

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

# Mombasa, Kenya

## Africa

# Mombasa

## Kenya

**Population**

1,208,333

**Size of the city**

229.9 km<sup>2</sup>

65 km<sup>2</sup> water mass

**Settlement type**

urban

**Year of Survey**

2021

**Total MSW Generation**

215.35 kg/cap/year

**MSW Collected**

56%

**Plastic Waste Generation**

16.06 kg/cap/year

**Plastic to water systems**

3 kg/cap/year



### Context and description

Mombasa is the second largest city in Kenya and located on the shore of the Indian Ocean, a cosmopolitan city with an estimated resident population of 1.2 million persons, translating to a density of 4,097 persons per square Kilometre.

There are 6 sub-counties and 29 wards within Mombasa County with varying means of MSW collection within the wards. There are county collection trucks, mainly collecting from common collection points, private companies and registered individuals/groups using handcarts, collecting from households (HH) and premises.

Mombasa County generates approximately 708 t/day of MSW and out of this, 56% (396 t/day) is collected. Out of 396 t/day of waste collected in Mombasa, 5% (36 t/day) is managed in controlled facilities through processing for recovery. There are numerous companies dealing with recovery of various types of materials including paper & cardboard, plastic (HDPE, LDPE, PP and PET), metals and glass with paper & cardboard having the highest demand and biggest fraction recovered, up to 20t/day.

There is one main designated waste disposal site in Mombasa, Mwakirunge. It is located approximately 30 kilometres from the city centre and sits on 50 acres of land that is owned by the county government. The city also has 4 other 'recognised' disposal sites; 50% (355 t/day) of the MSW generated is managed through disposal sites. All the dumpsites in Mombasa have no environmental control.

This case study's data was collected by UN-Habitat Waste Wise Cities Campaign.

## Survey Implementation Arrangement

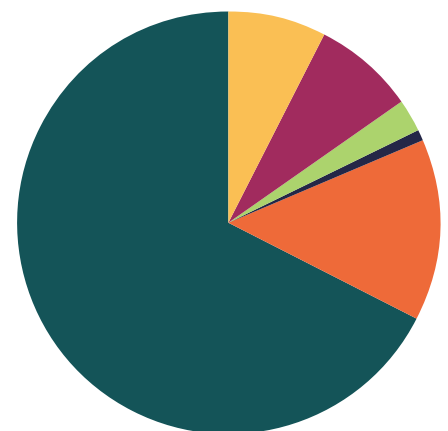
<b>City</b>	Mombasa
<b>Financed by</b>	UN Habitat
<b>Implemented by</b>	International and National consultant

## Overview data

<b>Population</b>	1,208,333 (2020)
<b>Waste generation rate, including commercial and institutional waste</b>	0.59 kg/cap/day (WaCT Survey)
<b>Total MSW generation</b>	708 tonnes/day (WaCT Survey)
<b>Collection rate</b>	56%
<b>MSW sent to disposal</b>	355 tonnes/day / 50% (WaCT Survey)
<b>MSW sorted for recovery</b>	40.5 tonnes/day / 6% (WaCT Survey)
<b>MSW managed in controlled facilities</b>	4% (WaCT Survey)
<b>Plastic waste generation</b>	19,401 tonnes/year
<b>Unmanaged plastic</b>	9,961 tonnes/year 51% of the entire plastic waste generation

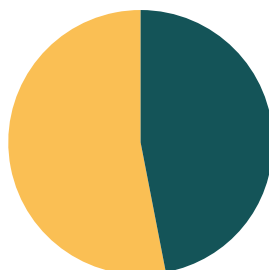
## MSW composition at point of generation

<span style="display: inline-block; width: 15px; height: 15px; background-color: #f1c232; border: 1px solid black; margin-right: 5px;"></span> paper 7.74%	<span style="display: inline-block; width: 15px; height: 15px; background-color: #1a202c; border: 1px solid black; margin-right: 5px;"></span> metals 0.89%
<span style="display: inline-block; width: 15px; height: 15px; background-color: #8e44ad; border: 1px solid black; margin-right: 5px;"></span> plastics 7.54%	<span style="display: inline-block; width: 15px; height: 15px; background-color: #e67e22; border: 1px solid black; margin-right: 5px;"></span> other 14.06%
<span style="display: inline-block; width: 15px; height: 15px; background-color: #a2d2c2; border: 1px solid black; margin-right: 5px;"></span> glass 2.51%	<span style="display: inline-block; width: 15px; height: 15px; background-color: #1a522d; border: 1px solid black; margin-right: 5px;"></span> organic 67.25%



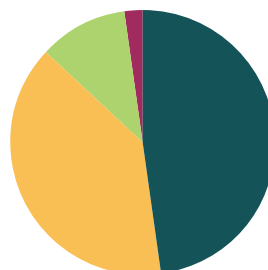
## WFD results

Plastic waste generation: 19,401 t/y



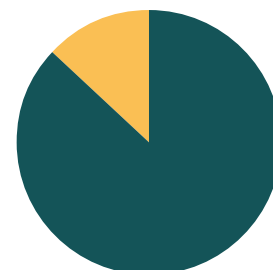
unmanaged 51%  
managed 49%

Fate of unmanaged plastic waste



retained on land 48%  
cleaned from drains 2%  
ending up in water systems 39%  
openly burnt 11%

