



CLEAN CITIES, BLUE OCEAN

Social and Behavior Change for Improved Solid Waste Management and Reduce, Reuse and Recycle (3R) Practices | Samaná Province, Dominican Republic

Trials of Improved Practices: Final Results



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Table of Contents

Acronyms and Abbreviations	4
1. Introduction	5
2. Trials of Improved Practices (TIPs)	6
2.1 Research Methodology	6
Trials of Improved Practices	6
Methodological and Logistical Limitations	8
3. Trials of Improved Practices: Results and Findings	8
3.1 Arroyo Barril Municipality.....	9
3.2 Sanchez Municipality.....	14
3.3 Samaná Municipality.....	20
3.4 Las Terrenas Municipality.....	23
3.5 Summary Findings.....	27
General Conclusions	28
4. Recommendations	30

List of Tables and Figures

Table 1. TIPs Sample Size in Samaná.....	7
Table 2. TIPs Summary Analysis for Arroyo Barril.....	9
Table 3. TIPs Summary Analysis for Sánchez Municipality.....	15
Table 4. TIPs Summary Analysis for Samaná.....	20
Table 5. TIPs Summary Analysis for Las Terrenas.....	23
Figure 1. Participant in Arroyo Barril showing her results of plastic separation.....	12
Figure 2. The result of a participant trial of putting leaves together for composting.....	12
Figure 3. Trash bin with wheels bought new after household interviews in Arroyo Barril	13
Figure 4. TIPs participants from Sánchez successfully separating plastic.....	19
Figure 5. Collection truck with 12 sacks of separated plastic from TIPs participants of Sánchez and Arroyo Barril	30

Acronyms and Abbreviations

3Rs	Reduce, Reuse, Recycle
CCBO	[USAID] Clean Cities, Blue Ocean
CEBSE	Centro para la Conservación y Eco-Desarrollo de la Bahía de Samaná
IWCs	Informal Waste Collectors
SBC	Social and Behavior Change
SWM	Solid Waste Management
TIPs	Trials of Improved Practices
USAID	United States Agency for International Development

I. Introduction

On August 28, 2019, Tetra Tech was awarded the Clean Cities, Blue Ocean (CCBO) Program, a five-year, \$48 million contract from the U.S. Agency for International Development Bureau of Economic Growth, Education, and Environment. CCBO is the Agency's flagship program to respond to the global crisis of marine plastic pollution. The objectives of CCBO are to:

Objective 1: Promote reduce, reuse, recycle (3Rs) and strengthen local and regional markets for recycled plastics;

Objective 2: Build social and behavior change (SBC) for 3Rs and sustainable solid waste management (3R/SWM);

Objective 3: Increase capacity and effective governance solid waste management (SWM) and recycling systems; and

Objective 4: Support international fora, public-private partnerships, and multi-stakeholder alliances.

As a cross-cutting objective, CCBO also works to support and enhance the livelihoods of those working in the waste and recycling sectors, particularly women, as well as advance gender equality within the sector and opportunities for women's economic empowerment.

The Dominican Republic is one of CCBO's seven focal countries, which also include: Indonesia, the Philippines, Sri Lanka, the Maldives, Vietnam, and Peru. In the Dominican Republic, CCBO is providing national-level support as well as engaging directly in Samaná Province. To support its efforts, in 2020, CCBO awarded a grant to the Centro para la Conservación y Eco-Desarrollo de la Bahía de Samaná (CEBSE) to conduct research to inform its social and behavior change initiatives, as well as research to gain further insights on women's role in the solid waste management (SWM) value chain in Samaná Province, Dominican Republic—for which there was no published information available to CCBO. CEBSE's research objectives were designed to inform CCBO's approach and future programming, particularly as the program awaited the passage of the country's National Law for Solid Waste Management (which was then passed in late 2020). As one of the program's first grantees, CCBO and CEBSE also worked together to develop a research model that could be used by other grantees, adapted to other countries and cities.

Little information is available and published on the actors in Samaná's waste value chain, household waste practices, and the communities' feelings and ideas about waste. Accordingly, CCBO partnered with CEBSE to gather this information, which would be crucial to any future SBC activity as well as important for local policy and waste infrastructure development. Through its grant, CEBSE conducted formative qualitative research to understand how the citizens of the towns in Samaná Province conceptualize, handle, and feel about waste, especially waste plastic; how businesses handle waste and their opinions about it; and municipalities' plans for SWM. This report presents the results of CEBSE's Trials of Improved Practices—a research method that combines research and implementation to see what behaviors or policies should be promoted.

2. Trials of Improved Practices (TIPs)

2.1 Research Methodology

Trials of Improved Practices

To establish a more comprehensive and research-based understanding of how the SWM system in Samaná functions, why, and what might be possible in the future based on current beliefs, opinions, and actions of all these groups, CEBSE conducted interviews with household residents in the urbanized portions of the province, as well as individual in-depth interviews with: women and men informal waste collectors (IWCs), informal waste aggregators who store and then sell the waste they collect, large waste aggregators in Santo Domingo who process and export waste plastic or furniture and other objects made from waste plastic, and businesses, including from the tourist sector and fishermen's associations. In addition, CEBSE held separate focus group discussions with residents (from households), business people, and IWCs. CEBSE also spoke to municipal officials.

This kind of qualitative research is indispensable to developing an SBC strategy; it reveals the range of opinions present, and shared values, cognition, meanings, perceptions, and reactions that can be used to communicate convincingly to the various groups. It is limited, however, in predicting what people will or won't be able to do in their everyday lives, where various other factors are at play: time, resources, space, etc. To complement and build on the in-depth interviews, focus group discussions, and other outreach, CEBSE conducted **Trials of Improved Practices (TIPs)**, a rapid action research method developed by The Manoff

Group that has been used for over 40 years in health to help answer questions about what people are able and willing to do to support implementation of a program. TIPs combine research and implementation to see what behaviors or policies should be promoted. Since it is an action research approach, the TIPs themselves can sometimes generate longer term behavior change, as it did among some in Samaná.

TIPs is an iterative research technique in which a small sample of a population are asked to select and try out a new or modified behavior for a brief period their daily lives. In this case, a sample of

Waste Challenges in Samaná Province

Waste plastic litters the landscape in Samaná Province, including the beautiful beaches and rivers that flow into the waters of Samaná Bay, an important tourist destination for humans and the whales they watch. The tourist industry maintains beaches in front of their resorts, but the remaining beaches and towns do not undergo regular intensive cleanups. Although the towns collect solid waste one or more times a week, there is no municipal recycling program. Waste metal or glass is collected from houses on an unpredictable, irregular schedule by waste traders (aggregators) who specialize in these items. Plastic gets picked up with other unsegregated waste by the towns and dropped off at the town dump.

