



PROJECT STATEMENT

Panama City

**Enhance the Recovery
of Recyclable Material
in Panama City**



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Team members

OCEAN CONSERVANCY

Keri Browder, Chever Voltmer

R-CITIES

Katrin Bruebach, Luciana Cardoso, Saurabh Gaidhani, Nini Purwajati, Alvaro Soldevilla

THE CIRCULATE INITIATIVE

Ellen Martin

CIRCULARITY INFORMATICS LAB, UNIVERSITY OF GEORGIA

Jenna Jambeck, Amy Brooks, Sheridan Finder, Taylor Maddalene, Jenni Mathis, Quinn O'Brien, Madison Werner, Kathryn Younblood

CENTRO DE ESTUDIOS Y ACCIÓN SOCIAL PANAMEÑA (CEASPA)

Daniel Holness C., Ricardo Wong, Geraldibe Barragán, Macario Caballero, Lynn Carranza, Dámaso Rodríguez, Omayra Salas, Odeida Solís, Noriluz Pérez V.

MUNICIPIO DE PANAMÁ

Marcos Marengo (Dirección de Resiliencia), Jannia Samuels (Dirección de Resiliencia), Edward García (Dirección de Gestión Ambiental)

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Introduction

● URBAN OCEAN MENTOR CITIES

● URBAN OCEAN LEARNING CITIES

* Chennai was welcomed as an additional city to the first cohort in August 2021 and it is working through an accelerated program order



Overview of the Urban Ocean Challenge

Cities are home to over half of the global population and account for nearly three-quarters of global greenhouse gas (GHG) emissions¹. The Covid-19 pandemic could push between 71 and 100 million people into extreme poverty, of which 30 percent will reside in urban centers². No climate nor social target will be met without a deep transformation of urban centers towards a more inclusive, sustainable and, ultimately, resilient path. Approaching urban waste management systems through a resilience lens reveals the complex, interrelated ramifications for social, economic, and environmental indicators. It is estimated that the waste management sector alone

has the potential to create 45 million jobs globally and reduce GHG emissions by 15 to 20 percent³. At the same time, the circular economy offers a \$4.5 trillion economic opportunity by reducing waste, stimulating innovation, and creating employment by 2030⁴. Adding a layer of complexity by including the marine plastic debris challenge can push cities towards rethinking their relationship with the ocean. So, a huge opportunity exists for city governments to implement policies and projects that promote a more resilient and circular waste sector in their cities. Now is the time to set out the path towards a more resilient urban-ocean relationship.



Program Objective

The Urban Ocean program aims to work with city leaders to bring new ideas, partners, and resources together to solve interrelated resilience challenges related to waste management, to reduce plastic leakage and to protect water bodies and the ocean. Urban Ocean provides the platform for ocean advocates and city leaders to join forces with other allies to develop comprehensive solutions that meet the needs and priorities of governments, cities, communities and other actors to create real and lasting impact. The program demonstrates how actions to improve waste management and recycling can provide resilient and sustainable solutions that reduce ocean plastic pollution and address key city priorities, such as improving public health, supporting economic development, and reducing greenhouse gas emissions. Furthermore, Urban Ocean provides cities with the opportunity to showcase leadership and share knowledge and experience across the Resilient Cities Network (R-Cities) community and beyond.

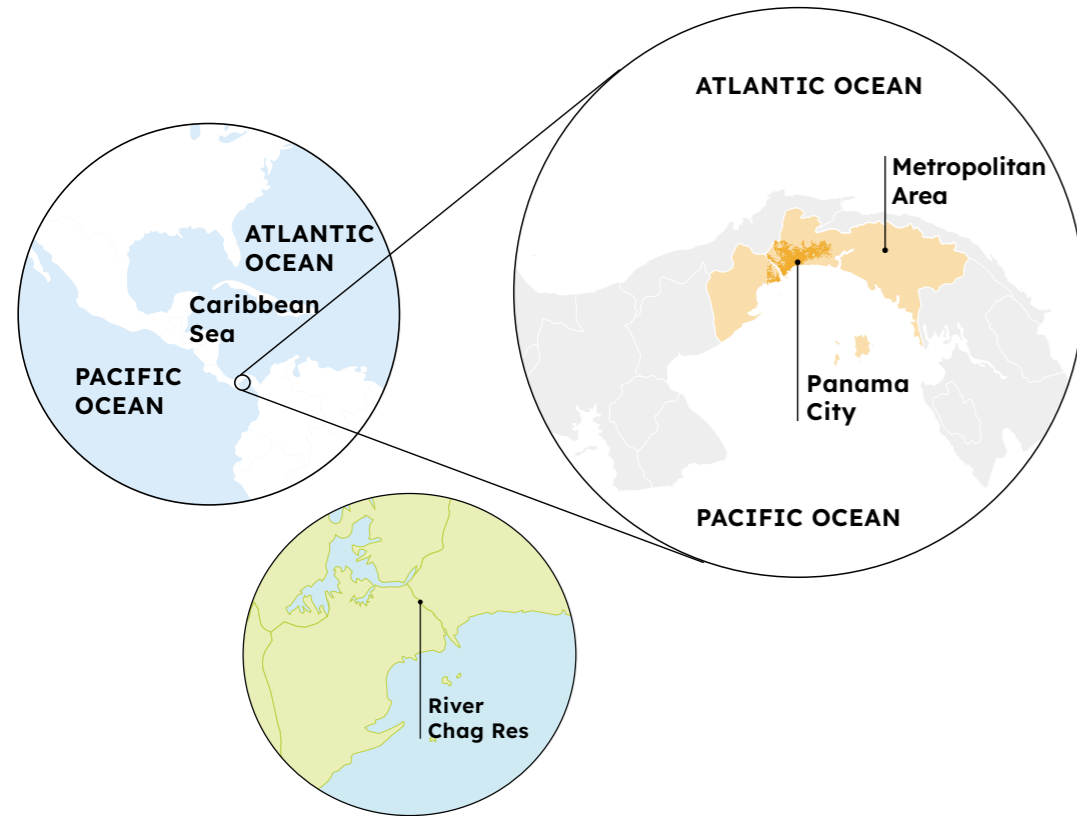
Project Statement

This Project Statement is the result of two years of work and dedication by Panama City and trusted partners to develop specific actions that the city hopes will advance solutions to address plastic waste challenges. It is based on a rigorous gap assessment process and several capacity-building sessions that helped the city to pinpoint the best opportunities for impact and formulate data-driven, multipronged approaches to implement locally. It outlines the context and the needs of the city on which the project builds. It provides the city's vision and outlines the impact Panama City is seeking to achieve.

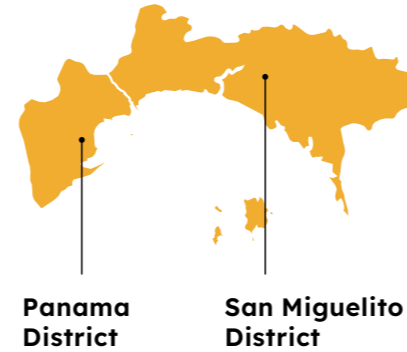


Context

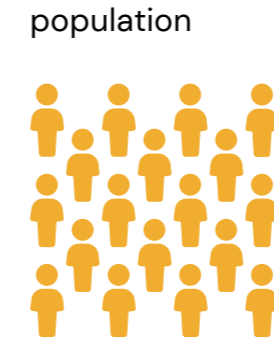
The City and its Rivers



2 districts

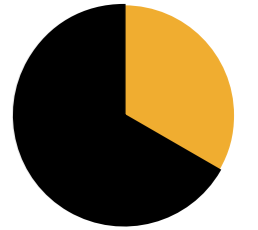


1.5 million



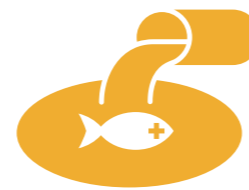
4%

of Panama's national territory



20%

of Panama's Gross Domestic Product



7 of 1,000

most polluted rivers worldwide are located in Panama, which

5 of 7

flow through Panama City

Source: Ocean Clean Up



More than

100 tons of garbage

are discharged into the Panamanian seas and coasts⁶ daily

Source: Las Marabuntas

Significant amounts of waste are deposited on the Panama City coastline by

oceanic currents.

Panama City is the capital and most populous city of Panama. The city is located at the Pacific end of the Panama Canal, which began operations in 1914. The construction of the canal involved a large infrastructure investment with several environmental, social, and economic consequences for the city. For instance, the urban growth of Panama City was largely fueled by significant waves of immigrants landing at the city in search of employment and prosperity. The unique geographic position of the country has always determined its vocation as a transit country and interoceanic hub. This vocation has led the city to take on an international role, promoting a friendly environment for businesses, banking, and tourism.

The growth of Panama City is partly a result of its relationship with and changes occurring in its water ecosystems. The areas

closer to the coastline developed in flood zones with predominant wetland plains, a network of tributaries and areas near various hydrographic basins. In addition, as the city comprises a humid rainforest and rich biodiversity, including protected national parks, the hydrological, geographical, and urban conditions in the city, results in a complex interaction between humans and the native flora and fauna of protected areas surrounding the city. For instance, high waste generation and inadequate waste management have resulted in aggravated pollution, increased flooding, and poor public health outcomes.

With climate change increasing the probability of natural hazards, floods are becoming even more recurrent. In this context, informal settlements and communities located in environmentally risky areas are the most negatively impacted. Income inequality, high poverty

levels, low achievement results in reading and mathematics tests, gender inequality, racial discrimination and informal employment were some of the socio-economic challenges highlighted by the Resilience Strategy⁷.

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The City's Waste Management System

In 2016, an estimated 1.2 kg of waste was generated per day, per capita in Panama⁸. In the same year, a study by CT BETA estimated the municipal waste generation rate per capita in Panama District to be 1.37 kg/day⁹. Both numbers are higher than the regional average for Latin America and the Caribbean, estimated at 0.93 kg /day per capita for urban solid waste generation¹⁰. While these numbers indicate a major waste management challenge for Panama City, the full picture can only be captured by including the city's high vulnerability to a wide range of shocks and stresses that include extreme natural events, unsustainable tourism practices, lack of reliable data, and others, in addition to the governance-related limitations (see Appendix 1).

Some 81 percent of the population in Panama City (Panama District and San Miguelito District) have access to regular municipal waste collection, according to the National Institute of Statistics and Census¹¹. For Panama District alone, the figure is 89 percent, meaning that approximately 10 percent of the population has no access to basic waste collection services¹². Still, the reliability and efficiency of this service has been questioned by communities. For instance, in 2015, only 59 percent of the residents of Panama City reported that they had regular waste collection in their community and 3 percent reported that they had no access to waste collection at all¹³.

