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IMPLEMENTATION OF PREVENTION AND MANAGEMENT TOOLS

GUIDE FOR THE INTEGRATION OF MARINE LITTER MANAGEMENT INTO MUNICIPAL SOLID WASTE PLANS

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



Guide for the Integration of Marine Litter Management into Municipal Solid Waste Plans

CEGESTI

First edition, August 2023

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

Promoting Circular Economy Solutions in Dominican Republic, Costa Rica and Colombia.

Project leader:

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Guide development:

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Technical review:



Ministry of Environment and Energy of Costa Rica



Directorate of Radiological Protection and Environmental Health - Ministry of Health of Costa Rica

PROLOG

ABOUT THE PROMAR PROJECT

The PROMAR - Prevention of Marine Litter in the Caribbean Sea project aims to reduce the flow of plastic waste (mainly plastic packaging and single-use plastics) reaching the Caribbean Sea by promoting Circular Economy solutions in the Dominican Republic, Costa Rica and Colombia. The project is funded by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) and led by the German organization adelphi.

The project created the PROMAR BlueBox, a compilation of various tools, guidelines, tutorials and materials to help you implement circular economy solutions to reduce marine litter in your municipality. This Guide for the Integration of Marine Litter Management into Municipal Solid Waste Plans is part of the PROMAR BlueBox.

The objective of this tool is to provide guidance to municipalities for implementing actions aimed at reducing marine litter generated within their jurisdictions. This is achieved through the formal integration of marine litter management into their Municipal Solid Waste Management Plans (MSWMP). The guide is based on the legal-administrative context of Costa Rica. Since the MSWMP instrument also exists in other countries, its methodology and experiences are perfectly transferable. The content was developed by CEGESTI as an implementing partner of the PROMAR project in Costa Rica, with the contribution of the Costa Rican Ministry of Health, the lead authority for solid waste, and the Costa Rican Ministry of Environment and Energy, the lead authority for waters and seas, who are working together to strengthen the management and prevention of marine litter.

The guide is aimed at municipal personnel involved in environmental issues and working groups that participate in the preparation of municipal plans for integrated solid waste management.

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INTRODUCTION

The Blue Box has been designed to provide you with a detailed overview of effective tools to combat marine pollution. In this guide, we focus on integrating marine litter management and prevention into municipal solid waste plans.

To prevent poorly managed waste from land-based sources from ending up on beaches and in marine ecosystems, it is essential to have a municipal plan for proper solid waste management that includes marine litter management at all times. This guide is divided into three main sections: the starting point or context on the issue, proposals for adaptations to municipal solid waste plans and annexes to other useful tools.

Some of the main benefits of integrating marine litter management into a municipal solid waste plan include:

- **Strengthen** the integrated waste management developed by municipalities by incorporating actions, resources and institutional support to reduce the flow of waste from land-based sources to water bodies.
- **Recognize** the influence exerted by the community's habits and customs on the influx of land-based waste into the coastal areas of the municipality.
- **Institutionalize** better control of marine pollution through the MSWMP, and ensure adequate funding for the actions defined.
- **Mobilize** other organizations such as NGOs, communities, sectors such as tourism, etc., involve them in action planning and strengthen their activities.
- **Mobilize** additional resources.

This guide includes examples of municipal plans for the inclusion of marine litter issues, as well as a set of indicators and other tools to be applied to improve the regulation and monitoring systems described in the management plans.

1. THE STARTING POINT

“Marine litter is any persistent, manufactured or processed solid material that is discharged, disposed of or abandoned in the marine and coastal environment.”

United Nations Environment Programme

In the report "From Pollution to Solution: A Global Assessment of Marine Litter and Plastic Pollution" (UNEP, 2021) the United Nations describe the global problem of marine litter, due to a rapid increase in the volume of waste that endangers the health of all the world's oceans and seas, with plastics being the most abundant, harmful and persistent fraction, representing at least 85% of all marine litter.

In coastal areas, this impact may be associated with the loss of tourists, that wish to visit the beaches or enjoy physical or social activities typical for these areas, as well as the impact that may be generated to marine animals that are part of the attraction of the communities.

At the level of coastal communities, marine litter pollution increases the cost of municipal waste management, for example, it generates accumulations of waste that can affect infrastructure and the loss of resilience due to climatic phenomena and an increase in the cost of its management (placement of containers, collection and final disposal).

