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# STOPPING OCEAN PLASTIC POLLUTION FROM CITIES:

## A USAID CASE STUDY OF PARAÑAQUE CITY, PHILIPPINES

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Ocean plastic pollution has reached crisis level: every minute, more than an entire garbage truck of plastic makes its way into the world's oceans—roughly 11 million tons annually. While plastic waste presents an immediate threat to marine wildlife and ecosystems, this global challenge also has implications for major industries such as fishing and tourism, impacting the livelihoods of millions of people. The drivers and impacts of ocean plastic pollution also contribute to global challenges in food security, human health, and climate change.

Most ocean plastic debris comes from rapidly growing cities and towns along rivers and coastal areas where reliance on single-use plastics and flexible plastic packaging produces high volumes of waste that are not easily recycled, or even recovered. The problem is then compounded by waste management systems, infrastructure, and governments that struggle to keep pace with the ever-increasing amount of waste. Waste management is typically the responsibility of cities and other local governments, which are often under-resourced and have limited capacity to address the magnitude of the ocean plastic pollution issue.

Given these realities, the most effective way to curb the flow of plastics into the ocean is to stop it at the source: on land. Focusing on regions and countries that contribute most significantly to this global challenge, USAID builds the capacity of local governments to promote the 3Rs—reduce, reuse, and recycle—while better monitoring and managing their solid waste. USAID also improves collaboration among the local actors responsible for waste management and recycling. To improve the livelihoods of the millions of people that are involved in the waste management sector, USAID supports training for independent waste collectors, connects them to strengthened recycling markets, and engages community-based organizations, women's organizations, schools, and small businesses who are instrumental in creating behavior change.

## **I. THE BUILDING BLOCKS OF A CIRCULAR ECONOMY: A LOCAL SYSTEMS APPROACH TO REDUCING OCEAN PLASTIC POLLUTION**

USAID has gained valuable insights from five years of tackling plastic pollution in low- and middle-income countries. USAID's first dedicated ocean plastics reduction effort, the [Municipal Waste Recycling Program \(MWRP\)](#), was implemented from 2016 to 2021. MWRP provided 30 small grants collectively worth \$5.5 million and technical assistance to local organizations for promising solid waste management (SWM) and recycling activities. In 2019, USAID launched [Clean Cities, Blue Ocean \(CCBO\)](#), the Agency's global flagship program to respond to the crisis of ocean plastic pollution. With a primary focus of building capacity in 25 cities in seven focal countries across Asia, Latin America, and the Caribbean, CCBO also supports national-level counterparts to advance national action plans, strengthen policy, and institutionalize best practices for national implementation, and has a \$10 million grants program that awards small grants to test and scale solutions at the local level.

Through the lessons learned during MWRP and CCBO, as well as USAID's global expertise in local government capacity strengthening and natural resource governance, the Agency developed a set of five building blocks that, together, create the foundation for preventing plastic pollution. USAID partners with national and local governments, civil society organizations, and the private sector to establish these building blocks using context-specific mechanisms and tools.



## **DATA-DRIVEN POLICY AND INSTITUTIONAL ENVIRONMENTS THAT ENABLE A CIRCULAR ECONOMY**

Progress towards a more circular economy requires evidence-based national policies and regulations, an integrated and coherent policy framework across national and local levels, and stakeholder input in the policy formulation process. Examples of policies to support a more circular economy include strengthening waste collection, creating recycling and labeling standards, introducing recycled content mandates, regulating and/or phasing out single-use plastics (SUP), or introducing Extended Producer Responsibility (EPR), in which producers help fund and manage the collection and recycling of their plastic products.



## **INCREASED INFRASTRUCTURE INVESTMENT AND IMPROVED SOLID WASTE SERVICES**

Efficient systems for collecting, aggregating, and sorting solid waste are a prerequisite for maximizing investment in recycling facilities and sanitary landfills. A local government that has a comprehensive, data-based SWM plan, good quality financial management, local regulations that are enforced, well-trained staff, and strong connections to the community has the basis for increasing coverage and improving SWM service delivery as well as attracting external investment. The local government should commit to increasing its own revenues (e.g., through taxes or fees) to support the system's operations and maintenance and look for synergies to decrease expenditures, including through collaboration with neighboring jurisdictions.



## **DEVELOPED MARKETS FOR LOCALLY VIABLE INNOVATIONS AND TECHNOLOGIES**

Robust, local markets for recycled materials support and strengthen SWM systems in developing countries. Growing markets require both clean, consistent feedstocks and secondary processors and manufacturers that are able to purchase and use these feedstocks. Hard-to-recycle materials like multi-layer and flexible plastic packaging need solutions that can be scaled appropriately on a local level, whether through alternative products or new processing technologies. Low labor costs can present opportunities to accelerate workforce and market development, especially for innovative and low-tech solutions, but must empower the most vulnerable segments of the population to be truly sustainable.



## **WIDESPREAD AND SUSTAINED BEHAVIOR CHANGE BY INCREASING RECYCLING AND REDUCING DEMAND FOR SINGLE-USE PLASTICS**

Sustained social and behavior change (SBC) is at the core of increasing the quality and volume of materials collected for recycling and reducing the demand for single-use plastics (SUP). The effectiveness of awareness raising, education and outreach activities is dependent on a deep understanding of people's attitudes, priorities, and current behavior toward SWM and the 3Rs and what they are willing to do to change this behavior, not just one time, but on a regular basis. Any strategies for SBC must also take into account the capacity of the current SWM system, including appropriate infrastructure such as bins, collection trucks for different streams of waste, and policy regulations and incentives that reinforce the desired behavior. Youth trained in social/environmental activism can be powerful agents of change in catalyzing SBC and, especially in countries with a youth bulge, they will make or break grassroots movements and legislation efficacy.



