



USAID
FROM THE AMERICAN PEOPLE



skat Swiss Resource Centre and
_ Consultancies for Development

Solid Waste Management Value Chain in Selected Barangays of Metro Manila, Rizal and Bulacan Provinces in the Philippines



@2016 Catholic Relief Services.

This report was prepared by Skat Consulting Ltd. and financially supported by United States Agency for International Development (USAID) with additional funding from Ocean Conservancy.

The views expressed in this report do not necessarily reflect those of Ocean Conservancy or USAID.

All rights reserved. This material may not be reproduced, displayed, modified, or distributed without expressed, prior written permission of the copyright holder.

For permission, contact pqpublications@crs.org.

Dr. Sanjay K. Gupta, Skat Consulting Ltd.
St. Gallen, Switzerland

May 13, 2016



PHOTO BY JEN HARDY/CRS.

Table of Contents

1.	Introduction	2
2.	Context of SWM in the Philippines	5
3.	Republic Act 9003, or the Ecological Solid Waste Management Act of 2000	6
4.	Creating Economic Opportunities	6
5.	Supporting Barangays in Technical Inputs and Capacity	7
6.	Purpose and Objectives	15
7.	Approach to the Study	15
8.	Data Analysis	18
9.	SWM Value Chain Analysis Framework	19
10.	Institutional Framework of SWM	23
11.	Waste Pickers: Findings and Analysis	26
12.	Small Junk Shops: Findings	26
13.	Plastics Recyclers: Findings	27
14.	Identification of Value Chain Opportunities and Constraints	31
15.	Development of the SWM Value Chain for Project SUCCESS	31
16.	Strengthening the SWM Value Chain: Recommendations	31
17.	Pilot Demonstration Projects in Selected Barangays	34
18.	Awareness Raising in Target Barangays	34
19.	Support to LGU and Other Government Agencies	35
20.	Training on Value Chain and Marketability in Recyclables	36
21.	Performance Monitoring	36
22.	Development of Livelihoods Opportunities to Selected Beneficiaries	37
23.	Sustainability and Exit Plan	37
24.	Annexes	38

FIGURES

Figure 1: Waste Generation from Various Sources.....	2
Figure 2: Waste Composition in Philippines.....	3
Figure 3: SWM Flow Chart.....	3
Figure 4: Cities and Municipalities Where Project SUCCESS Barangays Are Located.....	13
Figure 5: Basic Elements of a Value Chain.....	16
Figure 6: SWM Value Chain in Metro Manila.....	16
Figure 7: Recycling Value Chain Pyramid.....	17
Figure 8: Solid Waste Value Chain.....	17
Figure 9: Waste Pickers' Reason for Selling to Junk Shop, by Percentage Reporting.....	20
Figure 10: Favor Received From Junk Shop, by Number, Percentage of Waste Pickers Responding.....	20
Figure 11: Waste Pickers' Suggestions for Enhancing Their Income.....	21
Figure 12: Waste Material and Service Value Chain.....	23
Figure 13: Organic Waste to Compost/Energy.....	29

TABLES

Table 1: Three Steps in the Value Chain Research Approach.....	8
Table 2: SWM Study Respondents.....	11
Table 3: Barangays Selected for the Study.....	12
Table 4: Institutional Stakeholders in Solid Waste Management.....	18
Table 5: Work Territories and Working Hours of Waste Pickers Interviewed (n = 24).....	19
Table 6: Amount of Plastic Collected and Indication of Social and Financial Dependence.....	19
Table 7: Collated Responses From Waste Pickers About Door-to-Door and Recyclable Collection.....	21
Table 8: General Profile of Junk Shop Enterprises Interviewed.....	23
Table 9: Collated Responses of Junk Shop Owners on Their Willingness to Engage in DTDC and MRF Operation.....	24
Table 10: Collated Summary of Constraints Among Junk Shop Owners.....	25
Table 11: Opportunities and Constraints for MRF Operation.....	27
Table 12: Buying Price and Value Addition of Recyclables.....	30

ACRONYMS

CENRO	City Environment and Natural Resources Office
CRS	Catholic Relief Services
DSAC	Diocesan Social Action Center
DTDC	Door-to-Door Collection
FGD	Focus Group Discussion
IEC	Information, Education and Communication
LGU	Local Government Unit
MEAL	Monitoring, Evaluation, Accountability and Learning
MoU	Memorandum of Understanding
MRF	Materials Recovery Facility
NGO	Nongovernmental Organization
NSWMC	National Solid Waste Management Commission
OFDA	Office of Foreign Disaster Assistance
PVC	Polyvinyl Chloride
RA 9003	Republic Act 9003k, or the Ecological Solid Waste Management Act of 2000
SUCCESS	Strengthening Urban Communities' Capacity to Endure Severe Shocks
SWM	Solid Waste Management
USAID	United States Agency for International Development



Introduction

Catholic Relief Services (CRS) Philippines is implementing Strengthening Urban Communities' Capacity to Endure Severe Shocks, or SUCCESS, a 2-year, \$5 million disaster risk reduction project in 22 barangays of Metro Manila that is funded by the United States Agency for International Development, or USAID, and the Office of Foreign Disaster Assistance, or OFDA. Project SUCCESS directly targets 64,800 poor individuals (10,800 households) in flood-prone barangays. The goal of Project SUCCESS is to make poor households more resilient to frequent flooding by improving the local capacity to address their community's risks to flooding.

To advance the key component of Project SUCCESS, the project will focus on identifying sustainable livelihoods for the urban poor as a means for reducing solid waste accumulation in barangays, thereby lowering flood risks. The project will improve the livelihood capacity of 120 vulnerable households from the target group for market-based solid waste management, or SWM. Characteristics of the primary target group will be lower income, lower education, part of the most vulnerable people within the barangay and a preference for women. The secondary target group may include SWM upstream actors, such as junk shop operators. The project will conduct a comprehensive value chain analysis of SWM chains, implement market-based solutions (e.g., conditional cash-based transfers), provide targeted skills development and implement co-investment strategies across sectors (e.g., 10 percent co-investment among beneficiaries and private sector engagement).

In March 2014, CRS conducted a preliminary rapid market assessment for Phase I of Project SUCCESS to gain a sufficient understanding of the market opportunities related to SWM. The agency conducted a follow-up assessment in 2015 to further inform the approach to be taken for SWM livelihoods in Phase II. To identify the most relevant livelihood opportunities and market entry points, both assessments included interviews with market actors (e.g., trash collectors and junk shop owners), nongovernmental organizations—or NGOs—that work in SWM and environmental science professors from local universities.¹

Minimal Economic Recovery Standards (MERS) were used as a framework for the preliminary assessment, analysis and design of proposed SWM livelihoods support. This framework considers economic and market dynamics and the selection of markets that are growing, are stable and have unmet demands, and the ability to obtain a clear understanding of input suppliers, producers, end markets and policymakers.² The proposed livelihoods development activities in this assessment for waste management value chain are based on an understanding of current systems, a possibility of profit, and validation of an enabling environment with potential returns and risks identified within the public and private sectors.

Based on the preliminary rapid assessment results and analysis using MERS, CRS has identified junk shop operation and garbage collection as the two most promising avenues for small enterprise development under Project SUCCESS. The findings from the Phase I and Phase II initial rapid assessments justify these choices to add value to service chain and waste material value chain.

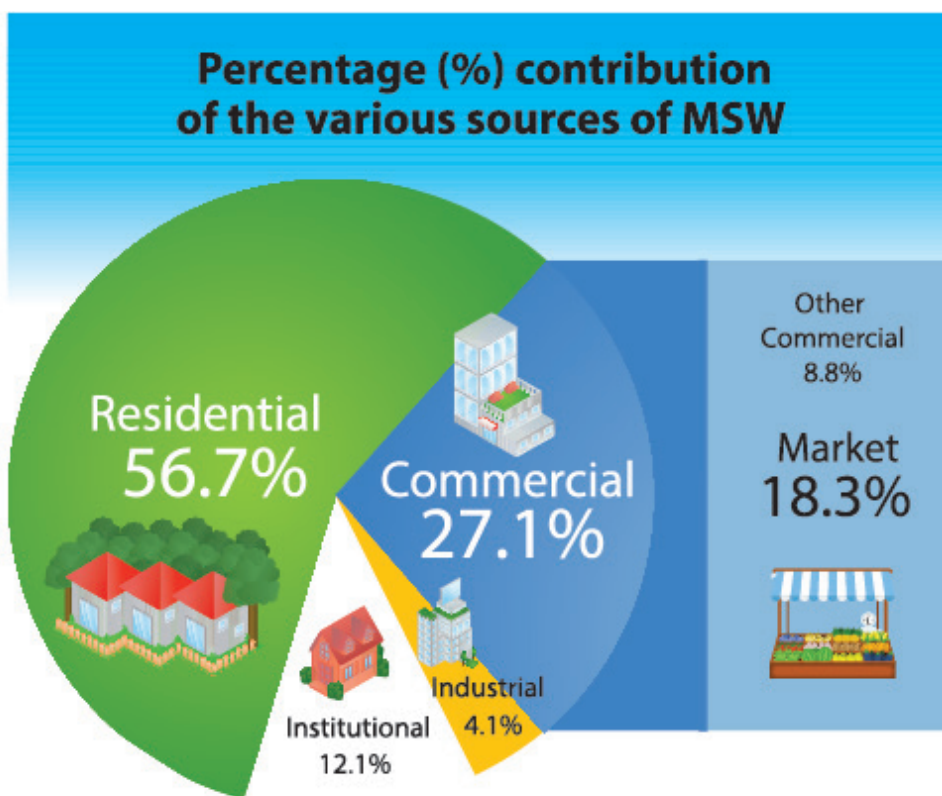
1 Market Assessment Report - SUCCESS CRS

2 Minimal Economic Recovery Standards (MERS) Handbook, Second Edition, 2010.

2. CONTEXT OF SOLID WASTE MANAGEMENT IN THE PHILIPPINES

The major source of waste generation is residential areas, which contribute to 56.7 percent of the waste (Figure 1). In urban areas, nearly one-third of waste is commercial and industrial. The composition of solid waste in the Philippines is mostly (52.3 percent) organic (Figure 2). The national survey revealed that the highest proportion of waste in most cities is organic followed by plastics (27.8 percent), paper and cardboard (8.7 percent), metals (4.2 percent), glass (2.3 percent), residuals (18 percent) and special/hazardous waste (1.9 percent).³ This proportion is highly influenced by the predominant socioeconomic strata: Organic waste content is estimated to be higher in low-income areas.⁴ The composition of recyclables is expected to be slightly higher in Metro Manila compared to the rest of the nation.

Figure 1: Waste Generation from Various Sources

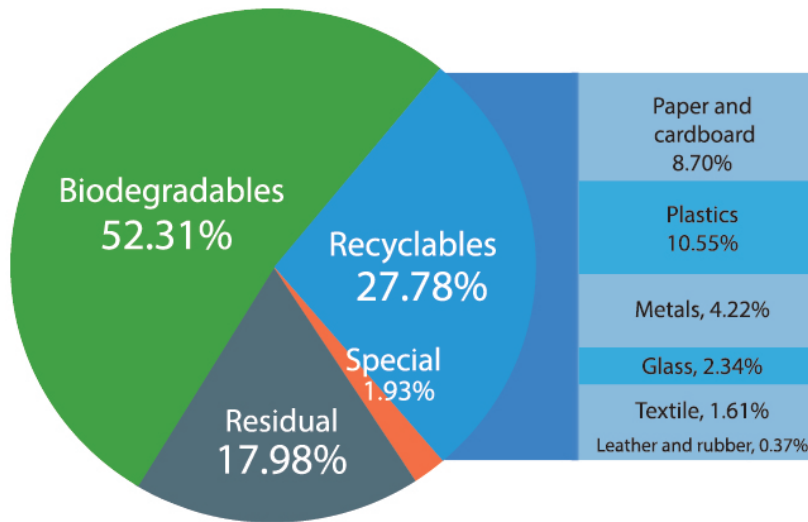


³ National Solid Waste Status Report (2008–2014), 2015.

⁴ Ibid.

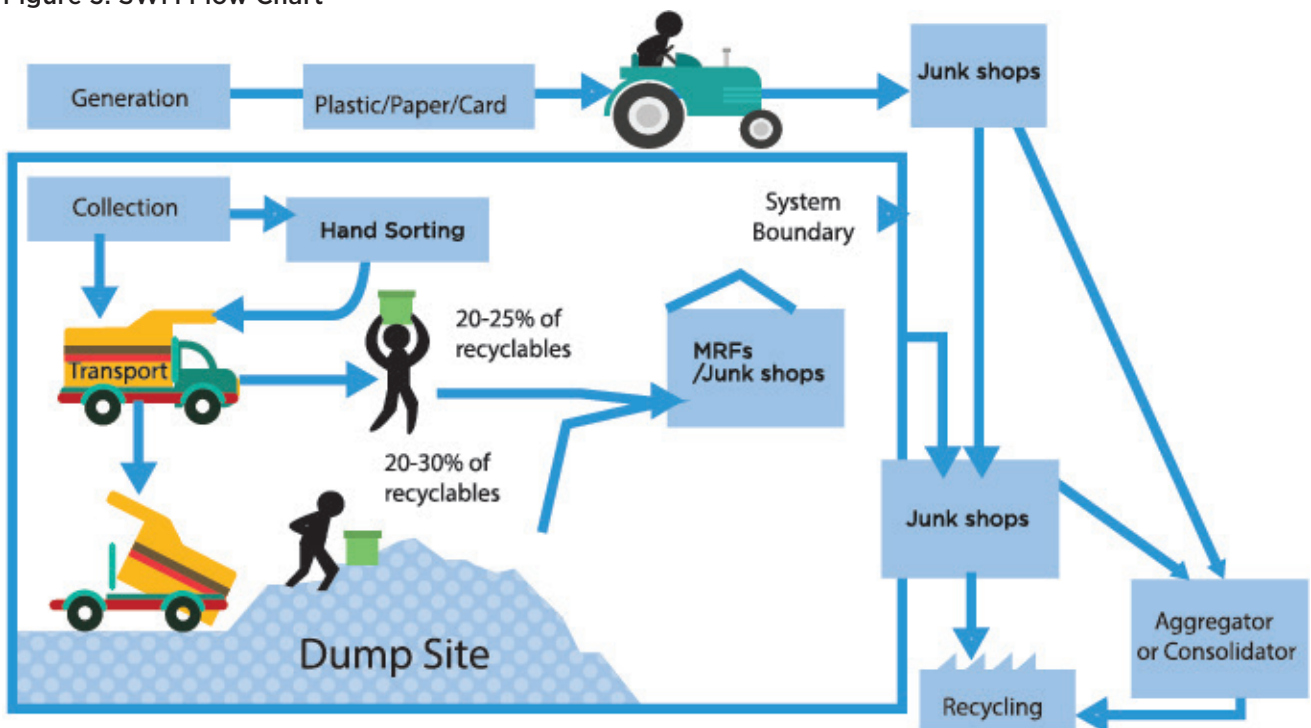
Figure 2: Waste Composition in the Philippines

Percentage (%) by weight of MSW fractions in the Philippines



The current waste management scenario is predominantly formal in terms of waste collection and transportation. The informal recycling sector, though, is more active and vibrant in its recycling recovery and processing of inorganic recyclable materials (Figure 3).

Figure 3: SWM Flow Chart





3. REPUBLIC ACT 9003, OR THE ECOLOGICAL SOLID WASTE MANAGEMENT ACT OF 2000

On January 26, 2000, the Republic Act 9003 (RA 9003), also known as the Ecological Solid Waste Management Act of 2000, was signed into law. This act provides for the necessary institutional support mechanisms and instructs local government units, or LGUs, to establish an ecological SWM program within their jurisdiction. Triggered by problems emanating from ubiquitously improper waste disposal, the Philippine Congress enacted RA 9003 to provide integrated solutions suited to the country, while simultaneously recognizing opportunities for policy enhancements through the creation of a multiagency National Solid Waste Management Commission, or NSWMC. In 2004, NSWMC released the National Solid Waste Management Framework, which emphasizes measures that encourage waste avoidance, waste reduction and recycling, as highlighted by RA 9003 provisions mandating segregation at source and diversion of at least 25 percent of solid waste from waste disposal facilities.

NSWMC encourages LGUs—particularly barangays and villages—to compost biodegradable wastes and establish materials recovery facilities, or MRFs, to improve waste resource recovery. Collection and management of residual and special wastes are delegated to the level of city and municipal LGUs. According to RA 9003, all dump sites should have been closed by 2006, leaving residual waste to be managed at sanitary landfills or integrated eco centers for final processing and safe disposal.

More than 15 years after the passage of RA 9003, enforcement and compliance with RA 9003 remain a challenge because of technical, organizational, political and financial limitations of responsible agencies and LGUs.⁵ The monitoring database of the NSWMC secretariat revealed that nearly 112 sanitary landfills are being established; however, as of June 2012, only 43 were operational. That number of individual or shared facilities available to LGUs is relatively small vis-à-vis 1,600 cities and municipalities in the Philippines. Under the act, all LGUs are mandated to establish MRFs in each barangay or cluster of barangays designed to receive, sort, process and store compostable and recyclable materials efficiently. About 8,800 out of 42,000 barangays have access to 7,700 MRFs in the country. Nevertheless, many LGUs (e.g., San Fernando, Cebu City) and private entities have done well with SWM programs—for example, segregation at source and recycling activities. San Fernando achieved a 60 percent diversion rate from landfill and dump sites primarily through composting and recycling activities.