One or more previous donor-funded programs had tried an education program to segregate waste and had provided different colored bins for different items. However, the programs had not attempted to change the municipalities' SWM programs. Thus, segregated and residual waste continued to be picked up together and deposited at the dump. Residents abandoned waste segregation, having witnessed the failure to maintain the separate waste streams that they had started.

households that were interviewed earlier during the qualitative research were asked to select and try new/modified behaviors that would support improved SWM and recycling. TIPs are always conducted after completion of qualitative research so that researchers have a thorough understanding of the qualitative research results and know what behaviors might be feasible for TIPs participants to try out. From the research, TIPs researchers develop a menu of possible more environmentally supportive behaviors.

In Samaná Province, CEBSE conducted two rounds of home visits in four municipalities to facilitate the TIPs process (see Table 1). In the Dominican Republic, prior to the first TIPs visit, CEBSE researchers reviewed the qualitative research interview information particular to each household to gain an understanding of what might be possible. Members of the CEBSE research team then visited each participating TIPs household and spoke to participants about the environmental crisis Samaná, the effect of mismanaged and public waste on the environment of Samaná, and the benefits of recycling. The TIPs researcher asked whether the person/household would like to do something with their household waste to help alleviate the problem and what behaviors they would consider adopting to do so. CEBSE and CCBO knew from the qualitative research that plastic waste in the environment was a source of distress to almost everyone in the household interview sample. If the person or household could not think of any behaviors, the interviewer suggested some to try from the TIPs menu.

To facilitate and ensure participants could trial the determined behaviors, the CEBSE consortium needed to contract with someone to pick up the recyclables and ensure that they would indeed be recycled since pick up of recyclable is sporadic and unpredictable in the province. The need to set up a system in order to conduct TIPs is unusual and possibly unique in TIPs research. This approach became particularly relevant as, during the study, the Dominican Republic began making plans for a new SWM system in the Province, including closing current dumps and installing a sanitary landfill and related facilities.

A week after the first visits, CEBSE returned for a second visit to see how the participants had done. Members of the CEBSE team made it clear to the participants that this wasn't a test of them; it was a test of the behaviors to see which are the most practical to ask people to do to support improved SWM.

In total, 26 households participated in the TIPs, with only four households not completing the full trial process. While TIPs generally involve at least three household visits, TIPs participants in Samaná Province were able to be interviewed only twice during the TIPs because the qualitative research conducted provided the information that is usually gathered during the first TIPs visit.

Table 1. TIPs Sample Size in Samaná

Municipality	# of Households (1 st Visit)	# of Households (2 nd Visit)
Sanchez	7	7
Las Terrenas	9	6
Santa Bárbara de Samaná	5	4
Arroyo Barril	5	5
TOTAL	26	22

Methodological and Logistical Limitations

The process of implementing TIPs faced several unexpected challenges that the CEBSE team was able to overcome with flexibility, quick thinking, and proactive solutions. Although these challenges slightly delayed the TIPs research, the trials were ultimately able to be completed successfully. Challenges included:

- a) **Impacts of COVID-19:** Training of consultants and interviewers had to be done virtually, instead of in-person as originally planned, since members of CCBO's team could not travel due to COVID restrictions. The virtual training reduced the quality of the interactions in regard to the introduction of behaviors to participants and how to do behavior follow up via phone, rather than in-person, due to positive cases.
- b) **Unforeseen logistical challenges:** The TIPs relied on numerous actors to pilot the recommended behaviors. Unforeseen personal circumstances, such as a transportation challenge and an accident, of those involved in facilitating the trial behaviors delayed pilot logistics, i.e., segregated waste was not picked up in as timely a schedule as had been planned.
- c) **Changes to recommended behaviors:** At the start of TIPs, the recommended menu of behaviors required quick revision. The day before the first TIPs visits, the team received official information from the United Nations that a pig plague was present in the Dominican Republic and that it was not recommended to promote household collection of organic waste for pig feeding. This issue delayed the interviewers while the TIPs menu was revised to remove saving organic matter for the pig food collectors, who routinely visit many of the native Dominican households. Additional meetings with the interviewers were necessary to familiarize them with the new menu.

Although all these issues were addressed, they delayed the final results and made the implementation logistics more complex.

3. Trials of Improved Practices: Results and Findings

The following section summarizes the results of TIPS in each city, followed by a table combining the results from all TIPs sites. The tables include the behaviors agreed to by TIPs participants and related results and analysis. Illustrative quotes that encapsulate the findings follow each table. Comments made by TIPs participants appear in their original Spanish, with approximate, accompanying English translations.

3.1 Arroyo Barril Municipality

In Arroyo Barril, five households (with 21 individuals total) participated in the TIPs process. Here, nine alternate behaviors were tested, which included:

- Separation of plastic
- Separation of metal and glass
- Separation of metal
- Separation of glass
- Separation of organic kitchen waste
- Composting
- Refraining from burning trash
- Separation of plastic and piling leaves in the *patio* (i.e., the yard)
- Refraining from burning the waste from bathroom waste containers
- Inclusion of bathroom trash in residual waste (customarily the contents of bathroom waste containers are burned along with yard waste)

Table 2. TIPs Summary Analysis for Arroyo Barril

Behavior	Did	Did Not Do	Changed	Intend to Continue	Did/Would Recommend	Comments
Plastic separation	5	0	2	5	5	<p><i>“Separar la basura me dio comodidad y en el zafacón eché menos basura.”</i> "Separating the garbage gave me comfort and I put less garbage in the trash can."</p> <p><i>“Fue muy fácil, incluso en el tanque de la vecina yo busqué plásticos y vidrios para separarlos.”</i> "It was very easy, even in the neighbor's bin I looked for plastic and glass to separate them."</p> <p><i>“Es una carga menos, se me hace más cómodo para juntar toda la basura cuando pasa el camión.”</i> "It is one less burden, it makes it easier to collect all the garbage when the truck passes." NOTE: to clarify, the participant is referring to how the recyclable collection system instituted for TIPs makes the waste collection at her house easier.</p> <p><i>“Le hablé a mi vecina sobre la clasificación de plásticos que estábamos haciendo para que ella aprenda a hacer lo mismo.”</i></p>

