

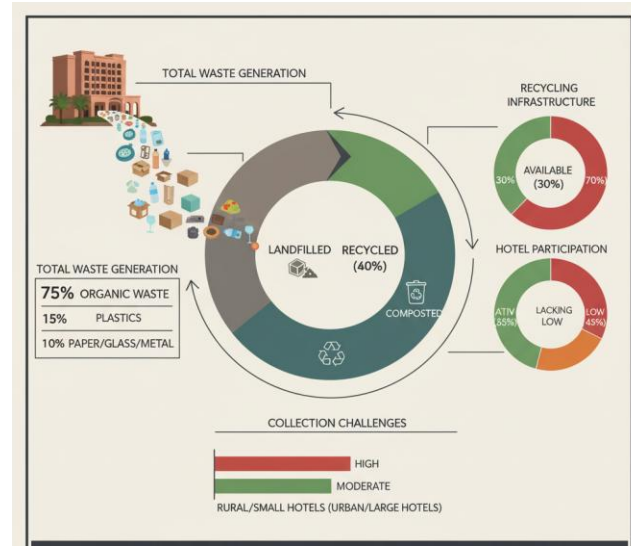
Third International TouMaLi Conference

TouMali Project in Morocco : Presentation of key results and outcomes

Pr. Loubna EL FELS

Cadi Ayyad University, Faculty of Science Semlalia

Solid Waste Management in Moroccan : Hotels Key Data and Challenges



Morocco has significantly modernized its solid waste management system over the past decade. The country has improved waste collection coverage—now reaching most urban areas—and introduced controlled landfills to replace open dumping sites

Law 28-00

- Managing all types of waste from **household waste** to **hazardous and industrial waste**
- It aims to **regulate the entire waste management chain**, from production to final disposal, including collection, transport, and recovery.

Amended by: Law No. 23-12 (Published in Official Bulletin No. 6080, September 6, 2012)

Law No. 23-12 (2013), amending and supplementing Law 28-00, **aims to strengthen the application and control mechanisms, Integrate Extended Producer Responsibility (EPR)** in application of Article 8 of the framework law 99-12 on the national charter for the environment and sustainable development.

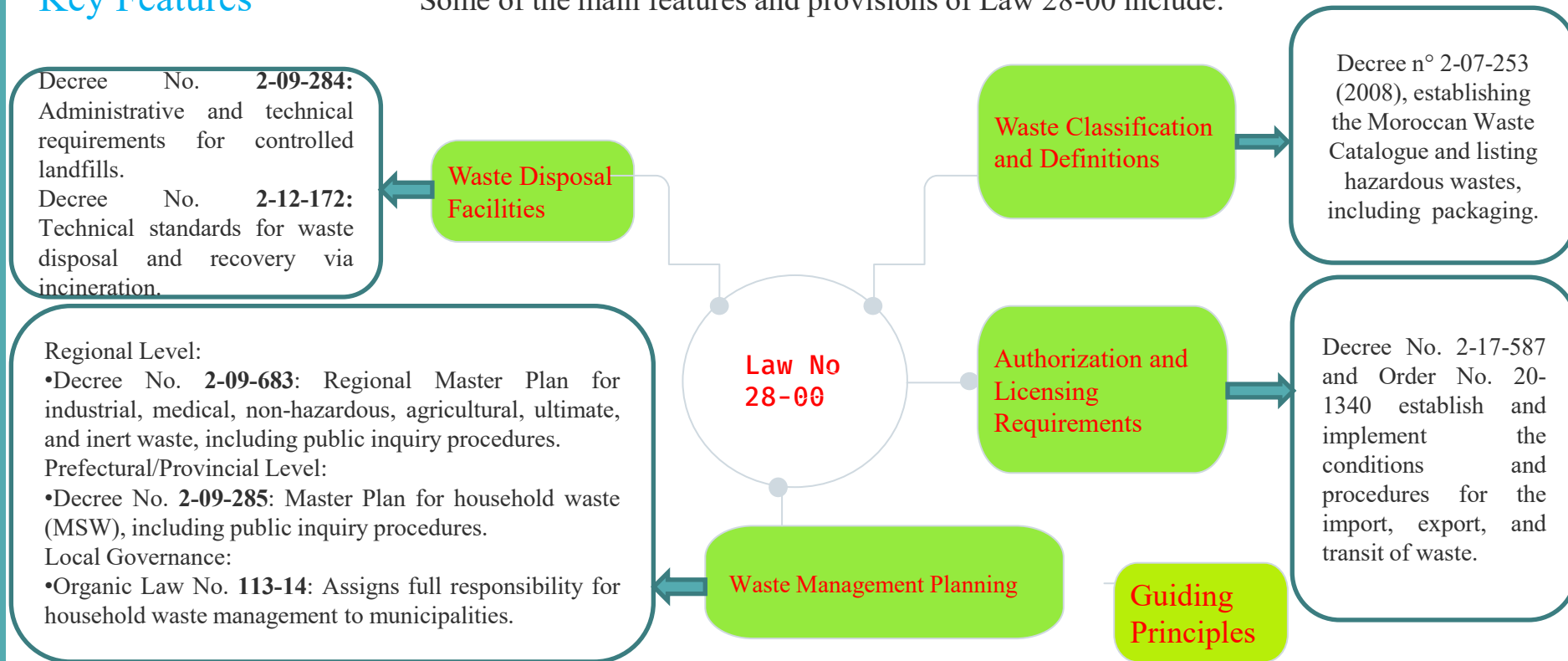
Waste Management Legislation Overview (REGULATORY PART)

Waste local regulation

Law No 28-00

Key Features

Some of the main features and provisions of Law 28-00 include:



Sponsored by:



Based on a decision of the German Bundestag

Waste Management Legislation Overview (REGULATORY PART)

- **ECOTAX:** An environmental tax applied to products or activities that generate pollution or environmental harm.

1.5% (2014)



1% (2016)

Overview:

Article 12 of Law No. 115-12, enacted through the 2013 Finance Act and effective from January 1, 2014, establishes an ecological tax on plastic packaging in Morocco. The tax applies to both locally produced and imported plastic packaging.

Objective:

1.Reduce Plastic Pollution – Discourage the overuse of single-use plastics by making them more costly for producers and importers.

1.Promote Eco-Design and Alternatives – **Stimulate innovation in biodegradable and recyclable packaging solutions.**

2.Revenue from ecotaxes **is typically used to finance waste management systems**, recycling programs, environmental protection projects, or the transition to greener technologies

3.Align with Sustainable Development Goals – Support Morocco's commitments

Law No. Law 115-12
Article 12

Responsible Institution :

The Ministry of Economy and Finance is the primary authority responsible for implementing and collecting the ecological tax.

Supported by:



Based on a decision of the German Bundestag

Extended Producer Responsibility (EPR)



Although Morocco has not established comprehensive national legislation on Extended Producer Responsibility (EPR), it is making significant efforts to integrate EPR principles into its waste management framework through various initiatives and pilot projects



Objective:

Make producers primarily responsible for the entire life cycle of their products, by encouraging them to design more environmentally friendly products, reduce waste, promote recycling and reuse, and foster a circular economy

EPR in Morocco



Legal Framework

the system could be integrated under Law 99-12 on sustainable development, providing the legal basis for producer responsibility obligations and compliance mechanisms.

- **Article 8**: recommends incorporating the principle of extended responsibility.

Waste Management Legislation Overview (REGULATORY PART)

Institutional Framework for Waste Management in Morocco

1. Legislative / Policy / Regulatory Level Entities

Ministry of Energy Transition and Sustainable Development (METSD)

Role: Leads national policies and strategies related to waste management, recycling, and environmental protection.

Nature: Public (Government Ministry).

Power Level: Top-tier — defines national policy and legislative frameworks.

