation, no collection” provision under the national law remains low.</td>
</tr>
</tbody>
</table>
Metro Manila lacks waste management infrastructure, which contributes to the leakage of solid wastes into the environment. Increasing segregation at the source could significantly curb the amount of waste leakage.

The majority of litter items collected through the Marine Debris Tracker app were food plastics and tobacco products. These items have low to no value for collection and recycling. This data can inform policy change, specifically Extended Producer Responsibility.

Acknowledgements
We would like to thank USAID for funding this work through the MWRP Program and their implementing partner, DIG, for facilitating various portions of this work. We would also like to thank the government and community for participating in the CAP.
# Glossary of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>CAP</td>
<td>Circularity Assessment Protocol</td>
</tr>
<tr>
<td>CE</td>
<td>Circular Economy</td>
</tr>
<tr>
<td>CIL</td>
<td>Circularity Informatics Lab</td>
</tr>
<tr>
<td>DENR</td>
<td>Department of Environment and Natural Resources</td>
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<tr>
<td>DIG</td>
<td>Development Innovations Group</td>
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<tr>
<td>DOH</td>
<td>Department of Health</td>
</tr>
<tr>
<td>EPR</td>
<td>Extended Producer Responsibility</td>
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<tr>
<td>HDPE</td>
<td>High Density Polyethylene</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>IWC</td>
<td>Independent Waste Collector</td>
</tr>
<tr>
<td>IEC</td>
<td>Information, Education and Communication</td>
</tr>
<tr>
<td>LGU</td>
<td>Local Government Unit</td>
</tr>
<tr>
<td>LIP</td>
<td>Local Implementing Partner</td>
</tr>
<tr>
<td>MPs</td>
<td>Microplastics</td>
</tr>
<tr>
<td>MRF</td>
<td>Materials Recovery System</td>
</tr>
<tr>
<td>MRS</td>
<td>Materials Recovery Facility</td>
</tr>
<tr>
<td>MSW</td>
<td>Municipal Solid Waste</td>
</tr>
<tr>
<td>MSWM</td>
<td>Municipal Solid Waste Management</td>
</tr>
<tr>
<td>MWRP</td>
<td>Municipal Waste Recycling Program</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>NMI</td>
<td>New Materials Institute</td>
</tr>
<tr>
<td>NSWMC</td>
<td>National Solid Waste Management Commission</td>
</tr>
<tr>
<td>OMSW</td>
<td>Ordinary Municipal Solid Waste</td>
</tr>
<tr>
<td>PE</td>
<td>Polyethylene</td>
</tr>
<tr>
<td>PET</td>
<td>Polyethylene terephthalate</td>
</tr>
<tr>
<td>PMO</td>
<td>Property Management Office</td>
</tr>
<tr>
<td>PP</td>
<td>Polypoplylne</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>PS</td>
<td>Polystyrene</td>
</tr>
<tr>
<td>RA</td>
<td>Republic Act</td>
</tr>
<tr>
<td>SPS</td>
<td>Save Philippine Seas (NGO)</td>
</tr>
<tr>
<td>SWM</td>
<td>Solid Waste Management</td>
</tr>
<tr>
<td>TCI</td>
<td>The Circulate Initiative</td>
</tr>
<tr>
<td>UGA</td>
<td>University of Georgia</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>WWF</td>
<td>World Wide Fund for Nature</td>
</tr>
</tbody>
</table>

US$1 = PhP (Philippine Peso) 47.89 as of 13 May 2021 (source: xe.com)
Introduction

The Circularity Informatics Lab at the University of Georgia has developed a Circularity Assessment Protocol (CAP), which is a standardized assessment protocol used to collect community-level data to inform decision-makers. The CAP characterizes seven community components:

1. **Inputs** – What products are sold in the community and where do they originate?
2. **Community** - What conversations are happening and what are the stakeholders’ attitudes and perceptions?
3. **Product design** - What materials, formats, and innovations are found in products, particularly packaging?
4. **Use** – What are the community trends around use and reuse of product types?
5. **Collection** – How much and what types of waste are generated? How much is collected and what infrastructure exists?
6. **End-of-cycle** – How is waste disposed? What is the fate of waste once it is properly discarded? How is it treated?
7. **Leakage** - What waste ends up in the environment? How and why is it getting there?

Various influencing factors drive this system including governance, economics, policy, and legislation (e.g., bans, taxes). Furthermore, multiple stakeholders exist at every level of the CAP influencing the complex system, and these include the public, government, industry, NGOs, and academia. While the hub and spoke model illustrates the CAP, it is a complex system with components inherently interconnected to each other and to life-cycle impacts beyond each spoke. The CAP is a framework approach to the flow of materials, in this case focusing on plastic and packaging, and the quantity and characterization of leakage from this sector will be characterized during litter assessments that can inform upstream interventions in the rest of the systems model. As of early 2021, CAP has been conducted in 26 cities in ten countries.

This report documents work conducted by the Circularity Informatics Lab at the University of Georgia (UGA) and Save Philippine Seas (SPS) in Metro Manila with support from the USAID Development Innovations Group (DIG) Municipal Waste Recycling Program (MWRP). Background information and a literature review was conducted in January - March 2020. Field work was conducted in January - March 2021 (delayed due to the COVID-19 pandemic). The report is split into the following sections of the CAP, which include results and discussion of each: Input, Community, Product Design, Use, Collection, End of Cycle and Leakage, followed by Opportunities (for change).
In the Philippines, the fundamental legal basis for waste management, prevention, and recycling in the country is the Ecological Solid Waste Management Act of the Philippines (Republic Act (RA) 9003) (Republic of the Philippines, 2001). Under this law, the local government units (LGUs) are mandated to implement and enforce its provisions within their jurisdiction. LGUs also have the responsibility to develop and implement 10-year solid waste management plans and pass their own local laws related to waste management.

Metro Manila is the project site of CAP in the Philippines. It is also known as the National Capital Region, and is considered the seat of the government in the Philippines. Metro Manila is composed of 16 cities, three of which were surveyed as part of CAP.

### Input

To get a snapshot of the characterization, scope, and source of common plastic packaged items that are entering Metro Manila, samples of common convenience items were sampled within nine 1km² squares in the region - three within each tertile of the population count, which included three within each city area of Quezon City, Manila City, and Mandaluyong City. Small convenience stores that are often attached to houses are called *sari-sari* stores (“variety” in English). The LIP selected three convenience or grocery shops to sample within each 1km² transect area where possible (unless there were less than three stores within the area), totaling to a minimum of 27 stores surveyed. For each shop, the LIP collected the most popular brands of candy, snacks, beverages, personal care products, as well as the most popular brands of tobacco products where possible. The “most popular brand” was determined as the most purchased brand based upon shelf space taken up and/or the shopkeeper’s input. This yielded 93 product samples total, 24 of which were candy, 27 snacks, 24 beverages, 4 tobacco products, 11 personal care products, and 3 cooking or house supply items. The weight of both the plastic packaging and the product itself were measured for each item using a kitchen scale.

For each of the top products documented, the LIP noted the type of packaging (including polymer, if possible), the brand, and the parent company. From there, the team was able to determine the manufacturing location, which was determined from manufacturing locations listed on product packaging or desktop research, as well as the headquarters location for the parent company of the brand (largely determined by desktop research). Table 1 contains the minimum, maximum and average distance to both the manufacturing facilities and parent companies, vehicle Figures 1-3 show maps of both manufacturer and parent company locations.
Table 1. Distances to Parent Company Headquarters and Manufacturing Facilities for Most Popular Products

<table>
<thead>
<tr>
<th>Category</th>
<th>Distance: Store to Parent Company (km)</th>
<th>Distance: Store to Manufacturer (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Candy</td>
<td>7</td>
<td>26,574</td>
</tr>
<tr>
<td>Snacks</td>
<td>11</td>
<td>119</td>
</tr>
<tr>
<td>Beverages</td>
<td>7</td>
<td>29,207</td>
</tr>
<tr>
<td>Tobacco Products</td>
<td>21</td>
<td>6,042</td>
</tr>
</tbody>
</table>

Figure 1: World view of distances between stores and manufacturers
Figure 2: Regional view of distances between stores and manufacturers

Figure 3: World view of distances between stores and parent companies.
The manufacturers for beverages are the close to the city (275km average), while the average parent company is further away (more than 16,000km average away). Both the parent and manufacturing of the most popular chip brands are less than 100km from the city, providing ample opportunity to discuss packaging design. Tobacco manufacturing and parent companies were also relatively close (less than 300km from the city) and candy was variable with the manufacture occurring an average of just over 100km away, but the parent companies average was over 4,000km away.

Community
To understand current attitudes and perceptions of plastic waste, SPS conducted 71 semi-structured interviews (Table 2). Among those interviewed, 32 were store staff (convenience stores, sari-sari stores, street vendors, and groceries); four were private waste hauling, landfill, or recycling companies; three local junk shops; five were informal recycling aggregators; 12 were food vendors; three were companies using or producing plastic alternatives; three were LGU representatives; three were from local NGOs; three were from academia; and three were from fast-moving consumer good companies that sold majority of their items in plastic packaging.

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>Number of Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighborhood Sundry Store Owner/Staff (Sari-sari Store in Filipino)</td>
<td>26</td>
</tr>
<tr>
<td>Food vendors</td>
<td>12</td>
</tr>
<tr>
<td>Independent Waste Pickers</td>
<td>5</td>
</tr>
<tr>
<td>Consumer Product Companies</td>
<td>3</td>
</tr>
<tr>
<td>Waste Aggregators</td>
<td>4</td>
</tr>
<tr>
<td>Local Government Unit</td>
<td>3</td>
</tr>
<tr>
<td>Local NGOs</td>
<td>3</td>
</tr>
<tr>
<td>Academia</td>
<td>3</td>
</tr>
<tr>
<td>Convenience Store Staff</td>
<td>4</td>
</tr>
<tr>
<td>Grocery Staff</td>
<td>1</td>
</tr>
<tr>
<td>Street Vendor</td>
<td>1</td>
</tr>
<tr>
<td>Local Zero Waste Stores</td>
<td>3</td>
</tr>
<tr>
<td>Local Junk Shop Owners</td>
<td>3</td>
</tr>
</tbody>
</table>
Local laws

Each LGU is governed by its own set of SWM laws. In Manila City, there is no local law that regulates or bans plastic. Their 10-year solid waste management plan ended in 2015, and the city LGU is expected to develop the follow-up plan in the next three years with the support of the World Wide Fund for Nature Philippines (WWF Philippines). The directive from the LGU is for barangays (the smallest administrative unit in the Philippines) to establish their own Materials Recovery System (MRS) or Materials Recovery Facility (MRF). The MRS is typically a steel welded wire mesh container that collects PET bottles and other recyclables.

“So according to the national solid waste management commission, there are 489 cities in municipalities that have some kind of plastic regulation...The earliest one was in 2003. There was an increase after Ondoy and Parang, after every big storm there was an increase of plastic bans. So, from there, you can see that we’re quite reactive when we think of policies...” (NGO Representative)

Mandaluyong City passed an ordinance banning the use of plastic and polystyrene packaging (often referred to as “styrofoam” or “styropor” in the Philippines) in 2013 (Mandaluyong City Government). The ordinance states that the total ban should have been fully implemented in 2014. Barangay officials are also required to create “recycling cages” within their jurisdiction (similar to Manila City’s MRS).

Quezon City first passed an ordinance to reduce single-use plastic bags in 2012. The policy required consumers to pay PhP2.00 ($US0.04) for plastic bags as an “environmental fee” (this fee went to a fund administered by the city, but given to businesses and organizations that wrote proposals for projects that benefit the entire city moving towards sustainability). The ordinance was amended in 2014 to incorporate the city’s Environment Code, and amended again in 2019 to impose a total ban on the distribution of plastic bags by all malls, supermarkets, grocery stores, food chains/stalls, restaurants, and pharmacies by January 2020. The total ban did not push through due to the community quarantines brought about by the COVID-19 pandemic in 2020. In
March 2021, the city government announced that the ordinance would again be enacted. The ordinance does not cover bags (i.e., bags with no handles, holes or strings) used for wrapping fresh and cooked food (Quezon City Government, 2021).

Despite the existing local laws in Mandaluyong City and Quezon City, implementation and compliance varies considerably.

"For the retailers' side, they have had to implement the ban as early as January of 2020. I think, they've compiled because they're afraid of being given a ticket or at least be given a cease and desist order by the BPLD once they are caught. They are also very aware that there are environmental enforcers. So, compliance on the side of retailers is I think could be high. Maybe, I believe it's between 90% to 100%." (Local Government)

"Actually, the ones who have more resistance are the consumers, not the retailers because that adds to the cost of the stores that provide small shirt bags. So when he was banned, really the burden was on buying because they didn't bring anything, or they forgot to bring. But, in terms of the retailers, uh, our ordinance is well-accepted. In fact, that's right, because they have reduced the cost of providing a shirt bag, they can outright tell their consumers, "Oh, plastic is forbidden in Quezon City, so no we can provide for you."") (Local Government)

"The DENR has to come up with the list of non-environmentally acceptable products. When I was with the National Solid Waste Management Commission, we started doing the life cycle of comparing the plastic, the paper...And now, there are bans on regulation on the use of plastic. But I think it's the behavior of the people. But we cannot legislate the behavior of the people, unless he's an environmentalist. It's really a process to educate the people on the impacts of improper solid waste management." (Waste Aggregator)

At the national level, there is a National Action Plan for Marine Litter being prepared by the Philippines, which is viewed in a positive light by many in the region. The Philippines is also a member country of the Coordinating Body on Seas of East Asia, which has a Regional Action Plan on Marine Litter.

"The National Plan of Action on Marine Litter helped a lot. Why? Because one, their PCAARRD, DOST-PCAARRD who is the agency tasked to develop the technologies to respond to the problem, they're now mandated eh. They're obliged to come up with funds to call for proposals that will answer that problem." (Academic)

Store owner and food vendor owner sentiments

Store owners have varying degrees of understanding on how plastic waste negatively affects the environment. They also had mixed reactions on the possible scenario of a total plastic ban and/or strict implementation of existing ordinances. A few respondents said that a total plastic ban would be acceptable if the LGU provided support for alternatives. One store vendor explained that PS food containers only cost PhP1.00 (US$0.02), and she can cut it in half to maximize its use. The paper-based packaging
option would be PhP5.00 (US$0.10), increasing her operational costs significantly. Several respondents replied that they would not support it because it would negatively impact their income. One store owner in Manila City recounted her experience seeing plastic wastes “returned” to the community when a strong storm hit the country's capital. The relationship between plastic pollution and typhoons is often raised after a big typhoon in the Philippines, as strong winds and storm surges regurgitate all kinds of debris back on land.

"Banning a material without sustainable alternatives can bring a different set of problems and it will also impact the income source of the informal waste sector."