						<p>"I told my neighbor about the classification of plastics that we have been doing so that she could learn to do the same thing."</p> <p><i>"Hablé con una vecina y echó plásticos en nuestros sacos."</i></p> <p>"I spoke to a neighbor and she put plastics in our bags."</p> <p><i>"Yo he conversado con vecinos para que no quemem los plásticos."</i></p> <p>"I have talked with neighbors so that they do not burn plastics."</p>
Separation of metal and glass	0	1	0	1	1	<p>These materials were not accumulated that week so the sack was not used.</p> <p>They used the sack as a substitute for the plastic cover in the trash that the town hall collects.</p>
Metal separation	3	0	0	3	3	
Glass separation	1	2	0	3	3	Participants did not generate glass that week.
Organic separation	3	1	1	3	4	<p><i>"Me sentí orgulloso de mi mismo."</i></p> <p>"I felt proud of myself."</p> <p><i>"El ayudante del patio botó en los plátanos el orgánico para compostar."</i></p> <p>"The yard helper threw the organic to compost [directly] into the plantain trees."</p>
Composting	1	0	0	1	1	<p><i>"En el caso de los orgánicos es bueno para la fertilización de los viveros que sembramos."</i></p> <p>"In the case of organics, it is good for fertilizing the food we grow."</p>
Not burn trash	2	1	0	1	3	<p><i>"Había llovido y para evitar acumular basura en el patio solo quemé la hierba del patio."</i></p> <p>"It had rained and to avoid accumulating garbage in the yard, I only burned the grass in the yard."</p> <p><i>"Sabemos que no es bueno quemar, ahora lo hicimos con menor frecuencia."</i></p> <p>"We know it's not good to burn, now we did it less often."</p>
Separation of plastic and pile patio leaves	1	0	0	1	1	<p><i>"Si yo lo voy a continuar y me gustó el Sistema de hacerlo. Ya mis nietos les dicen a otros niños que no boten la basura que el abuelo las está poniendo separadas en un saco."</i></p> <p>"Yes, I am going to continue it and I liked the system to do it. My grandchildren already tell other children not to throw away the garbage [and] that grandfather is putting them separately in a sack."</p>
Separation of bathroom trash in bags*	2	0	0	2	2	

Summary Data from First TIPs Interview

Before beginning the TIPs and to discuss and identify practices to be tested, researchers met with the five households and their 21 inhabitants. Through these interviews, CEBSE captured the following findings around individuals' current behaviors and attitudes toward waste (before the TIPs):

- In two households, children were the only household members who threw trash in public areas and natural spaces, however all households reported that their children also used trash bins.
- Two households were separating plastic and metal before TIPs, but were frustrated that the recyclables ended mixed in the landfill
- One household separated metal before TIPs and gave it to metal buyers
- Most households (four out of five) burned trash
- Most households (four out of five) also expressed that they wanted more trash bins (one for the bedroom, three for the patio, and one for the kitchen)
- Two out of five complained of lack of time for separating materials or composting during the first visit; no one complained during the subsequent visit (after practicing the new separation behaviors)
- Ethnic Dominican households native to Samaná reported that they left food scraps out for pigs (two households) and dogs (one household)

Observations and Analysis

In this municipality, 100% of participants (5/5) committed to and successfully adopted the behavior of separating plastic in a sack dedicated exclusively to this end—researchers had provided reinforced, stout plastic sacks for the purpose. All reported it to have been a relatively easy behavior to adopt and were willing to continue to do so if there is a program that supports this. Arroyo Barril also had the largest number of participants who shared information on recycling and included their neighbors in recycling plastic, which was not suggested as a new behavior during the TIPs interviews, but was independently adopted by TIPs participants. After completing the TIPs, many of the Arroyo el Barril participants shared their desire to have more government support and resources for these types of behaviors. They also shared a sense of satisfaction and pride in being more involved, organized, and thoughtful about their waste disposal. Several participants observed the direct benefit of having trash more organized and making it lighter/easier to handle the trash that the municipal truck picks up.

“Nos gustaría que el ayuntamiento nos facilite más tanques para poder colocar la basura.”

“We’d like for the City Hall to give us more containers so we can place the garbage.”¹

“Nos gustaría que el ayuntamiento haga esto que ustedes están haciendo. Además de facilitarnos los sacos nos den apoyo educativo.”

¹ These are big containers (industrial trash bins) that the municipality places on the streets. For an example, see <https://www.wallpaperflare.com/blue-industrial-trash-bin-dumpster-garbage-trashcan-container-wallpaper-amseu>

“We’d like for the city hall to do this that you are doing; in addition to the sacks, they should give us educational support.”

“Separar la basura me dio comodidad y en el zafacón eché menos basura”.

“Separating the garbage gave me comfort and I threw less garbage in the trash can.”

“Para mi esta experiencia fue como organizar las gavetas y/o closet de mi habitación, me siento organizada y me siento importante por hacer algo por el medio ambiente.”

“For me this experience was like organizing the drawers and/or closet in my room, I feel organized and I feel important to do something for the environment.”



Figure 1. Participant in Arroyo Barril showing her results of plastic separation

Interim Results

In this municipality, the level of satisfaction in participating on TIPs was consistently positive and supportive. As one participant noted, *“Me dio una sensación como que estaba haciendo algo por el planeta, como que soy importante para mi comunidad, a la vez una sensación de orgullo y orden.”* / **“It gave me a feeling like I was doing something for the planet, like I’m important to my community, at the same time a sense of pride and order.”**

Several of the observed, immediate results included:

Reduced burning of waste: According to the household interviews conducted in Arroyo Barril, this municipality had the greatest number of reports of burning trash and the practice is more commonplace than in the other municipalities. Of the three people who made a firm commitment to stop burning trash, two achieved the desired behavior. The individual who did not stop burning trash reported to have burned less than usual and that he had to manage some excess patio grass. He also reported, *“Sabemos que no*



Figure 2. The result of a participant trial of putting leaves together for composting

es bueno quemar, ahora lo hicimos con menor frecuencia.” / “We know that it is not good to burn, now we do it with less frequency.”

Increased waste segregation: More people adopted the behavior of separating organics (four out of five) in Arroyo Barril than in the other municipalities, however several people did not succeed in adopting the behavior of segregation of glass and metal, not due to lack of will but because their consumption was very low that week. Two of the five who successfully segregated plastic waste also appreciated the reduction in waste to give to the municipal waste collectors.

More realistic perception of time required to practice more sustainable behaviors: Interestingly, this was the only municipality where in the first interview, participants reported the issue of lack of time to try out the options presented. However, on the second visit none reported time availability to be a limitation to implement the committed behaviors.

Demonstrated need for behavior-supporting resources: Almost all participants (four out of five) reported the need for more trash bins, with requests for the town hall to provide support for this. Participants stated they would use the bins to handle patio leaves and grass, which might lessen the need to burn these types of materials.

Interestingly, and as unexpected positive change of behavior, at least two participants decided to buy wheeled trash containers, which are much more expensive than normal trash bins, as an alternative of burning patio leaves and plastic. Participants made this decision and purchased the bins as a direct result of participating in the household interviews, even before TIPs were implemented. One of these participants is notable because he owns a transportation company and generates a considerable amount of plastic.

