



URBAN-WASTE – 690452 – D4.1

URBAN-WASTE

Urban strategies for Waste Management in Tourist Cities

D4.1 URBAN-WASTE prevention and management strategies and guidelines for implementation

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Abstract

WP4 was aimed at developing eco-innovative, collectively-based and gender-sensitive waste prevention and management strategies to reduce the amount of municipal waste production by developing reuse, recycling, and selective collection of waste in cities with high levels of tourism.

The present deliverable is the product of several tasks (4.1, 4.2, 4.3 and 4.5) from WP4 and was based on the input of WP2 (Operationalizing urban metabolism) and WP3 (Mobilization of stakeholders) that gave the basis for the strategies' definition. WP6 in particular tasks 6.3 (implementation of selected measures) and 6.4 (monitoring systems) enabled to capitalize the lessons learnt during the implementation phase, and to identify the possible fine-tuning to make more efficient the measures that have been implemented.

D 4.1 "URBAN-WASTE prevention and management strategies and guidelines for implementation" provides the description of each pilot case in terms of tourism characteristics, waste management, stakeholders, the process of selection of measures and the results and feedback from their implementation.

It provides also a thorough description of the waste prevention and management measures designed, defining their objectives and targets, type of waste addressed, operational steps to be taken, the potential solutions for the financing of the measure, guidelines for monitoring and set up evaluation indicators. In addition, each description of measure compiles main results obtained and key points identified during the implementation phase in the different pilot cases.

Its whole content constitutes guidelines for policy makers.

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List of abbreviations

ACR+	Association of Cities and Regions for Recycling and Sustainable Resource management
CE	Consulta Europa
WP	Work Package
D	Deliverable
CoP	Communities of Practices
ICT	Information and Communication Technology
EU	The European Union
EC	European Commission
EASME	European Agency for Small and Medium Enterprises
MSW	Municipal Solid Waste

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1- Introduction

WP4 was aimed at developing eco-innovative, collectively-based and gender-sensitive waste prevention and management strategies to reduce the amount of municipal waste production by developing reuse, recycling, and selective collection of waste in cities with high levels of tourism.

The whole approach was based on the urban metabolism principles to support the switch to a circular model where waste is considered as resource and reintegrated in the urban flow.

The present deliverable is the product of several tasks (4.1, 4.2, 4.3 and 4.5) from WP4 that consisted in:

- Development of waste prevention and management strategies for tourist cities (4.1)
- Business models design to ensure the financial sustainability of the actions (4.2)
- Gender mainstreaming of strategies to assess their gender representativeness and sensitivity (4.3)
- Fine-tuning of the strategies after the implementation phase (4.5)

Task 4.1 in particular was based on the input of WP2 (Operationalizing urban metabolism) and WP3 (Mobilization of stakeholders) that gave the basis for the strategies' definition. In particular WP2 permitted the identification of good practices in the EU and in the pilot cases in terms of waste management strategies or approaches (see D2.7). WP3, through the different focus groups and Community of Practices (CoP) permitted to mobilize the different stakeholders and confront objectives of the pilots to reduce, reuse and recycle waste and the feasibility of the implementation of the measures.

Task 4.5 was conducted in parallel and closely with WP6 in particular tasks 6.3 (implementation of selected measures) and 6.4 (monitoring systems) whose deliverable (D6.2 monitoring report) enabled to capitalize the lessons learnt during the implementation phase, and identify the possible fine tuning to make more efficient the measures that have been implemented.

Deliverable 4.1 "URBAN-WASTE prevention and management strategies and guidelines for implementation" provides the description of each pilot case in terms of tourism characteristics, waste management, stakeholders, the process of selection of measures and the results and feedback from their implementation.

It provides also a thorough description of the waste prevention and management measures designed in task 4.1, defining their objectives and targets, type of waste addressed, operational steps to be taken, the potential solutions for the financing of the measure, guidelines for monitoring and set up evaluation indicators. In addition, each description of measure compiles

mains results obtained and key points identified during the implementation phase in the different pilot cases. Its whole content constitutes guidelines for policy makers.

A first version of the D4.1 was released in November 2017, the present report is a revised version and it encompasses information collected after the implementation phase in pilot cases that ended in December 2018.

2- Description of the methodology

Definition and selection process of measures

Deliverable 4.1 consists in two different tools that has been designed to facilitate information exchange between URBAN-WASTE partners and pilot cases:

- A form for the 11 pilot cases: a document compiling all the keys information on the pilot case, previously collected in the project, to have a complete overview of the current situation.
- A form for each measure selected by the pilot cases: measures are explained with all the necessary information for their implementation (purposes of the action, costs, stakeholders to involve, steps to implement the measure, example of good practices, indicators, guidelines for monitoring and lessons learnt from the implementation phase)

Pilot and measure forms were designed to select the measures together with the pilot cases, thanks to the key information they contain on the specific context of each pilot case in terms of tourism and waste management. The information helped defining the most relevant actions by identifying the main sources of waste production on which the project could have an impact, and the possible synergies with ongoing actions, taking into account the type of stakeholders involved.

On the other hand these documents were designed to be used as a dissemination tool, accessible to researches, technical people, or even the general public.

A first list of 32 measures were discussed with each pilot and ORDIF through bilateral meetings that were held from June to December 2017. The objective was to define with each pilot according to its priorities the strategy to put in place and the measure to select at a first step.

A brainstorming platform was implemented on the URBAN-WASTE website (<http://www.urban-waste.eu/european-cop/>) on which the pilot cases and their stakeholders, but also people from outside the project, could share their ideas on measures regarding waste management and waste prevention in touristic cities.

An important criteria that was reminded to pilot cases for the selection of the measures, was to have the possibility to monitor such action. Thus, this is why no measures such as nudge actions aiming at changing behaviour have been directly considered for the measure forms because they represented actions difficult to monitor.

The first list of measures reduced to 22 was presented and discussed with the different stakeholders at the second CoP events that were held in October 2017 in order to assess the feasibility of implementing them.

A second round of bilateral meetings were held with each pilot case up to refine the strategy up to December 2017. It was followed by the third CoP whose objectives were:

- To present the list of measures to be implemented in the pilot cases, that have been previously discussed and selected within the bilateral meetings.
- To discuss with the local stakeholders how they could be involved to implement such measures and to see with them how they will monitor the implemented measures.

The minimum number of measures to be chosen by the pilot cases was fixed to at least 2 or 3, including Waste App which was defined as a mandatory one.

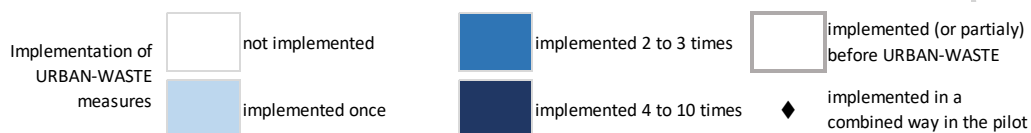
Finally, the selection of measures by the pilot cases was formalized at the 4th CoP organised by each pilot beginning of 2018 through the signing of a public-private partnership with the relevant stakeholders. The 4th CoP was a public event covered by media to present to a wider public the measures selected and to launch publicly the implementation of URBAN-WASTE strategies.

The implementation of the different measures was carried out by the pilot cases according to the operative plan agreed with the stakeholders signing the Public Private Partnerships (see D6.1 Public Private Partnerships report).

The following table summarizes the selected measures by each pilot case and gives an overview of priorities they fixed through their choice. Existing measures implemented before URBAN-WASTE are indicated as well.

	COPENHAGEN	DUNEA	FLORENCE	KAVALA	LISBON	MNCA	NICOSIA	PONTA DELGADA	SANTANDER	SYRACUSE	TENERIFE	Total
Measure 01: Doggy bags			◆	◆								3
Measure 02: Food waste prevention at buffets and restaurants	◆		◆		◆						◆	5
Measure 03: On-site composting in tourist establishments												1
Measure 04: Collection points for used cooking oils												1
Measure 05: Selective collection of biowaste from hotels and restaurants												1
Measure 06: Partnerships between hotels and charities for reuse initiatives												0
Measure 07: Substitution of disposable products in hotels												2
Measure 08: Reuse initiative in camping sites												0
Measure 09: Communication campaign on reuse through swap markets												1
Measure 10: Waste sorting in hotel rooms												1
Measure 11: Recycling advisors for tourist establishments												3
Measure 12: Sorting bins in public and touristic places												2
Measure 13: Promotion of tap water consumption												4
Measure 14: Waste sorting instructions translated in foreign languages												6
Measure 15: Waste sorting in marinas												0
Measure 16: Information on waste sorting for cruise ships												2
Measure 17: Pocket boxes and ashtrays against litter												0
Measure 18: ECO-events guidelines												1
Measure 19: Awareness campaign on marine litter												3
Measure 20: Food waste tracking device	◆			◆	◆						◆	6
Measure 21: WasteApp												10
Measure 22: Food donation to charities												1

Total of measures selected in the pilot cases



Each pilot case implemented from 4 to 6 measures. Without considering WasteApp that was mandatory¹, the group of measures that was selected by most of the pilots is represented by food and organic waste management regrouping 7 pilot cases: measures 1, 2, 3, 5, 20 and 22.

¹ Instead of implementing WasteApp which faced different technical in Copenhagen, the city finally implemented a survey of hotels and professional laundry companies to map the recycling potentials. This change was approved by the Commission.

Some measures were not selected at all because they were already implemented (fully or partially) in the pilot cases or they didn't fit their priorities: measures 6, 8, 15 and 17.

Although some measures were already implemented, they were selected in the framework of URBAN-WASTE. In this case, pilots wanted to reinforce or to enlarge to new stakeholders the measure thanks to the URBAN-WASTE methodology: measure 1 in Kavala, measure 2 in Tenerife, measure 10 in Lisbon, etc.

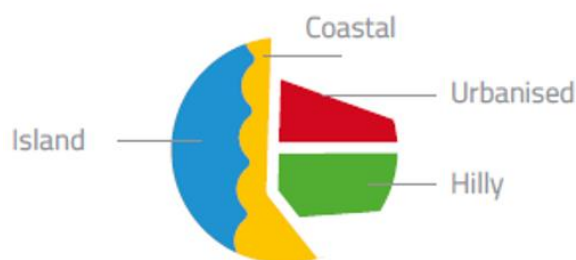
As indicated in the table, some measures were implemented in a combined way: for example measure 2 and 20 in Copenhagen, or measure 1 and 2 in Florence.

Presentation of the pilot case form

Each Pilot form is made of three blocks:

1. Overview of the status quo, tourism, waste data
2. Preselection and selection of a list of measures according to status quo and definition of objectives and targets
3. Evaluation and fine tuning after implementation and monitoring phases

The name of the pilot is the title of each form preceded by a logo characterising the type of tourist area according to the following colours:



Presentation of the measure form

Each Measure form is made of four blocks:

1. Description of the action: definition, integration in a waste management plan, economic indicators, operational steps for the implementation of the measure
2. Good practices
3. Guidance for setting-up indicators
4. Lessons learnt and fine tuning

3- Pilots cases forms

(Presented in the following order)

Copenhaguen

Dubrovnik

Florence

Kavala

Lisbon

Nice

Nicosia

Ponta Delgada

Santander

Syracuse

Tenerife



Overview²

Socio-economic and land use data

Type of pilot case	Municipality
Number of inhabitants	601,448 (2016)
Total area	88,6 km ²
Total urban area	72,7 km ² 82 % of total land area
Total nature & open space area	15,9 km ² 18 % of total land area
Total coastal area	31,7 km ² 36 % of total land area

Tourism

Average length of stay	2-3 days (1.9 days in average in 2014)
Number of tourist accommodation establishments	103 (2015)
Total number of tourist arrivals	5.525.594 (2016)
More frequent countries of origin of the tourists	UK, Sweden, India, Norway, the USA, Germany, Italy the Netherlands, France and China

² Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

- The high season peak for tourism in Copenhagen is in **July**.
- Most of the tourists are staying in hotels, many of them being eco-labelled.
- Several eco-labelled hotels in the city (~50 out of 85 hotels in total)
- 15 camping sites in the region

Type of tourism and activities

Copenhagen as the capital of Denmark is an important historical, economic and political city. Its tourist attractiveness is based on diversified points of interest:

- A vast heritage of castles, gardens and museums. Many of which are open and free for the public.
- Copenhagen offers both classical design icons and modern architectural wonders.
- Copenhagen today is the home of New Nordic cuisine and 16 Michelin starred restaurants.
- Clean harbours, organic restaurants, bikes and bike lanes, parks and green oasis - all the reasons making Copenhagen a sustainable destination. 45% of the inhabitants of Copenhagen ride a bicycle to work or school.
- Copenhagen is a long time frontrunner for the LGBT movement.
- Copenhagen is also a city of festivals: 14 in 2019 from rock, jazz, suburban dance to design, photo and cooking festival

Wonderful Copenhagen (a network organization to promote tourism in Greater Copenhagen Area) has launched the first strategy for sustainable tourism in 2018 “Tourism for Good” to prevent visitors’ pressure in the future through four different focus areas:

- Broadening tourism to areas outside the city centre’s boundaries and, hence, offering tourists a much wider choice of activities and richer experiences.
- Guide tourists towards responsible consumption and behaviour by promoting sustainable products and ways of transportation.
- Partnerships are to be formed in order for information and measurements to get collected so that increased knowledge on sustainability is acquired and passed along.
- *Wonderful Copenhagen* has chosen to lead by example, taking the greatest possible sustainability considerations when it comes to its own operations

Type of tourists³

12% of Danish tourists and 81% of international tourists were first-time visitors to Copenhagen. 30% of Danish tourists and 15% of international tourists had been to Copenhagen one to three times prior.

82% travelled with one or more adults and 73% travelled without any kids.

Almost half of the Danish respondents were in the age group 36-45, while the highest percentage of international respondents was 26% in the age group 26-35.

The average age for the Danish respondents was 45, while the average age for the international respondents was 42.

³ According to Copenhagen card user survey – 2017.

Waste data⁴

Main types of waste prevention actions regarding URBAN WASTE objectives



In the city of Copenhagen, there are different prevention actions that can or could target also the waste produced by tourists.

- Prevention of food waste is a main issue for both households and businesses. A range of measures are taken helping different stakeholders to prevent food waste e.g. social supermarkets, mobile phone apps, restaurants providing guests with doggy bags, cooperation with retailers, teaching households as well as staff in large kitchens to use food items close to “best before”-date, awareness raising on food waste, but also trust based certification (Refood label).
- In terms of reuse, there are many recycling hubs with swap facilities in the city (16 centers), many second-hand and antiques shops. There are also initiative in touristic places, such as the Tivoli Park where there are only reusable plastic cups with a deposit and return system.

Organization of waste collection for households



Responsibility

- Copenhagen municipality is responsible for MSW collection from all households, public institutions and small businesses located in residential buildings.
- The collection is operated by private companies.
- One specific aspect regarding waste management in the City of Copenhagen is that the municipality is only in charge of waste from households and is not allowed to collect waste from private companies. The private companies are obliged to manage their own waste in compliance with the municipal waste management regulation.
- Waste from street bins and street sweeping is not under the waste authority’s administration, but falls under another department in The Technical and Environmental Administration in the City of Copenhagen.
- The City of Copenhagen has a current “Resource and Waste Management Plan” that has been introduced for the period 2019-2024.

⁴ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Financing system



Denmark put in place the principle of ‘cost-coverage non-profit’ for the financing of a local authority’s waste management service. This means that waste management is not financed by taxes. Waste fees cover the costs involved, while they cannot exceed them to be used for other expenses in the city. The waste management budget in the City of Copenhagen amounts to around EUR 83 million / year.

Waste fees are collected with the property tax, and there is a **fixed price for recyclables**, whereas the fee is **volume-based for residual waste**. Access to the recycling stations and hubs is free, and it is financed by a flat rate charge per year, levied with the waste fee.

WASTE FEES 2017, IN EUROS

<i>Single-family households</i>	<i>litre/week</i>	<i>Fee, euros</i>
Residual waste bin	140	318
Residual waste bin	180	381
Residual waste bin	240	435
Recycling fee, flat rate		123
Total approximately		441–558
<i>Flats</i>		
Fixed fee per flat		31-52
Bins, per litre/week		0.70
Recycling fee, flat rate		130
Administration fee		11
Total approximately		300

Collection system

- MSW fractions are collected from kerbside and from recycling stations:

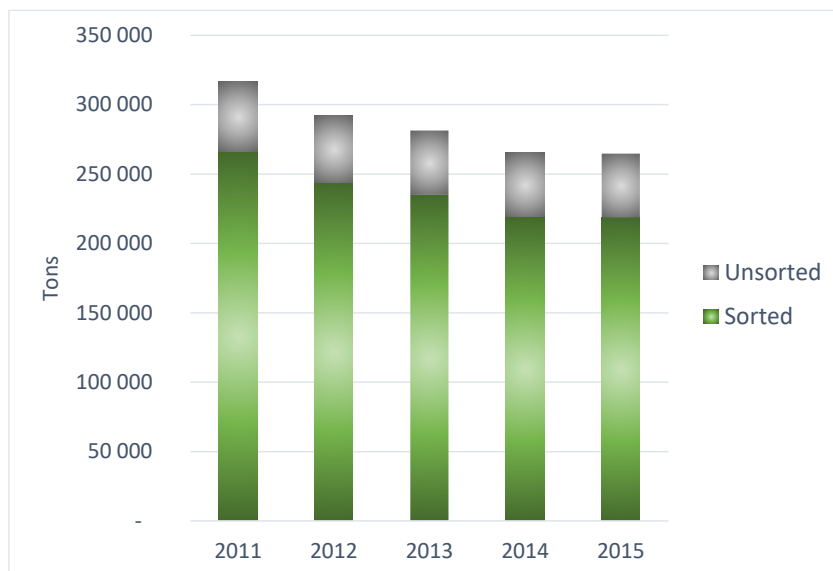
Kerbside collection from households	Collection from recycling stations
Residual waste	Small combustibles
Metals	Hazardous waste
Plastics	WEEE and cables
Smaller WEEE	White goods
Cardboard	Bulky waste
Paper	Metals
Hazardous waste	Paper
Batteries	Cardboard
Glass (also from public collection points)	Glass
Organic/food waste (from September 2017)	Garden waste
Garden waste	PVC
Bulky waste (on demand)	Tyres

	Construction and demolition waste Wood for recycling Impregnated wood Plastic Textiles Waste for landfilling
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- **Refund system for selected packaging materials:** in Denmark there is a deposit on most containers for carbonated soft drinks, water, beer and wine (bottles, cans). The deposit encourages the consumer to return the empty beverage container for recycling and thus prevents improper disposal and littering. The amount of deposit varies dependent on the type of beverage container.

Organisation of waste collection for private enterprises

- Like other businesses most touristic establishments like e.g. hotels have made arrangements with private waste collectors though some are serviced by the municipal waste collection.
- **The City of Copenhagen is only in charge of waste from households and is not allowed to collect waste from private companies.** The private companies are obliged to manage their own waste in compliance with the municipal waste management regulation by hiring private enterprises. Businesses are free to hire a private company collecting the waste for treatment but source segregation in recyclable fractions is compulsory (the businesses are also obliged to secure documentation).
- The waste from businesses should at least be separated into:
 - residual waste
 - paper
 - cardboard
 - rigid plastic
 - glass
 - garden waste
 - cooking oil
 - organic waste (food waste)
 - hazardous waste
 - plastic sheeting
 - metal
 - WEEE
- The city does sorting tests on the waste from households, but not from the private companies. Nevertheless, the City has advisors that visit the private companies within an existing programme and has a continuous dialogue with companies to make sure they maintain a correct sorting of waste. Even if in the end it is the waste producers who have the responsibility of sorting them correctly.



Development in the amount of waste from private companies



Organisation of street sweeping and street bins collection

- Waste from street bins and street sweeping is not under the waste authority's administration, but falls under another department in the technical and environmental administration in the City of Copenhagen.
- Litter is considered part of the street sweeping waste and therefore not included in the definition of MSW. The amount/year of street sweeping waste is stable over the past years.
- Street bin waste is sent to incineration without further segregation.

Waste treatment of the most relevant waste fractions

Waste fraction	First treatment destination	Treatment process
Residual waste		Incineration (producing district heating and power for the supply network)
Recyclables		Exported from the City of Copenhagen to other locations in Denmark or outside the country for further treatment

Remark: The new incinerator (Amager Ressource Center) was constructed with a rooftop skiing slope, a hiking track and a climbing wall, in this way making the waste treatment facility an integral part of the city experiences.

Specific focus on certain waste fractions/management models

The city of Copenhagen is currently testing in some areas containers tagged with microchips to register when the containers are full, in order to improve the waste collection.

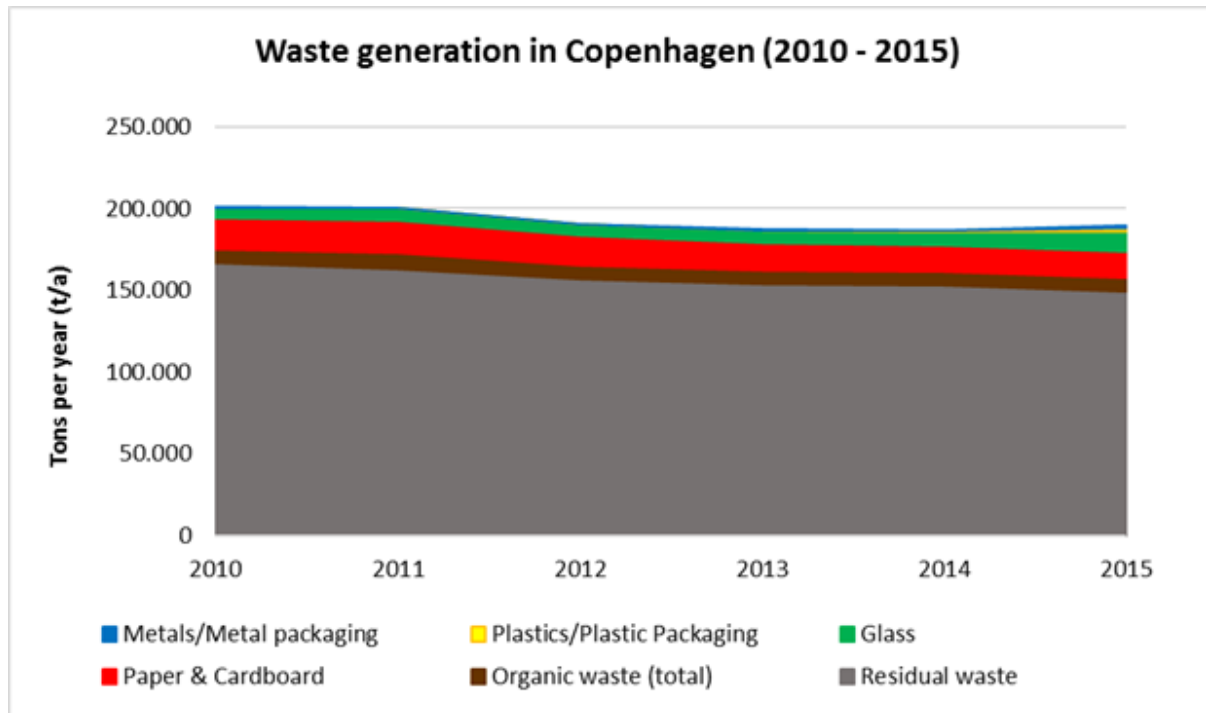


In Denmark, there is a deposit scheme for packaging items such as cans and bottles. These can be returned in supermarkets and grocery stores. It is a state-controlled system, not part of the waste-management system of the city. There has been a project in Copenhagen of street bins with an external tray specially designed to receive cans and bottles which can be then collected by homeless people.

The city of Copenhagen also dedicates some means on improving waste behaviour through different programmes:

- recycling advisors to help private businesses improve their waste sorting
- specific studies and pilot actions in party areas to reduce litter
- mapping of public fountains is available on the municipality homepage.

Specificities and challenges regarding the performance of the collection of certain waste fractions



- Recyclables: increase of the tons of cardboard, glass, metals, and plastics, whereas paper is decreasing.
- Decrease of the amount/y of municipal solid waste and residual waste collected over the past years.
- Regarding the main challenges in terms of waste collection, the city of Copenhagen has been recently working on the waste paper fraction to improve its sorting as the performances were not so good.
- One of the important tools to attain the overall recycling target for household waste is to have a separate collection and treatment service for biowaste (food leftovers, food waste, and other organic waste). Actually, a composition analysis from 2016 shows that 41% of residual waste was biowaste. The City's target is to collect 20.000 tons of biowaste in 2020. The biowaste collection started in late 2017.

Main priorities regarding waste management

- More separation in business community: more separation of waste from businesses (shops, restaurants, hotels) for recycling is encouraged by dialogue and information.
- Recycling and reuse are the main focuses for the City of Copenhagen.
- Prevention and recycling of plastic waste: 15.000 tons or 35% of the plastics from residual waste should be separated and recycled by 2018 by means of a specialized separation system, development of a roadmap tool, better collection programmes and information (Life+ project).

- According to the waste workers surveyed in Copenhagen⁵, 21 in total, the main priority concerning waste management is improving reuse (62%), followed by improving waste collection system, behavioural change, and optimizing recycling and composting (52%).



Gender profile

Copenhagen has a high awareness of gender issues. It has set up a Gender Equality Committee with representatives from the management and employees. A target of 10% maximum differences between male and female employees has been fixed, regarding directors/CEOs, head of departments or units. The waste management team of the city is dominated by women.

From the gender survey, case studies which reported areas of good practice were those which had a better representation of women and more women in senior and professional jobs. Copenhagen had commissioned research into how domestic waste behaviour was gendered, and had established a number of patterns which were partly based on gender.

The main concern expressed in focus groups is the behaviour of groups of mainly young men, who generate a lot of rubbish and for whom peer pressure is an important deterrent to them dealing with the rubbish.