(Business Rep)

“I’ll be transparent with you, [switching to plastic alternatives] is expensive. And we will really take a hit. You know, on the business side of things if we switch to a more sustainable packaging line up. We’re still looking for ways on how to bridge that gap anyway. It's so ironic, you know? ...Because we seem to want to be healthy. But we can’t do full force because healthy stuff is expensive. And we have the same sentiments as well when it comes to sustainability. There’s that hindrance, it's expensive to be sustainable.” (Coffee Company Rep)

Ambulant food vendors, streetside dining establishments, and local eateries (karinderia in Filipino) are heavily reliant on non-recyclable single-use plastics because of cost and convenience. Plastic use of dining establishments increased during the COVID-19 pandemic. Large chains such as Starbucks and small, local eateries alike reduced and/or eliminated the use of reusables due to the prohibition of indoor dining services and concerns for cross-contamination. The larger establishments have higher capacity and more resources to switch to paper-based packaging, or invest in plastic items that are more dense/sturdier, however smaller businesses struggle with the high costs and lack of incentives to switch to alternatives.

“And then we also have promotion of the use of reusable wares, because on July 1 hotels, restaurants, fast food chains, they can no longer use disposables and single-use plastics for their dine-in customers...So we promote the use of reusable wares even in that take-out. Although, the take-out is not covered by the regulation, we have implemented by-request protocols. So meaning, when you deliver, first ask if you need a plastic spoon and forks so that it doesn't just become waste.” (Local Government)

It was also mentioned repeatedly in the interview process that the concept of ‘circular economy’ is fairly new to the communities and businesses in Manila, in the modern sense of the phrase, even if historic behaviors may have emanated the concept.

“How should we be translating “circular economy” in Filipino or should we not call it circular economy? Because a lot of critics have said that circular economy is just the same thing as [unknown word] economy or sustainable development. We’re just rebranding it and we’re still messing around by adding this new term.” (Business Rep)
We don’t use circular economy, especially to consumers because it’s not something they would understand. So now we’re launching a campaign called Kasambuhay for the Environment. That is to emphasize also the role of consumers in being one with the environment and protecting the environment. But in terms of talking about sustainability, no, I think our emphasis is more on action from consumers versus highlighting the concept of circular economy.” (Business Rep)

“So I think because it’s a circular economy, for them it’s a new concept, so for them they need a new understanding when in fact they seem to separate it too much from what it really is ‘yung meron. So that’s the usual gap, because it’s like when there’s a new concept, they immediately think it’s a new concept that it needs its framework or they don’t immediately think about how it’s integrated already in the existing frameworks.” (NGO Rep)

**LGU perceptions**

The LGUs have a multitude of initiatives to address the solid waste problem. Quezon City curbs plastic waste through projects that promote a circular economy such as zero-waste condiment refilling stores and building partnerships with waste aggregators to collect recyclable plastic waste. Manila City exerts efforts on waste diversion programs with the help of NGOs and private companies (Dumlao-Abadilla, 2020).

LGU representatives interviewed for the CAP shared contrasting views on the perceived role of the LGUs in pushing for behavior change to address solid waste issues. A representative claims that promoting behavioral change is beyond their scope, while another representative believes that local policies can help improve solid waste management and drive the necessary behavior to promote a circular economy. Another common response from LGUs is that the existing laws are too aspirational and thus not enforceable.

“I really feel the government plays a big role. I mean we know how influential, how powerful the president is. If he says, ‘Today, we close Boracay.’ We close Boracay. So I also feel the government plays a big role in saying, ‘Today, you have to stop throwing [littering], and then you have to start segregating in your own homes.” So the messaging is very critical…I have also realized one of the issues in the government is you have the national and then you have the LGU, so even if the national says something but the LGUs don’t follow suit, there will be a disconnection So it’s very important that both departments are clearly aligned. You have MMDA, you have the LGUs, you have so on and so forth. And then you have the police who will enforce it. So if no one’s aligned, it’s like the seat belt law or the car seat law, then it becomes really a mess, right?” (Business Rep)
NGO-led initiatives

Pre-pandemic, many NGOs were active in conducting in-person information, education, communication campaigns and capacity-building programs related to SWM. Many NGOs have also used social media to promote their advocacies, creating infographics, toolkits, online petitions, and policy briefs available for free download. The Philippines has been described as the “social media capital of the world,” with Filipinos spending the most time online than any other nationality in the world (an average of four hours and 15 minutes a day) (Chua, 2021). During the pandemic, NGOs have adapted their in-person activities to online formats. An analysis of Philippines social media on the topic of plastic pollution was conducted by the SEE Suite in the College of Journalism at UGA (Appendix A).

Another popular initiative that began in the Philippines is the brand audit methodology, first implemented in the Philippines in 2017 by the coalition Break Free From Plastic. In an ordinary coastal cleanup, organizers conduct a waste audit by counting the types of materials collected. The brand audit methodology aims to hold corporations accountable by naming the parent companies of the wastes collected. By 2019, the brand audit method was adopted by 484 cleanups in over 50 countries and six continents.

“So we’re working on a bunch of different things, but the main focus is really, waste reduction at source, specifically, on plastic waste, the plastic problem. Because at least here in the Philippines, it’s often viewed as a waste management issue or waste in disposal issue. So what we’re trying to do is we want to reduce and manage waste by campaigning for bans on single-use plastic including their production." (NGO Rep)

“We think [EPR is] a good idea but we don’t actively support it since some EPR approaches, at least in other countries and in other industries, merong concerns. Because, sometimes what happens is it’s the industry that self-regulates and then there’s really no intervention from the public or from the government and it’s hard to make it really an accountable and transparent process." (NGO Rep)

“I think for waste management, there’s a lot of really good community based solutions that are coming out and I think it would be good to do IEC campaigns on those community initiatives as well. To make sure that it’s doable and also to amplify the ones that we think would work best and then go if it was not aligned with the right principles and the right ideas around circular economy. And also maybe I think continuing that narrative, corporations also have responsibility and there also has to be a responsibility on the government side. Because right now, people’s idea of going zero-waste is really more on individuals. It seems that the burden is always on consumers.” (NGO Rep)

Community Attitudes and Perceptions
While awareness of the issue of plastic pollution seems high among the city residents, from the interviews it seemed that the awareness level varies depending on the stakeholder group and also that the link between pollution and upstream infrastructure and behavior, such as consumer decisions and waste management, may not be clear.

“Well, in general, in solid waste management, people’s awareness is high. Now that we are also doing our plastic waste reduction ordinances, we’re implementing that. It actually started in 2012 that if you’re from QC and you buy groceries here, you have to pay two pesos when you don’t have an eco bag...So, I think in terms of level of awareness, high when it comes to plastic waste management. Except that of course, we still need to strengthen and do it over and over again, to make sure that we can inculcate the lifestyle change we want.” (Local Government)

“More people are concerned [with using alternatives due to COVID]. However, we still lack tools. I mean, the tools that we have right now are not as sophisticated. As I mentioned, there aren’t any composting facilities yet. So aside from that, education is essential. There’s this one client who tried to melt the cling wrap. There are different components -- it’s not like that. You have to expose it to certain factors for it to fully biodegrade. So education is really important. The more discerning the people are, the better it would be.” (Social Enterprise Rep)

The most common misconception is ...[plastic waste] is a government problem. That is the notion of man. We pay tax. We must be given government service. That’s the usual thing they’re worried about, that’s unbelievable. The misconception. But they don’t know that they are part of the solution to this garbage problem.” (Waste Aggregator)

“So when it comes to changing behavior, I think it’s really multisectoral because you’re changing a behavior that’s been there for a hundred, hundreds of years, right? Plus the fact that this is the last thing on anyone’s mind if you don’t have a job and you have nothing to eat.” (Business Rep)

It was also mentioned in the interviews that using social media and influencers could prove successful for getting across critical messages for behavior change in the Philippines, and that it hasn’t been used to its full potential as of yet.

“And then of course you need influencers, right? You need people that people look up to who are doing it so it becomes a trend. You have to make it trendy...Because especially for the youth, they will follow, right? And we see all these brands also talking about the environment. So I think it’s really multifactorial, but you really need to start somewhere. But you have to be convenient, they have to understand, and it has to be enforced” (Business Rep)

“I think our problem in the Philippines is that we don’t have any champions or icons. I appreciated this approach when I was in Canada. In Canada, what they did was to
build faces to the problem, to the issue. And you know that, you give a face to the problem. You give a champion to the problem.” (Academic)

Product Design
To characterize material types used in common consumer plastics, samples of common convenience and to-go items were obtained as described in the Input section. This included 32 stores and 27 food vendors or restaurants. The average weight of both the packaging and the product itself were collected for all samples (Table 3).

Table 3. Average weight of products and their plastic packaging for common convenience items.

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Number of Samples</th>
<th>Average Weight of Packaging (g)</th>
<th>Average Quantity of Product (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candy</td>
<td>24</td>
<td>1.2</td>
<td>25.5</td>
</tr>
<tr>
<td>Snacks</td>
<td>27</td>
<td>4.9</td>
<td>57.5</td>
</tr>
<tr>
<td>Beverage</td>
<td>24</td>
<td>10.5</td>
<td>165</td>
</tr>
<tr>
<td>Personal Care</td>
<td>11</td>
<td>4.3</td>
<td>42.2</td>
</tr>
<tr>
<td>Tobacco Products</td>
<td>4</td>
<td>6.8</td>
<td>14.7</td>
</tr>
</tbody>
</table>

Figure 4: Material Breakdown for Top Convenience Store Items

All but two of the 27 snack products that were sampled from convenience stores were packaged in multilayer plastic film or clear plastic film (Figure 4). Similarly, 75% of candy products and 63% of personal care products were packaged in multilayer plastic film, such as sachets, or clear plastic film. The majority of beverage products (58%) were
packaged in PET, but 20% of beverages were also found packaged in multilayer plastic film.

![Figure 5: Convenience Store product to plastic ratios, shown in grams](image)

Of the convenience items samples, beverage products on average had the highest packaging and product weight. Tobacco products had the highest ratio of packaging weight to product weight. Candy products had the smallest ratio of packaging weight to product weight. Beverage, and snacks and personal care products had similar ratios of packaging weight to product weight. It is more efficient to deliver as much (higher quantities) of product if it is packaged, and higher value packaging (for recycling) often has more mass, which can seem counter-intuitive, but is also illustrated by the “Leakage” component of the CAP. The lighter, film-based packaging often leaks out of the system.

Table 4. Average weight of common plastic packaging items from food vendors and restaurants.

<table>
<thead>
<tr>
<th>Product &amp; Material</th>
<th>Number of Samples</th>
<th>Average Weight of Packaging (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coke Mismo (beverage)</td>
<td>2</td>
<td>18.2</td>
</tr>
<tr>
<td>PET</td>
<td>2</td>
<td>18.2</td>
</tr>
<tr>
<td>Condiment bag</td>
<td>2</td>
<td>1.82</td>
</tr>
<tr>
<td>LDPE</td>
<td>2</td>
<td>1.82</td>
</tr>
<tr>
<td>Item</td>
<td>Quantity</td>
<td>Weight</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>----------</td>
<td>--------</td>
</tr>
<tr>
<td>Condiment Sachet</td>
<td>8</td>
<td>1.50</td>
</tr>
<tr>
<td>Multilayer plastic</td>
<td>4</td>
<td>1.2</td>
</tr>
<tr>
<td>LDPE</td>
<td>1</td>
<td>0.69</td>
</tr>
<tr>
<td>PS</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>Multilayer (carton and polypropylene)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Multilayer (paper with plastic)</td>
<td>1</td>
<td>0.35</td>
</tr>
<tr>
<td>Food wrapper</td>
<td>7</td>
<td>2.93</td>
</tr>
<tr>
<td>Multilayer (paper and plastic)</td>
<td>4</td>
<td>3.33</td>
</tr>
<tr>
<td>LDPE</td>
<td>2</td>
<td>1.01</td>
</tr>
<tr>
<td>Paper</td>
<td>1</td>
<td>5.2</td>
</tr>
<tr>
<td>Lid</td>
<td>10</td>
<td>2.12</td>
</tr>
<tr>
<td>PS</td>
<td>5</td>
<td>2.16</td>
</tr>
<tr>
<td>PP</td>
<td>4</td>
<td>2.38</td>
</tr>
<tr>
<td>PET</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Paper bag</td>
<td>4</td>
<td>17.32</td>
</tr>
<tr>
<td>Paper</td>
<td>4</td>
<td>17.32</td>
</tr>
<tr>
<td>Paper sleeve</td>
<td>1</td>
<td>3.6</td>
</tr>
<tr>
<td>Paper</td>
<td>1</td>
<td>3.6</td>
</tr>
<tr>
<td>Plastic bag</td>
<td>14</td>
<td>3.65</td>
</tr>
<tr>
<td>LDPE</td>
<td>8</td>
<td>3.08</td>
</tr>
<tr>
<td>PE</td>
<td>4</td>
<td>2.75</td>
</tr>
<tr>
<td>HDPE</td>
<td>2</td>
<td>7.55</td>
</tr>
<tr>
<td>Oxodegradable</td>
<td>1</td>
<td>4.1</td>
</tr>
<tr>
<td>Plastic labo</td>
<td>7</td>
<td>0.23</td>
</tr>
<tr>
<td>LDPE</td>
<td>7</td>
<td>0.23</td>
</tr>
<tr>
<td>Item</td>
<td>Count</td>
<td>Value</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>Plate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multilayer (paper and plastic)</td>
<td>1</td>
<td>12.6</td>
</tr>
<tr>
<td><strong>Skewer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood</td>
<td>1</td>
<td>0.29</td>
</tr>
<tr>
<td><strong>Straw</strong></td>
<td>13</td>
<td>0.99</td>
</tr>
<tr>
<td>PP</td>
<td>13</td>
<td>0.99</td>
</tr>
<tr>
<td><strong>To-go cup</strong></td>
<td>23</td>
<td>5.98</td>
</tr>
<tr>
<td>PP</td>
<td>11</td>
<td>5.05</td>
</tr>
<tr>
<td>Multilayer (paper and plastic)</td>
<td>7</td>
<td>8.7</td>
</tr>
<tr>
<td>PS</td>
<td>2</td>
<td>3.9</td>
</tr>
<tr>
<td>PE</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>PET</td>
<td>1</td>
<td>11.7</td>
</tr>
<tr>
<td><strong>To-go food container</strong></td>
<td>16</td>
<td>10.25</td>
</tr>
<tr>
<td>PS</td>
<td>7</td>
<td>4.38</td>
</tr>
<tr>
<td>Multilayer (paper and plastic)</td>
<td>7</td>
<td>15.49</td>
</tr>
<tr>
<td>PP</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>PET</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td><strong>Utensil</strong></td>
<td>27</td>
<td>2.59</td>
</tr>
<tr>
<td>PP</td>
<td>24</td>
<td>2.67</td>
</tr>
<tr>
<td>Wood</td>
<td>3</td>
<td>2.03</td>
</tr>
<tr>
<td><strong>Utensil packaging</strong></td>
<td>5</td>
<td>1.48</td>
</tr>
<tr>
<td>HDPE</td>
<td>3</td>
<td>1.88</td>
</tr>
<tr>
<td>Multilayer (paper and plastic)</td>
<td>1</td>
<td>1.57</td>
</tr>
<tr>
<td>Paper</td>
<td>1</td>
<td>0.21</td>
</tr>
</tbody>
</table>

In contrast to the convenience items samples, the majority of the to-go items sampled from restaurants and food vendors in Manila were PP, followed by similar ratios of
products that were multilayer paper and plastic, LDPE, and PS. Nearly 10% of the combined to-go items were composed of organic and biodegradable material, largely in the form of utensils and utensil wrappers. Condiment sachets, to-go cups, plastic bags, and to-go food containers all came in four or more material types across the vendors sampled (Figure 6). Condiment sachets were among the products that were most frequently found as multilayer plastic or multi-material, which can be the most difficult to recycle or develop value for in a waste economy.

