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**PREVENTIVE ACTION AND
WASTE MANAGEMENT**

CIRCULAR ECONOMY IN A MUNICIPALITY

A PRODUCT DEVELOPED WITHIN THE FRAMEWORK OF:



On behalf of:



Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

of the Federal Republic of Germany



**Circular economy in a municipality -
Santa marta colombia**

SOCYA First edition, March 2024

**Project - Prevention of Marine Debris
in the Caribbean Sea (PROMAR):**

Promoting circular economy solutions
in the Dominican Republic, Costa Rica
and Colombia

Project leader:

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FOREWORD

ABOUT THE PROMAR PROJECT

The PROMAR project - Prevention of Marine Waste in the Caribbean Sea aims to reduce the flow of plastic waste (mainly plastic packaging and single-use plastics) that reaches the Caribbean Sea, promoting Circular Economy solutions in eight Caribbean countries. The project is funded by the German Federal Ministry for the Environment, Nature Protection, Nuclear Safety and Consumer Protection (BMUV) and led by the German organization adelphi.

Within the framework of the project, the PROMAR BlueBox was created, a collection of various tools, guidelines, tutorials and materials that will help you apply circular economy solutions to reduce marine waste in your municipality. This success story for the circular economy in a municipality is part of the PROMAR BlueBox.

The objective of the tool is to make the pilot project model available to other interested parties so that they can adapt the structure according to the needs of the territory. The learning curve on the implementation of the pilot project will be disseminated; lessons learned, key points, milestones, mistakes, etc.

The content was developed by SOCYA as implementing partner of the PROMAR project in Colombia. The guide is aimed at environmental authorities, government entities, e.g. municipalities and civil society projects, initiatives or organizations interested in reproducing the pilot project.

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BACKGROUND

Pollution of the seas due to plastics is one of the most discussed topics in different environmental forums worldwide, because today we are seeing its consequences in different ecosystems. Proof of this is the death of birds, turtles, fish and large mammals due to the consumption of plastics that they mistake for food; Another problem is that much of this material does not float and has been found at great depths, in some cases much smaller than the original size, calling it micro-plastic, which is swallowed by fish and other animals that then become part of our chain. food. According to the WWF, man has a diet of approximately 5 grams of plastic per week, which is ingested from different sources. Although we still do not know the effects on human health, it is clear that we do know the damage to ecosystems (100 thousand marine animals die because of plastic and 700 threatened species).

14 million tons of plastic reaches the seas per year! *

According to the International Union for Conservation of Nature - IUCN (2021), 14 million tons of plastic reach the seas per year and it is estimated that by 2025 this value will increase by 3 million tons (of 100% of the plastic waste that arrives). To the sea, 49% are single-use plastics, 27% are plastic fishing equipment and 6% are other plastics). This has been reflected on beaches around the world and has also created 5 plastic islands located in the South and North Pacific, South and North Atlantic and Indian Ocean; These plastic islands cause the death of more than millions of animals and also make all conservation activities more expensive by thousands of dollars. Due to this growing problem, governments and institutions around the world have focused their efforts on improving waste management, especially plastics, for this different alternatives have been developed among which the Circular Economy plays a fundamental role.

BACKGROUND

Of the alternatives to prevent so much plastic from having its final destination in marine waters, many strategies are being worked on, including:

- **Avoid and reduce:** Avoid the use and reduce the consumption of plastics where possible
- **Eco-design:** Product design that takes into account environmental factors, which in this case is reducing the amount of plastic in a product
- **Change of material:** Change plastic containers for other materials
- **Re-use of plastic containers:** E.g. refilling cleaning products
- **Biodegradable packaging:** Replace plastic with material that degrades and can be used for composting
- **New packaging with recycling:** Use of plastic waste to create packaging with a percentage of recycled material
- **Improvement of materials:** More recyclable packaging
- **Fuel production from plastic:** Post-use plastic for fuel generation through pyrolysis or hydrothermal liquefaction
- **Generation of new products:** Sneakers, glasses, swimsuits and clothing with recycled plastic pellets
- **Crafts:** Recycled plastic for lamps, brooms, keychains, bags and others
- **Recycled plastic slats:** Plastic recycling to generate plastic slats, which are used for the construction of playgrounds, pallets and houses; better known as plastic wood. This last alternative is one of the most explored in the country, it has great uses, a growing market and there are several companies that produce and work with this material.

Of these alternatives, it is observed that some are developed before the production of the plastic and others after its use. For the alternatives that are after their use, the first thing that must be worked on is the management of the collection of this material, since without this the alternatives do not become economically viable, this being a fundamental part of the creation of circular economy pilots. . Knowing what and how much raw material we have in addition to the way it is collected makes the alternatives viable or unviable.

Colombia is no stranger to the problem of plastic waste, since it has different important sources of pollution, where coastal cities stand out, which is why the PROMAR Project has dedicated its efforts in this area to reduce the flow of plastic waste. that reach the Caribbean Sea.

2. INTRODUCTION

"Marine waste is any persistent, manufactured or processed solid material that is discharged, evacuated or abandoned in the marine and coastal environment."

United Nations Environment Program

What is PROMAR?

The PROMAR Project was created to reduce plastic pollution in the Caribbean Sea by implementing circular economy solutions in coastal communities. One of its key initiatives is the Santa Marta Circular Economy Pilot, which introduces waste management strategies to prevent plastic from entering the ocean.



The Problem:

Plastic Pollution in Water Sources

Many coastal cities suffer from poor waste management, and low public awareness contributes to plastic waste flowing into rivers and seas. In Santa Marta, the Manzanares River was identified as a major source of plastic pollution leading into the Caribbean.

The Solution: Circular Economy in Action

The Santa Marta pilot project focuses on:

- Creating synergies between local leaders, waste pickers, businesses, and government agencies.
- Establishing recycling strategies to give waste a second life.
- Building methodologies that can be replicated in other coastal cities.

Where Did the Project Take Place?

The Santa Marta Circular Economy Pilot was launched in August 2022 along the right and left banks of the Manzanares River, a key area where plastic waste frequently enters the Caribbean Sea.

Key Strategies Used in the Pilot

To ensure success, the project followed a business strengthening model that focused on six essential pillars:

- ✓ **Financial Model for the Recycling Productive Unit** – Ensuring long-term sustainability for waste pickers.
- ✓ **Marketing Plan** – Connecting recyclers with buyers to improve material value.
- ✓ **Social & Financial Insurance Plan** – Providing economic stability to recycling workers.
- ✓ **Operational Plan for Selective Waste Collection** – Organizing efficient waste collection routes.
- ✓ **Methodological Guide for Social Intervention** – Supporting and training waste pickers.
- ✓ **Communications Plan** – Raising public awareness on waste management.

How Waste Collection Works in the Pilot

- 24,000 households were covered using geo-referenced tricycles.
- Three waste picker organizations coordinated efforts with local sanitation services.
- Tricycles allowed for precise tracking of waste collection to measure impact.

Public Awareness & Expansion

The PROMAR communications campaign reached over 46,000 people, educating them on:

- ♻️ The importance of recycling and waste separation.
- ♻️ The role of responsible consumption in reducing pollution.

A key milestone was the partnership between PROMAR and the Repack Collective Plan, which:

- ◆ Expanded the project's reach to 80% of Santa Marta.
- ◆ Integrated the initiative into Colombia's national Extended Producer Responsibility (EPR) scheme.
- ◆ Helped secure funding and better waste processing agreements.