Plastic to water systems



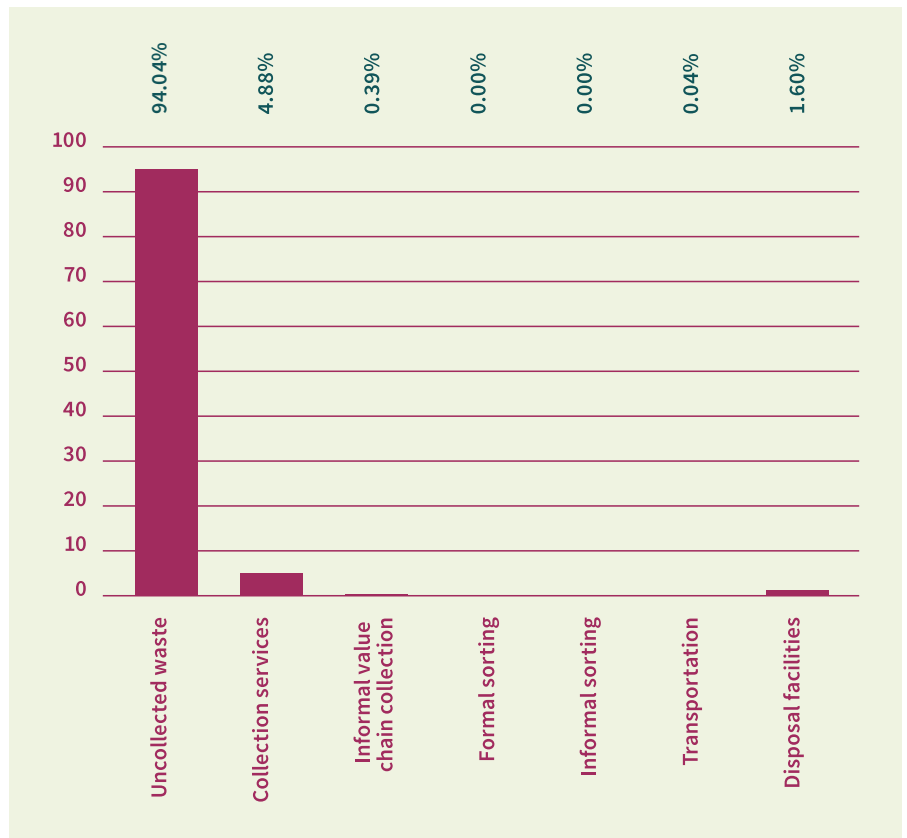
contribution directly entering water systems 87%  
contribution entering via storm drains 13%

Plastic waste to the environment	9,961 tonnes/year	51% of the plastic waste generated
Plastic to water systems	3,885 tonnes/year	5,287 trucks
Plastic to water systems per person	3 kg/person/year	99 PET bottles per person

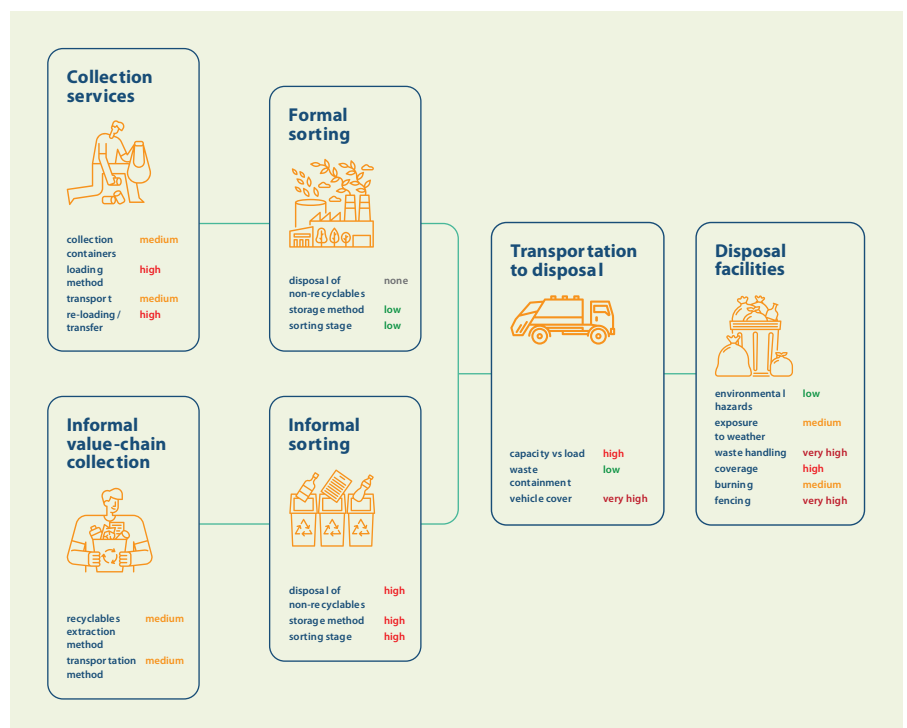
## Contribution to unmanaged plastic by SWM stage



## Contribution to unmanaged plastic by SWM stage



## Plastic leakage potential levels per leakage influencers



## **Lessons Learned & Challenges**

- Very small changes in the WFD baseline data entry interface results in significant differences in the results. For example, should there be a minor error in calculating composition analysis, even by 1%, the amount of plastic to water per person increases or decreases significantly;
- The tool requires skilled predictions when assigning formal and informal sorting for recovery. Therefore, this requires an expert to conduct this assessment, as training others with limited experience may not result in accurate outcomes.

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

- The WFD results have been utilised at multiple international events to promote recognition of the importance of tackling plastic pollution emissions in coastal cities in low and middle income countries;
- The WFD outcomes informed the development of investment projects in partnership with international development organisations.