Reporting Line: Reports directly to the Head of Government.

Geographical Coverage: National.

1

Ministry of Interior

Role: Oversees the operational coordination of waste management through **local collectivities** (municipalities, provinces, regions).

Nature: Public (Government Ministry).

Power Level: High — ensures policy implementation at local levels.

Reporting Line: Reports to the Head of Government; supervises municipal councils.

Geographical Coverage: National and local (through decentralized administrations).

2

Ministry of Industry and Trade

Role: Allocates funding, manages fiscal instruments, and collects related taxes.

Nature: Public (Government Ministry).

Power Level: Strategic controls financial levers supporting implementation.

Reporting Line: Reports to the Head of Government.

Geographical Coverage: National.

3

Ministry of Economy and Finance

Role: Regulates industrial waste and promotes circular economy initiatives.

Nature: Public (Government Ministry).

Power Level: Regulatory and promotional within the industrial sector.

Reporting Line: Reports to the Head of Government.

Geographical Coverage: National.

4

Total packaging

The percentage of PET PLASTIC'S packaging recycled, reused, sent to landfill



Recycled
5.6%

Plastic bottle being recycled

Recycled (5.6%): Only a small proportion is recycled, limiting resource recovery.



Reused
22.5%

Plastic bottle being used again

Reused (22.5%): A share of the produced plastic remains in use, delaying its entry into the waste stream.



Lost
19.7%

Plastic bottle lost in environment

Lost (19.7%): Nearly one-fifth of plastic is not collected and leaks into the environment.



Landfilled
52.1%

Most plastic ends in landfill

Landfilled (52.1%): More than half ends up in landfills, both controlled and uncontrolled, representing the main disposal pathway.

Dalberg Advisors, WWF Mediterranean Marine Initiative, 2019 “Stop the Flood of Plastic: How Mediterranean countries can save their sea”

Initiatives to combat plastic

Ambitious and promising global actions to reduce pollution

- ✓ The Ocean Foundation ; Copernicus EU ; Surfrider Foundation Europe ; EXXpedition...
- ✓ Fondation Minderoo ; Baleines en direct <https://www.baleines-en-direct.com/> Battle against this scourge



✓ **G7 commits to zero plastic pollution by 2040**



The international community is thus meeting in Paris (May 29 to June 3, 2023) to try to agree on a **"International Treaty on Plastic Pollution"**.

Africa (Morocco) takes a new step in the fight against plastic pollution

Coalition of great ambitions to put an end to plastic pollution, international instrument **legally** binding measures to put an end to plastic pollution (**EPR**), **Eco-tax**, **Zero Plastic**, etc.



Lalla Hasna Award



Sustainable coastline

TouMaLi – Tourism Marine Litter

Objectives of the project

Develop and implement sustainable waste management solutions for the tourism sector in MENA countries.

Promoting circular economy solutions (reduction and reuse of unavoidable waste)

Significantly reduce marine litter through the following measures:

- Assessing the basics of marine litter pollution.
- Drawing up a global waste management strategy.
- Raising awareness and building capacity, as well as transferring knowledge to key stakeholders/hotels, restaurants and communities....

The project is financed by **German Federal Ministry for the Environment and Nuclear Safety (BMU)** and managed by **Rostock University** and **Leibniz Institute of Baltic Sea Research Warnemünde (IOW)** (2021-2025)

TouMaLi project partners

Leibniz-Institute for Baltic Sea Research Warnemuende , Coastal and Marine Management workgroup

University of Rostock, Professor of Waste and Resource Management

Project co-leaders and managers of **beach-related topics**

Project manager responsible for **waste management**

BlackForest Solutions GmbH

Adelphi

Landbell Ag

Project manager responsible for waste management issues

Project manager and responsible for waste management issues

Project manager responsible for waste management issues

Consulting connections

International Center for Environmental Technologies /Tunisia

University of Marrakech Cadi Ayyad / Faculty of Science Semlalia/ Morocco

Arab Academy of Science and Technology /and Maritime Transport/ Egypt

Ministry of Environment
Tunisia

Ministry of Energy and Sustainable Development
Morocco

Ministry of Environment
Egypt

- Ministry of Tourism.
- Ministry of Economic Affairs.
- Ministry of Municipal Affairs.
- Ministry of Finance

- Ministry of Tourism (Tourism Delegations..)
- Regional Environment Directorates.
- Hotel industry associations.
- NGO ...

Research/national institutes in the field of marine and waste management.

- Local and international NGOs.
- Private sector in marine waste management.