Through this collaborative model, the project strengthened local recycling efforts, reduced waste, and created a scalable solution for other coastal cities.

3. GENERAL OBJECTIVE

The Santa Marta Circular Economy Pilot was designed to provide technical and financial support to key stakeholders involved in waste management and recycling.

The project aimed to:

- ✓ Reduce plastic waste entering the marine environment.
- ✓ Improve recycling systems through structured strategies.
- ✓ Support waste collectors and integrate them into formal recycling frameworks.

DEVELOPMENT PHASES OF THE PILOT PROJECT



4. METHODOLOGY

The Santa Marta Circular Economy Pilot was implemented using six strategic pillars, each focused on improving waste recovery, recycling efficiency, and financial sustainability.

The next section will break down these six key pillars in detail.

4.1. BUSINESS STRENGTHENING PLAN - PFE

The PFE Business Strengthening Plan is a structured guide with six key modules that provide a roadmap for replicating the circular economy model in any region.

1. Financial model of the recycling production unit

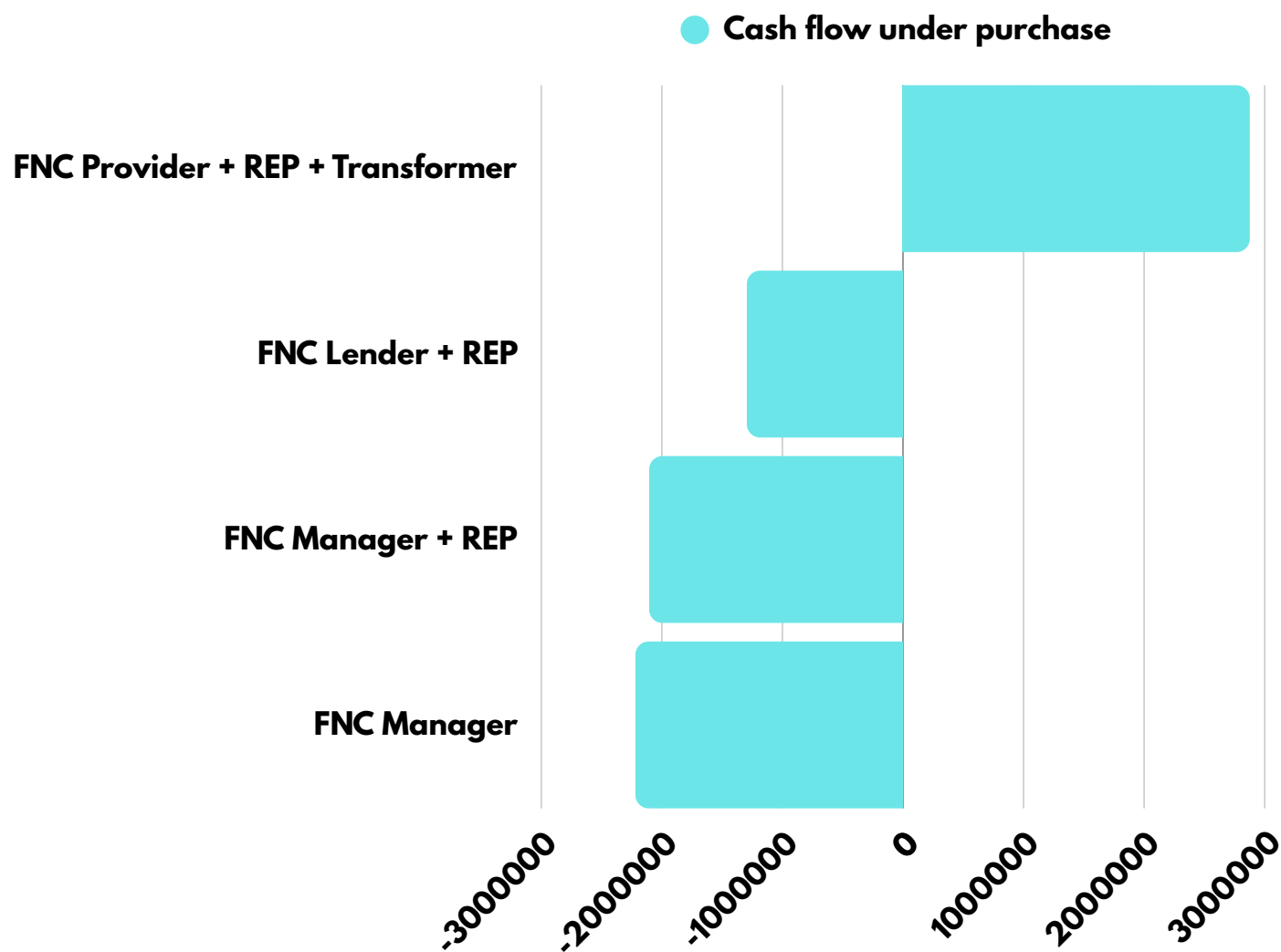


Fig. X Cash flow

Based on collection forecasts and factors like project area, target users, and transportation type, a financial plan is created for the short, medium, and long term to ensure the project's economic and social sustainability.

Marketing plan

This module helps bring together key players in the recycling process, strengthening the waste value chain and increasing recycling efficiency. By improving material recovery, it creates positive environmental impacts and promotes the sustainable use of natural resources.

How It Works:

Stronger Collaboration:

Integrates managers, recyclers, and processors into a coordinated system, improving waste utilization rates.

Better Financial Returns:

Enables direct agreements between waste collectors and buyers, reducing middlemen and increasing income for organizations and recyclers.

Sustainability Through REP:

Helps organizations take advantage of Extended Producer Responsibility (REP) policies, ensuring long-term funding and structured waste management.

Enhanced Recycling Services:

Supports organizations in expanding and improving waste collection and processing, making the system more effective.



Methodological guide for social intervention

A tool that helps assess the **socio-economic** conditions of a recycling organization. Based on the findings, a **strengthening plan** is created to improve **recyclers' work conditions, job security, and overall quality of life** for them and their families.



