

Case study \_\_\_\_\_

# Porto Seguro, Brazil Latin America

# Porto Seguro

Brazil

## Population

257,204 (2021)

## Size of the city

2,285,734 km<sup>2</sup>

## Settlement type

Urban

## Year of Survey

2021-2022

## Total MSW Generation

383.25 kg/cap/year

## MSW Collected

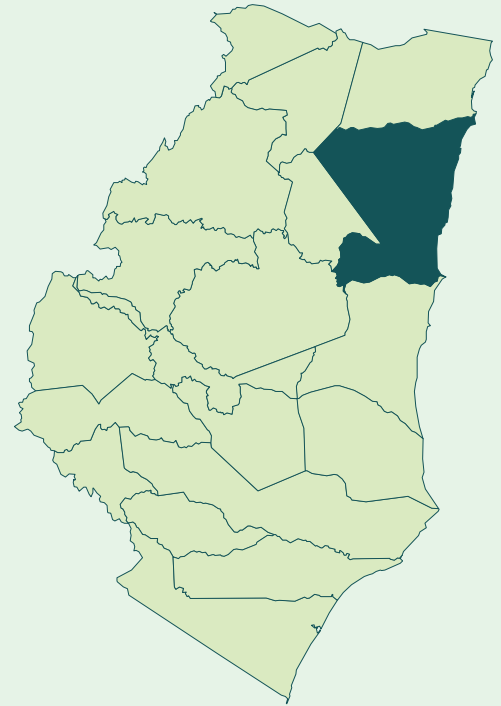
98-100%

## Plastic Waste Generation

53.65 kg/cap/year

## Plastic to water systems

1 kg/cap/year



## Context and description

The municipality Porto Seguro consists of six districts: Porto Seguro (headquarters), Arraial D'Ajuda, Caraíva, Trancoso, Vale Verde and Vera Cruz.

Porto Seguro is located in the extreme south of Bahia. This is a region extremely rich in biodiversity, with a high concentration of endemic species. Porto Seguro presents an enormous wealth of water resources, since the municipality is comprised of small valleys with many springs and water courses and around 22 micro watersheds in the territory. It also stands out for its social and economic importance and has relevant influence on other municipalities in the region, with an area of over 2,400 km<sup>2</sup> and 85 km of coastline. The beaches and coastal environments attract almost a million tourists each year, with marine resources that are the means of subsistence for hundreds of families of traditional coastal populations, while having several conservation units in its territory.

The main urban and tourist areas of the municipality were studied: headquarters, Arraial D'Ajuda, Trancoso and Caraíva. Visits were made to different neighborhoods of these locations.

This case study was implemented under leadership of GIZ project, "Protecting Brazil's marine and coastal biodiversity (TerraMar)", and supported environmental planning for Brazilian coastal and marine zones. It focused on two coastal regions: Costa dos Corais (Coral coast) and Abrolhos, due to their unique ecosystems and their significance for costal and marine biodiversity.

This case study's data was collected by GIZ







## Survey Implementation Arrangement

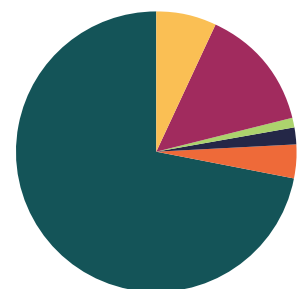
<b>City</b>	Porto Seguro
<b>Financed by</b>	GIZ
<b>Implemented by</b>	International consultant together with City SWM Managers

## Overview data

<b>Population</b>	257,204 (2021)
<b>Waste generation rate, including commercial and institutional waste</b>	1.5 kg/cap/day
<b>Total MSW generation</b>	270 tonnes/day
<b>Collection rate</b>	98% formal collection 2% informal collection
<b>MSW sent to disposal</b>	264.6 t/day (98% formal collection) 5.4 t/day (2% informal collection)
<b>MSW sorted for recovery</b>	0.8 t/day / <1%
<b>MSW managed in controlled facilities</b>	0%
<b>Plastic waste generation</b>	13,800 tonnes/year
<b>Unmanaged plastic</b>	1,529 t/year 11% of the entire plastic waste generation