## **AN INCLUSIVE AND EQUITABLE SYSTEM THAT INTEGRATES ALL MEMBERS ALONG THE SOLID WASTE MANAGEMENT VALUE CHAIN**

Informal sector workers are the foundation of the waste management pyramid, dominating the waste collection, sorting and recycling stages of the SWM value chain. A city's ability to create a more circular economy around SWM is a function of increased resource efficiency and material recovery, and inclusive integration of informal waste collectors (IWC), including minority groups and women. Examples of approaches to increase recovery and recycling rates with equity and empowerment include improving the welfare of IWCs by supporting safe working conditions, improving livelihoods through livable wages, and supporting women-owned recycling businesses.

## 2. USAID CLEAN CITIES BLUE OCEAN IN THE PHILIPPINES

Through USAID, the United States has a robust foreign assistance portfolio in the Philippines, providing more than \$5.1 billion (Php 247.5 billion) in support to the country since 1961. USAID's assistance to the Philippines includes a wide range of issue and sector areas, including developing infrastructure, providing training and technical assistance, increasing agricultural productivity and economic growth, promoting sustainable environmental management, improving health and nutrition, and fostering democracy and decentralization.

After the Philippines' decentralization process took off in the early 1990s, USAID programs have been designed to reinforce government decentralization through extensive capacity strengthening not only for the country's 146 cities and 1,488 municipalities, but also for the country's 42,036 barangays—the lowest level of local government, and responsible for solid waste collection. The complexity of the local government system presents a challenge for coordinating and implementing national policies. However, decentralization is the most effective and appropriate governance form for an archipelagic country with more than 7,000 islands.

The Philippines generates 2.7 million tons of plastic waste annually, of which 750,000 tons leak into the marine environment each year. The severity of the ocean plastics challenge in the Philippines led the country to be selected as a focal country for USAID's Municipal Waste Recycling Program, followed by the Clean Cities, Blue Ocean program. Over its five-year program in the Philippines, MWRP awarded 10 grants for locally-led solutions, and CCBO has awarded 6 grants to local organizations in its first two years. CCBO's approximately \$2.5 million grants program in the Philippines continues to expand.

One of the MWRP grants funded research that provided the first-ever, rigorous community-level data on plastic usage and management in Metro Manila. The research field work, conducted by local NGO Save Philippine Seas, utilized the Circularity Assessment Protocol (CAP), which was developed by researchers from the University of Georgia who provided guidance to the research process. 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 populations.

One of the key findings of the Metro Manila CAP research is that the majority of product packaging from dining establishments and stores comes in single-use plastic packaging and multi-layer film, with marked increases in single-use plastic packaging due to policies and behaviors related to COVID-19. Although waste collection levels are high in Metro Manila, compliance to the city's "no segregation, no collection" provision under national law remains low, thus increasing the risk of contaminating recyclables.

Another key finding from the research team's use of the Marine Debris Tracker<sup>1</sup> was that most plastic waste items identified through the app were food plastics and tobacco products. These items have low to no value for collection and recycling, suggesting that the adoption of new policies such as extended producer responsibility are necessary

to incentivize better businesses and household SWM outcomes.<sup>2</sup>

Under Clean Cities, Blue Ocean, USAID continues to provide assistance to Metro Manila, including by conducting waste analysis characterization surveys (WACS) to inform the new 10-year solid waste management plan for the Metro Manila Development Authority.

The cities of Puerto Princesa, Iloilo, and three cities of Metro Manila<sup>3</sup> (Manila, Parañaque, and Pasig) were selected as “engagement site” partners for CCBO’s work in the Philippines. CCBO’s selection of Parañaque was driven by programming opportunities identified through one of CCBO’s grantees—Communities Organized for Resource Allocation (CORA)—that had a long history of engagement and an existing network in Parañaque. See 4.4 for more information about CORA’s grant and activities in Parañaque.



**Large Map:** Parañaque City & Metro Manila with their respective population sizes.

**Small Map:** The Philippines, indicating the capital area, Metro Manila.

### 3. MARINE PLASTIC POLLUTION CHALLENGES IN PARAÑAQUE, PHILIPPINES

Rapid urbanization is often accompanied by increased rates of waste generation, especially plastic waste. According to the Philippines Statistical Authority, the country went from being a majority rural population to a majority urban population between 2010 and 2015. The largest urban area by far with 14 million inhabitants is the megacity of Metro Manila that borders Manila Bay. The Metro Manila Development Authority estimates that Metro Manila generates about 25% of waste in the entire country, with a high reliance on flexible plastic packaging.<sup>4</sup> According to a recent World Bank study, “heavy, low-value and hard-to-recycle flexible packaging represents 61% of the plastic packaging units entering the Philippine market...[partially explaining the]...market failure for plastics recycling leading to a plastic material value loss of USD 790-890 million per year.”<sup>5</sup>

The City of Parañaque is located in the southern region of the Metro Manila area, placing it squarely within the epicenter of the country’s plastic waste challenge. Parañaque is the fourth largest city in the area, with a total population of about 700,000 across eight barangays. Following several years of rapid population growth, the city is facing high volumes of waste generation, which is increasing pressures on the city’s hauling and disposal services. Informal settlements along rivers, waterways and creeks also contribute to the flow of plastic waste into the surrounding environment.

Parañaque borders two important marine ecosystem areas facing direct impacts of Metro Manila’s plastic waste challenge:

- **Las Piñas- Parañaque Critical Habitat:** The Las Piñas-Parañaque Critical Habitat, also known as the Las Piñas- Parañaque Wetland Park, is a protected area just off the coast of Parañaque and neighboring city Las Piñas. The area is a designated Ramsar Site, and home to mangroves as well as high levels of biodiversity. CCBO grantee CORA has been active in leading coastal clean ups and other environmental protection programs in the habitat area since 2018.
- **Manila Bay:** Manila Bay, a natural harbor bordering the entire length of the Metro Manila region, has high historical, cultural, and economic value to the Philippines. It currently serves as a major hub for shipping and commercial activities, contributing over 50% of the country’s GDP. Due to lack of policy enforcement or monitoring, these activities have led to high levels of pollution accumulation in Manila Bay; at present, the water is considered unfit for human contact. Rehabilitating the bay is a key priority for the Philippine government. In January 2019, the Department of Environment and Natural Resources (DENR) officially launched the ‘Battle for Manila Bay,’ a mass effort to clean up and protect the area.