Social and financial insurance plan for the selective route pilot

💰 Social & Financial Insurance Program

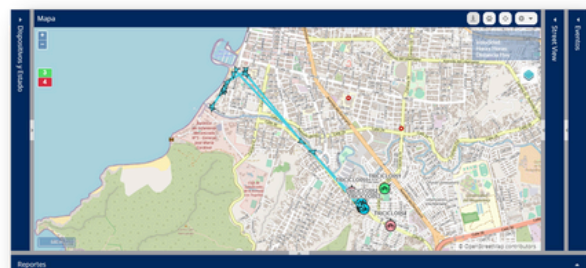
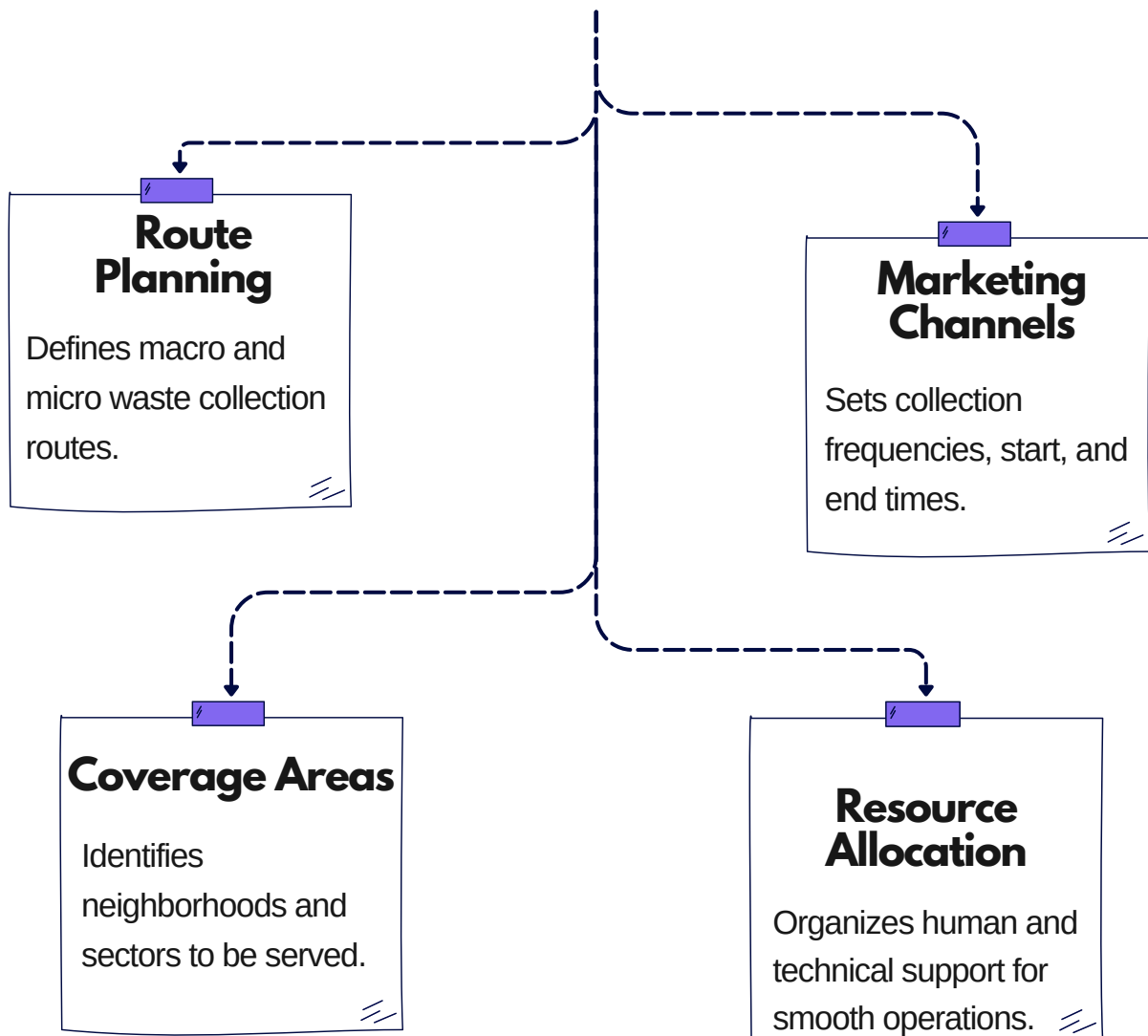
The **social and financial insurance** program offers temporary economic support based on waste collection goals. Organizations must meet certain criteria to access project funds, helping them achieve **financial stability, social security, and environmental sustainability**.



Selective Route Pilot Operational Plan

The use of the “Methodological guide for sampling solid waste on beaches” is proposed by the PROMAR Costa Rica project with the endorsement of the Ministries of Health and Environment of said country, since from these results a route for reduction proposals in the action plan.

What Does This Plan Cover?



Communications plan

The communications plan is a strategy to adequately reach the public of interest, where through the objectives to be achieved, certain tasks and actions to be carried out are defined.





ARTICULATION OF THE PILLARS OF THE COMPREHENSIVE SOLID WASTE MANAGEMENT PLAN AND REP


The financial model ensures that recycling operations remain sustainable, protecting investments while making waste management economically viable. The Santa Marta Circular Economy Pilot focuses on formalizing waste collection and processing services, improving efficiency, and securing financial stability.


To make recycling successful in a given area, it is essential to plan waste collection, ensure financial stability, and identify operational costs. By analyzing income statements, cash flow, and other financial indicators, the project can determine its feasibility, guarantee success, and create job opportunities for waste collectors. This also helps promote a business approach to recycling while supporting the growth of production units.


Strengthening Waste Collection & Recycling

 **Organized Waste Collection** – Establish structured collection routes, optimize logistics, and reduce operational costs.

 **Financial Sustainability** – Develop income models, track expenses, and ensure long-term financial health.

 **Job Creation & Stability** – Provide employment opportunities for recyclers and integrate them into the waste management system.

 **Formalizing Waste Services** – Ensure door-to-door collection is part of the official public sanitation system, improving conditions for waste collectors.

 **Strengthening Key Players** – Support managers, recyclers, and waste processors to enhance efficiency and economic benefits.

The project follows three main pillars:

1

Logistics & Operations – Improve waste collection efficiency as part of the sanitation service.

2

Fair Wages & Security – Ensure recyclers have a stable income linked to collection routes.





3

Sustainable Business Model – Strengthen recycling organizations to operate as financially independent businesses.

Financial Planning for Recycling Operations

Grassroots recycling organizations often lack the budget and financial expertise needed to grow. To address this, the PROMAR project provides tools to help them set realistic waste collection goals (annually, monthly, and daily) to ensure financial stability.

At this stage, key factors are determined, such as:

-  **Project Area** – Defining the geographical scope.
-  **Target Users** – Identifying who will be impacted.
-  **Collection Methods** – Choosing the right vehicles and capacity.
-  **Frequency** – Setting up collection schedules.

A Tailored Financial Analysis Tool

To support financial planning, **SOCYA Foundation** developed a customized tool for evaluating recycling projects. This tool helps analyze economic viability and can be adapted for use in other regions with specific conditions and needs.

Table 1 (below) provides an example of a financial analysis for waste collection and recycling, taking into account different variables such as costs, operational factors, and potential revenues.

Parámetro	Valor	Unidad
PPC estrato 1	0,63	Kg/Hab día
Densidad urbana	500	Hab/Ha
Caracterización plásticos estrato 1	0,136	%
Caracterización aprovechables estrato 1	0	%
Habitantes por vivienda estrato 1	4,2	Hab/vivienda
Meta	1000	Toneladas
Tiempo para cumplimiento de la meta	365	Días
Meta sobre el potencial aprovechable	0,3	%
Residuos en ECA con potencial en REP (empaques y envases)	1	%
Potencial de compensación de acuerdo a metas REP (empaques y envases)	0,5	%
Rendimiento recolección Reciclables (reciclador)	300	Kg/día persona
Salario Mínimo 2022 Colombia	1000000	pesos
Auxilio de transporte 2022	117.172	pesos
Factor prestacional	0,56	%
Administración del personal	0	%
Provisión para Investigación, desarrollo e innovación (I+D+i)	0,15	%
Gastos administrativos (Personal administrativo, equipos computo, software, asesorías, servicios públicos y otros)	0	%
Transferencia de recursos de tarifa a recicladores	0,55	%
Precio de comercialización y transformación de material x tonelada	927.049	Pesos
Precio de comercialización de reciclaje x tonelada	757295	Pesos
Arriendo bodegas lugares de acopio	15.000	Pesos/m ²
Transporte material	50000	Pesos/Ton
Número de viviendas de acuerdo al Mapa de Censo 2018 (área de trabajo)	14.415	Viviendas
Número de personas de acuerdo al Mapa de Censo 2018 (área de trabajo)	41964	Habitantes
Potencial aprovechables área de trabajo	6	Toneladas
Porcentaje de captación de material en ruta	0,3	%
Recolección de aprovechables área de trabajo	2	Toneladas
Frecuencias de recolección semanal en el área de influencia	2	días
Vehículos requeridos (600 kg micro ruta)	11	Unidades

Table 1. Parameters to take into account in the financial analysis

The integration of the different actors in the recycling chain is of great importance, allowing the development and implementation of strategies that enhance utilization rates and generate positive impacts on the use of natural resources.