There is also a significant percentage of waste being inadequately disposed of or dumped illegally every day in the city, reaching the rivers and the sea; this is not well captured by city data. For instance, it is estimated that about 65 percent of municipal solid waste generated in the city goes to the landfill Cerro Patacón, the only landfill in the city, and about 2 percent of waste is separated for recycling¹⁴, indicating an important percentage of mismanaged/leaked waste. Finally, residents' general perception is that all their waste ends up in Cerro Patacón, which discourages them from improving their waste management practices, including household segregation. Cerro Patacón has been considered an environmental and health hazard as it currently operates at nearly full capacity,

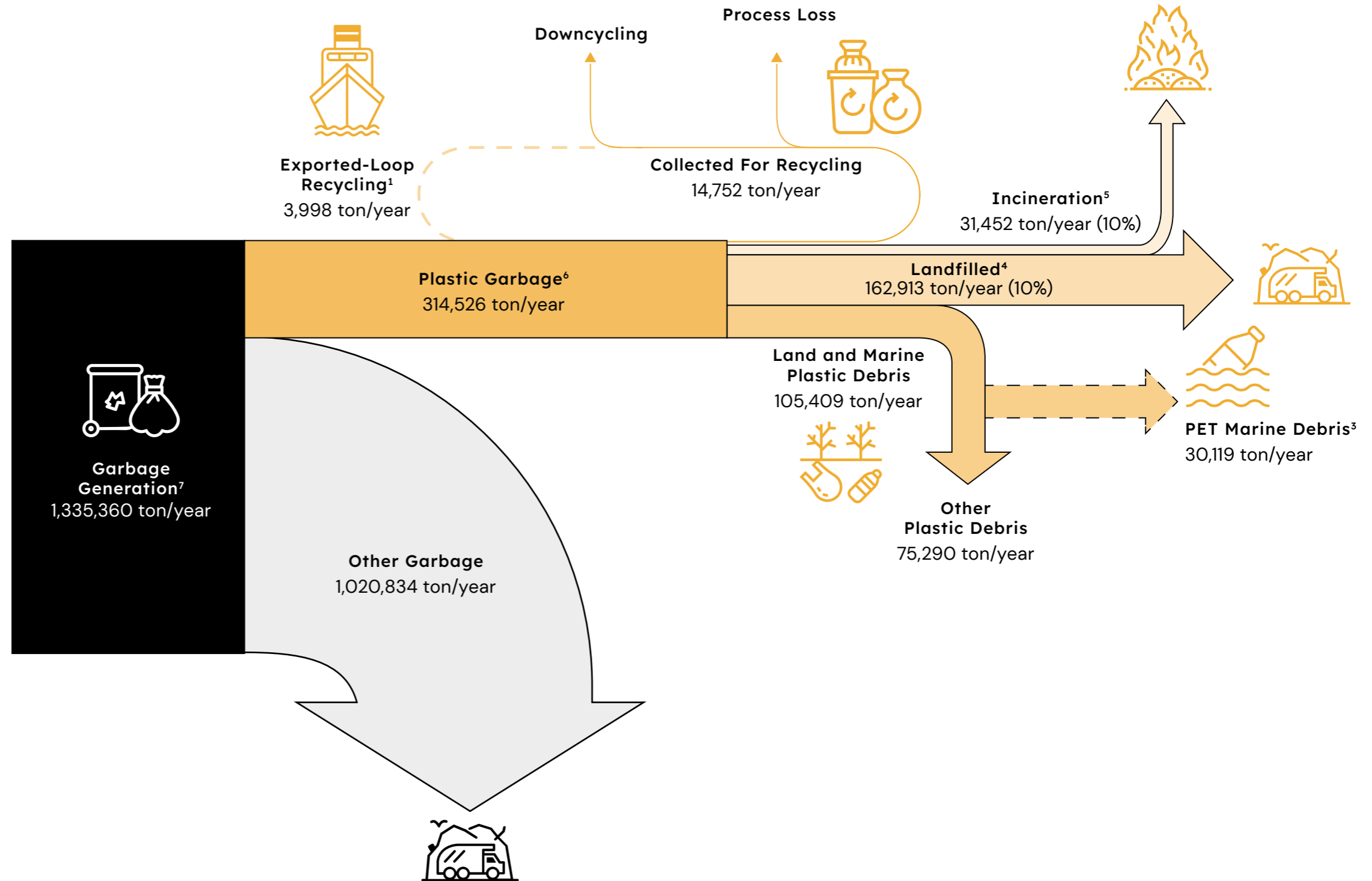
without transparent nor sustainable operation monitoring figures and with a recent landslide accident in June 2021.

The role of Panama District in designing and implementing actions related to circularity, which examine materials and products along their entire value chain, and waste management has been limited by the current governance structure. Panama District is the only local entity in the country that is not in charge of the collection and treatment of waste; this responsibility remains under the national Urban and Household Waste Management Authority (AAUD). The Municipal Plan for Integrated Management of Waste in Panama City (MPIMW-PC) recommends that the AAUD be responsible for legislating, overseeing and financing waste management facilities, but that e collection and treatment services be transferred to the municipality. Currently, there is no indication that the responsibility will be transferred to the municipality. However, the city does have the mandate to act on recycling.

Inadequate waste management in the city has multiple negative impacts and limits the potential benefits to overall resilience in the city. Approximately 73,600 inhabitants in areas near to Cerro Patacón are affected by long-term hazardous air pollutants generated there. Additionally, illegally dumped waste leads to a high risk of open fires, and pollutants leaking into water sources. The existing flood risk in areas located in the flood plains, due to unplanned urban growth and increasing rainfall due to climate change, is further exacerbated by the inadequate disposal of waste, clogging the drainage system. Moreover, the tourism industry, important for the city's economy, is highly impacted by the inadequate disposal of waste, with the city losing its attractiveness in the region. Finally, the inadequate handling of waste not only poses a health risk to waste workers, but the city does not reach its full potential of including informal waste workers in their municipal waste management system, which could have a positive direct impact on income security and livelihoods.

WASTE FLOW CHART

This waste flow chart illustrates the waste management system and waste flows in Panama (the country) in 2016¹⁵. This relatively out-of-date, low-resolution figure was chosen because of a lack of transparent, recent or reliable data available for Panama city. This illustrates the main challenges in the country, which are mirrored by the city.



SOURCE

Created by Alvaro Quirós R. based on the Sankey Diagram from the World Economic Forum, Ellen MacArthur Foundation, McKinsey & Company, 2016. Data for recycling and plastic garbage estimated by the National Chamber of Recyclers; the marine debris from land source estimated from UNEP, 2018; other data estimated from the Municipal Plan for Integrated Management of Waste in Panama City 2017-2027 and from Ineco 2017.

- 1 & 6 - Estimate national chamber of recyclers.
- 3 - Estimation of marine litter generated on land - Panama.
- 4, 5, 7 - National comprehensive waste management plan 2017-2027, waste management model. Estimation of the different types of waste. Ineco, 2017.

Project Justification



In 2020, the National Government of Panama drafted a National Marine Debris Action Plan (PANBM) to reduce the amount of marine litter in the country by 2026. The plan resulted in the development of various waste management and circularity regulations, plans and programs at the national level, such as regulations to limit the consumption of single-use plastics and increase the use of reusable bags. At the municipal level, it prompted Panama District to internally assess its opportunities within these sectors to make use of its local capacity and act in close collaboration with city stakeholders in search of solutions to the marine litter challenges in the city. As the city is not directly responsible for waste collection and treatment, it was noted that the city can only work within the recycling sector, where it has a clear mandate to act.

In a context of extremely low recycling rates, as outlined above, strengthening the recycling industry can generate a significant



impact in the medium term by decreasing the amount of litter, encouraging business opportunities, and creating jobs. As recycling plays a catalytic role in the circular economy, it is often argued that the circular economy is more than just recycling¹⁶. Considerations in terms of product design, reusing, repairing and others are key to the circularity debate. Therefore, strengthening and prioritizing the recycling industry within a circular economy approach can allow the city to incrementally move from a linear to a more circular and regenerative systems approach. This transition in the city will benefit from a strong commitment and capacity from the municipality, namely:

- Panama City has a track record of successful partnerships to strengthen recycling rates in the city through recyclables collection, communication, and educational campaigns on waste management and environmental practices.



- Panama City has undergone planning processes, such as the Resilience Strategy development, in which clear environmental, economic, and social risks and opportunities have been identified.
- Panama City's Resilience Office is well-placed within the municipality to lead this project, as it sits under the Mayor's Office and has a mandate to address resilience and climate change challenges in the city.

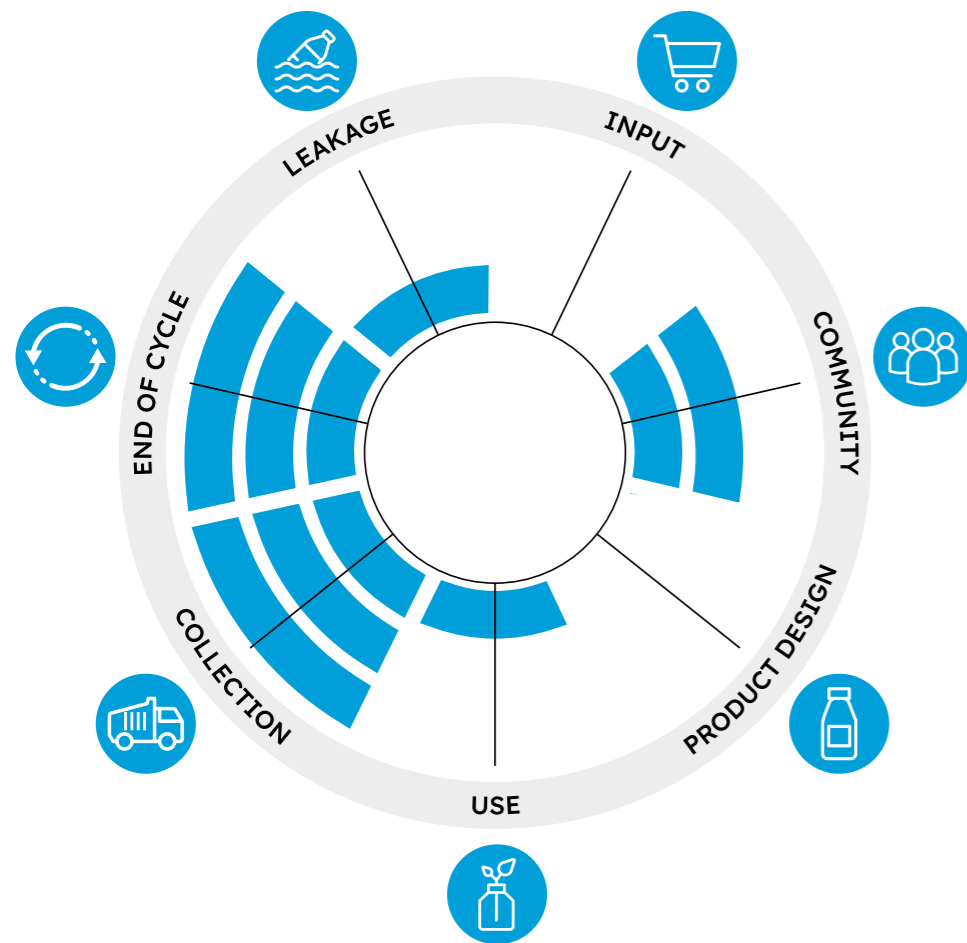
Therefore, through the Urban Ocean gap assessment, the city has been able to identify its main challenges and prioritize them to come up with opportunities that yield multiple benefits to the city. These opportunities have been structured as initiatives with various areas of intervention. The next sections document this process by highlighting the challenges and opportunities identified, as well as how they have been translated into a project with agreed-upon goals.



Challenges

- It was recognized that there is a general lack of awareness regarding the waste challenge in the city. It includes a high consumption of single-use materials, a very limited segregation of materials at source and significant littering behavior.
- The recycling industry is small and fragile.
 - ◊ Almost all the collected solid waste, whether recyclable or not, is diverted into the city's main landfill – Cerro Patacón.
 - ◊ The private recycling companies operate at a small scale and prioritize valuable materials, such as aluminum.
 - ◊ The city lacks proper recovery and treatment facilities for recyclables; there is not enough recycling infrastructure.
 - ◊ The city lacks proper business models that guarantee that low-value material is also collected and treated.
- The city's waterbodies are generally polluted, posing challenges in terms of flooding, water quality, environmental degradation, and health issues, particularly in communities living close to the rivers.
- Material that is collected from rivers is not treated because of the high costs associated with degraded material.
- Informal waste pickers' health and livelihoods are highly unstable due to a lack of proper work conditions and compensation.