4. CREATING ECONOMIC OPPORTUNITIES

The aim of the USAID-OFDA-funded Project SUCCESS is to help the identified barangays to create jobs for the urban poor by engaging them in SWM activities and the process of reducing flooding and pollution through improved waste management. The full potential of SWM value chain lies in the service chain and the material recovery and recycling value chain. Scarcity in marketing often has hindered this potential, particularly for compost made from household organic waste and low-value

⁵ National Solid Waste Management Commission. *Philippine National Solid Waste Management Strategy 2012-2016*.



plastics not picked up by waste pickers. The waste often ends up in waterways, such as drains and canals, and although that waste is not the sole cause of flooding, it aggravates floods. Value appreciation of the available waste products, marketplace, supply and demand, players—such as producers, sellers, buyers—and potential investors of recyclables and recycled (including compost) products oftentimes is inadequate. The waste products require 3–5 years to mature and are volatile to market risks. The full potential of creating economic opportunities from recyclable and recycled products can be realized if sustainable markets are established for all recyclables and recycled products (including compost) and incentives are available and accessible to people engaged in these businesses—mostly from the informal sector. The formal sector focuses more on services (i.e., collection, transportation), so frequently is not adequate enough to recover clean materials from the waste stream. This is where waste pickers and small junk shops, in partnership with a barangay, can improve the current services and recovery of recyclables, thus creating jobs and businesses in waste management services and recycling activities.

5. SUPPORTING BARANGAYS IN TECHNICAL INPUTS AND CAPACITY

Most barangays or LGUs do not have the means to access appropriate technologies on SWM and conduct necessary research studies for a number of reasons. More than 50 percent of municipalities in the country are classified as low-income communities and depend only on Internal Revenue Allotment shares, and thus do not have the funds.⁶ Some may have the resources but lack the capacity to organize door-to-door services and run an MRF. Others may have the capacity but have no resources. A few others have limitations on both. Moreover, some stakeholders need technical assistance and guidance in accessing suitable MRF and SWM technologies, particularly for organic waste, which often is more than 50 percent in any barangay. This is where USAID's Project SUCCESS can create a real impact by providing technical and managerial capacities and material support (i.e., MRFs) to selected barangays.

6. PURPOSE AND OBJECTIVES

The overall purpose of this project is to select and analyze up to four subsector value chains⁷ within the country's SWM sector. Ultimately, the subsector value chains should have an opportunity to reduce waste accumulation, reduce flood risk at the barangay level and employ the project's target group. The task will include investigating the context of SWM service delivery in Manila and developing a sequential list of interventions that provide employment opportunities and reduce waste. Expectations for the consultant were as follows:

- Conduct research on the solid waste sector value chain.
- Identify up to 12 subsector value chains⁸ across 3–5 SWM sectors that provide ,

⁶ Ibid., 27.

⁷ These subsector chains are detailed chains within larger sectoral chains. Examples of the larger chains include recyclables and organic waste.

⁸ For this recycling value chain, organics (e.g., compostables, feedstocks) and various plastics will be considered.

an opportunity—likely to be within the purview of biodegradables, recyclables and garbage collection fee for service—to the target group.

- Facilitate evidence-based and metric-driven selection of up to four subsector value chains for further in-depth assessment and program design. Debrief key stakeholders about the overall recommendations.
- Debrief key stakeholders about the overall recommendations.
- Produce a written report with a clear link between methods and data collection and data analysis, and a cogent set of evidence-based recommendations.

Preliminary Rapid Market Assessments

After carrying out a literature survey and initial field visits, the consultant concluded that there were not 12 subsector value chains (related to unsorted materials) in SWM. The consultant decided to focus on problematic plastic materials that currently are not picked up because of their low value and because they may end up in drains and other waterways, such as canals, thus aggravating urban flood. The consultant also decided to focus on waste collection services, an area in which jobs can be created and more low-value plastic can be picked up to reduce waste accumulation and pollution. As part of the value chain study, the consultant decided to examine the operation of MRFs, which can yield better prices for the waste pickers.

7. APPROACH TO THE STUDY

The approach to this value chain research was outlined out in three steps:

1. Perform a literature review and prepare research instruments and inception report.
2. Conduct a field survey and collect data with identified stakeholders.
3. Conduct a data analysis and write the report (see also Table 1).

Table 1: Three Steps in the Value Chain Research Approach

Step	Task	ACTIVITIES
1	Literature review, preparation of research instruments and inception report	Reviewed Philippines waste management status, including waste composition analysis; market assessment report prepared by previous consultant; workshop reports on MRF establishments; reports of barangay SWM committees; capacity building exercise report Information; education and communication, or IEC, activities report; SWM situation and profile of barangays; barangay SWM planning report; directory of buyers
2	Field survey and data collection with identified stakeholders	Conducted a field survey with the identified stakeholders and collected data; engaged in discussions with government units (i.e., NSWMC; City Environment and Natural Resources Office, or CENRO and barangay captains; and NGO partners)
3	Data analysis and report writing	Analyzed selected existing data from previous survey and current data

7.1 STAKEHOLDER IDENTIFICATION AND INTERVIEWS

The following stakeholders (i.e., players) were identified for discussions and interviews:

- CRS staff: CRS senior managers and Project SUCCESS team members
- Three categories of waste pickers: (1) street pickers, including one who picks up from street and community bins; (2) jumpers or “paleros,” who ride on the barangay waste collection vehicles and recover recyclables; and (3) eco aides, waste pickers the municipality has engaged on an honorarium and given the right to handle the recyclables, and who participate either in doorstep collection or ride on waste collection vehicles
- The study focused only on street waste pickers because they are contacted either by barangays for door-to-door collection, or DTDC, or become eco aides.
- Itinerant buyers: mobile junk buyers who do not own a specific space or shop but use a vehicle to collect waste they have purchased
- Two categories of junk or scrap dealers: small dealers trading less than 1 ton daily and big junk shops trading 1 ton or more daily
- NSWMC; municipalities, CENRO and barangay captains
- Semiprocessors and processors of plastics: manufacturers with shredding and washing machines on the manufacturing line, including plastic pelletizing machines, plastic lumber lines and plastic brick makers

- Plastic pellet product manufacturers that make the pellets from either recycled pellets or mixed recycled and virgin pellets
- CRS partners in implementation: four program officers
- Linis Ganda—which means “clean and beautiful” in the Tagalog language—an all-women NGO that has organized waste materials dealers into a junkshop association
- Philippine Plastics Industry Association
- NGOs and other waste advocacy groups, such as the Ecological Waste Coalition of the Philippines, Inc., or EcoWaste Coalition; The Global Alliance for Incinerator Alternatives, or GAIA; and Mother Earth Foundation

7.2 REVIEW OF EXISTING DATA AND RELEVANT DOCUMENTS

The consultant was provided with a set of data to be reviewed. This included:

- *National Solid Waste Management Strategy, 2012–2016*
- Barangay solid waste management planning, carried out in 2015 by EcoWaste Coalition
- Solid waste management situation and profile of barangays conducted by EcoWaste Coalition
- Information, education and communication strategies or activities in the 2016 *15 Project SUCCESS Barangays* report by EcoWaste Coalition
- Capacity building activities for Project SUCCESS from August to October 2015
- Establishment of the Barangay Solid Waste Management Committee in January 2016
- Seminar/workshop on the establishment of the MRF in January 2016
- Preliminary market assessment

These data offered an overview of the project status and ongoing activities.

7.3 DATA COLLECTION

In the current study, the consultant used a mixture of quantitative and qualitative tools and data collection methods for waste pickers and small junk shops. For other



stakeholders like big junk shops, government departments, NGO partners, barangay (officials) captains, and NGO and junk shop platforms, the consultant used only qualitative methods through structured and semistructured interviews and focus group discussions, or FGDs. The CRS Project SUCCESS staff and staff of the global hygiene and paper company, SCA, provided logistical support for interviewing water pickers and small junk shops, as well as hosting FGDs with households. See Table 2 for more information. All questionnaires appear in the Annexes.

7.4 QUANTITATIVE DATA

CRS and the Monitoring, Evaluation, Accountability and Learning, or MEAL, teams of the Diocesan Social Action Center, or DSAC, were provided with three sets of questionnaires to conduct interviews with waste pickers, junk shops and barangay captains. The questionnaires were translated into Tagalog and field-tested before final administration.

7.5 QUALITATIVE DATA

Structured questionnaires were designed to collect the qualitative data from senior officials from the NSWMC, barangay captains (i.e., elected heads) and recyclers. The consultant conducted the qualitative interviews.

7.6 FOCUS GROUP DISCUSSIONS

CRS and the DSAC Project SUCCESS team arranged one FGD with Linis Ganda, two FGDs with waste picker groups and four FGDs with households. The consultant conducted all FGDs.

7.7 SELECTION OF GEOGRAPHICAL AREA OR BARANGAYS

The barangays in which waste pickers, small junk shops and captains were interviewed are all intervention locations of CRS Project SUCCESS. The suggestion to have the sample size be the eight barangays (highlighted in Table 3) that were visited for observation and interviews was made by the Project SUCCESS team and DSAC partners, because more than one-third of the intervention areas is sufficient to generalize findings for the 22 selected project barangays (Figure 4). Out of the eight selected barangays, seven are Phase I sites and one is a newly selected Phase II site. Other criteria used to select barangays included partners' understanding of proactive

captains in barangays, familiarity with junk shops and presence of different types of waste pickers in the selected barangays—many of whom may be prospective direct beneficiaries of this project.

Table 2: SWM Study Respondents

STAKEHOLDERS	SIZE	TOOL	JUSTIFICATION
Waste pickers	24 (3 street pickers per each of the 8 barangays); 11 males and 13 females	<ul style="list-style-type: none"> Questionnaires, Discussion points for FGD 	<p>Barangays selected because of the presence of open, local dump sites and the number of potential junk shops that could be partners.</p> <p>Cooperation of barangay officials and relationships with junk shops were also crucial conditions for selection.</p> <p>The study had a target of 50% of male and 50% female respondents.</p>
Itinerant buyers	3	Same questionnaire as provided to junk or scrap dealers	Itinerant buyers are important players in the chain; they buy high-value waste from households and waste pickers, but do not own space for segregation or a junk shop.
Junk or scrap dealers	16 (12 small junk shops; 4 big junk shops)	<ul style="list-style-type: none"> Questionnaire FGD 	Minimum 1 junk shop identified in each selected barangay; 4 big junk shops interviewed (identified by the small junk shop to which they sell their waste further up in the chain).
Plastic semiprocessors and processors	2 semiprocessors and 1 semiprocessor/manufacturer	Questionnaire	Seeing the technologies used and their efficiency for recycling is important.
Barangay captains	5	Questionnaire	Captains are proactive, have a good relationship with Project SUCCESS partners; some initiatives already have been taken.
NSWMC and Municipality	1 NSWMC; 3 CENRO	Questionnaire	Necessary to understand policy and barriers of implementation.
Households	10–12 people for each (4 FGDs total)	Discussion point guidelines	<p>Needed to understand the service value chain for DTDC collection and willingness to pay for services.</p> <p>4 FGDs with 2 groups of males and 2 groups of females in 4 chosen barangays.</p>

Table 3: Barangays Selected for the Study

Highlighting signifies the barangays selected as the sample size.

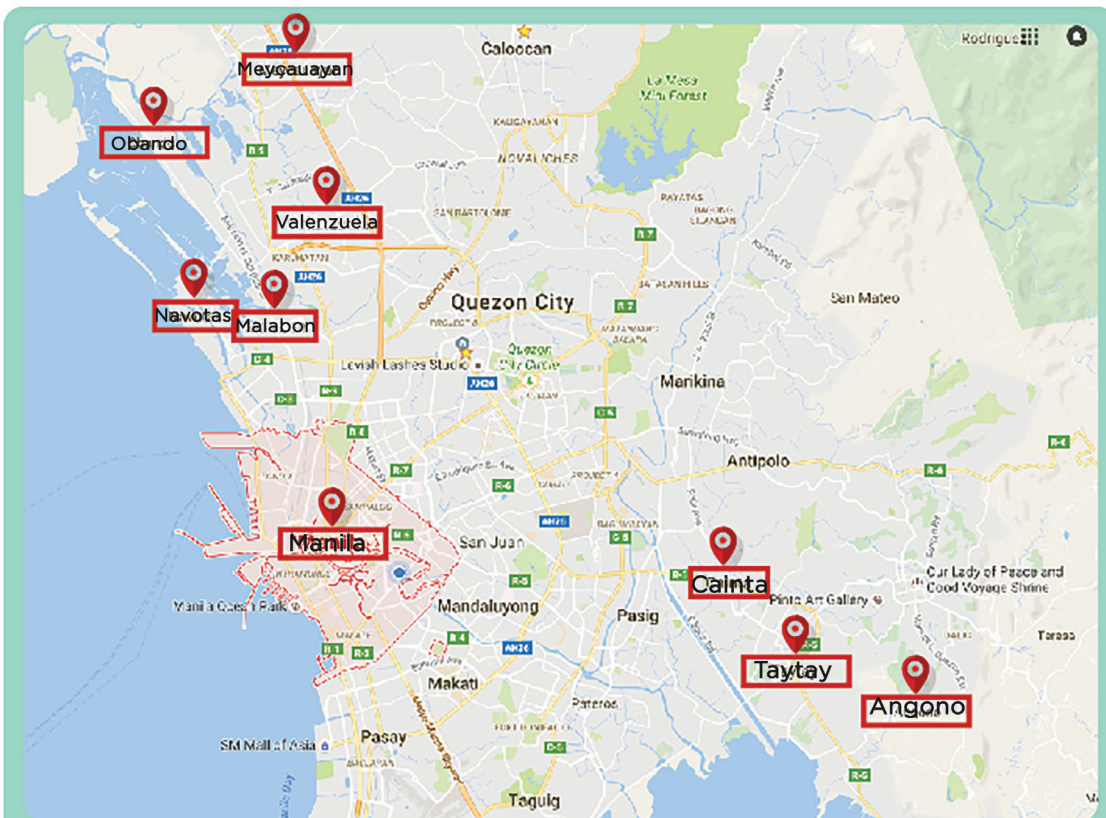
PARTNER	CITY/ MUNICIPALITY	BARANGAY	OLD/NEW
Caritas Kalookan	Malabon	Tonsuya	Old
		Maysilo	Old
		Longos	New
	Navotas	Barangay Bagumbayan South, or BBS	Old
		Barangay North Bay Boulevard, South, or NBBS	Old
		Tanza	New
Caritas Manila	Manila	Baseco	Old
		Barangay 101	New
		Barangay 160	New
DSAC Antipolo	Angono	Kalayaan	Old
		San Vicente	Old
		Poblacion Ibaba	New
	Cainta	San Andres	Old
		San Juan	Old
		Taytay	Muzon
DSAC Malolos	Obando	San Juan	Old
		Santa Ana	New
		San Pascual	Old
	Meycauayan	Bayugo	New
	Valenzuela	Malanday	Old
		Veinte Reales	Old
Arkong Bato		New	

7.8 LIMITATIONS OF THE METHODOLOGY

Because estimates of the number of waste pickers were unavailable, waste pickers were chosen at random in the selected barangays, based on the perception of Project SUCCESS partners. Because no waste pickers were found in one barangay, the consultant selected a neighboring barangay in which to interview waste pickers. Finding low-value plastic recyclers was somewhat difficult; they did not want to speak with the consultant because some recycling units were not complying with all legal requirements.

Given that prices of waste materials traded are volatile and change daily, the prices mentioned in the study for the various types of recycled materials are valid only for the day they were collected.

Figure 4: Cities and Municipalities Where Project SUCCESS Barangays Are Located (in red boxes)



7.9 ETHICAL GUIDANCE

The consultant and MEAL supervisor ensured that the surveyors/researchers adhered to the ethical guidelines outlined in the American Evaluation Association's (AEA) Guiding Principles for Evaluators.⁹ The following is a summary of these guidelines:

1. **Informed Consent:** All participants are expected to provide informed consent following standard and pre-agreed upon consent protocols.
2. **Systematic Inquiry:** Researchers must conduct systematic, data-based inquiries.
3. **Competence:** Researchers must provide competent performance to stakeholders.
4. **Integrity/Honesty:** Researchers must display honesty and integrity in their own behavior, and attempt to ensure the honesty and integrity of the entire evaluation process.
5. **Respect for People:** Researchers must respect the security, dignity and self-worth of respondents, program participants, clients and other stakeholders. It is expected that the researchers will obtain the informed consent of participants to ensure that they can decide in a conscious, deliberate way whether they want to participate.
6. **Responsibilities for General and Public Welfare:** Researchers must articulate and take into account the diversity of general and public interests and values that may be related to the evaluation or research.

7.10 RESEARCH ORIENTATION TO MEAL TEAM AND PARTNERS

The consultant conducted a half-day training to orient the surveyors/researchers to the questionnaire and also instructed the surveyors/researchers to use similar language while interpreting technical terms. A simulation was carried out to observe administration of the questionnaire. In addition, the consultant and survey team piloted the questionnaires.

8. DATA ANALYSIS

The consultant used qualitative and quantitative methods of analysis. The qualitative method of analysis was applied to data collected via interview and FGDs. The quantitative method was applied to data collected from waste pickers and small junk shops. For other stakeholders, such as big junk shops and plastic semiprocessors and processors, qualitative data were analyzed. The consultant used regular descriptive statistics and inferential statistics.