![Figure 6: Material Breakdown for To-Go Items](image)

The Philippines has been described as a “sachet economy,” and the data above supports this claim. Nearly all household essentials have a variant sold in small quantities (5-15 ml) and in multilayer plastic film because of affordability and convenience. Due to the growing awareness of various stakeholders on the Philippines’ plastic pollution problem, many businesses have shifted to paper-based products and the promotion of “eco bags,” which are reusable bags made from cloth, polyester, and polypropylene. In the past year, the popularity of cassava-based plastic bags and mailer bags (imported from Indonesia) and honeycomb packaging (imported from China) as a replacement for bubble wrap and plastic mailer bags has increased. This could be attributed to the rise of small, online businesses brought about by COVID-19 and the availability of these materials.

**Use**

Out of the 27 convenience stores and 27 food vendors or restaurants sampled, five of them offered alternatives to common plastic products. Three of them were reusable or “eco bags” as an alternative to plastic grocery bags, the remaining were paper and reused plastic from shipping of goods. These ranged from PhP6 to PhP25 (US$0.12-0.52)
for the consumer. One store charged an additional PhP2.00 (US$0.04) to use a plastic bag instead of a paper bag.

Table 5. Cost of Available Plastic Alternatives

<table>
<thead>
<tr>
<th>Store</th>
<th>Plastic Alternatives</th>
<th>Cost of Alternative in PhP</th>
<th>Cost of Alternative in US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenience Store Chain 1</td>
<td>Paper Bags</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>“Eco bag”</td>
<td>PhP 25.00</td>
<td>US$ 0.52</td>
</tr>
<tr>
<td>Convenience Store Chain 2</td>
<td>Paper Bags</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Grocery</td>
<td>“Eco bag”</td>
<td>PhP 6.00 - 10.00</td>
<td>US$ 0.12 - 0.20</td>
</tr>
<tr>
<td></td>
<td>Recycled Boxes for bulk/wholesale purchases</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sari-sari Store 1</td>
<td>“Eco bag”</td>
<td>PhP 15.00</td>
<td>US$ 0.31</td>
</tr>
<tr>
<td>Sari-sari Store 2</td>
<td>Reused Paper Bags</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
In the Philippines, it is common to reuse plastic bags and other containers (glass or plastic). Households commonly reuse plastic bags as trash bin liners, while some stores reuse collected plastic and paper bags from groceries and even use empty plastic packaging as plastic bags for their customers. Sari-sari stores reuse PET soda bottles as cooking oil container sold in retail or “tingi” (small quantities).

Since March 2019, SPS and other NGOs and social enterprises have been advocating for a policy that allows refilling for personal care and cosmetics. Refilling for home care products is allowed, but very few companies have pursued this so far due to the investment needed for the equipment and the cross-contamination concerns brought about by COVID-19. The refilling of personal care and cosmetics is prohibited due to cross-contamination concerns. In early 2021, the proposed policy was considered feasible by the Philippine Food and Drug Administration, but industry stakeholders have proposed the postponement of its passage, citing COVID-19 as the main reason.

**Bulk/zero-waste stores and package-free options**

Bulk/zero-waste stores are generally only found in large cities (e.g., Quezon City, Mandaluyong City) and cater to the upper- to upper-middle class market. They are mostly local (i.e., can only be found in one city and do not have other branches). Due to the pandemic, several zero-waste businesses downsized, closed, or adapted to a fully online shop.

In public markets, it is common practice for vendors to place items in a plastic bag or several layers of plastic bags. Food vendors generally allow consumers to bring their own packaging with the exception of pandemic-imposed rules (e.g., Starbucks and Tim Hortons had a global directive to stop promotion of reusables). Online food delivery services such as GrabFood and FoodPanda have options to remove utensils, but this is not always followed by the merchants. In Quezon City, a prohibition on single-use cutlery is imposed on hotels, restaurants, and food chains. However, the policy does not cover to-go food items; instead, establishments are encouraged to implement a “by-request” protocol in issuing plastic utensils and even condiments.

It is observed that micro, small, and medium enterprises have difficulty in transitioning to plastic alternatives due to cost implications. For businesses that promote the use of reusables (e.g., groceries, cafes), there is an observable behavior gap -- despite the growing voice of zero-waste advocates and awareness on waste management issues, the majority of customers continue to choose disposable options. One of the respondents who represented an international chain of coffee shops said that “voices are loud, but few walk the talk.”

“In general, in solid waste management, people's awareness is high. We are also doing our plastic waste reduction ordinances, we're implementing that. It actually started in 2012 that if you're from QC and you buy groceries here, you have to pay two pesos when you don't have an eco bag...That started in 2012. But in 2020, there was already a
plastic bag ban. And then eventually, next year even, brown bags will no longer be allowed in groceries and retail stores. So why do we do it phase by phase? Because we understand that the change should have to involve the behavior and lifestyle of the people as well. So with that transition...at first, when you don't bring anything you have a penalty because you have to pay two pesos...Then you get used to it when you carry an eco bag. So 2020, you really don’t see plastic bags anymore. The inconvenience of not carrying an eco bag would be a brown bag that is very difficult to carry, especially when you carry a lot. And we’re informing the public that by next year, even the brown bags will disappear from retail stores.” (Local Government)
Public collection bins

Across all three sites, only 36 “public” collection bins were identified (Figure 7 note not all bins visible since some are close together on the map). Of these 36 bins, two were designated for recycling. These bins were not necessarily maintained by the government. LIP notes that in Metro Manila, it is rare to see sturdy public trash bins with a clear and systematic segregation system. Based on anecdotal evidence, public trash bins are often stolen, which is why LGUs choose not to provide them in public spaces. Thus, “public bins” in this context come in a range of materials: cardboard boxes, metal crates, plastic bags, used sacks of rice, empty PET bottles, and cracked plastic pails. These bins are often owned by establishments, but are in accessible areas (e.g., inside a store but can be used by customers or bystanders or right outside a store). Since public recycling bins are so rare (just two bins out of 36), all bins contained mixed waste. On waste collection days, it is common to see plastic grocery bags filled with unsegregated trash hooked on gates or piled on the streets of residential areas.
Waste collection services
Waste collection is part of the LGU’s mandate. This means that curbside waste collection services, whether residential or commercial, are free. According to a SWM report from the Philippine Senate, the waste collection rate in Metro Manila is 85% (Philippine Senate, 2017). Respondents of the key informant interviews in all three sites shared that there is a daily schedule for waste collection, with biodegradable and non-biodegradable wastes scheduled for pick-up on different days of the week. All respondents said that this is not followed, and that wastes are picked up regardless of its composition. RA 9003 has a “no segregation, no collection” provision, but SPS observed that this is not followed across all sites.

“Actually, we are at the forefront of providing solid waste management services both at the local government unit and the private sector. So we are a member of the IPM Group of Companies. And for the other businesses that IPM has, we do the collection, transport, transfer, and disposal of waste. The IPM group also has a contract with the local government unit for their waste collection and disposal. And so most of what we are doing in BEST is also for government and private companies.” (I-11 Waste Aggregator)

“The people [unintelligible 00:15:30] waste disposal. You need to train them. You have to give information. Disseminate information on how they will manage the waste. Without doing that, they will fail...Yeah, there are instructions with regards to the used mask – There are instructions from the DOH and from the DENR on how to manage those waste. It has to be separated, and put separate. But I don’t know if people are doing that...I think it’s always a challenge when it comes to implementing these kinds of policies.” (I-11 Waste Aggregator)

“Next [in importance] is making it accessible for people. If I don’t have segregation, you know, those colored trash bins. It’s so difficult for me because my home is so small, where do I put it? So for instance, this aling tindera, we worked with PCX, I think it’s very effective. But how do you multiply it to hundreds and thousands and millions of drop-off
points? Because if you make it convenient, then you can at least start to change the behavior, right? But if not, it takes only a person who's super committed to do it. Otherwise, it's quite difficult.” (Business Rep)

Informal waste sector
The informal waste sector is a crucial stakeholder in Metro Manila’s waste management system. It has been estimated that there are 4,000 informal waste workers in Quezon City alone (Ramos, 2020). The informal waste sector includes itinerant waste buyers, paleros (garbage truck crew), “jumpers” (those who jump into collection trucks to recover recyclables), and waste pickers in dumpsites (Global Alliance of Waste Pickers, 2021). The informal waste workers interviewed during the CAP collect waste daily from the streets, households, or commercial establishments. They collect PET bottles (which they call “mineral”), hard plastics (called “sibak”), aluminum cans (called “fanta”), e-wastes, and cardboard boxes. One informal waste worker interviewed explained his unique business model where his family cleans soda PET bottles and sells them to partner retailers in the public market for PhP2.00/each (US$0.04). The income of the respondents range from PhP500/day to PhP500/week (US$10.41).

“Banning a material without sustainable alternatives can bring a different set of problems and it will also impact the income source of the informal waste sector.” (I-4 Business Rep)

Junk shops
The rates of junk shops vary considerably. The most profitable wastes are radiators (~PhP70-90/kg or US$1.46-1.87), condensers from air conditioners (~PhP60-80/kg or US$1.25-1.67), glass jalousies (~PhP35-40/kg or US$0.73-0.83), and aluminum (~PhP35/kg or US$0.73). The commonly collected plastics are hard plastics (~PhP10-12/kg or US$0.20-0.24) and clean PET (~PhP4-12/kg or US$0.08-0.12). All junk shop staff interviewed did not know where the final destination of their wastes would be.

Junk shops or private waste collection facilities are accredited by some LGUs to enable community-based MRS. This accreditation system is intended to integrate the informal waste sector into the formal system and increase waste collection efficiency.

“It’s just that we just need to legalize them. So we also had before a junk shop standardization program. Hopefully, that program can also be revived to educate [waste pickers] on their livelihood development, better, money management, their capital. Because we also have a separate office dealing with this sector to better sustain their program. Hopefully, because recycling is really established already...Of course, we will continue to organize them and integrate them. (Local Government)
End of Cycle

According to the World Bank (Hoornweg, D. and P. Bhada-Tata, 2012), solid waste is expected to increase in Philippine cities by 165% to 77,700 tons per day by 2025 and a near doubling of the municipal solid waste generation per capita to 0.9 kilograms per day from the current 0.5 kilograms per capita-day (NSWMC, 2017); Manila is already estimated to have a per capita waste generation rate of 0.7 kilograms per day (Sapuay, 2016). Residential wastes (e.g. kitchen scraps, yard wastes, paper and cardboard, glass bottles, etc.) account for a majority (57%) of the country’s total solid wastes (Hoornweg, D. and P. Bhada-Tata, 2012; NSWMC, 2017). Because of this, the country’s solid waste is primarily organic, biodegradable materials (52%) (NSWMC, 2017). Commercial and public/private markets account for 27% of the country’s total waste (NSWMC, 2017). Approximately 80% of the country’s waste stream is either compostable or recyclable (NSWMC, 2017), yet only 28% of that waste is recycled (Kaza et al., 2018). As of 2015, the solid waste diversion rate in Metro Manila is 48%, while outside Metro Manila this rate drops to 46% (NSWMC, 2017).

The National Solid Waste Management Commission was created to oversee the implementation of solid waste management plans and prescribe policies as well as incentives to achieve objectives of the Act (NSWMC, 2017). The Act states that the local government units (i.e. municipalities and barangays) are the primary institutions to implement the Act’s guidelines, and to collaborate with the private sectors and other associations that work within the solid waste management sector. The Act encourages the reduction of waste at the source, recovery of materials, recycling, and reuse of wastes with mandatory targets. Local government units that fail to comply are charged criminally or administratively. In 2016, criminal and administrative charges were filed against 50 local government units for violating the provisions of the Act (NSWMC, 2017). Additionally, the Act provides the legal framework for the country’s systematic, comprehensive, and ecological solid waste management program to ensure the protection of public health and the environment.

In order to achieve these targets, each barangay must establish a Material Recovery Facility, implement solid waste segregation at the source, including the collection and processing of recyclables and biodegradables (Paul et al., 2012; Sapuay, 2005). As of 2016, there are approximately 9,883 Material Recovery Facilities in operation that serve 13,155 barangays within the entire country, which represents 31.3% of the total 42,000 barangays in the country (NSWMC, 2017). In 2014, approximately 23% of barangays were reported to be served by Material Recovery Facilities (Sapuay, 2016). Presently, most local government units administer their own collection systems or contract out this service to private contractors. In Metro Manila, the common types of collection vehicles are open dump trucks and compactor trucks (NSWMC, 2017). Nationally, 40-85% of the generated solid wastes are collected, while in Metro Manila approximately 85-90% of the waste is collected (NSWMC, 2017). The World Bank reported in 2018 that Quezon City’s waste collection rate is 100% (Kaza et al., 2018).
In 2020, the Environment Management Bureau (EMB) of the Department of Environment and Natural Resources (DENR) estimated that the country generated 21,425,676 MT of waste. This is more than a 50% increase (59%) over the 2010 figure (13,481,326 MT). According to EMB’s 2008-2013 SWM progress report, the MSW composition by weight was 2% special wastes, 52% biodegradable, 18% residuals, and 28% recyclables. A parallel MWRP project conducted by EcoWaste provides greater detail on the waste management systems in Metro Manila.

In general, the Philippines still has progress to be made towards developing their solid waste management infrastructure. As of mid-2020, only 34% of LGUs are serviced by MRFs, and only 24% of LGUs are serviced by sanitary landfills (DENR, 2020). Quotes from interviewees working within the waste management system providing their input are below.