LANDBELL GROUP



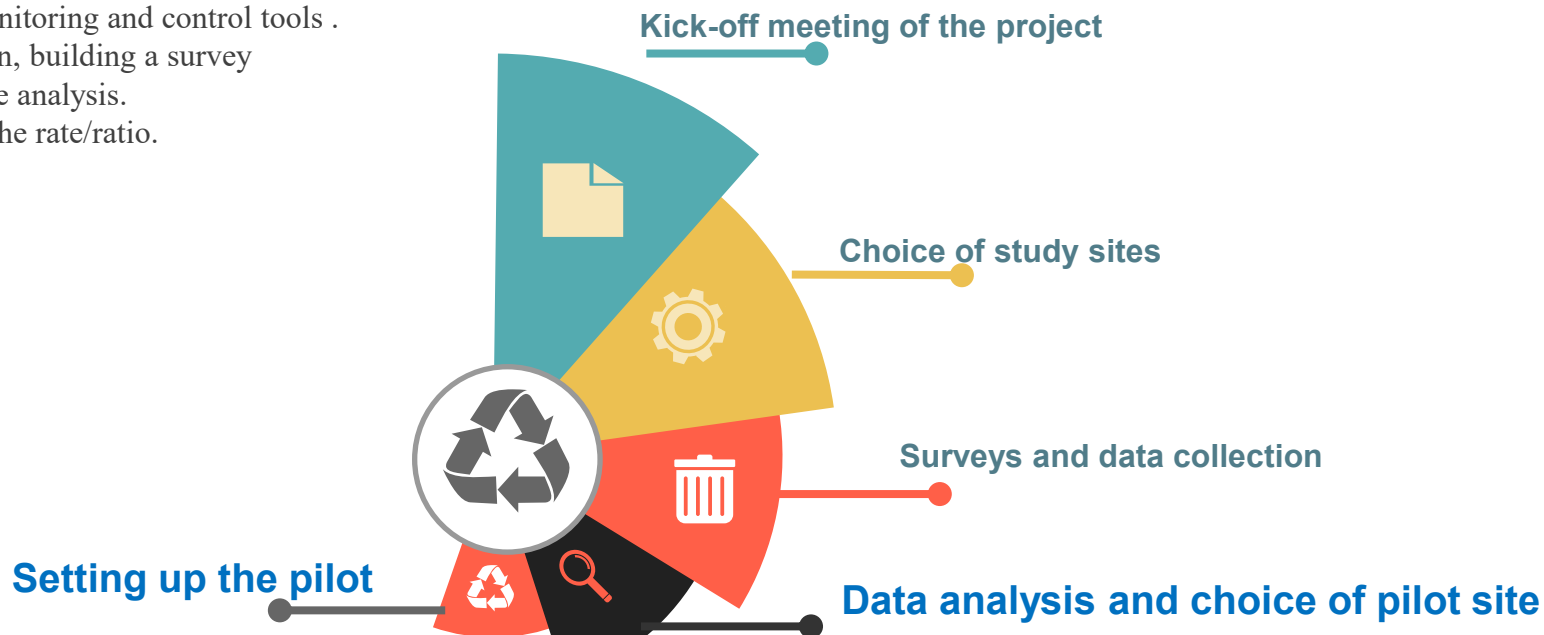
econnexions



Methodological approach: Hotel sector

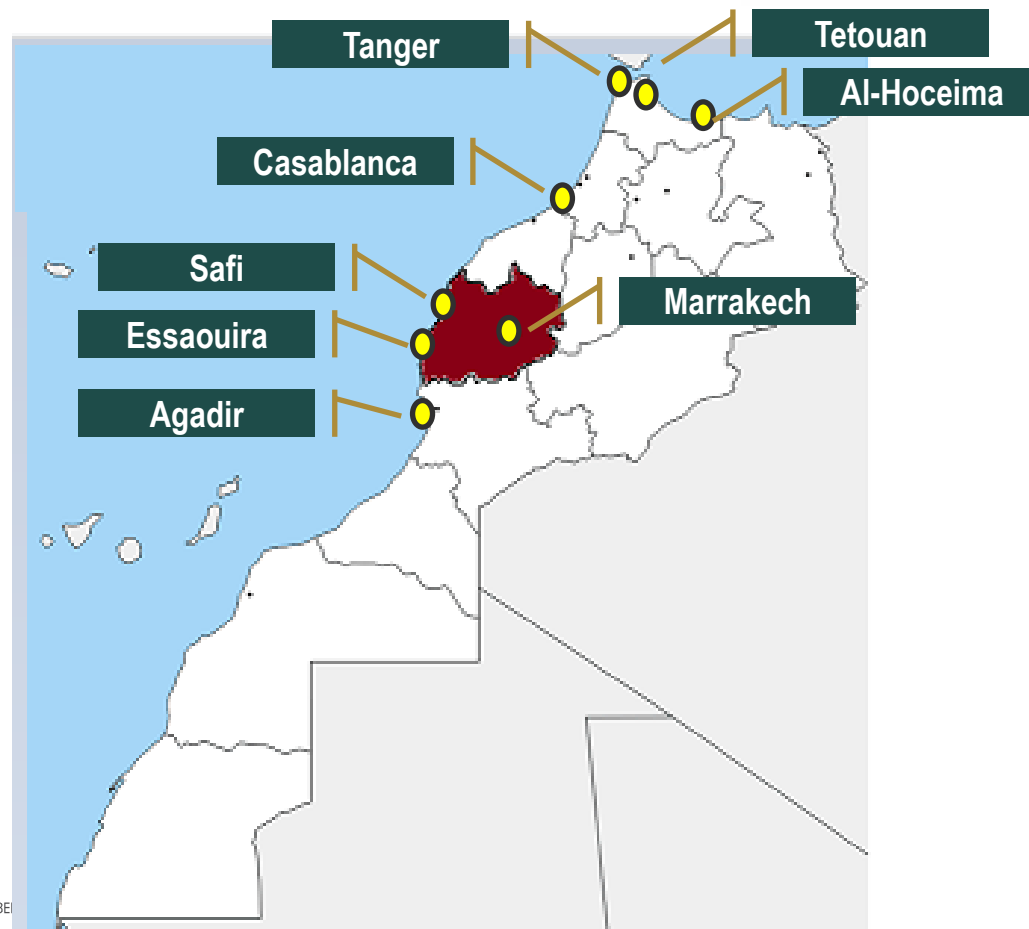
Approach :

- ✓ Setting up monitoring and control tools .
- ✓ Data collection, building a survey
- ✓ .On-site waste analysis.
- ✓ Determining the rate/ratio.



Waste management in the tourism sector: **Cities concerned**

Cities	Number of hotel establishments (HE) surveyed	Total HE surveyed
Tanger	15	123
Tetouan	11	
AL-Hoceima	14	
Casablanca	18	
Safi	9	
Essaouira	15	
Agadir	15	
Marrakech	26	



TouMali tourism questionnaire :Methodology 1.

1. General questions

- ✓ Type of hotel
- ✓ Number of rooms
- ✓ Number of beds
- ✓ Type of arrivals
- ✓ Certification/standards

2. Waste collection

Public and work areas

- ✓ Is waste sorted?
- ✓ What type of waste is most often generated in this area?
- ✓ Do you have an estimate of the percentage of different waste compositions?
- ✓ Where are the bins located?

3. Waste collected in the rooms area

- ☐ Is waste sorted?
- ☐ What type of waste is most often generated in this area?
- ☐ Do you have an estimate of the percentage of different waste compositions?
- ☐ Where are the bins located?

4. Specific tracking of inorganic waste

- ✓ Is glass collected separately?
- ✓ Are batteries collected separately?
- ✓ Do you collect metal separately?
- ✓ Do you collect Plastic separately?
- ✓ Do you collect paper separately??



Overview of the Situation of Solid waste Management in Hotel Industry



Mixed waste

Public area

rooms

Working-Staff area



Hotels

Municipality

Landfill

Solid waste management in hotel industry : Major Generator

- high guest turnover
 - intensive food services,
 - Large-scale housekeeping operations
-
- Typical waste stream include :(Food waste, plastic, glass, paper

Sorted waste



LL GROUP

BLACKFOREST

LOW



econnexions

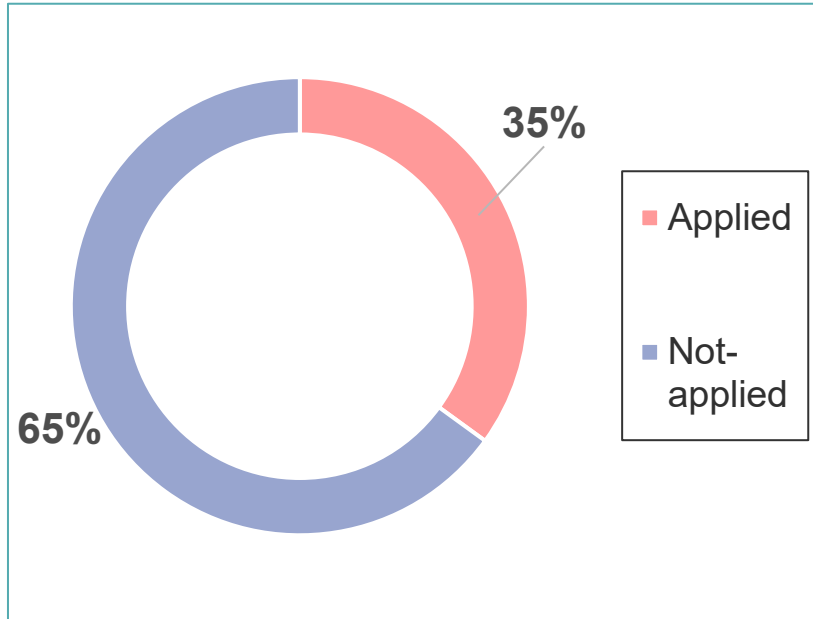


Effective management is essential to reduce environmental impacts, operational costs, and to meet growing sustainability expectations from guests and regulators.