The value chain analysis for waste material recycling was based on the International Labor Organization's approach to value chain development, which has a strong focus

⁹ American Evaluation Association. *Guiding Principles for Evaluators*. 2004.

on chains that are most relevant for livelihood creation and quality improvement. The International Labor Organization's value chain development tool addresses the underlying systems and institutions that drive competitiveness and job creation, using a market development approach. Those systems and institutions build on private sector-development strategies that seek to strengthen enterprises, business relationships, market structures and the business environment (as well as government institutions), wherever relevant.¹⁰ The assumptions about value chain development in this approach are somewhat similar to those in the USAID approach, which takes a systemic view that aims for poverty reduction and sustainability, is demand driven, and emphasizes both relationships and a business enabling environment¹¹—including government support in public services.

9. SOLID WASTE MANAGEMENT VALUE CHAIN ANALYSIS FRAMEWORK

Why Study the Value Chain Framework for Informal Recycling Sector?

According to a report by the SEEP Network:

Value chain development is an economic development tool and, when applied to local economic development, can become a powerful poverty eradication tool. Value chain developments are focused on helping businesses link with and compete in growing markets. When applied to the poverty eradication goal, value chain development links the poor to more viable economic opportunities and increases their benefits from market participation.¹² (See Figure 5.)

Furthermore, that report states that,

To date, “pro-poor” value chain development has been applied more in rural areas and needs to be adapted to urban markets—for example, to link the poor to growth sectors, to retail and service sectors, and to infrastructure and human service sectors. It has also worked well for linking more sophisticated firms to global markets, but there are key challenges for late-entry countries and cities.¹³

¹⁰ International Labor Organization. *ILOs Value Chain Development Tools*. 2009.

¹¹ Mennonite Economic Development Associates. *Program Design for Value Chain Initiatives*. 2008.

¹³ The Seep Network. *Urban Value Chain Development: Potential and Challenges in 2009*. 2008.

Figure 5: Basic Elements of a Value Chain¹⁴

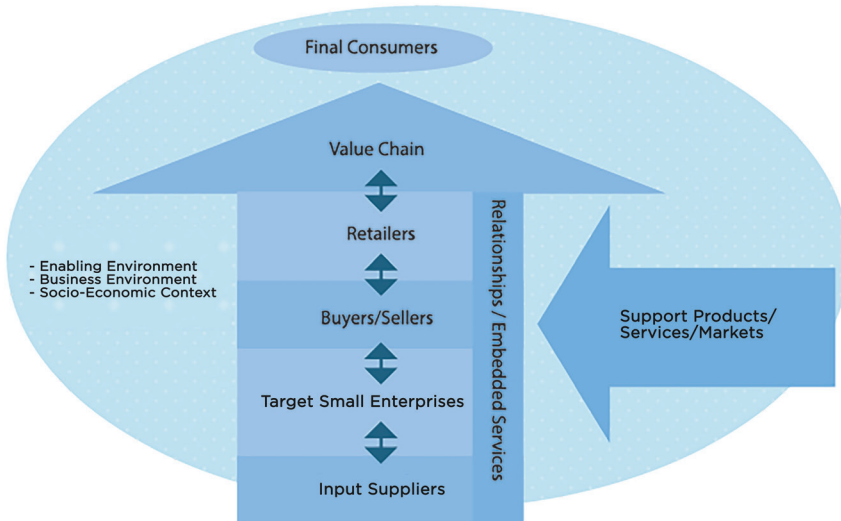


Figure 6: SWM Value Chain in Metro Manila

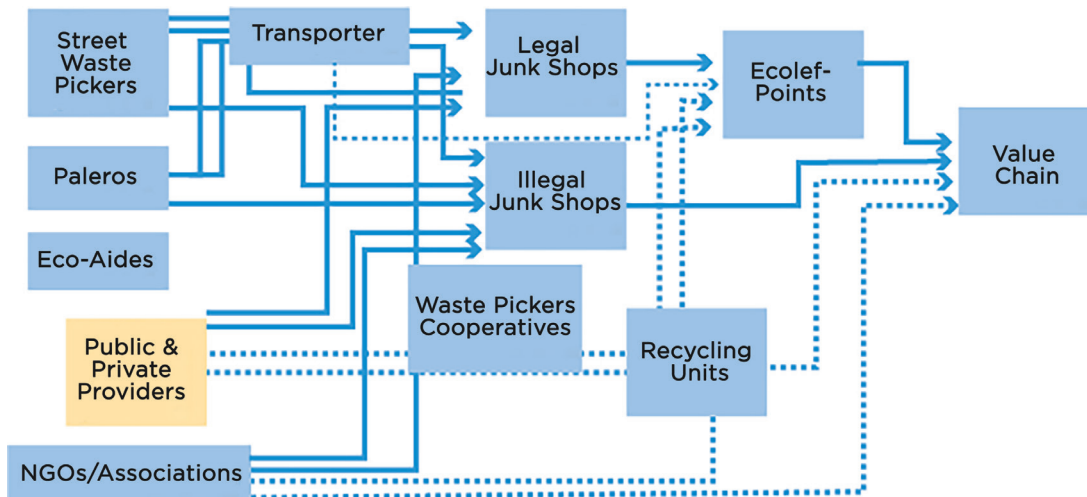


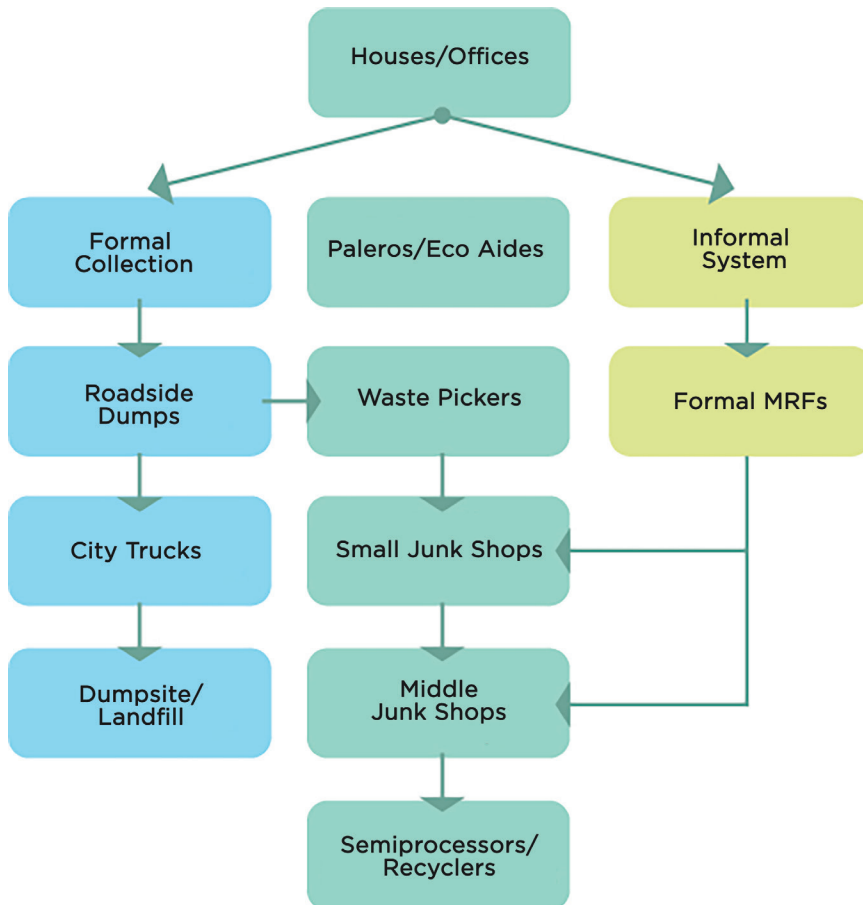
Figure 6 shows that not only is the informal recycling sector active, but that a variety of players are engaged, like street and dump site waste pickers, jumpers, and waste pickers functioning as itinerant buyers. In addition, some junk shops trade waste materials from itinerant buyers to small and big junk shops. Agents and aggregators collecting a particular type of material supply it to recyclers or manufacturers. Illegal junk shops owners operating without a license are sometimes able to offer better prices, due to their savings from taxes and license fees. At the processing and recycling levels are specialized units that collect from one to a few selected types of materials to use mostly for grinding, pelletizing or both. Some people have reported that, like the junk shop owners, some illegal processors are operating without licenses or permission, and buy from the junk shops and agents (Figures 7 and 8).

¹⁴ Mary McVay, Module 1: Overview of Enterprise Development through Value Chains and Business Service Markets. Turin, Italy: ILO International Training Centre, 2007.

Figure 7: Recycling Value Chain Pyramid



Figure 8: Solid Waste Value Chain



9.1 KEY VALUE CHAIN ACTORS' IDENTIFICATION UNDER THE PROJECT SUCCESS

Institutional mechanisms, provided by RA 9003, for the role of LGUs in SWM are in consonance with relevant provisions of Republic Act 7160, also known as the Local Government Code of 1991. Both laws direct LGUs to be the primary institutions responsible for implementing and enforcing, within their respective jurisdictions, the provisions of RA 9003. In particular, the segregation and collection of solid waste shall be conducted at the barangay level, specifically, for biodegradable, compostable and reusable wastes; whereas, the collection of nonrecyclable materials and special wastes shall be the responsibility of the municipality or city (per Section 10).¹⁵

10. INSTITUTIONAL FRAMEWORK OF SOLID WASTE MANAGEMENT

Two levels of local government have been mandated to implement SWM systems; each has its own functions and its roles to plan, implement and enforce RA 9003. In terms of SWM, the engagement of the different LGU levels is summarized in Table 4.¹⁶

Table 4: Institutional Stakeholders in Solid Waste Management

POLICY	PLANNING	IMPLEMENTATION	ENFORCEMENT
City/Municipal Level			
City/Municipal Council	City Planning and Development Office	Department of General Services, City Environment and Natural Resources offices, City/Municipal Engineering Office	Local Police—Deputized Regular enforcement personnel, such as environment or sanitation officers
City Solid Waste Management Board			
Barangay Level			
Barangay Council	Barangay Solid Waste Management Committee	Barangay Solid Waste Management Committee through eco aides/managers	Barangay Solid Waste Management Committee through eco aides/ barangay police

The table lists the formal institutional actors. As in many developing countries, the Philippines has informal key actors who have a direct or indirect engagement with SWM. Key actors relevant to this project are waste pickers of different types and junk shop operators. Furthermore, if the following other actors are not also taken into consideration, the project may have a negative effect on their livelihoods: street waste pickers, paleros/jumpers and small junk shop operators.

¹⁵ Philippine Government. *1987 Constitution*.

¹⁶ United Nations Environment Program. *Institutional Framework*, Mandaue. 2009.

11. WASTE PICKERS: FINDINGS AND ANALYSIS

Although waste pickers are at the bottom of the informal recycling value chain, they are the most important players, because the recycling section depends on their collection businesses. Interviewed waste pickers' working hours and territories of work are shown in Table 5.

Table 5: Work Territories and Working Hours of Interviewed Waste Pickers (n = 24)

No. Who Do Waste Picking as Individuals	No. Who Do Waste Picking With Family Members	No. Who Work in Same Barangay	No. Who Work in Barangay in Which They Reside and in Other Barangays	Average Minimum No. of Working Hours Per Day
8	16	16	8	5-6 hrs in 2 shifts

Waste pickers often trust or are loyal to the junk shops to which they regularly sell their collected recyclables. Waste pickers also often receive loans or are given gifts during holidays, as tokens of the appreciation for their loyalty. In addition to loans, these financial incentives can extend to cash advances, thus reflecting a high degree of social and financial dependence. Table 6 shows how much plastic waste pickers collect and indicates their social and financial dependence on the junk shops.

Table 6: Amount of Plastic Collection, Social and Financial Dependencies

Range of Amount of Plastic Recovered	Average Amount of Plastic Collected	Purchaser That Waste Pickers (n = 24) Typically Sell to (No. of Waste Pickers Reporting)	Favor or Benefits Received From Junk Shops (No. of Waste Pickers Reporting)
1-30 kilograms	7--12 kilograms	Same junk shop (16) Anyone offering a better price (8)	Gifts (11) Loan with interest (6)

As illustrated in Figure 9, waste pickers reported that the ability to access a direct cash loan is a major reason for sustaining a relationship with a junk shop; an informal microcredit relationship creates financial dependence and loyalty. Junk shops that provide some equipment to waste pickers have more loyal waste pickers selling to them. Figure 10 shows that a junk shop's provision of a motorized trike and jumbo sacks may help further increase the recovery of dry recyclables. Because waste pickers depend on junk shops for small cash loans and equipment for collection and storage, the relationship can become exploitative.

Figure 9: Waste Pickers' Reason for Selling to Junk Shop, by Percentage Reporting

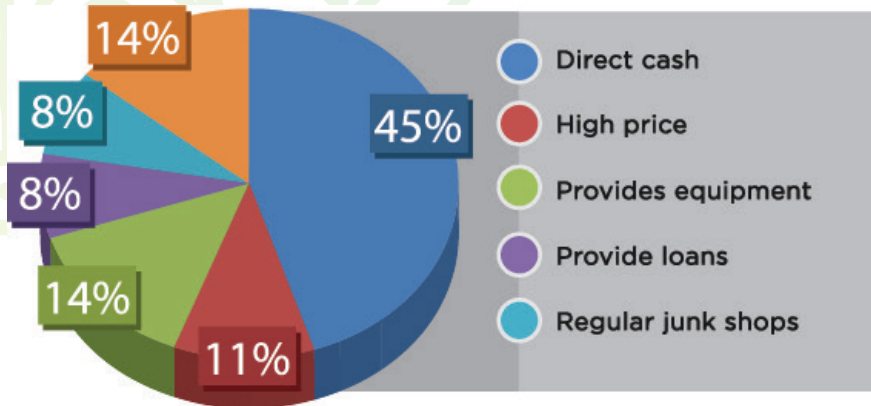
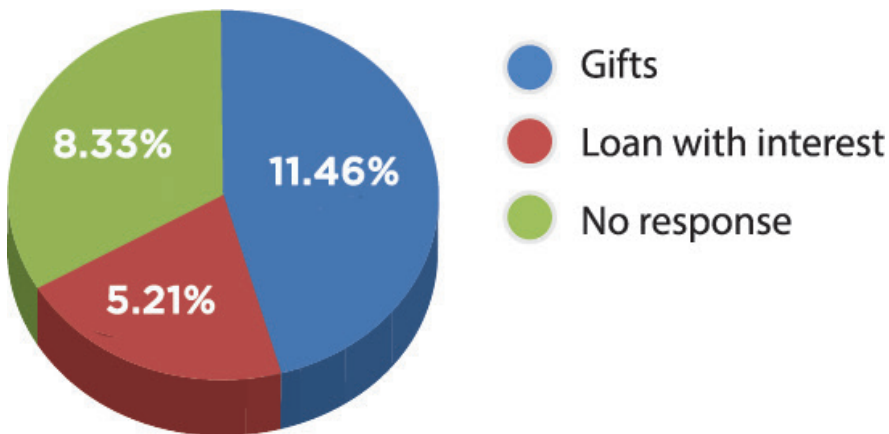


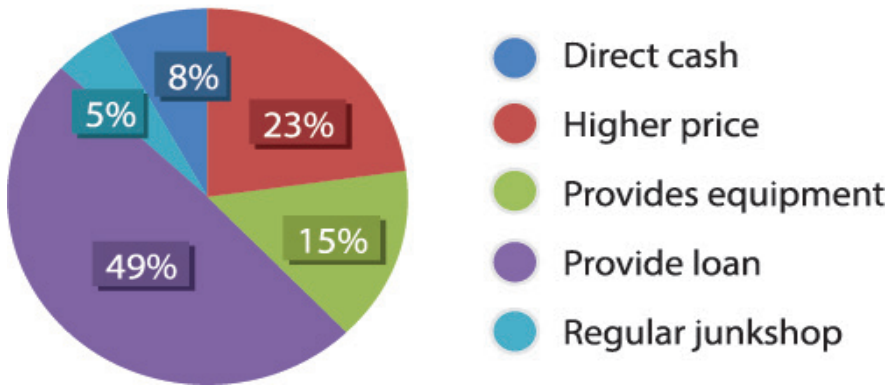
Figure 10: Favor Received from Junk Shop Junk Shop, by Number, Percentage of Waste Pickers Responding



Of the waste pickers, 49 percent reported that receipt of equipment—which they defined large sacks and a push cart attached to a bicycle—can greatly enhance their income. Moreover, 23 percent agreed that the price of a material sold to a junk shop either needs to be improved or should be standardized across regions because some areas provide better prices than others. Waste pickers also reported that improved cash flow will allow them to depend less on the junk shop from which they borrow cash on interest or will provide a guarantee that they can sell their recyclables at lower or minimum market prices. Figure 11 and Table 7 show waste pickers' suggestions for improving their income.

Figure 11: Waste Pickers’ Suggestions for Enhancing Their Income

Suggestions for enhancing waste picker income



Once waste material enters drains and other waterways, it becomes contaminated. According to the data, waste pickers cited contamination as a key reason why they do not pick up the material; in addition, contaminated material will fetch a low value (see Table 7). Thus, preventing recyclable materials from entering waterways or drains will make them valuable.