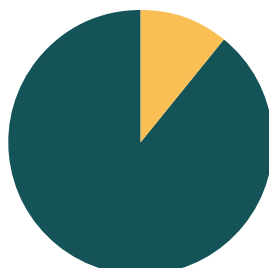
## MSW composition at point of generation

 paper 7%	 metals 2%
 plastics 14%	 other 4%
 glass 1%	 organic 71%



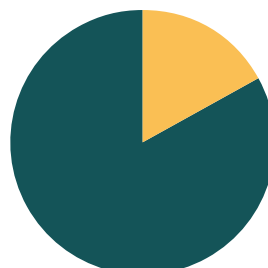
## WFD results Porto Seguro

Plastic waste generation: 19,377 t/y



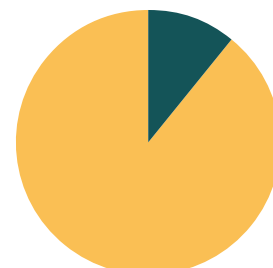
unmanaged 11%  
managed 89%

Fate of unmanaged plastic waste



in water systems 17%  
retained on land 83%  
openly burnt 0%  
cleaned from drains 0%

Plastic to water systems



contribution directly entering water systems 88%  
contribution entering via storm drains 12%

Plastic waste to the environment (High collection coverage / Agricultural)