## 4. HOW USAID IS WORKING TOWARD THE BUILDING BLOCKS IN PARAÑAQUE CITY

While CCBO activities in Parañaque are still underway, there are already several important developments and accomplishments demonstrating how USAID uses its building blocks to inform a tailored, locally led approach to reducing ocean plastic pollution. Highlights include:

- CCBO Pre-Work and Baseline Assessments
- Local government collaboration and the Solid Waste Management Capacity Index for Local Governments (SCIL)
- Women in Waste Economic Empowerment Program (WWEE)
- A Women-Driven Circular Center
- Optimizing the Parañaque Materials Recovery Facility (MRF) and identifying right-sized solutions

## 4.1 CCBO PRE-WORK AND BASELINE ASSESSMENTS

Before launching any activities, CCBO engaged in several months of pre-work to ensure that activities would further SWM goals and priorities broadly in the Philippines, as well as in Parañaque specifically.

- **Initial SWM Assessment (June 2020):** This report assessed the current status of SWM in the country, including an analysis of Republic Act No. 9003 (Ecological Solid Waste Management Act of 2000) and its local applications. Although the RA 9003 and its amendments created the necessary institutional mechanisms and incentives to develop sound systems, there has been a significant lag in local governments achieving the law's stipulations such as the closure of all dumps, establishment of sanitary landfills, and SWM plans for every city and municipality. The assessment also did a 'deep dive' on SWM governance, waste generation, collection, and recycling in Parañaque and each of the program's core engagement sites.
- **3R/SWM and Marine Debris Reduction Strategy Alignment Assessment (December 2020, February 2021):** Produced by the Jambeck Research Group (University of Georgia), this assessment presented an analysis of how well CCBO's proposed activities and objectives align with the Philippines' National Plan of Action for Marine Litter (NPOA-ML, then in draft) to inform CCBO's approach and provide recommendations for increased impact. The assessment found that in general, CCBO's proposed activities in Parañaque and other Philippine engage sites have strong alignment with the draft NPOA-ML and other national SWM goals and programs, especially in enhancing solid waste management and reduce, reuse, recycle (3R) practices, building SBC through educational and community efforts, and establishing effective policy with sustainable implementation.
- **Review and Analysis of Engagement Site Solid Waste Management Plan:** CCBO identified existing Solid Waste Management Plans in each of its engagement sites, including Parañaque, to identify local gaps, opportunities, and begin to incorporate local SWM priorities into its work planning.



*Informal settlements along rivers, waterways and creeks in Parañaque City contribute to the flow of plastic waste into the surrounding environment. Credit: Clean Cities, Blue Ocean*

## 4.2 LOCAL GOVERNMENT COLLABORATION AND THE SOLID WASTE MANAGEMENT CAPACITY INDEX FOR LOCAL GOVERNMENTS (SCIL)

In the Philippines and most other countries, local governments have the important role of creating and implementing 3R/SWM systems as a critical service for citizens. However, many local governments do not have the institutional capacity (skills, resources, knowledge and ability) to successfully plan, build and operate these systems. In addition, local governments often do not know what capacity is needed to undertake and sustain 3R/SWM systems that will be efficient, effective and equitable.

CCBO developed the Solid waste Capacity Index for Local Governments (SCIL) to provide a distilled, yet comprehensive approach to assessing capacity that cities and other local governments need to have in place to create and sustain an economically and environmentally sound 3R/SWM system. Developed based on CCBO's observations, experience, and research on best practices for 3R/SWM in low- and middle-income countries around the world, SCIL is a practical self-assessment tool for local governments to identify gaps in their capacity to expand, create and/or sustain effective SWM systems.

The SCIL Assessment uses a series of yes-or-no survey questions across six components of SWM. Along with the survey questionnaire, the SCIL assessment requires cities to provide documentation that supports their survey answers. Once complete, the tool generates a capacity rating that establishes a baseline measurement of 3R/SWM capacities. Department representatives use the data to determine where to invest resources and make recommendations in a final report. The SCIL is also intended to track progress over time, as cities can repeat the assessment periodically.

### Implementing SCIL in Parañaque

USAID worked closely with Parañaque's municipal government to identify opportunities for collaboration and mutual support, culminating in a **Memorandum of Understanding (MOU)** formalizing the partnership. The MOU had broad support from both the executive and legislative branches within the municipal government, facilitating the launch of SCIL and other CCBO activities in Parañaque.

To conduct the self-assessment, Parañaque's municipal government identified and assembled a dedicated SCIL Implementation Group composed of representatives across different departments within Parañaque's municipal government. Over several weeks, the implementation group completed the survey questionnaire with hands-on support from CCBO staff, gaining new insights from seeing the many facets of the SWM systems in its entirety.

One member noted:

“ I realized that the waste reduction and waste reuse programs we are presently doing are not included in our SWM plan, and recognized the importance of including them in the updating of our plan. I realized we can do more in terms of waste reduction and reuse, and I also realized the need to include a detailed budget in our SWM plan.”