Table 7: Collated Responses From Waste Pickers About Door-to-Door and Recyclable Collection

No. Willing to Do DTDC*	Primary Reason for Doing DTDC	Materials Ignored by Waste Pickers, Currently	Reasons for Not Picking Up Waste	Suggestions for Enhancing Waste Pickers’ Income (No. Waste Pickers Reporting)
23	Stable income	<ul style="list-style-type: none"> Low-value plastics Contaminated plastics Plastics floating on canals, waterways Diapers, napkins, Tetra Paks 	<ul style="list-style-type: none"> Lack of market Inadequate or no storage area Contamination 	<ul style="list-style-type: none"> Options to sell other items (3) Better and/or standardized prices for materials (9) More capital provided to waste pickers (6) Equipment is provided to waste pickers (19) Storage area is provided to waste pickers (2)

CASE STUDY

Mr. Lito Pereras: From Waste Picker to Junk Shop/MRF Manager

Lito Pereras, 52, is the junk shop/MRF manager of both the Sambayanan ng Muling Pagkabuhay Multi-Purpose Cooperative and the Smokey Mountain Waste Picker Cooperative. A native of Barangay 128 in Tondo, Manila, he has spent the past 5 years managing an MRF with an estimated size of more than 500 square meters. The cooperative leases the land from the government, paying a monthly rental of 20,000 pesos (\$429).

Lito used to manage 1.5 tons of solid waste per day, most of which had slightly more than 500 kilograms of plastics and other recyclable materials and nearly 1 ton organic waste. He sold the final product from the compost at 3 pesos (6 cents) per kilo (a little more than 2 pounds). Currently, Lito's cooperatives are not composting because of a lack of space/storage for their machinery.

The MRF, which earns a monthly income of 120,000–130,000 pesos (\$2,575–\$2,790) spends 70,000–80,000 pesos (\$1,502–\$1,717) monthly on salaries, truck fuel and maintenance. It employs around 20 people who each earn a wage of between 4,000 (\$86) and 6,000 (\$129) pesos per month.

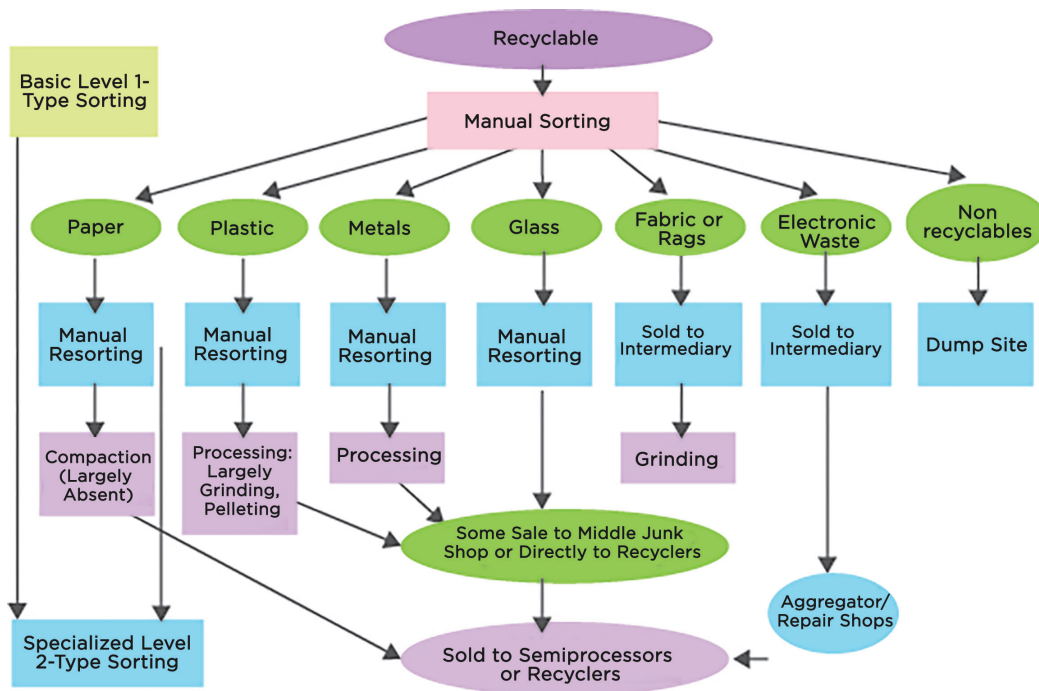
Pereras believes that with the provision of adequate space and equipment, his cooperatives could better handle both organic and inorganic waste. The cooperatives' current markets are bigger junk shops, but the cooperative plans to sell directly to recycling factories for better pricing.

Given the opportunity, almost all (23 out of 24) waste pickers would be willing to engage in DTDC to receive a stable income equal to or better than the income they currently earn, ranging from 8,000–12,000 pesos (\$171–\$258) per month; see Table 7. The data also revealed that, currently, no market exists for low-value plastics; highly contaminated plastics and a lack of storage space are identified problems.

12. SMALL JUNK SHOPS: FINDINGS

The study surveyed 12 junk shops with a focus on group discussion. Findings revealed that most small junk shops within a barangay are registered with the tax department or the barangay's authorities. The majority of spaces for junk shops are rented (7), but 5 spaces are owned by the junk shops' owners. Most have been in business for up to 10 years. The 12 junk shops trade anywhere between 100–5,000 kilograms (200 pounds to 5.5 tons) per week. Figure 12 describes the value addition at junk shops, by two different levels of sorting, and the relation and flow of materials in the chain.

Figure 12: Waste Material and Service Value Chain



Most of the junk shops rent space for their businesses; few own spaces (Table 8). The areas range between 40 meters and 250 meters (131 feet and 820 feet), little space is available for business expansion, particularly for those with less than 100 meters (328 feet) of space.

Table 8: General Profile of Junk Shop Enterprises Interviewed

No. Owned or Rented	Area of Junk Shop	Years of Experience	Trading per Week
Owned: 5 Rented: 7	40-250 meters (131-820 feet)	1-10 years	All recyclables: 100-5,000 kilograms (200 pounds to 5.5 tons)

According to the data, all of the junk shop owners surveyed hire labor to sort and pack the waste to be sold to the next level of junk shop buyers. Most prefer to hire daily wage laborers; however, some hire more regular laborers on monthly salaries, which vary between 2,500 and 6,000 pesos (\$54 and \$129). It appears that those on a lower salary do not work all through the month or the full 8 hours per day.

All the junk shop owners expressed an interest in expanding their businesses and a willingness to engage in DTDC through hiring the services of waste pickers. Because space is a major constraint in expanding a recycling business, an opportunity has

arisen: try to outsource the MRF operation to a reliably selected junk shop owner who can provide a premium for a waste picker’s collected recyclable materials. Junk shop owners also stated that most types of paper, metal and glass recovered by waste pickers or households already have a well-established recycling chain and are considered high-value materials.

Problematic, though, are the low-value plastics (e.g., sando bags) that waste pickers do not pick up because of a risk of contamination and their low weight, small size and volume; and because it is strenuous work for the waste pickers to collect such a small amount, meaning that they will earn little (Table 9). Waste pickers have reported that if a stable price is established for low-value plastics, such as 5–6 pesos per kilogram (11–13 cents per 2.2 pounds), the more low-value plastics they can collect; however, these plastics still must be free from major contamination. Waste pickers also thought that sando bags should either be made bigger and have higher (80–100) microns or should be heavier and able to be recycled to reduce littering.

One of the biggest recyclers, the Philippine Plastics Industry Association, said that most plastic recycling factories are running at only 30–40 percent of their actual capacity, because of a lack of clean plastics collected in volume. Furthermore, because of low oil prices, the value for recycled pellets is low, and plastic product manufacturers prefer to buy virgin pellets than recycled pellets. The Philippines purchases oil mainly from Saudi Arabia, Kuwait, the United Arab Emirates and Qatar at an average cost of \$60.06 per barrel, as of 2015, down 46 percent from \$106.89 per barrel in 2014¹⁷, indicating that virgin plastic pellets are available at much cheaper prices.

Table 9: Collated Responses of Junk Shop Owners on their Willingness to Engage in DTDC* and MRF Operation

Workers at Junk Shop for Sorting	Salary of Sorters, Per Month	Willingness to Expand Businesses	No. Willing to Engage in DTDC	Willingness to Operate MRF
1-6	Between 2,500 and 6,000 pesos (\$54-\$129)	Yes, but would require more space and cash	Yes: 5 No: 7	Yes

*DTDC, door-to-door collection

The data revealed that no market exists for the low-value plastics, Tetra Paks and Styrofoam (Table 10). These materials are problematic because they remain littered in the streets and are not picked up by the waste pickers. However, as the recycling factories have indicated, if they receive low-value plastics in volume—and the plastics are not contaminated—there will be a market for them. Although these low-value, uncontaminated plastics may not generate similar profit margins as PET, HDPE (high-density polyethylene) and PP, waste pickers can still trade them, thus increasing their income. This is one area in which barangays should focus their awareness and enforce segregation.

Table 10: Collated Summary of Constraints Among Junk Shop Owners

Materials Not Bought	Constraint of Recycling Businesses	Willing to Expand Business?	What is Required for Expansion?
PVC, Tetra Paks, wood, sando bags, Styrofoam	Space, capital, competition, lower price of plastics	Yes	More space, capital

*PVC, polyvinyl chloride.

At the outset, it may seem contradictory that junk shop owners have lamented a lack of a market for plastics and an already well-established market for high-value plastics. It is not, though, given that junk shops need space for certain voluminous types of low-value plastics, which, in certain seasons, can be stored and hedged. For example, if polyvinyl chloride, or PVC, is stored when low in demand, it can fetch much better pricing during the pre-monsoon season, when the prices go up because of an enhanced demand of PVC-based materials. The same goes for some other materials, so available storage space can add value and fetch better prices for the junk shops.

Case Study

Cristina Ong: Female Manager in the Junk Shop Industry

Cristina Ong has been in the junk shop business since 2012. Both her parents and her husband’s parents ran the same business. She manages approximately 10 employees in a space of about 300 square meters. Her junk shop trades nearly 80--100 tons per month of various types of recyclables. Stay-in employees receive a monthly wage of 5,000 pesos (\$107), whereas stay-out employees receive 9,000 pesos (\$193) per month.

Ong buys recyclable items, such as galvanized iron, metals, aluminum, papers, plastics and other materials, from anyone who wants to sell, as long as the recycling factories are demanding those items. Plastics that she does not buy include sando bags, plastic grocery bags, composites and Tetra Paks because they have no market. She stated that these kinds of plastics are either too contaminated or so voluminous that it does not make sense to buy them; in addition, factories are unwilling to take contaminated plastics.

Space is an issue when managing junk trading. Ong does not own any equipment; however, she explained that a compacting machine could enhance the use of available space. More space allows junk shop owners to earn better profits and improve working conditions.

17 Romero, Paolo. "Oil prices seen plunging to \$20 per barrel." The Philippine Star. April 21, 2016.

13. PLASTICS RECYCLERS: FINDINGS

The plastic recyclers that focus mostly on chipping, washing and pelletizing stated that, currently, the market is not good for contaminated plastics. The market for HDPE, PP and PET, though, is good, yet contamination can substantially reduce the price. Often, one can break even or pay less when buying virgin materials compared to purchasing recycled pellets because the price of crude oil, a raw material that plastics manufacturers use, is low. In the past, when virgin plastic prices were high, recyclers benefited because they could offer plastics processors a low-cost alternative resin. Now that virgin prices have spiked, recyclers are suffering. Plastics processors—companies that use either virgin or recycled raw materials in their products—are flexible and can adjust to customer demand. In most cases, they do not decide when to use recycled plastics; rather, their customers, companies that manufacture different products per retailer demand, make that decision. The secondary resin market of recycled plastics can improve if cleaner recovery with reasonable quality can be sourced.

Another problem that plastic recyclers in Metro Manila are facing is that cheap recycled pellets and virgin materials are flooding the market. Therefore, it is not lucrative for recyclers to source local plastics at the same or higher prices. Most recycling factories are running at 30–40 percent of their capacity, because of both the low demand for recycled plastics and an increase in cheap imports from China.

14. IDENTIFICATION OF VALUE CHAIN OPPORTUNITIES AND CONSTRAINTS

For Project SUCCESS, a key opportunity would be to have service delivery that engages the waste pickers/paleros by formalizing them as “eco aides.” The next level of opportunity would involve partnering with small junk shops to buy materials from waste pickers/eco aides at a premium price to encourage cleaner recovery of materials.

Key constraints are the current capacity of the barangay officials to organize waste pickers and enroll them as eco aides, and partnering with junk shops to operate the MRF (Table 11). Other constraints include both the barangays’ and waste pickers’ capacities to agree on a minimum income that will guarantee stable human resources for MRF service delivery and operations. The barangays will need to create complementary ordinances to RA 9003, get those passed, and enforce them. These ordinances would ask for compulsory segregation by households and payment of a minimum collection fee for DTDC services per pickup on daily/weekly/monthly basis. An example of this is an ordinance issued by the Province of Cotabato, Municipality of Kabacan, which defines different rates for different establishments. For more details, see Article 15 of the Ordinance.¹⁸ See also <https://www.scribd.com/doc/29324895/Barangay-Ordinance-01-2008> for more specific details on fee collection for solid waste.

¹⁸ Kabacan, Cotabato Government. *Solid Waste Management Ordinance*. 2009.

Table 11: Opportunities and Constraints for MRF Operation

SWM VALUE CHAIN	OPPORTUNITIES	KEY CONSTRAINTS	STRATEGY	PROS/CONS
DTDC, using waste pickers	<p>Job creation, cleaner recovery of materials, cleaner surroundings, services to all</p> <p>Formal engagement of itinerant waste pickers</p>	Mobilizing, enrolling, organizing and training waste pickers	<p>Use local NGO partners to identify and mobilize waste pickers; offer \$500 to encourage waste pickers to enroll</p> <p>Capacitate itinerant waste pickers through technical training, SWM laws and ordinances</p>	Stability of waste pickers in DTDC
Resource recovery or recyclables recovery	<p>Livelihood creation through recovery and sale of recyclables</p> <p>Adding premium to low-value plastics, cleaner recovery, volume</p>	<p>Low-income communities may keep the recyclables</p> <p>Some waste pickers may not be interested in DTDC in low-income areas</p>	<p>Enforce service fee to compensate low recovery of recyclables</p> <p>Provide better prices for recovered materials</p>	<p>Recycling market is volatile</p> <p>Stable prices can help improve recovery of low-value plastics</p>

15. DEVELOPMENT OF THE SWM VALUE CHAIN FOR PROJECT SUCCESS

15.1 SWM SERVICE VALUE CHAIN

An estimated 200–250 households will require one waste collector’s service for daily doorstep services. Doorstep services lead to less littering and cleaner surroundings as people gradually become aware of the services and hand over waste to the appointed waste collector. Smart collectors often also start trading (like an itinerant buyer) in high-value materials, and thus are able to earn a decent margin of 10–20 percent with junk shops.

In the FGD, most of the household participants agreed that they were willing to pay a reliable and regular waste collection fee. Most households already pay their children a small fee between 2 and 5 pesos (4 and 11 cents) per pickup; the pickups generally occur once or twice a week, or when the required waste disposal volume is large.

The previous assessment of Phase I indicated that community members were willing to pay 10–80 pesos (21 cents to \$1.72) per week; however, the present study suggests that this finding is high. An arrangement that can guarantee a collection fee of

3,000–4,000 pesos (\$64–\$86) and a barangay allowance of the same amount, plus rights over recyclables can attract waste pickers to mainstream waste collection, thus improving their livelihood and expanding the outreach of waste collection services for the barangays. These services are expected at least 5–6 days a week and should cover daily, regular collection of organic and inorganic waste. Of the junk shops interviewed, 21 out of 23 stated they are ready to partner with the barangays to help organize DTDC. Such arrangements need to be worked out mutually with the junk shops through a formal memorandum of understanding (MoU).



Push carts and improvised motorized trikes for DTDC collection. Photos by CRS staff.

15.2 ORGANIC WASTE MATERIAL VALUE CHAIN

Currently, there is little to no market for organic compost, which can be used as a soil amendment or nutrient (Figure 13). It is more economical to carry out decentralized composting than transport compost to dump sites. The cost savings from

transportation and dump site/landfill space can cover the composting cost. Ideally, as an incentive for the compost shed operator, barangays should purchase part of the compost to maintain their parks and nurseries. The biogas plant for processing organic waste will require a bigger investment to produce biogas, but the plant can sell gas to households and recover its investment in 3-4 years. It is recommended that composting be done only for the quantity that can be sold or consumed locally. Proper precautions need to be taken to monitor the quality of composting to avoid bad odors, rats and flies, which is why most community composting fails. These issues need to be addressed via good technical training and continuous monitoring of compost pits. Ideally, compost sheds should not be too far away from the communities. The MRF should handle only recyclable waste; if land is scarce, it can do so with proper care, which will increase the input cost for compost.

Figure 13: Organic Waste to Compost/Energy



15.3 PLASTIC RECYCLABLE MATERIALS VALUE CHAIN

The informal sector is actively recovering high-value materials from the waste stream. It sells these materials to small junk shops and, depending on the volume or quantity stored by the collector or junk shop, sells directly to middle junk shops or semiprocessors. If recovered clean and collected in larger quantities, some plastics can improve the income of waste pickers and junk shops. Cleaner recovery of any material will add value to the material so it can be sold at slightly higher prices. Due to a lack of space and storage, many improperly sorted and/or contaminated materials are sold; these items are often worthless.