“In 2013, the residential sector still is the biggest source of our waste, comprising of 60.85% of our total waste generation...this includes all biodegradables, non-biodegradables, and recyclables.” (Local Government)

“Largest sources of waste come from the households.” (Waste Aggregator)

“We had a survey, a preliminary survey in Manila Bay. Most of the plastics that we saw are really, um, plastic cups, bottle caps, PT, uh, plastic bottles, and then the plastic bags. That's just the initial survey so we give the data to EMB to MPOA Committee. So that becomes a sort of support to say if there is a plastic that we need to ban, these are the types of plastics that we should focus on, right? Because these are actual data, these are the actual plastics floating out there. So it's not just saying because it's the most abundant, you know, but it's really also the most mismanaged type of plastic. So the argument becomes stronger.” (Academic)

“In terms of recycling, we would like to find the solution where our products can be recycled back into its original form, so back into a polymer so that it's back to oil and it becomes plastic again. Although, especially with the sachet format, it's difficult at this point to do that. The next best thing would be upcycling, so turning it into products, 'cause the challenge you face is that if we if we look at naman, if you try to convert it to compostable -- I mean, we'd rather it become more high-value products then go back into the soil. So if we can find the solution, toward recyclability then that's a better option to take, but if, let's say, push comes to shove and the problem gets worse, and no recycling facility can be put up in the next few years, or no recovery facility, then it makes sense that compostable or biodegradable has to be the route, just to ensure that it doesn't end up in the environment. But I think the first priority is to make sure that we can try to find solutions to recycling as best we can whether that be mechanical or chemical.” (I-5 Business Rep)

1 “Special waste” under Republic Act 9003 refers to hazardous wastes from residential and commercial sources, e.g., consumer electronics, white goods, yard wastes, batteries, oil, and tires.
There are two large-scale recycling facilities being constructed. Coca-Cola Beverages Philippines, Inc., the bottling arm of Coca-Cola in the Philippines, is investing PhP1 billion to construct the largest state-of-the-art, bottle-to-bottle recycling facility in the Philippines in partnership with Indorama Ventures, a Thailand-based company. The facility will be built in General Trias, Cavite (the province next to Metro Manila) and is expected to be completed by 2022. PETValue will recycle up to 30,000MT of PET plastic bottles per year (2 billion plastic bottles), with an output of 16,000 MT/year of recycled PET (RPET). The facility will not only collect Coca-Cola bottles but also PET bottles from other companies (Inquirer BrandRoom, 2020). The Philippine Alliance for Recycling and Materials Sustainability is also constructing a PhP25 million facility in Parañaque City, Metro Manila that aims to turn sachets into plastic blocks and eco-bricks. These private sector investments focus solely on end-of-life waste recycling, but not collection.

**Leakage**

In total, 3,024 litter items were recorded across 27 100m$^2$ transects in nine different square kilometer areas sampled between January and March 2021. Litter transect locations were selected using a stratified random sampling method, in which transects were randomly selected in nine square kilometers which were distributed across three groups of population count (upper, middle, lower) based on LandScan ambient population data. Litter items were recorded using the open source [Marine Debris Tracker](https://marine-debris.org/) app.
Across all 27 transects, the two most common categories of litter items were tobacco products and food plastic (Figure 8). This is also reflected when we compare the litter material types between the three areas of Quezon, Manila, and Mandaluyong.

When we compare the observed litter between the three city areas (Figure 9), we see that more litter items (1,189) were found in Quezon, followed closely by Manila (1,109), and Mandaluyong had the lowest number of litter items (726). Distinctions are also seen between the material breakdown of litter in those three areas. All three areas have tobacco products and food plastic as the most common material types, however there was a higher proportion of metal, paper, and C&D materials in Quezon when compared to Manila and Mandaluyong. Manila and Mandaluyong also had a higher proportion of plastic fragments than observed in Quezon. Similar proportions of organics (4-7%) were found in litter between all three areas.

![Figure 9. Comparison of Material Composition of Litter in Quezon (outer), Manila (middle), and Mandaluyong (inner)](image)

The litter density was calculated for each of the three population count tertiles (Table 6). The density of litter per square meter was highest in the high population count areas and lowest in the low count areas. Litter densities across other countries in South Asia (e.g., India and Bangladesh) range from 0.5 items/m² to 15 items/m², with an average between 4-5 items/m² (n transects = 40) (Youngblood et al., Submitted). Litter densities
across Southeast Asia (Indonesia, Malaysia, and Vietnam) range from 0.75 to 3.39 items/m² with an average of 1.83 items/m² (n = 27) (Urban Ocean). The litter densities in the locations sampled for this project are below the SE Asia average observed to date, but within the range observed across all cities sampled in South and Southeast Asia.

Table 6. Litter density and top litter items from all transects in Manila

<table>
<thead>
<tr>
<th>Population Count Tertile</th>
<th>Top 5 Litter Items</th>
<th>Litter Density (count/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper (35,632-65,941 pp/ km²)</td>
<td>1) Cigarettes, 2) Plastic Food Wrapper, 3) Metal Bottle Caps or Tabs, 4) Receipts, 5) Foam or Plastic Cups or Lids</td>
<td>1.55</td>
</tr>
<tr>
<td>Middle (21,956-35,631 pp/ km²)</td>
<td>1) Cigarettes, 2) Plastic Food Wrapper, 3) Hard Plastic Fragments, 4) Straws, 5) Other Plastic Bag</td>
<td>0.95</td>
</tr>
<tr>
<td>Lower (19-21,955 pp/ km²)</td>
<td>1) Cigarettes, 2) Lumber, 3) Plastic Food Wrapper, 4) Glass or Ceramic Fragments, 5) Other Organic Waste</td>
<td>0.85</td>
</tr>
</tbody>
</table>

Cigarettes were the most abundant litter item identified in all three population account areas (Figure 10a-c). Plastic food wrappers were among the top 5 most abundant litter items in all population count areas as well. Lumber, glass or ceramic fragments, and other organic waste were uniquely in the top 5 items in the lower population count areas, whereas the other top items in the middle and high population count areas were more plastic convenience items such as straws, plastic bags, cups and lids.

The material breakdown of the litter between the three population count areas also yielded distinct patterns (Figure 10). Similar to what was observed in the overall litter material breakdown, the top items were in the food plastic and tobacco products categories. In the high population count areas, there was a higher percentage of paper litter and metal litter than in the medium and lower population count areas. The lower population count area was unique from the other two areas in its high proportion of C&D materials as well as glass.
Figure 10. Top 10 Items in Each Population Count Across Metro Manila

(a - High Population Count)

(b – Mid Population Count)

(c – Low Population Count)
Opportunities

In a workshop held July 15, 2021 (see Appendix B for details and vision boards) with 30 attendees across sectors of government (primarily Quezon City), private sector NGOs and waste management, four overlying barriers to progressing on opportunities to reduce plastic pollution were identified collectively:

1. human behavior change,
2. societal norms within plastic/waste management,
3. economic tensions,
4. and infrastructure limitations.

Workshop participants also envisioned a future free of these barriers and the values they held with how to reach these visions. These values are: **accessibility, accountability, inclusivity, and the development of intuitive participatory logistics over time**. The opportunities outlined below are described with these barriers, values, and input of workshop participants in mind (the terms are in bold italics when used). The opportunities below are outlined under the seven spokes of the CAP.
Input (and Leakage)

- **Change the default behavior and societal norms of commercial establishments** (e.g., cafés, schools, restaurants, supermarkets). This means not automatically offering single-use plastics, providing an opt-out option or offering “naked” products (i.e., products without packaging). 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% (Espina, 2020).

- **Extended Producer Responsibility (EPR).** Corporations should be accountable for their packaging. There and examples of both legislative and voluntary models of EPR around the world. Cites and communities should not hold 100% of the burden of waste management – it can be a shared responsibility between companies, government, and community-members.

Community

- **Develop audience-segmented, gender-based programs and behavior change campaigns.** Implementing organizations must consider how programs and proposed actions and behavior changes affect different target groups, as these have different impacts on women, children, and disadvantaged groups (e.g., persons with disabilities; informal waste pickers; coastal communities). Applying a gender and human rights lens that is inclusive to programs and policies is necessary to mitigate negative outcomes.

- **Develop campaigns and programs on other topics in SWM besides single-use plastics and use other communication channels besides social media.** Many programs, campaigns, and projects focus on single-use plastics. Many topics remain relatively unexplored. Examples that could be pursued: modeling sustainable behavior, such as using reusables, on popular media (teleseryes, movies, vlogs); how to segregate at source; and how to compost at home.

- **Engage other civil society organizations such as religious groups and academic institutions.** Religious groups and academic institutions are influential in shaping behaviors, attitudes, perceptions, and cultures. Environmental conservation organizations can work with them and build their capacity to promote science-based and research-based SWM programs.

- **Digital Campaigns.** With COVID-19 affecting social interactions, mass gatherings, and physical touchpoints, there will be a higher demand and greater opportunity for digital campaigns, learning/teaching opportunities, and online platforms. From 2019-2021, there has been a rise in mobile apps that facilitate waste collection. For many of these platforms, collection is limited to Metro Manila. Interviews also revealed that there may be opportunities to bring on influencers, develop local champions and figureheads, and establish icons for waste reduction messaging in Manila. See Appendix A for the social media analysis conducted for this project. While over 74% of the Filipino population has access to smartphones, this still limits the use of this opportunity to being 100%
accessible and inclusive, so it should be used hand-in-hand with other outreach, like in-person campaigns where needed. In combination, these could still make progress on the barriers identified at the workshop of human behavior change, societal norms within plastic/waste management, and potentially with mobile app waste collection, infrastructure limitations.

- **Pursue new and increasing funding opportunities.** In recent years, alliances, multilateral development banks, corporations, foundations, and aid agencies have allocated significant funding for waste management and circular economy initiatives. In the Philippines, there is significant interest in funding initiatives in Metro Manila, in line with the national government’s priority to rehabilitate Manila Bay. Examples of organizations and/or programs are Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH Rethinking Plastics and USAID’s MWRP and Clean Cities, Blue Ocean programs. NGOs such as WorldVision Philippines, WWF Philippines, and International Container Terminal Services, Inc. (ICTSI) Foundation have community-based SWM projects in Metro Manila. Development projects should be accessible, inclusive (open to everyone in the community), and help to develop the intuitive participatory logistics that the city/community desires.

**Material and Product Design**

- **Invest in packaging redesign.** Brand owners and manufacturers can redesign packaging to ensure that it is recyclable or reusable. Similar to other places globally, limited options exist for recycling multi-layer packaging, a common material used in packaging in Metro Manila.

**Use**

- **Invest in alternative delivery systems.** Refilling models offer a promising and sustainable solution. If the Philippines runs on a sachet economy, the principle of selling and purchasing goods in small quantities can be applied in refilling systems, where the consumers will buy only what they need and what they can afford. There are 800,000 to 1 million sari-sari stores in the Philippines, and the wide adoption of a micro-refilling system for household essentials could be accessible and inclusive while reducing the burden of plastic and packaging waste management. Although sanitation issues have been raised by some, these challenges have been overcome in other similar locations.

**Collection**

- **Segregation-at-source initiatives.** As one example, urban high-rise communities rely heavily on property management offices (PMOs) in dealing with household waste. The PMOs then coordinate with the LGU or a private contractor on disposing of the collected household waste -- the majority of which goes to landfills. There is an opportunity for PMOs to develop segregation-at-source habits and support nearby waste aggregators that buy recyclable waste products (e.g., metal, paper, plastic) in exchange for redeemable points or
monetary rewards. Some of these waste aggregators are accessible to the high-rise communities, which opens an opportunity to divert recyclable waste from the landfill to a nearer circular economy entry point.

- **Enforce the “no segregation, no collection” provision at the barangay level.** The barangay is the smallest administrative unit in the Philippines. By decentralizing waste collection to the barangay level, waste workers are able to build closer and more personal relationships with residents at the household level, encouraging higher compliance.

**Waste Management / Infrastructure**

- **Develop infrastructure that includes intuitive participatory logistics.** Research from the DENR shows that compliance to the waste management infrastructure required by RA 9003 is still below 40%. Having more sanitary landfills, MRFs, recycling facilities, composting facilities, and infrastructure for reverse logistics would encourage higher compliance to existing laws and prevent leakage of wastes into the environment. The two large-scale recycling facilities being constructed could help to expand and encourage source separation and recycling of materials. Recycling markets inherently give value to materials and help keep them out of the environment.

**Accessibility, accountability, inclusivity, and intuitive participatory logistics**

It would be beneficial for all sectors to build and nurture multi-sector, interdisciplinary partnerships. In Metro Manila, environmental conservation organizations and advocates are the most active actors in the waste management and circular economy spaces. While they have had considerable gains and successes, other organizations and types of expertise must be integrated for a diverse, systemic, and sustainable approach. Examples of potential organizations that could collaborate with environmental conservation organizations are mainstreaming gender, and labor; academic institutions; and economists. LGUs and corporations could work with industrial designers, materials engineers, supermarket chains, and sari-sari store owners to ensure that alternatives are affordable, durable, and intuitive. Policy changes must also incorporate support for a just and socially equitable transition. Open dialogue and collaborations can help mitigate concerns on trade-offs and risks and promote industrial symbiosis where waste from one industry can be raw material for another.
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Philippines
Ocean Plastic
Pollution Monitoring

Image Source: National Geographic
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Executive Summary
Executive Summary

The Twitter conversation around plastic pollution in the Philippines consists of these key themes:
- Ocean awareness (n= 29,978)
- Plastic packaging (n= 21,036)
- Trash and Waste (n= 17,219)
- Reduce, Reuse, Recycle (n= 12,614)
- Climate activist groups (n= 9,431)
- Single use plastics (n= 8,651)

The majority of the conversation (58%) was categorized under neutral sentiment, however, each key theme saw big spikes in positive and negative conversation. In both cases, the general public weren’t shy about expressing their opinions. It is worth noting that some conversations tagged as “negative” were posts that were angry at the situation or upset with a corporation or government, not people against clean oceans.
Executive Summary

Some hashtags have naturally caught on with the studied population. These top hashtags are important to keep using and generating momentum:
- #BreakFreeFromPlastic (n= 426)
- #ClimateJustice (n= 1,562)
- #OceanPlastic (n= 223)

Key influencers are also important to capitalize on. These users have amassed big followings and can reach many of the users you are trying to talk to.
- **GreenPeace Philippines**: Climate activist organization with large reach
- **H.Fish Johnson**: The CEO of SC Johnson and climate awareness raiser
- **Nadine Lustre**: Model and actress in the Philippines who uses her fame to build awareness
Executive Summary

Vast majority of the users in this conversation are tweeting from Manila, the country’s capital city. Manila is a bayside city which means it is particularly affected by ocean plastics.

The fluctuation of tweeting remained pretty steady throughout the year. The public would increase tweeting when a climate holiday was happening, some sort of scandal was found, a news article came out or a climate event was occurring. These scenarios generate the most traffic for this Twitter conversation.

The themes which did not have much Twitter conversation were some of the terms and situations we initially found in our research. There are many articles about government bans, the Break Free From Plastic movement, the six multinational corporations which make up 75% of the plastic waste in the Philippines, sachets and the possibility of unsafe drinking water, but not much Twitter buzz about the topics.
Executive Summary

The Facebook conversation around plastic pollution in the Philippines was further inspected by analyzing five popular Facebook pages in the Philippines. They were:

- Beat Plastic Pollution Philippines
- Clean Seas Philippines
- Save Philippines Seas
- Lana
- Refuse

The majority of the conversation (60%) was categorized under neutral sentiment. All of these pages encourage keeping the waters in the Philippines pollution free by posting daily informational content. The content includes promoting simples ways to start reducing, volunteer events, and how to get involved in the community. Some pages also promote reusable and environmental products to their viewers.
Executive Summary

The Instagram conversation around plastic pollution in the Philippines was further inspected by analyzing two filters. One filter analyzed popular hashtags in the Philippines while the other served as a geographic filter, using only city specific location hashtags.