## LIST AND DESCRIPTION OF SCIL COMPONENTS

Component	Component Description	Sub-Components
Planning	This component measures whether there is a well-developed and comprehensive plan for the SWM system that meets the needs of its citizens.	<ul style="list-style-type: none"> <li>• A transparent and inclusive planning process is established</li> <li>• A comprehensive written solid waste planning document is created and approved</li> </ul>
Policy and Legal Framework	This component measures whether the local laws and policies fulfill Local Government's responsibilities in accordance with national legal requirements, strategy, and policy.	<ul style="list-style-type: none"> <li>• Local legal and policy framework enables and supports 3R/SWM practices.</li> <li>• Local 3R/SWM laws and policies are effectively monitored and enforced.</li> <li>• Local 3R/SWM practices and responsibilities are institutionalized.</li> </ul>
Financial Management	This component measures the extent to which systems are in place to administer, budget and track all 3R/SWM system expenses and revenues.	<ul style="list-style-type: none"> <li>• 3R/SWM financing and funding options have been identified and analyzed</li> <li>• 3R/SWM budgets have been established to cover costs for implementing planned 3R/SWM activities</li> <li>• The 3R/SWM budget is executed faithfully and efficiently</li> </ul>
Service Delivery	This component measures the extent to which a Local Government has the infrastructure and protocols in place to deliver to all its citizens reliable, equitable, and environmentally sound 3R/SWM services for all waste types including recyclable/reusable waste.	<ul style="list-style-type: none"> <li>• Collection services</li> <li>• Collected material processing and marketing</li> <li>• Residual waste treatment and disposal</li> <li>• Performance and evaluation</li> </ul>
Human Resources	This component measures the extent to which a local government has established effective and equitable human resources, structures and processes that are required to competently and safely deliver 3R/SWM services.	<ul style="list-style-type: none"> <li>• Staffing organization</li> <li>• Human resource administration</li> <li>• Training</li> <li>• Worker safety</li> </ul>
Community Engagement	This component measures the extent to which a local government has engaged citizens and civil society groups (including women) in the 3R/SWM planning and implementation process and incorporated their input into the design and monitoring of the system.	<ul style="list-style-type: none"> <li>• Citizens and civil society groups participate in 3R/SWM planning, oversight, and outreach</li> <li>• Effective strategies for changing 3R/SWM behaviors are implemented</li> </ul>

The next step for Parañaque's municipal government is to use the SCIL assessment results to target key areas for improvement. This could take a variety of forms including staff training, new programs to promote waste reduction, and infrastructure expansion. The government will incorporate these approaches into an update of their 10-year SWM Plan and develop a budget for implementation.

Once complete, USAID and Parañaque's municipal government will use the assessment results to co-create a Capacity Development Agenda that will target key areas for improvement and ultimately strengthen future SWM service delivery. SCIL will also provide key Parañaque's municipal government with valuable insights on policy and operational changes necessary for promoting the 3Rs and enabling a circular economy in Parañaque.



*CCBO Philippines meets with Parañaque Mayor Edwin Olivarez to sign a Memorandum of Understanding that provides a framework for their partnership. Credit: Clean Cities, Blue Ocean*

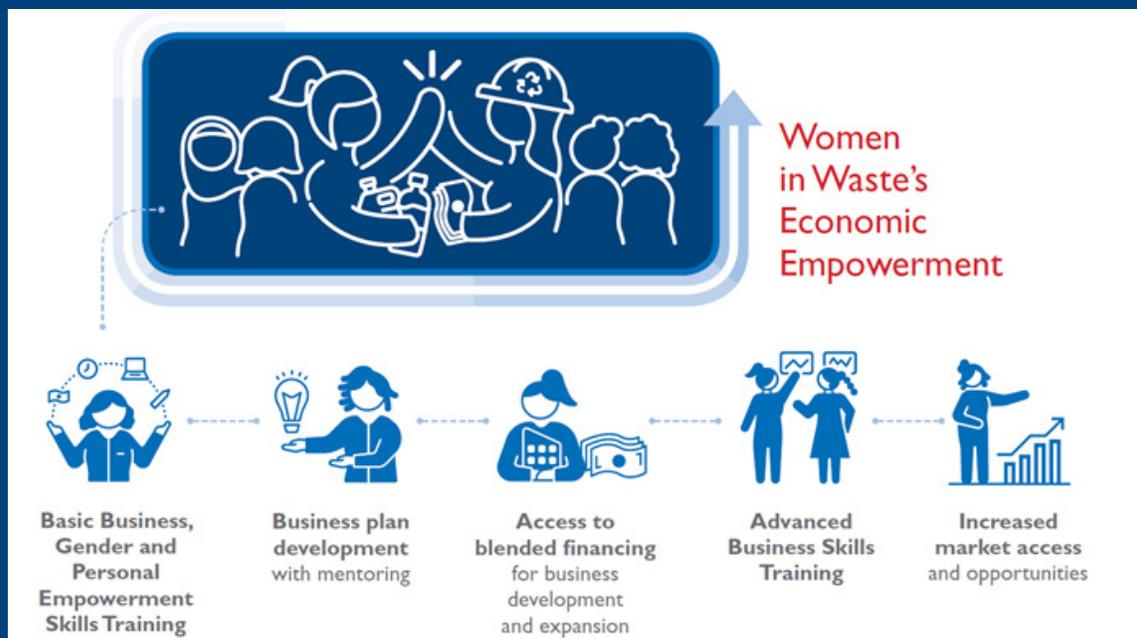
### 4.3 WOMEN IN WASTE ECONOMIC EMPOWERMENT PROGRAM (WWEE)

Women play a critical role in the waste management and recycling sectors in the Philippines, as with many other low and middle-income countries. In 2020, CCBO was awarded special funding for USAID’s Women in Waste Economic Empowerment (WWEE) activity in the Philippines and Indonesia.

There are four sequential components to the WWEE activity:

1. Basic Business Empowerment Skills Training (BBEST) (specifically for women, including leadership and negotiation skills, gender-based violence);
2. Business Plan Coaching and Evaluation;
3. Funding Support; and
4. Advanced Business Management Training and Mentorship.

A fifth component, Public and Private Sector Market Opportunities, runs throughout the lifecycle of the activity as a cross-cutting component. This is critical because in addition to leveraging funds from public and private sector market opportunities, partnership with other players in the value chain helps to create a network with the women in waste so that once they have finished their training and mentorship there is an available market for them. This fifth component is critical and cross-cutting because it closes the loop between all of the other components.



**Intentionally building inclusivity:** Women participants come from a wide range of places within the SWM value chain: although the emphasis is on informal waste collectors, the program also recruits junk shop owners, recyclers, upcycles, and those working within the industry either privately or with the municipality.

Given this wide range of backgrounds and experiences, WWEE is intentionally designed to build an inclusive atmosphere. Cohorts are organized by like/similar roles, so that training is appropriate and tailored to each group. Non-literate women can also present their business models through videos rather than a written business plan.

WWEE is also working to establish cross-learning between and within the cohorts, to equip the participants with a network that reflects the SWM value chains. This may create opportunities for partnership or employment further up the value chain.