⁵ Sources: URBAN-WASTE deliverable D3.2 : Situation and behavioural analysis of consume and waste behaviour and patterns

Waste and tourism⁶

Main impacts, influences and challenges of tourism on waste production and waste management identified

- As a very important part of the tourists in Copenhagen are staying in hotels and not in rented accommodations, it means that the waste from the tourists is mostly produced in touristic establishments (restaurants, bars, hotels, etc.) and is not collected by the municipal services. Thus, to target waste produced by tourists, measures regarding waste prevention and waste sorting should be focusing on these touristic establishments and the touristic sightseeing areas.
- In the period 2011-2015, waste generation from hotels and restaurants in Copenhagen was in the range of 13.438 - 18.235 tons per year or 1,8 – 2,8 kg waste per overnight stay respectively.

Street bins and tourism	
Residual waste	3.674
Separately collected recyclables	452 (for glass)
Number of touristic waste producers (food and accommodation tourist infrastructure)	3.032

Main priorities regarding waste production and management and tourism

- To improve the waste sorting and recycling from private touristic businesses, the city of Copenhagen has made targeted efforts to help hotels introduce waste separation.
- As a part of the new Resource and Waste Management Plan from 2019-2024, the City of Copenhagen is planning to create **750 sorting locations in public areas** for household waste. The containers will not be locked so tourists will also have access to the containers. 4-5 sorting fractions are foreseen at each location with a focus on plastic, carbon, metal, small electronics and bio waste. Glass is already collected at 500 places and drinking bottles (bears, water and soft drinks) are already a part of the Danish donation system.
- The City of Copenhagen is planning to require reusable and washable drinking cups at different events in the city.

⁶ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Main targets for the URBAN WASTE project

- **Stakeholders**

Within URBAN WASTE, the following types of stakeholders are involved in the project for the city of Copenhagen:

- Hotels and accommodation services
- Food and beverage services
- Tourism facilities (tourist offices, airport, port, museums, Tivoli park, etc.)
- Waste structures (municipal waste department, Danish deposit system organisation, association Keep Denmark clean)
- Others (citizens, other municipalities and associations in environment protection)

- The measures they will think about as possible measures to implement in URBAN WASTE will also be a way to then identify new stakeholders to contact.

- **Gender strategy**

Copenhagen has taken care to ensure gender representativeness (not only in terms of male/female, but also diversity of job positions, ages, and cultural backgrounds) in the participatory process, in particular during 2nd and 3rd Community of Practice events when the measures were discussed.

The city is willing to develop strategies that can encourage better waste management by young men groups.

Selection of measures





Discussion on the list of measure forms during the first bilateral meeting

Existing measures	Comments
Swap markets	This could be duplicated within URBAN-WASTE communication campaign.
Pocket boxes and ashtrays against litter	Large cigarette butt shows that the butt should go into the bin and not end up in the street. The City of Copenhagen hands out pocket ashtrays and a small pocket size container including bags for waste. Proposition from the City of Copenhagen: as cigarette butts and chewing gums were mentioned as an issue, another measure could be the distribution of small boxes to tourists in which they can put butts or gums and throw it later in a bin
Information on waste sorting for cruise ships	The City of Copenhagen started collaborating with the port authority for providing better and clearer communication about the waste handling to the cruise ships arriving in Copenhagen. The information given to the ships is about which fractions they can load off in Copenhagen. We found that more information should be given about that it is for free for them to load off the waste in Copenhagen, unless it is waste for special treatment.
Doggy bags in restaurants	This is already a current practice but this is not so popular and easy to introduce. Besides, as most of the tourists stay in hotels, it is not so convenient for them.
Prevention sign in hotels buffet to avoid food waste	Some hotels are doing it. We could ask them how this is done to provide the knowledge to other hotels.
Food tracking device (app developed by SLU) to test in a hotel or restaurant	A similar tool developed by Unilever Food Solutions is used by several kitchens in Copenhagen. https://www.unileverfoodsolutions.co.uk/chef-inspiration/from-chefs-for-chefs/food-waste-reduction.html
Communication campaign on food waste with restaurants	In relation with the gastronomic experience as part of tourism activities in Copenhagen.
Promotion of tap water	Different possibilities such as the promotion of reusable flasks (including distribution of flasks during communication events), dissemination of the map of the drinking fountains through apps, websites (see § on IT tools).

Interesting measures to implement	Comments
Waste sorting in hotel rooms in different fractions (Lisbon example)	<p>This will need compositional analysis of the waste and also knowledge on the amounts to be sure how to target this issue. One could start with looking into the waste amounts from hotels and find the hotspots. Maybe the kitchen generates more waste than the rooms. Also it would be interesting to know how the hotel waste is treated. Maybe they can use the coffee grounds for producing mushrooms (http://www.beyondcoffee.eu/).</p>
Gift box / reuse street furniture targeting tourists (they can drop the things they don't need/don't want to bring back home and they can pick up other things they would need)	<p>This especially relevant for outdoor tourism. An example is surplus fuel for cooking when camping. This cannot be carried on an airplane. The measure could be implemented at campsites. This measure is not super relevant for cities – I cannot come up with valuables that are only relevant for tourists except city maps... and they are for free. Maybe books? They can be left in our swap markets. These could be more available to tourists for leaving books they already read during the holidays. Also, this is not a measure in itself but as the Amager Resource Centre “part of the city experiences”, it would be very interesting to integrate this in the communication campaign organized during URBAN WASTE in the City of Copenhagen (during the implementation of measures) because this incinerator is a symbol of waste and tourism at the same time with its leisure activities.</p>

Other potential measures	Comments
Recycling advisors for touristic establishments (hotels, restaurants, shops)	<p>There could be synergies with the URBAN WASTE project, indeed by proposing the test of the food tracking device.</p>
Experimentation in party areas to improve people's behaviour and avoid litter	<p>Removable street bins.</p>
Deposit-refund scheme	<p>There are plastic bottles bins in Copenhagen airport (for charities). This seems like an interesting measure to further duplicate in places mainly frequented by tourists (Train station, parks, etc.).</p>

Measures implemented in Copenhagen

Measures implemented	Objectives & summary of actions
<p>Communication for cruise ships on waste handling (measure n°16)</p> 	<p>The municipality supported the Copenhagen Malmoe Port in improving the management of the waste flows produced by cruise-ships in the cruise terminal, increasing the recycling of plastic waste and better handling the hazardous waste. Copenhagen Malmoe Port prepared a new waste management plan and information materials which was sent to the cruise ships.</p>
<p>Eco-event guidelines (measure n°18)</p> 	<p>Development of a dialogue with event organizers working in Copenhagen, about the opportunities to make their event greener and to better manage the waste generated. The event organizers have been given access to an electronic ECO-event guideline and meetings/inspection were set up before, under and after the event to inspire and evaluate on waste sorting and recycling initiatives as e.g. access to tap water, reusable cups, donation for charities.</p>
<p>Food prevention at buffets and restaurants and food tracking device (measure n°2 and n°20)</p> 	<p>Implementation of the food waste tracking device in 4 hotels and one hostel to map and minimize food waste by e.g. sell drinks separately from breakfast bag, use coffee grind as fertilizer for plants, run campaign/competition between hotel with the positive message of “Love food and hate Waste”.</p>
<p>Partnerships between hotels and charities for increasing the circularity of hotel textiles (measure n°6 broadened)</p> 	<p>The City of Copenhagen has also done a mapping on the potentials of increasing the circularity of hotel textiles instead of doing the WasteApp, which did not work in Copenhagen. Hotel chains and hotels representing 61 % of all hotels in Copenhagen, took part of the survey. The report and the Urban Waste press release on the subject were sent to the involved hotels, HORESTA (a trade organization for hotels and restaurants in Denmark) and <i>Wonderful Copenhagen</i>.</p>

Main results and possible fine tuning in Copenhagen

Communication for cruise ships on waste handling (M16)

Copenhagen-Malmø Port (CMP) has distributed by e-mail to all 343 cruise ships docking at CMP in 2018. On CMP's website cruise ships can get access to CMP's Waste management plan in English⁷ and fill in the form about the waste they need to handle, up to 24 different waste fractions when docking at the port. In 2018, cruise ships docking CMP have managed sorting waste from app. 868,000 passengers and 290,000 staff members at the cruise ships. Even if the recycling-rate did not increase as expected due to the fact that mixed waste for incineration increased significantly, amounts of recyclables such as plastics, metals, glass and cardboard increased – but at a lower scale. Apparently, the improved information material made it clear to the cruise ships that they could deliver their waste free of charge at the dock at the same time as the new contractor made the handling of waste at the dock quicker. Because of this, the amounts increased.

Fine tuning

- ✓ As cruise ships are docking many different harbours in the EU, it is important that each harbour have similar requirements for waste sorting and handling.

Eco-event guidelines (M18)

Eco-event guidelines have been implemented in three different events: Cirkus Summarum includes a large playground where drinks and candy are sold. Haven is a music and food festival where drinks and food are sold on the festival ground which easier waste handling. DHL is a relay running event. DHL proposed a lunch box for each runner and organized the waste sorting and collection at the event. However, each running team could organize their own lunch, which made food waste handling more difficult.

Making events greener is time consuming (workshops and follow-up). The concepts of events are very different so there is not one solution for waste recycling that fits all. The best way to success is to have a direct communication with the event organizers to jointly find the best solutions for the specific event and manage the staff, volunteers and catering companies in a good way to help cleaning the area and sorting the waste in different fractions.

Waste amount depends a lot on weather conditions. If summer is a warm and sunny, food and drinks are more sold compared to a cold and rainy summer.

Good results have been related to the setting up of waste sorting "islands", to make the waste sorting and donation to charities more visible, and the use of reusable and washable cups and jugs.

Fine tuning

- ✓ Concentrate the sale of drinks and food in few places in order to easier the waste handling back stage.

⁷ <http://www.cmport.com/port-info/rules-and-regulations>

- ✓ In other situation, a competition can be organized between waste management teams for boosting recycling and minimize waste.

Food prevention at buffets and restaurants (M02) and food tracking device (M20)

Four hotels (Guldsmeden) and one hostel have implemented the food waste tracking device to get information on potential food waste that could be minimized thanks to the mapping that could take place with the device. In parallel, hotels have disseminated discrete message at buffet “Love food and hate waste”, so the guests feel themselves welcome and not guilty about environment issues during their vacation.

Guldsmeden Hotels run a competition to motivate the kitchen staff to continuously use the food waste tracking device and inform the guests about the reduction of food waste. The winning hotels served drinks and sent positive messages to their guests.

The food waste tracking device has been appreciated for giving good indications of different fractions of food waste – but the tool was still considered as a prototype to be further developed.

Number of dishes, particularly salads, had long-lasting qualities enabling there reuse, if not finished at one meal, into another dish. Guests invited to take smaller portions, and several trips to the buffet, to minimize waste.

Fine tuning

- ✓ Introduce the food waste tracking device in spring, so the staff members could have been trained and done some testing before the high touristic season.
- ✓ Data capacity, data transmission and reporting functions have to be improved to simplify the use of the food tracking device.

Partnerships between hotels and charities for increasing the circularity of hotel textiles (M6)

Based on the mapping it is estimated that 479 tons (approx. 14 kg per hotel bed) of hotel bed linen, kitchen textiles and uniforms/ workwear are in circulation in Copenhagen with approximately 121 tons (approx. 3.5 kg per hotel bed) of new textiles purchased each year leading to 3000 tons of CO2 emissions during production. More than 90% (by weight) of hotel textiles are leased. The textiles that hotels are most likely to own are uniforms for reception, bar and management staff (46% of hotels). All bedlinen and guest towels are leased.

Fine tuning

- ✓ Before the end of the project a report in English will be produced about status, barriers and potentials of reuse and recycle textiles form Copenhagen Hotels. The City of Copenhagen will also share the learnings with the participating hotels and Horesta (the Danish trade organization for hotels and restaurants).

Future of measures in Copenhagen

Communication for cruise ships on waste handling (M16):

Copenhagen-Malmø Port will continue its communication actions towards better waste handling from cruise ships.

Eco-event guidelines (M18):

Because food waste handling was more difficult to reduce, DHL intends to organize a competition between the running teams next year, about bringing up good suggestions for recycling and minimizing waste.

Reusable and washable cup were tested by Copenhagen city at Haven festival. An interview of 102 participants showed that 92 % liked the washable cups and 98 % would like to substitute disposable cups with washable cups. Based on this positive experience, the city has decided to make a public hearing on how to require washable cups at different events in the future.

Food prevention at buffets and restaurants (M02) and food tracking device (M20)

Organic food and food waste reduction is in the agenda of Copenhagen. The city is also in contact with HORESTA (the Danish trade organization for hotels and restaurants) for promoting reduction of food waste.

Moreover, Danish hotels and restaurants have already access to another food waste tracker better adapted for their needs.

Partnerships between hotels and charities for increasing the circularity of hotel textiles (M06)

Based on the learnings from the textile report, Copenhagen will give recommendations to the hotels for recycling textiles.



Dubrovnik Neretva County

Overview⁸

Socio-economic and land use data

Type of pilot case	County
Number of inhabitants	122.568
Total area (km ²)	1.793 km ²
Total urban area (km ² and %)	58,2 km ² 3 % of total land area
Total nature & open space area (km ² and %)	1.721 km ² 96 % of total land area
Total coastal area (km ² and %)	593 km ² 33 % of total land area

Tourism

Main characteristics (2015)

Average length of stay	5 days (national ; 2015)
Number of tourist accommodation establishments	n.a.
Total number of tourist arrivals	1.864.000 (2017)
Total number of beds (all accommodations)	76 684
More frequent countries of origin of the tourists	Germany, Slovenia, Austria, Italy, Czech Republic, Poland, France Hungary, Slovakia, Netherlands

Source: Tourism in numbers (2015), Ministry of Tourism of the Republic of Croatia

⁸ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Seasonality is expressed with the peak in the summer period, i.e. **from June to October**.

Type of tourism and activities

Dubrovnik-Neretva Region's economy, as well as its other sectors, is profoundly influenced by its geographic position, the length, indentation and quality of its coast, by the rich cultural and historical heritage, natural vistas, by the buildings that fit perfectly into the landscape, by numerous protected areas in terms of geology and nature, but also in historical and architectural terms, all of which make a valuable and attractive resource of the Region. Hospitality and tourism are traditional economic activities in Dubrovnik Neretva County due to its rich and recognized cultural and historical heritage. The importance of tourism resulting from the Business Impact operators in a number of other sectors, such as construction, real estate, transportation services, agriculture etc. This circumstance has led to a large expansion of tourism offers, mainly accommodation and catering section. Tourism types:

- Cultural tourism – World Heritage Sites.
- Rural tourism – Rural area of Dubrovnik Neretva Region (combination of sea, rivers, lakes, wines ...).
- Nautical tourism – Cruise tourism.

The table below gives an overview tourism turnover for the period from 2011 to 2014 and shows that the total number of tourist arrivals and nights is increasing. According to the intensity of tourist traffic, Dubrovnik Neretva County is in second place in the Republic of Croatia.

YEAR	ARRIVALS			OVERNIGHT STAYS		
	DOMESTIC	FOREIGN	TOTAL	DOMESTIC	FOREIGN	TOTAL
2011	95 200	97 9674	1 074 874	404 450	4 736 680	5 141 130
2012	91 200	1 084 978	1 176 178	403 475	5 328 896	5 732 371
2013	91 719	1 188 593	1 280 312	422 330	5 709 273	6 131 603
2014	99 941	1 296 344	1 396 285	457 142	5 938 686	6 395 828

Overview of tourist traffic in Dubrovnik Neretva County from 2011 to 2014 (Source: Tourist Board DNC)

The largest number of overnight stays refers to foreign tourists (about 90% of the total number of nights), where most tourists come from Germany, Austria, the United Kingdom, France, Czech Republic, Italy, Polish, Slovenian and BiH. More than 40% of overnight stays are realized in the City of Dubrovnik.

Dubrovnik Neretva County has three nautical ports: two marina (Korcula and Dubrovnik-Mokošica) and one harbour of Lumbarda on Korcula. Besides the three main ports, there are a number of ferry ports, harbors and anchorages.

An important part of the tourist tours in Dubrovnik Neretva County take visitors from CRUISE SHIPS. The table below shows cruise shipping in the period from 2011 – 2014.

YEAR	NUMBER OF PASSANGERS ARRIVED
2011	704 725
2012	743 087
2013	942 909
2014	806 558

Overview of cruise ship travels in Dubrovnik Neretva County (Source: Dubrovnik Port Authority)

Port of Dubrovnik for several years now, according to the provisions of Development Study for cruising tourism in Croatia, made by the Institute for Tourism, seeks to limit the number of passengers of cruise ships. Series of measures have been introduced, that, given the huge demand for Dubrovnik as one of the most attractive destinations in the Mediterranean, in most cases limits the number of guests from cruise ships to 8.000 a day. From 243 days attended by cruise ship in the year just 18 days exceeds the projected number of passengers by 8.000, of which six days in July and August, with only 4 days a year number slightly larger than 10.000 passengers.

Type of tourists

According to the analysis of guests by age groups, the largest number of arrivals in Dubrovnik Neretva County are 25-34 years old, while the largest number of overnight stays are realized by guests in the age group of 45 to 54 years. In the city of Dubrovnik, the largest number of arrivals and overnight stays are realized by guests in the age group of 25 to 34 years.

Waste data

Main types of waste prevention actions regarding Urban-Waste objectives

There is no prevention activities at the moment, only actions from voluntary agreements and commitments (ISO standards, Green key in hotels and other institutions).



Organization of waste collection for households

Responsibility

Municipal waste collection is within the local authorities' responsibilities; it includes waste from commerce. All 22 local government units in Dubrovnik Neretva County have a waste management and collection responsibility. There are also private companies that are authorized and in charge of specific kind of waste collection, such as cooking oils, electric and electronic waste, etc.



Financing system

Waste management financing system diversifies between the local government units, since local government units are authorized to manage waste. For 4 of 22 local government units including City of Dubrovnik, company ČISTOĆA Dubrovnik d.o.o. is in charge of waste management. The price fixed by the company **per litre of communal waste** (mixed), for households is 0,12 HRK, for public institutions 0,13 HRK, for institutions implementing economic activities 0,20 HRK and for tourist accommodation providers the price is 28,8 HRK per bed. VAT is not included in this price, also it may vary according to specific situation or individual orders.



Collection system

- Kerbside collection is applied to mixed municipal waste and separated waste.
- Mandatory separate collection for (among others):
 - Paper and cardboard
 - Glass
 - Biodegradable waste from kitchens and canteens
 - Textile
 - Cooking oil and fat
 - Plastic
 - Metals
 - Packaging waste
- But only 8 (out of 22) local authorities have implemented a partial selective collection scheme for paper, plastics, glass, textile and metal by setting up bring banks. However,

these are not accessible for all residents. Metkovic has the same selective scheme without textile. They have “green island system” (60 collection points).

- 14 local authorities do not have any separate collection schemes in place, except for bulky waste.
- Separate collection of bulky waste is being provided by a majority of local authorities from once a week to twice a year.
- There is only one recycling yard in the City of Dubrovnik in which citizens can personally dispose of certain wastes.
- Like elsewhere in Croatia, plastic packaging (PET bottles) can be returned to shops for a refund of 0.50 HRK per bottle (0,07€).
- Collection frequency and intensity increased in the summer during the touristic season

Organisation of waste collection for private enterprises

The waste from tourist establishments is covered by municipal waste collection. Hotels and restaurants can also contract authorized private companies that handle specific kinds of waste.

Organisation of street sweeping and street bins collection

The local authorities are responsible for the management of waste coming from street bins and street sweeping. It is classified into 4 categories:

- Road waste (dust, dirt, mud, etc.) which occurs as a result of weather conditions and the traffic
- Seasonal waste (leaves, twigs, etc.) which occurs due to weather conditions or human activities and is associated with certain seasonal variations
- Random waste (empty cigarette boxes, cigarette butts, matches, tram tickets, oil residues from vehicles, etc.) as the result of traffic of pedestrians and vehicles and littering in general
- Unusual waste which is usually bulky waste that occasionally and irresponsibly appears in the streets after being rejected.



Waste treatment of the most relevant waste fractions

- Most of the total amount of collected municipal waste generated in the County over the years was disposed in landfills (more than 90%) and only about 7% of municipal waste was sent for recovery.
- All the major recovery and disposal facilities are located in outside of Dubrovnik Neretva County.
- The collected residual waste is landfilled.
- Since Dubrovnik Neretva County only has landfills as a destination for the waste generated on its territory, without any official and certified facility for recycling and

recovery of certain waste fractions it is forced to transport and export to neighbouring and other counties in Croatia.

Specific focus on certain waste fractions/management models

- No tracking system or IT tools used for waste collection and management at the moment
- Deposit on plastic packaging like PET bottles

Main priorities regarding waste management in the pilot case

- One major issue is marine litter, which partly comes from the neighbouring countries. One idea would be to establish partnership with local associations to raise awareness by doing actions, such as cleaning the beaches. It could be a good option to convince stakeholders to be focusing on the “cleanliness” aspect, which might motivate private companies.
- Improving waste collection system has been considered the main priority according to the 88% of the waste workers surveyed in Dubrovnik Neretva region⁹ - 17 in total.
- 71% of the respondents believe that awareness raising on citizens and businesses and optimizing recycling and composting are also among the main priorities for the pilot region.



Gender profile

Former part of a socialist country (Yugoslavia) until 1990, Croatia inherited a certain gender equality policy. Regional Development Agency Dubrovnik-Neretva County has not developed any gender equality policy. However, the Agency employs among 17 people in total 12 females including Director and 5 males. The Director of Waste management agency of the City of Dubrovnik is female.

⁹ Sources: URBAN-WASTE deliverable D3.2 : Situation and behavioural analysis of consume and waste behaviour and patterns

Waste and tourism

Main impacts, influences and challenges of tourism on waste production and waste management identified

- According to Regional Development Agency Dubrovnik-Neretva County (DUNEA), the impact of a large number of nights and stay of tourists represents a significant pressure on the environment, both on land and at sea. A large number of nights significantly increases the quantity and load of wastewater, and increases the amount of municipal waste, and in some places the waste should be transported twice a day.
- According to the surveys developed and implemented within URBAN WASTE, tourism significantly influences waste production in Dubrovnik Neretva region. It is interesting to notice that Dubrovnik Neretva region is the only pilot case, together with Tenerife, where the majority of respondents of all the categories surveyed (waste workers, tourism workers and tourists) believes that tourism significantly affects and influences waste production - 88% of waste workers, 81% of tourist workers and 77 % of tourists.
- Main sources of waste production are, according to waste workers, hotels, catering sector, restaurants, vacation and second homes.
- Seasonal increase of waste has been considered as one of the main challenges in terms of waste management and tourism by 86% of waste workers surveyed, while under capacity of bins and containers was considered to be really relevant by 60% of respondents.

There was no available data that would have allowed to quantify waste generation from touristic activities.

Street bins and tourism	
Residual waste	n.a.
Separately collected recyclables	n.a.
Number of touristic waste producers(food and accommodation tourist infrastructure)	834

- Collection frequency and intensity increased in the summer during the touristic season
- Big impact of tourism regarding the waste coming from street bins and street sweeping, especially in the summer
- Big impact also on the residual waste produced, especially in small municipalities, and small islands

- Tourists are more aware of good waste management practices than the local people, and DUNEA is hoping to gain awareness raising from the URBAN-WASTE project. When raising awareness among people regarding waste sorting, it is a crucial issue to ensure them that the waste sorted is then adequately treated, which is a real problematic in a context of a lack of treatment infrastructures.

Main targets for the URBAN WASTE project

- Tourists are more aware of good waste management practices than the local people, and DUNEA is hoping to gain awareness raising from the URBAN WASTE project. When raising awareness among people regarding waste sorting, it is a crucial issue to ensure them that the waste sorted is then adequately treated, which is a real problematic in a context of a lack of treatment infrastructures.
- One major issue is marine litter, which partly comes from the neighbouring countries. The issue has been indeed mentioned during the focus group. One idea would be to establish partnership with local associations to raise awareness by doing actions, such as cleaning the beaches. It could be a good option to convince stakeholders to be focusing on the “cleanliness” aspect, which might motive private companies.

- **Stakeholders**

- DUNEA involved a wide range of different stakeholders in its community of practices including representatives from the waste management County authority, waste management private companies, environmental NGOs, tourism authority, hotels, local authority and the university. For example:
 - Targeting "Blue flag" beaches and "Blue flag" marinas, as their managers might be more sensitive to environment, cleanliness and waste aspects. There are several "Blue flag" beaches in the county. <http://www.blueflag.global/>
 - Clean Up Europe Network: useful source of information, such as guidelines on "involving businesses" and "effective communication" on litter prevention. <http://www.cleaneuropenetwork.eu/en/best-practices/auf/>
 - One other measure quoted by these documents could be to duplicate the French action "I sail, I sort". Tourists with sailing boats staying in the marinas are provided with different waste bags to sort their waste on their boat, and they can give it the marinas.
 - "Declaration of the Global Plastics Associations for Solutions on Marine litter" that was signed by several entities and private companies, to take actions against marine litter. Croatian Chamber of Economy signed it. https://www.marinelittersolutions.com/wp-content/uploads/2016/11/MLS-Declaration-2016_V3-002.pdf

- It has been difficult to convince private companies to participate, especially to implement the measures because they needed to see an added value. Then it has been suggested that the private companies could be promoted if they participate to awareness campaigns for example. Private companies could also be convinced by telling them that having environmental actions can differentiate them from the others, and the tourists might be sensitive to that, especially the ones coming from the Northern Europe.
- **Gender strategy**
- No specific gender strategy put in place. When organizing focus groups, educational workshops and Community of Practice events, it was not possible to request participating institutions to send a participant regarding specific gender. The first concern was involve people willing to participate, no matter the gender.
- It appeared that there are a bit more men than women, and that it would be useful to ensure that the possible new stakeholders would be more women.
- In general, there is no big difference between gender regarding behaviour and speaking about waste, as the awareness of the locals is quite low.

Selection of measures

Discussion on the list of measure forms during the first bilateral meeting

Interesting measures to implement	Comments
Communication campaign to raise awareness on food waste	Also seemed like a good idea, the budget has to be verified
Instructions for waste sorting for tourists	Seemed like another good possibility as the tourists are more concerned by waste management than local people
Communication campaign on marine litter	That was also previously discussed and could be a measure based on a cleaning action in cooperation with associations, and other actions like pocket ashtrays for cigarette butts, bins for plastic bottles...