It is for this reason that municipalities, in their role of managing the use of local resources for the well-being of their inhabitants, are a key player in making the problems generated by marine waste visible in the communities. They should strain to achieve local commitment to mitigate the environmental impact through the participatory processes involved in the construction/updating of municipal waste management plans.

INFO





Figure 1. Waste on Costa Rica's beaches.*

It is worth mentioning that the global problem of marine litter is addressed by a large number of international instruments, reflecting the importance of countries addressing the situation from a regional perspective, given the extent of the problem. In addition, the UN is building the first global treaty to curb plastic pollution.

Likewise, at a global level, there has been a great interest of countries to establish policies on Extended Producer Responsibility (EPR) where the responsibility of companies extends to the waste phase of the life cycle of their products.



Countries such as Costa Rica have established their "National Marine Litter Plan", which has objectives and actions to reduce and manage waste from land and marine sources, whose implementation is developed under a multi-sectoral governance scheme, with strategic alliances between the public sector, the private sector, non-governmental organizations and academia, among other key actors.

*Source: National Marine Debris Plan 2021-2030 (Ministry of Health and Ministry of Environment and Energy, 2021).

2. OBJECTIVE AND PROPOSED CONTENT FOR THE MSWMP

A Municipal Plan for Integrated Solid Waste Management is a document that establishes the policies, objectives and actions that a municipality will implement to efficiently and sustainably manage the solid waste generated in its territory.



Figure 2. Beach monitoring quadrant, Costa Rica.

The content of a municipal solid waste management plan may vary depending on the context and the specific regulations of each country, but in general, it considers the following topics:

2.1.
**DIAGNOSIS OF THE
CURRENT
SITUATION OF THE
SOLID WASTE
GENERATED.**

2.2.
**PLAN OF ACTIONS
NECESSARY TO
ACHIEVE THE
ESTABLISHED
OBJECTIVES.**

2.3.
**MONITORING AND
EVALUATION OF
INDICATORS
RELATED TO THE
PLAN.**

In the following proposals are made to guide the inclusion of marine litter in the municipal planning.

*Source: National Marine Debris Plan 2021-2030 (Ministry of Health and Ministry of Environment and Energy, 2021).

DIAGNOSIS

It is proposed to include a section on "marine litter" in the diagnosis and to include the following content:

1. Composition and generation of solid waste found in the cleaning and sampling campaigns carried out on the coasts and rivers of the municipality's territory.

2. Frequency, coverage and amount of material collected by the municipality in coastal areas and areas near rivers.

3. Record of experiences, initiatives and existing resources in the municipality for the integrated management of marine litter, both on land and at sea. This may include the municipality's own resources, as well as resources and initiatives provided by NGOs, the community and international cooperation projects.

4. Identification and registration of existing technologies and management practices for marine litter: Technologies such as artisanal or mechanized biobarriers (Find tools in Phase 4 of the BlueBox), cleaning boats, sweepers and marine containers to remove plastics and other debris reaching water bodies. Management practices also include awareness campaigns on marine debris prevention, citizen initiatives for waste recovery and collection campaigns for recoverable waste, among others.



*RECOMMENDATION

We propose the use of the "Methodological guide for solid waste sampling on beaches", proposed by the PROMAR Costa Rica project with the endorsement of the Ministries of Health and Environment, since these results generate a route for reduction proposals in the action plan.

2.2. ACTION PLAN

Some activities to consider are proposed below, however, it is important that these plans are the result of a consultation process through participatory workshops with community stakeholders, municipal authorities and other interested parties (BlueBox support tool: Stakeholder map).

1. EXAMPLES OF ACTION PLANS LINKED TO THE PREVENTION AND MANAGEMENT OF LAND AND MARINE SOURCES.

ACTION PLAN: ORDINARY AND SPECIAL SOLID WASTE MANAGEMENT (Phase 4 BlueBox)

- Municipal selective collection routes that include the coastal sector.
- Expand the coverage of the municipal collection service throughout the municipality, including unregulated settlements that are often a significant source of marine waste.
- Placement of containers for waste separation throughout the municipality's territory, including beaches. It is important to specify the information on each container at least in Spanish and English in order to also guide tourists in the correct separation.
- Implement an action plan for waste generated by maritime transport, the fishing sector, aquatic activities and tourism. For example: have enough containers on the docks so that boats can arrive and dispose of solid waste generated in their activities. For reference, information on the "International Convention for the Prevention of Pollution from Ships (MARPOL)," which refers to the prevention of pollution of the marine environment by ships due to operational or accidental factors, can be consulted.