Opportunities



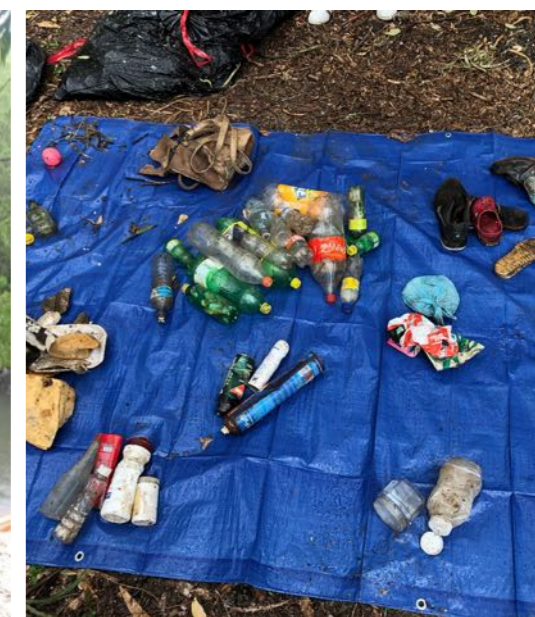
During the Urban Ocean gap assessment phase, the city led participatory workshops to identify the main opportunities for improving the waste management sector in the city while building more resilient societies and economies. The four opportunity areas that were prioritized and explored were:

- **Expand Extended Producer Responsibility (EPR).** One of the main goals defined by Municipal Plan for Integrated Management of Waste in Panama City for 2017–2023 is to approve national and municipal legislation that allows for increasing implementation of EPR policies. It was highlighted during the gap assessment process that it is necessary to perform a technical analysis of the current national and municipal legislation to identify the most adequate regulatory and financial mechanisms available to implement existing EPR policies.
 - ◊ 15 percent and 23 percent of top convenience products sampled during the Circularity Assessment Protocol (CAP) had parent companies and manufactures, respectively, located within Panama City. This includes 90 percent and 70 percent of top yogurt and popsicle product manufacturers and parent companies, respectively. So, there is an opportunity to explore EPR policy implementation with local manufactures and parent companies.

- **Raise awareness around plastic pollution.** One of the pillars of the Zero Trash program is to raise awareness of the waste challenge and plastic pollution in the city. It includes educational activities in schools and universities, community awareness and public communication campaigns. However, the CAP identified that levels of awareness of the plastic pollution challenge differ largely depending on age, income, and education. Targeted communication campaigns that include multiple platforms, nudging mechanisms and creative approaches are necessary to strengthen citizen awareness. Three main approaches to tackle this challenge were raised during the gap assessment:
 - ◊ Increase municipal monitoring capacity and transparency as a tool to foster participation.
 - ◊ Create dedicated consultative bodies/ focal groups with communities to understand behavioral patterns and engage citizens in circularity measures.
 - ◊ Improve the communication campaign in the city to increase awareness to the interrelated challenges of waste management and marine litter.



- **Recycling, reuse and treatment facility.** There is a general lack of waste treatment infrastructure in the city. The Cerro Patacón landfill that serves the city has had a series of environmental and safety concerns (including a landslide in June 2021) and is almost at full capacity. The landfill was projected to have a recycling center at its premises, but its operation is highly inadequate and most recyclable waste ends up going to the landfill. The recycling sector is mostly formed by private and informal actors but is restricted to the most valuable materials. It was noted that plastic does not generate as much of an income for informal recyclers, nor is there much opportunity for deposit or return schemes for plastic products. Apart from the recyclables that end in Cerro Patacón, a significant amount of recyclable waste collected is exported to neighbor countries with stronger recycling industries. The city has a huge opportunity to address the infrastructure gap by investing in recycling, reuse, and treatment facilities for the city.



- **Solutions for river plastic waste.** The river and coastal pollution in the city are problems that different organizations have been trying to tackle for years. For instance, the non-profit organization Marea Verde, established in 2017, installed trash traps in 2019 in the Matías Hernández River. As of December, that year, more than 10,000 garbage bags had been collected, equivalent to more than 70 tons of trash – including refrigerators, trolleys, suitcases and so on. Since then, the organization has been planning to deploy a different trash trap technology in the Juan Díaz River that is more sophisticated and could potentially collect more waste. Another experience that was shared during the gap assessment

was the World Bank-supported study to create the Conceptual Plan for Resilient Reactivation of the Waterfront in Panama City. The latter points towards solutions to coastal pollution, while addressing challenges of connectivity with marginalized neighborhoods, inefficient and polluting modes of transportation, and flooding risk in the area. One area being explored is the possibility of creating public spaces that use recycled material to build its leisure infrastructure. These experiences demonstrate that there is demand to recycle materials from river and coastal areas. However, to achieve this is challenging because the materials in question have already been degraded.

- The municipality has recognized the need to extend and enhance its practices towards a circular economy that are context and process-oriented, including collaborating with different stakeholders (e.g. working closely together with informal and private recyclers, to guarantee their social inclusion, financial sustainability, etc.), creating awareness-raising campaigns, reviewing its legal and regulatory framework, particularly towards Extended Producer Responsibility policies, investing in technology and service models that are innovative etc.

Translating the Opportunities into a Project

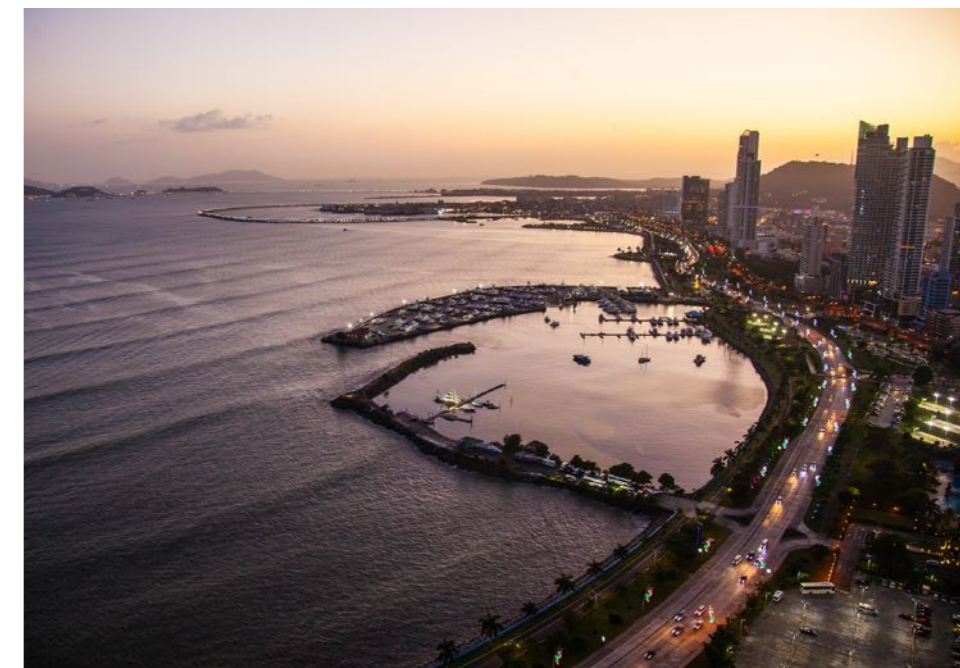


The project below has been designed not only to address the challenges identified above, but also to make best use of the friendly national regulatory environment for circularity and for strengthening the role of municipalities in waste management, and particularly in recycling for Panama City. It considers the existing partnerships with multiple stakeholders, including NGOs, national authorities, and the private sector, with whom the city has been testing different business models and technologies for collecting recyclable waste from households, from green points, and from polluted rivers. These experiences have demonstrated a gap between the collection and treatment of materials, highlighting the need for the city to promote and enforce actions that enable treatment, recycling, and recovery of recyclable materials. Therefore, the city recognizes the need to invest in technology and infrastructure to actively transform its recycling industry into a more sustainable, equitable and robust one, while enhancing the enabling regulatory and partnership environment towards building circularity and resilience.



There is no doubt that the city needs a recycling plant that caters for varied waste streams. Still, as this is a long-term investment, the city aims to use short-term projects and solutions that demonstrate the value of the recycling industry to the city. It was identified that promoting recycling alternatives to the materials that are already being collected from rivers and coastal areas could potentially have a high impact for community awareness, in addition to decreasing environmental pollution. All these solutions must be anchored in a municipal effort towards institutionalizing and operationalizing circularity in the city through a resilience lens. Therefore, it is imperative that the city reviews its legal capabilities to deploy a series of regulatory, economic and communication instruments towards strengthening the local implementation of waste management practices. Taking these aspects into consideration, the project is designed to promote environmental, social, and economic co-benefits to the city's economies and population.

Goal

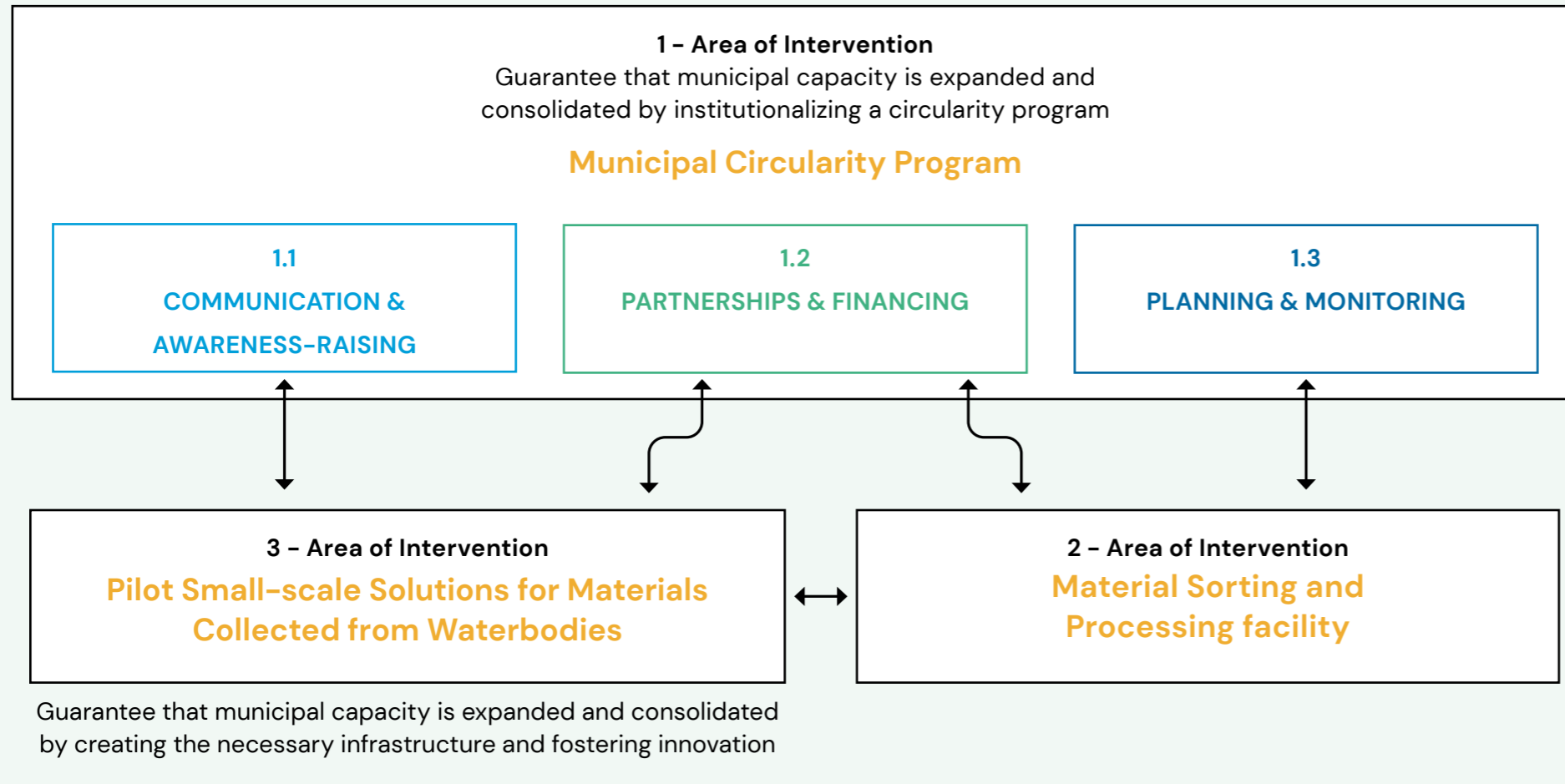


In line with the vision established by the municipality of Panama for the period until 2037 in the Municipal Plan for Integrated Management of Waste in Panama City (MPIMW-PC), this project's goal is to expand and consolidate the municipal role in recycling and recovering materials to reduce waste leakage into waterbodies.