Measures that seem difficult to implement	Comments
Doggy bags	Could be a relevant measure by difficult to find partners.
On site composting in hotels, restaurants or camping sites	Seemed like a good idea but the difficulty is to find partners but In Mljet municipality, it is planned to distribute composting units to households, craftsmen, hotels and other users.
Prevention sign in hotels buffet	The hotels are not really willing to participate.

The conclusion was that Dubrovnik will focus on the 3 following aspects:




- Marine litter
- Raising awareness
- Providing instructions to tourists regarding waste management

To better engage citizens and tourists the measures should be focused on waste prevention.

Measures discussed until the 2nd Community of Practice event

Measures discussed	Comments
Promotion of tap water	DUNEA has already provided the data on water fountains to integrate it into the waste app.
Awareness campaign on marine litter	
Eco-event guidelines	Konavle Municipality wants to be integrated in the process of raising awareness for their local community and is interested in this measure 18 ECO GUIDELINES. They would like to do more than just "soft" activities of publishing on institutional web pages and similar, they would like to organize like public forums for their local community and prepare material that they can send to their local people. They are asking if we can give them some kind of assistance from the project. They are willing to finance these activities only they need experts' help.

Measures implemented in DUNEA

Measures implemented	Objectives & summary of actions
<p>Promotion of tap water (measure n°13)</p> 	<p>The promotion of tap water aims at decreasing the consumption of bottled water, in particular PET bottles. Tourists are particularly big consumers of bottled water when on holiday, both directly through their purchases and indirectly through their tourist lifestyle (hotels, restaurants, etc.). To lower consumption of plastic bottles, Dubrovnik Neretva Regional Development Agency (DUNEA) set up a communication campaign to promote tap water and convince people it is safe to drink especially that of public fountains in Dubrovnik connected to the water pipeline built in 1437 with a length of 11°700 meters</p>
<p>Information on Waste sorting for ships (measure n°16)</p> 	<p>Because of lack of space on the ships a lot of effort is put into sorting and compressing the waste generated on board. When in port, if clear communication is delivered, waste can be handled correctly and the amount of waste being recycled from the ships can increase. To this aim, flyers prepared by DUNEA have been distributed by Cistoca i zelenilo Konavle d.o.o. and Konavle Municipality in Cavtat port in the period from June 2018 till October 2018, to inform nautical tourists how to manage waste once on land.</p>
<p>Awareness campaign on marine litter (measure n°19)</p> 	<p>Marine litter originates mainly from land-based activities. It covers any solid material which has been deliberately discarded, or unintentionally lost on beaches and on shores or at sea, including materials transported into the marine environment from land by rivers, draining or sewage systems or winds. To prevent marine litter production and inform widely people and tourists, DUNEA has organized educational workshops on the subject and the distribution of flyers to promote cleaning actions</p>

Main results and possible fine tuning in DUNEA

Promotion of tap water (M13)

The beginning of this action was conditioned by the installation of a water purifier that didn't take place. Without this device, tap water does not comply with all sanitary regulations, especially concerning water turbidity during heavy rains. Therefore, promotion of tap water could not be carried out.

Information on Waste sorting for ships (M16)

A total of 8,000 flyers were distributed to 783 ships encompassing in average 10 people on board (boat crew and the owners). About 7,830 people have been reached by this measure. The company in charge of waste management unfortunately did not observe a considerable increase in the amount of sorted waste. Nevertheless, the carrying out of the measure has made it possible to meet and work closely with Konavle Municipality one of the port communes and foster new partnership.

Awareness campaign on marine litter (M19)

3 educational workshops were organized, attended by, at least, 160 people. 2,000 flyers were distributed during these events and other open events in June and July. Thanks to media spreading on popular TV shows, the number of people reached by the awareness campaign of marine litter carried out in Dubrovnik area was about 1,510,000 people: NOVA TV, HRT1, HRT2 and MORE TV. In addition, portals with their Facebook pages have an audience of about 100,000 people, just like local radio stations.

Future of implemented measures in DUNEA

According to DUNEA, implemented measures will be continued as a good practice through some other projects that may be applied for financing.

Stakeholders will not continue these measures as they are but will collaborate in possible future projects.



Overview¹⁰

Socio-economic and land use data

Type of pilot case	Municipality
Number of inhabitants	378.174 (2015)
Total area (km²)	101,08 km ²
Total urban area (km² and %)	48,6 km ² 48 % of total land area
Total nature & open space area (km² and %)	50,5 km ² 50 % of total land area
Total coastal area (km² and %)	0 km ² 0 % of total land area

Tourism

Main characteristics on the tourism in the pilot cases

Average length of stay (in 2015 or other last available year)	2,5 days
Number of tourist accommodation establishments	<ul style="list-style-type: none">● hotels and similar accommodation: 387 (2012)● holiday and other short-stay accommodation: 682 (2012)● camping grounds, recreational vehicle parks and trailer parks: 3
Total number of tourist arrivals	<ul style="list-style-type: none">● tourist arrivals at a tourist accommodation establishment: 2.825.071 (2015)

¹⁰ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

	<ul style="list-style-type: none"> • Tourist arrivals in holiday and other short-stay accommodation : 761,951 (2015)
More frequent countries of origin of the tourists	USA, China, UK, Japan, France, Spain, Germany, Brazil, Australia, Korea

- 9 million of tourists/y, 76% foreigners (Uffizi museum: 2 million visitors)
- Highest touristic period: from April to October
- Average length of stay: 2,5 days but different types of tourism (weekend tourist, transit tourist, one week tourist, being either family, individual or organized tours)
- Tourist accommodations: ~400 hotels and ~1000 holiday and short-stay accommodation (20% tourist arrivals), and 4 camping grounds

Type of tourism and activities

Tourism in Florence is mainly cultural tourism for around 80%. About 10.2 millions of tourist nights registered yearly and 5.5 million of daily tourists (15,000 every day on average). About 6,200 commercial activities (16% of the total) and 2,700 restaurants (7% of the total).

Type of tourists

Foreign tourists' nights are 7.6 million (75% of the 10.2 million total nights)
There is no seasonality of the tourism.

Waste data¹¹

Main types of waste prevention actions regarding Urban-Waste objectives

- Financing of projects for reduction and prevention by the Tuscany Region: fountains, domestic composters, interventions in eco festival, eco-centres, communication campaigns



Organisation of waste collection for households

Responsibility

- Within the metropolitan area of Florence, the responsible for collection of MSW is the local waste management authority and it covers both the collection from households and from similar establishments (e.g. Schools, offices, hotels, etc.).



Financing system

- The tax paid by private establishments to the municipality for waste collection is a fixed price (the calculation is based on the persons and the square meters of the apartment)
- The tax paid by public establishments to the municipality for waste collection is a fixed price (the calculation is based on the product category and the square meters of the facility)
- There is a project of pay-as-you-throw scheme



Collection system

Paper and cardboard, organic, multi-material (= co-mingled fractions of recyclables (metals and plastic packaging)) and unsorted waste are collected through:

- Underground bins (historical centre)
- Up-loader with volumetric access control/bring banks (urbanized area)
- Door-to-door/proximity (urban area with low density)

Bulky and Green waste are collected through:

- Collection centre
- Service on demand

WEEE, expired drugs and batteries are collected through:

- Collection centre
- Eco-van (an equipped vehicle)

Clothing/textiles (providing clothing to charity is also an option available)

¹¹ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

- The waste management company operating the waste collection for the municipality is “Alia”
- The residual and organic waste collection is mostly done through the public waste collection for private enterprises
- On the other hand, for the recyclable waste fractions, the private enterprises choose for some of them to contract with other private companies
- Containers tagged with optical codes but not weighing system
- There is a door-to-door system organic waste collection for restaurants and hotels (the cost of the service is included in the tax)
- Currently the service is on demand; soon it will become mandatory

Organisation of waste collection for private enterprises

The municipal waste collection system explained previously also includes the collection of waste from private enterprises such as tourist establishments.

Organisation of street sweeping and street bins collection

The responsibility to collect this waste is also upon the local waste management authority and no significant seasonal variation in composition of this waste is visible in Florence.



Waste treatment of the most relevant waste fractions

Waste fraction	First treatment destination	Treatment process
Residual waste (unsorted)	pre-treatment in a mechanical biological treatment plant	<ul style="list-style-type: none"> ● Recyclable transported to recycling plant ● Residuals landfilled or used for energy recovery
Paper, glass, metals and recyclable plastic		Recycling
Light multi-material and non-recyclable plastics		incineration for energy production
Organic matter		composted or used for biogas production (anaerobic treatment) the residuals are landfilled

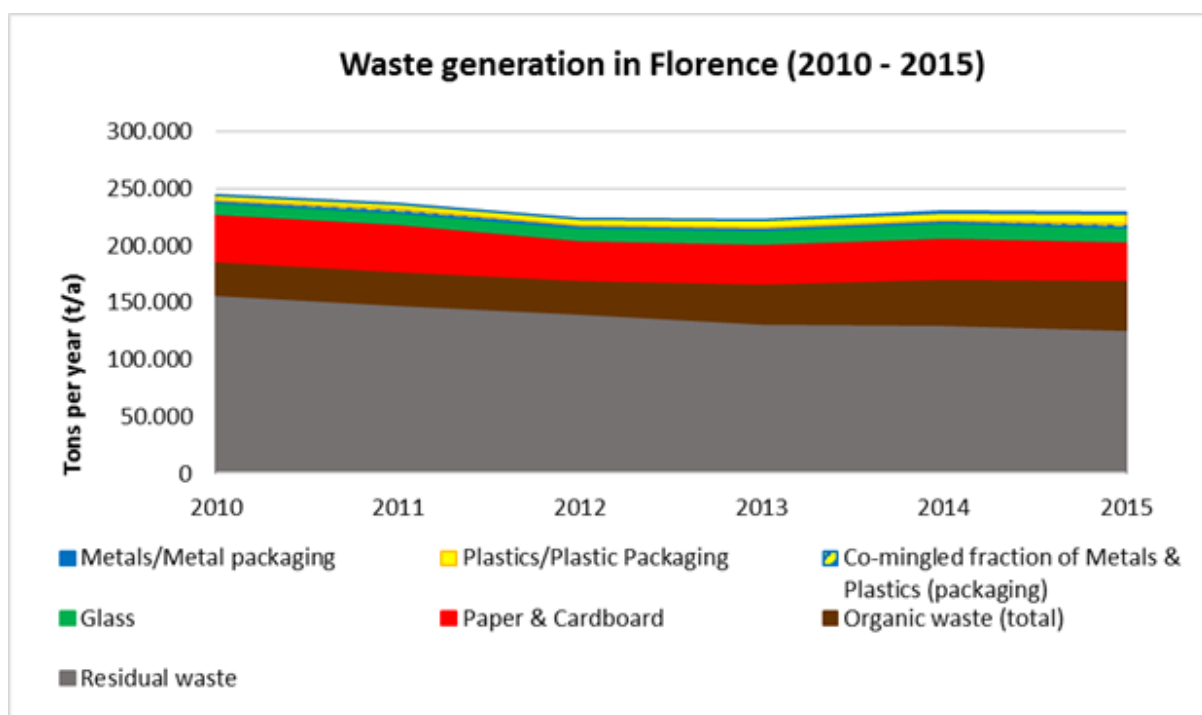
- All the waste fractions are treated and disposed within Tuscany region.

Specific focus on certain waste fractions/management models



- Containers are tagged with optical codes but not weighing system
- Bins are tagged with a chip and a weighing system)

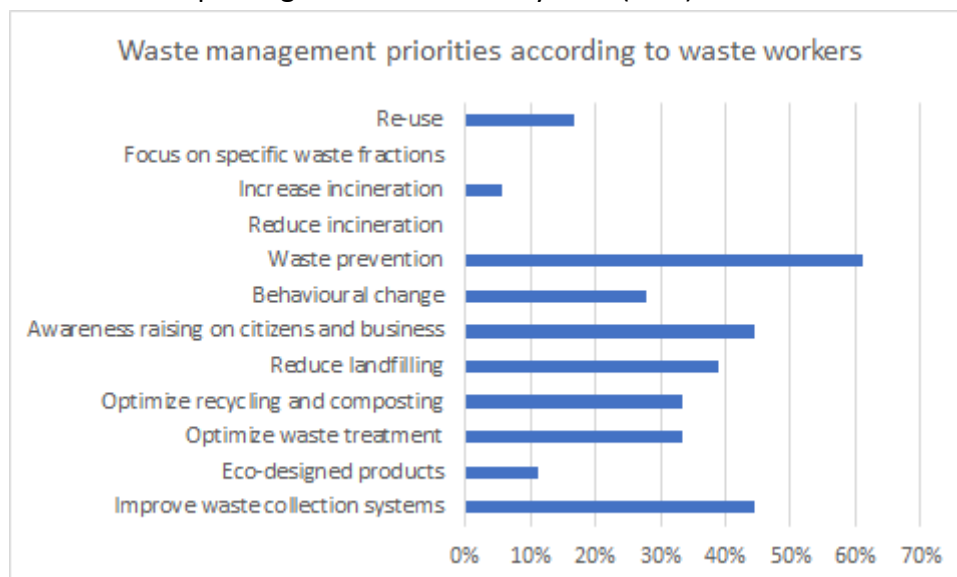
Specificities and challenges regarding the performance of the collection of certain waste fractions



- The strong increase in the amounts of organic waste can be explained by the progressive extension of the separate collection of the organic waste to all households and commercial users. Moreover, in some parts of the city the less efficient "street bin" collection service for organic waste has been replaced by the more efficient "door-to-door" collection service.
- The big differences in the collected amounts of paper & cardboard waste may be related to the economic crisis. However, it cannot be excluded that some commercial users for this waste fraction have chosen not to use the municipal waste collection service, as they could get some revenues from selling cardboard directly to paper preprocessors, or that some waste prevention best practices have produced some positive effect.

Main priorities regarding waste management

- The quality of the waste sorting - especially in the city center - is one of the priorities at the moment, which is related to the tourism in the city. There is a need to work on communication to face the difficulties to inform on waste sorting in the city center (rented accommodations, staff working in the bars, etc.).
- Another priority mentioned is the management of waste production during big events such as concerts, which happen a lot in Florence.
- A total of 18 waste workers has been surveyed in Florence¹². The majority of them (61%) believes that preventing waste production is the main priority on which the pilot should work.
- After that the main priorities considered are awareness raising on citizens and businesses and improving waste collection system (44%).



Gender profile

In Tuscany Region, waste management team is composed of 8 people gendered as follow: 1 Politician female, 1 Director male, 1 Manager female, 3 Technicians 2 female and 1 male, and 2 Administrative female.

Tuscany Region collects gender disaggregated data through a report: “The economic and working conditions of women - 2017”.

If there is no specific good practice of gender sensitivity in waste management, Tuscany Region practice gender sensitivity through positive action for employees in order to reconcile work and family life. Equal opportunities and gender equality are also part of the politics of the Tuscany Region.

¹² Sources: URBAN-WASTE deliverable D3.2 : Situation and behavioural analysis of consume and waste behaviour and patterns

Waste and tourism

Main impacts, influences and challenges of tourism on waste production and waste management identified

- 58% of waste workers involved in the survey believe that tourism significantly affects waste production in Florence and the same thought is shared by 66% of tourists interviewed.
- According to waste workers the main sources of waste produced by tourism are restaurants, street bins and the catering sector.
- Seasonal increase of waste in Florence is considered to be relevant just by the 30% of the waste workers surveyed, while 41% believe that street bins and containers under-capacity are together with the difficulties of hotels, bars and restaurants to handle waste, among the main challenges presented by tourism in relation with waste management.

Unfortunately, the available data on waste amounts and tourist overnight stays did not allow to quantify the waste generation by tourism.

Street bins and tourism	
Residual waste	4.733
Separately collected recyclables (such as paper and cardboard, glass, metal and plastic packaging, organic waste; small WEEE, different hazardous waste fractions)	> 10.000
Number of touristic waste producers (food and accommodation tourist infrastructure)	1.019

- The impact on waste management of such a high tourist flow in Florence is very important as the average per capita waste generation in the city centre reaches values above 1,000kg/inhabitant/year.
- The local infrastructure is well structured and guarantees a waste collection service adequate to cope with the relevant amount of waste generated, but the quality of the separate collected waste fractions (paper, organic, multi-material packaging) is low. Mainly because it's difficult to adequately inform tourists on the waste collection system in place, or to raise their awareness.
- There are no particular change and/or reinforcement of the waste collection services during the year because of tourism seasonality.

Main priorities regarding waste production and management and tourism

- The quality of the waste sorting - especially in the city center - is one of the priorities at the moment, which is related to the tourism in the city. There is a need to work on communication to face the difficulties to inform on waste sorting in the city center (rented accommodations, staff working in the bars, etc.).
- Another priority mentioned is the management of waste production during big events such as concerts, which happen a lot in Florence.
- Effort to improve the communication strategies, as well as the waste management services, targeting specifically tourists is a key issue for the city of Florence.

Main targets for the URBAN-WASTE project

Verbatim from the first Community of Practice event:

“We want to recycle, but here we can’t! At home we separate waste, while here is a little bit difficult because there are only unsorted waste bins in all historical centre. We booked with AirBnB”

“The city is clean, at home we do separate collection but here we cannot do it because we do not see differentiated bins around ...”

“We stay in a B&B and eat at the restaurant, so we do not produce much waste, except bottles of water and ice cream cups that we throw in the city bins. We do not mind to the separate collection of waste!”

“I would like to fill my water bottle at fountains, but I can’t find them around! So I’m forced to buy new ones even if I do not want to, but not for the price, for the waste of useless material. At home I do separate collection of waste and I really care for it. It would be really nice to see around the city the water fountains to fill in the flasks or bottles!”

The most common comments were related to the difficulties in **finding in the city center the waste bins for doing the separate collection** of waste or to understand in which bins to throw the different waste fractions. **Most of the tourists staying in AirBnB** (and they were a majority of the interviewed tourists) declared that they **didn’t receive any information** on how to do the separate collection of waste and in most cases **different bins for the different waste fractions where not available** in the apartments.

- Many hotels from AccorHotels group (program planet21)
- Synergies/mutualization/learning from the project Waste-Less in Chianti
- Initiative “Firenze per bene”
- Initiative “Enjoy respect Firenze”

- **Stakeholders**

Tuscany region carefully pre-selected the stakeholders to be involved and used the first Community of Practice event to gather new interested participants in its Community of Practice. In particular stakeholders represent the following categories: local authorities, waste management authorities, the University of Florence, trade association in the sector of hotels, environmental NGOs, schools and consumer association related with accessible tourism. However, they do not have representative from the food and beverage services. Thus, the Tuscany Region has launched a call for interest to involve new types of stakeholders such as trade associations, restaurants, etc. in the next Community of Practice events.

- **Gender aspects**

- On the whole, one of the better case studies regarding gender balance/equality issues.
- There is commitment with gender equality and balance issues at the level of the Tuscany Region which is the partner in the URBAN-WASTE project, although senior management in waste management still tends to be male dominated.
- Gender balance amongst stakeholders is pretty much respected.

Selection of measures

Discussion on the list of measure forms during the first bilateral meeting

Interesting measures to implement	Comments
<p>Special bins for plastic waste and paper in public areas highly visited by tourists (museums, churches, main public squares, train stations, parks)</p>	<p>They will have to check the current situation regarding this type of bins to assess if there is a lack or not and if it could be feasible to implement more bins within the URBAN-WASTE project.</p>
<p>Translation of waste sorting instructions in different languages for foreign tourists to be provided to of touristic accommodations</p>	<p>This measure seems quite interesting for Florence. They already have access to a database to contact the renter of touristic accommodations through the visitors tax system. Apart from the instructions, another major issue is the lack of facilities in the accommodations for waste sorting according to the tourists they interviewed. Thus this measure could be completed by a distribution of waste sorting bags to some renters of touristic accommodations.</p>
<p>Promotion of tap water through map of the fountains network available (WasteApp, other app, Firenze per bene), distribution of reusable flasks and possible cooperation with restaurants/cafes to provide tap water</p>	<p>This measure could also be an interesting measure for Florence, and one idea would be both to promote drinking fountains and to involve coffee shops and bars to give free tap water by integrating them in the URBAN-WASTE project. The establishments participating could be recognized through a specific sticker that would identify them as part of the URBAN-WASTE concept</p>
<p>Food tracking device (hotels, restaurants)</p>	<p>This measure will be discussed during the 2nd Community of Practice event and with the Tuscany Region. It could be a solution to work together with universities and schools to support the hotels or restaurants testing this device.</p>
<p>Recycling advisors and trainings for tourist establishments</p>	<p>The waste management company would be interested by this measure.</p>
<p>Organization of eco-events</p>	<p>They proposed to elaborate a charter with a package of actions, including mandatory actions and voluntary actions regarding waste management in the organization of big events. There are private companies currently able to provide services for sustainable waste management in big events.</p>





Measures that seem difficult to implement	Comments
Distribution and promotion of doggy bags in restaurants	This measure doesn't seem as relevant in Florence as tourists stay in bnb's and hotels and often don't have access to kitchen. A more general idea could be to develop a network of restaurants applying measures on food waste within the URBAN-WASTE project.

Other potential measures	Comments
Nudge actions to change tourists' behaviour towards waste sorting.	These type of nudge actions, which are smaller actions and not easy to monitor, could be included in the communication campaign that will take place during the implementation of the URBAN-WASTE measures
Development of a simplified label/brand capitalizing the Urban-Waste experience	Involvement of the different kind of tourism service providers in the development of waste prevention best practice, awarding them with a specific « urban waste » label/brand, coherent with the communication campaign materials developed by the project
Promotion of tap and public water	Together with the promotion of the public fountains a network of cafes and restaurants serving tap water or refilling flasks for free or at reduced prize can be created.

Measures selected during the 2nd Community of Practice event

Measures	Comments
Promotion of tap water	
Doggy bags + Food prevention at buffets and restaurants	Those two measures will be conducted at the same time by the voluntary restaurants.
Food donation from restaurants and hotels to charities	
Waste sorting instructions in foreign languages	This one could be associated with an action focusing on informing people about the location of the street bins.
Partnerships between hotels and charities for reuse initiatives	This one needs to be discussed deeply, it is not sure that it will be implemented.

Measures implemented in Florence

Measures implemented	Objectives & summary of actions
<p>Doggy bags and food waste reduction in restaurants (measure n°1 and n°2)</p> 	<p>Restaurants joining URBAN-WASTE has committed to offer a doggy bag to their customers at the end of the meal to take away food and wine that have not been consumed and, when possible, to include in the menu half size portions and traditional dishes minimizing kitchen's waste.</p>
<p>Promotion of tap water (measure n°13)</p> 	<p>Distribution of flasks to tourists and promotion of the public fountains where they can fill them up.</p>
<p>Waste sorting instructions in foreign languages (measure n°14)</p> 	<p>For tourists staying in B&B and apartments, a multilanguage guide has been prepared to provide information on correct behaviours in waste sorting as to achieve correct recovery and recycling of waste products.</p>
<p>Food donation from restaurants and hotels to charities (measure n°22)</p> 	<p>A voluntary agreement between some hotels and catering organizations and local association foreseen the daily donation of food which has not been consumed in buffets to local charities.</p>

Main results and possible fine tuning in Florence

Doggy bags (M01) and food waste reduction in restaurants (M02)

Tuscany Region designed and printed 15,000 doggy bags and 1,000 table tabs and 15,000 postcards. 128 restaurants have been involved in the implementation of the measure distributing to them 8,900 doggy bags. Some restaurants offered “URBAN-WASTE” daily menu with half size portions.

Fine tuning

- ✓ Launch the start-up phase earlier (winter) with stakeholders.
- ✓ Organize regular promotional events with press conferences and other media dissemination (TV, videos) with the presence of the politician in charge of waste.
- ✓ Mobilize restaurants by visiting them directly at the start-up phase and call and/or email regularly restaurants to keep contact.

Promotion of tap water (M13)

About 1,550 flasks were distributed to citizens and tourists during the 4 events realized. The use of city fountains and the promotion of tap water has been done together with the distribution of about 45,000 URBAN-WASTE Florence map with the location of fountains and 1,000 brochures reaching at least 11,000 tourists.

Fine tuning

- ✓ Focus more on the promotion of public fountains and distribution of flasks than on the involvement of bars or restaurants willing to distribute tap water. The loss of income it causes by giving up the sale of water bottles are too prohibitive.

Waste sorting instructions in foreign languages (M14)

About 20,000 Multilanguage brochures and 45,000 URBAN-WASTE Maps (showing the location of the waste bins for sorted collection) distributed through 8 tourist info points, 2 taxi companies and 2 sharing economy platforms. The people potentially reached by all these communication initiatives are at least 30,000. If we consider, on average, at least 10 persons staying in a month in one of the flats involved in the distribution of the sorting instructions the value could increase to 300.000 people.

Fine tuning

- ✓ Launch the start-up phase earlier (winter) with stakeholders.

Food donation from restaurants and hotels to charities (M22)

4 hotels and 2 charities fully involved. 1 charity managing a canteen hosting about 114 poor people including adults and children. 50 table tabs promoting the initiative were distributed in the involved hotels.

Overview¹³

Socio-economic and land use data

Type of pilot case	Municipality
Number of inhabitants	73.384 (2015)
Total area (km²)	351,3 km ²
Total urban area (km² and %)	18,4 km ² 5 % of total land area
Total nature & open space area (km² and %)	333,74 km ² 95 % of total land area
Total coastal area (km² and %)	22,1 km ² 6 % of total land area

Tourism

Average length of stay	weekend stays to longer stays (2015)
Number of tourist accommodation establishments	<ul style="list-style-type: none"> • Number of hotels and similar accommodation: 258 (2014) • Number of camping grounds, recreational vehicle parks and trailer parks: 10 (2014)
Total number of tourist arrivals	<ul style="list-style-type: none"> • Total number of tourist arrivals at a tourist accommodation establishment : 606.705 (2015)
More frequent countries of origin of tourists	Germany, France, UK, Italy, Netherlands, Sweden, Belgium, Bulgaria, Denmark, Austria

¹³ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

- 10 camping sites.
- ~250 hotels.
- There is a diversity of accommodations, such as rooms and flats renting, hotels, and many second houses. There are more and more accommodations rented through Airbnb.