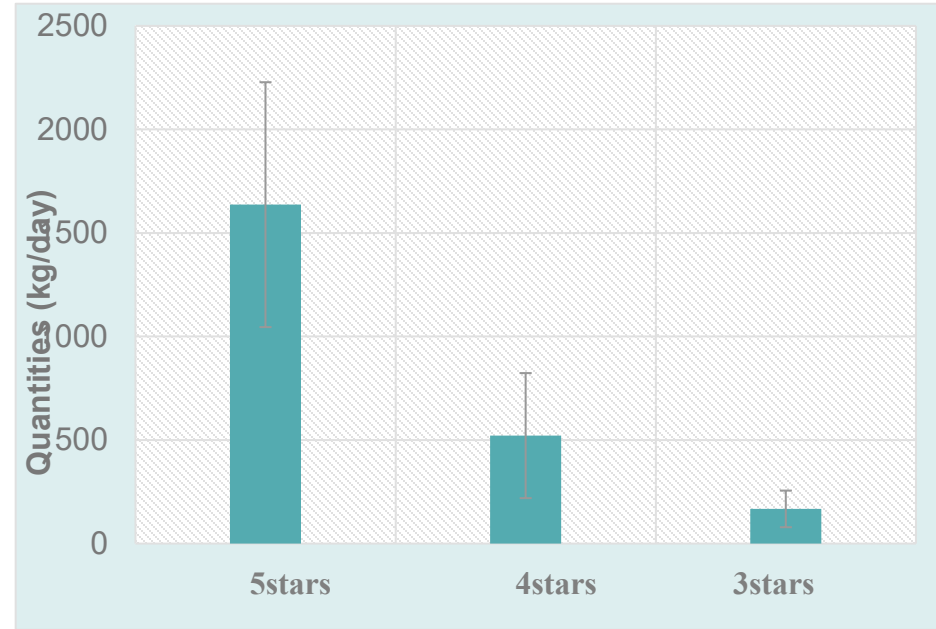


Marrakech-Safi region : Waste management in the tourism sector

MARRAKECH



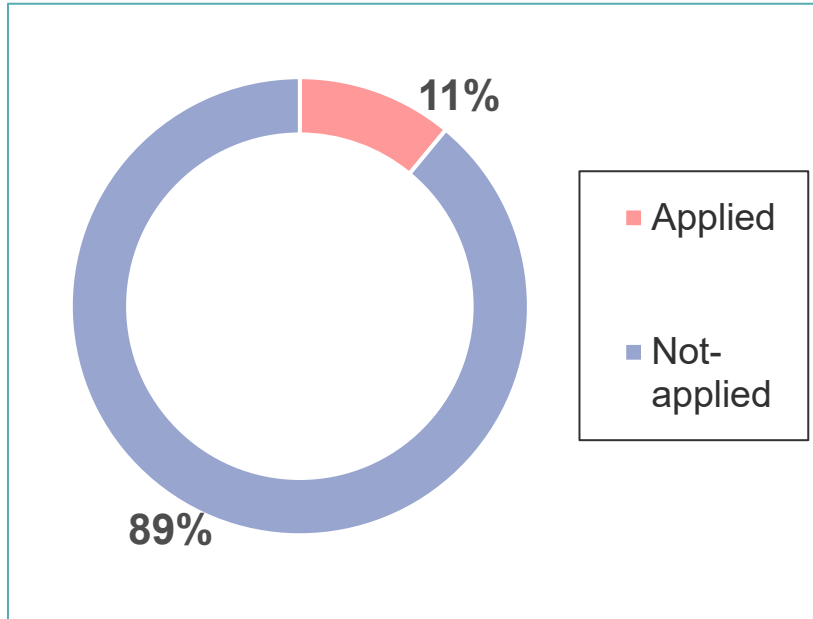
Percentage of hotels in Marrakech implementing waste sorting at final stage



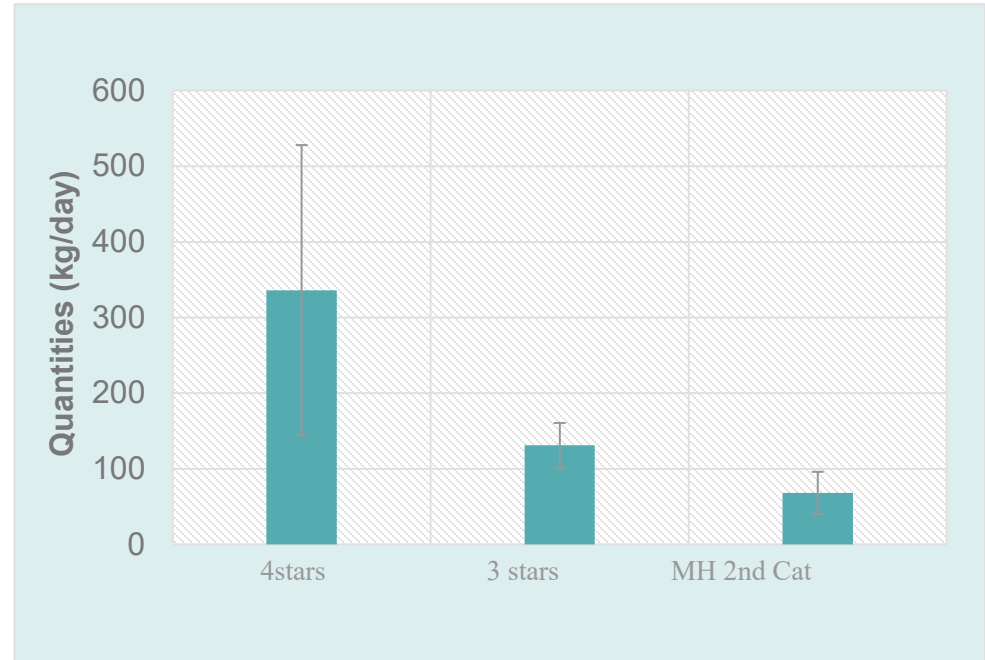
Average waste quantities (kg/day)

Marrakech-Safi region : Waste management in the tourism sector

SAFI



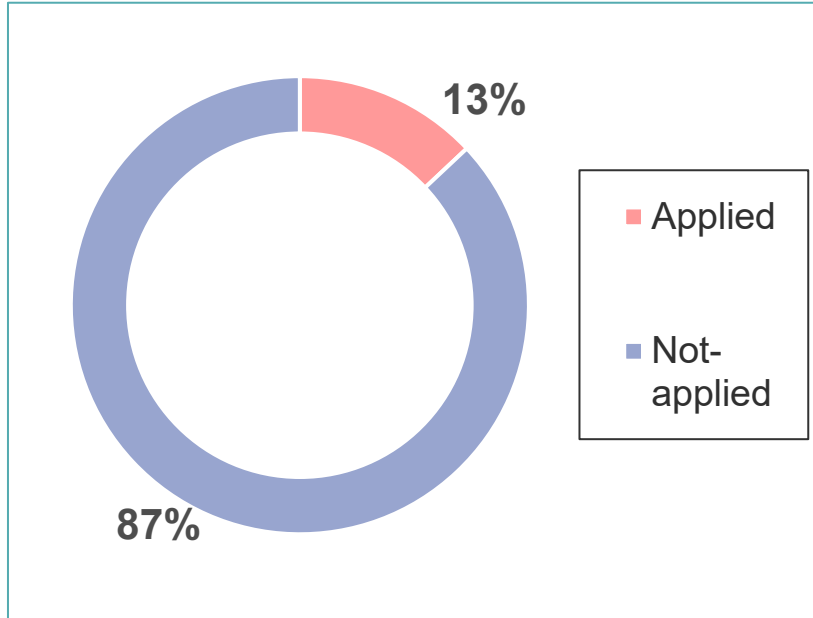
Percentage of hotels in Safi implementing waste sorting at final stage