Participants also showed agreement that a municipal education program is needed and that positive results are possible. Participants mentioned:

- *“Hay que hablar con la comunidad y aunque al principio no funcione, muchos van a seguir [lo enseñado] y [van a] servir de ejemplo. Explicarles de qué se trata la separación de la basura y lo bueno que es para el planeta.”* / “[We] have to talk with the community and although at the beginning it may not work, a lot will follow [what has been taught] and [they will] be examples to others. [We have to] explain to them what segregating trash is, and how good it is for the planet.”
- *“Las familias ya entienden que no debe tirarse el plástico y todavía no entienden que no debe continuar haciéndolo, entonces necesitan más formación sobre las consecuencias de no cuidar el medio ambiente.”* / “The families now understand that they shouldn’t throw plastic, and [if] they still don’t understand that they shouldn’t continue doing it, then they need more training on the consequences of not taking care of the environment.”



Figure 3. Trash bin with wheels bought new after household interviews in Arroyo Barril

- *“Estamos como los niños cuando saben que algo no está bien pero lo Siguen haciendo. Ese es el comportamiento que la gente tiene. Hay que trabajar mas en la consciencia de las personas.” / “We are like kids, when they know that something is not right, but they continue doing it. This is the behavior that people have. We have to work harder on the awareness of people.”*

Willingness to promote behaviors to friends and neighbors: Arroyo Barril also had the largest number of participants who shared information on recycling and included their neighbors in recycling plastic, which was not suggested as a new behavior during the TIPs interviews, but was independently adopted by TIPs participants. All participants were willing to recommend some of the new behaviors adopted and at least three of the households already had engaged in conversations with neighbors and one even convinced a neighbor to participate. *“Hablé con una vecina y echó algunos plásticos en nuestros sacos.” / “I told a neighbor and she threw some of her plastics in my sacks.”* Another participant understood the danger of burning waste and shared, *“Yo he conversado con vecinos para que no quemem los plásticos.” / “I spoke with my neighbors so they don’t burn plastics.”*

3.2 Sanchez Municipality

In Sanchez, seven households (with 34 individuals total) participated in the TIPs process. Here, eight alternate behaviors were tested, which included:

- Separation of plastic
- Separation of metal and glass
- Separation of metal
- Separation of glass
- Organic separation
- Composting
- Refraining from throwing garbage on the “seashore”
- Separation of bathroom trash in bags

Table 3. TIPs Summary Analysis for Sánchez Municipality

Behavior	Did	Did Not Do	Changed	Intend to Continue	Did/Would Recommend	Comments
Plastic separation	7	1	0	1	3	<p>“Si hubiese tenido más sacos y más tiempo, más potes habria recogido.” <i>"If I had had more bags and more time, I would have collected more plastic."</i></p> <p>“Le dije a los vecinos que estabamos separando basura.” <i>"I told neighbors that we were separating garbage."</i></p> <p>“Me senti bien, creo es beneficioso. Ojalá se pueda continuar.” <i>"I felt good, I think is beneficial. I hope it can continue. "</i></p> <p>“Quizás pueda practicar esto mejor en mi lugar de trabajo ya que vivo sola en casa y casi no genero residuos.” <i>"Maybe I can practice this better in my workplace since I live alone at home and generate almost no waste."</i></p> <p>“Yo empecé a hablarles a los niños de la problemática de medio ambiente. Les dije que todo plástico que usaran debían tirarlo en el saco que habia puesto en el patio.” <i>"I started talking to the children about the environmental problem. I told them that all plastic they used should be thrown in the sack that I had put in the yard."</i></p>
Separation of metal and glass	1	2 ²	0	2	2	<p>“Una vecina vino a mi casa a preguntarme sobre esos sacos tan bonitos para qué eran. Le expliqué que para clasificar la basura.” <i>"A neighbor came to my house to ask me what those beautiful sacks were for. I explained that [they are] to classify the garbage. "</i></p>
Metal separation	2	1 ³			2	

² For one did not do: There was no collection of metal or glass because the household had not produced any that week, but the household is still willing to segregate these.

³ One participant did not have any metal to collect.

Glass separation	3	1		3	3	“Mi cuñado me preguntó y le expliqué que estaba separando.” “My brother-in-law asked me and I explained that I was separating.”
Organic separation	4			4	4	“Algunos vecinos me dijeron que no tengo oficio. Les dije que ojalá todos nos pusieramos a uno y lo hicieramos igual todo.” “Some neighbors told me I have nothing to do. I told them that I wished we all would unite and do it all the same.[the waste segregation].”
Composting		1 ⁴	1	1	1	
Do not throw garbage on the seashore	1				1	
Separation of bathroom trash in bags	1			1	1	

Summary Data from First TIPs Interview

Before beginning the TIPs and to discuss and identify practices to be tested, researchers met with the seven households and their 37 inhabitants. Through these interviews, CEBSE captured the following findings around individuals’ current behaviors and attitudes toward waste (before the TIPs):

- The majority of households (five out of seven) wanted more trash bins (4 for their patios and one for the front of the house)
- None complained about lack of time to segregate waste, etc.
- Regarding current waste behaviors, none reported burning their trash; one household separated plastics already and gave it to someone who picks plastics up; two households separated some of their organics out for their plants; and two households mentioned that they had already gained some segregation skills from a former JICA project around 2017.
- Four households promised to separate organics for pig food and one for dog food

⁴ Instead of composting, the interviewee used the bin to store pig food.

Observations and Analysis

Almost all participants from Sánchez (six of seven) committed and successfully adopted the behavior of separating plastic in a dedicated sack. At least two participants included children in the segregation of plastics. In general, participants reported segregation to have been a relatively easy behavior to adopt and are willing to continue to do so if there is a program that supports this, also an increased sense of empowerment was expressed: *“Esta iniciativa está bien, esos plásticos y esas botellas no deberían estar en la playa. La gente no quiere cooperar pero creo que si uno le explica bien ellos harían lo mismo que hice yo.”* / **“This initiative is fine, those plastics and those bottles should not be on the beach. People don’t want to cooperate but I think that if you explain them well they would do the same as I did.”**

None of participants from Sánchez reported that they burned trash, although visual evidence from interview visits suggests that some did burn at least partially, but nevertheless none admitted to burning trash. Connected to this, a majority of participants (five of seven) reported the need of more trash bins. The needed bins are to handle patio and garden leaves and grass which can ease the pressure to burn trash if that practice actually happens. One participant disposed of her trash directly on the beach besides her house, a behavior she changed during the TIPs.

In regard to the follow up for this experience, participants suggest improvements to the waste collection systems so that waste segregation efforts are not lost upon collection. Others requested support for more bags and time to support their waste collection and separation efforts. The two participants who committed to separate metal and glass together were not able to do it, reporting that they didn’t produce enough waste of these materials. It could be attributed to the fact that metals already have a market and people sell it to the *guaguita* (scrap metal collector). Participants showed consensus that a municipal education program is needed and that positive results are possible as this participant mentions.

At least four participants had conversations with neighbors about their new behaviors. Three of these participants got positive feedback from neighbors but one received negative comments.

Interim Results

In this municipality, households overall reported adoption of trial behaviors more often than not and, in several cases, recommended to others in the community and/or noted that they would continue the behavior.