Type of tourism and activities

Mainly, family vacations and fair tourism.
Highly frequented public area and gastronomy.

Seasonality of the tourism is expressed in summer.

Type of tourists

Family tourists.

Waste data¹⁴

Main types of waste prevention actions regarding URBAN-WASTE objectives



- Domestic composting in residences
- With the new “regional solid waste management plan”, new prevention actions should be led:
 - at the moment a Drop-Off Recycling Point (Πράσινο σημείο) is in the planning phase. This recycling point will promote prevention & reuse, it will be a spot where people will be able to drop-off many different fractions (not only glass, paper/metal/plastic/cardboard but also batteries, electronic equipment, bulky waste, clothes and others).
- More recycling bins in public and touristic places for collecting fractions of recycles are foreseen.



Organisation of waste collection for households

Responsibility

- Only the municipal authority is responsible for the collection of MSW and owns part of the equipment for collection and transfer of waste.
- The Waste Management Authority (DIAAMATH) provides part of the equipment necessary for the collection and transfer of the waste fractions into the collection centres.
- The municipal waste collection covers waste from households and similar establishments. All waste fractions are collected by the municipality, except hazardous waste which is collected by private actors.
- Private companies or big producers are obliged to transfer by their own means of transportation the waste to the sanitary landfill.
- The threshold for a private company to be considered as a big producer is 500 tons of waste per year to sanitary landfill of Kavala.

Financing system

- There is no tax incentive for household waste or other types of wastes
- On 15th of April 2019 a new Joint Ministerial Decision (KYA ΥΠΕΝ/ΔΔΑΠΠ/31606/930, ΦΕΚ 1277B/15/04/2019) got valid about "Waste Pricing Regulation for Solid Waste Management by Waste Management Authorities". This JMD



¹⁴ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

is going to be in effect from 01/01/2020. Based on the Joint Ministerial Decision from 01/01/2020 different pricing of Waste Management Authority services will be applied according to the hierarchy of waste management actions and operations. In addition, the performance of each Municipality in recycling, separate collection of packaging and biowaste (food waste and green waste) and generally the diversion from burial will lead to a reduction in its contribution to the Waste Management Authority. Thus, the total contribution of each Municipality to the Waste Management Authority is impaired from 5% to 25%, depending on the performance of each Municipality.¹⁵

Collection system

The current waste management practices include separate collection for paper, cardboard, glass, metal (steel and aluminium packages), and plastic. They are sorted at source.

Paper, cardboard, metal and plastic are collected as one recyclable fraction in blue bins.
Glass is collected separately in the light blue bell shaped containers. Besides, there is a dense network of glass bring banks in the municipality (bell containers), and are particularly strengthened in the areas of the municipality that have a strong presence of restaurant and bars.
At residence level, food preparation and garden waste is composted in home composting bins where applicable (houses with gardens).
All the other waste fractions are collected in green bins, which correspond to the residual municipal waste.

There is no door-to-door collection in Kavala but only collection points: the green bins and blue bins consist in containers located on the streets. However, the collection points are bins that are situated at every neighbourhood and the city has numerous collection points. This is not a classical door-to-door collection system though and resembles more a “Kerbside collection” accomplished by personnel using purpose built vehicles to pick up household waste in containers acceptable by the municipality of Kavala.

“Bring it yourself” systems are also available for bulky waste, batteries, electronic waste, tires, motor oils and car batteries, waste cooking oil. Clothing can also be given to charities that are from private or community initiatives.

New actions that should be implemented through the new regional waste management plan:

- According to the new regional plan it is expected that there will be an extra bin (4th fraction) for separate collection of organics (brown bin). There are several conditions to

¹⁵ Source: <https://www.aftodioikisi.gr/ipourgeia/fodsa-ekdothike-i-kya-gia-ton-neo-kanonismo-timologisis-fek/>

be met beforehand, e.g. secure financing for the supply of the equipment (bins, collection vehicles), tenders, construction of MBT unit, etc.

- Till now glass is collected in a separate bell shaped bin while plastic, metal and paper is collected in the blue bin. Next step is the separate collection of paper/cardboard in the yellow bin, so as to maximize the quality of the material recovered. Now paper/cardboard from the commingled blue bin is of low quality because of high humidity.
- The current system used for waste collection is not likely to evolve (collection points at the moment).

Organisation of waste collection for private enterprises

The collection of the waste from tourist establishments is done by the Municipality of Kavala as these establishments are considered as “similar establishments” and the waste collection operated by the municipality concerns both households and similar establishments.

- Private companies or big producers are obliged to transfer by their own means of transportation the waste to the Sanitary Landfill or to Materials Recycling Facility.
- The threshold for a private company to be considered as a big producer is to transfer over 500 tons of waste per year to sanitary landfill of Kavala.

Organisation of street sweeping and street bins collection

The Municipality of Kavala is responsible for street bins and street sweeping. Street sweeping waste is understood as the waste accumulated from street sweeping, together with the content of public street bins and litter. There is bigger amount of litter during the summer due to the tourists’ presence.



Waste treatment of the most relevant waste fractions

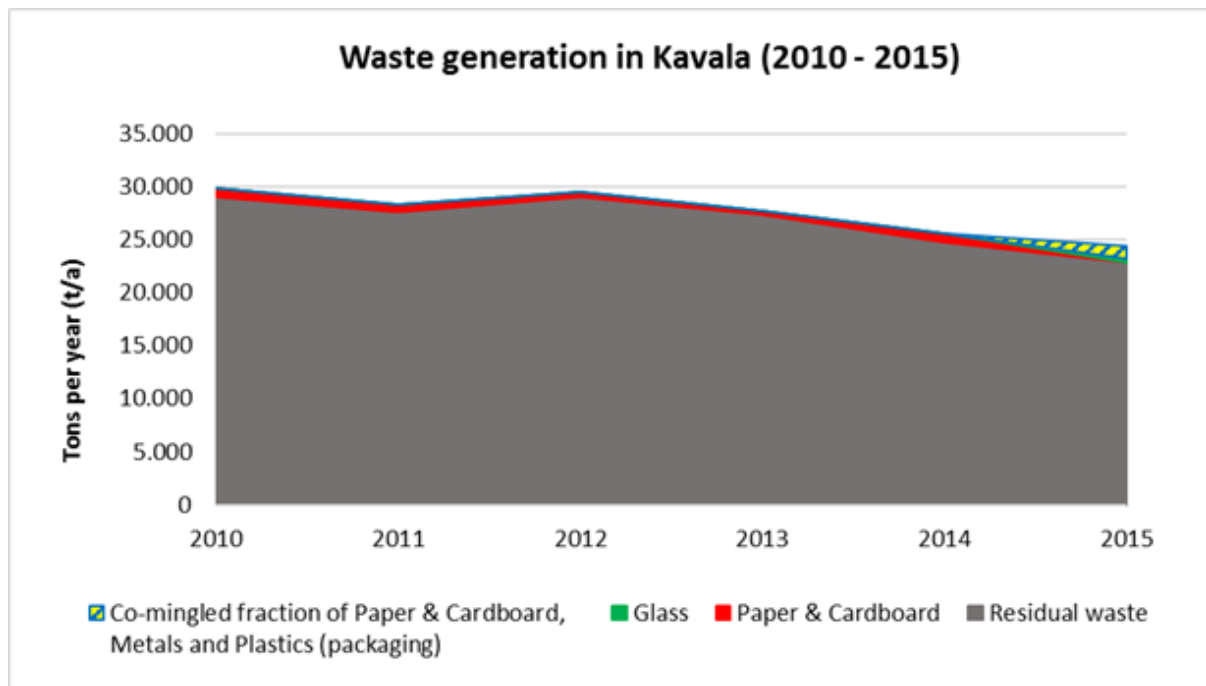
Waste fraction	First treatment destination	Treatment process
Residual waste		landfilled 10 km from the city of Kavala
Recyclable waste fractions	sorting	<ul style="list-style-type: none"> ● recycled ● sold for recycling (out of Kavala e.g. Thessaloniki or Serres)
Glass		transferred to private actors and exported for recycling in different regions

Specific focus on certain waste fractions/management models

- Bins with an ID number and GIS coordinates, can be linked to a specific location
- It is not likely to have new IT tools and technologies used for waste management



Specificities and challenges regarding the performance of the collection of certain waste fractions



- In Kavala, there is a (sometimes quite strong) decrease in the generation of residual waste since 2008. Partly this decrease could be explained with the introduction of separate collection of specific fractions, in 2009.
- Paper and cardboard were the only recyclables with separate collection until March 2015, when metals and plastic packaging were added. In June 2015, separate collection of glass was introduced.
- Challenge: bad data quality due to inconsistencies in reported figures. Only one employee was responsible for recording the waste amounts during the summer months and because of periods of annual leave there is a possibility that the amounts of waste were not recorded for certain days. For the future, this type of situation is effectively addressed since October 2016, when a proper track scale was installed and a day-to-day recording system was put in place.

Main priorities regarding waste management in the pilot case

- The municipality of Kavala is currently and gradually shifting its waste management practices to new practices stated in the recently approved “Regional solid waste management plan”
- At the moment main priorities for waste management in general are:
 - Drop-Off Recycling Points (a)
 - a composting unit for garden waste, branches and cuttings (b)
- Also an MBT unit is in the future plans but this will probably take longer than the above (a) and (b) mentioned.
- Studies for all the above are either being prepared or are already submitted but it should be noted that it is a process that takes quite a while until the studies are approved from the authorities (so as to move on the next step, that of construction).
- It should be noted that the above mentioned actions will be financed by European sources so any changes or delays that may or may not happen could be due to lack of financing (in case these financial applications are not be accepted or are altered).
- According to the waste workers surveyed in Kavala¹⁶, 40 in total, the main priority concerning waste management is to raise the awareness on citizens and businesses (40%), followed by optimizing recycling and composting and improving waste collection system.



¹⁶ Sources: URBAN-WASTE deliverable D3.2 : Situation and behavioural analysis of consume and waste behaviour and patterns

Gender profile

Gender balance of your waste management team is as follow:

- Managerial 1 female and 2 male
- Technical 2 female –and 1 male
- Legislation advisor 0 female and 1 male
- Board of directors 1 female - 6 male

Waste and tourism¹⁷

Main impacts, influences and challenges of tourism on waste production and waste management identified

- 55% of waste workers and 50% of tourists surveyed believe that tourism significantly affects waste production in Kavala.
- Waste workers believe that in particular the main sources of waste production are hotels and street bins, while waste management is mostly affected by the seasonal increase of waste.

Street bins and tourism	
Residual waste	2.800
Separately collected recyclables	993
Number of touristic waste producers (food and accommodation tourist infrastructure)	96

- Change in waste collection services during the year because of tourism, from May to September: more employees in the waste management are employed during summer periods now.
- During summer periods in Kavala there is a rise in tourists' arrivals and a consequent rise on waste production. So the need of collection of the waste is increasing and as well the respective personnel and employees. In the sanitary landfill this corresponds to extra workhours to operate the machinery for landfilling of waste and extra amounts of soil to cover the waste.

Main priorities regarding waste production and management and tourism

- There is no particular priority for managing waste from tourists. They are looking forward to URBAN-WASTE measures.
- It was stated that there is a bigger amount of litter during the summer, because of the tourists, and that there is a change in waste collection services during the year (summer).
- "The shift to the new waste management plan that has already started is expected to potentially confuse the tourists": with just one recycling bin (blue bin) of commingled

¹⁷ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

recycling materials the situation is simple. More recycling bins of different colours, according to the new waste management plan, that is for example, an extra yellow bin of paper/cardboard, may potentially confuse the tourists in their use.

Main targets for the URBAN-WASTE project

- **Stakeholders**

Kavala included in its Community of Practice representatives from the municipality and the regional authority, hotels, NGOs, social enterprises, industry and citizens.

- **Gender approach**

Regarding gender issues, the objective is to reach female-male staff equally distributed in all types of works performed i.e. preparation of the doggy bag, kitchen/serving staff, decisions made in the establishment in general mostly made by males.

Gender sensitivity will apply also regarding communications towards customers but also between staff in the different tourist establishment.

Selection of the measures

Discussion on the list of measure forms during the first bilateral meeting

Existing measures	Comments
Distribution and promotion of doggy bags in restaurants	Some restaurants were already equipped with doggy bags, but it is not much promoted. It could be a good idea to reinforce the promotion of doggy bags within URBAN-WASTE project. They will see if this is feasible.
On-site composting in restaurants	This also something already tested in restaurants but this could be also extended within URBAN-WASTE project. It is important to explain to the restaurants the benefits of this practice and the use they can make of the compost. Besides, the region was indeed very agricultural.
Removable bins in frequented public areas, beaches, to face the increase of tourists	There are already bins on the beaches during the summer, and also the coffee shops and other commercial establishments place bins in front of their buildings
Specific measure for cigarette butts (specific bins, distribution of pocket ashtrays)	It could be interesting to make a reminder of Kavala history (Mecca of Tobacco) by implementing a measure on cigarette butts. There are already bins on the streets and in front of commercial establishments, and also distribution of little boxes for butts (pocket ashtrays)
Bins for plastic bottles in airport and port	There are already specific bins for recyclables in the airport and port.




Interesting measures to implement	Comments
Guidelines on food waste prevention and management for restaurants	This measure has been suggested after discussing the “doggy bags” one and the “on-site composting in restaurants” one. It could be useful to inform the restaurants on the different practices they can implement to prevent food waste and also to manage it better.
Prevention sign in hotels buffet to avoid food waste	Buffets are quite common in hotels in Kavala, this could be a good measure
Guidelines for waste sorting translated for tourists	They will see if it is possible to get in contact with the private owners renting accommodation, through Airbnb for example or other structures (tourism offices, etc.). It

	was suggested to include such guidelines in the WasteApp.
Promotion of tap water and reusable flasks	In Kavala, the tap water is drinkable. At the restaurants, people usually order bottles because they don't know they can't drink tap water. Promotion of tap water in restaurants could be effective. Regarding the public water fountains, they will see if there could be a measure focusing on the fountains.
Reuse initiative in camping sites	There is no reuse initiative at the moment in Kavala. Indeed, this is not something in the Greek culture. Nevertheless, given the origins of the tourists (a lot of Nordic countries), this could be successful in a touristic context such as camping sites.

Measures selected during the 2nd Community of Practice event

Pre-selected measures to be implemented	Comments
Food prevention at buffets and restaurants	
Partnerships between hotels and charities for reuse initiatives	Interesting for a big hotel in particular
Doggy bags	
Awareness campaign on marine litter	Necessary for the city of Kavala and for specific tourists groups
Sorting bins in public and touristic places	They should find a budget for that one, so it might be complicated
Waste sorting instructions in foreign languages	That would be interesting for the AirBnb
Waste sorting in hotel rooms	

Measures implemented in Kavala

Measures implemented	Objectives & summary of actions
<p>Doggy bags and Food tracking device (measure n°1 and n°20)</p> 	<p>7 Restaurants have committed to implement the food tracking device in order to monitor their food waste production and to offer a doggy bag to their customers at the end of the meal to take away food and wine that have not been consumed.</p>
<p>Food waste prevention at buffets and restaurants (measure n°2)</p> 	<p>3 hotels joining the project have committed to develop awareness raising activities with their customers in order to prevent food waste from their buffets.</p>
<p>Sorting bins in public and touristic places (measure n°12)</p> 	<p>25 new bins for waste sorting collection was installed in the port area of Kavala, supported by a massive communication campaign about waste separated collection and waste reduction (Big promo posters, stickers, Promocards, and A3 posters were developed and disseminated).</p>

Main results and possible fine tuning in Kavala

Doggy bags (M01) and Food tracking device (M20)

400 Doggy bags were distributed to 5 restaurants. The food tracking device was installed in 7 restaurants, about 9% of the restaurants that are operating in the city of Kavala but only 5 continued to monitor for a few weeks the food waste produced.

Restaurant owners were not always willing to continue reporting due to high volume of customers and the long hours of work in summer - Further communication was sent out to remind owners to report regularly

Fine tuning:

- ✓ Launch starting phase and training earlier (not in summer)
- ✓ Easier use of the food tracking device

Food waste prevention at buffets and restaurants (M02)

Three hotels committed to participate in the implementation of this measure by promoting with posters and promo cards (about 80) in their buffets, different ways to reduce the food waste. Two of them had 250-300 daily guests.

The food waste only comes from guests plates while what was left over in the buffet (anyway representing very small quantities) was reused for the preparation of other dishes (i.e. spaghetti sauce from cooked tomatoes).

Hotel Managers were difficult to contact due to busy period.

Fine tuning:

- ✓ Reinforce follow-up of hotels and communication via telephones and/or emails
- ✓ Define incentives for the initial planning and implementation of measures

Sorting bins in public and touristic places (M12)

25 new bins for waste sorting collection of metal, plastic, paper and glass (blue bin) were installed in the port area of Kavala (2,5 ha), supported by a massive communication campaign about waste separated collection and waste involving 19 important media and 85 stakeholders. During the monitoring data showed an increase of the sorted fractions (plastic, glass, metal, and paper) of about 27%, managing to reduce the unsorted waste by 32%.

Future of measures in Kavala

Doggy bags (M01) and Food tracking device (M20)

The Municipality of Kavala will continue the animation and the mobilization of restaurants to develop further the use of doggy bags. Same stakeholders will be involved. The use of the food tracking device will not continue.

Food waste prevention at buffets and restaurants (M02)

The three hotels participating in 2018 will continue to develop this measure.

Sorting bins in public and touristic places (M12)

Additional bins for waste sorting will be installed in other ports and marinas in Kavala.



Overview¹⁸

Socio-economic and land use data

Type of pilot case	City
Number of inhabitants	504.471 (2015)
Total area (km²)	85,8 km ²
Total urban area (km² and %)	68,1 km ² 79 % of total land area
Total nature & open space area (km² and %)	14,6 km ² 17 % of total land area
Total coastal area (km² and %)	18,8 km ² 22 % of total land area

Tourism

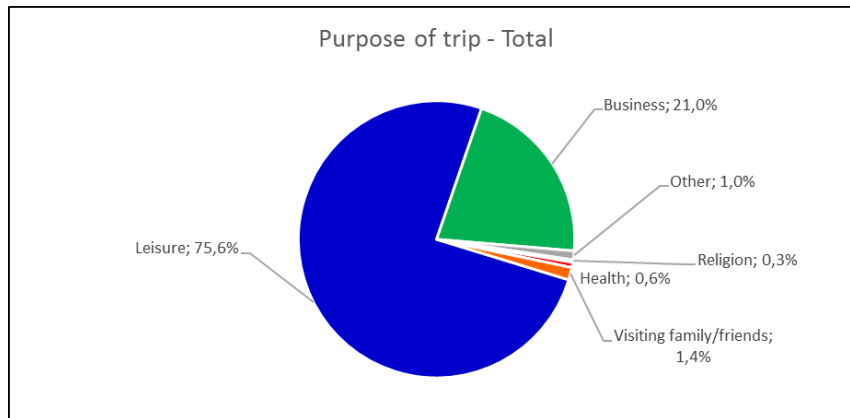
Average length of stay	2-3 days (2015)
Number of tourist accommodation establishments	<ul style="list-style-type: none">hotels and similar accommodation : 187 (2015)holiday and other short-stay accommodation : 3.335 (2015)camping grounds, recreational vehicle parks and trailer parks: 1 in the city + 25 in the metropolitan area (2015)
Total number of tourist arrivals	Tourist arrivals at a tourist accommodation establishment: 3.782.115 (2015)
More frequent countries of origin of the tourists	France, Spain, Brazil, Germany, USA, Italy, UK, Netherlands, China

- Increasing number of hotels (~190)
- Increasing amount of holiday and short-stay accommodation (~3300)

¹⁸ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

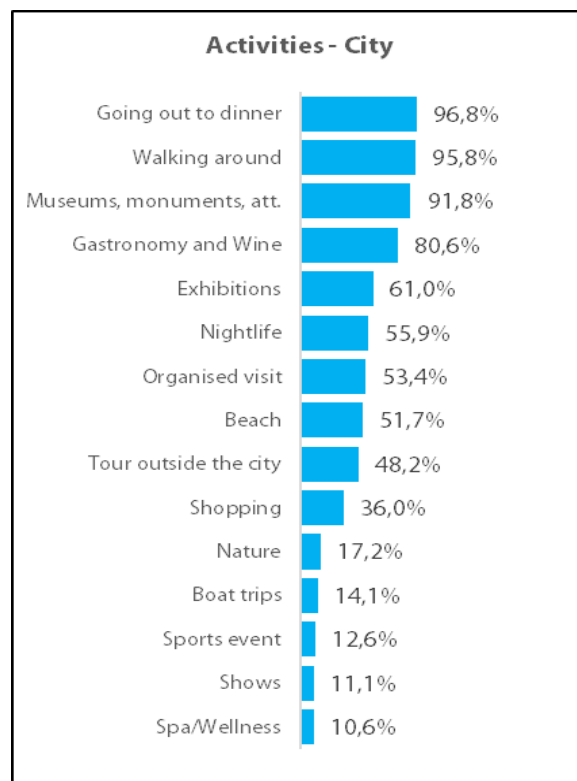
Type of tourism and activities

Lisbon as the capital of Portugal is an important historical, economic and political city. Leisure tourism is the most important type.



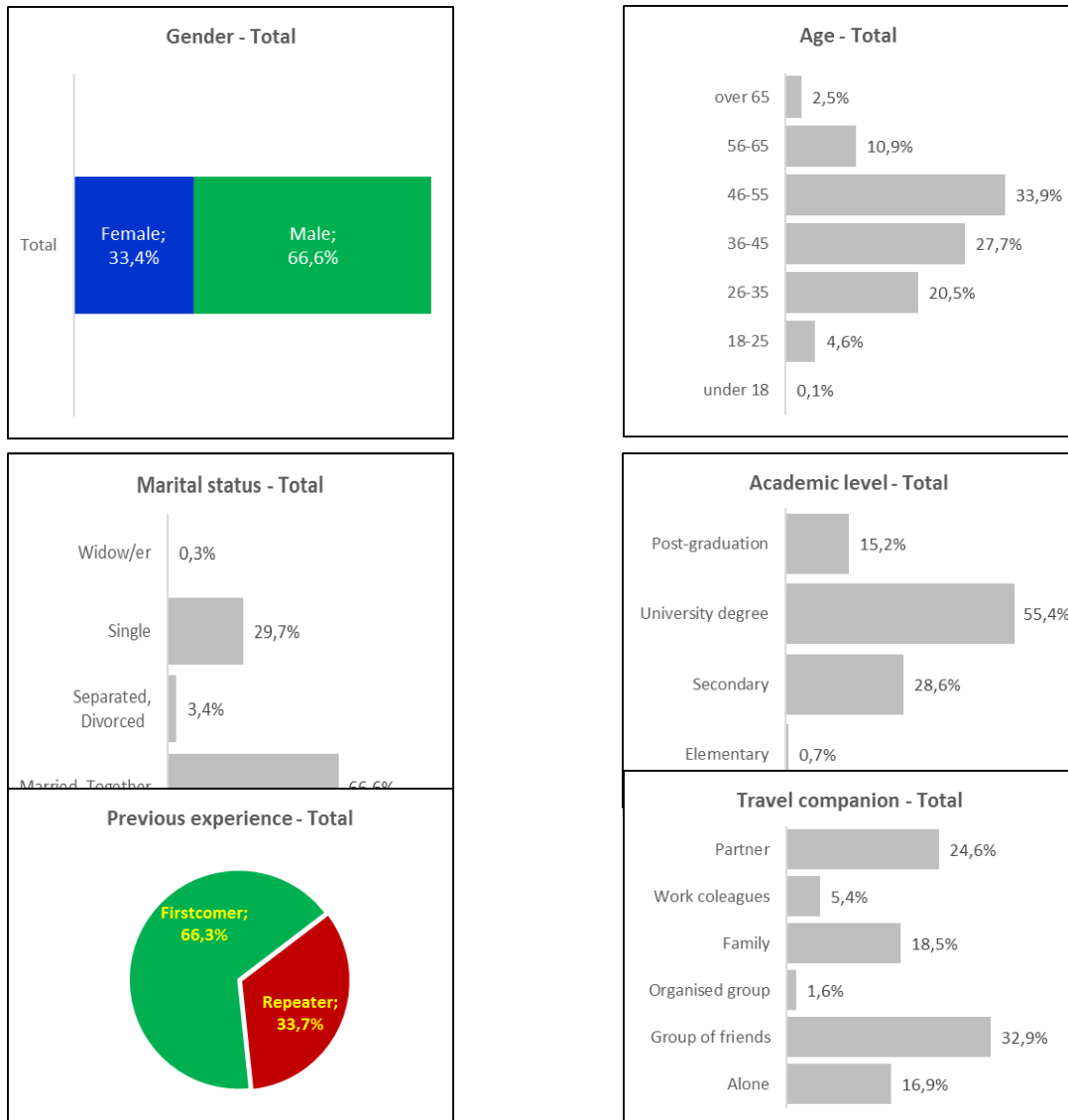
Source: Survey to the Purpose of Trip 2017 - Lisbon City, Turismo de Lisboa

Most of activities are linked to culture:



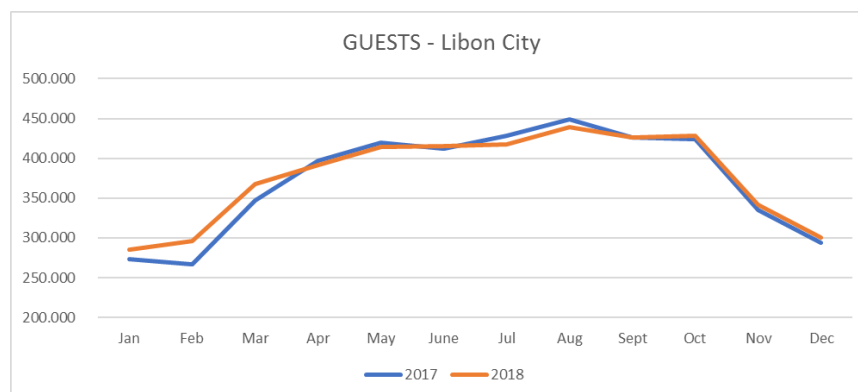
Source: Visitor Activities and Information Survey 2017, Turismo de Lisboa

Type of tourists



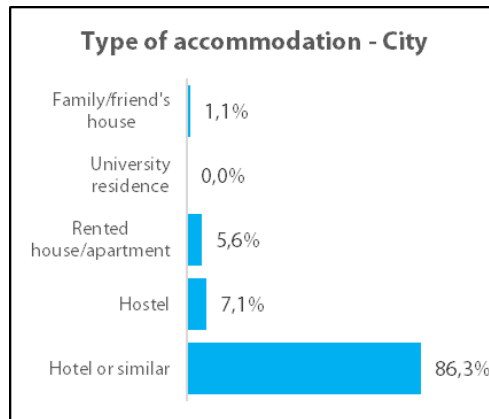
Source: Survey to the Purpose of Trip 2017 - Lisbon City, Turismo de Lisboa

- The high season peak for tourism in Lisbon is in August.