This identification of actors allows organizations to approach the opportunities that the country offers within the framework of the Extended Producer Responsibility – REP and articulate actions to strengthen the provision of the service.



Traceability of the collected material.

It is essential to know the socio-economic structure of the recyclers' organizations to intervene, which allows guiding the strengthening and actions to be developed from social, environmental, technical and communication concepts in favor of improving the conditions in the work of the recycler and the quality of lives of them and their families.

Reincorporamos tus envases y empaques



Illustration 2. REP - Collective plan for containers and packaging in Colombia Repack

Integrating Recyclable Packaging into the Economy

The **Extended Producer Responsibility (EPR)** system plays a key role in improving **recyclable waste collection**, ensuring producers take responsibility for the lifecycle of their packaging. In **Colombia**, this initiative is regulated by **Resolution 1407 of 2018**, which mandates producers to **implement education, innovation, and collection programs** to achieve national recycling goals. This law helps reduce **paper, cardboard, plastic, glass, and metal packaging waste** placed on the market.

Why Linking Financial Analysis to EPR Matters

To ensure efficient recycling operations, it is crucial to incorporate financial strategies that improve waste collection conditions:



Stronger Recycling Organizations

Recognized recyclers gain access to additional resources and financial stability.



More Funding & Support

Revenue is generated not only from selling recyclables but also through cleaning fees and direct links to the REP collective plan.

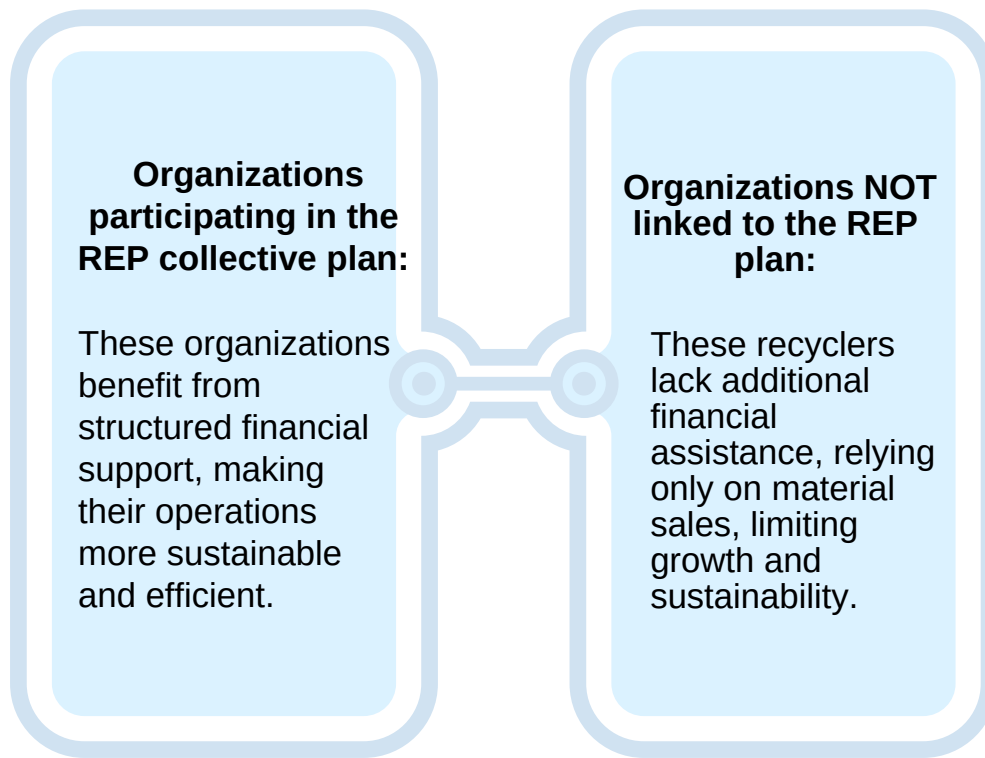


Operational Growth

Funds can be reinvested in expanding waste collection, logistics, and processing capacity in specific areas.

Financial Impact of REP Participation

A comparison is made between two financial projections:



Below, we see an example of the financial projection for an organization whose scenario is to be a utilization service provider linked to the REP collective plan and an organization that is not a utilization service provider.

Scenario NO recycling provider buys the material from professional recyclers (2.7t / day)



Utilization provider scenario with contracted personnel (2.7 Ton / day) REP + Utilization Benefit



This last scenario shows that legally registered waste management company with hired personnel, linked to a collective EPR plan, and actively processing collected materials represents the ideal model for recyclers to achieve financial stability.

For an organization collecting **2.7 tons** of recyclable waste daily, net income is projected to be **31% higher than expenses**, ensuring financial growth and long-term sustainability.

To strengthen the recycling ecosystem, it is crucial to **map key stakeholders**, including **NGOs, government agencies, and private entities**. Using a **stakeholder prioritization tool**, organizations can develop **targeted engagement strategies**, fostering collaborations and resource-sharing to optimize waste management efforts.

4.2 ACTOR MAPPING

In the second stage, an evaluation of actors is carried out that allows you to identify which entities are related to the project, which ones are interested, and identify the degree of influence they have within the pilot. It is important to have a tool where you can evaluate the different actors (stakeholders) and determine whether or not they are relevant to the pilot. For this, our tool that graphically shows the results is recommended. (See our analysis tool in the BlueBox "Stakeholder Map").