The proposed MRF can help add value to materials by proper sorting, cleaning, storage and compacting. An MRF should have basic equipment, such as large sacks for packaging, knives for removing bottle caps, a manual compressor for reducing the volume of paper and plastic, a sorting platform designed with the inputs of sorters, and tools for disassembling materials. The MRF should provide separate storage for each material; plastic requires maximum compartments and space. A worker-friendly MRF should provide water, toilets and a wash basin.

Most of the value addition between waste pickers and junk dealers happens when the materials are sorted (see Figure 12). While the waste pickers do level 1 sorting, which involves basic types of materials, the junk shops carry out level 2 specialized sorting. Those who have space and capital also do specialized sorting by color, type, virgin, already recycled, soft, hard and so on, and add more value to the materials. Others can clean and compact materials to add further value. Table 12 shows value addition that happens from one junk shop to the next level of junk shop.

Table 12: Buying Price and Value Addition of Recyclables

Material	Buying Price for Small Junk Shop, in Pesos (\$)	Buying Price for Middle Junk Shop, in Pesos (\$)	Total Value Addition	Value Addition Cost	Net Value Addition (%)
PP white	15 (32 cents)	25 (54 cents)	60-70	3-4	30-35
PET green	15 (32 cents)	12 (26 cents)	80-100	3-4 pesos (6-9 cents)	40-45
Plastic spoon-fork	3 (6 cents)	25-30 (54-64 cents)	100-120	4-5 pesos (9-11 cents)	25-35
Malutong brittle plastic toys	3 (6 cents)	6-7 (13-15 cents)	100	2 pesos (4 cents)	20-25
Tin cans	3 (6 cents)	6 (13 cents)	80-100	1-1 pesos (2-2 cents)	25-30
HDPE black	3 (6 cents)	5-6 (11-13 cents)	80-100	1-2 pesos (2-4 cents)	25-35
Cartons: Brown papers	1 (2 cents)	5-6 (11-13 cents)	100	1-2 pesos (2-4 cents)	20-40
Paper mix	5 (11 cents)	2 (4 cents)	120-140	50 centavos	40-50
White paper	1-1.50 (2-3 cents)	12 (26 cents)	100-200	2-3 pesos (4-6 cents)	40-50
Brown thin paper	3 (6 cents)	2-4 (4-9 cents)	100	50 centavos	40-50
Plastic white transparent laminate	4-4.5 (9-10 cents)	6 (13 cents)	150-200	1-2 pesos (2-4 cents)	40-50
PE	1 (2 cents)	10-12 (21-26 cents)	100	40-50	30-45

Sando bags	3 (6 cents)	2 (4 cents)	300-500	4-5 pesos (9-11 cents)	35-50
PET	3 (6 cents)	20-22 (43-47 cents)	300-500	3-5 pesos (6-11 cents)	30-45
Plastic ropes, straw	3 (6 cents)	9-15 (19-32 cents)	300-500	3-5 pesos (6-11 cents)	30-45

It is apparent that some cost is involved in specialized sorting; however, that cost is much lower than the margin earned by junk shops. An MRF can carry out both level 1 and 2 sorting, and should be able to provide better prices to waste pickers and make profit margins for themselves. Waste pickers also should be encouraged to pick the plastics with added value (see highlighted ones in Table 12). Few waste pickers currently collect these materials because of either low prices or low availability.

16. STRENGTHENING THE SWM VALUE CHAIN: RECOMMENDATIONS

16.1 SERVICE VALUE CHAIN

- Organize, mobilize and build capacity of willing waste pickers to be formally engaged in DTDC (on a contractual basis between the municipality and waste pickers, with condition of selling the recyclables to the appointed junk shop).
- Seek a 10 to 15 percent contribution from waste pickers to provide the \$500 beneficiary amount in procuring motorized trikes, jumbo sacks and cash for trading with households for high-value recyclables. This will enhance ownership of the equipment provided and a better selection of beneficiaries.
- Advocate with barangays to issue a separate ordinance for source segregation, collection fees (to be decided by respective barangays) and nonlittering.
- Wherever demanded by the community, include other services, such as street sweeping and drain cleaning, at an additional charge either on a monthly or weekly basis.
- Provide identity cards (from barangays or cities) and help people enroll for government social welfare schemes, such as health benefits, education-related scholarships for waste picker children (to build trust) or any other scheme for which the urban poor are eligible.
- Provide group medical and accident insurance to waste picker groups—ideally done by the municipality from any scheme meant for the poor.
- The DTDC service model should ensure a monthly income of 8,000-10,000 pesos (\$172-\$215) to maintain stable services.

Step for improving the Service Value Chain

Train waste pickers to be waste collectors who perform DTDC for households; they would collect source-separated waste for a fee and have the right to handle recyclables.

Issues

When initiating mobilization and DTDC, several issues will arise. A well-thought-out strategy will help create a smoother intervention. Mostly, the issues will be:

- Absence or presence of barangay SWM collection system, policies or ordinances.
- Receiving barangay approval/agreement on proposed SWM schemes.
- Creating barangay or community SWM information and education campaigns.
- Lack of doorbells and whistles.
- Absence of standardized waste collection times and schedules.
- Allocation of waste collection routes for “puroks,” the smaller sections of barangays.
- Registration of waste pickers, selection criteria.
- Lack of badges, uniforms, boots, aprons, etc.
- Need for appropriate vehicle (e.g., trikes or pedicabs) or motorized equipment for loading and transfer of recyclable waste to MRF or junk shops.
- Working capital or microcredits for buying recyclables from households.
- Changes to municipal communal containers’ waste collection system and routing.
- Service collection fee imposed on households and their willingness to pay.
- Waste pickers or collectors with an obligation to keep the communal collection point clean.
- Interest of informal sectors in cleaning communal bins where doorstep services do not reach.
- Enrollment for social welfare schemes, health schemes, identity cards.

16.2 RECYCLING VALUE CHAIN AND MRFs

It is necessary to construct the MRF per the requirement of the barangay. As outlined earlier, the MRF should have the basic equipment of a decentralized MRF. Although the size and design of the MRF will depend on the land available, MRFs of less than 100 square meters will not prove useful. Every effort should be made to have an MRF with a size of 250 square meters or more to serve 10,000–12,000 households. The MRF operator should be able to clear the materials weekly for fire safety reasons and to create space for the arrival of new materials. Before CRS suggests who should operate the MRF, it would be worth having a discussion about the purpose for operationalizing the MRF and what role each stakeholder should play.

A barangay should carefully examine the best possible way to build and operate an MRF because its successful reduction of waste and diversion of recyclables depend on higher recoveries. This is an environmental and public health work—not a barangay’s money-making initiative. Consider that MRFs in developing countries are:

- Publicly owned and operated.
- Publicly owned and privately operated (mostly seen in developing countries).
- Privately owned and operated (mostly seen in developed countries).

CRS and partners, and the barangay should address some of these issues before constructing MRFs:

- What do you want out of an MRF (e.g., better waste management, jobs for the poor)?
- Who has the capacity to run an MRF?
- Who will be fully accountable for running the MRF?
- Do the barangays have the right market linkages to sell recyclables and operate an MRF sustainably?
- Should an MRF be outsourced to a waste picker association or a women’s Savings and Internal Lending Communities, or SILC, group?
- Should it be outsourced to a junk shop dealer?
- How does one select the right junk shop to operate the MRF? What conditions are necessary?
- What are the conditions to fulfill the RA 9003 or other relevant ordinances?

The answer to these questions will help formulate a working strategy to construct and operate an MRF. Looking at the current capacity of the barangay officials, it is unlikely that they can successfully run an MRF because it requires special skills in the sorting of different materials, storage, market assessment, equipment and ownership, and safety issues. Similarly, if a livelihood group is given the job of operating an MRF, the group will require intensive training in SWM, the sorting of materials, market linkages, bookkeeping and accounting, and assessment.

17. PILOT DEMONSTRATION PROJECTS IN SELECTED BARANGAYS

It has been suggested that a pilot initiative be carried out immediately in a few selected barangays (three or four) to verify the assumption of coverage of number of households per waste collector or picker, the number of recyclables recovered from those houses, the income from the recovered materials, and the prospective service fee collection and payment for embedded services. The following steps should be taken:

- Initiate DTDC of source-separated waste.
- Initiate complementary ordinances to RA 9003 for collection fee for residents and commercial areas.
- Link street sweeping or drain desilting—wherever demanded by residents—with the same waste collector or agency.
- Operate MRFs preferably by junk shop owner or waste picker associations, or livelihood groups that receive intensive training.
- Take into account the waste pickers' opinions when planning for collection and segregation.
- Conduct a formal workshop with barangay officials and an SWM committee to present the plan and strategy; focus on initiating DTDC and MRF operation.

18. AWARENESS RAISING IN TARGET BARANGAYS

Present a workshop on the IEC strategies developed by the 15 Project SUCCESS barangays (by EcoWaste Coalition) to push forward the barangays' plans and programs on ecological SWM that are tied to the results of the social and behavioral change communications strategy. Reinforce the workshop in a slightly modified manner to suit the new realities. The objectives of the workshop should be as follows:²⁰

- To provide actual learning experiences on successful ecological solid waste management programs in one urban and one low-income community of the barangays.
- To provide a forum for participants and LGUs of host sites to discuss issues and strategies on effective barangay ecological solid waste management programs through a mix of barangay officials and community members.
- To create a list of priority issues and actions or strategies to take toward implementing a barangay SWM program with clear monitoring indicators and mechanisms.

These monitoring indicators and mechanisms should focus on the following:

- Strict implementation of RA 9003.
- Waste segregation at source.
- Segregated collection.
- IEC.
- Composting process and technical inputs.
- MRF operation: quality, quantity and market assessment.
- Livelihood creation.
- Prevention of open dump site or littering.

19. SUPPORT TO LGUs AND OTHER GOVERNMENT AGENCIES

It is recommended that similar workshops should be conducted with the barangay and city officials on the preceding topics, but in a less intensive manner. Here the focus should be more on awareness building and campaigns, strict enforcement of RA 9003, and barangay ordinances and monitoring of services. To incorporate their suggestions and ensure cofunding wherever available or possible, the city government and barangay should be consulted before waste pickers' enrollment and MRF construction.

Various MRFs in partner barangays. Photos by CRS staff.



Recommended support and training for CRS and Project SUCCESS partners are as follows:

- Partners, including CRS staff, need intensive capacity building to provide operational, managerial and technical help to barangays. The Mother Earth Foundation has such capacities, but not others.
- Find good, practical trainers under the guidance of an international trainer for both barangays and selected beneficiaries.

- Set up a monitoring system on the effectiveness of DTDC, segregation and recovery to present to the city, and upscale the models besides filling operation gaps during the pilot program.
- Help barangays prepare good MoU or contract documents for MRF partnerships.
- Prepare reasonable but clear job descriptions for the waste pickers-turned-eco aides.

20. TRAINING ON VALUE CHAIN AND MARKETABILITY IN RECYCLABLES

If any other player—except a junk shop—is chosen to operate an MRF, the operator will require intensive training to efficiently run it. This training will include:

- Quality sorting and cleaning of materials.
- Value addition in high-value plastics, such as PET, HDPE and PP.
- Value addition in paper, glass and metal.
- Value creation in low-value plastics.
- Storage/hedging/volume, as per market assessment.
- Exploration of market for low-value plastics (problematic plastics related to drain clogging).
- Compost production and market development.

21. PERFORMANCE MONITORING

By initiating DTDC services, the scope of the collection coverage will increase, and indiscriminate dumping and the need to be monitored will decrease. Similarly, operation of the MRF will require a performance-monitoring system to improve collection, sorting and residual management. Without a decent monitoring system in place from the beginning of the intervention, the project's effects will be difficult to judge. More importantly, gaps cannot be filled without a monitoring system in place.

22. DEVELOPMENT OF LIVELIHOODS OPPORTUNITIES TO SELECTED BENEFICIARIES

The project needs to develop criteria for selecting and enrolling waste pickers and unemployed youths, to engage them in DTDC. Development of these criteria will involve preparing a job description for the waste pickers and signing a nonlegal MoU with the junk shop. In case the barangay decides to outsource the operation of an

MRF to a junk shop, a legal MoU needs to be prepared and signed; the preparation of a statement of interest should also be required to invite junk shops to bid for the proposed MRF. The MoU should make it a condition that the selected junk shop display the daily price of all materials. These prices will either be slightly higher than the market price or the junk shop will have to pay a premium.

23. SUSTAINABILITY AND EXIT PLAN

It is critical to develop exit strategies and hand over the waste management projects to the barangay at the end of term. Keeping in mind that the time period for this project is short, it is critical to develop exit strategies and hand over the waste management projects to the barangay at the end of term. A full-scale sustainability and exit plan may not be possible, so it may be necessary to request a project extension. Usually, private sector waste management projects take 3–5 years to stabilize and sustain. It is important to have an exit strategy from the initial phase onward to ensure sustainability. The key is local engagement in all activities, including:

- **Ensuring managerial and technical abilities are enhanced.** Local capacities must be built, so that once the MRF project is completed, adequate technical and managerial capabilities remain to carry on any waste management activities.
- **Financial self-sufficiency.** Any waste management system must continue to function past the recovery phase with fees and/or public sector funds to ensure sustainability. Effective handover is also important to the selected agency for the service provisions and MRF operations. The options may include private-sector handover (which includes junk shops and livelihood groups), so that the system established is passed on to a private-sector player and continues to operate as a for-profit service. This can be a direct handover to the current management team or can follow a simple tendering process, such as an expression of interest or a request for a proposal:
 - In the case of a public-sector handover, the system is handed over to the local authority (i.e., barangay) or another governmental department for continued operations as part of a public-sector service.
 - In the case of a community-based organization, (i.e. local NGO), the system is taken over by a local NGO or livelihood group to continue operations with national or international funding—at least for another 18–24 months (mostly technical support).
 - In the case of a public-private hybrid handover, the public-sector organization functions as a commercial entity that provides services to either the public sector or directly into the marketplace for recyclables.

23. ANNEXES

- I. Questionnaire for Waste Pickers
- II. Questionnaire for Junk Shops
- III. Questionnaire for Recyclers/Processors
- IV. Questionnaire for Barangays/Municipalities
- V. FGD Discussion Points for Waste Pickers
- VI. FGD Discussion Notes for Waste Pickers
- VII. FGD Discussion Points for Households
- VIII. FGD Discussion Notes for Households
- IX. Data on Waste Pickers
- X. Data on Junk Shops
- XI. Data on Recyclers/Processors
- XII. Data on Barangays/Municipality



- Who buys your waste?
 - a. Itinerant buyer.
 - b. Local fixed dealer.
 - c. Any junk dealers who gives a good price.
 - d. Other.
- Do you sort and wash plastics before selling it to the junk dealer?
 - a. Clean.
 - b. Sort (by color and/or kind).
 - c. Wash and dry.
 - d. Other.
- What are the prices (per kilogram) offered to you by your current buyer?
 - a. Plastics (PET, HDPE, PP, PE, etc.)
 - b. Paper (mixed, white, cardboard)
 - c. Glass (bottle, colored, broken)
 - d. Metals
 - e. Other.
- What is your approximate daily income from waste-picking?
- Do you have the resources (safety equipment/tools/vehicle) to collect waste in a hygienic manner?
 - a. If yes, please enumerate.
 - b. No.
- To whom do you sell your waste? What are the main reasons you sell your waste to your current junk dealer/buyer? (Check all relevant responses).
 - a. Instant cash.
 - b. Contract/agreement with dealer.
 - c. Taken loan or cash advance from dealer.
 - d. Dealer is a relative.
 - e. Everyone goes to this dealer.
 - f. Dealer provides transport.
 - g. Other reason.
- What other benefits (cash/in-kind) are provided to you by the junk dealer? (Check all relevant responses).
 - a. Food.
 - b. Loan(s) without interest.
 - c. Shelter or place to rest.
 - d. Tools/materials to use for waste collection.
 - e. Other reason.
- Do you have access to the following facilities? (Check all relevant responses).
 - a. Bank account.
 - b. Legal identification card.
 - c. Health card/insurance.
 - d. Access to government support or provisions (e.g. DSWD, SSS).
 - e. Microfinance access.
 - f. Other.
- Will you agree to do door-to-door collection of waste if you are paid the same income?
 - If yes, why?
 - If no, why?

- What are the conditions that you want/need to be able to do door-to-door collection?
- Are there types of plastics you currently do not pick? (Mention plastic type and prices sought).
- What is the minimum price you are willing to receive to pick up plastics that you do not currently collect? Mention plastic type and prices sought:
- What kind of plastic will you never pick up and why?
- What are your suggestions to enhance your income through waste collection? What are your suggestions to increase productivity, in terms of facilities/ tools?

Investigator's Signature:

Date:

Place:

Contact Number:

II. QUESTIONNAIRES FOR JUNK SHOPS

IDENTIFICATION DATA

Barangay, Municipality:

Date:

Name of Junk Shop:

Name of Respondent:

Number of Employees:

Number of Years in Operation:

Type of Junk Shop (Small, Medium, Large):

Junk Shop Space (Owned or Rented):

Approximate Area (in Square Meters):

On average, how much solid waste does the shop receive or pick up, per week?