### Partners in Advancing Women's Empowerment

- **EcoWaste Coalition** is a CCBO grantee and the main implementing partner of WWEE. EcoWaste Coalition is a public interest and advocacy network of more than 150 community, church, school, environmental and health groups. The organization works toward a Zero Waste society in the Philippines by pursuing sustainable solutions to waste, climate change and chemical issues facing the Philippines and the world. EcoWaste Coalition organizes and supports various citizens' efforts addressing waste, climate and chemical safety issues through: research and evidence building approach; information dissemination; skill shares and workshops; policy development and advocacy; and demonstration projects of ecological alternatives and strategic campaigns and alliances, locally and internationally.



*EcoWaste Coalition conducts needs assessment research with women waste collectors in Metro Manila to guide the design of a WWEE Basic Business and Empowerment Skills Training. Credit: EcoWaste Coalition*

- **Johns Hopkins University** is a subcontractor on the WWEE activity, tasked with tailoring Self-Empowerment and Equity for Change’s (SEE Change) Empowered Entrepreneur Training” to the Philippines and SWM sector to be a core piece of the activity’s BBEST curriculum. The modules foster self-awareness, empowerment, leadership, and confidence to support entrepreneurship.
- **Linis Ganda** has an MOU with WWEE to support recruitment and training. Linis Ganda is the Philippines’ largest junk shop cooperative that has experience working with Unilever through community based programs that work on 3Rs and SWM. They also seek to provide livelihoods for community collectors.
- **Rotary Club of Alabang in Madrigal Business Park** has an MOU with WWEE to support recruitment and training. The club is committed to provide participants for the training and will be sponsoring training costs for the women that they will be sending.
- **Coca Cola Foundation-Philippines** have committed to being a funding partner for WWEE. Coca-Cola will be providing funds for WWEE’s funding support to participants with winning business pitches, as well as support for virtual and in-person mentoring.

CCBO partners, EcoWaste Coalition and JHU, co-created the BBEST curriculum, running surveys and focus group discussions to tailor the BBEST training modules for the Philippines. WWEE’s target is to have 300 graduates from the BBEST program in the Philippines overall.

**WWEE in Parañaque:** The Parañaque city government reached out to eligible women to benefit from the WWEE program, identifying more than 20 women that will be part of the activity’s first learning cohorts, thus exceeding expectations. These include women working in waste, such as women who provide collection services for homeowners’ associations, city street sweepers, and others living in the city’s poorer communities.

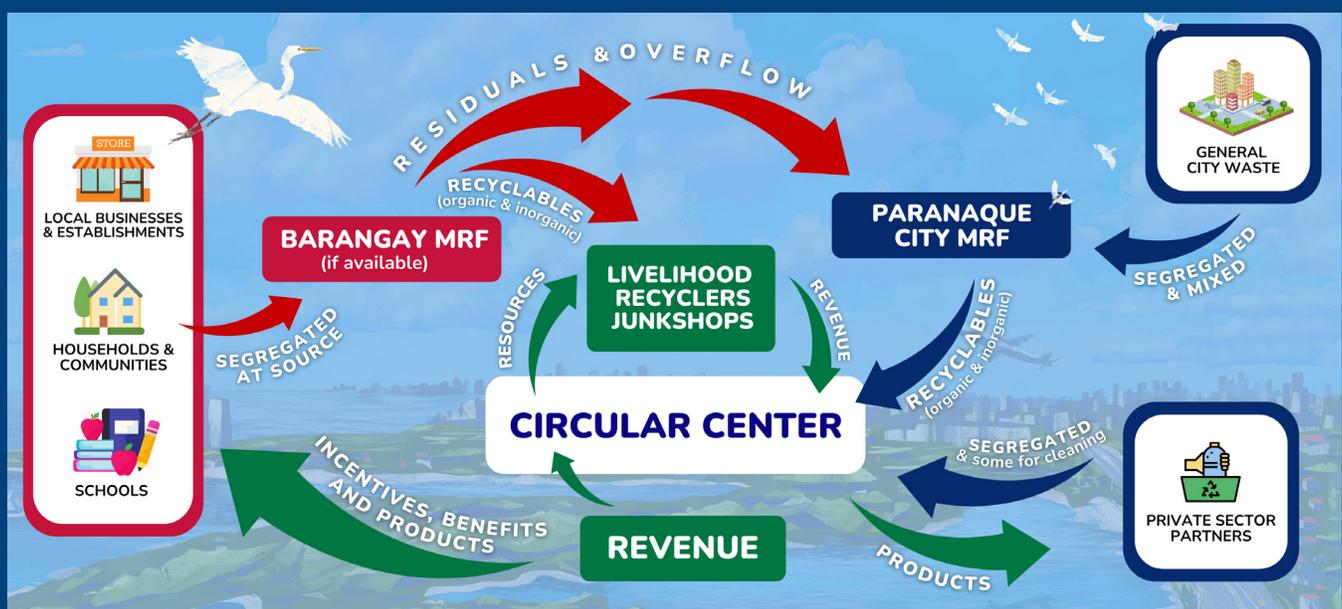
## 4.4 A WOMEN-DRIVEN CIRCULAR CENTER

Communities Organized for Resource Allocation (CORA), a non-profit organization that has been active in Parañaque since 2018, received a grant from USAID in November 2020 to establish a Circular Center, a recycling facility that will focus on processing single-use plastics collected from coastal clean up activities and from big brand warehouses in the Parañaque vicinity that were previously deemed unrecyclable. These plastics will be sold to a plastic manufacturer for upcycled products. Profits from these activities will be reinvested into the Circular Center to fund additional waste management activities such as composting, and support livelihood programs such as plastic weaving and bag making.

The Circular Center will be co-located in Parañaque's main Materials Recovery Facility (MRF). By situating the center within existing local government systems and SWM infrastructure, the Circular Center will be able to demonstrate proof of concept of an expanded MRF model that processes higher volumes of waste using a circular economy framework. Through the life of the grant, the Circular Center will operate as a separate entity and work parallel to, but in partnership with the city MRF to test approaches and document successes that may be replicated in Parañaque and other localities at the conclusion of the project.