Filter One: #buhayzerowaste OR #cleanseaspilipinas OR #lowimpactfilipina OR #plasticfreebohol OR #savephseas OR #zerowasteph OR #plasticpollutionph OR #lowimpactfilipino

Filter Two: #Philippines OR #Manila OR #Davao OR #Cebu OR #CagayandeOro OR #SanPablo OR #ph OR #pilipinas OR #bohol OR #filipina OR #quezon OR #makati OR #pasig OR #baguio

The filters garnered a low number of results, but nonetheless the overall messages stayed the same when exploring a different social media platform. Instagram users still rallied around the overall goal of keeping the waters in the Philippines pollution free. This was done by users posting content very much similar to the other social platforms analyzed. The only notable difference from the other media platforms is that Instagram users typically use a lot more hashtags when they upload a photo to Instagram.
Key Recommendations
1. Encourage **key figures** (such as model Nadine Lustre, business owner H.Fisk Johnson, community activist groups like GreenPeace Philippines) to bring awareness to the topic of plastic pollution. This includes using/spreading awareness of existing popular hashtags to bring people together.

2. Capitalize on **important dates** that promote awareness of environmental subject matter. Social media conversations naturally spike on environmental holidays or awareness events. Use this momentum to your advantage.

3. Expand upon the idea of **sponsorships** and promoting items related to preventing pollution. Ex: most everyday users are already promoting reusable products on their personal social platforms, get a wider reach by using more prominent users such as local micro-influencers. Possibly provide their followers with discount codes for these reusable products.

4. Post more **informational content**. Share as many facts and figures as possible, people like sharing news or other facts to their friends and followers. Promote easy ways to get involved with the environmental movement, promote groups and communities working towards the goal and show how to take preventable measures against plastic pollution. Many people get their news from social media, you can use that to your advantage.
1. Encourage **key figures** to bring awareness to the topic of plastic pollution. This includes spreading awareness by posting content with key influencers or well-known companies as a way of encouraging the people of the Philippines to come together and get passion about the topic of plastic pollution.

2. Capitalize on the use of **Facebook Marketplace**. This is a wonderful feature to highlights eco-friendly products to the mass audience who has liked the Facebook page already.

3. Expand upon the idea of **sponsorships** and promoting items related to preventing pollution. This platform is made for e-commerce and for virality.

4. Post more **informational content**. Share as many facts and figures as possible, people like sharing news or other facts to their friends and followers. Promote easy ways to get involved with the environmental movement, promote groups and communities working towards the goal and show how to take preventable measures against plastic pollution. Many people get their news from social media, you can use that to to your advantage.
1. Encourage **key figures** to bring awareness to the topic of plastic pollution. This includes spreading awareness by posting content with key influencers or well-known companies as a way of encouraging the people of the Philippines to come together and get passion about the topic of plastic pollution.

2. Capitalize on the use of **hashtags**. When uploading a picture to Instagram regarding plastic pollution in the Philippines, use a lot of hashtags. There are many popular hashtags that are being used by many Philippines users. Also, make note of the existing popular hashtags regarding plastic pollution and include them at the end of each post.

3. Post more **informational content**. Share as many facts and figures as possible, people like sharing news or other facts to their friends and followers. Promote easy ways to get involved with the environmental movement, promote groups and communities working towards the goal and show how to take preventable measures against plastic pollution. Many people get their news from social media, you can use that to your advantage.
Twitter Data Overview
Twitter Sentiment Summary

Total Number of Posts: **104,193**

Sentiment of Posts:

- **18%** Positive
- **58%** Neutral
- **24%** Negative
# Twitter Top Hashtags

<table>
<thead>
<tr>
<th>Hashtag</th>
<th>Count</th>
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<tbody>
<tr>
<td>#BreakFreeFromPlastic</td>
<td>4,000+</td>
</tr>
<tr>
<td>#ClimateJustice</td>
<td>2,000+</td>
</tr>
<tr>
<td>#EarthquakeEngineering</td>
<td>1,400+</td>
</tr>
<tr>
<td>#CE197</td>
<td>1,400+</td>
</tr>
<tr>
<td>#oceanplastic</td>
<td>1,100+</td>
</tr>
<tr>
<td>#zerowaste</td>
<td>1,000+</td>
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<tr>
<td>Top Mentions</td>
<td>Top Sources</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>@SCJohnson - 1,800+</td>
<td><a href="http://www.greenpeace.org">www.greenpeace.org</a> - 1,153</td>
</tr>
<tr>
<td>@gpph - 1,600+</td>
<td><a href="http://www.rappler.com">www.rappler.com</a> - 624</td>
</tr>
<tr>
<td>@MareaVerde_P - 1,000+</td>
<td>news.abs-cbn.com - 593</td>
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<tr>
<td>@Shell - 1,000+</td>
<td><a href="http://www.cnn.com">www.cnn.com</a> - 543</td>
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<tr>
<td>@PlasticBank - 830+</td>
<td>newsinfo.inquirer.net - 519</td>
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<tr>
<td>@mainedcm - 750+</td>
<td><a href="http://www.bloomberg.com">www.bloomberg.com</a> - 447</td>
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<tr>
<td>@SipPurified - 500+</td>
<td><a href="http://www.nationalgeographic.com">www.nationalgeographic.com</a> - 354</td>
</tr>
<tr>
<td>@bopinion - 420+</td>
<td></td>
</tr>
<tr>
<td>@gp_warrior - 400+</td>
<td></td>
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</table>
Biggest Influencers on Twitter

Greenpeace Philippines - @gpph - 19.6k Followers
An independent campaigning organization that acts to change attitudes/behavior with the hopes of protecting the environment and promoting peace. Leading the conversation about plastic pollution in the Philippines.

H. Fisk Johnson - @hfiskjohnson - 592k Followers
CEO of SC Johnson, a United States based multinational corporation that produces household cleaners and other chemicals. Johnson is working to undo the pollution his company has done in the past and raise awareness for other similar companies.

StanceGrounded - @_SJPeace_ - 384.4k Followers
Human/Civil Rights Activist with many environmental posts. Gained fame from his viral tweets pointing out injustices and other wrongdoings on the internet. He gets interacted with often by other activists and workers towards the same cause.
Example Tweets

H Fisk Johnson, Ph.D. @HFiskJohnson

Stopping #oceanplastic starts with cleaning up plastic in rivers that flow to the sea. This project by @MareaVerde_PA has collected 120,000 bags of waste from a river in just a year! It’s a step in the right direction. Our oceans need more innovations like this around the world.

Greenpeace Philippines @gpph

Plastic sachets are anti-poor and a way to increase the multinationals’ sales by targeting customers who cannot afford bigger quantities, while suffocating our environment. Remind companies to #BreakFreeFromPlastic >> act.gp/stopsingleusep... reuters.com/article/us-asi...

StanceGrounded @_SJPeace_

Sea Of Plastic' Discovered In The Caribbean Stretches Miles And Is Choking Wildlife

THIS IS NOT OK! THIS IS DISGUSTING!

Retweet!

Tweets frequently about saving the environment and using less plastic

Consistently uploading pictures, articles, and videos regarding the plastic pollution crisis in the Philippines

Tweets frequently advocating for a cleaner oceans and spreading awareness about pollution reduction efforts
Philippines Specific Influencers on Twitter

@fyfemma - 19.5k Followers
Woman from Norway who travels often. Posts some comedic tweets but also some environmental tweets. Has a large and active following. A few environmental tweets have had virality among Filipino audiences. (Appeared in dataset 217 times)

@chrismmiramon - 1.7k Followers
College student at the University of the Philippines. A radio news show host and frequent tweeter of information and articles. Shares not only environmental articles and resources but also political and civil rights information. (Appeared in data set 244 times)

@jobujobxjoben - 1.2k Followers
A Philippines-based young activist and active tweeter. Shares and retweets lots of informational content about Philippines environmental issues. Recent graduate of the University of the Philippines. (Appeared in data set 101 times)
Twitter Top Hyperlinks

- [https://twitter.com/sherilynjoy_/status/1177215348585615360](https://twitter.com/sherilynjoy_/status/1177215348585615360) (n= 2,683)
  - Post about biodegradable and flushable wipes to cut down on wipe waste
  - Caption translates to: “believe me on this”

- [https://twitter.com/tictoc/status/1107838231733829632](https://twitter.com/tictoc/status/1107838231733829632) (n= 1,448)
  - Video from Bloomberg QuickTake of man taking pounds of plastic out of a beached whale’s stomach
  - The plastic blocking his organs is believed to be the cause of death
  - This is one of at least 50 beached whales in the past few years killed by plastic consumption

- [https://twitter.com/kickitcunt/status/1163676500438089729](https://twitter.com/kickitcunt/status/1163676500438089729) (n= 1,421)
  - Tweet sharing a National Geographic article calling out the fact that by 2050 there will be more plastic in the ocean than there are fish
  - Lots of outrage over this finding and people searching for ways to counteract
Twitter Demographics

Female - 55%
Male - 45%

*36k posts (35%) have identifiable gender

17 and below: 36%
18-24: 3%
25-34: 7%
35 and above: 54%

*9940 posts (10%) have identifiable age
Geographic Breakdown: Manila Dataset

Top Volume Cities | % of total
1. Manila         | 76.44%
2. Davao          | 5.66%
3. Cebu           | 5.51%
4. Cagayan de Oro | 2.30%
5. San Pablo      | 1.09%

*88,476 (85%) posts had identifiable locations
Manila Summary

While overall the Manila part of the dataset was similar to the country-wide dataset, there were a few distinct differences. The key themes were largely the same as the original dataset. There is more direct calls for plastic bag bans using the hashtag #BagBan. Additionally, @HFiskJohnson the CEO of SC Johnson is even more popular in Manila than in the rest of the dataset. Retweets of him make up over 3.4% of the posts in Manila last year whereas the larger dataset featured him in 2.8% of posts. Many people in the Manila dataset are retweeting from other sources.

The age and gender demographics are identical to the larger data set, more female than male and most tweets from older people (35 and above.) Sentiment largely more negative (18%) than positive (4%).
Spike Analysis

Philippines Twitter Data
Spike Analysis
January - March (n= 24,925)

Jan 11, 2019 (n=875)
“Turtles” n= 590 (68%)
Tweet goes viral exposing turtles eating plastic bags thinking they’re jellyfish

March, 2 2019 (n=1,331)
“Nadine” n= 550 (41%)
GreenPeacePH and model Nadine Lustre hosted an event bringing awareness about plastic pollution

March, 11th 2019 (n = 830)
“@ClimateBen” n= 475 (58%)
@ClimateBen has a viral tweet listing 6 top environmental crises & calling out news sources for not covering them as such

March, 22 2019 (n= 846)
“Litter” n= 394 (43%)
World Water Day with calls to action to reduce waste and clean waterways

March, 28 2019 (n= 1,161)
“Oceans” n= 726 (63%)
Two viral tweets showing photos of tons of plastic in the oceans and calling people out for single use plastic use.

January 30th, 2019 (n= 910)
“Manila” n= 553 (64%)
Viral tweet and responses in Filipino asking for more information on how to keep Manilla Bay clean
Spike Analysis:
April - June 2019 (n= 32,066)

April, 23 2019 (n= 1,562)
“#CE197” n= 1,088 (71%)
Earthquake in the Philippines - photos of surrounding seas with plastic shaken into the ocean (CE197 = earthquake engineering)

May, 10 2019 (n= 1,114)
“Whale” n= 593 (53%)
Large-scale art installation made completely out of plastic shows whale decomposing - lots of attention

May, 31 2019 (n= 3,150)
“Wrapper” n= 1,710 (54%)
Viral call for a recycling system where one gets the extra cents back when the bottle is recycled.

April, 26 2019 (n= 1,085)
“Caribbean” n= 630 (59%)
News article showing miles of plastic floating in Caribbean sea
Spike Analysis:
July - September 2019 (n= 30,195)

July 6th, 2019 (n=1,082)
“Plastic” n= 798 (74%)
Many users retweet a reply to an image of Kylie Jenner wearing heavy makeup to resemble Ariel from *The Little Mermaid* that states, “It’s already enough plastic in the ocean”

August 22nd, 2019 (n= 1,176)
“Bottles” n= 662 (56%)
A user uploads a plea to Twitter encouraging people to reuse plastic bags, bring their own water bottles, avoid buying drinks in plastic bottles, and to stop burning items made of plastic

September 29th, 2019 (n= 2,274)
“Biodegradable” n= 1,908 (84%)
A tweet that went viral informs users that wet wipes use plastic materials and are not biodegradable. They encourage the public to start using sanicare bamboo wipes due to it being made of bamboo fibers which are biodegradable

September 10th, 2019 (n= 1,321)
“Plastic” n= 1,045 (79%)
Viral tweet that informs the public that Rice straws are now available in Davao, Philippines. On top of that, they come in plastic wraps which are also bioplastic

September 19th, 2019 (n= 1,139)
“Trash” n= 441 (39%)
A viral video that shows a swan removing plastic and trash out of the water
Spike Analysis:
October - December 2019 (n= 17,007)

- **October 1st, 2019 (n= 742)**
  - "Biodegradable" n= 336 (45%)
  - Viral tweet saying wet wipes are not biodegradable and take 100 years to disappear from landfills. Encourage the public to start using sanicare bamboo wipes due to it being made of bamboo fibers which are biodegradable.

- **October 18th, 2019 (n= 620)**
  - "Plastic" n= 436 (70%)
  - Viral tweet from the CEO of SC Johnson that informs users that ocean plastic is a huge issue. He also states they have partnered with @PlasticBank to tackle the issue and expand collection points across 5 countries.

- **November 3rd, 2019 (n= 427)**
  - "Water" n= 236 (55%)
  - Tweet that informs users of "plastic" bag made from cassava (root vegetable). It is 100% biodegradable, feels like latex, and dissolves in water.