Material	A. Do you receive this item? (Yes/No)	B. How much do you get per day? (Specify unit)	C. How much do you pay for this item? (Specify in kg.)	D. How easy is it for you to find these items to buy? (Easy, medium, hard)	E. How interested are you in purchasing more of these items? (High, medium, low)	F. Type of customers (Private business, recycling plant, other junk shop) and number of customers	G. How much do you sell it for? (Specify in kg.)	H. Are buyers interested in buying more of this? (High, medium, low)
Plastic								
PET			per					
LDPE			per					
HDPE			per					
PVC			per					
PP			per					
EPS: Styrofoam			per					
Metal			per					
Paper			per					
Cardboard			per					
Organic waste			per					
Electronics			per					
Hazardous waste			per					
Residual			per					
Other			per					

- If more materials were available, would you have the capacity (cash, storage, or transportation) to buy them?
Yes; which items?
No; why not?
- Which items are you not willing to buy? (Tetra Paks, sachets, chips/biscuit packages). Why?
- Does the amount of waste you receive change during the year/season? (Mention when you get less waste).
Yes; describe the pattern and specify the item:
Mention when you get waste:
- From whom do you receive the items?

	How much per kg?	What kind?	How do they drop off items? (Pushcart, on foot, in sack)	What items do they sell you?
Households				
Businesses/offices				
Government facilities				
Junk collectors				
Waste pickers				
• Junk shops/ itinerant buyers				
Other:				

- Do you employ waste collectors/pickers for sorting waste?
Yes; how much do you pay them?
No.
- How many sorters do you have?
 - Do you provide your waste pickers/junk collectors with equipment?
What kind of equipment?
 - How many kgs. of materials can a waste sorter segregate in one day? How many hours does it take for waste sorters to segregate collected items?
 - Plastic (in kgs)
 - Paper (in kgs)
- How much storage do you have for items that you receive, currently? (in square meters).
- What percentage of this space is full, currently?
- Do you need more space to increase your business or to do segregation?
- Beyond just storing materials/items, do you process, clean, or transform any of the collected waste?
No.
Yes; describe details of process and/or equipment used.
- If you do process materials, what is the value addition (per kilogram)?
- Would you pay more if a customer brings cleaner material to you? How much more will you pay?

- What is your average monthly income? (Gross).
- Approximately, what is your monthly profit? (Net Savings).
- How many tons (or kilograms) of waste do you sell and/or trade per month?
- How have prices for material changed in the last 5 years? Are there some items that have increased and/or decreased in price?
 - a. PET
 - b. HDPE
 - c. PP
 - d. LDPE
 - e. PVC
- Is there a demand for organic waste to produce manure or bio gas? Do you know of any buyers that would be interested in buying compost or bio gas produced from organic waste?
- Are there any items that customers do not bring you?
- What are the primary constraints in expanding your business? How could these constraints be eased, in terms of the following?
 - a. Information:
 - b. Finance:
 - c. Technology:
 - d. Infrastructure:
 - e. Labor:
 - f. Transportation:
- Would you want to expand your business? What would you need to expand your business, in terms of the following?
 - a. Finance/Cash:
 - b. Technology/Machines:
 - c. Land and Shade:
- Would you be interested in being a contractor for door-to-door waste collection?
- If yes, what kind of support do you require?
- If no, why not?
- Is your business registered with the relevant government department(s)?
- What are the trends you have observed in this type of business over the past 5 years?
- Do you have any other comments or observations regarding the junk shop?

III. QUESTIONNAIRE FOR RECYCLERS/PROCESSORS

IDENTIFICATION DATA

Name of Respondent:

Barangay, Municipality:

Date:

Name of Recycler/Processor:

Number of Employees:

Number of Years in Operation:

Type of Recycling:

Size of the Recycling Factory (Small, medium large):

Space (Owned or Rented):

Approximate Area (in Square Meters):

- When did you start the recycling process/business?
- What type of waste materials do you source?
- What products are manufactured at your processing facility?
- What type of machinery do you use?
- From where did you source your recycling processing machines?
- Describe the processes that waste materials undergo.
- Do you manufacture a product for an end-user? Is there a readily available market?
- What is your daily requirement of waste materials (in kgs)? Write material names and amounts needed.
- How do you source waste? From where? Who are your main suppliers?
- Do you use recycled pellets or virgin pellets? (If mix, ask the ratio).
- Are there better machines available for improved recycling and profit?
- If yes, where are those machines and what kinds of investments are needed to procure them?
- What challenges do you face when sourcing raw materials?
- Are there seasonal variations in the sourcing and/or production processes?
- With which authorities is your recycling business registered?
- What kind of support is needed from the government to promote and improve the recycling of plastic and/or paper? Describe the support required at the barangay, municipality, and national levels.
- What “problem items” in the plastic waste stream are not being recycled, currently? Why?
- What are your suggestions to increase waste collection and recycling?
- How can each and every kilogram of plastic be recycled and economically viable? If yes, at what price? If no, why?



IV. QUESTIONNAIRE FOR BARANGAYS/MUNICIPALITIES

Name of Respondent:

Barangay, Municipality:

Date:

- Please describe the waste collection system of the municipality/city/barangay?
- Has the municipality/barangay notified citizens of its waste collection schedule?
- Has the municipality/city/barangay implemented the Republic Act of 9003 with regard to collection, transportation, and processing of municipal solid waste?
- How does the city dispose of its solid waste? Where? (Describe).
- Does the municipality/barangay possess a landfill site?
- For how many years will the current landfill/dumping ground site last?
- Has the city/municipality/barangay identified future landfill sites?
- Does the municipality/barangay have any waste processing plants?
- Does the municipality/barangay have an ordinance on source segregation (biodegradable, recyclables and special waste) in accordance with RA 9003?
- Has the municipality/barangay taken any steps or have any programs to encourage its citizen to segregate their waste?
- Does the municipality/barangay have any ordinances prohibiting littering of waste? Has it been enforced? If not, what are the barriers to implementing the ordinance?
- Has the municipality/barangay carried out any program/campaign/awareness to encourage its citizens to stop littering?
- Does the municipality/barangay conduct regular door-to-door collection of waste?
- Does the municipality/barangay collect waste from Informal Settlers?
- Commercial areas? Hotels? Residential Areas? Markets?
- Which areas of the barangay are not currently covered for regular waste collection?
- Does the municipality/barangay have separate collection and disposal systems for bio-medical and other domestic hazardous waste?
- Does the municipality/barangay have proper collection and disposal systems for horticultural/construction waste?
- Has the municipality/barangay ensured that waste (especially inorganic waste, dry leaves) are not burnt?
- Does the municipality/barangay possess any system for composting its organic waste?
- Does the municipality/barangay possess any systems for resource recovery for recyclables?

- Does the municipality/barangay possess any systems for utilization of non-recyclable non-biodegradables ?
- Are there any programs to involve local residents/CBOs/NGOs in municipal solid waste management?
- Is there an ongoing livelihood program being implemented by the municipality/ barangay in connecting solid waste management involving waste pickers?
- Does the barangay wish to initiate a door to door collection system of waste?

V. FGD DISCUSSION POINTS FOR WASTE PICKERS

- What is your primary livelihood?
- What are your typical working hours (shift-wise and total)?
- urban flooding/overflowing of drains?
- After collection, do you: 1) sell everything daily at one rate without segregation; 2) sell daily after segregation; 3) periodically, sell it after segregation?
- How much waste do you collect every day, by kilograms? Please respond for plastics, paper, glass, metals, and any other materials.
- What is your approximate daily and/or monthly income, gross and net?
- Do you face any kind of discrimination?
- What are your suggestions to enhance your income through waste collection?
- Are you satisfied with your current waste collection system(s)? If yes, please describe the system(s). If no, please state the problem(s) related to the lack of a proper waste collection system.
- Do you think the lack of consistent waste collection system is a reason for urban flooding/overflowing of drains?
- To improve the situation, would you like to receive door-to-door collection services for a weekly payment? If yes, could you pay per week? If you do not want the services, please state why. If you do not want the services, state why?
- If a door-to-door collection system is started, will you segregate your waste into 3 types (organic and recyclables, residual and domestic, and hazardous) to improve the recycling of waste?
- Besides door-to-door collection of waste, what other services would you expect from the service provider (street-sweeping, drain-cleaning, etc.)?
- If there is a resident association of any form (community groups, religious groups, etc.), will they agree to monitor the services, household segregation, and payment? If no, how can this be initiated?

VII. FGD DISCUSSION POINTS FOR HOUSEHOLDS

WASTE PICKER INTERVIEW			Total family members?				How many in your family are engaged in waste-picking?	What is your primary livelihood?
Profile	Age	Gender	Number of Adult Males	Number of Adult Females	Number of Minor Males	Number of Minor Females		
1	38	Female	1	1	1	0	No Data	Waste-picking
2	64	Male	1	2	4	3	No Data	Waste-picking
3	65	Male	2	2	1	1	No Data	Waste-picking
4	32	Male	1	0	3	0	No Data	Waste-picking
5	35	Male	1	1	2	3	No Data	Waste-picking; Itinerant buyer; Extra laborer
6	60	Male	3	2	0	0	No Data	Waste-picking
7	36	Female	1	1	3	2	1	Waste-picking
8	35	Male	1	1	0	3	1	Waste-picking
9	50	Male	1	2	1	5	1	Waste-picking
10	63	Male	1	2	1	0	1	Waste-picking
11	55	Female	3	3	2	1	2; mother and her two daughters.	Waste-picking
12	37	Female	3	2	0	1	No Data	Waste-picking
13	36	Female	3	1	2	2	No Data	Waste-picking
14	36	Female	1	1	3	3	2; respondent and her husband.	Waste-picking
15	46	Male	3	4	1	2	1	Waste-picking
16	32	Female	1	1	3	3	2	Waste-picking; Laundry
17	59	Female	0	2	0	0	1	Waste-picking
18	44	Male	1	0	2	0	3	Waste-picking
19	31	Female	1	1	0	2	1	Waste-picking
20	63	Male	2	1	0	0	2; respondent and his wife.	Waste-picking; Cleaning tricycle terminals
21	40	Female	1	1	4	1	3; respondent and her two children. The children are minors.	Waste-picking
22	63	Female	3	1	0	2	3; respondent and her two grandchildren. The grandchildren are minors.	Waste-picking
23	39	Female	1	1	1	1	1	Waste-picking; Construction
24	39	Female	0	1	0	0	1	Waste-picking

Profile	What are your typical working hours for waste-picking?	In which barangay do you collect waste or waste-pick?		Do you collect waste everyday?
		Barangay where you live?	Other areas?	
1	7:00AM - 12:00AM	Yes; Lupang Arenda.		Yes
2	7:00am - 10:00am		Greenland Cainta; Taytay	Yes
3	8:00am - 10:00pm		Bicutan Proper	Yes
4	6:00am - 4:00pm		Angono; Taytay; Binangonan	Yes
5	6:00am - 3:00pm		Antipolo; Cainta (Sta. Lucia); Angono; Taytay; Binangonan	Yes
6	7:00am - 10:00pm	Yes	Pinaggpala; Villaluz; Aguinaldo; Ibañez Angono	Yes
7	8:00am - 5:00pm	Yes		Yes
8	8:00pm - 5:00am	Yes		Yes
9	7:00am - 2:00pm	Yes	Cainta (Greenwoods)	No; only on weekdays.
10	7:00am- 9:00am; 3:00pm - 7:00pm	Yes; Tonsuya.	City Jail of Caloocan; Dagat-Dagatan	Yes
11	6:00am-9:00am; 7:00pm-9:00pm	Yes; Tonsuya.	Caloocan (Langaray and Barangay 14)	Yes
12	5:00am - 10:00pm	Yes; Tonsuya.	Caloocan	Yes
13	9:00am-11:00am; 9:00pm-6:00am	Yes; Barangay BBS.	Navotas (San Jose and San Roque)	Yes
14	10:00pm-12:00am, because there is more trash to be collected at night.	Yes; Barangay BBS.	Bayan	Yes
15	During low tide	Yes; riverside of the barangay where the respondent lives.		Yes
16	9:00 pm - 4:00 am	Yes; Barangays BBS and Navotas.		Yes
17	3:00pm - 1:00am		Divisoria	Yes
18	6:00pm - 3:00am		Divisoria	No; only 4 times a week.
19	11:00pm - 4:00am	Yes; Malanday.	Malinta; Peoples Park	Yes
20	4:00pm - 9:30pm	Yes; Malanday.		Yes
21	7:00am - 5:00pm	Yes; Bayugo.	Poblacion; Fortune Market; Bangcal; Marilao	Yes
22	7:00am - 5:00pm	No	St. Michael	No; only Mondays and Thursdays.

23	3:00am - to 5:00 pm	No	Meycauayan Market	Yes
24	7:00am - 2:00pm	No	Meycauayan Market	Yes

Profile	What materials are in your daily collections?	How much waste do you collect per day (kgs)?					After collection, you?
		Plastics	Paper	Glass	Metal	Others	
1	Plastics, Paper, Glass, Metal, TVs, Electric fans	30 kgs	15 kgs	3 sacks	30 kgs		Periodically, sell it after segregation
2	Plastics, Paper, Metal, Glass	8 kgs	8 kgs	No Data	5 kgs		Sell daily after segregation
3	Paper, Glass, Plastics, Metal (if available)	12 kgs	2 kgs	20 pieces	2 kgs		Sell daily after segregation
4	Glass, Paper, Plastics, Metal	25 kgs	40 kgs	No Data	20 kgs		Sell daily after segregation
5	Paper, Plastic, Glass, Appliances (not often)	10-15 kgs	30 kgs	3 sacks	25-30 kgs		Sell daily after segregation
6	Glass, Plastics, Paper, Metal, Electronic parts	15 kgs		90 pieces	.5 kgs		Sell daily after segregation
7	Plastics, Paper, Metal, Glass	20 kgs	10 kgs	100 pieces	No Data		Sell everything daily without segregation; sell daily after segregation (sometimes)
8	Plastics, Paper, Metal, Glass	3 kgs	4 kgs	4 kgs	1 kg	Tin cans, 3 kgs	Sell daily after segregation
9	Plastics, Glass, Paper, Metal, Electronic parts	14 kgs	25 kgs	10 pieces	5 kgs		Sell everything daily without segregation; sell daily after segregation (sometimes)
10	Glass, Paper, Plastics, Metal	3 kgs	5 kgs	2 kgs	1 kg	Cooking utensils, 2-3 kgs	Periodically, sell it after segregation
11	Plastics, Glass, Paper	4-20 kgs	1-6 kgs	1- 5 pieces	2-3 kgs	Electronics, 1-2 pieces/year	Sell daily after segregation
12	Plastics, Glass, Paper	5 kgs	3 kgs	6 pieces	1 kg		Sell daily after segregation
13	Plastics, Electronics, Paper, Metals	1.5-3 kgs	2-4 kgs	3-10 pieces	.5-1 kg		Sell daily after segregation
14	Plastics, Electronics, Paper, Metals	1 kg	1 kg	5-10 pieces	.5-1 sack		Sell daily after segregation
15	Plastics, Glass, Metal, Wood	No Data	No Data	No Data	No Data		Periodically, sell it after segregation
16	Glass, Plastics, Paper, Metal, Electronic waste	2-4.5 kgs	6 KGS	10-20 pieces	1-4 kgs		Sell daily after segregation
17	Plastics	5 kgs	10 kgs	No Data	1 kg		Sell daily after segregation
18	Plastics, Paper, Metal	3 kgs	No Data	No Data	5 kgs		Sell daily after segregation

19	Various types of scraps	3 kgs	2 kgs	No Data	2 kgs		Periodically, sell it after segregation
20	Various types of scraps	1-2 kgs	0.5 KGS	5-10 pieces	No Data		Sell daily after segregation
21	Various types of scraps	2 to 5 kgs	2	1-4 pieces	3-10 kgs		Sell daily after segregation
22	Various types of scraps	6-10 kgs	5-10kgs	5-30 pieces	4-8 kgs		Sell daily after segregation
23	Plastics	1-2 kgs	No Data	No Data	No Data		Periodically, sell it after segregation
24	Various types of scraps	1-2 kgs	1 kg	5 pieces	3 kgs		Periodically, sell it after segregation

Profile	Do you store certain types of waste to be sold in bulk? What?	Who buys your waste?	What are the prices (per kilogram) offered to you by your current buyer?			
			Plastics	Paper	Glass	Metal
1	No Data	Local fixed dealer	Hard plastic = 17.00/kg; PET = 8.00/kg; Plastic bottles = 3.00/kg	White = Php 7/kg; Assorted = Php 2/kg; Carton = Php 4/kg	Php 1.50/piece	Php 6/kg
2	No Data	Itinerant buyer; Any junk dealers who give a good price	As is = Php 5.00/kg; Cleaned = Php 10.00/kg	White = Php 6/kg; Newspaper = Php 3/kg; Carton = Php 4/kg; Assorted = Php 1/kg		Php 6/kg
3	No Data	Any junk dealers who give a good price	Php 5.00/kg	White = Php 6/kg; Carton = Php 3.50/kg; Newspaper = Php 3/kg	Php 0.50/piece	Php 6/kg
4	No Data	Local fixed dealer; Any junk dealers who give a good price	PET = Php 5.00/kg; Assorted = Php 16.00/kg	White = Php 5/kg; Assorted = Php 1/kg; Carton = Php 4/kg		Php 2-7/kg
5	No Data	Any junk dealers who give a good price	PET = Php 6-7.00/kg; Hard plastic = Php 15-16.00/kg	White = Php 5/kg; Newspaper = Php 4/kg; Carton = Php 4/kg; Assorted = Php 1.50/kg		Php 7.50/kg
6	No Data	Any junk dealers who give a good price	Hard plastic = Php 15.00/kg; PET = Php 3.00/kg;	White = Php 5.00/kg; Assorted = Php 1/kg	Php 0.40-1.50/piece	Php 7-50/kg
7	Electronic parts	Local fixed dealer	Hard plastic = Php 16.00/kg; PET = Php 6.00/kg	White = Php 7/kg; Assorted = Php 1/kg; Cardboard = Php 4/kg	Php 1.00/piece	Php 7-160/kg