Several of the observed, immediate results included:

Demonstrated need for behavior-supporting resources: In general, participants reported segregation to have been a relatively easy behavior to adopt and were willing to continue to do so if there were a program that supports this.

Several participants reported that the key to making a lasting change is implementing an education program. *“Esta iniciativa está bien, esos plásticos y esas botellas no deberían estar en la playa. La gente no*

quiere cooperar pero creo que si uno le explica bien ellos harían lo mismo que hice yo.” / **“This initiative is good; those plastics and bottles should not be in the beach. People do not want to cooperate but I think that if you explain it well to them, they would do the same thing I did.”**

In addition to educational resources, participants noted that they would have benefitted from additional resources, like waste bins. None of participants from Sánchez reported burning trash, although visual evidence from interview visits suggests that some did burn, at least partially. Connected to this, a majority of participants (five out of seven households) reported the need of more trash bins. They needed bins to handle patio and garden leaves and grass which can ease the pressure to burn trash. Although one participant changed her practices during the TIPs—ceasing disposal of her trash directly on the beach beside her house—an even greater impact could have been made with additional resources. *“Si hubiese tenido más sacos y más tiempo, más potes habría recogido.”* / **“If I’d have had more sacks and time, I’d have picked up more glass and plastics.”**

Participants also expressed desire for a system that would be compatible with these new, improved practices. When probed on feedback about their TIPs experience, a participant suggested: *“Recomendaría separar pero con un sistema, porque si el camión se lo lleva junto no estamos en nada.”* / **“I would recommend segregation but with a system, because if the truck is going to take everything together, we are not doing any good.”**

Barriers to new behaviors, despite willingness: Some TIPs participants were willing to try behaviors but were not able to for various reasons—ranging from low waste generation to systemic challenges.

Regarding challenges around low waste volumes, the only person who didn’t comply with the committed behavior stated: *“Quizás pueda practicar esto mejor en mi lugar de trabajo ya que vivo sola en casa y casi no genero residuos.”* / **“Maybe I can practice this better at my work place, as I live alone and I don’t generate too much waste.”** Another two participants who committed to separate metal and glass together were not able to do it, reporting that they didn’t produce enough waste of these materials during the TIPs period. It could be attributed to the fact that metals already have a market and people sell it to the “guaguita” (a small truck that drives around buying metals from people).

Participants showed agreement that a municipal education program is needed and that positive results are possible, as the participant quoted above mentioned. For example, participants shared that they used the buckets provided for composting for pig food. Composting is something they don’t handle well. They think that it should be taught in order to be able to do it. From all participants only one committed to compost and was not able to do it. They found it easier to save all organic waste for pig food. Saving organic waste for pig food had originally been on the TIPs menu, but was removed upon learning of the pig epidemic—this is what native Samaná ethnic Dominicans were accustomed to doing. Almost all expressed the opinion that they would like to continue segregating, but segregation of waste is currently nearly impossible under the current SWM system, where municipal collectors put all waste together and empty it on the town landfill. The bottle and metal collectors who visit homes also do not do so on a regular schedule.

In El Cangrejo area, the president of the Neighborhood Council requested workshops that allow residents to learn how to manage their waste. To support this, one participant expressed: *“Hay que orientar a las familias y los niños en las escuelas.”* / **“We have to provide orientation to families and to kids in school.”** Most of the interviewees agree with regard to composting, separation and trash management that: *“Si les enseñan, ellos pueden aprender.”* / **“If they are taught, they can learn.”**

Willingness to promote behaviors to friends and neighbors: A number of Sanchez participants recommended their new behaviors to other community members and shared information to increase their awareness of the waste issues. At least four participants had conversations with neighbors about their new behaviors.

- *“Yo empecé a hablarles a los niños de la problemática de medio ambiente. Les dije que todo plástico que usaran debían tirarlo en el saco que había puesto en el patio.”* / **“I started to talk to the kids about the problems in the environment. I told them that all the plastics they used should be thrown in the sack I placed in the patio.”**
- *“Fue muy novedoso y me siento satisfecho de que estoy educando a mis hijos sobre el medio ambiente, y aunque no se ha logrado del todo ya ellos tienen ese conocimiento.”* / **“It was a novelty and I feel satisfied that I am teaching my children about the environment, even though we haven’t totally succeeded, at least they now have the knowledge.”**
- *“Una vecina vino a mi casa a preguntarme sobre esos sacos tan bonitos para qué eran, le expliqué que para clasificar la basura.”* / **“A neighbor came to my house to ask me what those beautiful sacks were for, and I explained they were to classify waste.”**

Three of these participants got positive feedback from neighbors but one received negative comments: *“Algunos vecinos me dijeron que no tengo oficio, les dije que ojalá todos nos pusieramos a uno y lo hicieramos igual todo.”* / **“Some neighbors told me that I had nothing to do; I told them that I wished all would start doing this and all would do it the same.”**



Figure 4. TIPs participants from Sánchez successfully separating plastic

3.3 Samaná Municipality

In Samaná, four households (with 14 individuals total) participated in the TIPs process. Here, seven alternate behaviors were tested, which included:

- Separation of plastic
- Separation of metal
- Separation of glass
- Composting, mixing organic waste with patio leaves
- Separation of plastic and pile patio leaves
- Refrain from burning trash
- Separation of bathroom trash in bags

Table 4. TIPs Summary Analysis for Samaná

Behavior	Did	Did Not Do	Changed	Intend to Continue	Did/Would Recommend	Comments
Plastic separation	2 ⁵	1 ⁶	2	0	1	<p>“Si porque eso nos ayuda a que haya menos basura en las calles.” “Yes, because that helps us to have less garbage in the streets.”</p> <p>“Nunca me acordaba de los plásticos y lo eché a la basura, es positivo porque uno no está impuesto a eso.” “I would never remember plastics and would throw them in the trash, [segregating plastics] is positive because one is inspired to do it.”</p> <p>“Que separen es positivo para que después pueda ser utilizada para otras cosas utiles.” “That they separate is positive so that later it can be used for other useful things.”</p>
Metal separation	1	2	0	0	1	<p>“No quiero esas cosas acumuladas en mi casa. Uno tiene que estar lavando eso también.” “I don't want those things accumulated in my house. You have to wash them too.”</p>
Glass separation	2			1	2	<p>“Me sentí rara y bien; porque no estaba segura si lo estaba haciendo bien y bien porque estaba ayudando de manera positiva al medio ambiente”.</p> <p>“I felt strange and good; [strange] because I was not sure if I was doing it well and [I felt] good because I was helping the environment in a positive way.”</p>

⁵ One participant practiced separation, but only with one type of plastic (water bottles). The participant also did not use the provided sacks for fear that they would be stolen and, instead, found a smaller sack where everything could still be put together, separated from the rest of the garbage.