- Create an information system with geo-referenced maps and databases of sites where waste usually accumulates (clandestine garbage dumps).
- Place surveillance cameras in identified clandestine dumps.
- Elimination of illegal dumps, including those located in coastal areas.
- Have an information system that includes all reported data regarding solid waste management (amount of waste that enters recycling processes and serves as raw material for other productive processes, number of volunteers, number of complaints, among others).
- Introduce sustainable procurement policies that include the environmental variable in the criteria for the acquisition of products, goods and services, using as a reference the Sustainable Procurement Guide developed by the Ministry of the Environment of Costa Rica.

ACTION PLAN: COMMUNITY AND INTER-INSTITUTIONAL COORDINATION

- Integrate fishing, port and tourism sectors in the area into the MSWMP Committee.
- Provide an easily accessible means of reporting for the population, allowing for immediate reporting of incorrect practices in waste management, both on land and at sea.
- Have an organization, company, or social group from the community to be vigilant for each clandestine dump identified for monitoring and reporting.
- Integrate a committee of coastal municipalities that can generate common actions for the prevention of marine litter.
- Clean public spaces such as beaches, rivers, urban areas, streets, public places, port areas, underwater areas, among others, in coordination with other municipalities, non-governmental organizations, civil society organizations, businesses, the community, the education sector, and other institutions. It is recommended that sampling be carried out as proposed in section 2.1 of this document, in order to generate data for marine litter education.
- Promote the substitution of single-use plastic products for renewable and compostable alternatives among retailers and wholesalers throughout the municipality, considering the case of restaurants, hotels, street vendors in beach areas, among others. A specific example would be to install water dispensers in tourist sites to encourage the use of reusable bottles and reduce consumption of plastic bottles.
- Promote policies and guidelines at the regional level to encourage organizations to replace single-use plastic consumption with renewable and compostable alternatives.

- Promote the implementation of actions to reduce land and marine waste in a coordinated manner among community initiatives, NGOs, education sector, international cooperation support, among other groups that make efforts in favor of the environment.
- Link the municipality's private sector with existing initiatives at the national level (developed by government institutions, NGOs, international cooperation projects) related to waste management, sustainable purchasing, circular economy, extended producer responsibility.

ACTION PLAN: INCENTIVES AND FINES

- Create solid waste management regulations for the establishment and enforcement of fines for inadequate waste management, both in land and maritime areas.
- Evaluate at the municipal level the application of possible incentives such as:
 - Give subsidies to authorized waste collection centers for recoverable waste.
 - Incentivize with prizes to families and organizations that support composting, recycling and other programs carried out by the municipality.
 - Fees according to generation to benefit those who carry out good practices.
 - Provide inputs to community groups to carry out waste collection campaigns, in coordination with the municipality or between organizations/community groups to motivate community leadership.
 - Hand out bags or containers for the correct separation of waste to families, organizations or companies that have good environmental practices.
 - Generate a seal of responsible tourism commerce/responsible business that allows local people and visitors to identify places that have good practices in integrated waste management.
 - Define municipal incentives that can be given to community entities in the municipal territory that replace single-use plastic with renewable and compostable materials.

2. EXAMPLE OF AN ACTION PLAN LINKED TO EDUCATION, AWARENESS RAISING AND INFORMATION DISSEMINATION



Figure 3. Educational workshop, Costa Rica.*

ACTION PLAN: EDUCATION AND AWARENESS ON MARINE LITTER (Phase 3 BlueBox)