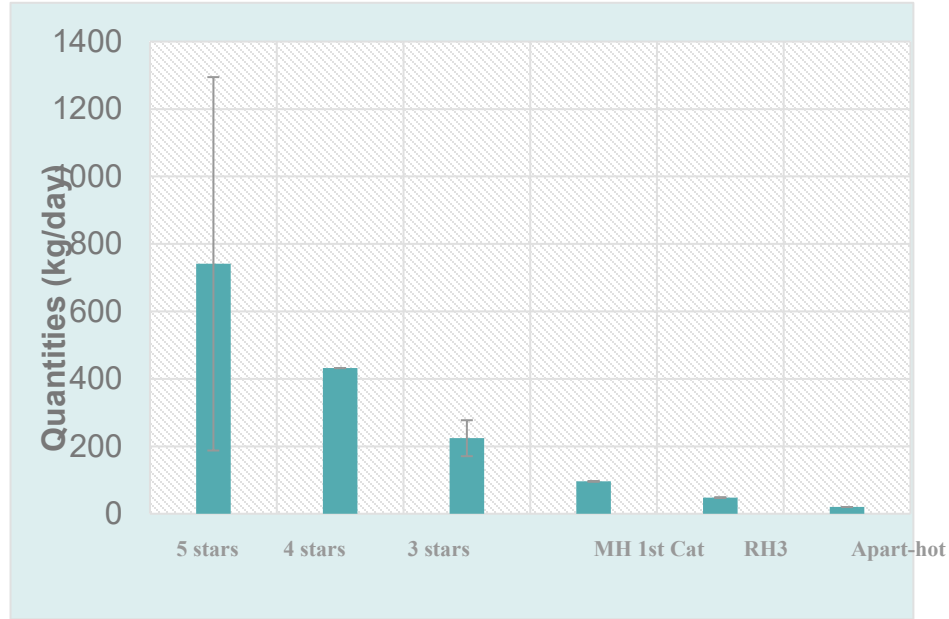
Average waste quantities (kg/day)

Marrakech-Safi region : Waste management in the tourism sector

ESSAOUIRA

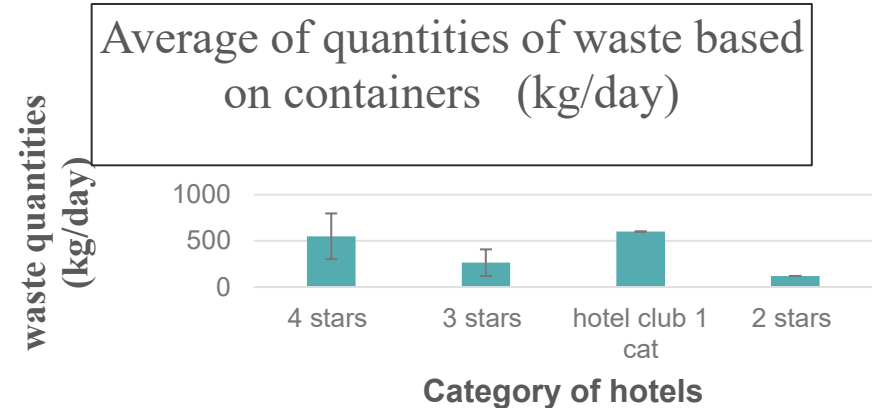
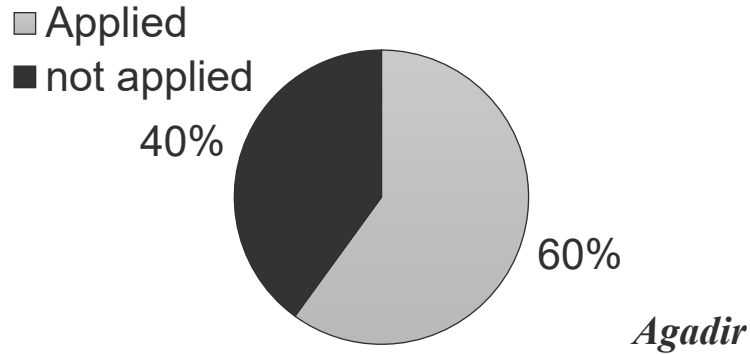
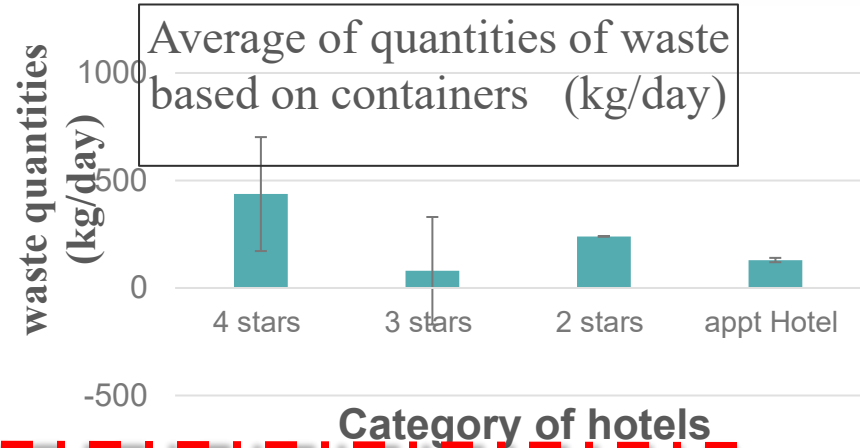
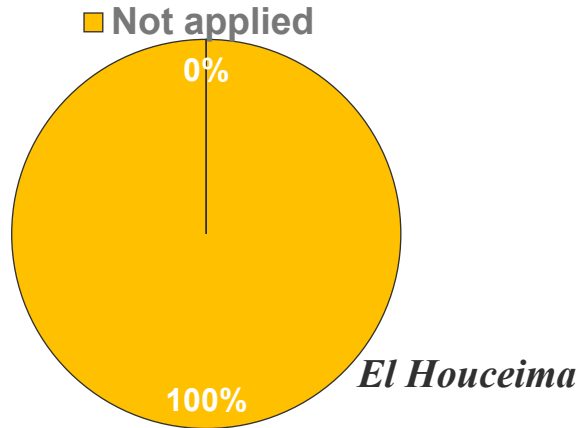


Percentage of hotels in Essaouira implementing waste sorting at final stage



Average waste quantities (kg/day)

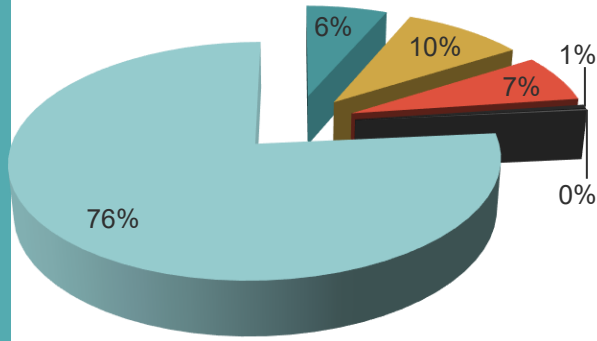
Waste management in the tourism sector



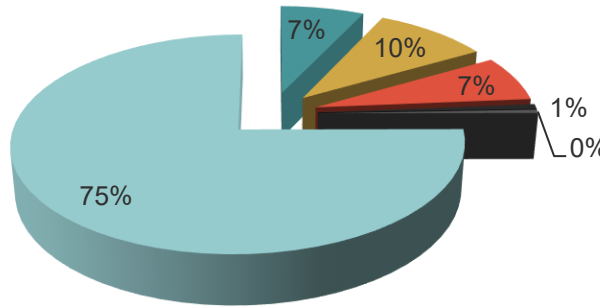
Marrakech-Safi region : Waste management in the tourism sector