1,529 tonnes/year

11% of the plastic waste generated

Plastic to water systems

255 tonnes/year

374 trucks

Plastic to water systems per person

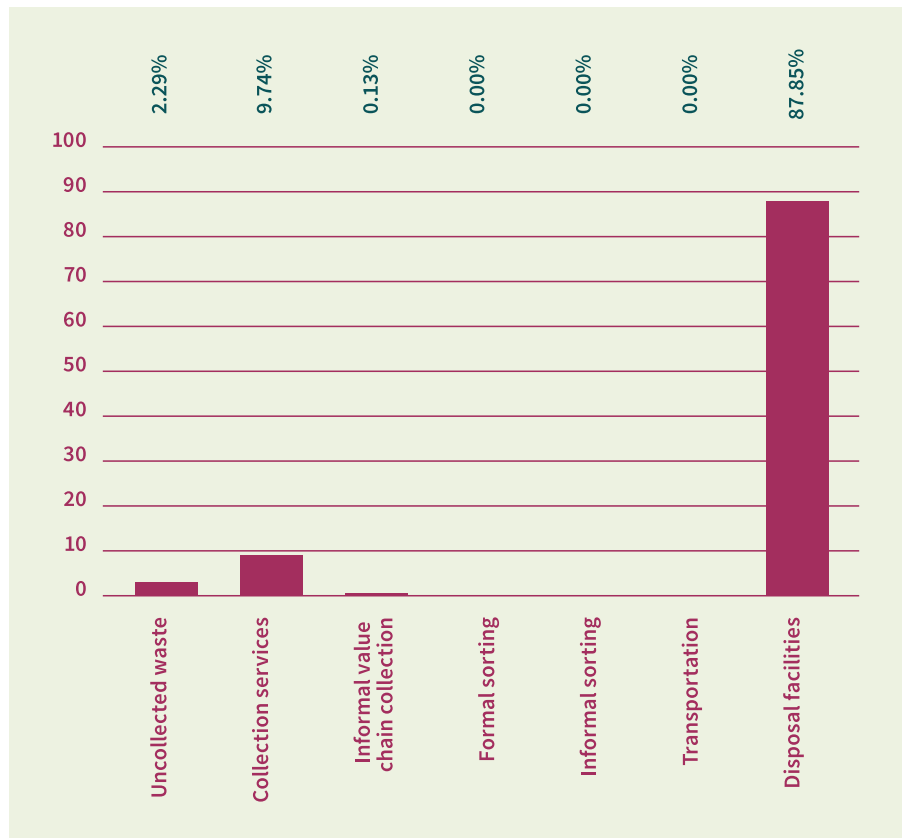
1 kg/person/year

33 PET bottles per person

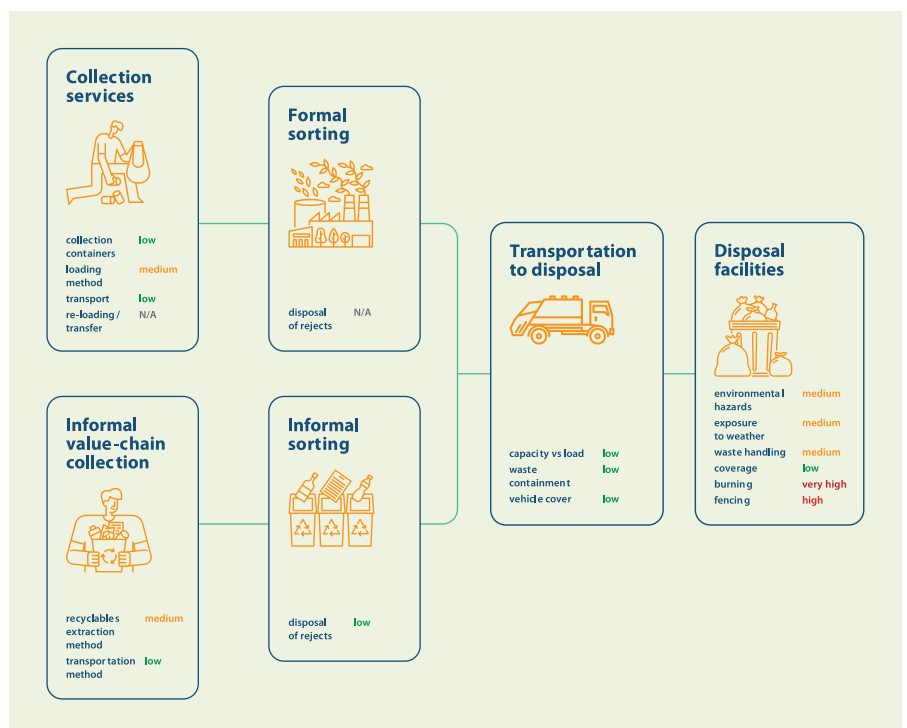
## WFD Results in Porto Seguro



### Contribution to unmanaged plastic waste by SWM stage



### Plastic leakage potential levels per leakage influencers in Purto Seguro



## **Lessons Learned & Challenges**

- Transparency and the support of local managers are essential for the field visits to reflect the reality in the municipality. It was very important to have the support and accompaniment of a local guide (manager) to indicate the hotspots of plastic leakage;
- Obtaining data from the municipality is a challenging task, especially in regard to the quantity and composition of waste collected by the informal chain. Obtaining data from waste pickers is delicate and it is necessary to establish a prior relationship of trust to obtain more reliable data;
- The WFD does not directly consider the top of the MSWM hierarchy (non-generation, reduction, and reuse). Therefore, measures that target these dimensions, such as regulations aimed at prohibiting or reducing plastic consumption are needed, as they are not considered in the methodology. Brazilian experience shows that the possibilities of introducing regulatory instruments with this scope at the municipal level are quite limited;
- In a few cases in Brazil, the collection of recyclables by informal recyclable collectors is often supported by the municipality by providing facilities for sorting contracted and appropriately paid separate waste collection. Thus, the transition between informally and formally provided services is fluid and both services overlap.

## **Use of WFD / Triggered Change**

- The WFD was applied in seven coastal municipalities in Brazil to support them in developing plans to reduce marine litter. Scenarios were simulated with measures ranging from the implementation of selective collection, environmental education actions, improvements in the urban cleaning infrastructure, improvements in landfills, and increased recycling rates. The scenarios informed and helped municipalities in developing solutions to reduce marine litter and adjust strategic waste management planning;
- The conducted assessments considered the average waste generation in the observed time period, without considering eventual fluctuations throughout the year. Thus, they do not directly reflect the variations on waste generation and waste leakage by influx of visitors during the touristic high season months. To try to incorporate tourism data, the annual

population was calculated considering resident population + the average number of tourists per month. A seasonal assessment may be implemented to understand tourism impacts, while the hotel industry requested to reduce and substitute their plastic consumption.