This will be achieved by balancing short-term actions that demonstrate the value of recycled material with longer-term structural solutions to strengthen the recycling industry in the city and promoting green jobs and equity, decreasing the amount of waste generation and littering.

Project Description

SHORT TERM ————— LONG TERM



The Panama City Urban Ocean Initiative is changing the relationship between the city and the waste it produces. The strengthening of the recycling industry through resilience and circularity incorporates activities to add value to materials, reduce the amount of waste being produced, decrease health and environmental risks associated with inadequate waste disposal, and allow for the economic and social benefits of enlarging the recycling industry to be generated.

To achieve the city's goal, the city will

- (1) create a Municipality Circularity Program that will oversee the (2) design and construction of a materials recovery facility, and the (3) implementation of small-scale solutions to recycle and reuse materials collected from waterbodies.**

Municipal Circularity Program under the Resilience Office

The Municipal Circularity Program will anchor the municipal effort towards institutionalizing and operationalizing circularity through a resilience lens in the city. City initiatives such as the Basura Cero (Zero Trash) program or the Recicla por tu Futuro (Recycle for your Future) program have created important work and knowledge on educational and awareness-raising activities, partnership building with the private sector and waste collection that are needed to inform this effort. These experiences demonstrate the capacity and interest of the municipality for strengthening its capacity and mandate to improve the waste sector in the city from a circularity point of view.

The resilience-building efforts in the city enhance its capacity to deliver projects and activities that yield multiple benefits. The Resilience Office (RO) was established in 2017; it currently sits under the Panama City Mayor's Office. As a strategic office, the RO is well placed within the municipality to conceptualize, structure and deliver the Municipal Circularity Program for the city. The Resilience Office has recently taken on the role of planning the municipal efforts towards achieving its targets for the climate change agenda, placing it as the best-suited department to lead circularity work.

Therefore, the city is planning to develop its circularity muscle within the Resilience Office by building on the following three pillars:

1.1 - Communications and Awareness Pillar

OVERVIEW

The city will target its communication efforts towards increasing knowledge about the challenges and opportunities within the waste sector in the city in addition to opportunities for residents to get more engaged with this work. Building on the lessons learned from the community engagement work that has been done in the city, the municipality is looking to expand and consolidate its methods for engagement. Participatory structures exist, but they are not geared towards raising awareness to circularity challenges. Similarly, new methods that enhance the visibility of the waste challenge and its opportunities can be very effective.

ENABLING ENVIRONMENT & LOCAL RESOURCES

Under the Basura Cero (Zero Trash) program:

- A communication campaign has been launched in various channels (including news, magazines, MoUs signed with television channels, etc).
- Some 250 teachers, 14 schools and four universities have been trained in integral waste management.

The city has committed to developing a communication campaign targeted at river pollution.

EXPECTED IMPACT

Fundamentally change the relationship between residents and materials by:



Decreasing littering.



Decreasing the use of single-use materials.



Increasing separation at source.

RESILIENCE VALUE

The communication and awareness-raising activities must be designed to promote social cohesion, participation, and inclusion.

The Marea Verde pilot work with communities surrounding the Matías Hernández River demonstrated that awareness raising within communities could potentially impact the digital gap and gender inequality in addition to consumption habits. By introducing methods that prioritize social inclusion, the organization was able to identify and address digital and gender gaps that were key to the project's success.

SDG



Responsible Consumption and Production

Target 12.5

By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse

ACTIVITIES FOR IMPLEMENTATION



Evaluate the community awareness component of the Basura Cero program, including the educational activities in schools and universities, its communication campaigns, and the community educational component of the program to inform a community awareness campaign.



Develop a communication plan to publicize the benefits of having a holistic approach to waste management and waterbodies management, through a circularity and resilience lens.



Include communication materials to advertise the work being done in the city in terms of waste management, both by the municipality and civil society initiatives.



Explore multiple communication channels to reach different target populations (radio, television, social media, etc.).



Develop targeted communication campaigns to raise awareness of waste separation at source.



Design “buy recycled” campaigns to actively support consumers in buying products made of recycled materials.



Identify and create dedicated consultative bodies/focal groups within communities to understand behavioral patterns and engage citizens in circularity measures. This work should be done in close collaboration with the community boards (juntas comunales) in the city.



Create a call for artists, students, and other interested civil society stakeholders to work with recycled material that can be publicly displayed/serve as urban furniture. This work should be coupled with the recycling opportunities for material collected from rivers to encourage creative ways to repurpose and recycle. This should create short-term visible solutions to the marine challenge and help improve public spaces in the city.

TECHNICAL STUDIES AVAILABLE

Results Report – Progress and Lessons Learned from the Zero Waste Pilot Plan (UNDP, 2015). *Informe de Resultados – Avances y Lecciones Aprendidas del Plan Piloto del Programa Basura Cero (UNDP, 2015).*

INSPIRATION



📍 Florida, USA

The City of Boca Raton, in Florida, USA, recently launched a call for artists to work with discarded materials to raise awareness of the plastic pollution challenge. This type of initiative not only raises awareness of the challenge, but also impacts other urban systems by creating more vibrant public spaces, incentivizing culture, and improving livelihoods.

1.2 - Partnership and Finance Pillar

OVERVIEW

The city will invest in the necessary partnerships to grow the recycling industry and allow for innovation that supports an enabling environment for recycling businesses to prosper. Building on an extensive range of stakeholders that the city has already engaged, such as international organizations, NGOs, municipal and national departments, and others, in combination with the different types of institutional and legal instruments the city has used to create partnerships, such as public-private partnerships, Memorandums of Understanding (MoUs), and others, the city will explore and consolidate mechanisms that guarantee the implementation of EPR.

ENABLING ENVIRONMENT & LOCAL RESOURCES

Recicla por Tu Futuro (Recycle for your Future) is an important partnership between the Municipality of Panama, the Ministry of the Environment, the AAUD, the Cervecería Nacional and the Coca-Cola System towards improving recyclable collection and creating green points in the city.

The principles of shared responsibility and EPR are regulated by the national Law 33 from 2018 for the Zero Trash Policy and Integral Waste Management. However, local means of implementation have not been established, including the type of management, financing, and local regulations.

EXPECTED IMPACT

Fundamentally change the relationship between producers and the city by:



Decreasing the production of single-use materials.



Strengthening the recycling industry in the city.

SDG



Responsible Consumption and Production

Target 12.5

By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse

RESILIENCE VALUE

EPR mechanisms must be designed to consider all waste workers, including informal ones, guaranteeing safe work conditions and livelihoods.

Strengthen multi-stakeholder coordination, supporting the city in partnership building.

Guarantee adequate municipal financing capacity to improve the service and invest in new projects.

ACTIVITIES FOR IMPLEMENTATION



Set up a multi-stakeholder platform for collaboration in defining the adequate political, economic, and legal mechanisms to implement an EPR policy, specifically:

1. Set EPR targets for waste minimization.
2. Define the appropriate institutional structure and model to collect and administer funds related to the EPR policy.
3. Define the appropriate institutional structure and model to control and enforce the EPR policy.
4. Guarantee that the EPR policy features inclusive recycling measures that support informal recyclers.
5. Include resilience and circularity targets within performance goals for the private sector.



Partner with academic actors to offer training, technical assistance, and advisory services to strengthen the circularity and resilience pillars of businesses.

INSPIRATION



Colombia

The CEMPRE (Compromiso Empresarial para el Reciclaje) in Colombia is a membership organization with private sector members that supports inclusive recycling activities. It includes capacity building for waste pickers, facilitation of agreements between waste pickers and national and local authorities, and securing and advocating for rights for informal recyclers.

1.3 - Planning and Monitoring Pillar

OVERVIEW

The city will concentrate efforts towards streamlining the current legal framework for circularity and improving its capacity to plan, design, execute, monitor, and evaluate projects that foster resilience within the circular economy. Building on existing national and legal frameworks that create incentives to reduce plastic consumption and share the recycling responsibility with multiple stakeholders, the city will enact and enforce policies that decrease consumption of materials, so reducing the generation of waste. This pillar should strengthen the institutional memory in the city towards circularity.

ENABLING ENVIRONMENT & LOCAL RESOURCES

The city has engaged in planning exercises for the waste sector, such as:

- the Municipal Agreement No. 124 of September 2015 – Municipal Policy on Integrated Solid Waste Management and the Zero Trash Program 2015–2035.
- the Municipal Plan for Integrated Management of Waste in Panama City (2016)

The city has also enacted circularity policies, such as:

- the Municipal Agreement No. 231 of 25 Sept. 2018, whereby measures are established for the reduction of disposable plastics both in facilities and in the activities developed by the Municipality of Panama.

EXPECTED IMPACT

Fundamentally change the relationship between the AAUD and the city by increasing the city’s capacity to plan, design, execute, monitor, and evaluate projects that foster resilience within the circular economy.

SDG



Sustainable Cities and Communities

Target 11.3

By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated, and sustainable human settlements planning and management in all countries

RESILIENCE VALUE

Enable circularity to be a transversal thematic priority for the city and be integrated into the municipal work related to other urban systems (such as water management, energy provision etc.). This should allow the city to design projects that yield multiple benefits and address the different shocks and stresses that the city faces. For instance, all planning exercises need to understand the impact of flooding to the project and how the project will contribute to decreasing flooding risk.

Support the city in expanding its mandate in waste management

ACTIVITIES FOR IMPLEMENTATION



Strengthen the city’s capacity to monitor and evaluate programs by revisiting the data collection methods for the CAP over time and determining the efficiency of recent policies on single-use plastic. It could be beneficial to both measure the impact and to show the community the positive impact that the policy is having and help boost support and awareness.



Perform a legal and technical review on the local and national policies and regulations for EPR, identifying possible bottlenecks and opportunities.



Review different EPR models in different cities, analyzing their economic efficiency and environmental effectiveness.



Evaluate the supply and demand for recyclable material, including current actors, market trends and behavioral patterns.



Perform a legal and technical review to set smart green public procurement procedures. Use the procurement process as an opportunity to require innovation in climate-resilient solutions and flexible contingency arrangements.



Develop facility-level contingency and emergency recovery plans for the different waste management infrastructure (clean points, sorting and treatment facilities, etc.) to cover a full range of shock events.