Distribution of waste fractions in hotels

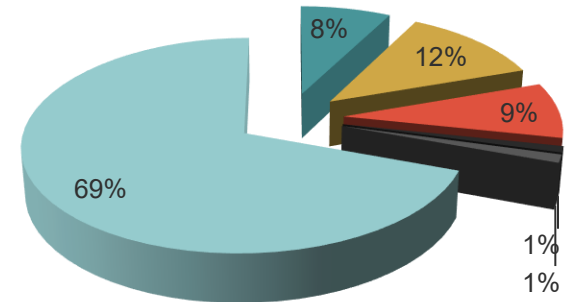
5 stars



4 stars




3 stars



■ Plastic ■ Paper and packaging ■ Glass ■ Metal ■ Textil ■ Organic matter

Waste management in the tourism sector :the Atlantic and Mediterranean cities

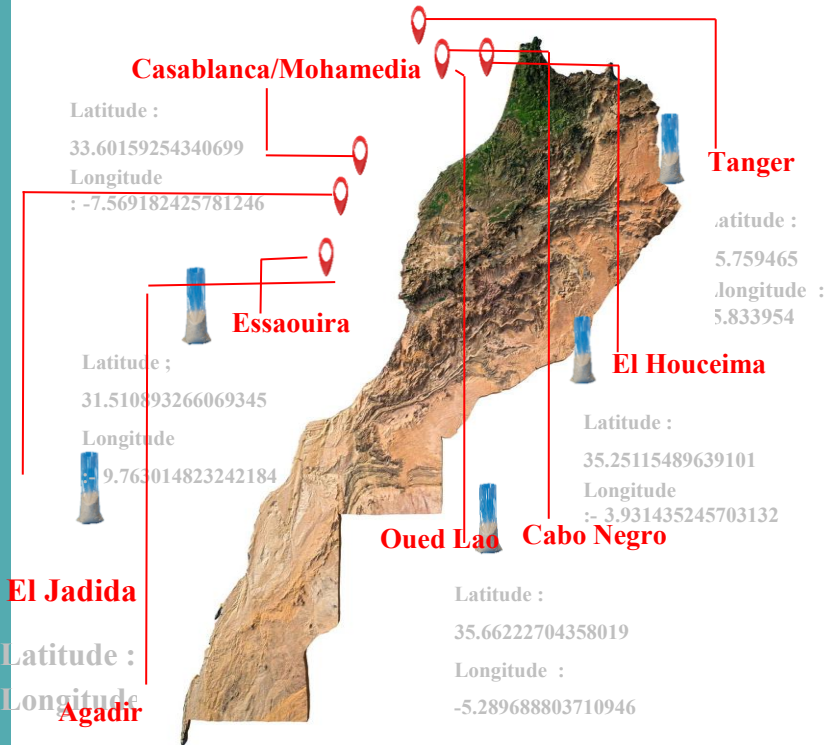
A photograph of a beach at sunset. The sun is low on the horizon, casting a warm orange glow over the sky and water. Several seagulls are visible on the sand. In the foreground, the beach is covered with a large amount of colorful plastic trash, including bottle caps, small pieces of plastic, and other debris.

Waste on beaches is a major environmental concern because it affects ecosystems, public health, and coastal economies dependent on tourism and fisheries.

Analysis of beach waste on the Atlantic and Mediterranean coasts

Cadi Ayyad University UCA/ FSSM /IOW

Beaches surveyed



Cities	Names of the beaches	Number of beaches / city	Total
Casablanca	Nehla beach	1	7 beaches
El jadida	El jadida beach	1	
Mohemadi a	Sablette beach	1	
Essaouira	Beach Essaouira Center	1	
Around Essaouira	Beach Sidi kaouki	1	
Agadir	Beach Agadir Center	1	

Cities	Name of the beaches	Total
Tanger	Playa beach	14 beaches
	Malabata Beach	
Oued Alian	Oued Aliane Beach	
Oued El Marsa	Oued el Marsa Beach	
Mdiq and Fnidy	Mdiq center Beach	
	Rifiyine Beach	
	Marina Beach	
Cabo Negro	Cabo Negro 2 beach	
Oued Laou	Oued Laou Beach	
Kaa Asreas	Kaa Asreas Beach	
Stehat	Stehat	
Hoceima	Isly	
	Quemado	
	Sabadila	

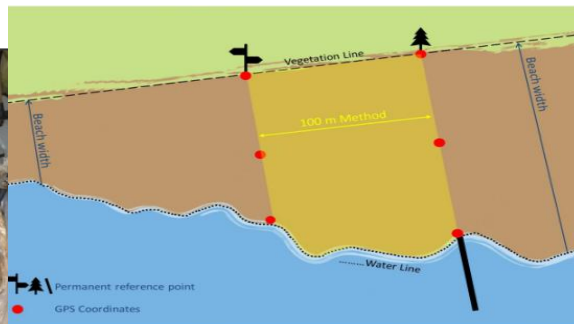
According to a report by the World Tourism Organisation (WTO).
Morocco is ranked :
**3rd most visited Arab country in 2022 with :
11 million tourists**



Methodology

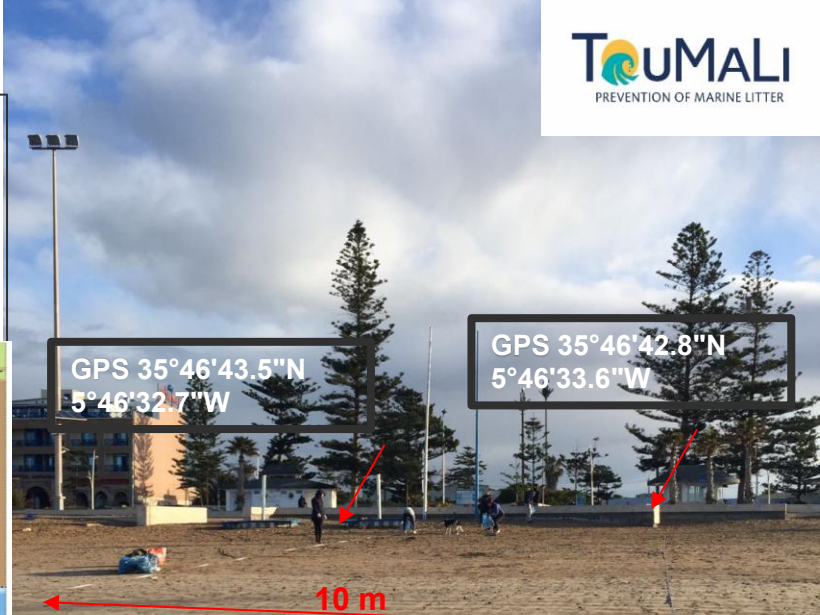
• OSPAR

- Delimit the section using the OSPAR technique. Take the GPS position of the 4 points. Collect waste from the vegetation line to the water line..