⁶ One participant could not practice the behavior because the husband took the bags to throw sand.

Compost mixing organic with patio leaves	1	0	0	1	1	<p><i>“Que separen es positivo para que después pueda ser utilizada para otras cosas útiles.”</i></p> <p>“That they separate is positive so that later it can be used for other useful things.”</p>
Separation of plastic and pile patio leaves	1	0	0	0	1	<p><i>“Me sentí orgulloso de mi mismo.”</i></p> <p>“I felt proud of myself.”</p> <p><i>“El ayudante del patio botó en los plátanos el orgánico para compostar.”</i></p> <p>“The yard helper threw the organic to compost [directly] into the plantain trees.”</p>
Not burn trash	1	0	0	0	0	<p><i>“En el caso de los orgánicos es bueno para la fertilización de los viveres que sembramos.”</i></p> <p>“In the case of organics, it is good for fertilizing the food we grow.”</p>
Separation of bathroom trash in bags		1	0	0	0	<p><i>“Había llovido y para evitar acumular basura en el patio solo quemé la hierba del patio.”</i></p> <p>“It had rained and to avoid accumulating garbage in the yard, I only burned the grass in the yard.”</p> <p><i>“Sabemos que no es bueno quemar, ahora lo hicimos con menor frecuencia.”</i></p> <p>“We know it's not good to burn, now we did it with less frequency”</p>

Summary Data from First TIPs Interview

Before beginning the TIPs and to discuss and identify practices to be tested, researchers met with the four households and their 14 inhabitants. Through these interviews, CEBSE captured the following findings around individuals’ current behaviors and attitudes toward waste (before the TIPs):

- Some (two out of the four) households burned their trash
- None of the households stated that a lack of time prevented them from practicing positive solid waste management behaviors; all of their children used trash bins
- The majority (three of four households) stated that they would like more trash bins (one for each the yard (patio), kitchen (cocina), and bedroom
- Half of the households left food scraps for pigs

Observations and Analysis

In this municipality, half of the households managed to separate plastics and glass from the rest of the garbage as a result of the TIPs. One household separated some kinds of metal from the rest of the garbage. Two behavioral changes regarding the separation of plastics and glass were recorded; in the case of plastic, only water bottles were separated; however, they said they did not have intention of continuing to do because they do not want to accumulate things at home and mentioned the need to wash the bottles before sorting them. Half also expressed fear in losing the provided bags, and not having a safe space to store them. One household managed not to burn garbage, although they did not commit to continue doing it. *“No tengo un sitio seguro para los sacos porque se lo pueden robar.”* / **“I don’t have a safe place for the bags because they can be stolen.”**

Interim Results

In this municipality, more households were hesitant to continue trialed behaviors than in the other municipalities. In general there was **low willingness to continue to trial behaviors, although reported positive experiences**: A number of Samaná residents reported positive opinions about the actions they had taken.

- *““Con estos cambios estamos ayudando con la mejoría del planeta”* / **“With these changes we are helping to improve the planet.”**
- *“Deberían darle a más familias los sacos para que puedan hacerlo.”* / **“They should give more families the bags so they can do it.”**

One household was able to comply with the action of mixing leaves and organic waste for compost but did not commit to continue with this practice. In the municipality, none of the household participants showed an explicit interest in continuing to make the behavior changes. Researchers observed a generalized apathy towards the issue of garbage management, which could be associated with the large number of investigations and public and private initiatives in Santa Bárbara de Samaná that have taken place in the area in the last 30 years (the municipality of Samaná is the city with more initiatives being tried in the province), without the population being able to see concrete lasting results. This includes USAID community-based projects from the 1990s, a recycling project sponsored by ECORED (2013-2017), different government interventions (both from central and municipal administration) and many research projects (GIZ, JICA, UNDP and others). This attitude was present in all the contacts made during the different stages of the interviews. All households showed relief when the bags were collected; and they did not show any commitment or awareness that they were doing something for the environment, but rather a favor to the interviewer (as per the interviewer perception).

3.4 Las Terrenas Municipality

In Las Terrenas, six households (with 16 individuals total) participated in the TIPs process. Here, six alternate behaviors were tested, which included:

- Separation of plastic
- Separation of metal
- Separation of glass
- Separation of organics
- Composting
- Refrain from burning trash

Table 5. TIPs Summary Analysis for Las Terrenas

Behavior	Did	Did Not Do	Changed	Intend to Continue	Did/Would Recommend	Comments
Plastic separation	4	1	1	1	3	<p><i>“Hablé con mi madre, padrastro, ambos me dijeron que estaba bien y recomendaría que reciclen, porque no es bueno que se junte el cristal con el plástico.”</i></p> <p>"I spoke with my mother [and] stepfather, they both told me it was fine and I would recommend they recycle, because it is not good for glass to come together with plastic."</p> <p><i>“Conversé con los vecinos, algunos me dijeron que esta bien. Algunos me ayudaron a recoger plásticos.”</i></p> <p>"I spoke with the neighbors, some told me that it [the household collection of recyclables instituted solely for TIPs] is fine. Some helped me collect plastics."</p> <p>NOTE: participant used the word 'it' as referring to the household recyclable collection system instituted just for TIPs</p> <p><i>“Son unas prácticas que no son muy difícil de realizar y tiene un impacto muy positivo.”</i></p> <p>"They are practices that are not very difficult to do and have a very positive impact."</p> <p><i>“Es un buen proyecto para el medio ambiente, más organización sobre la basura, que se puede hacer mejor y que todo marcharía mejor y que es más práctico para las mismas personas.”</i></p>

						<p>"It is a good project for the environment, more organization on garbage, that can be done better and that everything would work better and that is more practical for the same people."</p> <p><i>"Se hizo muy fácil la separación. Cuando llegaron los sacos, yo llamé a mis niñas para enseñarles a identificar la basura, les dije este saco es para la basura plásticas y este es para los vidrios, después desde que veían plásticos iban y lo echaban en la basura."</i></p> <p>"It made separation very easy. When the sacks arrived, I called my children to teach them to identify the garbage, I told them this bag is for plastic garbage and this is for glass, after that, every time they saw plastics, they picked them up and threw in the garbage."</p>
Metal separation	4			1	2	<p><i>"Mi vecinos me preguntaron que para que era eso, y les comenté que es una fundación que está haciendo una iniciativa para seleccionar la basura."</i></p> <p>"My neighbors asked me what that was for, and I commented that it is an initiative by a foundation to segregate the garbage."</p>
Glass separation	5			3	5	<p><i>"Porque me gustó y se siente bien, tomar la responsabilidad de la basura, es bueno de salir de la rutina de ponerla toda junta y ponerla en el camión, y mas sabiendo que puedes hacer algo más con ella." / "Because I liked [it] and it feels good, to take responsibility for the garbage, it's good to leave the routine of putting all together and taking it in the truck and knowing you can do something more with it [the garbage]."</i></p>
Organic separation	1			1	1	<p><i>"Que hagan compostaje, ya que en la mayoría de la casas generan mucha comida organica y también la clasificación de los vidrios, plásticos y metales."</i></p> <p>"Let them do composting, because there is a lot of organics generated in the majority of homes as well as let them classify glass, plastics and metals."</p>
Composting		1 ⁷		1	1	
Not burn trash	1	1		1	1	<p><i>"Respecto a la quema de basura, tendré que volver a quemar porque hay muchas ramas y eso genera muchos mosquitos."</i></p> <p>"In respect to burning garbage, I will have to return to burning because there are a lot of branches and that produces many mosquitoes."⁸</p> <p><i>"Se nos hizo fácil no quemar la basura, ya tiene un mes detrás de la casa y no la hemos quemado."</i></p> <p>"It was easy for us not to burn the garbage, as of now it has been a month behind the house and we haven't burned it."</p>