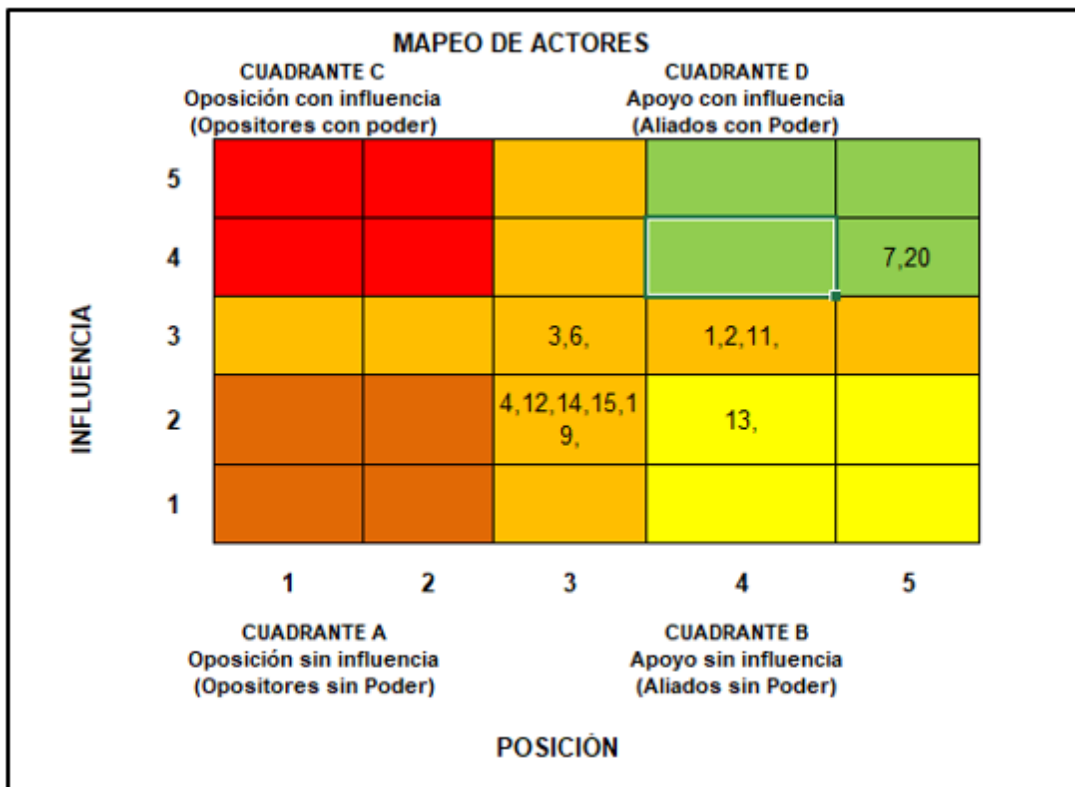


Illustration 5. Actor evaluation graph.

Selecting Strategic Allies

- Identify and engage stakeholders with the interest and capacity to support the project.
- Ensure collaboration for efficient public sanitation services in line with current regulations.
- Work towards closing the material cycle, increasing the value of recyclables and boosting income for organizations.

Transforming Usable Materials

- Support waste processing and recycling to create valuable materials.
- Conduct educational programs to raise awareness among consumers.
- Establish communication spaces to engage the public and promote recycling efforts.

This compilation of actors is initially carried out with secondary information. After having a preliminary list, we proceed to contact each of them virtually or by telephone to schedule appointments to publicize the pilot and see the opportunities for linking each of them to achieve the pilot's objectives.

Among the most relevant actors identified in the circular economy pilot exercise we find:

- **Local and national environmental authorities:**

Facilitator in the creation of institutional synergies, technical and administrative advisor.

- **Public Cleaning Services Companies:**

Executors of the PGIRS. Door-to-door environmental education and awareness days.

- **Public recycling service providers:**

Articulated with the sanitation provider, organizations of recyclers that provide the service of collecting reusable materials.

- **Foundations that work for the environment in the territory:**

Organizations potentially related to Community Action Boards in the area of influence of the pilot and can carry out educational activities.

- **Mayor's Office:**

Coordinates the execution in the territory of the plans, programs and projects of the district entities and organizations that intervene in the territory, complementing the Development Plan.

- **Transformers of reusable material:**

Companies that transform recyclable material and can work jointly with the public cleaning service provider, to achieve valid traceability before the environmental authority aligned with the REP since they are responsible for issuing transformation certificates.

- **REP collective plans:**

Private companies that accompany producers to comply with resolution 1407 of 2018 that regulates the Environmental Management Plans for Containers and Packaging where the different actors in the production chain are integrated, strengthening and enhancing utilization rates. , generated positive impacts on the use of natural resources. For the pilot we worked in coordination with REPACK collective plan led by SOCYA.

- **Others:**

Research entities, educational institutions, companies that carry out their activity within the area of influence of the pilot.

4.3 DIAGNOSIS OF LOCAL CONDITIONS IN THE FIELD

In the third stage of the pilot, an on-site diagnosis is conducted to observe the conditions of the areas of influence. Additionally, meetings are held with each of the entities identified in the stakeholder mapping, ensuring proper engagement with key actors in the project.

Observing Project Influence Areas

- Conduct on-site assessments to evaluate working conditions, collection areas, and management capacity.
- Identify potential risks and opportunities for improving circular economy practices.

Stakeholder Engagement & Meetings

- Hold discussions with key stakeholders, including local authorities, recyclers, and private organizations.
- Present the circular economy pilot proposal, gather feedback, and establish synergies for collaboration.
- Ensure all selected actors from the stakeholder mapping are engaged.

Worksite Visits & Partner Selection

- Strategic allies must visit their work sites to assess feasibility and interest in the project.
- Evaluate service providers and recyclers to select the most suitable partners.

Integration into the REP System

- Encourage waste collection service providers and processors to join the Repack collective plan or another REP-managed program.
- This provides access to financial support, better logistics management, and environmental traceability certification.

4.4. PROJECT PLANNING

In the fourth stage, the area of direct and indirect influence of the pilot is defined, georeferenced to achieve further analysis of data such as population, coverage area and tools and equipment required for the operation. This location will allow us to assign roles and responsibilities to the selected stakeholders.

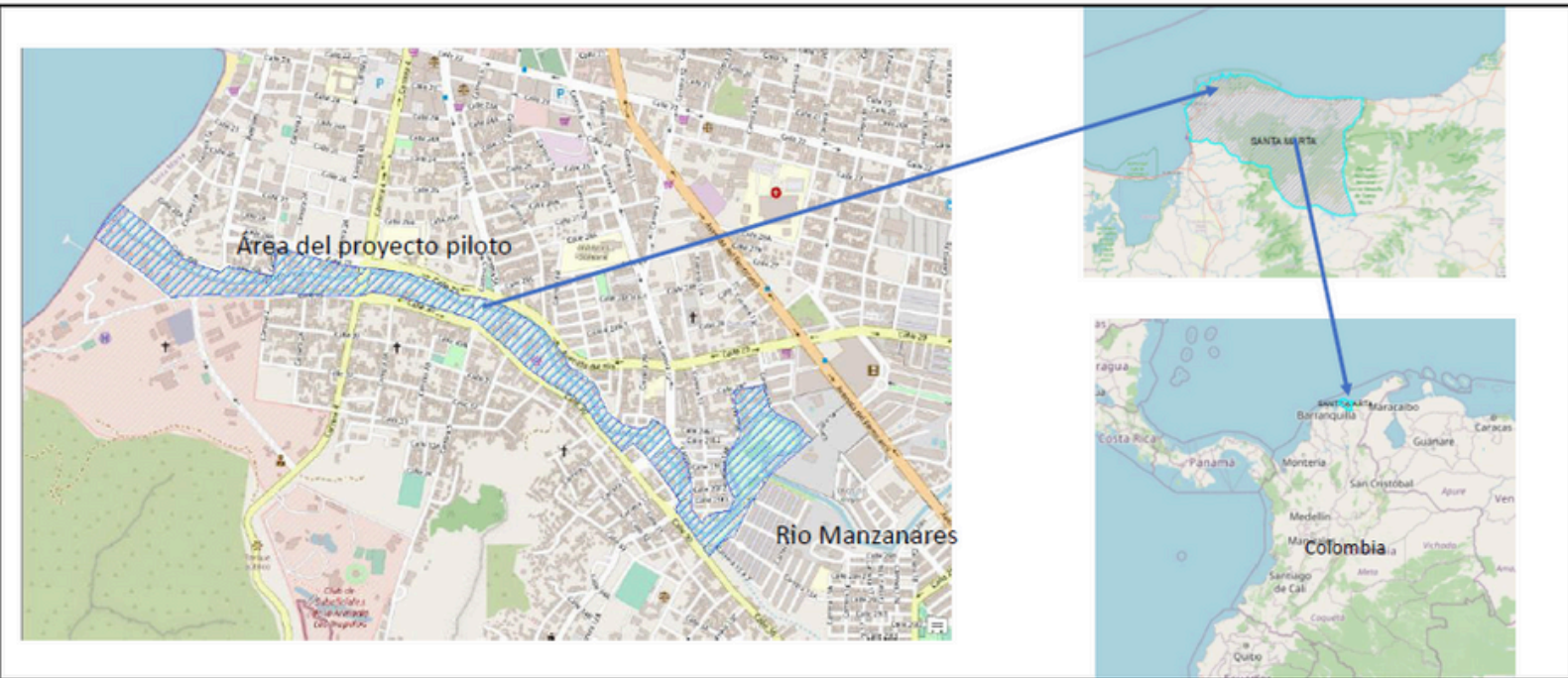


Illustration 6. Circular economy pilot direct influence area District of Santa Marta