8	Toys	Any junk dealers who give a good price	Hard plastic = Php 16.00/kg; PET = Php 7.00/kg	White = Php 7/kg; Assorted = Php 1/kg; Carton = Php 4/kg	Php 0.40-1.50/piece	Php 7-150/kg
9	No	Local fixed dealer	PET (as is) = Php 6.00/kg; PET (cleaned) = Php 8.00/kg	White = Php 8/kg; Assorted = Php 1.50/kg; Cardboard = Php 4/kg	Php 1.50-1.80/piece	Php 7.50-150/kg
10	Yes; plastics, paper, and metals.	Any junk dealers who give a good price		Assorted = Php 1/kg; White = Php 6/kg	Php 1/piece	Php 30/kg
11	Metals	Any junk dealers who give a good price	Php 8/kg; Assorted = Php 16/kg	Assorted = Php 1/kg; White = Php 6/kg; Cardboard = Php 4/kg	Php 1-2/piece	Php 2-130/piece
12	Metals	Any junk dealers who give a good price	Php 7/kg	Assorted = 1.50/kg; White = Php 6/kg; Cardboard = Php 3.50/kg	Php 1/piece	Php 11/kg
13	Yes; sort.	Any junk dealers who give a good price		Assorted = Php 1.50/kg; White = Php 8/kg; Cardboard = Php 4/kg	Php 0.50/piece	Php 0.50-40/kg
14	Yes; remove the lid.	Any junk dealers who give a good price	PET = Php 30/kg; HDPE = Php 20/kg; PP = Php 10/kg; Plastic bag = Php 7/kg	Assorted = Php 6/kg; White = Php 7/kg; Cardboard = Php 7/kg	Php 2/piece or Php 10/kg	Php 9/kg
15	Yes; remove the lid and label.	Any junk dealers who give a good price; Wood, specifically, is sold to a charcoal vendor	Php 12/kg		Php 0.50-2/piece	Php 3-40/kg
16	Yes; sort.	Any junk dealers who give a good price	HDPE = Php 19/kg; PET = Php 9/kg	White = Php 8/kg; Assorted/Colored = Php 2/kg; Carton = Php 4/kg	Php 1-2/piece	Php 0.50-40/kg
17	Yes; sort and wash.	Junkshop with which the respondent is familiar	Php 12/kg	Php 4-7/kg		
18	Yes; sort and wash.	Junkshop with which the respondent is familiar	Php 12/kg	Php 4-7/kg		Php 80-160/kg
19	Yes	Junkshop with which the respondent is familiar	PET = Php 17/kg; HDPE = Php 6/kg	Assorted = Php 2/kg; White = Php 4/kg; Cardboard = Php 6/kg		Php 5-270/kg
20	Yes	Any junk dealers who give a good price	PET = Php 15/kg; HDPE = 17/kg; PE = 18/kg	Assorted = Php 3/kg; White = 4/kg; Cardboard = Php 4/kg	Php 1/piece	

21	Yes	Junkshop with which the respondent is familiar	PET = Php 10-12/kg; HDPE = Php 16/kg	Assorted = Php 2/kg; White = Php 8/kg; Cardboard = Php 4/kg	Php 0.50-2/ piece	Php 6/ piece
22	Yes	Junkshop with which the respondent is familiar	PET = Php 10-12/kg; HDPE = Php 16/kg	Assorted = Php 2/kg; White = Php 8/kg; Cardboard = Php 4/kg	Php 0.50-2/ piece	Php 6/ piece
23	Yes	Junkshop with which the respondent is familiar	PET = Php 16/kg; Assorted = Php 10-12/kg			
24	Yes	Junkshop with which the respondent is familiar	PET = Php 16/kg; HDPE = Php 10-12/kg	White = Php 8/kg	Php 1/ piece	Php 10/ piece

Profile	What is your approximate daily income from waste-picking	Do you have the resources (safety equipment/ tools/ vehicle) to collect waste in a hygienic manner?	What other benefits (cash/in-kind) are provided to you by the junk dealer?	Do you have access to the following?					
				Bank account	Health card	Legal identification card	Government support	Micro-finance	Others
1	Php 400-450	Instant cash; The buyer provided transport and equipment.	None, except provided sidecar	Bank account	Health card	Legal identification card	Government support	Micro-finance	Others
2	Php 150	Instant cash; The buyer provided transport.	None, except provided sidecar	No	No	No	No	No	Neighborhood Association ID
3	Php 400	Instant cash	On Christmas season only (T-shirt, food)	No	No	Senior Citizen ID	No	No	No
4	Php 200-250	Instant cash; The buyer provided transport.	During Christmas season only (T-shirt, food)	No	Philhealth card	Senior Citizen ID	No	No	No
5	Php 250	Instant cash	During Christmas season only (T-shirt, small amount of groceries)	No	No	Voter ID	No	No	No
6	Php 200	Instant cash	During Christmas season only (T-shirt, 300.00)	No	No	No	No	No	No

7	Php 300	Instant cash; The buyer provided transport and loans.	Loan with no interest; can borrow sidecar	No	No	No	No	No	No
8	Php 200	Instant cash; The buyer provided equipment.		No	No	No	No	No	No
9	Php 150-200	Instant cash; The buyer provided transport.	Loan with no interest; can borrow sidecar; capital	No	No	No	4Ps Member	No	No
10	Php 50-100, every 2-3 days	Proximity		No	No	Postal ID	No	No	No
11	Php 34-120	Proximity		No	No	No	SSS (from previous employer)	No	Senior Card
12	Php 70-100	Proximity		No	No	Barangay card; DSWD card	No	No	No
13	Php 50-150	Instant cash		No	No	No	4Ps Member	No	No
14		Instant cash	Christmas gifts	No	Philhealth card	No	No	No	No
15	Php 300-500, every 3 days	Instant cash; Proximity	Loans without interest	No	Philhealth card	No	No	No	No
16	Php 90-160	Instant cash; Proximity; Familiarity	Christmas gifts	No	Philhealth card	Voter's ID	No	No	No
17	Php 150-250	Familiarity; Proximity		No	PhilHealth card	Voter ID	4Ps Member	No	No
18	Php 150-300	Familiarity; Proximity		No	No	No	No	No	No
19	Php 80-100	Instant cash; Highest offering price		No	No	No	No	No	No
20	Php 200	Highest offering price	Christmas gifts; groceries	No	No	No	No	No	No
21	Php 80-200	Instant cash; The buyer provides loans and gifts.	Loans without interest; clothes	No	No	Senior ID	No	No	No
22	Php 80-100	Instant cash; The buyer provides loans and gifts.	Loans without interest; clothes	No	No	Voter ID	No	No	No

23	Php 50	Highest offering price	Groceries; clothes; Christmas gifts	No	No	Voter ID; Senior ID	No	No	No
24	Php 200	Highest offering price	Groceries; clothes; Christmas gifts	No	No	No	No	No	No

Profile	Will you agree to do door-to-door?			Are there types of plastic you currently don't pick?	At what price are you willing to pick up these types of plastics?	Are there types of plastics that you will never pick?	What are your suggestions to enhance your income through waste collection?
	If yes, why?	If no, why?	Others conditions needed to do "door-to-door" collection				
1	Yes; it will increase our income.			Non-buyable plastics		Non-buyable plastics	Make all items buyable.
2	Yes; it is consistent income.			Colored plastics		Anything with oil residue	Additional/more capital to buy equipment
3	Yes; it is consistent income.			Non-buyable plastics		Plastics that don't float	Restore the previous (higher) prices for materials. Junk shops provide protective gear.
4	Yes; it will increase our income.			Fiber glass; Non-buyable plastics		Non-buyable fiber glass	Restore the previous (higher) prices for materials.
5	Yes; it is consistent income.			No		Non-buyable plastics	Restore the previous (higher) prices for materials.
6	Yes; it is consistent income.			Non-buyable plastics		Anything that's difficult to grind down	Additional/more capital to buy equipment; Storage space
7	Yes; it is consistent income.			Non-buyable plastics; Colored plastics		Plastics in poor condition	Additional/more capital to buy equipment
8	Yes; it will increase our income and it is consistent.			Non-buyable plastics		Non-buyable items	Additional/more capital to buy equipment
9	Yes; it is consistent income.			Non-buyable plastics		Non-buyable items	Additional/more capital to buy equipment

10	Yes; it is consistent income.		Additional equipment/materials for waste-picking	Non-buyable items		Non-buyable items	Additional/more capital; Storage space. Junk shop should provide protective gear.
11	Yes; it is consistent income.			Colored plastics		Plastics with rubber	Additional/more capital to buy equipment
12	Yes; it will increase our income.		A cart	Non-buyable plastics		Non-buyable plastics	Additional/more capital to buy equipment
13	Yes; respondent is already doing DTDC.		A cart or sidecar	Non-buyable plastics		Diapers, Napkins, Non-buyable plastics	Make all items buyable; Additional/more capital
14	Yes; it will increase our income.		Storage	Diapers, Napkins		Diapers, Napkins	Junk shops provide transportation and storage.
15		No; most households sell their own waste products, especially plastics and metals.		Colored plastics		Diapers	Junk shops provide equipment/materials for waste-picking.
16	Yes; it will increase our income.		Additional equipment/materials for waste-picking	Non-buyable items	White plastic bags = Php 40/kg; Colored plastic bags = Php 30/kg	Non-buyable items	Additional/more capital to buy equipment
17	Yes; it will increase our income without exerting more effort.		A cart	Non-buyable plastics		Non-buyable plastics	Junk shops provide transportation.
18	Yes; it will increase our income without exerting more effort.	pero hindi dapat bitawan ang divisoria	A cart	Non-buyable plastics; Colored plastics		Non-buyable plastics	Junk shops provide transportation.
19	Yes; it is consistent income.		A sidecar; Respondent wants garbage to already be segregated by HHs	Non-buyable items		Non-buyable plastics	Increased government support
20	Yes; it is consistent income.		Additional equipment/materials for waste-picking	Non-buyable plastics; Colored plastics		Non-buyable items	Increased government support; Standardized prices for scraps

21	Yes; it is consistent income.		Additional equipment/materials for waste-picking	Non-buyable plastics; Colored plastics		Non-buyable items	Junk shops provide transportation; Standardized prices for scraps
22	Yes; it is consistent income.		Additional equipment/materials for waste-picking	Non-buyable plastics; Colored plastics		Non-buyable items	Junk shops provide transportation; Standardized prices for scraps
23	Yes; it is consistent income.		Additional equipment/materials for waste-picking	Non-buyable plastics; Colored plastics		Non-buyable items	Increased government support; Standardized prices for scraps
24	Yes; it is consistent income.		Additional equipment/materials for waste-picking	Non-buyable items		Non-buyable items	Increased government support; Standardized prices for scraps

VIII. FGD DISCUSSION NOTES FOR HOUSEHOLDS

NO.	Barangay Municipality	Name of Recycler/ Processor	Number of employees	Number of years in operation	Type of Recycling (Mention particular material recycled like PET, HDPE, LDPE, PVC, PP)	Size of the Recycling Factory (small, medium, large):	Space (Owned or Rented)
1	Valenzuela City	Reinheart Marketing	50+	10	HDPE, PP, LDPE, PVC, PET	Large	Owned
2	Valenzuela City	Dragon King Plastic Grinding	21	9	All engineering plastics; HIPS, AS, PP, Nylon, PA, PNMA.	Medium	Owned
3	Quezon City	Geoplastic Corporation	150	51	LDPE, HDPE, PS, PET	Large	Owned

NO.	Approximate area (in sq m)	When did you start this recycling processing business?	What type of waste materials do you source for reprocessing?	What are the type of products manufactured at your processing facility?	What type of machinery do you use?	Where did you source recycling machines from?	How many employees work in the recycling company?
1	4,000.00	2006	HDPE, PP, LDPE, PVC, PET	HDPE, PP, LDPE, PVC, PET	Pelletizer; other machines.	Manila	50+
2	2,200.00	2007	All engineering plastics; HIPS, AS, PP, Nylon, PA, PNMA.	All engineering plastics; HIPS, AS, PP, Nylon, PA, PNMA.	Grinding machine	Manila	21
3	20,000	1965	LDPE, HDPE, PS, PET	Nylon (plastic) ropes; bags, etc.	Pelletizer; other machines for production.	Manila; some parts came from other countries.	150

NO.	Please describe what are the processes you carry out with the waste material?	Do you also manufacture a product for the end-user? Is there ready available market for it?	What is your daily requirement of input waste material? (in kg). Write material names/s	How and where do you source it? Who are your main suppliers of input materials?	Do you make products only from recycled pellets/Pet Flakes or do you also use virgin pellets? (If mix, ask the ratio) (both in case of products and pellets)	Is there better machinery available for improved recycling and profit?
1	Sorting, cleaning, and pelletizing.	No, just pelletizing.	600 tons/month; 249 tons/week	Junk shops	Recycled only	Yes, and there are plans to upgrade.
2	Grinding or crushing.	No, just grinding.	30 tons/month or 1 ton/day	Junk shops; waste pickers	Recycled only	Yes, but there is no plan to upgrade.
3	Sorting, cleaning, grinding, and pelletizing.	Yes; bags and nylon equipments; depends on clients' requests.	Currently receiving 10-15 tons/day, but full capacity of the recycler is 40 tons/day.	Junk shops; waste pickers	Depends on the client	Yes, but the company is not currently operating at full capacity with the equipment that it has.

NO.	If, Yes, where are those and what kind of investments are needed?	What are the challenges faced by you in sourcing the raw material?	Are there any seasonal variations in the sourcing and production processes?	With what authority is your recycling factory registered?	What kind of support is needed from the Government to promote and improve recycling of plastic/paper? Describe support required at level like Barangay, Municipality/city/national?
1	Technological and financial investments are needed.	Shortage of supply from junk shops.	Yes, during rainy season there are fewer supplies.	Department of Trade and Industry (DTI) and LGUs	Improve recycling in the Philippines by reinforcing laws, starting at the household level.
2	Technological and financial investments are needed.	No issues with sourcing.	Yes, there is high demand during the months of October, November, and December (festival season).	DTI and LGUs	
3		Shortage of supply from junk shops; contaminated supplies.		LGUs	

NO.	What are the problems in plastic waste stream currently not recycled? And why? Please list them	What are your suggestions to increase the collection and recycling of plastics currently being dumped?	Can each and every plastic be recycled and still be economically viable?	If Yes, at what price?	If No, Why?
1			Yes, it just depends on the machine.	Php 30/kg	
2			No		
3					

IX. DATA ON WASTE PICKERS

Garbage Truck Crew / Eco Boys

The garbage truck crew of Christian Maceda, James Consigna, Renneil Alde, and Wilmer Serbo work from 6 a.m. to 6 p.m. collecting waste in Lupang Arenda, using the barangay's garbage truck.

Aside from a Php 3,000.00/month honorarium, they earn Php 150.00 to Php 180.00 per day for every 50 kilograms of solid waste that they gather. The highest price among solid waste is for aluminum, which can be sold at Php 30.00/kg; tin cans and white, transparent plastics follow at Php 20.00/kg. According to the garbage truck crew, grocery plastics cannot be sold; other reject plastics, like colored plastics, are also worthless to them.