Design and Implement a Material Sorting and Processing Facility



Clean Point in April 2020

OVERVIEW

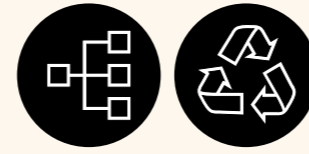
Under this area of intervention, the municipality is tackling the urgent need for recycling infrastructure in the city. As infrastructure had already been highlighted as a critical gap in the city, a feasibility study for treatment facilities was commissioned in 2018 and two main options were evaluated: a waste-to-energy facility, and sorting and processing of different waste streams. This area of intervention will focus on the second option, namely the design and construction of a sorting and processing plant for undifferentiated municipal solid waste, with the objective of recovering and valorizing as much of the waste as possible, following international standards. The proposed waste-sorting plant will combine automatic and manual sorting processes to separate the recoverable fractions from the waste mixture and prepare them for commercialization. The following large groups of waste will be generated from the sorting process, which, after being packaged, will be taken to sub-plants or sub-treatment lines to continue the transformation process and be returned to a productive cycle as appropriate: plastic, glass, paper, cardboard, metals, pneumatics, organic/composted material.

ENABLING ENVIRONMENT & LOCAL RESOURCES

Overview

The boxes on the right indicate the main public infrastructure for waste management in the city. Most infrastructure is operated through a public-private partnership model, but there are also fully private facilities operation. In addition, there are NGOs, such as Botellas de Amor, that collect single-use plastics in bottles to classify them and leave them ready to make plastic wood strips, which are used to make tables, chairs, playground equipment or vegetable gardens. This information needs to be updated as part of the feasibility study for the sorting and processing facility.

Type of infrastructure



Sorting and recycling facility

Number

1

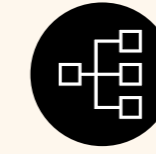
Description

Sorting and waste recycling facility located in the Cerro Patacón landfill.

Conditions

Serious environmental and safety concerns. Operations are highly unstable.

Type of infrastructure



Sorting facilities

Number

3

Description

There are at least three sorting plants under the Zero Trash program that vary in size and type of material accepted.

Conditions

Usually located close to the Clean Points, these sorting facilities are in generally good condition.

Type of infrastructure



Clean Point (Collection centre)

Number

13

Description

The Clean Points under the Zero Trash program only accept recyclable materials, including PET bottles, cans, TetraPak™, glass, etc.

Conditions

There are other Clean Points under private operation. In general, the Clean Points are in good condition, but they are not numerous enough for all the recyclables generated in the city. Operations are highly impacted by external events.

Type of infrastructure



Landfill - Cerro Patacón

Number

1

Description

The only controlled deposit located in Panama City under public ownership and private concession to Urbalia SA, a Colombian enterprise. It serves both the District of Panama and of San Miguelito.

Conditions

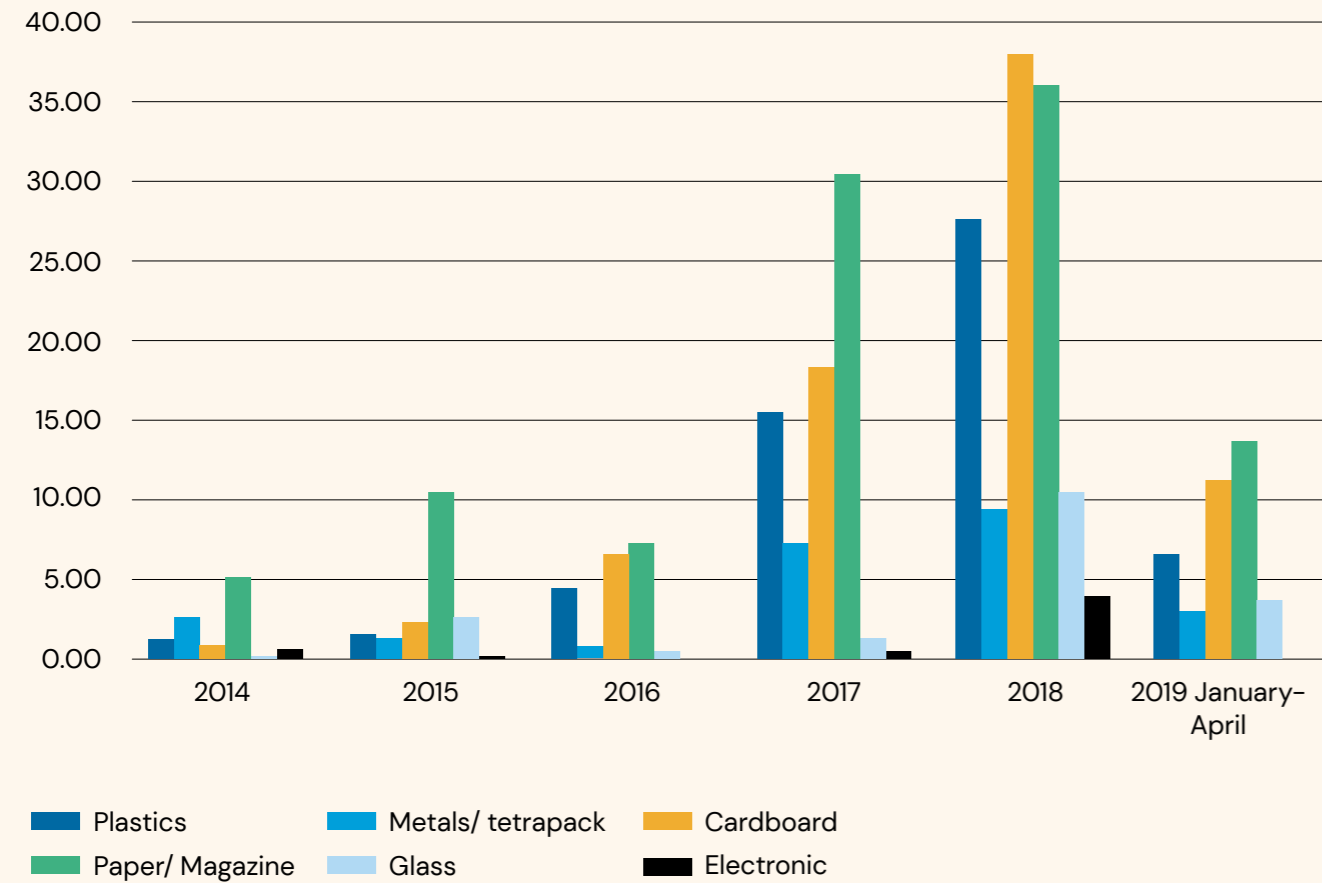
Serious environmental and safety concerns, including a landslide in June 2021, and it's reaching its capacity several years before it was originally due to close. The private concession is until 2023.

Recyclable collection infrastructure

The municipality and its partners, particularly from the Zero Trash program, currently operate 13 “Clean Points” to collect recyclable waste. There are private organizations or NGOs, such as Fundación Costa Recicla, that operate other Clean Points as well. Due to the Covid-19 pandemic, most of the Clean Points had to be closed, which not only increased incorrect disposal of waste, but can increase the risk of flooding

when there are strong rains, encourage the proliferation of diseases and impact the livelihoods of waste pickers. As part of the circularity program, the operations of this type of infrastructure need to be reviewed to include contingency and emergency recovery plans, on top of improving efficiency and cleanliness. The following chart presents the results of the material collected in the Clean Points by quantity and material.

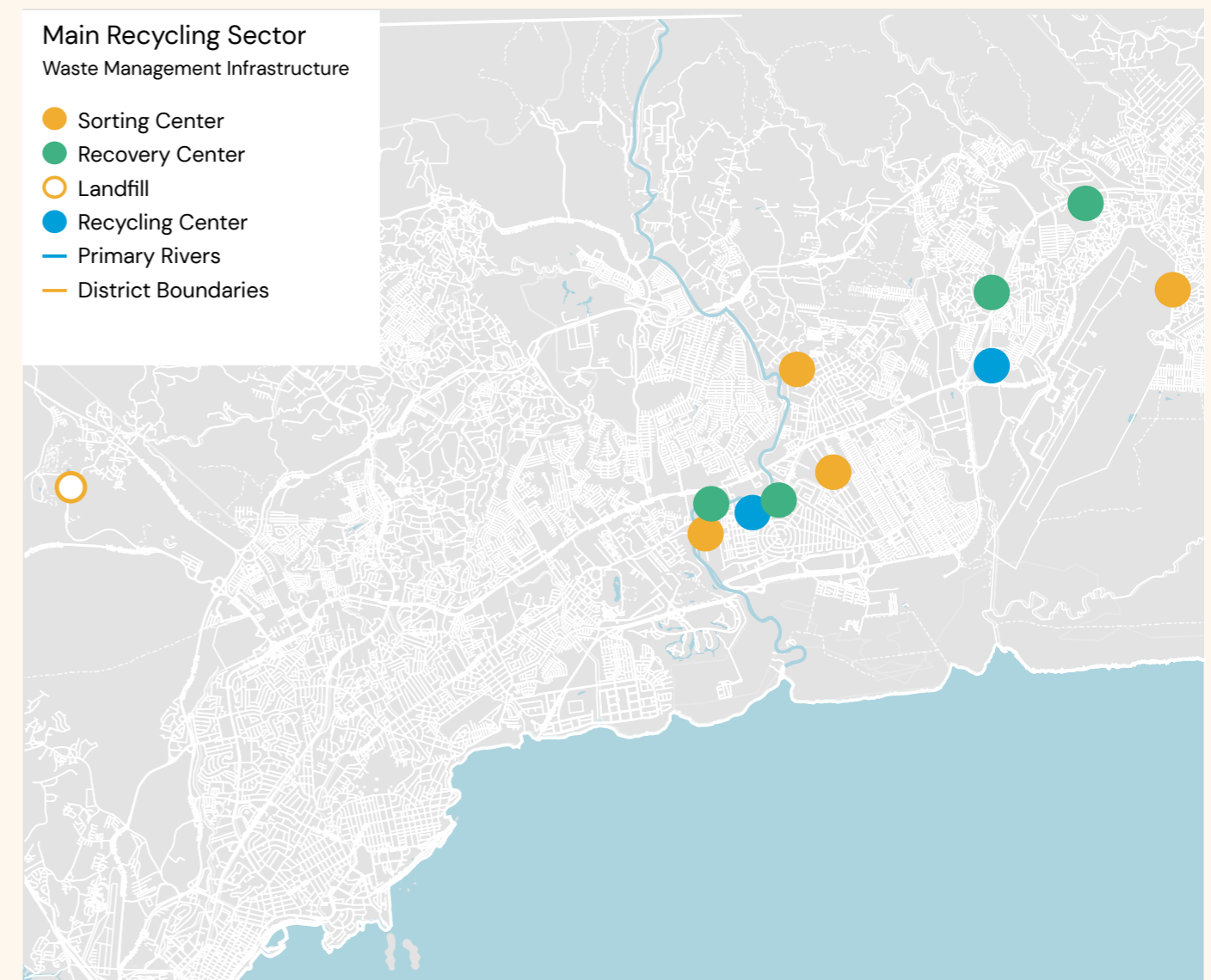
QUANTITIES BY TYPE OF MATERIAL 2014-2018 (TONS)



Waste sorting and recycling infrastructure

The city also has a private recycling sector that focuses mostly on high-value material, such as aluminium. On the map below, the main sorting, recovery, and recycling centres in the city are shown, demonstrating an unequal distribution of infrastructure. At the same time, as most of the infrastructure is located close to rivers, there is an opportunity to bridge the gap between collection and sorting of river material.

Finally, the city has committed two extra collection trucks to expand its recyclable collection efforts.



EXPECTED IMPACT

This plant is expected to expand the amount of recyclable waste that is collected and treated in the city, strengthening the recycling industry. The initial estimations from the feasibility study suggest 300,000 tons of waste could be recycled per year.