- Conduct, by appropriate means, information campaigns for the population and visitors on the risks and impacts for health and the environment associated with inadequate integrated waste management. Take advantage of key sites in tourist areas such as cab ranks, public transportation, docks, restaurants, beaches, among others.
- Carry out cleanups and campaigns in critical waste accumulation sites such as beaches, vacant lots, bridges, coffee plantations, sidewalks, ravines, ditches, streets and parks. Sampling is recommended according to the proposal indicated in section 2.1 of this document in order to identify community awareness and education needs (BlueBox support tool: Beach data sampling).
- Signage of critical sites and development of artwork at these key points (culverts), infographics and digital posters.
- Schedule volunteer activities coordinated by the municipality or the community to promote integrated waste management through river and beach cleanups or other types of activities (Support tool in BlueBox: Beach cleanup guide).
- Promote conscious tourism where visitors are invited to actively participate in cleanup campaigns and to demand the correct management of solid waste in businesses, public transportation, maritime transportation, among others.
- Give talks on proper waste management according to the sector and the activity they perform, for example, to people working in maritime transport, the fishing sector, aquatic activities, and tourism.

3. EXAMPLE OF AN ACTION PLAN LINKED TO RESEARCH, DEVELOPMENT AND INNOVATION



Figure 4. Beach sampling, Costa Rica.*

ACTION PLAN: GREEN EMPLOYMENT AND ENTREPRENEURSHIP.

- Promote green employment initiatives. Motivate people in the community to work on the issue of waste, give talks, advice and/or campaigns. For example: Focus the advice on the possibility of generating jobs through collection centers, manufacture of souvenirs from the reuse of waste.
- Stimulate Research and Development among specialized laboratories, universities, technical colleges and training centers, to create and design products that replace single-use plastic with renewable and compostable alternatives, as well as local recycling options for separated materials.
- Stimulate investment in productive projects that contribute to the substitution of single-use plastic for renewable and compostable alternatives, as well as local recycling projects. Investment opportunities that exist under national or international cooperation funds can be identified, as well as programs offered by financial entities linked to environmental issues or circular economy.

*Source: National Marine Debris Plan 2021-2030 (Ministry of Health and Ministry of Environment and Energy, 2021).

2.3. MONITORING AND EVALUATION

To assess management accomplishments, the suggestion is to incorporate a segment featuring indicators tied to marine litter. This entails delineating specific data for tracking the evaluation of implemented measures and monitoring their long-term impacts. For instance, concerning cleanups, the recommendation is to report data in alignment with the guidelines outlined in section 4.1 of this document. The following proposal provides a theoretical framework for potential indicators.

EXAMPLE 1

BEACH CLEANUP CAMPAIGNS

Provided that:

- *There is data on the amount of waste (kilograms - kg) collected during cleanup campaigns in specific areas of higher priority for the municipality.*
- *There is data on the m² (square meters) of beach where collection has been carried out.*
- *The indicator of kilograms of waste collected / m² of beach can be obtained.*
- *Amount of waste by type: organic, plastics, metals, among others.*

Then it can be calculated:

Amount of waste that does not reach the sea due to the implementation of X number of beach cleanup campaigns.

$$= \frac{\text{kg of waste collected in previous campaigns}}{\text{m}^2 \text{ of beach in previous campaigns}} * \text{m}^2 \text{ of beach in new campaigns}$$

EXAMPLE 2

EXPAND COVERAGE OF MUNICIPAL SOLID WASTE COLLECTION SERVICE

Whereas:

- *There is a percentage of the population that is not provided with municipal collection service.*
- *There is data on the number of kilometers (km) of the municipality's current territory that receive municipal collection service.*
- *There is data on the number of people covered by the current municipal collection service.*
- *There is an indicator of the number of people covered / km traveled.*
- *There is an updated indicator of the amount of waste generated per person.*

Then it can be calculated:

Amount of daily waste that does not reach the sea due to the increase of X km of municipal service coverage.

$$= \frac{\text{number of people covered}}{\text{km traveled}} * \frac{\text{kg of generated waste}}{\text{per person}} * \text{km of service coverage expanded}$$

EXAMPLE 3

SPECIFIC ACTIONS IN THE COMMERCIAL SECTOR WITH A FOCUS ON EXTENDED PRODUCER RESPONSIBILITY (EPR)

Provided that:

- There is data on the amount of waste in kg collected from the commercial sector.
- The percentage of solid plastic waste generated by the commercial sector is available.

Then it can be calculated:

Quantity of plastic waste that does not reach the sea due to implementation of EPR in the commercial sector.