⁷ One participant reported that he was not able to compost because the grass hadn't been cut.

⁸ Although no one explained this in the TIP, yard waste is burned also in order to keep mosquitoes away.

Summary Data from first TIPs interview

Before beginning the TIPs and to discuss and identify practices to be tested, researchers met with the four households and their 14 inhabitants. Through these interviews, CEBSE captured the following findings around individuals' current behaviors and attitudes toward waste (before the TIPs):

- Half of the households (three of six) reported that they burned their waste
- Half also stated that they would like more trash bins, particularly two large bins for outside
- None of the households reported that they lacked time for solid waste management practices
- All reported that their children used trash bins
- Half of the households noted that they left food scraps for pig food and one household for dogs

Observations and Analysis

Las Terrenas presented more challenges to TIPs practitioners than other municipalities, with difficulties faced in scheduling second interviews. A lot of mobility amongst the participants was reported, including two participants who were changing housing at the time of the second interview, which prevented completion of their second interview.

Overall, however, almost all (five of six) households committed and successfully adopted the behavior of separating plastic in a sack dedicated exclusively to this end. In general participants reported this had been a relatively easy behavior to adopt and were willing to continue to do so if there is a program that supports this. Even the only person that didn't separate any materials, expressed:

“Son unas prácticas que no son muy difícil de realizar y tiene un impacto muy positivo.” / **“These are some practices that are hard to do, but they have a positive impact.”**

Interim Results

Las Terrenas is the city that reflects the wider and mixed array of results in the implementation of TIPs, reflecting the cultural and socioeconomic diversity of the municipality. This is the city where with more urban patterns, e.g., participants living in apartments (no patio access for many participants), changing homes frequently, and high production of trash in places that are not home base (work spaces).

Several of the observed, immediate results included:

Mixed success in reduced burning of waste: Half of participants from Las Terrenas reported in the first interview that they burn trash. Two of these participants were able to fulfill the commitment of not burning trash commenting that: *“Se nos hizo fácil no quemar la basura, ya tiene un mes detrás de la casa y no la hemos quemado.”* / **“It was easy to not burn trash; we have had it for a month in the back of the house, and we haven't burnt it.”** One participant, however, was not able to commit to ceasing burning waste and expressed, *“Respecto a la quema de basura, tendré que volver a quemar porque*

hay muchas ramas y eso genera muchos mosquitos.” / “Regarding the burning of trash, I’ll have to burn again because there are too many branches and that generates a lot of mosquitoes.”⁹ According to the household interviews conducted in Arroyo Barril, this municipality had the greatest number of reports of burning trash and the practice is more commonplace than in the other municipalities. Of the three people who made a firm commitment to stop burning trash, two achieved the desired behavior. The individual who did not stop burning trash reported to have burned less than usual and that he had to manage some excess patio grass. He also reported, “*Sabemos que no es bueno quemar, ahora lo hicimos con menor frecuencia.*” / “**We know that it is not good to burn, now we do it with less frequency.**”

Demonstrated need for behavior-supporting resources: Although to a lesser extent than other municipalities, (three of six) participating TIPs households also reported the need of more trash bins, The needed bins are to handle patio waste. One participant also requested a big container for the front street to be used by the neighborhood for all kinds of trash.

Willingness to promote behaviors to friends and neighbors: At least half of households participants reported that they had conversations with neighbors about their new behaviors, and one reported that they had convinced neighbors to participate: “*Conversé con los vecinos, algunos me dijeron que está bien, algunos me ayudaron a recoger plásticos.*” / “**I talked with the neighbors, some said it was a good thing, and some helped picking up plastics.**” Another one expressed: “*Mis vecinos me preguntaron que para que era eso, y le comenté que es una fundacion que está haciendo una iniciativa para seleccionar la basura.*” / “My neighbors asked me what this was for, and I told them it is a foundation that is doing an initiative to segregate the garbage waste.” Another participant involved extended family in the trial: “*Hablé con mi madre, padraastro, ambos me dijeron que estaba bien y recomendaría que reciden, porque no es bueno que se junte el cristal con el plástico.*” / “**I spoke with my mother and stepfather, and they both said this was good, and would recommend recycling, because it is not good to mix glass with plastics.**”

Expressed desire to continue implementing new behaviors: Regarding the follow up for this experience all participants expressed positive support. Participants commented:

- “*Yo sé que este es un estudio, un proyecto de práctica, pero sería fabuloso seguir haciéndolo de esta manera.*” / “**I know this is a study, a trial, but it would be fabulous if we could continue doing it this way.**”
- “*Se siente bien, porque cuando tu estas separando los vidrios y plásticos, uno se siente como wao, mira como estoy ayudando el medio ambiente.*” / “**It feels good, because when you are segregating glass and plastics, one feels like ‘wow,’ look how I am helping the environment.**”

Several participants showed awareness of the wider impact their actions can achieve:

- “*Porque así contribuiría a la educación de las personas sobre la basura y así habría lugares con menos contaminación.*” / “**Because I could contribute to the education of the people about waste, and there would be places with less contamination.**”

⁹ Mosquitoes are the vectors for several diseases in the Dominican Republic, e.g, dengue, Chikungunya, and (rarely) malaria.

- “Es una buena práctica y si todo la llevamos a cabo, pudiéramos minimizar toda la basura que llega al mar, a los ríos y a las calles también.” / “This is a good practice and if we could see it through, we could minimize all the trash that ends up in the ocean, rivers and streets too.”

3.5 Summary Findings

In total, twenty-two households with eighty-three residents participated in the TIPs from four municipalities: Arroyo Barril, Sanchez, Samaná, and Las Terrenas. Results of the trials are summarized in Table 5.