Source: Instituto Nacional de Estatística, Portugal

- Most of the tourists are staying in hotels, many of them being eco-labelled.



Source: Visitor Activities and Information Survey 2017, Turismo de Lisboa

Main types of waste prevention actions regarding Urban-Waste objectives



- Reuse (charities, reuse centers)
- Food waste (Re-food project, other charity projects)
- Awareness raising “More sustainability for Lisbon” (Lisbon municipality website)
- Advisory council for the reduction of waste production. The proposal for constitution and Regulation of the Advisory Council was prepared in October 2016; The official presentation of the Advisory Council was made to the partners involved and agents of the waste sector, on November 20th 2017, at the City Hall, by the Vice-Mayor and the Municipal Director of the Waste Management Department;
- A Workshop on "Circular Economy - Food Waste and Bio-waste in the Value Chain" was held on "Good Practices in the Value Chain", with the National Partners of the European Project "FORCE - Cities Cooperating for Circular Economy" and Invited Entities: Portuguese Agency of the Environment (APA), Agents of the Sector of Production, Distribution, Consumption and Recovery of Food, NGO and Industrial Sector, at the City Hall, on 21st June 2018; No further developments.
- Reinforcement of awareness-raising actions on prevention of waste reduction aimed at several target audiences.

¹⁹ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Organization of waste collection for households



Responsibility

The municipality (Lisbon City Council) is responsible by law for the collection of municipal waste and for the transportation to waste treatment and recovery centres, with the exception of clothing and textiles. That includes waste produced by households, by so-called similar establishments like schools, offices, public institutions, tourist establishments like hotels, and businesses more in general with a maximum production of 1,100 litres a day. Besides the legal responsibility of the municipality, there are some private companies operating waste collection for specific types of waste (ex: construction and demolition waste) or big producers (ex: supermarkets). As an example, waste collection in the area Parque das Nações (Park of the Nations) is done by a private company using pneumatic or vacuum technology.

One main company (VALORSUL) is operating the treatment of municipal waste and pays the municipality for specific segregate waste fractions (paper/cardboard, glass, and packaging).

Big producer's entities (with production equal or higher than 1,100 L per day) should register with the municipality and subsequently conclude the urban waste management contract. Big urban waste producers may choose to contract a private waste management entity.

The Municipality of Lisbon is obliged to collect the residues of the so-called "small producers"

Financing system

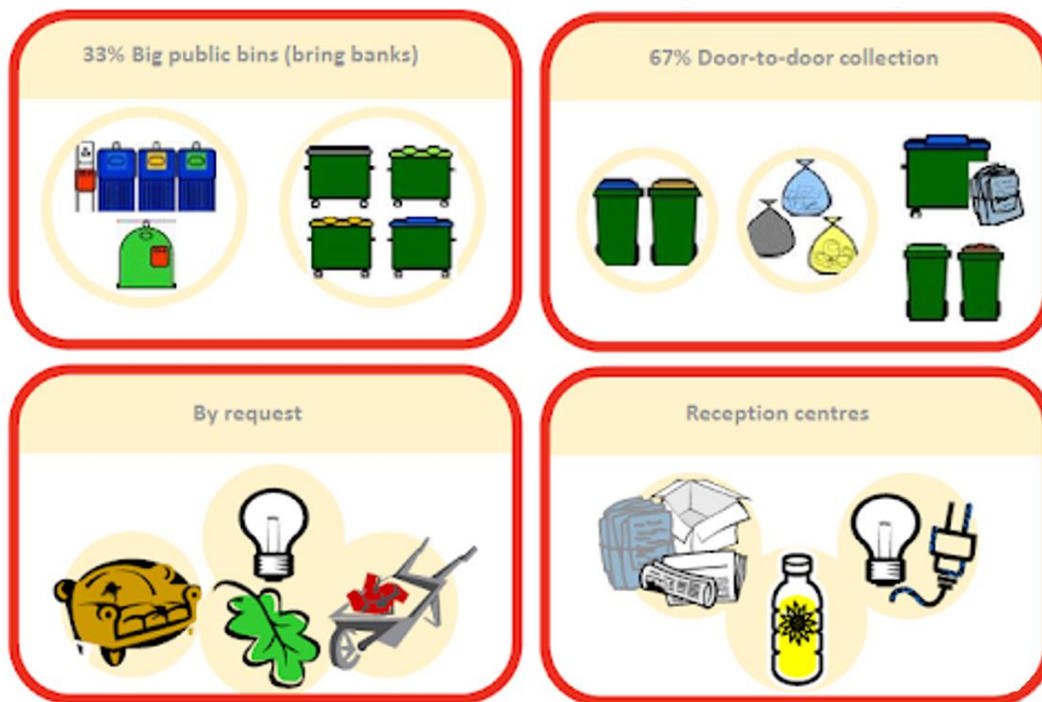
- The tax system is currently based on water consumption. The municipality hopes to change this tax system in the future, but it is not possible for the moment as the government is also involved. For the big producers (> 1,100 l/d of waste produced), the tax is also calculated on the size and the type of bins. The big producers can be collected by the municipal services or they can establish contracts on their own with private companies.
- The use of sensors, app, RFID technology work in part of collective surface equipment (only glass) and underground bring banks (in the underground it corresponds to 100%). But they are not connected to pay as you throw.
- The National Strategic Plan for Urban Waste by 2020 (PERSU 2020) recommends the implementation of PAYT systems as a measure that promotes the reduction of waste production and its reuse and recycling, also promoting circular economy; Under the Municipal Waste Management Plan until 2020 and the Plan of Action for compliance with PERSU 2020 (PAPERSU 2015-2020) of the municipality of Lisbon, it is planned to introduce new technologies in the waste removal system and the implementation of a PAYT system; At the moment, the acquisition of an electronic fleet management system (90,000 chips for containers and equipping of 100 vehicles) is underway; A system of waste tariffs in entities is implemented, as foreseen in the Urban Waste Tariff Regulations approved in 2015, with the application of tariffs based on installed capacity and frequency of waste collection (in about 120 places with contracts concluded); A European Life + PAYT Project is also underway, which foresees the extension of the application of the tariff

model to 300 entities and the investment in an externally contracted awareness campaign and the allocation of the operational teams of a tool that allows the registration and real-time monitoring of deposition behaviours.

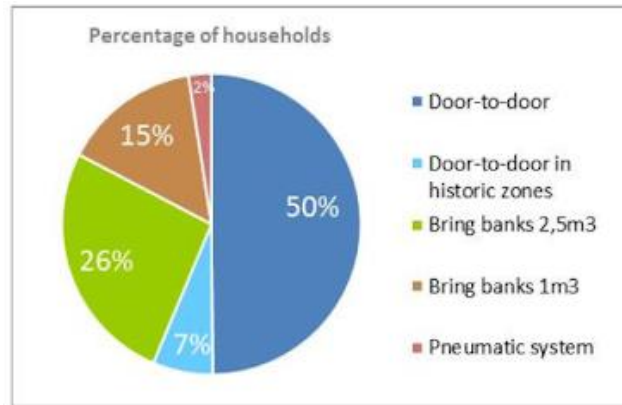
Collection system

- The major systems for separate waste collection in Lisbon are door-to-door collection introduced in 2003 (67%) and bring banks within the public areas (33%). Underground containers are located across the city and public space facilities are operational. The containers are not tagged with a chip or an optical code to define their availability to users (customers) in a specific location or specific types of customers.

They also have civic amenity sites and a service to collect bulky waste, green waste, etc. on request. The collection by request allows the collection of certain types of waste that cannot be collected by the conventional ways.



Most waste fractions that are separated and are collected by means of various systems:



- The food waste collections have specific routes in the catering sector, namely restaurants, hotels, canteens, markets and other food retail and the final destination is for anaerobic digestion. The brown food waste bins are locked to avoid contamination with waste from other producers.

Door-to-door	Bring collection points	Bring-in civic amenity sites
Fractions collected: Paper & cardboard Glass (only bu) Packaging Organic waste (only bu)	Fractions collected: Paper & cardboard Glass Packaging Batteries	Fractions collected: Paper & cardboard Glass Packaging
Frequency: Paper & cardboard 1 d/w* (hh) 1-5/w (bu) Glass 1-3 d/w (bu) Packages 1-2d/w (hh) 1-2d/w (bu) Organic waste 6-7d/w (bu)	Number of collection points[#] All major fractions 303 Not all fractions 148 Glass only 878	Number of sites 28
Collected quantities (kg/cap/yr) Paper & cardboard: 19.54 Glass: 1.82 Packages: 11.48 Organic waste: 0.47 Residual waste: 254.65	Collected quantities (kg/cap/yr) Paper & cardboard: 4.54 Glass: 15.32 Packages: 3.30 Organic waste: PM Residual waste: 0.01	Collected quantities (kg/cap/yr) Paper & cardboard: 4.98 Glass: 1.61 Packages: 2.28
Source of funding Municipal tax and waste budget Tax based on water consumption: 0.17€/m ³ (hh), 0.80€/m ³ (bu)	Source of funding Municipal tax and waste budget	Source of funding Municipal tax and waste budget
Cost to consumer Indirect via water bill	Cost to consumer Free	Cost to consumer Free

bu businesses
hh households
* days per week
2015

- Today Lisbon has about 2900 entities with selective collection of organic waste; the goal of the Municipal Plan and PAPERSU 2015-2020 is to cover 6,700 residential fires.

Organisation of waste collection for private enterprises

- Collection from major waste generators, i.e. businesses that generate more than 1,100 litres (1.1 m³) a day like supermarkets, is also being done by private companies. These major waste generators include for instance hypermarkets but also the largest among tourist venues like hotels and restaurants.
- Door-to-door collection of both glass and food waste is only available for businesses. All the businesses can ask to access the door-to-door collection for glass and food waste collection no matter their location within the municipality. It is carried out in about 6750 entities

Organisation of street sweeping and street bins collection

The municipality is also responsible for emptying street bins and street sweeping.

Waste treatment of the most relevant waste fractions

Waste fraction	First treatment destination	Treatment process
Mixed waste (unsorted)		Incineration with energy recovery
Glass, paper, packaging materials	Manual and mechanical sorting processes	Recycling
Biodegradable waste (mainly food waste, but also green waste)		Anaerobic digestion with energy production and organic compost produced
Inert ashes + residuals from treatment		Landfill with landfill gas collection

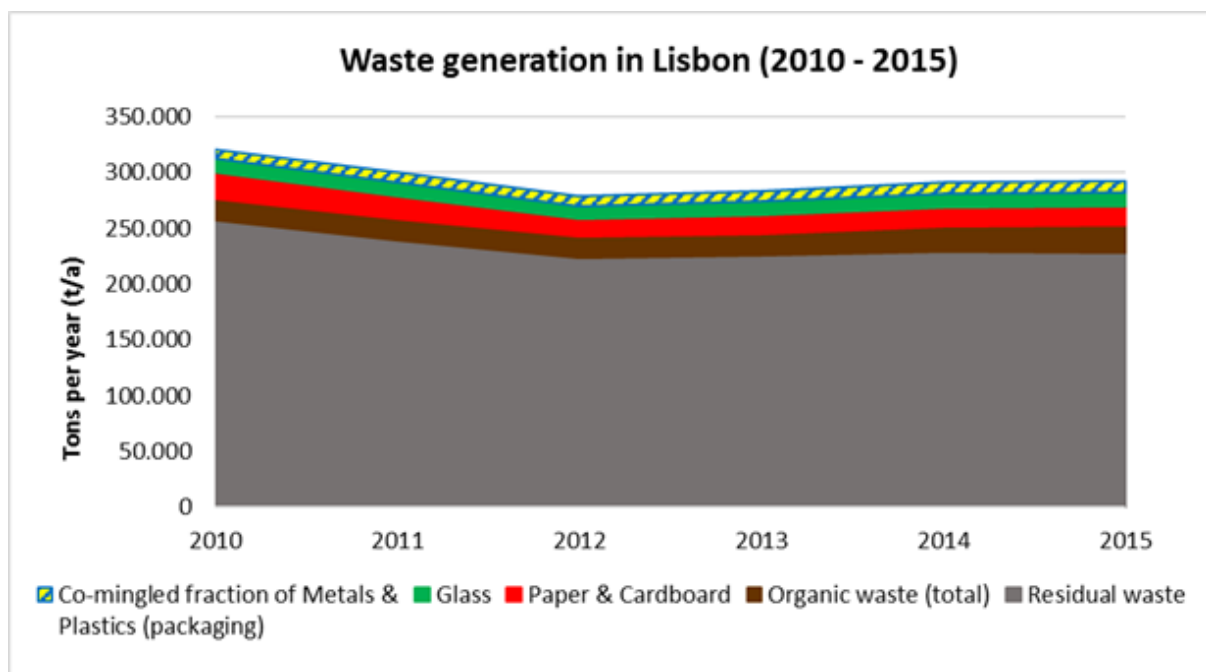
Specific focus on certain waste fractions/management models

The use of sensors, app, RFID technology on underground bring banks and also the sensors placed to measure the level of filling of surface glass containers;

EcoLisboa App is available for citizen and internal management of the equipment (information about bring banks).

Electronic Fleet Management System (90,000 chips for containers and equipping of 100 vehicles): award procedure approved in Chamber Session (May 2017) with grant of contract (awaiting decision of the Administrative Court).

Specificities and challenges regarding the performance of the collection of certain waste fractions



- Quantity of MSW slightly decreasing over the years and residual waste significantly decreasing. Recyclables: paper and cardboard, glass, co-mingled fraction of metals and plastics increasing, organic waste (food waste) increasing also.
- Within the “FORCE” H2020 project the municipality is currently working on the biowaste collection system in order to introduce a pilot scheme covering 6.700 households, which is expected to increase the recovered waste from this stream by 4.000 tons/year and, additionally, and to expand the ongoing collection scheme with restaurants and similar entities, for a further increase of 3.000 tons/year. The expansion of the collection schemes must be coordinated with *Valorsul*, responsible for the reception, treatment and

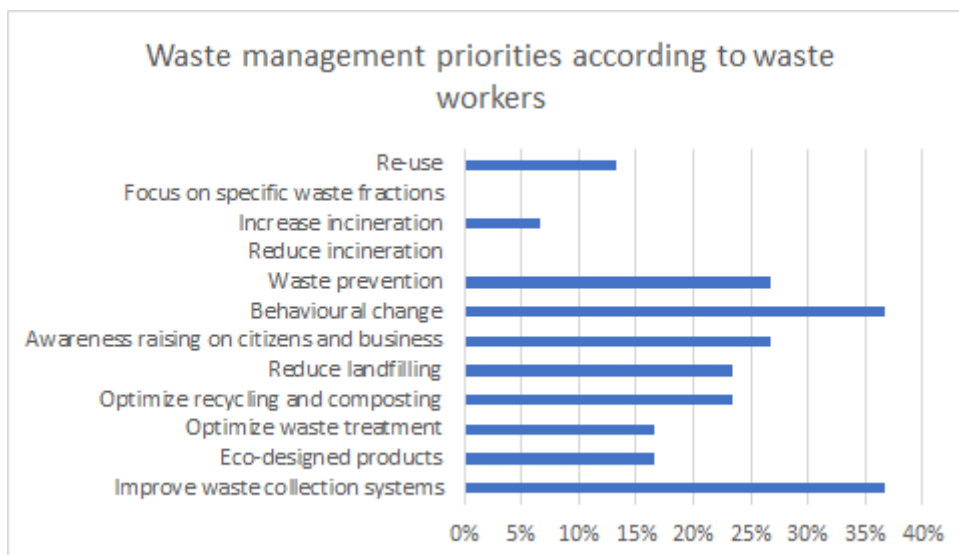
valorisation, of this waste stream, as the current treatment facility might reach full capacity in the near future.

- The municipality is currently changing the collection system within the historical areas. Bring banks are being implemented to replace the door-to-door collection. The reason for this major change is the presence of the tourists in the historical areas. As they do not know well the rules for waste collection, a lot of bags are put in the streets. There is currently a pilot project going on, and the municipality wants to extend and duplicate it within other areas.

Main priorities regarding waste management

- 3 priorities :
 - extension of waste collection network
 - increasing the recycling amounts and improving material quality
 - improving waste prevention
- Waste collection network:
 - new underground bins
 - collection points for used cooking oils
 - creation of 2 waste reception centers and environmental interpretation center
 - replacing the door-to-door collection system within the historical areas by bring banks to encourage tourists to sort better the waste they produce on holidays
- Increasing the recycling amounts/improving material quality: increasing the number of households with door-to-door selective collection
- Waste prevention: advisory council, domestic composting, communication
- According to the waste workers surveyed in Lisbon²⁰ through the URBAN WASTE project - 30 in total - the main priorities of waste management in their cities include behavioural change and improving waste collection system. Details of their answers are presented in the graph below:

²⁰ Sources: URBAN-WASTE deliverable D3.2 : Situation and behavioural analysis of consume and waste behaviour and patterns



Gender profile

Lisbon Waste Management is being led by 2 women: the Municipal Director and the Department Director. Besides having numerous women working on the waste collection, 1 female driver of collection trucks have been recruited.

The Lisbon Waste Management has the following gender balance:

Career	N.º Workers	Female	Male	% F	% M
Senior Technician	40	23	17	57,50	42,50
Technical assistant	57	27	30	47,37	52,63
Operational Assistant	1266	158	1108	12,48	87,52
Total	1363	208	1155	15,26	84,74

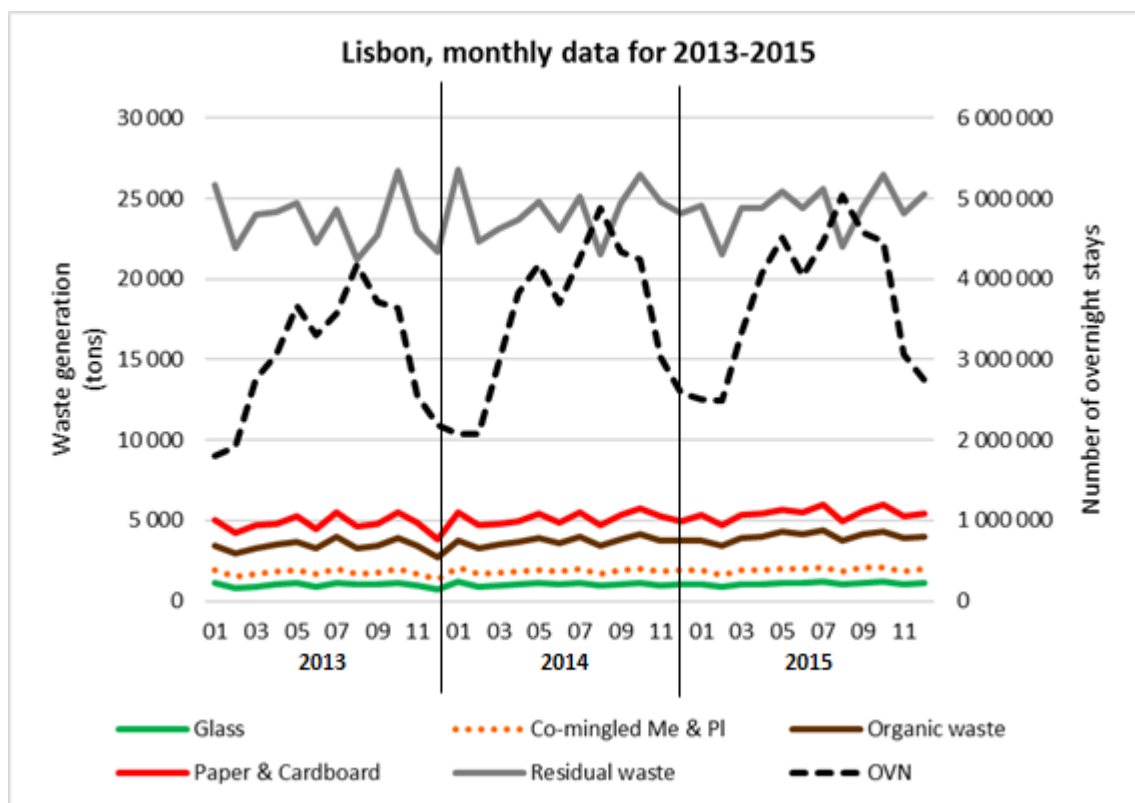
For comparison, we also send the gender parity in relation to the total universe of the Lisbon City Council:

Lisbon Municipality	
Female Rate	41,6%
Male rate	58,4%

Waste and tourism²¹

Main impacts, influences and challenges of tourism on waste production and waste management identified

- 54% and 50% of tourist workers and waste workers respectively believe that tourism activities significantly influence waste production in Lisbon; while the majority of tourists (46%) indicated that tourism moderately influences waste production in Lisbon.
- According to waste workers, as in many other pilot cases, the main waste producers in this field are hotels and restaurants, followed by bars and street bins.
- The waste workers surveyed stated that tourism affects waste management mainly for the following reasons: seasonal increase of waste (71%) and bins and containers in under-capacity (60%).



The figure shows monthly variations in waste generation and tourist overnight stays. Especially for residual waste: there is a noticeable drop in the amount of residual waste (as well as all other fractions we analysed) collected in February and August in every year from 2013 – 2015. Especially in August, the drop is significant because in this month there is a peak in the number of nights spent by tourists in Lisbon. These drops can be explained by the fact that a high

²¹ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

number of Lisbon residents go on holidays in these months and only a few hotels are covered by municipal waste collection, i.e. represented in the available data.

Unfortunately, without more detailed information to what extent hotels are included in the available waste data, it was not possible to quantify the tourism waste generation.

Street bins and tourism	
Residual waste	104.778
Separately collected recyclables	98.570
Number of touristic waste producers (food and accommodation tourist infrastructure)	1.889

Main priorities regarding waste production and management and tourism

- The municipality is currently changing the collection system within the historical areas. Bring banks are being implemented to replace the door-to-door collection. The reason for this major change is the presence of tourists in the historical areas. As they do not know well the rules for the waste collection, a lot of bags are put in the streets. There is currently a pilot project going on, and the municipality wants to extend and duplicate it within other areas.
- Door-to-door collection of both glass and food waste is only available for businesses.
- The Lisbon Municipality intends to continue working with several entities, namely in the hospitality sector, to continue the implementation of good environmental practices and waste reduction.
- The Draft Regulation on Waste, Cleaning and Urban Hygiene Management, which was in publicly consulted during January 2019 and will be submitted shortly to the approval of the Lisbon Municipal Assembly, which prohibits the use of disposable plastics (single used plastics) in commercial spaces.

Main targets for the URBAN WASTE project

- Biowaste (used cooking oils, food waste)
- Reuse
- Recyclable waste fractions (glass, packaging, paper and cardboard)

- **Stakeholders**

Lisbon included in its Community of Practice a wide range of different stakeholders including hotels, waste management companies, hotel associations and the tourism local authority

There was no representative from food and beverage services (restaurants, bars, etc.) within the stakeholders' database of November 2016.

- **Gender aspects**

Lisbon appears to be one of the minority of case studies which has been sensitive to gender differences and inequalities for a while, and which has adopted a number of measures to achieve gender balance/equality.

Lisbon finished with quite a high majority of women stakeholders - 68%.

Selection of measures

Discussion on the list of measure forms during the first bilateral meeting

Existing measures	Comments
Doggy bags in restaurants	It could be interesting to further promote this concept but it does not seem to be a priority.
Waste sorting in hotel rooms	Neya hotel is already doing it (good practice). This could be also implemented in other hotels with the support of Neya hotel.
Cooperation with local non-profit recovery organization (e.g. bulky waste from hotels)	
Instructions for waste sorting translated in foreign languages for tourists	This measure is already going on, but an extension of the measure within URBAN-WASTE could be feasible.




Interesting measures to implement	Comments
Food tracking device	This seems like a good measure but it could be difficult to convince people. Nevertheless, the stakeholders from the hotel groups showed interest in the device.
Awareness campaign on food waste with the support of local restaurants	It was suggested that this measure could be complementary to other actions like the promotion of doggy bags, to have a sort of package of actions on food waste.
Promotion of tap water and reusable flasks among tourists	This seems like an interesting measure too, especially since it was mentioned by the tourists. It is not sure the network of fountains is very important though. According to the data collected by UCPH, the network seems quite developed (deliverable D2.5). Besides, the promotion of tap water could also be done in partnership with bars and coffee shops.

Measures that seem difficult to implement	Comments
Collection of used cooking oils	n.a.
Substitution of disposable products in hotel with sustainable products (in hotel rooms and hotel common areas)	This measure would be difficult to implement in 5 stars hotel, according to the discussions the pilot had with hotel managers. Customers in such hotels want single use products. Nevertheless, this could be done in 4 stars or less hotels if not possible in 5 stars hotels.
Pilot test with pay as you throw tax for businesses (tourist establishments)	This measure seems too complicated for the moment.
Training courses / recycling and prevention advisors for businesses (tourist establishments)	This measure is interesting but seems impossible at the moment as there is not enough staff at the municipality. Another possibility could be involving volunteers or interns to do so.