- **December 1st, 2019 (n= 410)**
  - "Plastic" n= 75 (19%)
  - Viral tweet goes around about a bottle made out of bamboo that lasts for years as an alternative to plastic.
### Twitter Themes: Bottom-Up & Top-Down

#### Bottom-Up: (from the data)
- Ocean Awareness (29,978 posts)
- Plastic Packaging (21,036 posts)
- Trash and Waste (17,219 posts)
- Reduce, Reuse, Recycle (12,614 posts)
- Climate Activist Groups (9,431 posts)
- Single Use Plastics (8,651 posts)

#### Top-Down: (from the research)
- Government Action (4,935 posts)
- Break Free From Plastic (4,061 posts)
- Six major multinational corporations (1,114 posts)
- Sachets (658 posts)
- Unsafe Drinking Water (375 posts)
Ocean Awareness
Total Volume: 29,978
Conversation centers around ocean awareness and marine animal health concerns because of the rise of plastic pollution. There are calls to stop using plastic products and awareness about cleanup efforts. Tweets are angry about the climate crisis and have a positive tone when there are cleanup events or other hopeful gatherings.
Positive Conversation (15%) n= 4,255

- July 2nd was International Plastic Bag Free Day - conversation spiked because of this holiday

- Users retweeting articles on ways to help countries with the highest amount of trash in the ocean

- The CEO of SC Johnson tweets that his company advocates to improve conditions in waste filled oceans. He even pledges to partner with @PlasticBank (organization that turns plastic waste into currency to fight ocean plastic & help people ascend from poverty). He also tweets that he hopes other companies will join the cause.
Negative Conversation (39%) n= 11,605

- Users reminding the public that marine life and ocean ecosystems are being killed as a result of plastic pollution in the ocean

- Users sharing articles that state that if we don’t change our constant use of plastic soon that our oceans will have more plastic than fish by 2050

- Users pointing fingers at major companies rather than consumers for dumping metric tons of pollution into the air and oceans

Video goes viral showing this boat driving through miles of floating plastic waste.
Unique Metrics

- Top Hashtag: #oceanplastic (4% of posts)
  - Calling out all kinds of plastic found in the oceans
- Top Unique Hashtag: #BeatPlasticPollution (2% of posts)
  - A movement to get people to join in clean-up efforts, and stop using single-use plastics
- Key Influencers: @HFiskJohnson & @MareaVerde_PA -
  - The CEO of SC Johnson and an environmental impact group based out of Panama with a wide following
- Top Hyperlink: Video of plastic being pulled out of a beached whale’s stomach posted by Bloomberg.com
  https://twitter.com/QuickTake/status/1107838231733829632
Plastic Packaging
Total Volume: 21,036

Image Source: National Geographic
In a Nutshell

Plastic packaging is a huge problem in the Philippines. As a result, plastic packaging is the number one most common material found inside of the polluted oceans. Conversation mainly calls on people to stop using throw away packaging and calls out both individuals and big companies to cease using plastic packaging because of the harm it is doing to the oceans. The public is also bringing to light substituting plastic packaging with decomposable materials or more permanent and reusable materials.
Positive Conversation (18%) n= 3,667

- Users sharing biodegradable substitutes to plastic packaging
- Users advertising reusable products that will help prevent pollution
- After a typhoon strikes Japan and photos of the flooding emerge, users were impressed that water wasn’t polluted with plastic bottles or any sort of debris

Example of a biodegradable solution to plastic grocery bags made in Indonesia
Negative Conversation (22%) n= 4,418

- Users upset that the public isn’t picking up their trash and their packaging ends up harming marine wildlife
- Users pleading with the public to take action further than just prayers
- Users asking the public to stop burning plastic products after using
- Users share statistics on about how low of a number it is that people actually recycle after using plastic products

Highlighting the dangers of plastic bags in the oceans - turtles mistaking them for Jellyfish and ingesting them. Link to article

Twitter post:

@krislc96

Leatherback turtles eat jellyfish. They can easily confuse Plastic bags with jellyfish considering the similar structure and movement in water. Pick up your trash when you go to the beach. twitter.com/Unexplained/st…

Highlighting the dangers of plastic bags in the oceans - turtles mistaking them for Jellyfish and ingesting them. Link to article
Unique Metrics

- Top Hashtag: #OceanPlastic (5% of posts)
  - Calls to attention the plastic which is ending up in the oceans around the Philippines
- Top Unique Hashtag: #VotePH2019 (1% of posts)
  - Calling on citizens to vote people with positive environmental policies into power

- Key Influencers: Greenpeace Philippines (@greenpeaceph) -
  - Group working together to create socially conscious events and compel volunteers to help clean both land and oceans from pollution.
- Top Hyperlink: Article from inquirer.net talking about a Senate event organized by community members where the audience booed and heckled them because of environmental policy.
Trash and Waste

Total Volume: 17,219
In a Nutshell

Conversation mainly calls out restaurants, events, and the general public gatherings who use too much single use plastic or are not disposing of their trash correctly. The conversation was bringing awareness to improper waste disposal in addition to the overarching issue of waste management infrastructure issues. As articles and photos get posted, more people get active in this theme. People rally around evocative images and reports because they feel bad and empathetic towards these animals that are hurting.
Positive Conversation (11%) n= 1,743

- Users happy that some companies have started to introduce reusable and biodegradable products at their establishments

- Users regularly push forward friendly reminders to clean up after yourself

- Filipino actress and singer created positive buzz as she stated in an interview, "I don't think I can forgive myself if I just stood still and let the trash go into the ocean.” Greenpeace Philippines retweeted this interview which helped garner positive engagement from Twitter users.

Amazement about Japan’s hyper-clean streets when the flooding water is crystal clear.
Negative Conversation (55%) n= 9,193

- Users upset about plastic waste interfering with marine wildlife. The more photos and reports circulating the internet, the more people get up i arms about the pollution.

- Users frustrated that people aren’t making a bigger effort to clean their waste and the waste management on the islands is not strong

- Many articles being shared and retweeted about how the Philippines is among the top 5 countries that are throwing plastic products into the ocean

Clear instructions on how to reduce plastic pollution - main sentiment anger
Unique Metrics

- Top Hashtag: #BreakFreeFromPlastic (5% of posts)
  - Pleading with people to stop using single use plastics.
- Top Unique Hashtag: #GoForZeroWaste (1% of posts)
  - A trend called Zero Waste, trying to get people to live more circular lifestyles without plastic waste.
- Key Influencers: @gpph & @rapplerdotcom
  - Greenpeace Philippines action group to advocate for environmental policies. Rappler is a news sharing site where stories that don’t often get told in the media get told.
- Top Hyperlink: Bloomberg article on how to stop plastic pollution
Reduce, Reuse, Recycle

Total Volume: 12,614
Due to the overwhelming amount of plastic pollution in the oceans in the Philippines, users are desperately encouraging users to take awareness and familiarize themselves with this three R’s. Conversation mostly centers around awareness and provides users with potential solutions to help expand upon the three P’s. Reduce their plastic usage, reuse products after use instead of immediately throwing them away, and to be extra conscious of recycling whenever they’re done using specific products.
Positive Conversation (20%) n= 2,301

- Users excited about how certain establishments are now offering reusable coffee cups
- As well-known and recognizable faces around the globe, Twitter users retweeted content involving famous celebrities using reusable products when performing on stage. Ex: Shawn Mendes, Halsey
- Conversation increased on June 5th as that was World Environment Day. Many users were promoting using reusable products
- Users excited to see popular brand Unilever start to introduce refills for some of their products
Negative Conversation (21%) n= 2,438

- Users warning the public to change their actions in fear of the planet Earth dying rapidly
- Users sharing reminders that turtles choke on plastic straws; encourage users to make the switch to reusable straws
- Users generally upset with the lack of effort to implement the 3 R’s and the amount of pollution found in the oceans

Graphic video of plastic being pulled out of a beached whale’s stomach - pounds of plastic
Unique Metrics

- Top Hashtag: #CE197 (10% of posts)
  - A class in a special kind of engineering that is disaster related
- Top Unique Hashtag: #earthquakeengineering (9% of posts)
  - This expands upon ce197, it is a kind of engineering that designs building that are ready to take the impact
- Key Influencers: @fyfemma & @jobujjobxjoben
  - 19 year old climate activist and social justice worker & a young but prominent civil engineer in the philippines
- Top Hyperlink: Tweet of a photo showing the difference of human pollution in the same shot between just ten years
  
  https://twitter.com/alexivenegas_/status/1099780054597263360
Climate Activist Groups

Total Volume: 9,431
In a Nutshell

Around the world there are climate activist groups that are popping up and banding together to further the climate agenda. The biggest group in the Philippines is GreenPeace Philippines with thousands of members. These groups host events, raise awareness and have fundraisers to further their missions of creating a cleaner earth. These groups are some of the biggest change-makers when it comes to plastic pollution in the Philippines. People follow their accounts specifically to get information on plastic pollution fighting efforts and to look for ways to help. These are important groups to partner or work with because they already have consumer trust.
Positive Conversation n= 1,992 (21%)

- Nadine Lustre is one of the main topics talked about. She is a model and activist who has worked a lot with GreenPeace Philippines.

- In August when Secretary Gina Lopez passed away Twitter had a lot of mourners, she was a pioneer in the climate fight and a big voice in the government.

- The call of Climate Justice is a huge topic in this conversation. Climate Justice, in this context, is about the inequity of plastic pollution and how disproportionately it affects poor or underprivileged people. This is an important concept in the climate advocacy world. It gets people talking about plastic pollution in a really real way.

- This is the only theme in all of our research with more positive sentiment posts than negative sentiment posts. This is an important distinction because it shows people are overwhelmingly more positive about the work climate groups are doing.
Negative Conversation n= 892 (10%)

- Users crying out to Twitter about the crisis of climate change and the effects it can have - these passionate cries are trying to get people riled up to get active with the climate groups. The conversation is in the context of these groups' work to offset human impacts on the environment through clean ups and other awareness events.

- The #BreakFreeFromPlastic movement is huge in this Twitter theme because it is climate groups who move this conversation

- There is a big swell of people talking about waste management protocols and the issues that the Philippines has with the waste management infrastructure. This is an important issue as it relates to plastic pollution for these islands.
Unique Metrics

- Top Hashtag: #BreakFreeFromPlastic (21% of posts)
  - The viral hashtag that unifies people around the idea that it is possible to break free from the dependence on plastic in today's world

- Unique Hashtag: #ClimateJustice (19% of posts)
  - The hashtag to bring light to the undue burden poor or less fortunate people have to bear in the climate emergency.

- Key Influencers: @gpph & @shell
  - Greenpeace Philippines action group who advocates for climate initiatives and Shell gas company, one of the largest miners and producers of gas in the world.

- Top Hyperlink: An article by Greenpeace Philippines talking about the climate emergency that is happening.
  - https://act.greenpeace.org/page/47007/petition/1?ea.tracking.id=xoomy58v
Single Use Plastics
Total Volume: 8,651
In a Nutshell

A huge part of the pollution problem in the Philippines is the use of single use plastics (SUPs). This includes items such as grocery bags, food packaging, water bottles, straws, containers, cups, and sachets. These plastics intended to make life easier for consumers come with a steep environmental price. The main problem with SUPs is the material they’re made out of; specifically the material that sachets are made from. Sachets are small plastic packets that are typically lined with aluminum and other non-recyclable materials. Due to the Philippines proficient use of sachets, it leads to high volume residual waste that cannot be recycled or composted.
Positive Conversation (12%) n= 923

- Users excited after San Francisco International airport banned the sale of plastic bottled water - as a result, they are aiming to become zero waste by 2021

- Users retweeting articles with the central theme of how to easily stop using single use plastics

- Users posting friendly reminders to quit using single use plastics

---

Anj @SuperbVicey

Good day everyone! I would like you guys to meet my turtle 🐢

Things to make my turtle happy is: For you guys to stop using single-use plastic.

I love my turtol and do please make my turtol happy.

RT to save a Turtle 🐢

Whimsical way to ask people to stop using single use plastics
Negative Conversation (36%) n = 2,952

- Users upset about the frequent use of single use plastics
- Users pointing blame at major corporations for the excessive amount of single use plastic found in the oceans
- Some users upset with the idea of environmentalism and the push to stop using single use plastics because it isn’t inclusive for people with low economic status

Allan Enriquez
@ImMisterA

Unless big multicompanies like #Unilever, #PandG discontinue selling sachets or single use plastic, I don’t think we’ll be getting rid of plastic trash.
twitter.com/qz/status/1084...

Calling out the major corporations who do a majority of the plastic polluting, link to article
Unique Metrics

- Top Hashtag: #BreakfreefromPlastic (8% of posts)
  - Same hashtag used to unite people around the cause of stopping using disposable packaging and other single use plastics

- Top Unique Hashtag: #PlasticMonster (2% of posts)
  - A hashtag used to raise awareness about the plastic in Manilla Bay, a major body of water around the Philippines

- Key Influencers: Greenpeace Philippines & @ChrismMiramon
  - GreenPeace is an advocacy group for environmental purposes and Chris Miramon is a college student at the University of Philippines who is active

- Top Hyperlink: Article on Greenpeace Philippines
  https://act.greenpeace.org/page/39058/subscribe/1?ea.tracking.id=twitter-share
  - About how to stop relying on single use plastics
Important Issues with Low Volume
Government Action
Total Volume: 4,935
In a Nutshell

Key Metrics:
- Top Hashtag: #ClimateEmergency
- Key Influencers: @Greenpeace Philippines & @hfiskjohnson
- Top Hyperlink: https://act.greenpeace.org/page/52778/petition/1?ea.tracking.id=xoomy58v&en_chan=tw
  - An open letter to President Duterte declaring climate emergency

The town I live in banned single-use plastics in order to reduce waste. But the government has no sewage treatment plant and doesn't collect trash from businesses/homes. So people have to release their wastewater into the ocean & burn their trash. SOS to the world
Break Free From Plastic
Total Volume: 4,061
In a Nutshell

A movement has since been established in the Philippines and a few other countries worldwide which encourages the public to use plastic-free alternatives and refrain from using or buying plastic products. Not only has this movement generated a great deal of online conversation, but there is a popular hashtag and popular account that are associated with the conversation. Users on Twitter use #breakfreefromplastic when speaking on the topic. @brkfreeplastic is also a popular Twitter account that tweets often regarding the break free from plastic movement.

Key Metrics:
- Top Hashtag: #BreakFreefromPlastic
- Key Influencers: Greenpeace Philippines
- Top Hyperlink: Article from Greenpeace [https://act.greenpeace.org/page/39058/subscribe/1](https://act.greenpeace.org/page/39058/subscribe/1)
Multinational Corporations

Total Volume: 1,114

Image Source: The National
In a Nutshell

Key Metrics:
- Top Hashtag: #BreakFreeFromPlastic
  - Same hashtag used to unite people around the cause of stopping using disposable packaging and other single use plastics
- Key Influencers: @Greenpeace Philippines & @hfiskjohnson
- Top Hyperlink: act.greenpeace.org

Six companies make 75% of ocean waste in the Philippines. At the forefront of it all is Coca-Cola, Nestle, and Pepsi products.
Sachets
Total Volume: 658
In a Nutshell

Key Metrics:
- Top Hashtag: #BreakFreeFromPlastic
- Key Influencers: @GreenpeacePhilippines
- Top Hyperlink: https://act.greenpeace.org/page/39058/subscribe/1?ea.tracking.id=twitter-share
  - How to help stop plastic pollution

And also, let’s start drinking water from glasses and bottles. No to plastics! And no more sachets please!!!!!

Grate: Much of plastics in PH are sachet waste, packs of shampoo, coffee etc that the poor can only afford on a daily basis #GoForZeroWaste #breakfreefromplastic #BurnNot
Unsafe Drinking Water
Total Volume: 375
In a Nutshell

Key Metrics:
- Top Hashtag: #cleanwater
- Key Influencers: Asian Development Bank (@ADB_HQ)
  - ADB is committed to achieving a prosperous, inclusive, resilient and sustainable Asia & the Pacific, while sustaining its efforts to eradicate extreme poverty
  - After an Earthquake in early November in small towns of the Philippines, people are faced with lack of drinking water

Tiny bits of plastic were found in nine major rivers in Europe, in 100% of tests.

Microplastics often absorb pollutants and become highly toxic.

Pretty gross.