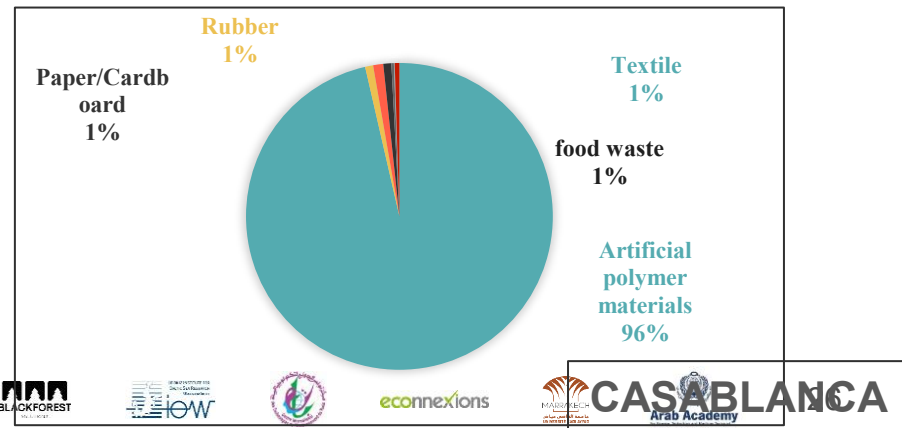
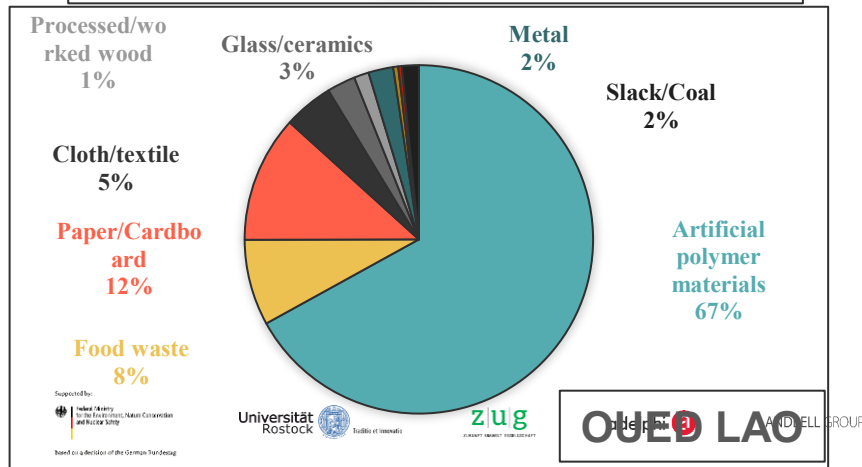
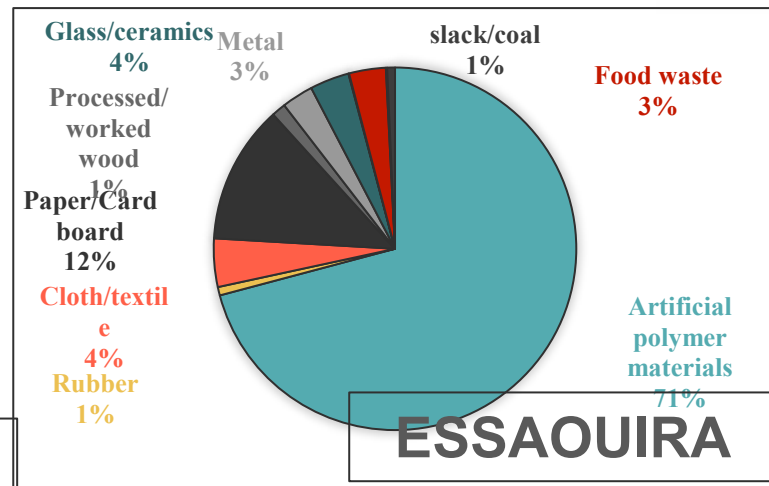
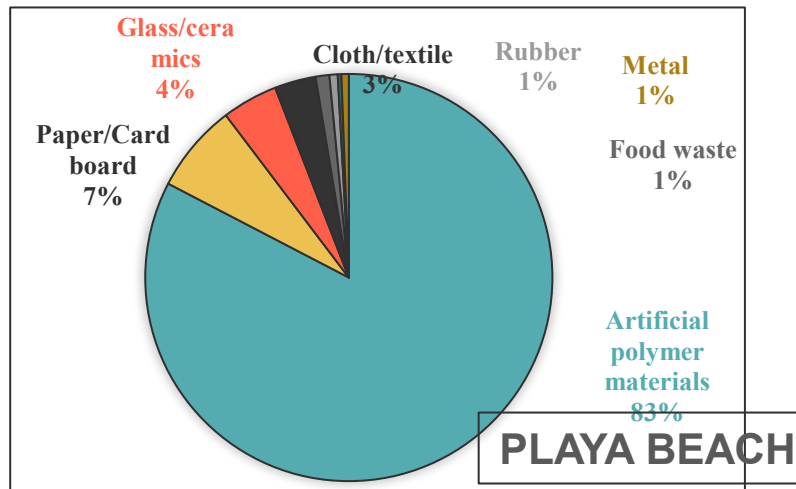


Materials used

Survey area. In yellow, the zone for the 100 m macro-waste method is indicated. The red circles indicate where the GPS coordinates were taken.



The sorting stage





Waste management at the pilote city / Essauira



Liste of hotels : Essaouira City

City	Hotels	Categories
Essaouira	Hôtel Heure Bleue	4 stars
	Hotel des iles	4 stars
	Hôtel Atlas	5 stars
	Hotel Miramar	3 stars
	Villa Maroc	3 stars
	Salut Maroc	5 stars
	Palais des Remparts	5 stars
	Chez Khadija and Franz	RH 3 eme cat
	Hôtel Riad Zahra	3 stars
	Hotel Aljazira	2 stars
	Hôtel Vent des dunes	3 stars
	Villa Quieta	4 stars
	Hôtel la perle de Mogador	3 stars
	Hôtel Sofitel	5 stars
	Hôtel le Medina	5 stars
	DAR L'OUSSIA	4 stars
	Hotel Souiri	1 stars
	Maison du Sud	3 stars
	Riad El Madina	3 stars

19 hotels

The hotels according to the waste management system in place

1. Hotels with no waste management system (**everything mixed up**)

2. Hotels with no waste management system but trying to reduce plastic (**using dispensers instead of small plastic, reducing the use of plastic bottles....**)

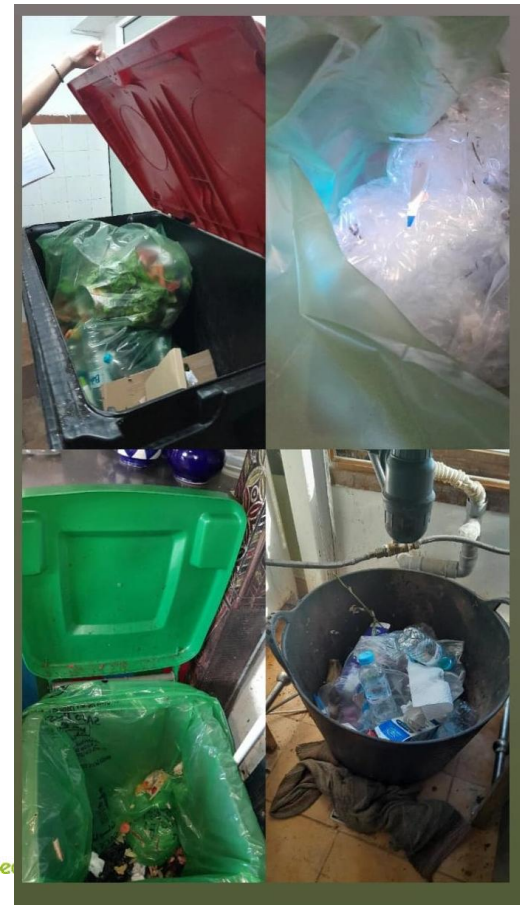
3. Hotels with their own waste management **system** and **good practices for reducing the various waste streams.**

Category 1 :Hotels with **no waste management system**

lacking a formal waste management system

City	Hotels
Essaouira	Hotel des iles
	Hotel Miramar
	Palais des Remparts
	Chez Khadija and Franz
	Villa Quieta
	Hôtel la perle de Mogador
	Maison du Sud
	Riad El Madina

Mixed fractions collected by the Municipality /Ozone .



Category 2 : Hotels with no waste management system **but trying to reduce plastic**

waste is still largely mixed and not properly sorted

Sofitel



Using 1L glass or plastic water bottle

Hotel Souiri

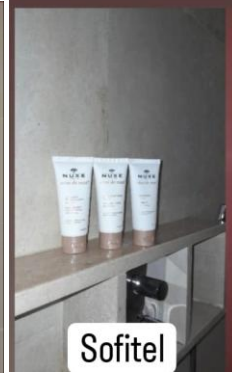


City	Hotels
Essaouira	Hôtel Atlas
	Hotel Aljazira
	Hôtel Vent des dunes
	Hôtel Sofitel
	Hôtel le Medina
	Salut Maroc
	DAR L'OUSSIA
	Hotel Souiri

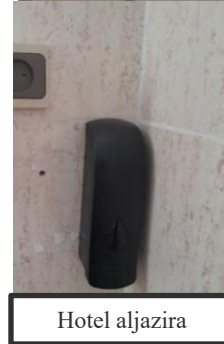
Hotel Atlas



Sofitel



Hotel aljazira



Dar L'OUSSIA



Asian culture, turning away customers' bottles at check-in

Using dispensers instead of small plastic bottles

Category 3 : Hotels with their own waste management system and good practices **for reducing the various waste streams.**

developed comprehensive internal waste management



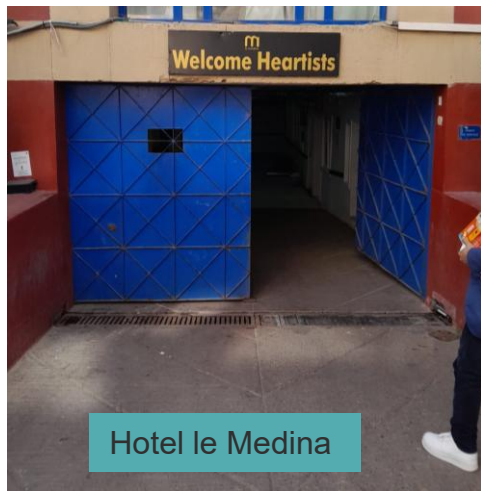
All fractions are sorted by the hotel staff, who take the plastic and glass for sale.