Table 5. Consolidated Data Final TIPs

Behavior	Did	Did Not Do	Changed	Deviations from Intended Behavior	Intend to Continue	Will Recommend
Plastic separation	17	6	6	1. Neighbors' involvement 2. Husband filled sack with sand 3. Used a smaller sack because of fear of being stolen 4. Only separated water bottles 5. Use of sack the same way as was using plastic bags for general trash 6. Collected plastics from neighbor	17	18
Metal separation	10	6			10	11
Glass separation	12	6			12	13
Organic separation	8	3	2	1. Worker mixed organics with trash 2. The organic material was dropped directly into plantains trees	8	7
Separation of plastics and glass in Single sack		1				
Separation of metal and glass		4	2	1. Used sack for general trash 2. Sack was stolen and used own buckets	1	1
Separation plastics, metal and	1		1	Was afraid sacks would be stolen, got a smaller sack		

glass in Single sack						
Separation of plastic and pile patio leaves	2					
Separation of bathroom trash in bags	3	1			3	3
Not burn trash	5	3	1	Burned less trash	3	5
Compost mixing organic with patio leaves	3	2	1	Used buckets for pig food	3	2

General Conclusions

Summary results of trialed behaviors:

The city which showed more commitment and satisfaction from the TIPs experience was Arroyo Barril, where all participants (5/5) implemented most behaviors they had agreed to do and reported intent to continue with these behaviors. The next city with a similar supportive outcome is Sánchez. In both of these cities several households reported a previous waste separation experience from the Japanese Cooperation that they said increased capacities and interest in waste separation. Las Terrenas is the city that reflects the wider and mixed array of results in the implementation of TIPs, reflecting the cultural and socioeconomic diversity of the municipality. This city has more urban patterns, e.g., participants living in apartments (no patio access for many participants), changing homes frequently, and high production of trash in places that are not home base (work spaces).

- Most participants (17/22) committed and successfully adopted the behavior of separating plastic in a dedicated sack for this end, suggesting that adopting the behavior of separating plastic is very feasible on a wider population scale if the proper collection system support is present.
- Several households were already separating metal and glass because there is a market for this in place. It's also observed that, if proper technical support is provided, there is willingness to try this behavior from many households that have not been separating these materials.
- Of the eight participants who agreed to stop burning trash, five were able to do so.
- Participants observed that it's possible and relatively easy to separate the plastic that is usually mixed with the patio leaves and to pile the grass and leaves under a tree. Several observed the need to have an extra trash bin or container in the patio if leaves or grass cuts overwhelms the patio space.
- Of the recommended practices, composting was the most challenging practice to be implemented. It requires more support and follow up than any of the other behaviors. Related to this, eight of eleven participants that agreed to separate organics did it successfully—the first necessary step to implement a composting practice.

- The practice of separating food leftovers for pigs and other animals (dogs) is even more widespread than reported on the household interviews. More than half (14/22) of the TIPs participants already implement this practice, although it was not explicitly promoted as a TIPs behavior because of the pig plague that broke out during the trials. Still, participants reported the doing it. For example, several participants used the bucket for organics for pig food. Related to this, not a single participant showed concern or awareness that a pig plague is underway, nor did we observe any prevention activity from official authorities.

Additional positive outcomes observed:

- Many participants by their own initiative (because it was not a formal TIPs behavior) shared with neighbors about the trial behaviors they were implementing, and, with the exemption of a single participant, they all reported positive feedback from the neighbors. Also, several participants (at least five) not only had conversations but actively involved neighbors or children in the plastic separation practice, which indicates the potential of implementing a program that can be driven by leadership of participant implementers.
- In the design of TIPs instruments it was assumed from the household interview data that lack of time or space was a potential limitation for implementing changed behaviors in some households. In the end not a single household reported lack of time or space for not implementing any of the committed behaviors.

Barriers and Challenges:

- Samaná municipality is identified as the city where there are more cultural barriers and general apathy to implement positive new behaviors related to waste management. This could be associated with the large number of investigations and public and private initiatives that have taken place in the area in recent years, without the population being able to see concrete results or the small sample. In short, Samaná participants may be showing some kind of burnout related to the topic of waste management. Samaná residents may need to see a real, permanent change in the SWM system and be assured that segregated waste will remain in separate waste streams and will be recycled.
- For several participants we observed that more information about the purpose of the project, the objectives, and future benefits of the research of TIPs could have increased the level of commitment, especially in Samaná city.
- Although almost everyone burns the contents of their bathroom waste container, relatively few people chose to stop this burning and add the bathroom waste container content to their residual waste. The household interviews indicated strong adherence to modesty and hygiene as the reason for this burning. If this waste could be guaranteed to be kept private (i.e., inaccessible to dogs and informal waste collectors), more people might be willing to stop burning.

Overall, there was consensus by all participants of the relevance and importance of implementing these changed behaviors. This even includes participants who were not able to comply or do not intend to continue with the behaviors (case of Samaná); there is the perception that these practices should be scaled up.

4. Recommendations

As a result of the TIPs, several recommendations have been developed—both to inform future Clean Cities, Blue Ocean programming and the actions and decisions of other donors, organizations, and local/national governments.

1. **Plastic separation is clearly the biggest opportunity for follow up in complete accordance to CCBO objectives.** This is by far the behavior that most participants feel more comfortable implementing and where there is the biggest potential to integrate neighbors and extended family members. The TIPs results show that most people are ready or at least very open to engage in a plastic separation program if educational and logistical support is provided, when the local authorities are ready for it.
2. **The issue of trash burning can be advanced with a mix of direct educational campaigns** (engaging and talking directly with households that burn trash and offer options) and by providing access to trash bins/containers for patios. If patio waste is maintained in a separate waste stream by the municipalities, people seem to be willing to ensure that no plastics enter this waste stream.
3. **In the case of the Samaná Province, metal separation should not be a high priority, since there seems to be an effective market that prevents most metals from ending up on urban public and natural spaces**, unlike plastic and foam.
4. Once the pig plague is declared resolved by official authorities, **there should be more focused and in-depth research on the pig food collection system to look for opportunities for wider efficiency and increased volume of the food collected.** The TIPs results confirm that the practice has a very active support in all the cities, and that is a practice that seems to be exclusively practiced by Dominicans. However, some Dominicans who were not native to Samaná began to leave food for the pig food collectors during TIPs, so perhaps this could be generalized to the wider population.



Figure 5. Collection truck with 12 sacks of separated plastic from TIPs participants of Sánchez and Arroyo Barril

In addition, for future TIPs, CEBSE recommends that:

1. **Related to waste management in the DR, or even in other countries, the timing should be longer between interviews** if the rate of consumption of some of the materials is relatively low (as glass and metal) or include explicitly a behavior that involves integrating neighbors in the separation of these materials.
2. If composting is to be included as a behavior in the TIPs menu, then **a special training and follow-up of participants should be designed.**
3. **More information about the purpose of the project, the objectives, and future benefits of the research could increase the level of commitment of the more apathic participants.** This might entail that the interview visits to have a longer duration.