SDGS



11 – Sustainable Cities and Communities

Target 11.3

By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated, and sustainable human settlements planning and management in all countries



13 – Climate Action

Target 13.1

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

RESILIENCE VALUE



Environmental benefits

- Decrease the risk of flooding by decreasing the amount of litter. Panama City is highly susceptible to flooding, particularly between June and December, the wet season in Panama. The country ranked first on the Local Disaster Index of Latin America¹⁷ with flooding causing 86.9 percent of reported economic losses and 34.4 percent of mortality between 1990 and 2014. Poor waste management was indicated as one of the main causes of flooding in the Juan Dias water basin.
- Decrease GHG emissions. It is estimated that 7 percent of total GHG emissions in the city are related to the waste sector (IDB, 2017), particularly through landfill (83%) and incineration (17%). This plant could decrease the amount of material that ends up in the landfill or being incinerated, decreasing the emissions.










Social and economic benefits

- The initial estimations from the feasibility study suggest that 150 jobs could be generated for the sorting and treatment facility; many more green jobs could be generated in the recycling sector through innovation and new business creation.
- More than 600 prison inmates are actively participating in the EcoSólido project. For every two days of full-time work, they commute one day of their sentence and 90 percent of the prison's waste is transformed and reused. The initiative is present in La Joyita and 45 other prisons and aims to reinforce the social inclusion of people in vulnerable situations through their labor insertion in the recycling sector.
- Recycled material can create infrastructure and products (e.g., public furniture, bicycle lanes) that create jobs and foster economic development.



ACTIVITIES FOR IMPLEMENTATION

Identified needs to update the feasibility study


-  Updated stakeholder map in the recycling sector (main generators, collectors, recyclers, and exporters).
-  Social and environmental assessment, including job generation outline and possibility of including educational program with inmates from La Joyita.
 - ◊ The feasibility study evaluated the possibility of having the plant close to the prison La Joyita and creating a program with inmates to work at the treatment plant. This would support resocialization and reskilling of inmates. Further assessments in close collaboration with national authorities need to determine the legal and operational feasibility of the program.
-  Measure and model the recyclable generation volumes, considering:
 - ◊ The new consumption habits and materials given the Covid-19 pandemic.
 - ◊ The volumes per district.
-  Analyze the feasibility of new technologies available for treatment and recovery of materials.
-  Evaluate public-private alliances and synergies, new legislation, and other conditioning aspects.

-  Financial assessment, including the possibility of a concession model for the design, construction, and operation of the plant.
-  Analyze the possibilities for building efficiency (the use of renewable energy, water efficiency, etc.).

After these steps are conducted in close collaboration with the city, the next steps include:

-  Preparation of necessary legal documentation, including tendering, procurement, land-use permits, etc.
-  Evaluate possible fiscal benefits, such as exemption from import taxes on equipment, machinery necessary for the installation of the plant.

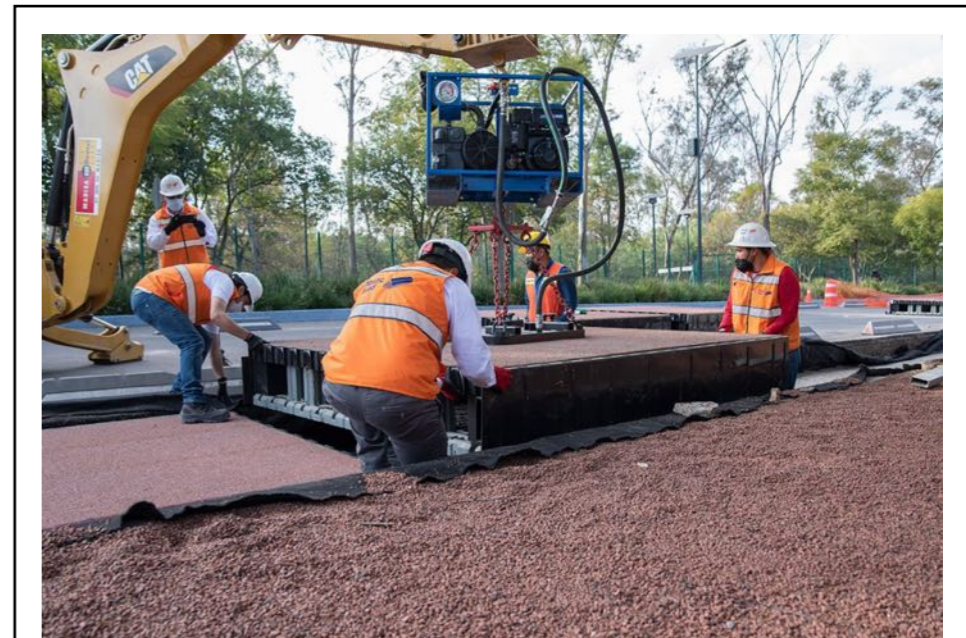
The Municipal Master Plan also proposes the following planning instrument to be developed as part of the design of the waste facilities:

-  Management unit plans: These are detailed documents for the planning and management of the facility to follow the regulations of a public service.

TECHNICAL STUDIES AVAILABLE

- Circularity Assessment Protocol Report (2021). New Materials Institute
- Feasibility study for the measurement and analysis of solid waste management and the design of a pilot plan for an integrated solid waste management system in Panama East (2019). Fundación para la Promoción del Desarrollo Sostenible – available upon request to municipality
- Report: study to mitigate climate change and GHG emissions inventory for 2005–2013 in the Metropolitan Area of Panama. (2017). IDB, IH Cantabria and Panama City.

INSPIRATION



📍 Mexico City, Mexico

Inspiration: Mexico City, together with Orbia and PlasticRoad, inaugurated a pilot in the Chapultepec Forest of a bike lane made of recycled plastic. The pilot track is made of over 1,000 kilograms of plastic waste – the equivalent of half a million plastic bottle caps. The carbon footprint in comparison with traditional road structure is 72 percent lower. This is the type of innovative recycling business that can be created.

Pilot Small-Scale Solutions for Materials Collected from Waterbodies



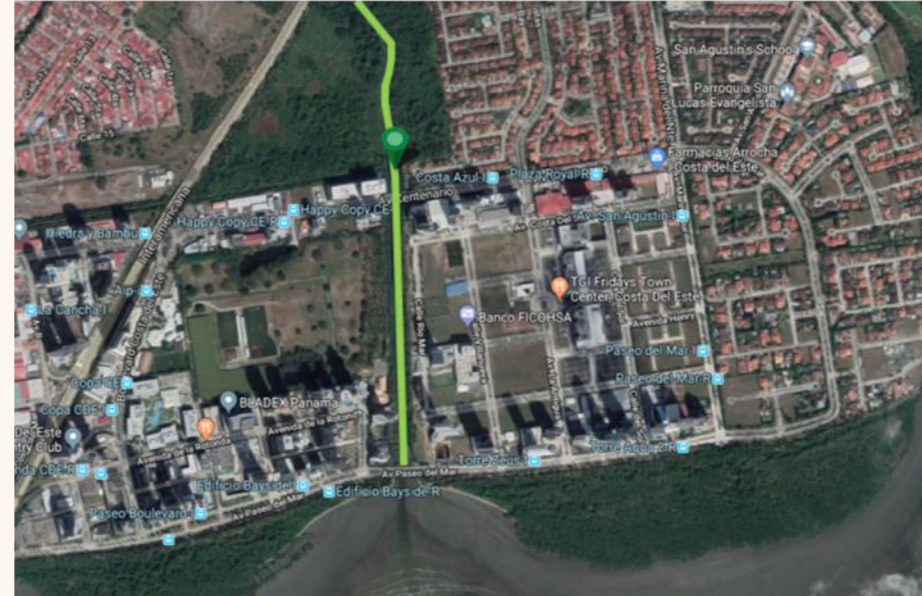
River collection infrastructure

OVERVIEW

This area of intervention is a strategic one, as it fosters innovation within the recycling industry, while bridging the gap between current river waste collection efforts and treatment of these materials. If well-managed, the recycled material could be used for communication campaigns or as urban furniture to raise awareness of the challenges and opportunities of waste management. Materials collected from rivers pose an extra layer of difficulty to recycling because they usually have been in the water for a long time, causing them to lose some of their useful properties. For instance, these materials would most probably not be eligible to go to the sorting and processing plant. However, they present a good opportunity to test small-scale solutions and to be used for public furniture, such as benches. Not only could this raise awareness, but it could potentially improve the quality of public spaces in the city.

ENABLING ENVIRONMENT & LOCAL RESOURCES

Two trash traps have been deployed in Panama City and another is being developed. The first is in the Matías Hernández River and the second one is in the Juan Díaz River. The one being developed will also be deployed in the latter river. However, these devices are only capable of capturing approximately 60 percent of the waste dumped into the river and has suffered further setbacks due to a lack of community acceptance, limited resources, and governance challenges. Additionally, the material that is being collected from rivers currently goes to Cerro Patacón, not receiving any type of processing treatment.



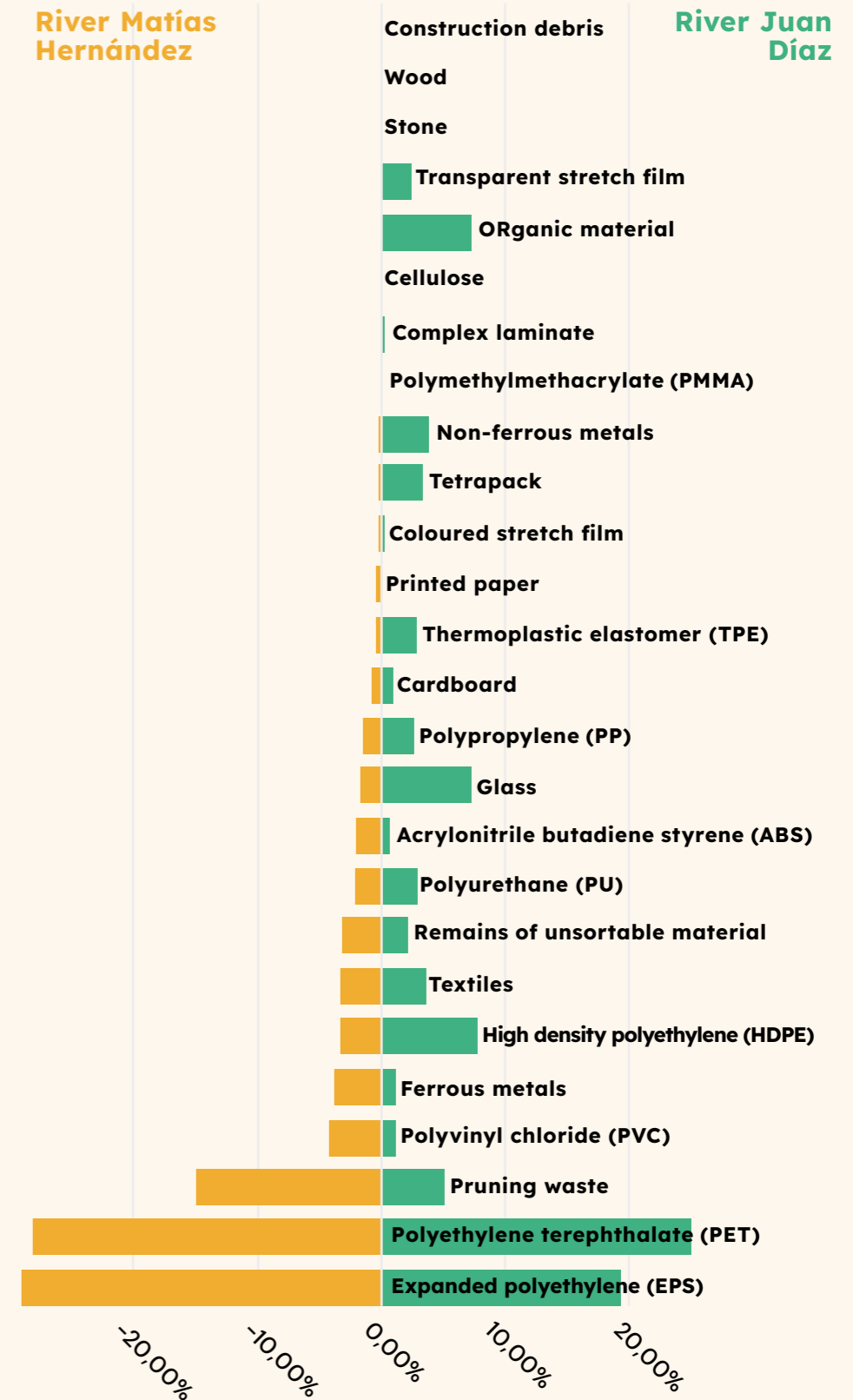
Location of Trash Trap in Matias Hernández



Location of Trash Trap in Juan Diaz

The new solution being analyzed for deployment is interceptor technology, which could potentially increase the operation's efficiency and capacity. The following figure presents the results of the material collected in both trash traps with a percentage distribution of materials. It is clear that in both rivers, PET is frequently present.