City	Hotels
Essaouira	Hôtel Heure Bleue
	Villa Maroc
	Hôtel Riad Zahra



Plastic and glass are collected by a private company



Hotel le Medina

Garbage room



Hotel le Mogador



Riad Al zahra



Villa Quieta

within the hotel




Street bins

Hotel AL Jazira

Hotel des iles

Street of Appt chez Frank/ chez Ali

Proper recycling starts with **choosing the right bins** (Each fraction needs its own clearly labeled container)

Hôtels	Trash size	Plastics, metals	Paper, cardboard	Glass	Domestic waste	Waste organic
	60L 	2	2	2	2	0
	120L 	0	0	0	0	1
	240L 	0	0	0	0	3

5 types of waste bins for sorting at source at this hotel:

Glass Waste



Green bin for glass waste such as empty wine and beer bottles as well as food jars

Mixed Waste



Black bin for mixed, non-recyclable waste like sanitary products, nappies, etc.

Paper/Cardboard



Blue bin for recyclable, clean paper and cardboard waste

Plastic/Metal



Yellow bin for recyclable plastic and metal waste

Organic



Brown bin for food waste, leftovers, fruit and vegetable rests, etc.

Color coding is very effective



Today we are going to focus on a **simple but powerful step** in effective waste management



Training hotel staff is essential for addressing waste management challenges for several key reasons:

- **Building Awareness and Responsibility**
- **Ensuring Correct Waste Segregation**
- **Supporting National and International Sustainability Goals**



TouMaLi achievement

As part of the Toumali Project's implementation in Morocco, strategic meetings were held with key municipal authorities and local NGOs to ensure effective coordination and long-term sustainability



Kich of meeting

**March 21 mars, 2022
Marrakech**

21 mars 2022

2nd International Conference

Effective Waste Management for Sustainable Tourism and Marine Ecosystem Protection

8th & 9th of November 2023



Building on last year's success in Egypt!

TARGET ?

Building national,
regional and
international
networks in the
tourism sector to
fight marine litter
together!

WHERE ?

**Cadi Ayyad
University
Marrakesh**



WHO?

National &
international
speakers

Decision-makers &
stakeholders

International
tourism industries

Access information from the 1st international
conference which took place last year in Egypt:

Photos, presentations, video
recordings and lessons learnt
from last year's conference



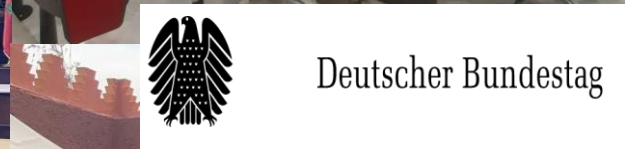
Stay updated and register for this year's 2nd
international conference:



Information on the upcoming
TouMaLi conference 2023

Second TouMaLi congress

November 8 and 9, 2023 Marrakech



Meeting with association
Sealovers
31 january 2023



Municipalities & Harbours



Tourist surveys

Surfrider Association/ Essaouira June 2022



Based on a decision of the German Bundestag



International TouMaLi Days



Establishment of an administrative mechanism for continuity. Creation of a knowledge-transfer plan (training materials, documentation, workshops).









The Toumali Project includes the establishment of a dedicated **plastic recycling center** in **Essaouira**, **designed as a flagship model for integrated waste reduction** and circular economy practices in coastal cities



Agreement procedure



This center aims **to demonstrate how local infrastructure,** community participation, and public-private partnerships can transform plastic waste into valuable resources while protecting coastal ecosystems



Location and Characteristics of the Recycling Platform Site - Toumali

- Vents dominants avec des rafales Nord ouest
- Sol de nature sable limoneuse et calcaire
- Presence de dunes de sable
- Zone à Vocation d'équipements
- Zone du domaine forestier
- Presence de petits arbustes des zones semi desertiques type tamaris



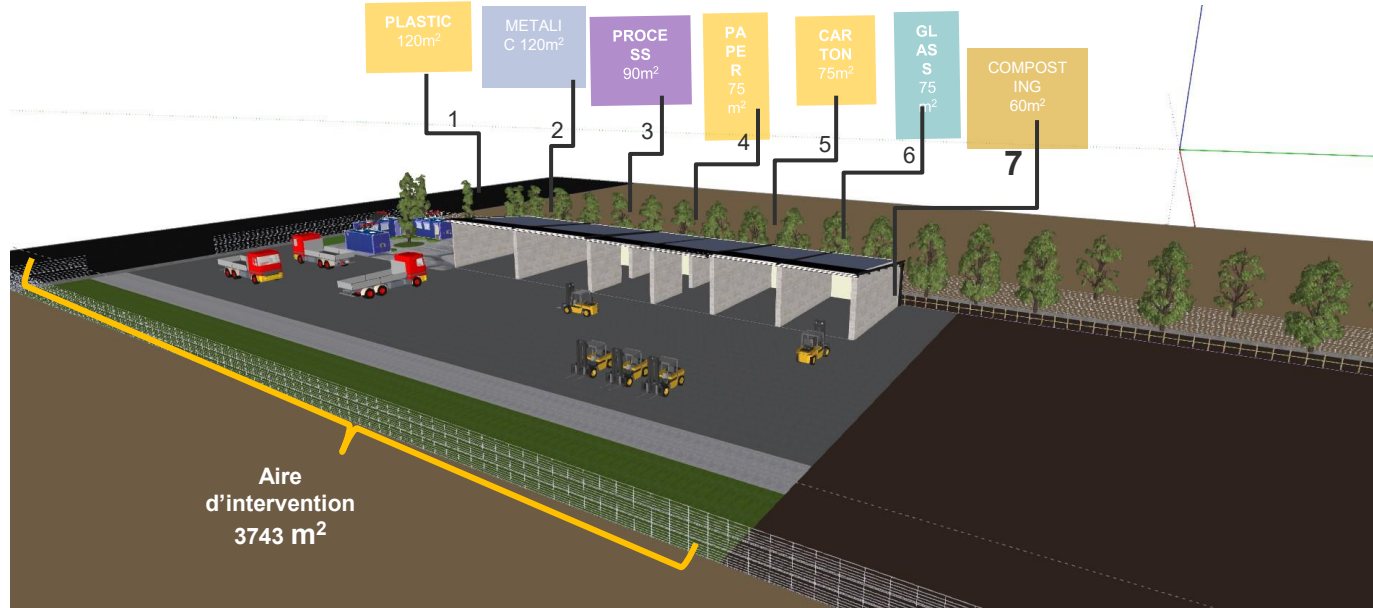
Photo report of the site



Site plan of the recycling platform



Site plan of the recycling platform: Overview





L GROUP







Thank you for your
attention