Measures selected during the 2nd Community of Practice event

Measures	Comments
Selective collection of biowaste from restaurants and hotels	This one will be discussed with the hotels during the 3rd Community of Practice event.
Substitution of disposable products in hotels	This one will be discussed with the hotels during the 3rd Community of Practice event.
Waste sorting in hotel rooms	This one will be discussed with the hotels during the 3rd Community of Practice event.
Sorting bins in public and touristic places	This one will not be discussed during the 3rd Community of Practice event but will be conducted by the waste management department itself.

Measures implemented in Lisbon

Measures implemented	Objectives & summary of actions
<p>Food prevention at buffets and restaurants and food tracking device (measure n°2 and n°20)</p> 	<p>More than 40% of the waste generated at tourist establishments such as buffets and restaurants is considered as food waste. Buffets and restaurants at hotels involved in the project included half-size portions in the menu and traditional dishes in order to minimize waste generated in the kitchen. In addition, some of the hotels involved used the food tracking device as a direct measure to reduce food waste by increasing awareness on the quantity of food wasted and reducing over production of food.</p>
<p>Substitution of disposable products in hotels (measure n°7)</p> 	<p>One of the main problems of amenities in hotels' rooms is the excessive waste generated from the use of hygiene products. This measure implied the selection of the most ecological products (dispensers) to replace disposable ones in hotel rooms and the revision of contracts with product suppliers. Marketing materials were distributed at the reception of the hotel to inform customers on the new measure.</p>
<p>Waste sorting in hotel rooms (measure n°10)</p> 	<p>On average, hotels generate around 1 kg of waste per guest per night. In order to increase recycling rates at hotels, this measure promotes the proper separation of plastic, paper and glass fractions by guests in hotel rooms. However, since that was not possible for the Hotels to implement, it was decided that they would do the selective waste sorting in the rooms though the housekeeping staff.</p>

Main results and possible fine tuning in Lisbon

Food prevention at buffets and restaurants (M02) and food tracking device (M20)

In total, 4 tourist establishments (with 1 hotel school) were involved and monitored during the implementation phase. 2 hotels were involved in the implementation of measures 2 and 2 hotels in the implementation of measure 20.

Implementation of measure 2 in the two hotels led to a reduction in the amount of organic waste generated of 7% and 25% respectively. Moreover, both hotels started to reuse the edible leftovers in the kitchen.

High rotation of the teams and excessive workload brought some difficulties to ensure their training and good conditions for the use of the food tracking device, the communication with clients to raise awareness about food waste, and to serve the required amount of food (right dose for meal) for children and for adults.

Fine tuning

- ✓ As far as possible rely on a stable team.
- ✓ Carry out daily follow-ups is highly recommended and necessary.
- ✓ Weigh the peels. It is important to acknowledge the impact this item in the kitchen and to find a solution to avoid this fraction to end up in the mixed waste bin.

Substitution of disposable products in hotels (M07)

The measure was implemented in 169 rooms of 1 Hotel in Lisbon, where disposable products were replaced by dispensers. 340 soap shampoo/shower gel dispensers were purchased. In parallel, the hotel informed customers about its commitment to achieve good environmental practices. In addition, the project was well promoted in the social networks and media. A reduction of 19% of unsorted waste was reached although the hotel occupation rate during the monitoring phase was only 62%.

Despite Lisbon Municipality's efforts, only one hotel participated to measure 7.

Fine tuning

- ✓ Put strong efforts in the mobilization of hotels to increase their participation.

Waste sorting in hotel rooms (M10)

In total, three hotels have been implemented this measure. Selective collection was applied to 305 rooms. Waste generated in these hotels was reduced by 12% and the volume of recycled waste in the hotel increased immediately to 72% while the occupancy rate was about only 46%. It should be noted that additional work due to waste sorting fell to women because they compose more than 80% of staff.

Fine tuning

- ✓ Use new containers and colours bags in all locations to facilitate recycling and the adaptation of staff.
- ✓ The staff has to be strongly motivated and raise their ecological awareness.
- ✓ Put strong efforts in the mobilization of hotels to increase their participation.

Future of measures in Lisbon

Food prevention at buffets and restaurants (M02) and food tracking device (M20):

Hotels having implemented Food prevention at buffets and restaurants (M02) will continue this measure.

Waste Management Department of the Municipality of Lisbon is committed to continue the mobilization of other hotels.

Substitution of disposable products in hotels (M07)

Participating hotel will continue this measure.

Waste Management Department of the Municipality of Lisbon is committed to continue the mobilization of other hotels.

Waste sorting in hotel rooms (M10)

Participating hotels will continue this measure.

Waste Management Department of the Municipality of Lisbon is committed to continue the mobilization of other hotels.



Overview²²

Socio-economic and land use data

Type of pilot case	Metropolitan area
Number of inhabitants	536.327 (2015)
Total area (km²)	1.463 km ²
Total urban area (km² and %)	127 km ² 9 % of total land area
Total nature & open space area (km² and %)	1331,3 km ² 91 % of total land area
Total coastal area (km² and %)	32,7 km ² 2 % of total land area

Tourism

Average length of stay	6 days (2015)
Number of tourist accommodation establishments	<ul style="list-style-type: none">hotels and similar accommodation: 316 (2015)holiday and other short-stay accommodation: 37 (2015)camping grounds, recreational vehicle parks and trailer parks: 10 (2015)
Total number of tourist arrivals	tourist arrivals at a tourist accommodation establishment : 2.264.503 (2015)
More frequent countries of origin of the tourists	Portugal, Spain, USA and UK, Germany, Russia, China

²² Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

- Many second homes in the Metropole
- 10 camping sites

Type of tourism and activities

- Business tourism
- Event tourism
- Relax and wellness tourism
- Cultural tourism
- Sport tourism
- Religious tourism...

Type of tourists (family, young people, retired people, etc.)

- Family
 - Young
 - Retired
 - Honey moon...
-
- Seasonality of the tourism: April to October with a high season end of May to end of August

Main types of waste prevention actions regarding Urban-Waste objectives



- Biowaste composting :
 - Delivery of composters on request (to households, public services, business, local authorities)
 - Experimentation of on-site composting in hotels. Results: there were few hotels participating because the main issue for hotels in Nice regarding this is a lack of space to have a container box. Thus, extending this test through the “on-site composting” measure under the URBAN-WASTE project does not seem really feasible.
- Food waste measures : campaign (schools, markets), doggy bags (100 restaurants in the metropolitan area)
- Plastic waste prevention : reusable cups, reusable bags
- General waste prevention : eco-event chart
- Reuse : promotion campaign, charity shops, repair centers
- Specific actions in eco-labelled hotels : reusable dinnerware, refillable toiletries dispensers, onsite or offsite composting
- During the summer of 2017, Nice organised a specific environment communication campaign every Wednesday going on all the summer (from June to September) on green promenade of Nice, which is very touristic. It is not sure yet that this event will also happen next year but there could be interesting synergies with the URBAN-WASTE communication campaign measure.
- The future “waste prevention plan” of the Metropole of Nice will include marine environment. There could be here also some interesting synergies to develop with the URBAN-WASTE project.

Organization of waste collection for households

Responsibility

- The local waste management authority is responsible of MSW collection together with partners from the private sector working on behalf of the municipality, depending on the municipalities of the Metropole and on the respective waste fractions.



²³ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

- In general, the municipal waste collection covers households and similar establishments.
- Since 2014, Nice Metropole has a special department which work on a "special tax" for companies which produce waste. Indeed, progressively all companies pay this "royalty rate" instead of the tax that all the citizens pay. This royalty is calculated company by company according to the waste production of each company.

Financing system

- All the citizens pay a "waste tax" which amount depends of the size of the house.



Collection system

- Depending on the type of waste fraction, different collection systems are used:
 - **Residual waste:** door-to-door collection in the urban areas and concentration points for the collection in the most rural areas. In some areas, there are also bring banks (123) which are either buried or half-buried. Residual waste is either collected by local authorities or by private companies depending on the municipalities of the metropole.
 - **Packaging waste** (cardboard, plastic, recyclable metals): door-to-door collection in the urban areas and concentration points and brings banks in the less urban areas. Packaging waste is either collected by local authorities or by private companies depending on the municipalities of the metropole.
 - **Paper:** door-to-door collection for schools and administration, otherwise bring banks (buried or semi-buried waste containers or aerial waste containers). Paper is collected by private companies, except in one municipality which collects itself.
 - **Glass:** bring banks (buried or semi-buried waste containers or aerial waste containers) for households and door-to-door collection for certain business establishments (hotels, restaurants, bars). Glass is collected by private companies, except in one municipality which collects itself.
- No food waste collection
- Further, in the Metropole of Nice Côte d'Azur, there are 13 civic amenity sites where private individuals can bring bulky waste (furniture, domestic electrical goods), garden waste, wood, but also hazardous waste such as batteries and accumulators, oils. Besides, the eco-organisation Corepile in charge of the EPR scheme related to batteries

and accumulators provides containers to collect batteries in public areas like the town hall, hospitals, etc.

Organisation of waste collection for private enterprises

The waste collection of touristic establishments is covered by the Metropole Nice Côte d’Azur. As mentioned previously, certain businesses (e.g. hotels, restaurants, bars) have a specific door-to-door collection for glass waste.

Organisation of street sweeping and street bins collection



The urban cleaning service is in charge of the management of street bins and street sweeping. The waste collected from street includes fractions such as cans, papers, plastic, garden waste. The street sweeping waste is incinerated.

The street bins in the Metropole of Nice are not geolocalized. There has been a test on having two kinds of street bins (one for the residual waste, the other one for recyclables), which was also done on the beaches but it didn’t work at all for the recyclables.

Waste treatment of the most relevant waste fractions

Waste fraction	First treatment destination	Treatment process
Residual waste		Four different processes: <ul style="list-style-type: none"> ● 90% of the residual waste is incinerated with energetic recovery ● 2,3% of the residual waste is landfilled ● 1,8% of the residual waste is composted ● 2,5% of the residual waste is transformed in refuse-derived fuel with energetic recovery
Packaging waste	separated in sorting centre (cardboard, plastic, tin)	<ul style="list-style-type: none"> ● 72,7% of the packaging waste are recycled ● 27,3 are impurities which are incinerated (97%) or landfilled (3%)
Glass and paper		recycled

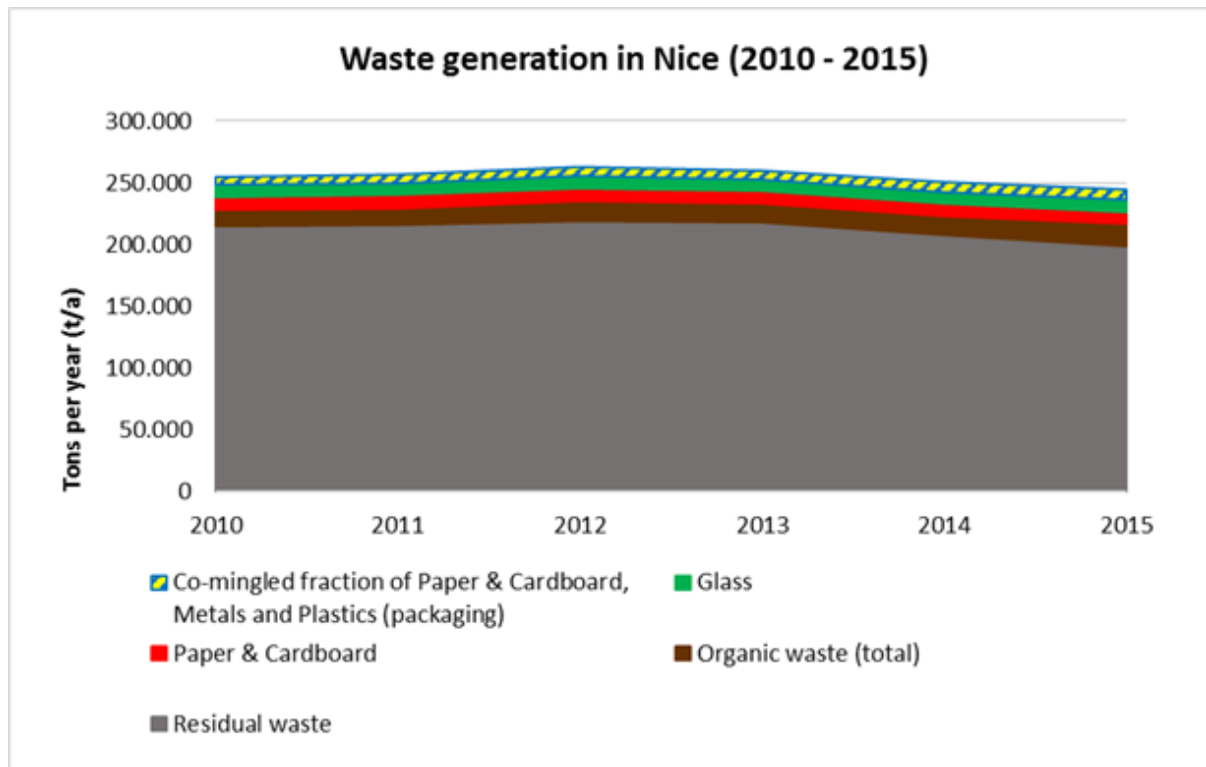
Specific focus on certain waste fractions/management models



- Sensors in containers: there was a pilot test on this, which is now over. The conclusion was that this system was really expensive and did not work very well.
- GPS in collection trucks: the drivers can signal and localize a problem thanks to this system
- Bins for packaging are tagged with location chips

- The Metropole is currently working on a single smartphone application to gather all the apps already existing and to have one single app providing a lot of different information.
- Incentive financial scheme for private companies : “royalty rate” is paid since 2014 by companies
- Thanks to incentive financial scheme, hotels, restaurants and other touristic establishments have a well management of waste (because the packaging is less expensive than mix waste)

Specificities and challenges regarding the performance of the collection of certain waste fractions



- For Nice a permanent increase in the collected amounts of organic waste (this is in fact green waste collected at collection sites in the bring system) and a drop in collected amounts of residual waste in 2009 indicate the expansion of separate collection of organic waste which only partly can explain the dropped amounts of residual waste. However, data on the collection of (green) garden waste are not representative for the whole pilot case area as green (garden) waste is separately collected in only 4 out of 49 municipalities of the MNCA.
- Recyclables : increase of glass, metal and packaging (with plastics and aluminum) separate collection over the past years, whereas paper and paper cardboard are stable
- Ask if there are already challenges identified regarding the performance of the collection of specific waste fractions on which the Metropole is willing to implement new solutions and which ones (e.g. biowaste collection?)

Main priorities regarding waste management in the pilot case

- The main priority at the moment is to reduce the frequency of waste collection, in particular for economic reasons.

- Biowaste selective collection is not planned in the Metropole of Nice for the moment. Even though it is compulsory for restaurants to sort it (above a certain threshold), many restaurants seem not to do it.
- 35 waste workers have been surveyed in Nice²⁴, and according to them the main waste management priorities are: behavioural change (74%), awareness raising on citizens and businesses (66%) and optimizing composting and recycling (63%).



Gender profile

The management of waste department in Nice Metropole has been headed by a woman for 13 years. Since November 2016 we have a man.).

Several women are managing services. Indeed one of the most important service of waste management of waste (treatment) is managed by a woman.

More and more women are working in the street as “street cleaner”. 3 truck driver are women.

²⁴ Sources: URBAN-WASTE deliverable D3.2 : Situation and behavioural analysis of consume and waste behaviour and patterns

Waste and tourism²⁵

Main impacts, influences and challenges of tourism on waste production and waste management identified

- According to the results of the survey, almost 50% of waste and tourist workers surveyed believes that tourism significantly affects waste production in Nice
- Almost 90% of waste workers respondents believes that catering sector is among the main waste producers, followed by hotels (77%), and restaurants (66%)
- Seasonal increase of waste is also considered by the majority of waste workers (88%) among the main challenge for waste management in relation with tourist arrivals.

Unfortunately, the available data on waste amounts and tourist overnight stays did not allow to quantify the waste generation by tourism.

Street bins and tourism	
Residual waste	14.620
Separately collected recyclables	2.432
Number of touristic waste producers (food and accommodation tourist infrastructure)	1.081

Main priorities regarding waste production and management and tourism

- Regarding waste production and management related to tourism, there is no specific priorities already defined by the Metropole, even though so relevant actions are already in place (see § on measures).
- Waste from tourists (recyclable waste fractions) : the Metropole of Nice is currently translating guidelines regarding waste sorting in several languages.
- There is a lot of garbage on the beaches, especially during the highest touristic seasons, but this is a very complicated issue to handle because of the costs and the logistical aspects.
- In the spring and summer, there are really a lot of tourists in the city center, especially going to the restaurants.

²⁵ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Main targets for the URBAN-WASTE project

- The mapping of the drinking fountains so that tourists can get this information easily. This would be really relevant as there is a good network of drinking fountains in the Metropole. As the waste app will include this mapping of drinking fountains, then it would be relevant to include it within the new website that is currently developed by the Metropole of Nice.
- Waste from tourists (recyclable waste fractions): the Metropole of Nice is currently translating guidelines regarding waste sorting in several languages.
- **Stakeholders**
 - They didn't get any additional participants from the 1st Community of Practice event, but that they have been in contact with other stakeholders (managers of 3 piers in the Metropole for example).
- **Gender strategy**
 - For Nice, it is not so clear what is expected and how they should proceed regarding the gender strategy. At the scale of the Metropole of Nice, regarding waste management, the previous person at the head of the department had been a woman for the past 10 years, and now it has changed to a man.
 - It has been explained to Nice that the gender strategy was about ensuring a gender representativeness (not only in terms of male/female, but also diversity of job positions, ages, and cultural backgrounds) in the participatory process, in particular during the next 2nd and 3rd Community of Practice event when the measures will be discussed. It is also about having a gender sensitive set of measures (strategy) in the pilot case, to be sure that the measures will be effective towards a diversified public. Finally, there is the possibility of having specific measures relative to gender.

Selection of the measures in Nice Metropole

Discussion on the list of measure forms during the first bilateral meeting

Existing measures	Comments
Doggy bags in restaurants	This is already working well, the restaurants should be signaled in the WasteApp. This could be considered as a measure with wider restaurants involved.
Composting (on-site or off-site) for hotels	Too complicated, not enough space but it could be done for camping sites.
Guidelines for waste sorting translated for tourists	It is currently in progress, the initial target is tourists having second houses but this could be extended to URBAN-WASTE with a wider dissemination to reach all the types of renting accommodations. Those guidelines could also be integrated in the Waste App.
Eco-events chart	Distribution of eco-cups in the Nice Jazz Festival but this might be difficult to do more prevention actions within this famous festival.
Cooperation with local non-profit recovery organization (e.g. bulky waste from hotels)	This measure has not been discussed.
Reuse initiative in camping sites	There is already a gift box system in one of the municipality of the Metropole (Cagnes-sur-Mer), but this could be a good idea in a campsite as it is more difficult on a public space because it needs to be handle regularly by someone.





Interesting measures to implement	Comments
Mapping of the drinking fountains	This seems like a really interesting and feasible measure.
Promotion of tap water and reusable flasks	This is also an interesting measure that could be linked with the map of the drinking fountains.
Food waste tracking device	Nice shows interest in proposing the app but asked for more details. A contact between SLU and Nice was supposed to be done.
Prevention sign in hotels buffet	This seems to be a good measure.
Waste sorting in hotel rooms	This will be discussed with the hotel managers.

Other ideas	Comments
Composting in camping sites	
Removable bins in frequented public areas	It would be an interesting measure but it seems to be too expensive and complicated in terms of logistic.

Measures selected during the 2nd Community of Practice event

Selected measures	Comments
Doggy bags	
Awareness campaign on marine litter	It will be combined with the implementation of an art board where people will be able to stick their coloured stickers of the cruise on a board called "Make your art work".
Promotion of tap water	It needs to be added to the WasteApp because so far it has not been added in Nice case.
Waste sorting instruction in foreign languages	

Measures implemented in Nice Métropole

Measures implemented	Objectives & summary of actions
<p>Doggy bags (measure n°1)</p> 	<p>The distribution and promotion of small food containers to take home leftovers in restaurants, also called “doggy bags”, is an efficient way to reduce the production of food waste, considering that it is an important part of the waste produced by restaurants. Restaurants joining URBAN-WASTE have committed to offer a doggy bag to their customers at the end of the meal to take away food and wine that have not been consumed.</p>
<p>Promotion of tap water (measure n°13)</p> 	<p>Tourists are particularly big consumers of bottled water when on holiday, both directly through their purchases and indirectly through their tourist lifestyle (hotels, restaurants, etc.). To lower consumption of plastic bottles, reusable plastic cups have been distributed to tourists in MNCA communes. Moreover, public fountains have been selected to promote tap water through communication materials and the possibility to find their location on WasteApp.</p>
<p>Waste sorting instruction in foreign languages (measure n°14)</p> 	<p>As the waste management system may be very different when on holidays, and the information not easily accessible to tourists (language barriers, lack of information, etc.), waste sorting can be difficult for tourists. To tackle this issue, the waste sorting instructions have been translated and made available to tourists renting holiday accommodations. Besides, the instructions have been complemented with the map of sorting bins available in bring banks systems collecting waste on public areas.</p>
<p>Awareness campaign on marine litter (measure n°19)</p> 	<p>Marine litter originates mainly from land-based activities. It covers any solid material which has been deliberately discarded, or unintentionally lost on beaches and on shores or at sea, including materials transported into the marine environment from land by rivers, draining or sewage systems or winds. Among the sea and land-based activities are including littering actions caused by tourism in coastal areas. To prevent litter production, MNCA has put in place a wide and multi-channel communication campaign to alert people, especially tourists on beaches to reduce and sort their waste.</p>

Main results and possible fine tuning in Nice Métropole

Doggy bags (M1)

6.000 doggy bags distributed. 39 restaurants involved in the measure representing 18% of the 217 restaurants identified in tourism office of Nice Metropole cities.

The effect of use of doggy bags on mixed waste production leads to a decrease of 7% in average in participating restaurants on a three months period of monitoring.

Fine tuning

- ✓ take enough time to build trusting relationships with restaurant managers at the beginning of the operation.

Promotion of tap water (M13)

1,500 reusable plastic "eco cups" have been distributed on beach stands to inform about marine litter issues and in tourist offices.

Stickers with the URBAN-WASTE logo and QR code for WasteApp have been placed on the 30 public fountains selected to promote tap water.

Waste sorting instruction in foreign languages (M14)

5 tourism offices involved to disseminate translated instructions (French, English, Italian and Spanish).

103 owners and renters of tourist accommodations have been provided with instructions. 3,750 instructions were distributed.

Fine tuning

- ✓ Involve other stakeholders (i.e. hotels, restaurants, camping, airport, railway station...) to broaden dissemination of translated instructions.

Awareness campaign on marine litter (M19)

16 communication events organized. The number of people attending these events was 1,287. One clean-up day during the *World Clean-up Day* on 15th of September.

Massive campaign carried out in August (poster displayed on one tramway, posters displayed on 242 street billboards and digital display of posters in Nice centre in the main pedestrian area and advertisement in full page in the 2 regional newspapers), from 125,000 to 250,000 people have been reached by the campaign.

Fine tuning

- ✓ Reinforce partnership with associations to mobilize enough volunteers during the events.

Future of measures in Nice Métropole

Doggy bags (M1)

Nice Metropole will continue the mobilization of restaurants and it's planned to provide doggy bag at all the restaurant interested in the 49 cities of the metropole.

Promotion of tap water (M13)

Dissemination of public fountains' location and provision of cup during events on beaches will continue.

Waste sorting instruction in foreign languages (M14)

No continuation.

Awareness campaign on marine litter (M19)

An new awareness campaign on marine litter is foreseen in 2019.

Overview²⁶

Socio-economic and land use data

Type of pilot case	Municipality
Number of inhabitants	57.626 (2015)
Total area (km²)	14,8 km ²
Total urban area (km² and %)	13,3 km ² 90 % of total land area
Total nature & open space area (km² and %)	1,2 km ² 8 % of total land area
Total coastal area (km² and %)	0 km ² 0 % of total land area

Tourism

Average length of stay	10 days (national scale, 2015)
Number of tourist accommodation establishments	<ul style="list-style-type: none"> hotels and similar accommodation: 15 (2015) holiday and other short-stay accommodation: n.a. camping grounds, recreational vehicle parks and trailer parks: n.a.
Total number of tourist arrivals	<ul style="list-style-type: none"> tourist arrivals at a tourist accommodation establishment: 85.407 (2015)
More frequent countries of origin of the tourists	UK, Russia, Israel, Germany, Greece, Sweden (2018)

²⁶ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Type of tourism and activities

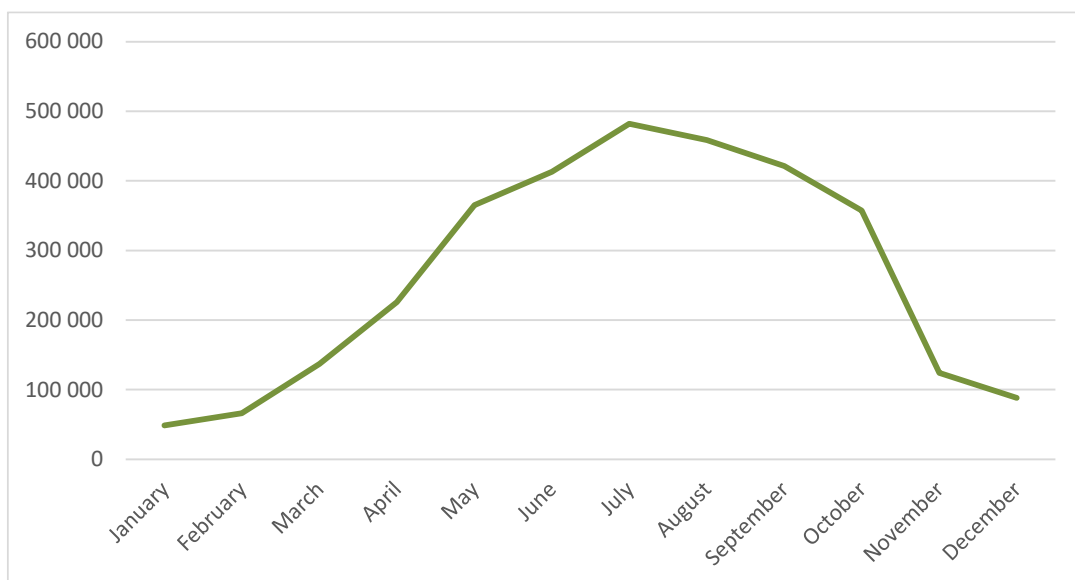
Purpose for visiting the island is dominated by holidays (83%), then visiting friends and relatives (11%) then for business reasons (6%).