*= kg of waste generated in the commercial sector * Percentage of plastic waste generated in the commercial sector*

EXAMPLE 4

INSTALLATION OF WATER DISPENSERS AT TOURIST SITES TO ENCOURAGE THE USE OF REUSABLE BOTTLES AND REDUCE THE CONSUMPTION OF PLASTIC BOTTLES.

Provided that:

- The average daily data of visitation in the area (tourist areas, tourist docks, among others) is available.
- It is estimated that each person uses 1 plastic bottle per day.

Then it can be calculated:

Amount of daily plastic waste that does not reach the sea due to the installation of water dispensers.

*= weight of one plastic bottle in kg * number of visits in the area*

EXAMPLE 5

PLACE WASTE SEPARATION CONTAINERS AT POINTS WHERE MANY PEOPLE/TOURISTS ARRIVE.

Considering that:

- The data of the capacity in kilograms of the containers is known.
- The location of containers can consider tourist docks.

Then it can be calculated:

Amount of waste that does not reach the sea due to the placement of sorting containers.

$$= \text{capacity of containers in kg} * \text{number of installed containers}$$

EXAMPLE 6

IMPLEMENT SPECIFIC COLLECTION ROUTES FOR RECOVERABLE WASTE.

Considering that:

- The population data of the municipal territory is available.
- The per capita generation data (kg) of solid waste is available.
- Percentage data on the fraction of recoverable solid waste generated by the population of the municipal territory is available.

Then it can be calculated:

Amount of plastic waste that does not reach the sea the sea due to the implementation of separate collection.

$$= \text{number of inhabitants in the territory of the municipality} * \text{waste generation per capita} * \text{percentage of recoverable solid waste generated by the municipality's population}$$

3. BLUEBOX: TOOLS TO SUPPORT TO SUPPORT A MSWMP

PROMAR BLUEBOX



PROMAR Bluebox contains a compilation of tools designed to contribute to the design of solutions for the prevention of marine litter, which can be useful for the approach of actions of a MSWMP.

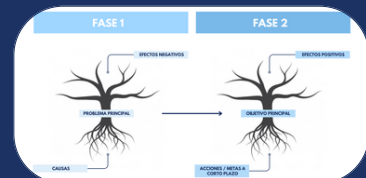
You will find all the tools in this link! <https://promar.org/es/bluebox>

Some of the tools available in the Blue Box are shown below:



BEACH SAMPLING GUIDE
STEP-BY-STEP INSTRUCTIONS FOR BEACH SAMPLING AND PROCESSING OF THE RESULTS OBTAINED

PROBLEM AND SOLUTION TREE
ALLOWS TO ANALYZE THE EXISTING CHALLENGES IN A GRAPHIC REPRESENTATION OF THE CAUSES AND EFFECTS TO DEVELOP A SOLUTION PLAN



STAKEHOLDER MAP
ALLOWS TO DETERMINE THE DEGREE OF INFLUENCE OF STAKEHOLDERS ON THE PROJECT AND TO DEFINE AN ENGAGEMENT PLAN FOR THEM.

GUIDE FOR SENSIBILIZATION AND CAPACITY BUILDING ON OCEANS AND MARINE PLASTIC POLLUTION
FREE ONLINE COURSE ABOUT THE IMPORTANCE OF THE OCEANS, THE THREATS THEY FACE AND POSSIBLE SOLUTIONS





FLOATING BARRIERS: BIOBARRIERS AND RIVER BOOMS

DETAILS THE MANAGEMENT REQUIRED FOR THE INSTALLATION OF FLOATING BOOMS, AS WELL AS THEIR OPERATION AND MAINTENANCE. INCLUDES INSTRUCTIONS FOR THE CONSTRUCTION OF BIOBARRIERS AS A COST-EFFECTIVE SOLUTION TO ADDRESS SOLID WASTE CONTAMINATION OF WATER BODIES.

COLLECTION STATIONS

INTRODUCES USERS TO THE CONCEPT OF SOLID WASTE COLLECTION CONTAINERS IN COMMUNITIES AS STRUCTURES FOR PROPER INTERCEPTION AND CLASSIFICATION OF WASTE, ACCOMPANIED BY EDUCATIONAL FACILITIES FOR COMMUNITY USE.



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