These plastics have been found in our food, and drinking water. 😕

#BreakFreeFromPlastic euroweeknews.com/2019/11/23/mic...
Facebook Analysis
Summary

Total Number of Posts: 13,029

Sentiment of Posts:

- 26% Positive
- 62% Neutral
- 12% Negative
Beat Plastic Pollution Philippines

n=13,029
Summary

Aims to stop plastic pollution and climate change by posting daily content reminding the public to do their share and stop polluting.

Sentiment of Posts:

- **22% Positive**
- **66% Neutral**
- **11% Negative**
Positive Conversation

Posts of positive nature typically shared the beneficial results of environmental activism and how reusable products are the new future.
Negative Conversation

Beat Plastic Pollution shares pictures that share the state of the environment and the challenges it faces on a daily basis. These type of posts typically draw negative responses with the intention of firing up audiences into taking immediate action.
Clean Seas Pilipinas

n = 2,586
Summary

Clean Seas Pilipinas aims to establish a national network of partners to organize, support and sustain the momentum of reducing ocean plastics in the Philippines.

Sentiment of Posts:

- **23%** Positive
- **59%** Neutral
- **18%** Negative
Positive Conversation

Most of the positive conversation stems around the page reposting content that shows the oceans in better/clean conditions. They also post content with easy ways to help the environment such as how to recycle more effectively and highlighting environmental safe products.
Negative Conversation

Negative conversation stems around the page sharing content of plastic surrounding the ocean area. This leads to displeasure with their followers and sparks a conversation to start acting to ensure the cleanliness of the waters.
Save Philippines Seas

n= 1,367
Summary

Save Philippine Seas (SPS) aims to narrow the gap between scientists and the general public by mobilizing SEAtizen-led initiatives that are empowering Filipinos towards collective action and behavior change.

Sentiment of Posts:

- 24% Positive
- 61% Neutral
- 15% Negative
Positive Conversation

Positive conversation revolves around promoting keeping the seas clean. Their content consists of posts such as promoting reusable products, zero waste, and highlighting local news stories that involve the subject of keeping the environment healthy.
Negative Conversation

Negative conversation often results from this page posting and sharing upsetting news stories or pictures that involve creatures in the waters and how their living condition isn’t stable due to the harsh conditions of the water.
Lana

n= 1,225
Summary

Lana PH is a cruelty-free and zero waste lifestyle cosmetic brand that’s dedicated to defend skin from the damage caused by pollution.

*No Negative Data analysis since number is so low

Sentiment of Posts:

- 35% Positive
- 63% Neutral
- 2% Negative
Positive Conversation

The Lana page is a beauty cosmetic brand which means that a majority of their posts consist of sharing the current products on their market with their audience. Products consist of sunblock, makeup, lotion, and other skincare products.
Summary

REFUSE PHILIPPINES aims to give consumers a greener alternative for frequent purchase goods and long term items. Their mission is to make eco-friendly and zero waste products more accessible to the public by providing locally produced sustainable goods such as household and other personal necessities.

Sentiment of Posts:

- 28% Positive
- 60% Neutral
- 12% Negative
Positive Conversation

Positive conversation focuses on highlighting greener alternative products and the discounts that come when consumers purchase as an incentive to make the switch and more affordable.
Negative Conversation

Negative conversation is fairly scarce on this page. However, on some occasions, the Refuse page posts content which highlights the harsh reality of the quality of the waters with the intention of firing up audiences into taking immediate action.
Instagram Analysis
(Worldwide)

n= 633,255
Summary

Sentiment of Posts:
- 58% Positive
- 30% Neutral
- 12% Negative
<table>
<thead>
<tr>
<th>Hashtag</th>
<th>Count</th>
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<tbody>
<tr>
<td>#zerowaste</td>
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<tr>
<td>#plasticfree</td>
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<td>69k+</td>
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<tr>
<td>#sustainable</td>
<td>66k+</td>
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</tbody>
</table>

Overall Top Hashtags & Word Cloud  

n = 633,255
Notable Influencers

Save Philippine Seas - @savephseas - 17.1k Followers
A Philippines based environmental conservation organization that focuses on mobilizing citizen-led initiatives that empower Filipinos towards collective action and behavioral change.

Clean Seas Pilipinas - @cleanseaspilipinas - 10k Followers
A community of people who work together to fight against single-use plastics. Works to spread information, gets together volunteer groups and lobbies private sector companies to stop using single-use plastic.

Plastic Free Bohol - @plasticfree_bohol - 8.2k
A movement against plastic pollution in the city of Bohol, Philippines. Works in tandem with other Philippines city’s plastic free movements. Work to clean their city, promote reusable materials and gets volunteers together to clean.
Instagram in the Philippines
## Two methods for extracting Philippines specific data

<table>
<thead>
<tr>
<th>Philippines-specific hashtags</th>
<th>General with location-specific hashtags</th>
</tr>
</thead>
<tbody>
<tr>
<td>#zerowasteph</td>
<td>#philippines - 583 (79% of total posts)</td>
</tr>
<tr>
<td>1,666 (68% of total posts)</td>
<td>#zerowaste - 289 (52% of total posts)</td>
</tr>
<tr>
<td>#buhayzerowaste</td>
<td>#ecofriendly - 271 (37% of total posts)</td>
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<tr>
<td>228 (9% of total posts)</td>
<td>#plasticfree - 189 (26% of total posts)</td>
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<tr>
<td>#cleanseaspilipinas</td>
<td>#manila - 133 (18% of total posts)</td>
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<tr>
<td>92 (4% of total posts)</td>
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<tr>
<td>#savephseas</td>
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<tr>
<td>37 (2% of total posts)</td>
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<tr>
<td>#plasticfreebohol</td>
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<tr>
<td>30 (1% of total posts)</td>
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<td>#lowimpactfilipina</td>
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<tr>
<td>1 (&lt;1% of total posts)</td>
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</table>
Method I
Philippines Specific Instagram Hashtags
n= 2,514
Summary

Creating a filter on the available Instagram data, we took Philippines specific hashtags from the provided research document such as, #buhayzerowaste, #cleanseaspilipinas, #lowimpactpilipina, #zerowasteph, etc. This methodology was used because the social listening tool Crimson Hexagon does not provide geographic filters like the Twitter and Facebook analysis tools.

We found on Instagram the users who utilize the hashtags that are Philippines-specific are typically promoting sustainable lifestyles, environmentally conscious products or information on how/why sustainable choices matter.
<table>
<thead>
<tr>
<th>Hashtags</th>
<th>How Many Posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>#zerowasteph</td>
<td>1,666 (68% of total posts)</td>
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<tr>
<td>#buhayzerowaste</td>
<td>228 (9% of total posts)</td>
</tr>
<tr>
<td>#cleanseaspilipinas</td>
<td>92 (4% of total posts)</td>
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<tr>
<td>#savephseas</td>
<td>37 (2% of total posts)</td>
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<tr>
<td>#plasticfreebohol</td>
<td>30 (1% of total posts)</td>
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<tr>
<td>#lowimpactfilipina</td>
<td>1 (&lt;1% of total posts)</td>
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</table>
#zerowasteph

n= 1,666
Conversation stems around keeping the country of Philippines waste free. Many companies and influencers join the conversation by posting frequently as well as promoting environmentally conscious products. People post their solutions to living waste free in the Philippines. The company shown here makes many environmentally friendly products for Philippines consumers. #zerowaste is a worldwide movement and #zerowasteph builds off of that.
#buhayzerowaste

n = 228
Buhay Zero Waste is a proactive Filipino community trying to reduce the amount of plastic waste they produce in their day-to-day lives. This group originated from Facebook and has started gaining a growth of popularity on Instagram. The hashtag is encouraged to be used on content that promotes zero-waste life in the Filipino setting. Buhay translates to life. The phrase means “Zero Waste Life”
#cleanseapilipinas

n = 92
The hashtag #cleanseapilipinas is derived from an existing environmental organization called Clean Seas Pilipinas. Their goal is to end all use of plastics (including single-use plastics) and encourage the citizens of the Philippines to refuse plastic and instead reuse while creating an equitable economy for all. This group has many members and a wide reach. This hashtag gets used by their members to unite the posts.
#savephseas

n = 37
The hashtag #savephseas is an extension from an established environmental conservation organization called Save Philippine Seas. Their main intention is to create mobilizing citizen-led initiatives that empower Filipinos towards collective action and behavior change. They organize coastal cleanups with companies/institutions committed to sustainability strategies.
#plasticfreebohol

n = 30
The hashtag #plasticfreebohol is an extension from an existing community organization that is encouraging the movement against plastic pollution in Bohol, Philippines. They team up with other companies and help organize volunteer cleanups of the Philippines’ waters. It’s an open group where anyone can join at any point to begin their zero-waste journey.
Method II

Posts with location-specific hashtags

n = 750
Summary

Again, we were limited by the social listening tool so we created this filter with only location-specific hashtags. These hashtags were popular cities in the Philippines where we have seen social media activity before as well as general Philippines words. Some examples from the filter include, #philippines, #ph, #manila, #cebu, #davao, #bohol, etc. This was to determine if there was a more general conversation happening outside of the popular plastic pollution hashtags.

We found there was very little conversation that included solely location-based hashtags. Even the posts that did include location-only hashtags often also included the popular hashtags we saw from the first filter. #philippines was our most popular and most widely used hashtag in this dataset which is unsurprising. After that, the hashtags become general again. Using location only hashtags would not be the best way to reach this audience.
## Posts found with location-specific hashtags (n=750)

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<td>#philippines</td>
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<td>#zerowaste</td>
<td>289 (52% of total posts)</td>
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<tr>
<td>#ecofriendly</td>
<td>271 (37% of total posts)</td>
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<tr>
<td>#plasticfree</td>
<td>189 (26% of total posts)</td>
</tr>
<tr>
<td>#manila</td>
<td>133 (18% of total posts)</td>
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</tbody>
</table>
#philippines

n = 583
The hashtag #philippines pretty much speaks for itself. The citizens of the Philippines want to maintain the cleanliness of their waters as well sustaining a healthy, plastic free, and eco-friendly environment. Influencers and active Instagram users also promote the act of reusing and keeping the Philippines a zero waste country.
Located in Cebu City, Philippines, this company sells low-waste lifestyle essentials for a cheap price. Products consist mostly of cosmetics that are safe for the environment as well as being made from eco-friendly materials. This is a great example of a zero waste store. This type of lifestyle is growing in popularity and the members of these groups use these hashtags to find each other.
#ecofriendly

n= 271
#ecofriendly is another wide-reaching hashtag among the cities in the Philippines that can capture many people from the environmental movements. Many people who are a part of the zero waste community also use this hashtag and check in on this hashtag. Companies and influencers who make or sell sustainable products also utilize this hashtag to find people in the sustainable community.
#plasticfree

n = 189
Again, #plasticfree is one of the hashtags people who want to live a more sustainable and eco-friendly life use and check. These existing hashtags are gateways to whole communities. People want to make this lifestyle switch and then get ideas, inspiration and support from others who are doing the same. These communities are very important in the fight against single use plastics and becoming a plastic free society.
#manila

n = 133
Manila is the capital city of the Philippines so it makes sense that #manila would garner some results. Much like all the other cities in the Philippines, Manilla also promotes a plastic free environment. Many active Instagram users and sustainable living companies in the Philippines often post reminder content to inform their followers the dangers of their non-recyclable ways. This is a growing and modernizing city in an island nation. They are very aware of their relationship to the ocean and their role to keep it clean.
Appendices
Twitter Search Monitor:

"marine debris" OR "ocean plastic" OR "ocean pollution" OR "single use plastic" OR "PET bottles" OR "PET bottle" OR "years for plastic" OR biodegradable OR @gpph OR author:@gpph OR @cleanseaspilipinas OR author:@cleanseaspilipinas OR @PlasticBankPHI OR author: @PlasticBankPHI OR #CoastalCleanupDay OR #InternationalCoastalCleanup OR #beatpollution OR #beatplasticpollution OR #breakfreefromplastic OR #breakfreefromplasticph OR "zero waste" OR #zerowaste OR #plasticfreebohol OR #plasticbattleshph OR #cleanseaspilipinas OR #savephseas OR #morefishnotplastic OR #scubasurero OR #scubasurera OR #singleuseplastics OR #DiveAgainstDebris OR #strawwarsph OR #buhayzerowaste OR #WalaUsik OR

((Ocean OR marine OR aquatic OR water OR beach OR sea OR shore OR beaches OR seas OR oceans OR gyre OR gyres OR shores OR gulf OR bay OR gulfs OR bays OR "Philippine Sea" OR archipelago) AND (Reduce OR Reuse OR recycle OR plastic OR straws OR pollution OR "waste collection" OR "waste pickers" OR "waste picker" OR "waste management" OR "plastic bags" OR "plastic bag" OR "solid waste" OR sachet OR sachets OR "bag ban" OR litter OR "single use plastic" OR "single use plastics" OR #singleuseplastics OR #singleuseplastic OR "plastic pollution" OR composting OR ecofriendly OR sustainability OR sustainable OR "plastic bottles" OR "plastic bottle" OR biodegradable OR #biodegradable OR bamboo OR #bamboo OR reusable OR #reusable OR #disposable OR disposable OR "one time" OR "one-time" OR discard OR rubbish OR recyclable OR #onetime OR #discard OR #rubbish OR #recyclable OR basura OR basurero OR basurera OR straw OR straws OR "plant based" OR "plastic pollution" OR debris OR #debris OR "marine wildlife" OR "coffee cup" OR "coffee cups" OR "plastic cutlery" OR "plastic fork" OR "plastic spoon" OR "plastic knife" OR wrapper OR "plastic container" OR bottled OR "circular economy" OR "waste to energy" OR "informal waste" OR composting OR #Banthebag OR #planetorplastic OR #plasticfree OR #CircularEconomy OR "zero plastic" OR #mainstreamrefilling))
Filters for Twitter Themes

Ocean Awareness Conversation: ("ocean plastic" OR marine OR ocean OR oceans OR sea OR "marine debris" OR "ocean plastics" OR "sea pollution" OR “marine plastic” OR “sea plastic”)

Plastic Packaging: (sachet OR sachets OR #sachets OR #sachets OR packaging OR packets OR "plastic bags" OR #plasticbag OR "sachet packet" OR "sachet packets" OR #packets OR #plasticbag OR #plasticwrap OR bottle OR bottles OR bag OR bags OR wrapper OR wrap OR packet)

Trash & Waste Conversation: (trash OR waste OR rubbish OR garbage OR "throw away" OR "trash can" OR cans OR bin OR bins OR trashed OR #trash OR #waste OR #rubbish OR #throwaway)

Reduce, Reuse, Recycle Conversation: (reduce OR reuse OR recycle OR #reduce OR #reuse OR #recycle OR recyclable OR reusable OR recyclable OR #reusable OR #reducible OR #recyclable OR "reuse this" OR "reduce this" OR "recycle this")

Single Use Plastics Conversation: ("single use plastics" OR "single use plastic" OR "single use" OR "throw away" OR "disposable plastic" OR sups OR SUPS OR "one time plastic" OR "one time")
Filters for Twitter Themes Cont.