Tourism in Nicosia is characterized by short stays: tourists either come for a day without spending a night, or they spend a night in one of the hotels of the city. Indeed, in the summer, there are many busses dropping tourists for a day in Nicosia.

The hotels are always full, as there are not so many hotels. It is in winter

Type of tourists

Age categories are a bit dominated by the class 45-64 years which represents 32%, while 20-31 years represents 25% and 32-44 years 24%.



Tourist arrivals per month in Cyprus in 2016

(Source: Ministry of Finance, Statistical Service, Cyprus)

High season of tourists in Cyprus is in July and August.

Waste data²⁷

Main types of waste prevention actions regarding Urban-Waste objectives



- Project with title 'waste mapping' that aims to reduce hotel's food waste and improve the management of their waste.
- Nicosia Municipality is also performing a number of activities to reinforce citizen's awareness, enhance their willingness to reduce their waste and participate to recycling programs. The municipality therefore, organizes cleaning campaigns, participates to volunteer campaigns, published press releases, prepare and disseminate informational leaflets and announcements and use of posters in important key areas such as bus stations.
- Project LIFE+ "RETHINK" on waste reduction, reuse and recycling

Organisation of waste collection for households

Responsibility

Nicosia municipality is the local authority responsible for waste management within the municipality borders. It is responsible for the collection of MSW from both households, street cleaning and similar establishments within the area.



Financing system

Once a year all the facilities have to pay the tax on waste. By this way the municipality covers all the expenditure related to waste collection (personnel cost, vehicles, disposal, fuel, etc). For households waste tax is based on number of people (single 119 € and 159€ for a family in 2015). For hotels, restaurants and bars tax is based on collection frequency and number of bins (in average 2.00€ for a hotel in 2015).



Collection system

The mixed waste is collected door-to-door from private and municipal bins by the municipal services (own vehicles and material). The biodegradable fraction is the highest fraction of residual waste.

Metals and plastics are collected together (PMD). Paper, glass, green waste, clothing are collected separately. Both green and bulky items e.g. carpets and electric equipment, are collected from kerbside three times per year.

²⁷ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

The recyclable materials (paper, glass, PMD), electronic waste and used household batteries are collected from collective systems on behalf of Nicosia Municipality, either door-to-door (not glass) or from private and public collection points.

There is no selective collection for food waste.

Since the different fractions of recyclable materials must be separated from the other types of waste from households or businesses in order to be collected from the collective systems (sorted at source), Nicosia Municipality has operated a temporary drop off point (green point) where the citizens have the opportunity to transfer the different fractions of household waste to without charge.

Households and companies have to buy their bins. In the city center, when there is not enough space, companies are allowed to put their bins on the pedestrian area.

Residual waste are collected from green bins and in few cases when the streets are too narrow the citizens place the trash bags outside of their house.

The recyclables are collected from door to door (the citizens must use brown bags for paper and blue for PMD) and from special bins. Glass is collected through green rounded bins in public areas.

Bulky items, recyclables, residual waste etc. are collected without any charge. The collection frequency depends on the quantity of each stream of waste. There are several containers. Containers are emptied almost daily.

Organisation of waste collection for private enterprises

- Waste from tourist establishments is collected and treated together with other waste fractions arising from businesses and households in Nicosia municipality. The businesses / companies which produce or handle hazardous waste maintain contracts with private companies for the separate collection and special treatment of their waste.
- The door-to-door campaign is targeting big producers.
- Information regularly given to new businesses regarding waste management and prevention.
- The threshold to consider a producer as a big one is 3500L of residual waste per week (more than three bins with capacity 1100L each).

Organisation of street sweeping and street bins collection

Waste from street sweeping and street bins is under the responsibility of the municipality. The only seasonality of this waste is the leaves that appear during autumn in some main streets outside the walled city, but no data on the quantities of this organic waste fraction is available.



Waste from street sweeping and street bins contains recyclable materials such as pieces of paper, plastic, metal, few glass, and organic waste including food waste, dust and leaves.

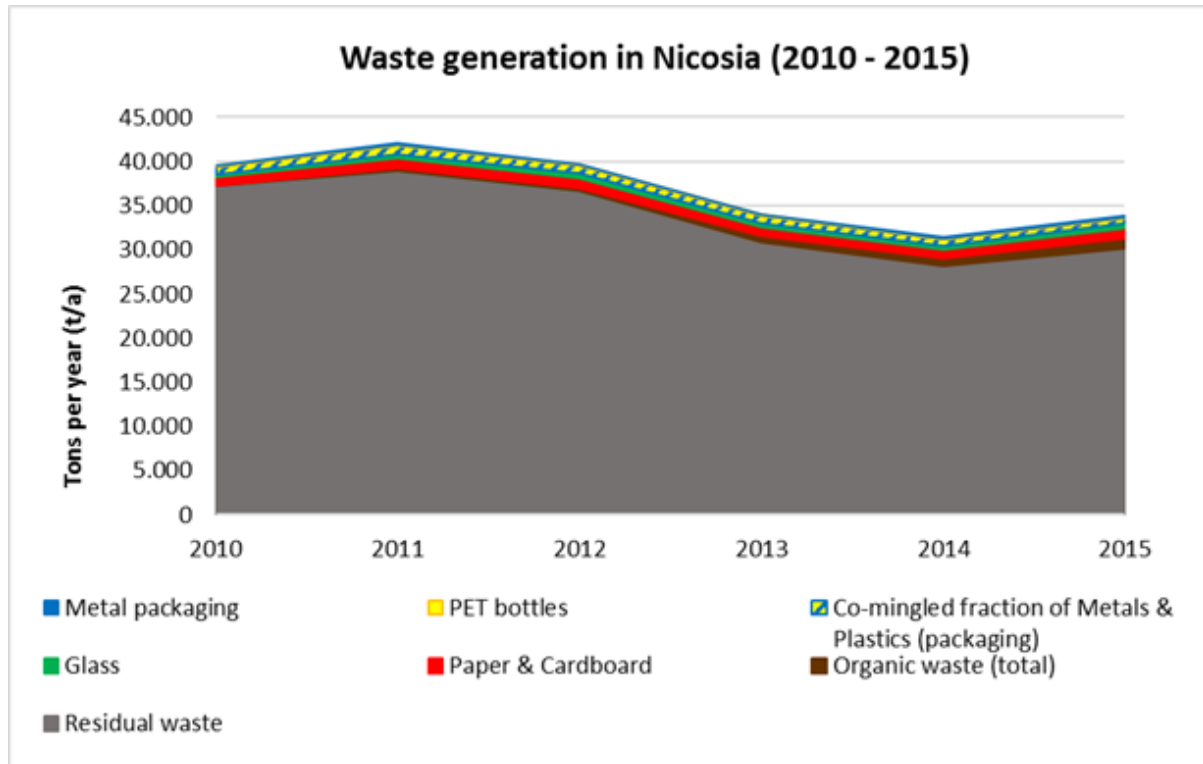
Waste treatment of the most relevant waste fractions

Waste fraction	First treatment destination	Treatment process
Non-recyclable part of municipal solid waste		landfilled at Kotsiatis landfill, outside the municipal boundaries
Recyclable material (green waste, electrical and electronic equipment, household batteries, used clothing, textiles and bulky items)	collected separately	transferred to appropriate facilities of private units for special treatment and handling
Glass		transferred to a recycling plant and converted to dust for the production of cement
Paper, plastics and metal are sorted in different types and packed on pallets in order to be exported to materials recovery facilities abroad.	sorted and packed on pallets	exported to material recovery facilities abroad

Specific focus on certain waste fractions/management models

- Pay-as-you-throw system: by this system the citizens will be charged based on the quantity of waste produced. The Ministry of Agriculture, Rural Development and Environment which is responsible for the implementation of legislation relating to the management of solid waste, prepares a report in order to provide guidance, probable solutions and assistance to the municipalities for the implementation of this system.
- Municipalities are waiting guidelines from the state to proceed to the separate collection of food waste.

Specificities and challenges regarding the performance of the collection of certain waste fractions



- Residual waste is decreasing whereas recyclable waste fractions are increasing. In total, the MSW is slightly decreasing.
- Data show a strong increase in the collected amounts of various recyclables, resulting from a change in the waste management system. Nicosia has increased gradually the total number of special bins which has been installed for the separate collection of recyclable materials (focusing on the city centre and especially to the biggest waste producers such as restaurants, snack bars etc.). Moreover, the communication with citizens regarding the dissemination of the information related to recycling has been improved.
- Green (garden) waste collection started in 2011. The collection of green (garden) waste takes place from households and public areas. Three clean-up campaigns are done per year. During clean-up campaigns the municipality collects green waste without any charge. Organic waste are not collected separately yet. The quantity of green waste (branches) collected in 2015 was significantly higher than the amount collected in 2014 because many street trees were pruned.
- The noticeable decrease in the collected amounts of PMD (co-mingled fraction of metal & plastic packaging) and residual waste from 2011 onwards is a result of the financial

crisis. It seems that the consumers had altered their consuming and shopping habits and were purchasing fewer products during this time.



Characterization of waste in Cyprus: main streams are organic fraction, paper and cardboard, plastic (source: green-dot Cyprus, 2017)

Main priorities regarding waste management in the pilot case

- Increase recycling as well as enhance the separate collection of recyclable materials.
- Promote the separate collection of organic (food) waste especially for restaurants and hotels in order to reduce even more residual waste.
- Kotsiatis landfill has closed on 28/02/2019. Therefore, all the residual waste derived from Nicosia Municipality limits ends up the Koshi Integrated Waste Management Facility. Thus, the other types of materials such as recyclables, green waste, bulky items etc. are collected separately and transferred to special plants for suitable treatment.
- According to waste workers surveyed in Nicosia, 50 workers, the main priorities related with waste management in the city are behavioural change (38%) and awareness raising on citizens and businesses (36%). Moreover, more than 25% of respondents included optimizing recycling and composting and improving waste prevention.



Gender profile

Gender balance of the waste management team:

- 50% men: municipal Health Inspector (managerial), the supervisor of the cleaning section (coordinator) and one health inspector (technical).
- 50% women three health inspectors (technical).

Waste and tourism²⁸

Main impacts, influences and challenges of tourism on waste production and waste management identified

- Considering the survey results, tourism activities don't contribute significantly to waste production in Nicosia. Indeed only around 20% of respondents, including tourists, waste workers and tourism workers, consider that tourism affects significantly waste production.
- In Nicosia, waste workers believe that the majority of the waste produced by tourism is related with hotels and restaurants.

Unfortunately, the available data on waste amounts and tourist overnight stays did not allow to quantify the waste generation by tourism.

Street bins and tourism	
Residual waste	11 (underground containers in the walled city) 84 (usual 1100L bins) (excluding small public pedestrian bins)
Separately collected recyclables	744 (paper, glass PMD)
Number of touristic waste producers (food and accommodation tourist infrastructure)	132

- Waste collection service is reinforced during the year according to the touristic flows

Main priorities regarding waste production and management and tourism

- Several initiatives to promote sustainable tourism including waste actions (CTO guidelines with minimum standards for hotels, evaluation criteria concerning waste generation the amount of waste produced in kg per guest and night)
- The municipality decided to focus on bigger producers, in particular restaurants and food waste, during the Community of Practice events.
- Their main goals are to reduce waste sent to landfill, increase awareness and inform visitors on waste management

²⁸ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

- Some tourists have mentioned a lack of bins to throw their waste, and there is not enough space in the city center to put new bins for recyclable waste

Main targets for the URBAN WASTE project

- Several initiatives to promote sustainable tourism including waste actions:
 - CTO guidelines with minimum standards for hotels
 - evaluation criteria concerning waste generation the amount of waste produced in kg per guest and night
 - waste mapping guidance for hotels
- There are some actions and projects that have interesting synergies with URBAN - WASTE project:
 - The LIFE+ project “RETHINK”, organizing events in the whole country of Cyprus
 - Discussion forum with the immigrants: the aim of this initiative is both to ask the immigrants their knowledge about the waste management system to see if they understand the policies, and to give them information. This is important to also have in mind that there are a lot of immigrants in Nicosia, and a lot of them work as housekeepers in private homes or in restaurants.
- “Fighting plastic waste in Cyprus” project: aims at **raising the awareness of Cypriot society about the sources and immediate consequences of discarding plastics at sea** and at the same time at **providing innovative proposals to reduce the problem**. The actions are specifically aiming at owners of coastal areas restaurants and bars in order to raise awareness on the protection of the beaches and reduce the amount of garbage, mainly plastic, abandoned by the people. For the implementation of the actions, **an extensive information campaign is carried out throughout Cyprus, during which the owners of the restaurants and the other businesses of food and drinks are informed on how they can become environmentally responsible**. A comprehensive guide outlining good practices that could apply is also provided.

- **Stakeholders**

Nicosia involved a diversified range of stakeholders including actors from the tourism sector (tourism board, travel agents, hotels, restaurants and travel organizations), one recycling company, experts of the sectors (universities and consultancies) and stakeholders coming from the public sector (ministry of agriculture, union of municipalities, technician from the same municipality of Nicosia).

- **Gender aspects**
- 9 female out of 23 stakeholders.
- Focus groups didn’t notice differences between men and women responses.

Selection of measures in Nicosia




Discussion on the list of measure forms during the first bilateral meeting

Interesting measures to implement	Comments
Food tracking device	This action will be discussed with the Cyprus organization for hotels
Waste sorting in hotel rooms	This action will be discussed with the Cyprus organization for hotels
Green procurements	This action will be discussed with the Cyprus organization for hotels
Reusable and sustainable products instead of disposable products	This action will be discussed with the Cyprus organization for hotels
Prevention signs at hotels' buffet	This action will be discussed with the Cyprus organization for hotels
Training courses for businesses (tourists establishments) on waste management, recycling and prevention	This measure seemed feasible for the municipality, and hotels are already sensitive to these topics In restaurants and cafés, a lot of plastic waste is produced, thus this could be something to target. Shops for tourists could also be part of the target
Special bins for plastic waste in public areas highly visited by tourists (museums, airport, parks, etc.)	They will see if it is possible to implement special bins for plastic waste To monitor this kind of actions, one option could be to count the number of bags collected, by involving the people collecting the waste from these special bins
Translation of waste sorting instructions in different languages for foreign tourists to be provided to tourists with second homes, renters of touristic accommodations	Such instructions could be distributed at the airport, as a leaflet for instance. Target immigrants regarding the instructions, as they can be key actors regarding waste from tourism due to their types of job.

Measures that seem difficult to implement	Comments
Distribution and promotion of doggy bags in restaurants	This measure seems rather difficult as tourists don't stay in the city for a long time, nevertheless this could be discussed with the stakeholders
Separation of organic waste in restaurants (e.g. for on-site composting)	This measure also seemed difficult but will be discussed with the stakeholders
Promotion of tap water	The tap water is drinkable but local people don't drink it much Promoting tap water in restaurants seems problematic as this can be a lack of revenue , as the tap water is not charged (not legal in Nicosia). In Nicosia, there are not any fountains in public areas. Therefore, this measure was not applicable for Nicosia.

Other potential measures	Comments
Promotion of reusable bags (textile bags) with a communication campaign on plastic waste (e.g. during plastic bag free day)	In big supermarkets, there are already some efforts to remove plastic waste

Measures implemented in Nicosia

Measures implemented	Objectives & summary of actions
Recycling advisors for tourist establishments (measure n°11)  	<p>This measure introduces the role of recycling advisors to inform and help restaurants reducing and sorting their waste. Two training sessions and visits of recycling advisors team to the establishments situated in or near the pedestrian areas of the walled city and in the commercial area of Nicosia (Tripiotis parish) were carried out for training purposes and the provision of advice.</p>
Waste sorting instructions in foreign languages (measure n°14) 	<p>Multilanguage guides (Greek and English) were distributed to tourists staying at hotels as well as to other tourism related entities with information on waste sorting. Waste management instructions were widely distributed and communicated to tourists.</p>
Food tracking device (measure n°20) 	<p>Implementation of the food waste tracking device in 5 restaurants, one cafe and one hotel which are situated within Nicosia Municipality limits. Each facility was following a different monitoring procedure for the collection of food waste and guest's number data. Together with this monitoring system every business has implemented waste reduction actions.</p>

Main results and possible fine tuning in Nicosia

Recycling advisors for tourist establishments (M11)

89 facilities have been involved in training activities and informed through regular visits: 8 hotels (100% of hotels in pilot area), 40 restaurants (73% of restaurants in pilot area) and 41 others.

The number of people trained was 117.

A general assessment in 11 restaurants showed a decrease of unsorted waste produced for each customer or transaction.

Changing the way employees manage waste was difficult because they are too busy in high season or because of the turnover in the teams.

Fine tuning

- ✓ Provide analytical written instructions via email communication along with personal calls and visits.
- ✓ Organize regular visits to businesses for solving particular problems and transfer the information to the responsible personnel.
- ✓ Organize training events not more than half a day because the facilities have not extra staff to participate.

Waste sorting instructions in foreign languages (M14)

1,840 printed waste instructions were disseminated to hotels and other entities. The instructions have been promoted through museums and hotels, in hotel rooms, municipal buses and also outside Nicosia, in other municipalities.

The overall number of distribution points involved was 202 (points where leaflets given, number of websites showing the information, etc.).

Fine tuning

- ✓ Disseminate the instructions on the facilities' web site if possible to expand the audience.

Food tracking device (M20)

The facilities effectively using the food tracking devices has been 7.

Most of them have implemented in parallel at least 2 food reduction measures like: fresh food from wrong orders can be consumed by personnel for their lunch, prepare less rice than before, train personnel to be careful when cut cheese and vegetables to reduce trimmings.

Fine tuning

- ✓ Train the personnel at least one month prior the implementation of the device and reduce the number of categories to characterize food waste.

Future of measures in Nicosia

Recycling advisors for tourist establishments (M11)

Facilities will continue the implementation of this measure. New stakeholders will implement the measure also, possibly beyond the defined area, in the entire Nicosia Municipality limits. The municipality will try to find solutions for stakeholders willing to participate but facing problems to store sorted waste because of lack of space in their premises.

Waste sorting instructions in foreign languages (M14)

Distribution of the brochures will continue.

Food tracking device (M20)

Some facilities will continue weighing food waste with the device.



Overviews²⁹

Socio-economic and land use data

Type of pilot case	Municipality
Number of inhabitants	69.883
Total area (km²)	233,5 km ²
Total urban area (km² and %)	21,8 km ² 9 % of total land area
Total nature & open space area (km² and %)	210,15 km ² 90 % of total land area
Total coastal area (km² and %)	57,8 km ² 25 % of total land area

Tourism

Average length of stay	3.5 days (2015)
Number of tourist accommodation establishments	<ul style="list-style-type: none">• holiday and other short-stay accommodation: 286 (2015)• camping grounds, recreational vehicle parks and trailer parks: 1 (2015)• Number of hotels and similar accommodation: 40 (2015)
Total number of tourist arrivals	Total number of tourist arrivals at a tourist accommodation establishment: 294.570 (2015)

²⁹ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

More frequent countries of origin of the tourists
(by importance)

Portugal, Germany, USA, Spain,
Netherlands, UK, France, Canada,
Belgium

- Ponta Delgada : more than a half of the supply of Azores hotel beds (around 40 hotels in the region)
- In the region, a growing number of holiday and other short-stay accommodation
- Touristic season: from June to September
- Around 10% of the tourists arrive by ship

Type of tourism and activities

Cruise tourism is mainly characterized by older people, usually accompanied looking for a more cultural visit in the central part of the city, or an excursion to the main localities of the municipality, usually adopting a trip of a day or two in maximum, in pre-paid packages.

For tourists who come by plane, the characterization is not so homogeneous. They are either families or individuals of various ages, who usually rent a car and travel in a more or less planned way throughout the whole island for a few days; apparently they interact more with the local population and appreciate the culture, gastronomy and landscape in a more or less intense way.

Strategic and marketing plan of the Azores tourism

The achievement of the strategic objectives is based on the definition of strategic and complementary products, nature tourism being the central product of the Azores. Nautical tourism, cultural and scenic touring, gastronomy and health and well-being are complementary products that diversify and enrich the offer.

Waste data³⁰

Main types of waste prevention actions regarding Urban-Waste objectives

- Eco-fee on plastic bags
- Eco-town contest, eco schools program, EWWR
- Door-to-door information and awareness programme in Ponta Delgada.



Organization of waste collection for households

Responsibility

- The collection of MSW is entirely under the responsibility of the municipality (Câmara Municipal de Ponta Delgada, Environment and Urban Services).
- It covers households as well as similar establishments producing domestic kind of like waste.
- A similar establishment is a producer with less than 1 100 liters, or 250 kg, per day, of domestic kind of like waste.
- The Urban Services (SU) of the City Council is responsible for the collection and transportation of solid waste in all parishes of the municipality.
- The Azores Seaports are responsible for the collection of waste from touristic ships, which is sorted in 4 fractions: residual waste, paper, tetra pack and glass.



Financing system

- The waste tax is similar to all consumers, but depends on several parameters: the type of area (rural or urban) and the frequency of the collection. There is also a variable part based on the consumption of water.
- The waste tax for big producers works the same as for domestic. The monthly fee (fixed and variable components) are higher than for domestic producers.



Collection system

- The waste collection is reinforced during the **touristic core season between June and September**.
- Separately collected fractions are:

³⁰ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Residual waste	Door-to-door collection
Bulky waste and plastic/metal	Kerbside collection after dial-up to the municipal services
Green and great format waste	Kerbside collection after dial-up to the municipal services
Paper/cardboard	Kerbside collection on some commercial areas. Only households of those commercial areas. benefit from this collection
Glass	No kerbside collection for households but only for commercial establishments such as restaurants, coffee shops, hotels, etc.
Paper/cardboard, glass, plastics and metals	Bring-it-yourself system: eco-points
Used cooking oils	Kerbside collection and bring-it-yourself system

- Concerning the collection of packaging (plastic/metal) waste for commercial establishments, there is kerbside collection in the historical center of Ponta Delgada. Since 2017, the entire historical center has this type of collection (before there was not).
- For packaging waste there is the “Green Dot System / SOCIEDADE PONTO VERDE (SPV)”, a non-profit-making company with the mission to promote the selective collection, takeback and recycling of packaging waste in Portugal.
- A specific collection for organic waste is planned to star at 2020.

Organisation of waste collection for private enterprises

- The collection of waste from touristic establishments is covered by the municipal waste collection (“similar establishments”), therefore the same waste collection and treatment principles as described above apply. During the touristic core season between June and September the waste collection is reinforced.
- Concerning kerbside collection, commercial establishments are in the domestic collection normal routes, there is no “special” treatment.

Organisation of street sweeping and street bins collection



- The management of street bins and street sweeping is also under the responsibility of the municipality. The local definition of “street sweeping waste” includes grit, dust, abraded particles of the roadbed, interspersed with organic components of soil, roadside greenery and leaves as well as waste from collection containers/bins along the roadside and in parks and public squares.

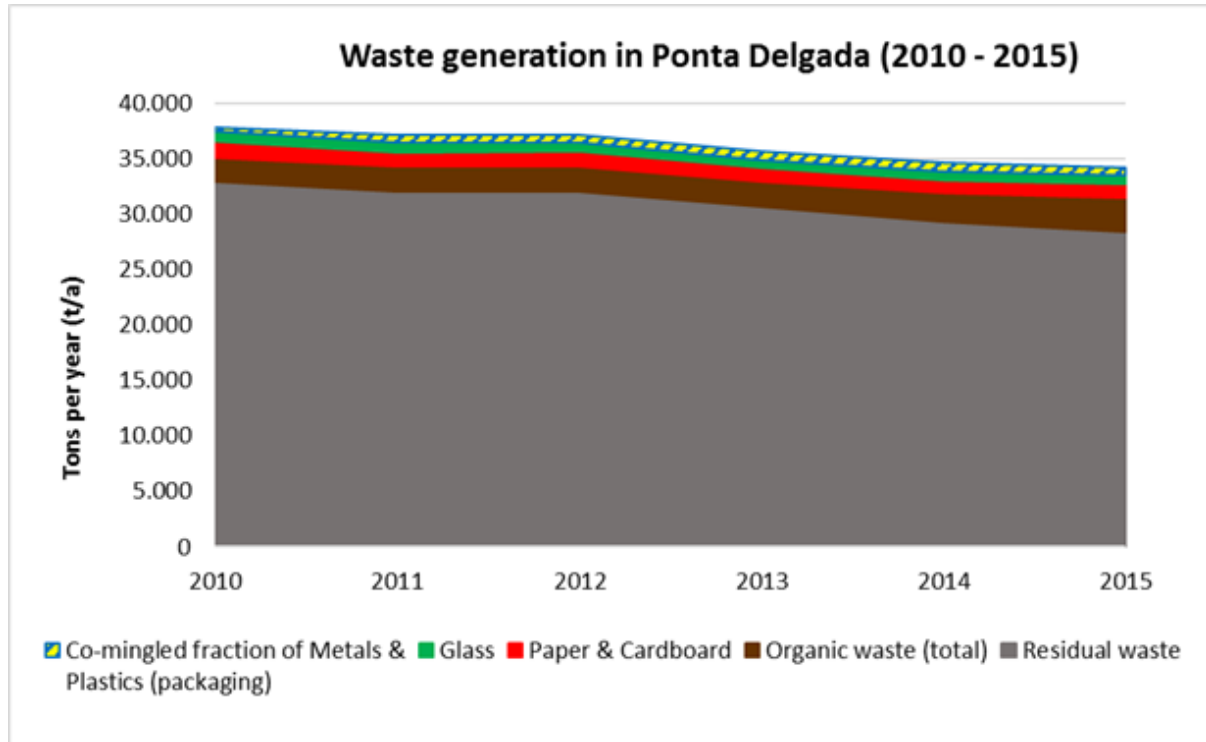
Waste treatment of the most relevant waste fractions

Waste fraction	First treatment destination	Treatment process
Bulky waste		landfilled
Great format waste	screening/separation of different components	landfill or is further screened (then shipped to the mainland)
Paper and cardboard, plastic, metal, batteries and glass	stored and reduced in volume	shipment to the mainland of Portugal
Green waste (trees, grass and bushes)		composted
Used cooking oil		transferred into biodiesel production

Specific focus on certain waste fractions/management models

- 2009 – door to door project in 150 households for kerbside/door to door collection of every type of waste;
- 2016-2017 – RAYT project (*receive as you throw* project for plastic/metal packaging at Capela’s parish);
- 2018 - kerbside/door to door collection of plastic/metal packaging at the whole municipality.