Through CORA, the Circular Center has partnered with Sentinel Upcycling Technologies, part of the larger Sentinel Plastic Manufacturing Corporation, to facilitate product development and innovation. Through specialized technology, Sentinel will turn low value, typically non-recyclable plastics collected and processed at the Circular Center into household products such as chairs, tables, and trash cans.

Core to the Circular Center model is intentionally championing women as leaders in SWM and recycling. CORA has hired female facility workers from the coastal communities surrounding the MRF to work alongside the current



Waste flow diagram for the Circular Center. Credit: CORA

MRF personnel (9 women and 5 men). CORA has created and begun implementing a training plan to enhance the skills and efficiency of women facility workers, as well as trainings on women's rights, gender-based violence, leadership, and communication.

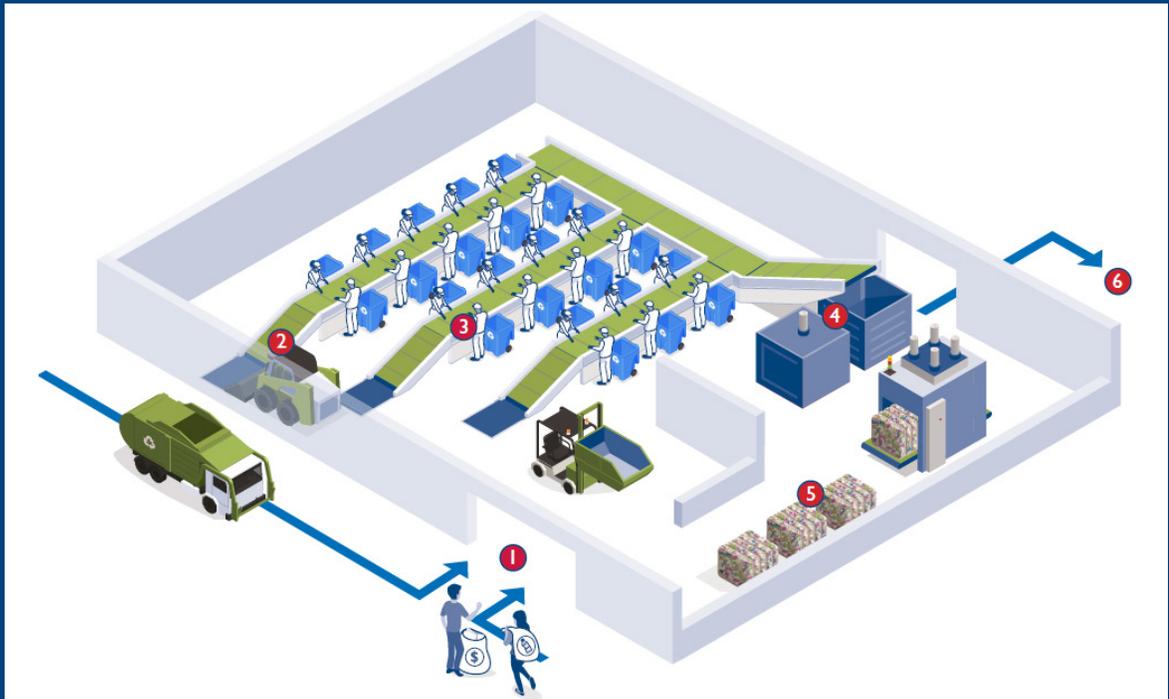
CORA will also work in close collaboration with USAID to leverage existing and emerging research on social and behavior change (SBC) to encourage sustainable 3R/SWM practices in Parañaque. SBC activities will build on CORA's existing expertise and networks in beach cleanups and educational campaigns with schools and other organizations. CORA will also work with Circular Center staff to share their SWM learnings and experiences with the broader community.

**WWEE and the CORA grant:** Circular Center staff will also participate in CCBO's WWEE trainings. CORA can play an instrumental role in bridging gaps in the value chain for the women who are participating in WWEE through a symbiotic and complementary relationship. Women participating in WWEE will benefit from CORA's partnerships and engagements broadly with other industry partners. On the other hand, WWEE will provide a second layer of skills improvement and training and an opportunity to pitch businesses for women working in the CORA's Circular Center.

## 4.5 OPTIMIZING THE PARAÑAQUE MATERIALS RECOVERY FACILITY (MRF) AND IDENTIFYING RIGHT-SIZED SOLUTIONS

Building on the Circular Center concept, USAID collaborated with Parañaque’s municipal government and CORA to further maximize Parañaque’s main MRF. With technical support from Tetra Tech Solid Waste West, USAID developed plans for new, right-sized sorting line equipment, along with design of how to best optimize the space with the new equipment. The new sorting line will build a mechanical sorting capacity of 500 tons/month, where none existed previously—and, when operating at full capacity, the facility will provide 50 to 80 new living wage jobs. The design is appropriate for many rapidly developing localities that are currently struggling to keep up with increasing waste volumes and limited local resources, providing a design template that can be used in other CCBO engagement sites. CORA will help implement the installation of the new equipment in the Circular Center.

### OPTIMIZING THE PARAÑAQUE CITY MRF DESIGN



- 1 Materials enter the facility from local collection services and informal waste collectors.
- 2 Materials enter the sorting system.
- 3 Materials are cleaned and sorted by type.
- 4 Cleaned, sorted materials are compacted; residuals are separated out of the system.
- 5 Recyclable and reusable materials are compacted and baled for efficient transportation.
- 6 Materials exit the facility for recycling and reuse.

## **5. EXPECTED IMPACTS FROM CLEAN CITIES BLUE OCEAN IN THE PHILIPPINES**

As the result of assistance provided under Clean Cities, Blue Ocean, USAID expects to see measurable progress towards establishing each of the building blocks of a circular economy in the city of Parañaque and other municipalities of the Philippines. Each building block of USAID's systems approach has affiliated indicators and targets which will support evaluation of the project's impact.