Having a clear area of direct influence and the actors involved, we proceed to develop ideation workshops with each of them, which will allow us to be clear about the areas of coverage, the frequency of collection of the material and the dynamics of the territory in cultural aspects, social, political and technical.

At this stage, the participation of all actors is essential since it will allow us to know the real needs of the territory and thus develop tools and methodologies to achieve an effective articulation of the provision of the public utilization service with the REP and therefore improve the service to the users.

Some of the topics addressed in these spaces are the following:

- Coverage areas
- Micro routes and macro routes for waste collection.
- Type of collection vehicles used (electric, fuel-powered or human-powered)
- Collection points.
- Identification of generators, managers and transformers.
- Existing media according to the audiences of interest.
- Educational activities (door-to-door training, neighborhood meetings, meetings in educational institutions, public address, sound-types, bells)
- Visibility of recyclers with the provision according to SST.
- Colors that should be implemented for pilot visibility.
- Staff training (leadership, teamwork, assertive communication, personal finances).



Illustration 7. Ideation workshop

It is essential to achieve synergies, identify actors or projects that are being executed with similar indicators to expand scope and impact.

These ideation spaces are developed at the beginning of the pilot to structure and fine-tune the tools and methodologies, however throughout the implementation it is possible to hold workshops that allow us to adjust the processes since the pilot is dynamic according to the conditions of the territory. and the regulations applicable at the time it is executed.

4.5 APPROVAL AND SYNERGIES

In the fifth stage, meetings are held with stakeholders to build partnerships and secure project approval. This step ensures collaboration between key actors, making the pilot more effective and sustainable.

Coordination with Authorities



- Work closely with mayors, environmental authorities, and public sanitation services to align the project with local regulations.
- Utilize district roadmaps and government guidelines for better implementation.

Engaging Environmental Authorities



- Authorities play a crucial role in educating communities about waste management.
- They advocate for public policies that protect natural resources.

Strengthening Extended Producer Responsibility Plans



- ERP plans encourage producers to reintegrate containers and packaging into the circular economy.
- These initiatives improve recycling efficiency by involving different actors in the production chain.
- They generate social, environmental, and economic benefits by reducing waste and increasing material reuse.

Formalizing Agreements



- Strategic allies are key in energizing and executing the project.
- Memorandums of understanding (MoUs) between actors and the project executor help:
 - Define clear responsibilities for all parties.
 - Establish timelines for execution.

4.5 APPROVAL AND SYNERGIES

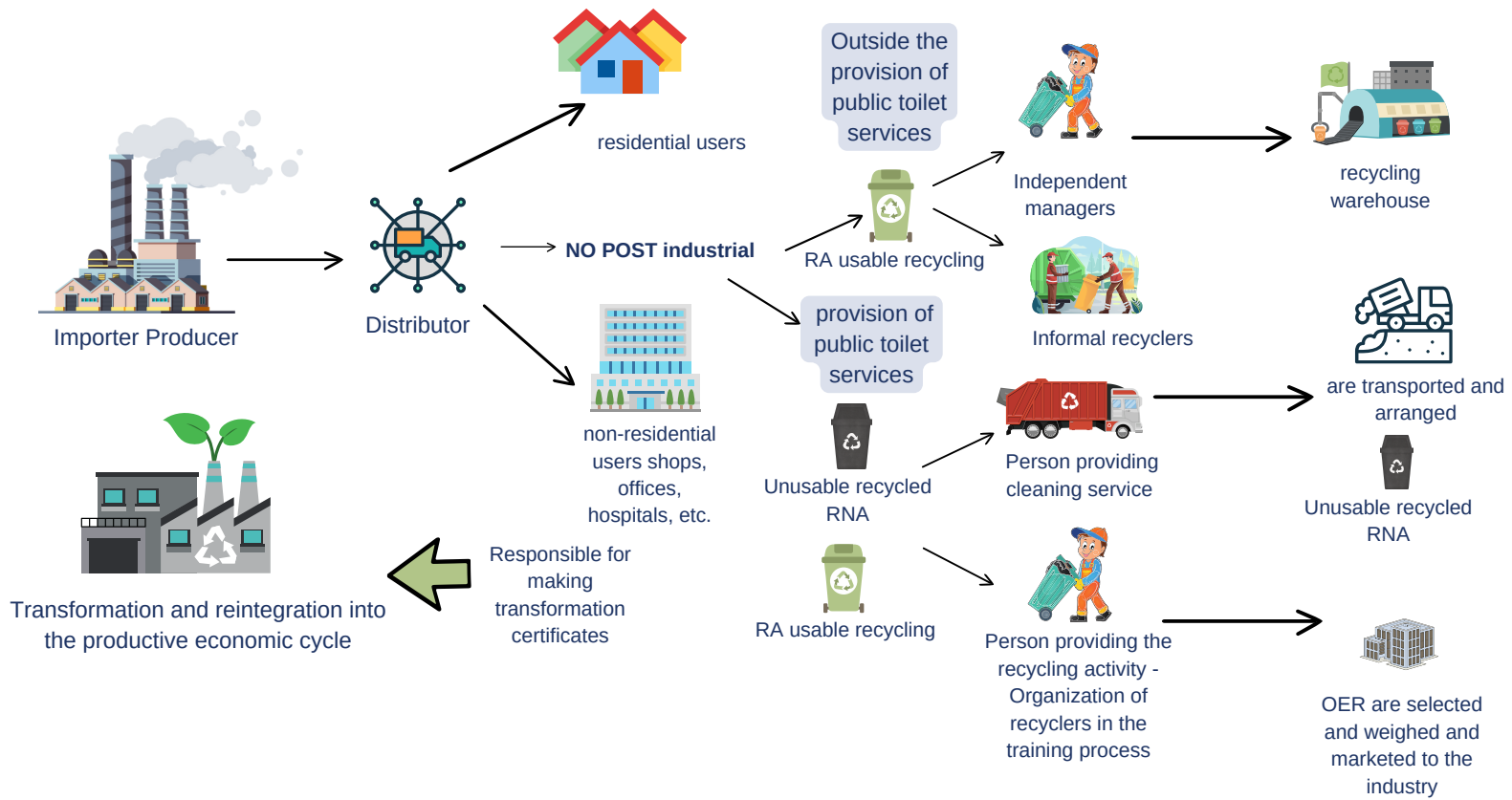


Illustration 7. Structure of actors in the pilot. Articulation REP scheme and exploitation scheme in Colombia.