CHARACTERIZATION OF FLOATING SOLIDS BOB RÍO MATÍAS HERNÁNDEZ VS. RÍO JUAN DÍAZ PERCENTAGE DISTRIBUTION OF MATERIALS



EXPECTED IMPACT

These solutions are expected to recover materials that otherwise would end up in the landfill.

- An estimation from the Zero Waste Lab showed that 800 kg of plastic could be transformed into ten pieces of furniture and save 2080 kg of CO2 emissions .
- According to the feasibility study, more than 200 tons of garbage and debris were removed from Panamanian rivers and streams in 2017 alone, with the cleaning and dredging of the capital city’s tributaries carried out by the Ministry of Public Works. The collected garbage ended up in the landfill.
- According to Marea Verde, the trash trap in the Matías Hernández River collected around 70 tons of waste over a period of approximately one-and-a-half years, 46.7 percent of which were plastic bottles and disposable containers.
- According to Marea Verde, the organization is planning to deploy the interceptor technology on the Juan Díaz River in 2022, with the capacity to collect between 50,000 and 100,000 kg of trash per day.

SDG



14 - Life Below Water Target 14.1

By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

RESILIENCE VALUE

The municipality will evaluate the solutions with an eye on resilience indicators that assess the recycled material, the solutions provider and the process of recycling in terms of their ability to yield multiple benefits (for example, create vibrant public spaces, contribute to decreasing economic and social inequality...).

If well-implemented, this area of intervention could not only benefit the recycling industry by fostering innovation, but also raise awareness of the waste challenge, particularly in waterbodies.

The Flipfloopi project in Kenya, for instance, where a boat made of 10 tons of discarded plastic was built to raise awareness of the single-use plastic challenge and consumption challenges, is a good example. Even though not all the plastic used had been collected from rivers and coastal areas, the project prioritized low-technology solutions to recover the plastics.

ACTIVITIES FOR IMPLEMENTATION



Evaluate local, national, and international technologies available to sort, clean and recycle the material being collected from rivers.



Launch a call for proposals on solutions, technologies, and innovations to recycle material collected from rivers.



Evaluate proposals according to their resilience value.



In close collaboration with the World Bank, create an inventory of possible public furniture infrastructure and public spaces where this infrastructure could be deployed. The World Bank has initiated this inventory as part of the Conceptual Plan for Resilient Reactivation of the Waterfront in Panama City.



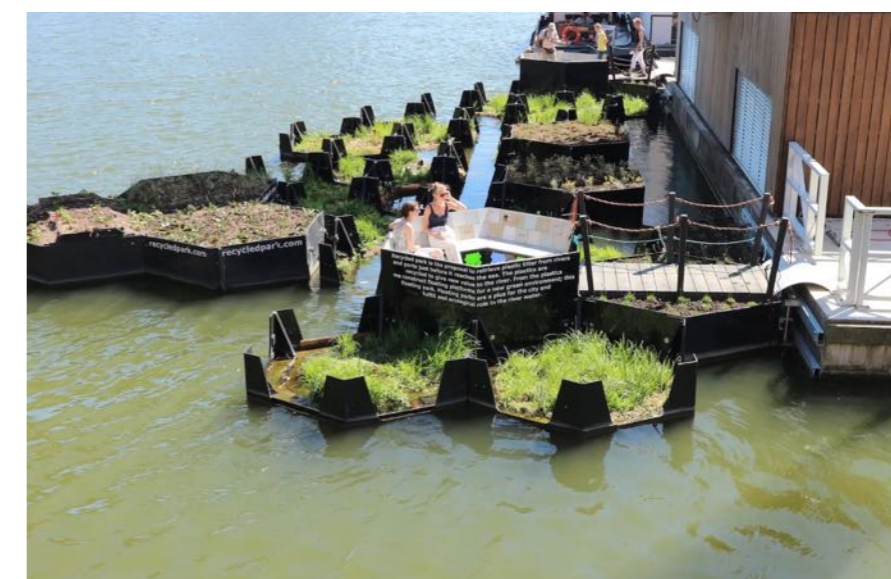
In close collaboration with Marea Verde, create a scale-up concept for the existing trash traps to guarantee that they will be installed in all nine rivers of the city.

- ◊ Define a monitoring and evaluation scheme to understand whether littering is declining.

TECHNICAL STUDIES AVAILABLE

- Characterization of the discharge of macro-plastics and other post-consumer floating solid waste in the Bay of Panama by the Matías Hernández River (2020). Marea Verde
- Informe Prueba del BoB en el Río Juan Díaz Panamá (Report on testing trash traps in the Juan Díaz River in Panama, 2020). Marea Verde
- Flood Risk and Coastal Assessment of the Tocumen River (2021). World Bank
- Integral Study of Flood Mitigation Actions in the Juan Díaz Basin (2016). BID and IH Cantabria

INSPIRATION



Rotterdam, netherlands

The City of Rotterdam has created a floating park made of recycled plastic in its waterways. The recycled plastic is formed into hexagonal pods and can be used for gardens, habitats for wildlife, and for leisure. The Recycled Island Foundation is testing solutions to use recycled plastic from trash traps in the river to build floating parks.

Further Understanding the Resilience Value

This initiative has been designed under the premise of being a resilient project. Not only will it transform the recycling industry into a more robust and innovative one that can be adapted to the needs of the city, but it will also develop more interconnected systems, so Panama City is more prepared to survive and thrive from the shocks and stresses it faces. Conceptually, this means thinking about this project from three perspectives:

- How the project itself demonstrates qualities of resilience, so that it is in a better position to handle external shocks and stresses.
- How the project contributes to the resilience of the city, considering its direct and indirect impacts.
- How the operation of the project is influenced by the resilience of the city environment in general (positively or negatively).

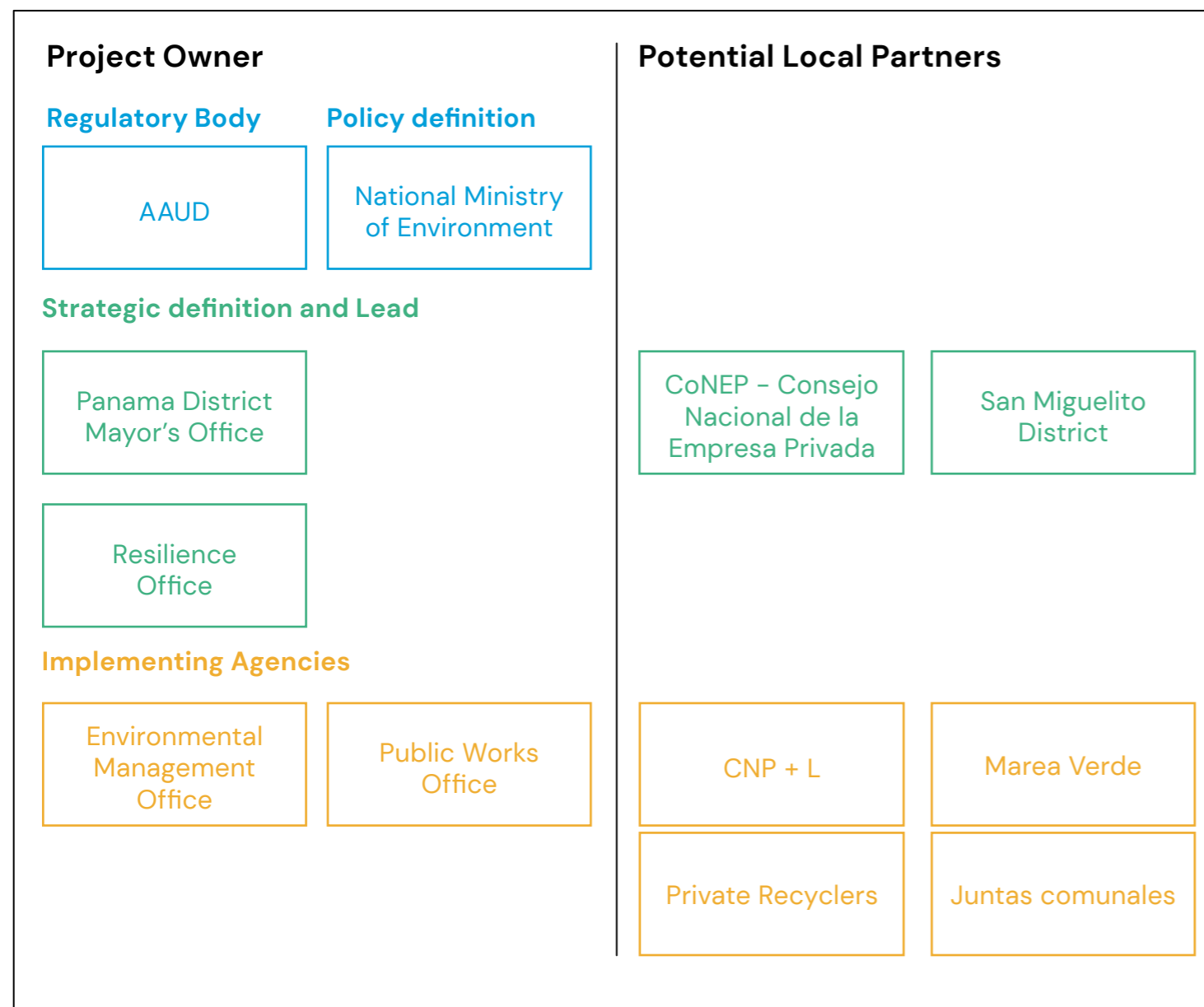
Beyond the immediate objectives to be achieved, the sought transformation will include and maximize all those “co-benefits” generated by the project that contribute to the structural, community, and/or individual resilience of the citizens of Panama City. For this, the link between the recycling industry and the city, the region and even the nation will be considered, including the interdependencies between the existing social, environmental, economic, and institutional systems.