X. DATA ON JUNK SHOPS

NO.	Barangay, Municipality	1. Are you satisfied with your current waste collection system? If yes, please describe. If no, please state the problem(s) related to the lack of a proper waste collection system.	2. Do you think the lack of a consistent waste collection system is a reason for urban flooding/overflow of drains and other artificial flooding?	3. To improve the situation, would you like to receive door-to-door collection services with a weekly payment? If yes, how much can you pay per week? If you do not want the services, state why?	If a door-to-door collection system is started, will you segregate your waste into 3 types (organic and recyclables, residual and domestic, and hazardous) to improve the recycling of waste?
1	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
2	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
3	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
4	NBBS	Yes; there are barangay and city garbage trucks collecting waste.	Yes	No, the barangay garbage truck collects it.	Yes
5	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes

6	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
7	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
8	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
9	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
10	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
11	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
12	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
13	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
14	NBBS	Yes; every day a garbage truck comes to collect waste.	Yes	No, the barangay garbage truck collects it.	Yes
15	Tonsuya, Malabon	Yes; there is scheduled garbage collection.	Yes; in addition, the barangay is below sea level, so there are silt blockages present.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 20.00 - Php 60.00 per week for collection services.	Yes
16	Tonsuya, Malabon	No; the garbage truck will not go down barangays' narrow roads.	Yes; in addition, the barangay is below sea level, so there are silt blockages present.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 30.00 - Php 60.00 per week for collection services (i.e. 5 to 10 pesos per pick up).	Yes
17	Tonsuya, Malabon	No; the garbage truck will not go down barangays' narrow roads.	Yes; in addition, the barangay is below sea level, so there are silt blockages present.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 20.00 - Php 40.00 per week for collection services (i.e. 5 to 10 pesos per pick up).	Yes
18	Tonsuya, Malabon	No; the garbage truck will not go down barangays' narrow roads.	Yes; in addition, the barangay is below sea level, so there are silt blockages present.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 20.00 - Php 40.00 per week for collection services (i.e. 2 to 5 pesos per pick up).	Yes

19	Tonsuya, Malabon	No; the garbage truck will not go down barangays' narrow roads.	Yes; in addition, the barangay is below sea level, so there are silt blockages present.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 20.00 - Php 40.00 per week for collection services (i.e. 5 to 10 pesos per pick up).	Yes
20	Tonsuya, Malabon	Yes; there is scheduled garbage collection.	Yes; in addition, the barangay is below sea level, so there are silt blockages present.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 20.00 - Php 40.00 per week for collection services.	Yes
21	Tonsuya, Malabon	Yes; there is scheduled garbage collection.	Yes; in addition, the barangay is below sea level, so there are silt blockages present.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services (i.e. 5 to 10 pesos per pick up).	Yes
22	Tonsuya, Malabon	Yes; there is scheduled garbage collection.	Yes; in addition, the barangay is below sea level, so there are silt blockages present.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services.	Yes
23	Sta. Ana Taytay	No; there is only one garbage truck collecting trash. There are no trash bins to segregate garbage.	Yes; plastic bags are clogging the canals' drainage. In addition, the barangay is below sea level, so there are silt blockages present.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services (i.e. 5 to 10 pesos per pick up).	Yes
24	Sta. Ana Taytay	No; there is only one garbage truck collecting trash. There are no trash bins to segregate garbage.	Yes; plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services.	Yes
25	Sta. Ana Taytay	No; there is only one garbage truck collecting trash. There are no trash bins to segregate garbage.	Yes; plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services.	Yes
26	Sta. Ana Taytay	No; there is only one garbage truck collecting trash. There are no trash bins to segregate garbage.	Yes; children throw chip and candy wrappers into the canals.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services.	Yes

27	Sta. Ana Taytay	No; there is only one garbage truck collecting trash. There are no trash bins to segregate garbage.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services.	Yes
28	Sta. Ana Taytay	No; there is only one garbage truck collecting trash. There are no trash bins to segregate garbage.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services.	Yes
29	Sta. Ana Taytay	No; there is only one garbage truck collecting trash. There are no trash bins to segregate garbage.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services.	Yes
30	Sta. Ana Taytay	No; there is only one garbage truck collecting trash. There are no trash bins to segregate garbage.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services.	Yes
31	Sta. Ana Taytay	No; there is only one garbage truck collecting trash. There are no trash bins to segregate garbage.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 30.00 - Php 60.00 per week for collection services.	Yes
32	Sta. Ana Taytay	No; there is only one garbage truck collecting trash. There are no trash bins to segregate garbage.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services.	Yes
33	San Andres Cainta	No; there are no trash bins available for segregating garbage.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 10.00 - Php 20.00 per week for collection services (i.e. 2 to 5 pesos per pick up).	Yes
34	San Andres Cainta	No; there are no trash bins available for segregating garbage.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 30.00 - Php 40.00 per week for collection services (i.e. 2 to 5 pesos per pick up).	Yes

35	San Andres Cainta	No; there are no trash bins available to segregate garbage. When the household misses a scheduled collection, they ask children to throw their garbage wherever.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 20.00 - Php 40.00 per week for collection services (i.e. 2 to 10 pesos per pick up).	Yes
36	San Andres Cainta	No; there are no trash bins available to segregate garbage. When the household misses a scheduled collection, they ask children to throw their garbage wherever.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. Php 20.00 - Php 40.00 per week (i.e. 2 to 10 pesos per pick up).	Yes
37	San Andres Cainta	No; there are no trash bins available to segregate garbage. When the household misses a scheduled collection, they ask children to throw their garbage wherever.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 20.00 - Php 30.00 per week (i.e. 2 to 10 pesos per pick up).	Yes
38	San Andres Cainta	No; there are no trash bins available to segregate garbage. When the household misses a scheduled collection, they ask children to throw their garbage wherever.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay 20.00 - Php 30.00 per week (i.e. 2 to 10 pesos per pick up).	Yes
39	San Andres Cainta	No; there are no trash bins available for segregating garbage.	Yes; food wrappers and plastic bags are clogging the canals' drainage.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 20.00 - Php 30.00 per week (i.e. 2 to 10 pesos per pick up).	Yes
40	San Andres Cainta	No; there are no trash bins available for segregating garbage.	Yes; children throw chip and candy wrappers into the canals.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 20.00 - Php 30.00 per week (i.e. 2 to 10 pesos per pick up).	Yes
41	San Andres Cainta	No; there are no trash bins available for segregating garbage.	Yes; children throw chip and candy wrappers into the canals.	Yes; the household would like to learn and practice to segregate waste. They would be willing to pay Php 20.00 - Php 30.00 per week (i.e. 2 to 10 pesos per pick up).	Yes

NO.	Barangay, Municipality	Besides door-to-door collection of waste, what other services would you expect from the service provider (street-sweeping, drain-cleaning, etc.)?	If there is a resident association of any form (community groups, religious groups, etc.) will they agree to monitor the services, household segregation, and payment? If no, how can this be initiated?
1	NBBS	Removing plastic bags from drainage canals.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
2	NBBS	Educating the community on garbage segregation.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
3	NBBS	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
4	NBBS	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
5	NBBS	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
6	NBBS	Removing plastic bags in the drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
7	NBBS	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
8	NBBS	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
9	NBBS	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
10	NBBS	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
11	NBBS	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
12	NBBS	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
13	NBBS	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
14	NBBS	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
15	Tonsuya, Malabon	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
16	Tonsuya, Malabon	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
17	Tonsuya, Malabon	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
18	Tonsuya, Malabon	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.

19	Tonsuya, Malabon	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
20	Tonsuya, Malabon	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
21	Tonsuya, Malabon	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
22	Tonsuya, Malabon	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
23	Sta. Ana Taytay	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
24	Sta. Ana Taytay	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
25	Sta. Ana Taytay	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
26	Sta. Ana Taytay	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
27	Sta. Ana Taytay	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
28	Sta. Ana Taytay	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
29	Sta. Ana Taytay	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
30	Sta. Ana Taytay	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
31	Sta. Ana Taytay	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
32	Sta. Ana Taytay	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
33	San Andres Cainta	Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
34	San Andres Cainta	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
35	San Andres Cainta	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will monitor services, ordinances, and regulations on garbage segregation/proper disposal.
NO.	Barangay, Municipality	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
36	San Andres Cainta	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
37	San Andres Cainta	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.

38	San Andres Cainta	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
39	San Andres Cainta	Educating the community on garbage segregation. Removing plastic bags from drainage canals and segregating garbage.	Yes; resident associations will support efforts to improve cleanliness in the community.
40	San Andres Cainta	No; there are no trash bins available for segregating garbage.	Yes; children throw chip and candy wrappers into the canals.
41	San Andres Cainta	No; there are no trash bins available for segregating garbage.	Yes; children throw chip and candy wrappers into the canals.

XI. DATA ON RECYCLERS/PROCESSORS

Name of Recycler/Processor	Reinheart Marketing	Dragon King Plastic Grinding.	Geoplastic Corporation
Number of employees	50+	21	150
Number of years in operation	10	9	51
Type of Recycling (Mention particular material recycled like PET, HDPE, LDPE, PVC, PP)	HDPE, PP, LDPE, PVC, PET	All engineering plastics; HIPS, AS, PP, Nylon, PA, PNMA.	LDPE, HDPE, PS, PET
Size of the Recycling Factory (small, medium, large):	Large	Medium	Large
Space (Owned or Rented)	Owned	Owned	Owned
Approximate area (in sqm)	4,000	2,200	20,000
When did you start this recycling processing business?	2006	2007	1965
What type of waste materials do you source?	HDPE, PP, LDPE, PVC, PET	All engineering plastics; HIPS, AS, PP, Nylon, PA, PNMA	LDPE, HDPE, PS, PET
What products are manufactured at your processing facility?	HDPE, PP, LDPE, PVC, PET	All engineering plastics; HIPS, AS, PP, Nylon, PA, PNMA	Nylon (plastic) ropes; bags, etc
What type of machinery do you use?	Pelletizer; other machines	Grinding machine	Pelletizer; other machines for production
From where did you source your recycling processing machines?	Manila	Manila	Manila; some parts came from other countries
Describe the processes that waste materials undergo.	Sorting, cleaning, and pelletizing	Grinding or crushing	Sorting, cleaning, grinding, and pelletizing
Do you manufacture a product for an end-user? Is there a readily available market?	No, just pelletizing	No, just grinding	Yes; bags and nylon equipments; depends on clients' requests
What is your daily requirement of waste materials (in kgs)? Write material names and amounts needed.	600 tons/month; 249 tons/week	30 tons/month or 1 ton/day	Currently receiving 10-15 tons/day, but full capacity of the recycler is 40 tons/day.
How do you source waste? From where? Who are your main suppliers?	Junk shops	Junk shops; waste pickers	Junk shops; waste pickers
Do you use recycled pellets or virgin pellets? (If mix, ask the ratio).	Recycled only	Recycled only	Depends on the client
Are there better machines available for improved recycling and profit?	Yes, and there are plans to upgrade.	Yes, but there is no plan to upgrade.	Yes, but the company is not currently operating at full capacity with the equipment that it has.
If yes, where are those machines and what kinds of investments are needed to procure them?	Technological and financial investments are needed.	Technological and financial investments are needed.	Technological and financial investments are needed.
What challenges do you face when sourcing raw materials?	Shortage of supply from junk shops.	No issues with sourcing.	Shortage of supply from junk shops; contaminated supplies.
Are there seasonal variations in the sourcing and/or production processes?	Yes, during rainy season there are fewer supplies.	Yes, there is high demand during the months of October, November, and December (festival season).	No answer.

With which authorities is your recycling business registered?	Department of Trade and Industry (DTI) and LGUs	DTI and LGUs	LGUs
What kind of support is needed from the government to promote and improve the recycling of plastic and/or paper? Describe the support required at the barangay, municipality, and national levels.	Improve recycling in the Philippines by reinforcing laws, starting at the household level.	Improve recycling in the Philippines by reinforcing laws, starting at the household level.	Improve recycling in the Philippines by reinforcing laws, starting at the household level.
What "problem items" in the plastic waste stream are not being recycled, currently? Why?	No answer.	No answer.	No answer.
What are your suggestions to increase waste collection and recycling?	No answer.	No answer.	No answer.
How can each and every kilogram of plastic be recycled and economically viable?	Yes, it just depends on the machine.	No.	No answer.
If yes, at what price?	Php 30/kg.	No answer.	No answer.
If no, why?	No answer.	No answer.	No answer.

XII. DATA ON BARANGAYS

	Malanday, Valenzuela City	Tonsuya, Malabon	Kalayaan, Angono, Rizal	Angono, Rizal	North Bay Boulevard South
Please describe the waste collection system of the municipality/city/barangay?	Barangay waste collection happens every Monday and Thursday; daily collection occurs for the two national roads in Valenzuela. The garbage collectors do the segregation work. Previously, an effort to promote segregation at the source was in place; however, it was deemed ineffective, due to confusion.		The barangay collects waste from residents at designated pick up points.	The municipality collects the waste for barangays using municipal trucks. The residents of the barangay follows the "set out" method, where they bring their waste to designated collection points at a given time.	A barangay truck collects recyclables for the barangay; the remaining waste is brought by trucks to the Navotas landfill.
Has the municipality/barangay notified citizens of its waste collection schedule?	Yes	Yes	Yes	Yes	Yes
Has the municipality/city/barangay implemented the Republic Act of 9003 with regard to collection, transportation, and processing of municipal solid waste?	No	No	No	Yes, but there's not full compliance on the part of residents and/or barangays	Yes
How does the city dispose of its solid waste? Where? (Describe).	Montalban landfill	Garbage is collected and brought to Tanza landfill.	Garbage is collected and brought to Payatas landfill.	Garbage is collected and brought to Payatas landfill.	Garbage is collected and brought to Payatas landfill.

Does the municipality/ barangay possess a landfill site?	Yes				No
For how many years will the current landfill/dumping ground site last?	20 years (Lingunan landfill)	No	No		
Has the city/municipality/ barangay identified future landfill sites?	Yes				
Does the municipality/ barangay have any waste processing plants?	Yes, but it is not operational.	No	No	No	No
Does the municipality/ barangay have an ordinance on source segregation (biodegradable, recyclables and special waste) in accordance with RA 9003?	Yes, at the city-level.	Yes	Yes; the barangay has adopted the municipal ordinance, but is has not been implemented.	Yes, but it has not been fully implemented at the barangay level.	Yes, at the city-level.
Has the municipality/ barangay taken any steps or have any programs to encourage its citizen to segregate their waste?	Currently, segregation is done by the garbage collectors, not by the households	None except the WACS	Not yet, but there are current plans to pilot segregation of waste in selected Puroks.	Yes, approximately 75% compliance	The barangay has no MRF due to non-availability of space. They established an MRS or materials recovery system to facilitate partnership with the 3 junkshops located at the said barangay.
Does the municipality/ barangay have any ordinances prohibiting littering of waste? Has it been enforced? If not, what are the barriers to implementing the ordinance?	Yes	Yes, at the city-level	Yes. But not implemented.	Yes but not fully implemented	Yes but not fully implemented
Has the municipality/ barangay carried out any program/ campaign/awareness to encourage its citizens to stop littering?	Yes, through a city-level ordinance	Yes people are notified of the proper time for waste collection and assigned CENRO from each barangay do the monitoring.	YES. Thru posters only.	Yes thru IEC materials such as tarpaulins with messages on Anti-Littering and, speaking engagements in the barangay	
Does the municipality/ barangay conduct regular door-to-door collection of waste?	NA	NA	No	No	Yes
Does the municipality/ barangay collect waste from:	Informal settlers: Yes Commercial Areas: Yes Hotels: No Residential Areas: Yes Markets: Yes	Informal settlers: Yes Commercial Areas: Yes Hotels: NA Residential Areas: Yes Markets: Yes	Informal settlers: Yes Commercial Areas: Yes Hotels: No Residential Areas: Yes Markets: Yes	Informal settlers: Yes Commercial Areas: Yes Hotels: No Residential Areas: Yes Markets: Yes	Informal settlers: Yes Commercial Areas: Yes Hotels: No Residential Areas: Yes Markets: Yes
Which areas of the barangay are not currently covered for regular waste collection?	None	NA	None	Private hospitals are not covered.	NA

Does the municipality/ barangay have separate collection and disposal systems for bio-medical and other domestic hazardous waste?	Yes; city garbage collectors do segregation.	No	Yes; toxic waste from the industries is collected by the City Environmental Office.	No	No
Does the municipality/ barangay have proper collection and disposal systems for horticultural/construction waste?	No; contractors manage their own disposal of waste.	NA	NA	Yes, there is for horticultural waste produced by the municipal parks and construction waste.	NA
Has the municipality/ barangay ensured that waste (especially inorganic waste, dry leaves) are not burnt?	Yes; environmental police are deployed and there is a hotline number for complaints, as indicated by the city's SWM ordinance.	No	Yes	Yes. For the first offense, the offender is reprimanded. For the second and third offenses, there are monetary penalties. However, this is not always properly implemented.	
Does the municipality/ barangay possess any system for composting its organic waste?	Yes; barangays with their own MRF use the bacterial input system.	No	No	Yes; there is vermicomposting at San Isidro EcoPark.	NA
Does the municipality/ barangay possess any systems for resource recovery for recyclables?	Yes, but only for barangays with their own MRFs. The city has no centralized MRF.		No	Yes; the municipal MRF.	Yes; paleros do the collection.
Does the municipality/ barangay possess any systems for utilization of non-recyclable non-biodegradables?	NA	No	No	Yes; residuals are chipped and mixed for hollowblock production.	NA
Are there any programs to involve local residents/CBOs/ NGOs in municipal solid waste management?	No	NA	No	Yes, but it is not fully implemented. The municipality forged a partnership with the Junk Shops' Association through an MOA, recognizing them as barangay MRFs.	NA
Is there an ongoing livelihood program being implemented by the municipality/ barangay in connecting solid waste management involving waste pickers?	No	No	No	There is no formal livelihood program. Informally, however, waste pickers are tapped to sort waste and can sell the recyclablesX`	NA
Does the barangay wish to initiate a door to door collection system of waste?	NA	NA	Yes, but only for biodegradables and recyclables.	No; the municipality will continue their current "set out" method of collecting waste, because they don't see the benefits of doing door-to-door. The municipality believes it is the responsibility of the residents to take out their waste during the collection period.	Yes; it is already being done by paleros.

ABOUT CRS

CRS is the official overseas relief and development agency of the United States Conference of Catholic Bishops and a member of Caritas Internationalis. CRS has been working in the Philippines since 1945, specializing in the fields of emergency response, sustainable agriculture, peacebuilding and disaster risk reduction.

For more information, visit crs.org.

faith. action. results.



CRS.ORG



CRS Philippines



Catholic Relief



@CatholicRelief



Catholic Relief Services (Philippines). 2/F CBCP Building, 470 Gen Luna Street. Intramuros, 1002 Manila, Philippines
Tel: (+63-2) 527-8331 to 33 | Fax: (+63-2) 527-4140