4.6 PILOT START-UP

In the sixth stage, the pilot is officially launched, and both pedagogical and technical tools are structured for implementation. Waste collection begins using GPS-tracked tricycles assigned to each recycling organization, ensuring efficient georeferenced collection routes. The technical team oversees the design, validation, and implementation process, adjusting routes as needed for better performance. (See Illustration 8)

The georeferencing of tricycles allows for real-time tracking of materials, ensuring compliance with the Superintendency of Public Cleaning Services and the REP system for waste transformation certification. The Information System is a key decision-making tool that helps adjust operational plans for each organization.

This information system must contain:

- An information module on the traceability of the collection and transformation of materials within the framework of the pilot project. These can be through a GPS or through platforms that work with Smartphone cell phones (it all depends on the financial analysis), this must be traceable in real time and must leave records of the routes taken (see Illustration 9).
- An information space for the actors in the pilot value chain.
- A mechanism for managing certificates for the different usable materials managed and reincorporated into the recycling value chain.

The effective closure of the pilot must be the transformation or closure of the cycle of the materials, for this it is essential to seek synergies between the public utilization service provider, which in our case are the recyclers' organizations, and the final transformer. The ideal scenario is for the provider to fulfill the role of transformer, eliminating intermediaries and achieving a better price in the material market, which leads to stability in the financial model in less time.

The transformer linked to cycle closure must reincorporate into its processes the recyclable materials collected on the routes established by the pilot and manufacture a financially profitable product that has a potential market and reincorporates those elements that are difficult to close the cycle in the market. or transformation.

For this reason, it is essential to link research institutions that develop new transformation alternatives that increase the value of the collected material, thus improving the payment for the management of the material to the recyclers' organizations and improving their income.

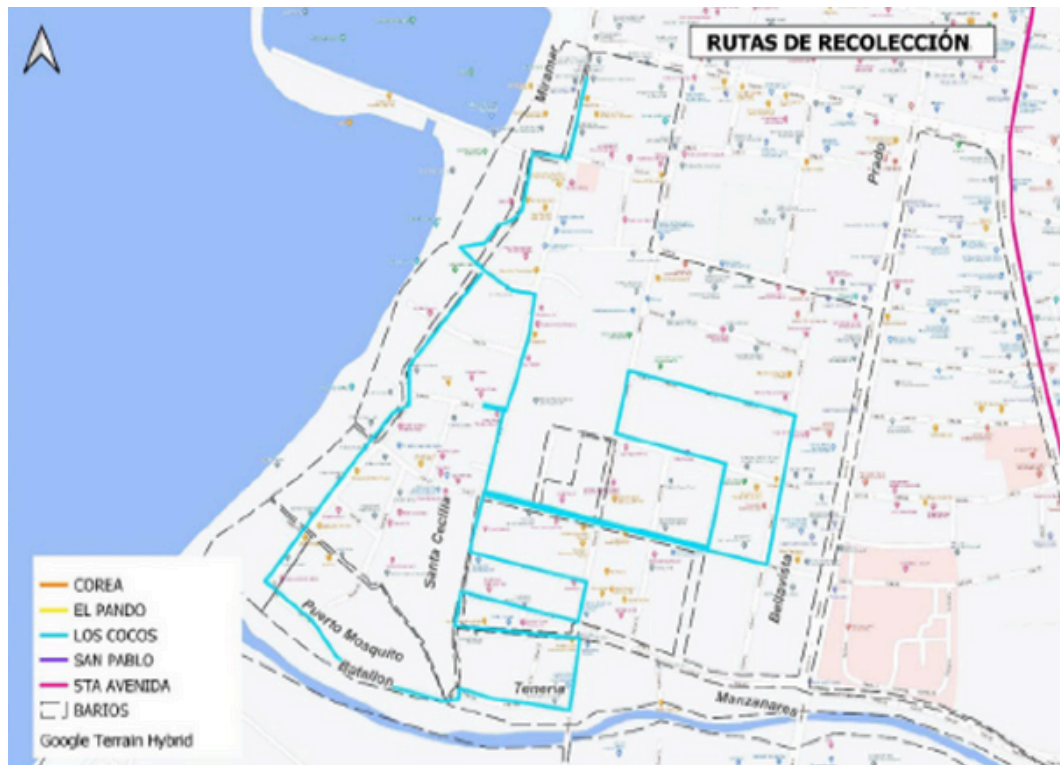


Illustration 8. Collection routes.

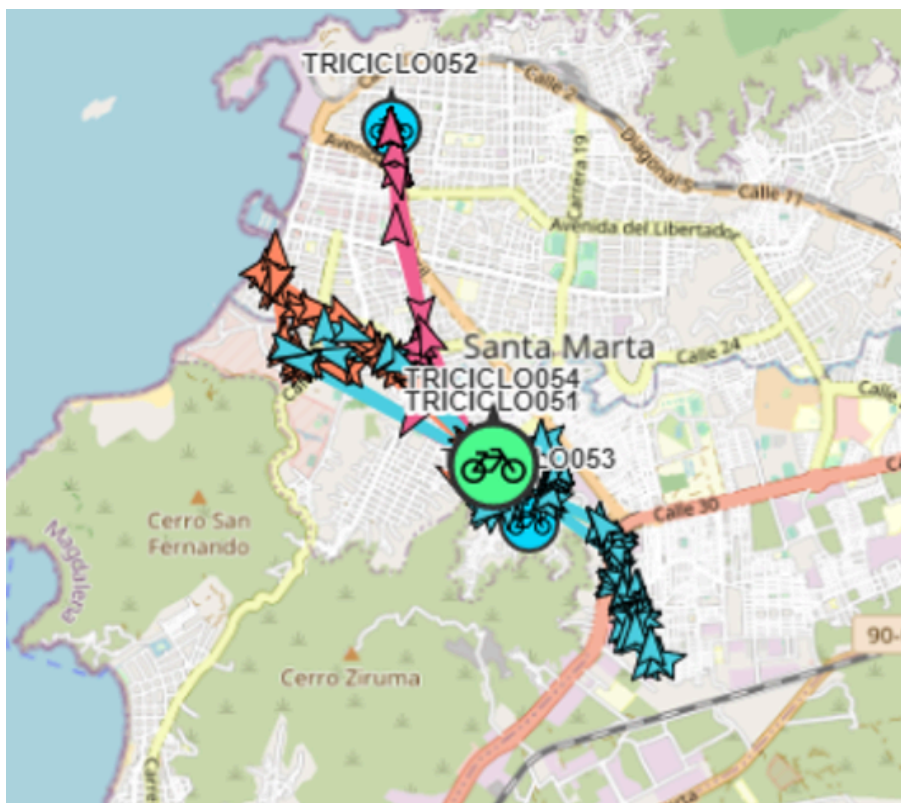


Illustration 9. GPS route tracking

4.7. EVALUATION AND DISCLOSURE

For evaluation and dissemination, a digital platform was built that allows us to have real-time indicators regarding variables of types of materials, quantities, compliance with routes, linked recyclers, costs and utilities associated with the operation. In addition, it is expected to collect enough information to show the results of the pilot, in order to promote its replication.

For assessment, also check out our CAP (Knowledge + Attitude + Practice) tool in the BlueBox!