**Climate Activist Groups:** (Greenpeace OR gpph OR activist OR "advocacy groups" OR "climate activist")

**Major Multinational Corporations:** (Nestle OR #Nestle OR Nestlé OR #Nestlé OR "Coca Cola" OR cocacola OR coke OR #coke OR #Unilever OR Unilever OR "Procter and Gamble" OR "Procter & Gamble" OR #ProcterandGamble OR #ProcterGamble OR "PT Mayora" OR PTMayora OR Colgate-Palmolive OR "Colgate Palmolive" OR #ColgatePalmolive OR "Colgate Palmolive" OR Colgate OR #Colgate OR #Palmolive OR Palmolive OR Pepsi OR PepsiCo OR #Pepsi OR #PepsiCo OR "P & G" OR #P&G)

**Sachets:** (sachet OR sachets OR #sachet OR #sachets OR "use sachet")

**Unsafe Drinking Water:** ("drinking water" OR "unsafe drinking water" OR "dirty water" OR "unclean water" OR palatable OR potable)

**Government Action:** (government OR president OR governments OR ban OR law OR bans OR laws OR regulation OR regulations OR regulate OR "government action" OR lawmakers)
Facebook Pages Analyzed


Clean Seas Philippines - https://www.facebook.com/CleanSeasGlobal/

Save Philippines Seas - https://www.facebook.com/savephilippinesseas/

Lana - https://www.facebook.com/officiallanaph/

Refuse - https://www.facebook.com/RefusePH/
Instagram Hashtag Buzz Monitors

**Philippine Specific:** #buhayzerowaste OR #cleanseaspilipinas OR #lowimpactfilipina OR #plasticfreebohol OR #savephseas OR #zerowasteph OR #plasticpollutionph OR #lowimpactfilipino

**Geographic Filter:** Philippines OR #Manila OR #Davao OR #Cebu OR #CagayandeOro OR #SanPablo OR #ph OR #pilipinas OR #bohol OR #filipina OR #quezon OR #makati OR #pasig OR #baguio

**All Hashtags Combined:** #30daystozerowaste OR #banthebag OR #beatplasticpollution OR #beatpollution OR #breakfreefromplastic or #buhayzerowaste OR #bureau OR #choosetorefuse OR #circulareconomy OR #cleanseaspilipinas OR #coastalcleanupday OR #diveagainstdebris OR #droptheballoondrop OR #gosweep OR #internationalcoastalcleanup OR #lowimpactfilipina OR #lowimpactmovement OR #lowpurchase OR #lowwaste OR #mainstreamrefilling OR #morefishlessplastic OR #morefishnotplastic OR #moreoceanlessplastic OR #netpositiva OR #planetorplastic OR #plasticbattle OR #plasticfree OR #plasticfreebohol OR #refusesingleuse OR #savephseas OR #wastewatchwednesday OR #worldwithoutwaste OR #zerowaste OR #zerowastegoals OR #zerowasteph OR #bagban
Learn more

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Appendix B

Creating Music for Transformative Change: Circularity Assessment Protocol Workshop Summary

Metro Manila Philippines (Zoom); July 15 2021

Group Topic: CAP Research Findings and Opportunities

Participants: See attached list

The SONGS (Sharing Our Narrative Grows Strength) model was introduced and used to facilitate creative explorative conversations utilizing the CAP data report. This summary outlines the process used to discuss opportunities in the CAP as well as a review of some of the transformative conversations, themes and actions resulting from participation in the workshop on this topic.

Dominant Narratives Identified: Four specific problem narrative storylines addressing barriers to opportunities were identified collectively by the workshop participants and placed into questions that explored the group member’s relationships to the problem stories. The top four barriers, or problem stories, identified by the workshop group included:

1. human behavior change,
2. societal norms within plastic/waste management,
3. economic tensions,
4. **and infrastructure limitations.**

Problem Externalized: Workshop participants divided into four focus groups to address the four specific problem/dominant narratives identified as a result of the CAP data summary. Each group mapped out identified problem stories on vision boards. These problem stories were drawn out in words, images, and symbols so all participants could ask questions, share responses, notice themes, and curiously investigate beliefs, ideas, values and hopes layered in the identified dominant narratives.

Alternative Narratives Discovered/Explored: As participants in this workshop questioned and visualized relationships to the problem stories shifting into preferred narratives; collaborative value-based themes emerged. These themes resulted from dialogue that allowed for acceptance of similarities, differences, role identities and solution opportunities. The following collaborative thematic values were identified across all 4 problem (dominant) stories explored in this workshop:

**Accessibility, accountability, inclusivity, and the development of intuitive participatory logistics over time.** These identified values are significant as they may be utilized by this community/group to formulate new questions, develop action steps, and measure committed actions toward change (as significant or not) within each dominant problem story.

For example, questions rooted in these collaborative values may include (yet are not limited to) options such as (from the dominant narrative vision board on infrastructure, when talking about managing organics in an integrated solid waste management system):

- Could landfill gas to energy/anaerobic digestion initiatives include all or any of the above named values?
- What actions within infrastructure solutions/options create movement toward the above noted collaborative values?
- Who would help make actions toward these values possible?
- What amount of time would be needed to move in the direction toward any of the above values for landfill gas to energy/anaerobic digestion solutions?
- What other voices/stakeholders would be willing to help contribute to actions or any incremental movements toward any of the above values as it pertains to solution initiatives?

Similarly thematic values based dialogue and questioning may also be applied and repeated in each dominant story domain including current or future proposed solutions/ideas. A second example demonstrating the application of developing questions for another problem story domain is as follows: “How could/would trash to cash back programs move towards the values of accessibility, accountability, inclusivity and intuitive participation?” This question example again utilizes the group’s identified
collective thematic values to explore the alternative narratives around changing human behavior as it relates to waste management within the category of use and reuse.

The opportunities outlined in the final report to USAID have been edited with these narrative themes in mind.

Preferred Narrative Actions/Commitments:

The preferred narratives will continue developing beyond participation in this workshop if ongoing transformative questioning and listening opportunities are made possible within diverse perspectives. At the close of this workshop, the participants were proposed with the following questions of commitment in fostering participation towards transformative change together.

★ Do you want to work with one another going forward?
★ What, when, where and how would you be willing to commit to working together?
★ What role identities or restrictions may limit you from transformative questioning and listening to one another?
★ With whom would you be willing to share your preferred visions, stories, hopes, ideas and actions?

Every participant in this workshop replied “yes” to creating change and named the importance of the CAP data as a platform for creating **meaningful human partnerships that foster acceptance, awareness and transformative opportunities for change**.

As a final summary of this workshop experience, I would circle back to the song that identifies your personal waste management journey. As you listen to this tune, consider reflecting on the values of accessibility, accountability, inclusivity, and intuitive participation in your own stories. This is where new transformative songs of change begin; within each of us!

**Addendum:** sharing the small group vision (jam) boards with workshop participants as an attachment to this document will be beneficial for ongoing group work opportunities.

One suggestion in expanding future group work opportunities for this project would be to **intentionally invite/include wide generational participants in solution centered work together.** Intergenerational work on this issue has been shown to have co-benefits towards reaching solutions (Hartley et al., 2021).
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Work with domestic manufacturers to redesign product delivery, packaging, promote reused schemes/bulk sales, responsible collection, increase the local market for capture and recycling of materials esp. multilayer film products.

COMMUNITY
There is mixed feedback on regulations including bans and fees, but a growing acknowledgement of the issue. Delineate roles for NGO and Govt sectors for engagement of public.

PRODUCT DESIGN
Common packaged items in stores is primarily multi-layer film packaging, restaurants is PP. Pushes for all materials have occurred, but could be further expanded.

USE
The majority of product packaging from dining establishments and stores came in single-use plastic packaging and in multi-layer film. Use increased due to COVID-19. Regulations could be addressed to allow more bulk stores / reuse beyond household products.

COLLECTION
Expand waste collection and segregation at source. Audience-segmented, gender-based programs and behavior change campaigns could be developed. Implementing organizations must consider how programs and proposed actions and behavior changes affect different target groups, as these have different impacts on women, children, and disadvantaged groups. Applying a gender and human rights lens to programs and policies is necessary to mitigate negative outcomes.

END OF CYCLE
Explore what LGU resources are needed to further develop MRFs
- Expand waste segregation at source
- Develop more infrastructure, make sure if landfills used, they are designed.

LEAKAGE
Addressing upstream some of the top littered items (food plastic and tobacco items) with additional policies and public campaigns.

---

**Behavior Change**

- **Problems that show up:**
  - Media Influence: clickbait
  - Increase the awareness of the community
  - Recycling and segregation awareness

- **Community practice of the 3Rs --> collective behavior change**

**Convenience & Societal Norms**

- **How we use things:**
  - Dosage control for home and personal care products (how much people actually use - demonstration is excessive)
  - Food safety
  - Convenience

**Product Design**

- **Convenience**

**Infrastructures**

- **Waste Collection Efficiency**
  - SPACE in Metro Manila for waste management facilities

- **Facilities proximity to communities.**

**Economics**

- **Increased dependency on e-commerce**
  - Understanding the value chain and roles of the informal waste sectors

- **Upfront costs for transition to circular economy**

---
Quadrant 3 Notes (Katy)

Many wanted the 'problems' to change. Or at least aspects of them.

More Gov't oversight and involvement so it's not on 'people'.

Themes emerged in multiple 'problems'.

Stakeholders; intuitiveness, everyone wants change!

Is there a desire to work together as a team and collaborate across industries to create change?

What are our actions? How to we create change/preferred narrative?

We are not here to solve problems but LIVE them!
What is your relationship to behavior change?

Perception and behavior of community members - you cannot pursue objectives if that isn't aligned.

Greatest challenge for city is discipline of community in using plastic, getting them to transition to reusable instead of single-use.

How do you combat the indifference of people? How do you get them to care and understand why they should change?

“This affects the oceans, but I live in the mountains. Do I not have responsibility?“

BARRIER: single-use plastic is cheaper

BARRIER: convenience of single-use

BARRIER: people don't make the connection that the environment is harmed by single-use plastic

BARRIER: community members don't see their role in managing waste
Do you want **BEHAVIOR CHANGE / AWARENESS** to change **YES.**

- Perception of the community and their role in waste management
- People to have more compassion with others, thinking not only of themselves
- Segregation at source - people need to know to do it, and also HOW to do it
- Breaking the norms! People are used to using plastic, its automatic
- Have to widen the circle of awareness of people
- This is a luxury, for some!
- BUT very hard to do!
- More information should be available to the community

DIG Example: realizing later on in a project how many parts of the system could be more connected and effective
How do you visualize this story changing?

People effectively segregating waste at the household level

Needs to be intuitive!

Emelita Aguilalado in chat: Need to incentivize segregation at source. Our company has a Trash to Cashback Program

But this is also difficult - it shouldn't be so centralized - economics isn't allowing for this

There isn't a glass recycler available anywhere!

Accessibility to recycling infrastructure
What is your relationship to ____________?

**INFRASTRUCTURE**

**Jenna:** technical background in solid waste infrastructure

**Jonathan:** 1/2 of area have materials recovery facility. In communities, there are junk shops and informal workers. Part of environmental protection sector of government

**Dave:** part of sector that demands infrastructure from government. Part of non-profit

**Henri:** part of solid waste management collection, solid waste bins, collection, and treatment. Has a role in consulting
Do you want Infrastructure to change?

Yes: 3
No: 0
How do you visualize this story changing? (Infrastructure)

Human-centered and functional MRFs with dedicated management and logistics

Intuitive

Key for categories like >50% organics and 20% plastics/paper/etc that will contaminate each other if not segregated. For infrastructure that means separate collection and effective treatment of waste.

Biogas facility captures methane gas from former sanitary landfill. Landfill gas to energy.
What is your relationship to societal norms around plastic or waste management/circular economy?

**Drop off stations to collect plastic waste in community**

**Creating a new activity for trash to nature program to encourage people to drop off compostable waste & used cooking oil**

**People want accessible areas where they can drop off their waste**

**Systems approach - various stakeholders need to take accountability and action**

**Currently have one drop off location and more communities want to participate**

**Awareness + action**

**We have a lot of solutions, and we don’t know all of the solutions out there, so we don’t know which solutions should align to the current policies we already have.**

**Solutions are very scattered.**

**People don’t have concept that waste can be reduced, recycled, upcycled.**

**Focus on “throw away” rather than reduction**

**Government wants to build landfills and use WTE - this will not solve the problem. This will still have the concept of “throw away” so it doesn’t solve problem.**

**Waste = to be disposed**

**We need more awareness of government officials**

**People need to be aware of why it is important to manage waste and the circular economy**

**Concerned with awareness building not only of community but also of those in power, those in government**

**Some of the government programs are lip-service to cover up problems and do not attack the main problem**
Do you want the societal norms to change?

Part of the problem = can take steps to solving the problem

Need for stakeholders to take accountability.

Individuals need to know and learn how we contribute to the problem.

Are we making waste problems worse or are we working towards contributing towards solutions.

Same is true for industry, production, consumption, and disposal.

Yes!

Systems approach requires behavioral change.
How do you visualize this story changing?

**EPR**
- Need to make extended producer responsibility more concrete.
- EPR for manufacturer, distributor, and clients.

**Trash to nature.**
- Emphasize responsibility that we all have.
- Collaborative effort of different entities.

**Bioplastics.**

**Inclusivity**
- Informal workers, other stakeholders should be involved, not just government.
- Participatory approach to waste governance.

Also need to put accountability of other stakeholders. Strict implementation of existing policy.
What is your relationship to Economics?

Startup
Company: partnering with tech company, giving way to incentivize

Local bakery: what containers to use and impact on small business.

Business means and sustainable at the same time.

Attention of opposites!

Do you want societal norms to change?

People might not want to pay for certain things like plastics that are more expensive.

People are sensitive to price/cost.

Remove idea of incentivization why is this necessary?

Rule of Government? Contracted for waste management?

How to do you see this relationship changing?

Natural market correction as more people get involved.

How to convince people to make changes?

Will eventually get there/d/e-commerce and competition.
Do you want **Economics** to change?

Government to take a better role in it all.

Economics behind waste collections.

Lower margins, taxes breaks, other incentives for companies.

'Butting' in and supporting industries to make changes.

Economics as secondary; government needs to support manufacturing, and R&D.

Supply and demand: needs to change.

Need to interact with population more; needs to change.

Globally, big economic difference with affording environmentally friendly alternatives.

Needs to change: blaming individuals rather than corporations.
How do you visualize this story changing?

Economics!

- Needing to close the gap between stakeholders to bring other to the table and change the narrative.
- More people 'like us' in the industry and involved in the process.
- Governmental oversight and involvement in concern over waste removal.
- Shift to eco-friendly products or materials over time.
- More community involvement and more organization in the industry. Can be siloed at times.
- Provide space for other stakeholders to 'chip in'.
- Having more coordinated lobbying efforts.
What is your relationship to water?

- Relationship with water has been interrupted.
- Learned of case with water/marine water; upset emotions.
- Working as marine conservationist for 10 years.

Source of life.
Marine water
Life's work
Growing up: exposure to issues with water.