The City Resilience Framework identifies seven qualities of resilience that any urban system must incorporate so that it can resist, respond, and adapt more quickly to the shocks and stresses it faces. Thus, this initiative – understood as a system integrated into the city – is designed considering the following qualities of resilience:

REFLECTIVE	Systems that have mechanisms to continuously evolve and will modify standards or norms based on emerging evidence, learning from past experiences.	<ul style="list-style-type: none"> • Under the circularity program, municipal capacity will be created to monitor, track, and evaluate results from all components of the project. • The work with partners such as Marea Verde and the <i>juntas comunales</i> allows easy data collection within communities.
ROBUST	Systems that include well-conceived, constructed, and managed physical assets so they can withstand the impacts of shocks and stresses.	The design of the sorting and treatment facility will investigate the possibility of designing for building efficiency (including renewable energy, water efficiency, etc.) and including social programs for training the workforce, etc..
REDUNDANT	Systems that create spare capacity purposely to accommodate disruption, extreme pressure, and surges in demand.	The project is designed to strengthen the recycling sector in the city; therefore, more recycling businesses will be created.
FLEXIBLE	Systems that can change, evolve, and adapt in response to changing circumstances.	The location being defined for the recyclables sorting and treatment facility takes into consideration the possibility of expansion depending on necessity, including if other districts decide to use it as well.
RESOURCEFUL	Systems that can rapidly find different ways to achieve their goals or meet their needs during a shock or under stress.	The project is structured to balance short-term and long-term actions. It acknowledges the complex environment and it searches for multiple solutions.
INCLUSIVE	Systems that emphasize the need for a broad consultation and engagement of communities.	<ul style="list-style-type: none"> • The project has a multi-stakeholder approach, working with the private sector, the national government, communities, and NGOs. • The project will strengthen the recycling sector as a whole, guaranteeing that informal waste pickers are not disadvantaged.
INTEGRATED	Systems that promote consistency in decision making and ensure that all investments are mutually supportive to a common objective.	<ul style="list-style-type: none"> • The project is completely connected, as all three components mutually support each other. • The project has the potential to improve various urban systems, public spaces, the environment, public health, and livelihoods.

Roadmap for Implementation

Institutional Arrangements



The project is led by the Resilience Office in the city, where the Circularity program will be situated. As the strategic planner, the Resilience Office will guarantee knowledge creation, monitoring capacity, strategic partnerships, and alignment with regulations. The infrastructure projects will be implemented by the Public Works Office and activities related to community awareness and waste collection will be carried out by the Environmental Management Office.

The Public Works Office (Dirección de Obras Públicas) oversees construction plan registration and issues permits, certifications and sanctions related to construction works in Panama District, performing inspection functions to ensure compliance with urban development regulations, municipal agreements and urban laws in force within Panama District. The Environmental Management Office is the department that supports the execution of environmental policies, coordinates and promotes the management and sustainable use of natural resources, the improvement of the city's environmental quality, and citizen participation in environmental management. The National Committee for Private Enterprises (CoNEP) and the San Miguelito District are potential partners to support creation of the enabling environment for businesses to thrive and to gather greater volumes of recyclables for the facilities, respectively.

POTENTIAL PARTNERS

CNP+L

The National Cleaner Production Center of Panama was created following the

project "Support for the establishment of the National Cleaner Production Center to improve the environmental performance and competitiveness of the productive sectors within the Panama Canal Watershed". In 2004, with financial contributions from PROARCA-SIGMA, the business plan for the establishment of the National Cleaner Production Center was prepared, which led to its establishment with a permanent legal and organizational structure. The CNP+L supported the municipality in developing the feasibility study for the measurement and analysis of solid waste management and the design of a pilot plan for an integrated solid waste management system in eastern Panama.

Marea Verde

Marea Verde is a non-profit organization established in 2017 to promote civic action and awareness on how to mitigate solid waste pollution in Panama's rivers and coasts. The organization has been supporting research, community awareness campaigns and the deployment of trash trap technology in two rivers in the city. The Municipality of Panama and Marea Verde signed an MoU in 2019 to develop joint work on improving waste management.

Community Boards (Juntas Comunales)

The juntas comunales are spaces for citizen participation. They are made up of representatives of the local government and five citizens residing in the municipality. Their main objectives are to promote community development and to seek solutions to the most relevant problems. It is crucial to work with these spaces to guarantee that the community work is effective and inclusive.

Implementation Timeline

AREAS OF INTERVENTION	Year 1	Year 2	Year 3
Municipal Circularity Program			
Support needed to implement			
Technical assistance to evaluate past community awareness campaigns and educational programs.			
Technical assistance and capacity-building activities to evaluate and define legal, institutional, and financing structure for EPR.			
Technical assistance and capacity-building activities to strengthen the city's capacity to evaluate and monitor programs.			
Internal milestones			
Design and prepare communication plan and activities.			
Implement communication activities.			
Create a call for artists, students, and other interested civil society stakeholders to work with recycled material.			
Perform legal and technical review for EPR and circularity policymaking.			
Set up EPR scheme.			
Design and implement a material sorting and processing facility			
Support needed to implement			
Project feasibility study update, includes business case and technology needed.			
Environmental impact study for Ministry of the Environment (depends on if it is category 1 or 2).			
Socio-economic impact study.			
Internal milestones			
Procurement process (municipal council approval, preparation of bidding documents, bidding award and order to proceed).			
Approval and permitting of projects with firefighters, Ministry of Health, Ministry of Public Works, National Water and Sewer Institute, Urban and Household Sanitation Authority, Transit and Land Transportation Authority.			
Definition of Key Performance Indicators			
Execution of the project as designed			
Pilot small-scale solutions for materials collected from waterbodies			
Support needed to implement			
Evaluate local, national, and international technologies available for recycling material collected from rivers.			
Inventory of potential public furniture/infrastructure.			
Create a scale-up concept for trash traps.			
Internal milestones			
Launch a call for proposals on solutions, technologies, innovations to recycle material collected from rivers.			
Support selected solutions.			
Evaluate program and define communication campaign.			

Potential Access to Funds

GREEN FUND FROM THE MINISTRY OF ENVIRONMENT

The fund seeks to be a permanent source of financing and support for public and private local environmental investment initiatives to close the existing financial gap in environmental management and, at the same time, generate green economic growth spaces that strengthen socio-ecosystemic capacities within communities. Some interesting programs being financed currently by the fund include: 1) Integration of environmentally sustainable development objectives into companies' business strategies to strengthen their environmental management and competitiveness; 2) Integrated solid waste management program in public institutions.

CARBON NEUTRAL STATUS OF THE COUNTRY

In 2021, Panama published its second biennial report update on the mitigation of climate change in Panama. The results of the emissions inventories included in this report, prepared for the first time by an inter-institutional technical team, conclude that Panama is carbon neutral. However, this does not exclude the country from the global commitment to decarbonize outlined by the Paris Agreement. The results obtained with the improvement of the inventories are indispensable for the design of the National Strategy for Low Carbon Economic and Social Development, the implementation of the commitments set out in their Nationally Determined Contribution, delivered in December 2020, and to drive the transformation of the country towards climate resilience. The extended data collected and the fact that the country is carbon-free could support its application for various international grants.

Annex

Overview of the Governance Structure and Main Regulations in Panama

In Panama, waste collection and management are traditionally the responsibility of the municipalities, except for Panama District, where the national government has assumed responsibility for waste management through the Urban and Household Sanitation Authority (Autoridad de Aseo Urbano y Domiciliario or AAUD) since 2010. Article 2 of Law 51 states:

The Authority will be in charge of the administration, direction, planning, operation, exploitation, use, investigation, inspection and supervision of the services related to urban, commercial and commercial sanitation urban, commercial and domiciliary sanitation and sanitary landfills¹⁹.

The AAUD is responsible for covering about 50 to 60 percent of the waste collection and transportation service in Panama District, operating with its own equipment, facilities, and human resources. The AAUD subcontracts other private companies to cover the rest of the collection and transportation service. However, contracts are generally lax in terms of collection schedules, frequency, and maintenance, among other considerations.

As Panama City is comprised of two districts, Panama District and San Miguelito District, governance can be a challenge. For instance, the AAUD is not responsible for waste management in San Miguelito, as the district has its own governance structure for waste collection and treatment. Still, both districts use the Cerro Patacón landfill as their main disposal site. At the same time, Panama District is directly responsible for the management of waste generated in the city's markets (Abastos Market, San Felipe Neri Market, and the seafood market) as well as in the more than 200 municipal parks in the city. Panama District is also the one of the main local implementation partners of the public-private partnership for the Zero Trash program, which initially convened the district with the AAUD, ANCON, Cervecería Nacional SA, Tocumen International Airport and Panamanian Institute for Special Training (IPHE) Not only does this demonstrate that Panama District has the ability to enter into contractual agreements with the private sector, but it also demonstrates the city's mandate to work on strengthening the recycling sector in the city. The enabling environment for doing business in Panama City is also strong and suitable. According to the Doing Business profile of Central America cities by the World Bank (2015), it ranks as the first city in the region.

The enabling environment for doing business in Panama City is also strong and suitable. According to the Doing Business profile of Central America cities by the World Bank (2015), it ranks as the first city in the region.

NATIONAL LEVEL

Definition of roles and responsibilities

- Law 51 of 29 September 2010. Creates the Urban and Household Cleaning Authority, which is responsible for the integral management of solid waste: its handling, exploitation, use and final disposal, among other aspects.
 - ◊ Executive Decree 1445 of 18 December 2011. Regulates Law 51 of 2010 and Article 48 establishes penalties for improper disposal of waste.

Definition of strategy

- National Integrated Waste Management Plan 2017–2027. The general objective of this plan, in accordance with the provisions of Executive Decree No. 34/2007 establishing the National Policy on Hazardous and Non-Hazardous Solid Waste Management, is to achieve integrated management of the waste generated in the Republic of Panama in an environmentally sound and sustainable manner, ensuring the conservation of the environment and eliminating negative effects on the environment and the health of the population.
- Law 33 of 30 May 2018. Establishes the zero-waste policy and its framework of action for integrated waste management.
- Law 93: Decentralization of public administration. Regulates the institutional framework for decentralization and public-private partnerships for infrastructure and services at the municipal level.

Other circularity regulations:

- Law 1 of 19 January 2018. Promotes the use of reusable bags and prohibits the use of plastic bags with polyethylene, establishing a fee that merchants may choose to charge for reusable bags.
- Law 187 of 2 December 2020. Regulates the progressive reduction and replacement of single-use plastics throughout the country
- Law 223 of 8 July 2021. Establishes tax exemptions and incentives for material recovery companies to strengthen the recycling industry.

Municipal level

- Municipal Agreement No. 124 of September 2015. At the local level, establishes the Municipal Policy on Integrated Solid Waste Management and the Zero Waste Program 2015–2035. Establishes that the municipality has the mandate to work with the recycling sector.
- Municipal Plan for Integrated Management of Waste in Panama City (2016). Defines the 20-year vision for waste management in Panama District in line with the waste recycling and recovery objectives set forth in the Zero Waste program.
- There are also regulations, particularly in terms of fiscal policy to create incentives for environmental practices, that are currently under review.

Endnotes

- ¹ Intergovernmental Panel on Climate Change (2021). Report on Climate Change 2021: the Physical Science Basis. Link: <https://www.ipcc.ch/report/ar6/wg1/#FullReport>
- ² World Bank (2020). Link: <https://blogs.worldbank.org/developmenttalk/new-poor-are-different-whothey-are-and-why-it-matters>
- ³ International Labour Organization (2018). World Employment Social Outlook; Eunomia (2015). The potential Contribution of Waste Management to a Low Carbon Economy
- ⁴ WRI (2021). 5 Opportunities of a Circular Economy. Link: <https://www.wri.org/insights/5-opportunities-circular-economy>
- ⁵ IDB Invest (2018). Link: <https://idbinvest.org/en/blog/financial-institutions/unleashing-certainty-catalytic-effects-panama-canal-expansion>
- ⁶ NewsRoom Panama (2020). Seven of world's most polluted rivers in Panama. <https://newsroompanama.com/news/environment-seven-of-worlds-most-polluted-rivers-in-panama>
- ⁷ Alcaldía de Panamá (2018). Panamá Resiliente. https://resilientcitiesnetwork.org/downloadable_resources/Network/Panama-Resilience-Strategy-English.pdf
- ⁸ Holland Circular Hotspot (2021). Link: https://hollandcircularhotspot.nl/wp-content/uploads/2021/04/Report_Waste_Management_Panama_20210322.pdf
- ⁹ Official data used by the Municipal Plan for Integrated Waste Management in Panama City
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