5. PILOT COMPLEMENT

For this project to be successful in the territory, the project coordination must seek research alternatives for the development of product improvement, support the strengthening of the actors' process, provide advice, workshops and training to all interested parties and allies, generate progress reports and promote the product resulting from the pilot. For this, 3 strategies have been thought of that will serve as support and complement to the pilot, two of them are carried out transversally from the ideation stage, the strategies are:

5.1. COMMUNICATION AND EDUCATION STRATEGY

Although this strategy is formulated in the ideation stage, it is a strategy that lasts throughout the development of the pilot and continues after it; Its focus is on the population located where the pilot takes place. Among these mechanisms we have:

- **Pilot launch:** Event where the development stage of the project begins; For this, local environmental authorities, community action boards from the area of influence, educational centers, community leaders and foundations that are in the areas where the project is developed, as well as the population of the area, must be invited. The launch creates an expectation and the pilot actors and their strategic allies begin to be recognized.

- **Cleaning days:** Events that take place at strategic points such as beaches, river banks or points where problems are observed due to the accumulation of waste. It is recommended to always invite the population to participate in the sessions; in addition, the pilot actors must be present and make their contribution. These days are suitable for providing workshops and other recreational activities so that the population has more interest in learning about these topics.

Also check out our “Beach Cleaning Guide” tool in the BlueBox!

- **Education days:** The community is invited to workshops where they talk about the problem of waste and how work is being done to mitigate its impact. Community headquarters, schools, among others, can be used for these workshops. The pilot actors must be present, especially the strategic allies.

Also consult our tool “Educational workshop on the oceans and their pollution due to plastic” in the BlueBox!

- **Perifoneo:** Delivery of information through loudspeakers where the population is invited to carry out better waste management in their homes and to get to know the personnel who are carrying out the waste collection work in the area of influence; Furthermore, it is recommended to create a Sonotype that seeks to generate identity for the recyclable waste collection manager and that is easy to recognize.



Photograph 1. Cleaning days

Media:

- Other means for disseminating information are social networks, where graphic pieces of the activities to be carried out, articles that talk about the pilot, photographs and videos must be published.
- In addition, information about events, workshops and pilot training must be communicated by this means.
- The press and radio are effective means for disseminating information; written press and radio stations should be searched in the territory for the publication of activities and events that will take place.

Results event:

This event aims to disseminate results to local authorities and people interested in the project.

The communications plan must be designed under the availability of existing media in the territory. It is of great value that the communication and education strategy is executed in an articulated manner with the actors of interest in the territory who are linked to the provision of public use service, such as local environmental authorities, public cleaning service companies, recyclers' organizations, universities and JAC.

5.2. TRAINING STRATEGY

Training is one of the fundamental pillars for the proper development of the project. For this, the people who will carry out the recycling work must be identified, in which the following topics can be taken into account:

- **Technical training for professional recyclers:**

The training of professional recyclers leads to better service provision, the identification of materials, the use of new tools, better assertive communication and providing a better image to the target audience.

- **Technical training for waste managers and processors:**

This is expected to seek new alternatives for their business, improve the service provided, be more efficient and effective, improve the relationship with the community and local authorities, develop collection logistics, provide better guarantees and contractual security to its collaborators.

- **Door-to-door training of users linked to the collection route:**

Door-to-door training of users linked to the collection route: users are expected to improve separation at source, identify collection days and gain greater knowledge on the waste problem in the district. To carry out these training programs, it is essential that professional recyclers play this role, after receiving the necessary training on the topics to be taught.



Photograph 2. Door-to-door training strategy

5.2. RESEARCH STRATEGY

The following actors can be counted on in the training strategy:

1. Local environmental authorities,
2. public sanitation service companies
3. Foundations.

It would be an important complement so that the pilot has permanence over time. This strategy seeks to design a circular alternative for recyclable materials based on the principles of Cradle to Cradle.

For this you must:

- **Diagnose the flows of materials, energy, water and social aspects of the current process**
- **Prototype circular alternatives for recyclable materials**
- **Propose alternatives to improve processes from collection to transformation**

With this, it is planned to look for new alternatives that give added value to the product; it is important to select a material for the study. For the case study, the material with the greatest problems in Santa Marta is plastic, so many of the investigations that are in process are focused on providing solutions for the use and exploitation of this material.

In the research strategy you can find support from universities, research institutes or independent researchers. They can work with local processing companies to improve their products, increase their efficiency and explore new local markets.

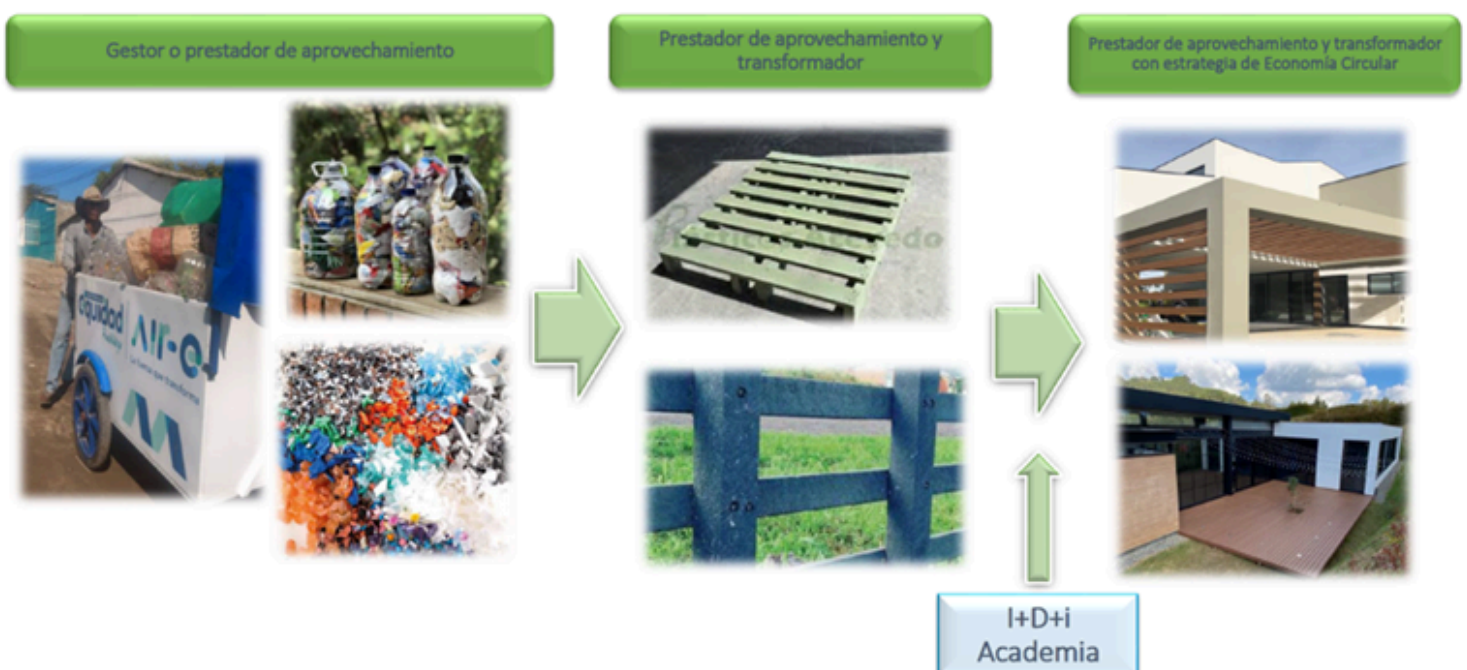


Illustration 10. Research process

BLUE BOX

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On behalf of:



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