## DATA-DRIVEN POLICY AND INSTITUTIONAL ENVIRONMENTS THAT ENABLE A CIRCULAR ECONOMY

A city's solid waste management plan is the key policy document for establishing the foundation for a circular economy and the 3Rs at the local level. Following the Parañaque Municipal Government's implementation of the SCIL assessment, the city is updating its existing 10-Year Solid Waste Management Plan in three important ways:

- **Greater engagement of city stakeholders:** SWM planning will now include direct consultations with barangay representatives, homeowners' associations, business groups, MRF and junk shop operators, informal waste collectors, and contracted haulers, to ensure that their needs and opinions related to 3R/SWM are taken into consideration in the municipality's plans and programs. These consultations will deepen city stakeholders' buy-in to the city's SWM planning and implementation efforts, including waste reduction programs.
- **Improved data collection for performance monitoring of the SWM system:** The new SWM plan will include more rigorous data collection efforts aligned with the plan's objectives and stated activities. The aim of the improved monitoring and data collection is to identify gaps in service delivery, as well as highlight where activities are effective and efficient in the long term, these service delivery improvements should boost citizens' satisfaction and their willingness to pay for services, contributing to increased revenue and funds available for the 3R/SWM system.
- **Strengthened financial data and management tools:** The results of the SCIL assessment prompted recommendations that the city conduct a review of financial management controls, tracking and budget development protocols/policies for 3R/SWM services and activities in Parañaque. This review will identify how the city can increase financial efficiencies, transparency, and improve data management. In the long term, this will contribute to an improved 3R/SWM financial management approach that will provide foundational support for the SWM system and improve the city's capacity to maintain it sustainably.

The program is also working in coordination with the Philippines' national government, through the Department of Environment and Natural Resources (DENR), to advance national policy and plans that are requisite to achieve nationwide, sustainable success. Through its activities and sharing identified best practices, CCBO is supporting the Philippines' National Plan of Action for the Reduction of Marine Litter (NPoA-ML), which was adopted by DENR in late 2021 and aims for zero waste in Philippine waters by 2040. The program is also interested in supporting national policy efforts, such as those around extended producer responsibility.

### AFFILIATED INDICATORS

- Number of public policies and SWM plans that advance 3R/SWM supported by US Government assistance
  - Target for the Philippines: 16



## INCREASED INFRASTRUCTURE INVESTMENT AND IMPROVED SOLID WASTE SERVICES

In addition to support with updating city SWM plans, CCBO will also provide capacity strengthening support to city governments that will contribute to:

- **Increased understanding of current system capabilities and needs:** CCBO works directly with local governments to conduct Waste Analysis Characterization Studies (WACS) that establish a baseline study of current system capabilities and identify areas where infrastructure and waste services require attention. The WACS not only informs SWM planning, but builds the capacity of local government staff. CCBO has conducted WACS in other Metro Manila cities, such as Las Pinas, where the WACS was used to inform the World Bank-supported 25-year Metro Manila SWM Master Plan for the Metro Manila Development Authority.
- **New and expanded reduction and reuse programs:** As a result of the newly updated SWM Plan, the city plans to develop and expand waste reduction and reuse programs, which would contribute to a decrease in waste generation and an increase in waste being diverted from disposal. For example, Parañaque city enacted an ordinance regulating the use, provision, and sale of Styrofoam, plastic bags, and plastic for prepared food and beverage containers including plastic straws and Stirrers and prescribing penalties thereof.
- **Regular assessments of cost of service, and increased capacity to identify funding needs and resources:** CCBO will support the city with the implementation of a cost-of-service analysis of the 3R/SWM system. This will give the city concrete baseline costs for their current system and allow for more accurate cost estimates, which are key to maintaining and improving the system. Most importantly, baseline costs will give the city a clear target for the revenues it needs to generate, thus providing a foundation to seek additional funding options.

USAID's investments and support to optimizing the Parañaque MRF will have clear, direct impact on:

- **Increased waste diversion and recyclables sorting** in Parañaque due to the MRF's larger sorting capacity of 500/tons per month where none existed previously.

### AFFILIATED INDICATORS:

- Metric tons of plastic waste safely managed as a result of USG assistance
  - Target for Philippines: 3,480 MT
- Amount of Investment mobilized for 3R/SWM supported by USG assistance
  - Target for Philippines: \$2,700,000
- Number of entities with increased capacity to assess or address 3R/SWM
  - Target for Philippines: 40



## DEVELOPED MARKETS FOR LOCALLY VIABLE INNOVATIONS AND TECHNOLOGIES

In addition to conducting a market survey for the Parañaque MRF, CCBO is strengthening recycling markets throughout Manila and other cities of the Philippines by providing grants to local organizations. Each grant project needs to demonstrate that they are providing innovative solutions appropriate to the Philippines, in terms of potential buyers, workers, customers, and technologies involved.

- **New markets for items made from recycled plastic waste:** The items made and sold through the partnership between the Circular Center in Parañaque and Sentinel will serve as proof-of-concept for other private sector stakeholders that single-use plastics can be effectively processed and transformed into new materials.
- **Introducing innovative collection schemes:** Program grantee, the Plastic Credit Exchange (PCX), is engaging women micro-entrepreneurs who own small, home-based convenience stores in areas throughout Metro Manila to serve as community collection points for plastic waste where community members can bring and sell their plastic in exchange for cash. The “Aling Tinderas” are fully equipped with container vans, scales, and balers to condense the plastic—preparing it for PCX’s offtake partners who will recycle and transform the plastic waste. Through this innovative collection scheme, USAID-supported Aling Tinderas have aggregated over 22 metric tons of plastic and other waste as of December 2021.
- **Local circular economies, with new products from organic waste and recyclables:** Clean Cities Blue Ocean grantee, Green Antz, is creating an improved collection, segregation, sorting and recycling system in one barangay of Pasig City (Metro Manila). The project is building a community EcoHub—an integrated waste management system capable of processing organics and single use plastics to turn them into usable products. The hub is managed by a team of local facility and collection staff and will become part of the local government’s facilities at the close of the grant.

### AFFILIATED INDICATORS

- Number of innovations supported through US Government assistance
  - Target for Philippines: 9
- Number of microenterprises supported by USG assistance
  - Target for Philippines: 55
- Metric tons of material reduced or recovered and diverted from disposal as a result of USG assistance
  - Target for Philippines: 3,560 MT



## WIDESPREAD AND SUSTAINED BEHAVIOR CHANGE BY INCREASING RECYCLING AND REDUCING DEMAND FOR SINGLE-USE PLASTICS

Clean Cities Blue Ocean is working to create widespread and sustained behavior change both through its capacity building of city governments and through the work of its grantees.

Based on a recommendation from the SCIL Assessment, Parañaque City will conduct a survey to assess overall satisfaction with 3R/SWM services, as well as to better understand communities' 3R/SWM behaviors, practices and perspectives. In addition, the city must develop a communications plan as part of the SWM plan update, so that the public will understand how the 3R/SWM system will be improved and what they need to do to participate in making it successful. Together, these activities will contribute to:

- **City officials and workers having a more in depth understanding of residents' existing SWM behaviors:** This will allow the city to identify priority projects and SBC approaches that are data-driven and designed to meet people's concerns and constraints.
- **Increased public awareness of SWM system improvements and public participation:** Greater public participation in SWM will translate into better waste segregation, more regular collection schedules, and more plastics secured and diverted from waterways. For example, Paranaque City uses the slogan "You Segregate...We Collect" to promote a new initiative for a separate collection of plastic waste, including plastic sachets, from households and other waste generators.

Program grantees, like CORA, are also advancing social and behavior change objectives through broadening and deepening education of the public as well as conducting research called Trials of Improved Practices (TIPS).

- **Using social media to increase public awareness of the plastic waste crisis:** CORA has leveraged its sizable social media following and expertise in awareness raising to increase public awareness of the plastic waste crisis in the Philippines, as well as best practices to reduce plastic waste. In the long term, these campaigns contribute to general public knowledge and acceptance of 3R practices at the individual level.
- **SWM ambassadors and door-to-door education:** In communities throughout Metro Manila, program grantee Catholic Relief Services (CRS) worked with local partners to make new behaviors possible and easier to do. The group facilitated new relationships within the barangays by forming and training a group of door-to-door waste collectors, mobilizing small businesses in the area to support the waste collectors' work and launching a group of SWM ambassadors to educate local residents and businesses.
- **Trials of Improved Practices (TIPS):** CRS also conducted a form of SBC research, called Trials of Improved Practices (TIPS) to learn what alternative behaviors locals might adopt and piloted them before promoting through its ambassadors. CORA and program grantee, Project Zacchaeus—located in Puerto Princesa—have also been trained on the TIPS methodology and will carry out this research in their communities as part of their grants.

### AFFILIATED INDICATORS

- Number of households/establishments participating in 3R/SWM programs as a result US Government assistance
  - Target for Philippines: 400,000
- Number of people trained in 3R/SWM supported by US Government assistance
  - Target for Philippines: 520



## AN INCLUSIVE AND EQUITABLE SYSTEM THAT INTEGRATES ALL MEMBERS ALONG THE SOLID WASTE MANAGEMENT VALUE CHAIN

Through the program's WWEE activity, CCBO will provide training, mentoring, and financial support to over 250 women to improve their livelihoods and enable them to move up the recycling value chain.

- **Strengthened business and financial capacity for women in the recycling sector:** Women will be able to start or expand their SWM businesses and network with other women and actors in the value chain to create more market opportunities and spur business growth. The community where the women operate their businesses will also benefit through job creation and better management of solid waste. By augmenting their contributions to household income, the women will also be empowered to make decisions for the family.

Following results from the SCIL Assessment, each city will establish protocols and protections to improve care and working conditions for 3R/SWM workers. When these protocols are implemented, they will contribute to:

- **Improved protections for solid waste workers:** When employees are protected their morale and productivity improves, consequently reducing turnover. This improves the quality and efficiency of the 3R/SWM system, which increases customer satisfaction.

### AFFILIATED INDICATORS

- Number of women participating in US Government-assisted programs designed to increase access to productive economic resources (assets, credit, income or employment)
  - Target for the Philippines: 275
- Number of legal instruments drafted, proposed, or adopted to promote gender-equality or non-discrimination against women or girls at the national or sub-national level.
  - Target for the Philippines: 2

## NOTES

<sup>1</sup> The Marine Debris Tracker app is a joint initiative between the NOAA Marine Debris Program and the University of Georgia College of Engineering. The app allows individuals to contribute to data on plastic pollution through an open data collecting system. <https://debristracker.org/>

<sup>2</sup> Jenna Jambeck, Taylor Maddalene, Madison Werner, Kathryn Youngblood, Anna Oposa, Harvey Perello, Connor Keisling. “Circularity Assessment Protocol: Manila, Philippines.” Research funded by USAID Municipal Waste Recycling Program. 2021.

<sup>3</sup> Also called the National Capital Region (NCR), a region which encompasses the nation’s capital, Manila, and its surrounding metropolitan areas.

<sup>4</sup> USAID Clean Cities, Blue Ocean. Initial Solid Waste Management Assessment - Philippines. July 2020. Available online at [https://pdf.usaid.gov/pdf\\_docs/PA00XWPH.pdf](https://pdf.usaid.gov/pdf_docs/PA00XWPH.pdf)

<sup>5</sup> World Bank. “Market Study for the Philippines. Plastics Circularity and Opportunities.” 2021. Available online at <https://www.worldbank.org/en/country/philippines/publication/market-study-for-philippines-plastics-circularity-opportunities-and-barriers-report-landing-page>

<sup>6</sup> The smallest administrative government unit in the Philippines.

<sup>7</sup> Amended 10-Year Solid Waste Management Plan: City of Parañaque. October 2018.

<sup>8</sup> Manila Bay Sustainable Development Master Plan, Republic of the Philippines National Economic and Development Authority. Available online at <http://mbsdmp.com/about-us>

For more information on USAID’s approach to reducing ocean plastic pollution or CCBO activities in Parañaque City, contact: [oceanplastics@usaid.gov](mailto:oceanplastics@usaid.gov)