Specificities and challenges regarding the performance of the collection of certain waste fractions



- For Ponta Delgada as for most other cities there are inconsistencies in the database for the years before 2010. As for most European cities, it can be assumed that changes in the collection system or changes in the recording are responsible for this phenomenon. A peak in the collected amounts of paper/cardboard in 2010 has been detected, which could not be clarified.
- Yearly amount of MSW seems to decrease, same trend for residual waste
- Increase (2008-2011), then decrease (2011-2013) and now increase again of the amount of separately collected recyclables
- Paper: collection quite stable; glass: slightly decreasing; plastic and metals: increase and now stable

Main priorities regarding waste management in the pilot case

- The current goal of the municipality is to increase the quality and quantity of the waste sorting. The main obstacle for this is the behavior. There seem to be cultural reasons for this, as in general people in Portugal are not so concerned about waste sorting, and despite the communication actions organized in Ponta Delgada, it didn't seem to change much. Besides, there was a case study in a small village in the area of Ponta Delgada to improve the sorting of plastic; only a small number of households participated.

- 60 waste workers have been surveyed in Ponta Delgada³¹. Almost 70% of them considered awareness raising on citizens and businesses and reducing landfilling among the most important waste management priorities, followed by improving waste collection system (55% of respondents).



Gender profile

The waste management team is gendered as follow:

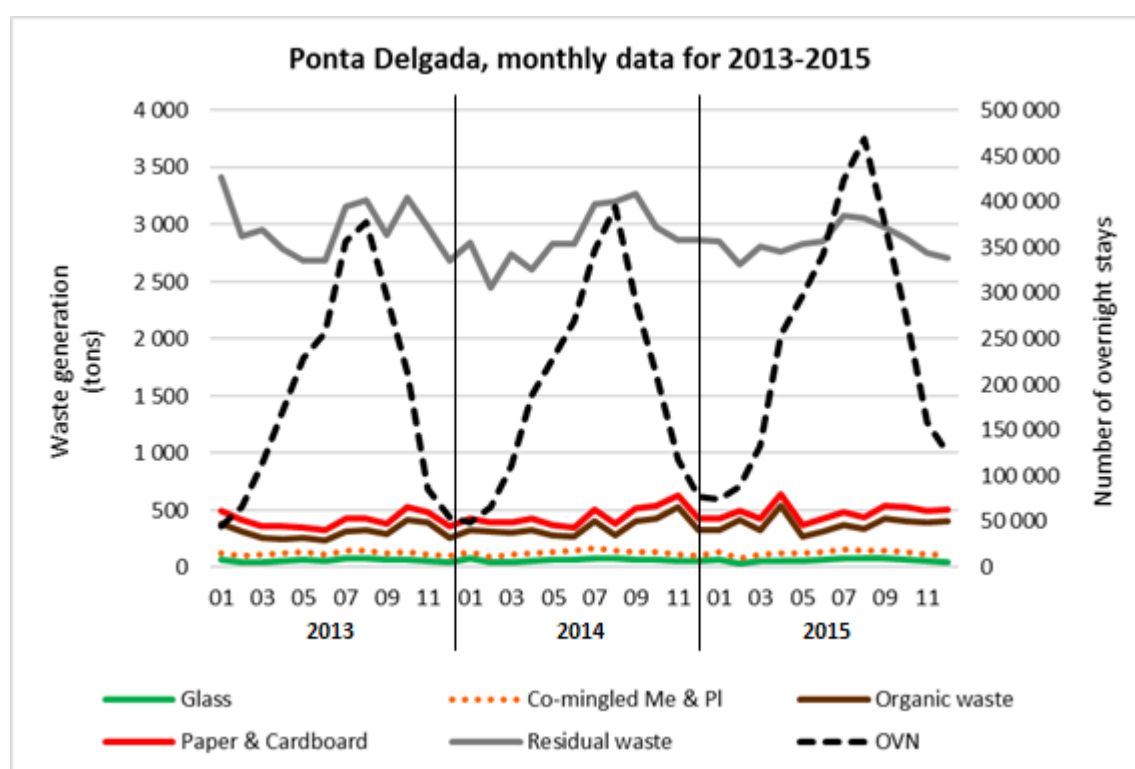
- Management/technical - 2 female; 1 male.
- Administrative – 2 female; 1 male.
- Operational supervision – 3 male.
- Operational (collection: with drivers and workers) – all male.
- Operational, but external - 80% male; 20% female.

³¹ Sources: URBAN-WASTE deliverable D3.2 : Situation and behavioural analysis of consume and waste behaviour and patterns

Waste and tourism³²

Main impacts, influences and challenges of tourism on waste production and waste management identified

- According to the majority of the waste workers surveyed in Ponta Delgada (71%) tourism significantly affects waste production, while just 26% of tourism workers and 15% of tourists consider tourist activities significant for waste production.
- Waste workers believe that hotels, restaurants and bars are the main producers of waste when it comes to tourism related production.
- 86% of the respondents among the waste workers believe that the main challenge in terms of waste management related with tourism is the seasonal increase of waste followed by the bins and containers under-capacity (55%) and contamination of households waste containers (45%).



The figure shows monthly variations in waste generation and tourist overnight stays. In Ponta Delgada, summer months are the high season of tourism. Peaks in the number of overnight stays are clearly visible for all summer months from 2013-2015. For waste generation, a similar trend is visible, but less pronounced. Due to the fact that the share of tourists compared to local resident population is very small even in months of high tourism season (< 5 %) and the data set available for statistical analysis

³² Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

was small, no reliable results regarding the amount of residual waste per overnight stay could be produced.

Street bins and tourism	
Residual waste	540
Separately collected recyclables	1398
Number of touristic waste producers (food and accommodation tourist infrastructure)	446

- The waste collection is reinforced during the touristic core season between June and September (increase of the MSW, residual waste, glass waste, metals and plastics)
- Higher emergence of street sweeping waste during festivities, particularly in waste collected in containers/bins along the roadside and in parks or public squares
- There has been an increase in waste production and economic recovery since the second half of 2015, with a slight increase in the amount of waste produced, in particular paper and board packaging waste, which is an indirect output of imports and consumption in the city, in particular by shops and restaurants.

Main priorities regarding waste production and management and tourism

- Increase the frequency of all packaging kerbside collection at the whole municipality.
- The waste collection is reinforced during the touristic core season between June and September (increase of the MSW, residual waste, glass waste, metals and plastics)
- One of the key topics to address currently in Ponta Delgada is the civic attitude to make people act. In that sense, the actions implemented to change people’s behaviour could also have positive impacts on the tourists’ behaviour. It could be interesting to develop nudge actions, which are specifically addressing people’s behaviour, during the communication campaign organized during the implementation of URBAN WASTE measures.

Main targets for the URBAN WASTE project

Increase the frequency of all packaging kerbside collection at the whole municipality.

Stakeholders

- Ponta Delgada included in its Community of Practice a very diversified range of stakeholders including: waste management authorities, transport providers, local authorities, hotels, citizens associations, restaurants and food and beverage services.
- Other stakeholders have been identified when looking for sponsors for the WasteApp and in the focus groups.

Gender strategy

- Ponta Delgada is one of the most committed pilot case in the project in terms of gender. During the focus groups, there was a discussion on which jobs are open to men and women.
- Ponta Delgada has built in a requirement that newly contracted out services employ a certain percentage of female waste workers.
- There appears to be a serious engagement with gender equality and balance issues albeit at an early stage. It will be interesting to monitor how the involvement of a gender balanced and generally aware team can influence eco-innovative waste reduction strategies.

Selection of measures in Ponta Delgada

Discussion on the list of measure forms during the first bilateral meeting

Existing measures	Comments
Doggy bags in restaurants	This already exists, nevertheless this could be further promoted within URBAN WASTE project.
Training courses / recycling and prevention advisors for businesses (tourist establishments)	The municipality has already organized some trainings courses. One idea could be to develop recycling advisors and training courses for businesses through associations of professionals to have a bigger impact on the businesses.
Promotion of tap water and reusable flasks among tourists and possible cooperation with restaurants to provide tap water	This action is already planned by the municipality of Ponta Delgada. There is even in Ponta Delgada a restaurant promoting tap water and selling it after putting gas and filtering for instance. Besides, during the focus groups hotels and restaurants indicated that they provide tap water.
Special bins for waste sorting in public areas highly visited by tourists (beaches, museums, airport, train stations, parks)	There are already bins for waste sorting in public areas.
Communication campaign on marine litter	There is already an important communication campaign going on about this topic.




Interesting measures to implement	Comments
Waste sorting in hotel rooms	Interesting for the hotels.
Green procurement in hotels (commitment to buy recycled products, reusable products, etc.)	Interesting for the hotels.
Substitution of disposable products in hotel with sustainable products (in hotel rooms and hotel common areas)	Interesting for the hotels.
Actions against food waste at hotels buffets (prevention sign, size of the dishes)	Interesting for the hotels.
Providing cruise ships with waste sorting instructions	That should be investigated to see if possible to implement.
Providing the sailing community with guidelines for proper sorting and waste bags for sorting in the marinas	This measure seems very relevant with the local context.
Translation of waste sorting instructions in different languages for foreign tourists to be provided to tourists with second homes, renters of touristic accommodations	This measure also seems a good idea; there seems to be a lack of information for the tourists regarding waste management.

Measures that seem difficult to implement	Comments
On-site composting of food waste in hotels	Currently, there is no industrial composting unit or other means to treat organic waste for the enterprise in charge of waste treatment of several municipalities. The municipality of Ponta Delgada has developed domestic composting, in particular in schools. On-site composting in hotels seems complicated but the hotels don't have much green spaces to use the compost.
Food tracking device (hotels, restaurants)	This measure seems complex, especially to find human resources to test this device. However, this could be done in partnerships with universities for example.

Measures selected during the 2nd Community of Practice event

Selected measures to be implemented	Comments
Selective collection of biowaste from restaurants and hotels	
Substitution of disposable products in hotels	There are too many disposable products on the island. That is part of the culture, and it is something hard to change. They will see to work with a local NGO to rise hotels' awareness
Waste sorting in hotel rooms	They would like to combine those two measures as they think it concerns the same people
Waste sorting instructions in foreign languages	
Recycling advisors for tourist establishments	
Promotion of tap water	Their local stakeholders seemed very interested in this subject during the 2nd Community of Practice event as they proposed two other related measures, which are: <i>"Incentives for the consumption of drink with returnable bottles"</i> + <i>"Create a Seal of Quality for tap water, to be placed in public fountains and in public and private touristic spaces"</i> .

Measures implemented in Ponta Delgada

Measures implemented	Objectives & summary of actions
<p>Substitution of disposable products in hotels (measure n°7)</p> 	<p>One of the main problems of amenities in hotels' rooms is the excessive waste generated from the use of hygiene products, plastic cups and paper napkins. The replacement of amenities in the bathroom by dispensers is estimated to reduce the total waste generated in hotels by 5%. Hotels implementing this measure have committed to substitute these single use and disposable products by – for instance – shampoo and soap dispensers.</p>
<p>Recycling advisors for tourist establishments (measure n°11)</p> 	<p>Well informed and duly advised establishment help, for instance, diverting large amounts of waste from the landfill to recycling. This measure introduces the role of recycling advisors to inform and help restaurants sorting their waste. Training sessions and regular visits to these establishments were carried out to monitor and collect the different indicators. Two teams of recycling advisors were created, and restaurants adhering to the measure obtained a “seal of good practice”.</p>
<p>Waste sorting instructions in foreign languages (measure n°14)</p> 	<p>Waste management systems usually differ from country to country and information on waste sorting may not be available nor accessible for tourists, making waste sorting difficult. Throughout the city there are selective collection containers for plastic, cans, glass and paper. Multilanguage guides (Portuguese and English) were distributed to tourists staying at hotels, B&B and apartments with information on waste sorting and containers with instructions were installed to increase the recovery and recycling of waste products.</p>

Main results and possible fine tuning in Ponta Delgada

Substitution of disposable products in hotels (M07)

Two hotels were involved in the implementation and monitoring of the measure accounting a total of 213 rooms equipped with dispensers.

50 stickers were placed in the bathrooms and two stickers at the entrance of the hotels with the message “We join the entrance” reaching a total of 12,789 tourists.

During the period of 5 months where the implementation took place, a total of 1,350 kg of plastic waste was avoided in both hotels, and 1,620 kg of paper waste were avoided in one Hotel.

Fine tuning

- ✓ Plan the implementation of this measure well in advance of peak tourist season which needs time to be correctly organised.

Recycling advisors for tourist establishments (M11)

40 restaurants were involved. This required the training of 87 staff members from all restaurants and 40 stickers were designed and delivered as communication materials.

The implementation of this measure resulted in the following figures regarding the number of bins (with 50 litres of capacity) collected with sorted waste (for 28 restaurants that carried out the monitoring) for a total of 576,208 customers:

- Plastic waste: 4,907 bins
- Paper waste: 4,471 bins
- Glass waste: 5,286 bins
- Unsorted waste (including organic waste): 10,362 bins

Thanks to this measure, the Municipality managed to get closer relations with restaurants. It leads to new waste collection procedures coping better with the restaurants constraints.

Fine tuning

- ✓ Plan the implementation of this measure well in advance of peak tourist season to train employees when they are not too busy.
- ✓ Organise regular visits or keep regularly contact with restaurants’ manager to discuss problems and find solutions.

Waste sorting instructions in foreign languages (M14)

122 establishments involved including 120 accommodations and 2 hotels, taking advantage of 150 distribution points.

Number of tourists reached during the implementation phase was 471,950.

Number and type of materials with translated instructions (Portuguese, English) distributed by establishments:

- 1 poster for the main city avenue, delivered to Ponta Delgada Municipality.
- 1 poster for the Marina of Ponta Delgada, delivered to Portos dos Açores.
- 120 magnets with waste instructions for 120 local accommodations freezers.
- 1,500 brochures with waste instructions distributed to guests in 120 accommodations and 2 hotels.
- 300 stickers for bins with waste translated instructions in Portuguese and English.

Fine tuning

- ✓ Mobilize stakeholders via different means of communication (e.g. emails, phone calls ...) to enlarge their participation.

Future of measures in Ponta Delgada

Substitution of disposable products in hotels (M07)

The 2 hotels that implemented the measure will continue. Two 2 other hotels will commit to this measure in 2019.

Recycling advisors for tourist establishments (M11)

70% of the restaurants will refresh the trainings after the high season to better prepare high season in 2020.

Involvement of the stakeholders to coordinate and promote the actions, train the people will continue. Ponta Delgada Municipality will continue to put effort to mobilize all the restaurants of the city.

Waste sorting instructions in foreign languages (M14)

About 110 involved establishments in 2018 will continue to disseminate the translated instructions and use the different communication materials promoting waste sorting.

More generally, Ponta Delgada Municipality and MUSAMI (Municipal Environmental Operations) will take over the communication actions for promoting the different measures.

Overview³³

Socio-economic and land use data

Type of pilot case	Municipality
Number of inhabitants	172.656 (2015)
Total area (km²)	34,7 km ²
Total urban area (km² and %)	21,1 km ² 61 % of total land area
Total nature & open space area (km² and %)	14,2 km ² 41 % of total land area
Total coastal area (km² and %)	17,3 km ² 50 % of total land area

Tourism

Average length of stay	2 days (2015)
Number of tourist accommodation establishments	<ul style="list-style-type: none"> hotels and similar accommodation : 3.694 (2016) holiday and other short-stay accommodation : 4.267 (2016) camping grounds, recreational vehicle parks and trailer parks: 314 (2016)
Total number of tourist arrivals	<ul style="list-style-type: none"> tourist arrivals at a tourist accommodation establishment: 1.759.594 (2016)
More frequent countries of origin of the tourists	Spain, UK, USA, France, Germany, Italy

Type of tourism and activities

³³ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

- Sea and mountains present in the city, spectacular bay
- The municipality is currently focusing on increasing cultural and convention tourism
- At a regional level, tourist accommodation establishments either hotels, or holiday and short-stay accommodation. Also many camping sites

Type of tourists

- More than 80% of the tourists are Spanish tourists, thus the level of awareness of the tourists is quite similar to the national Spanish level.
 - The visitors mostly stay either in second houses or hotels.
 - There are one camping site in the city.
 - There is a lot of family tourism in Santander, and the tourists do not come only for the coastal tourism, but also for the mountain, the museums, gastronomy, cultural and sport events.
-
- July to September : highest touristic period

Main types of waste prevention actions regarding Urban-Waste objectives



- Awareness campaign in order to raise raising public awareness relating to waste. The council launches periodic campaigns to raise awareness among citizens about the need for recycling and the cleanliness of public spaces.
- The latest campaign launched by the City Council, aims to raise awareness of citizens to avoid waste in the street. Videos in hidden camera format and a campaign on social networks have been launched in April 2019.



Websources:

- <https://www.facebook.com/1499776066820920/photos/p.1511200629011797/1511200629011797/>
- <https://www.facebook.com/MedAmbStder/videos/1313302618825442/>
- <https://www.facebook.com/MedAmbStder/videos/2621922611168637/>
- <https://santander.es/noticia/santander-inicia-campana-evitar-deposito-residuos-fuera-del-contenedor>

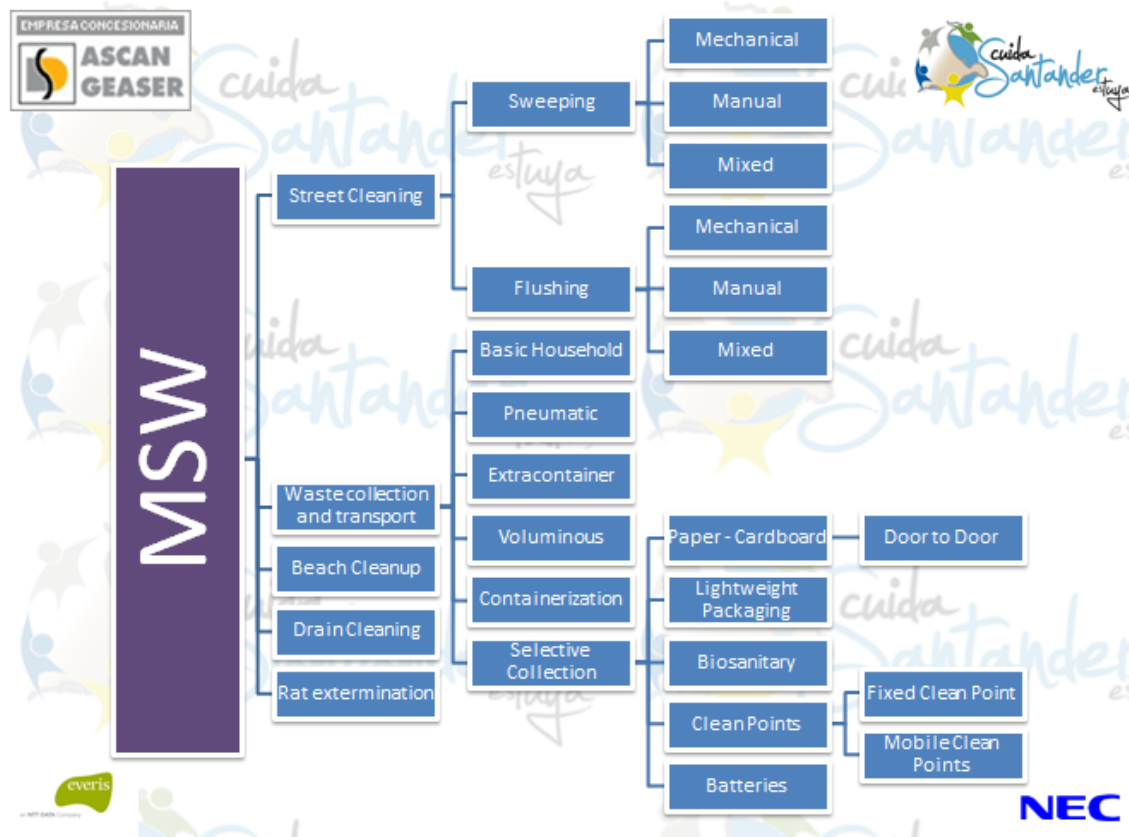
- Each year, the municipality conducts several environmental campaigns aimed at the city's children.



³⁴ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Responsibility

The Santander city council is responsible for the collection of municipal solid waste (MSW). The waste management as public utility service is provided by a local waste management enterprise through a public tender. Ascan Geaser is the provider company and Cuida Santander is the name for the service.



Collection covers households, accommodation and premises or establishments where industrial, commercial, professional, and artistic and service activities as is described in the municipal by-law35

In accordance with current legislation, are considered to be urban or municipal waste, and therefore its management is the responsibility of this City Council, the generated in private homes, shops, offices, etc. and services, as well as all those, who do not have the classification as dangerous and that by its nature or composition can be assimilated to those produced in the previous ones places or activities.

The following shall also be considered as municipal waste the following:

- Waste from street cleaning, green areas, recreational areas and beaches.
- Dead pets and furniture, abandoned household goods and vehicles.
- Waste and rubble from minor works of construction and home repair, provided that they do not exceed 50 kg.

³⁵ http://santander.es/sites/default/files/ordenanza_residuos.pdf

Waste deposit and collection

1. The use of containers for collection of lightweight packaging, glass and cardboard paper, is not subject to subject to any schedule.
2. The rest of the waste (remaining fraction) will be deposited in containers (grey container) between 19:00 hours and 22:00 hours, except special pick-up services that have specific timetables
3. Commercial premises or public or private centres, the total closure of which is prior to the time laid down in the previous point, they will be able to deposit the residues to the hour of your closing.

The city council collects the *grey container daily* with the remaining fraction by side-loading trucks and takes it to the environmental centre of Meruelo where it receives the appropriate waste treatment.

Paper and plastic containers include IoT sensors to know the filling in real time so the collection routes are programmed dynamically being as efficient as possible.

There are two other types of collection in the city in specific areas: urban waste collection through underground containment and pneumatic collection.

Financing system

A specific tax for collection of solid urban waste is compulsory and is regulated in the municipal bylaw³⁶ for households, accommodation and premises or establishments where industrial, commercial, professional, and artistic and service activities are carried out.



For this purpose, household rubbish and solid urban waste are considered to be food waste or detritus from the normal cleaning of premises or households, excluding from this concept industrial waste, construction debris, human detritus, contaminated, corrosive, dangerous materials or materials whose collection or dumping requires the adoption of special hygienic, prophylactic or safety measures.

The definitions of the different concepts of waste are contained in Article 3 of Law 22/2011, of 28 July, on Contaminated Soils and Waste (Official State Gazette, BOE 29 July 2011).

The tax liability shall consist of a fixed amount, per unit of premises, to be determined according to the nature and destination of the property.

Three types of premises are distinguished, depending on their nature or destination:

- household and Closed Premises: family homes, pensions that do not exceed 10 places and closed premises that are not considered commercial or industrial warehouses
- Accommodation: places of non-family collective coexistence, including hotels, hostels, residences, pensions, hospitals, schools and other centers of a similar nature, provided that they exceed ten places.
- Business premises: places where industrial, commercial, service or professional activities are carried out.

³⁶ http://santander.es/sites/default/files/5-t._2018._tasa_por_prestacion_del_servicio_de_recogida_de_basuras.pdf

The tax shall be settled in accordance with the following rates:

Rate 1.- Houses and closed premises.

Euros/year	Euros/Quarter
105.64€	26.41€

Rate 2.- Accommodations.

Epigraph	Accommodation	Euros/Year
1	Hotels, motels, hostels and 5 and 4 star apartment-hotels, for each square and year.	30,59 €
2	Hotels, motels, hostels and 3 and 2 star apartment-hotels, for each square and year.	25,37 €
3	Hotels, motels, hostels and 1 star apartment hotels, for each square and year.	19,95 €
4	Pensions, guesthouses, guesthouses, etc. for each square and year	19,57 €
5	Hospitals, sanatoriums, clinics and other assistance centers, for each place and year.	18,24 €
6	Teaching Centres, Halls of Residence, Student Residences with a food pension scheme, for each place and year with a minimum of 405.20 euros.	9,03 €
7	Teaching Centres, Halls of Residence, student residences with no maintenance scheme, per centre and year	365,66 €
8	Camping, per square and year	9,03 €
9	Accommodation not included under the above headings, for each and every year.	182,31 €

Rate 3.- Business premises.

Ep.	Business Premises	Euro/Year
1	Restaurants, for each square and year:	- Luxury category (5 forks) 36,67 € - First category (4 forks) 30,31 € - Second class (3 forks) 25,27 € - Third category (2 forks) 20,33 € - Fourth category (1 fork) 19,57 €
2	Cafeterias, for each and every year:	- Special category (3 cups) 912,95 € - First class (2 cups) 739,48 € - Second class (1 cup) 548,34 € - Third category 365,66 €
3	Bars, for each and every year:	- Special category A and B 740,34 € - First category 637,93 € - Second category 548,34 € - Third category 456,95 € - Fourth category 365,66 €
4	Party halls, discotheques, pubs and similar, for each and every year.	912,95 €
5	Recreational Circles, Social Clubs, etc.:	- With restaurants and or cafeterias, they will be taxed by the corresponding epigraph and also by each one and year. 365,66 € - Other 183,07 €
6	Theatres and cinematographers, each and every year	457,14 €
7	Bingos, casinos, etc.:	- With restaurants, cafeterias etc. will be taxed by the corresponding epigraph and also by each one and year. 1.817,35 € - Other 912,95 €
8	Department stores, meaning those with more than 50 employees or an area of more than 500 m ² , for each one and year.	5.478,75 €
9	Food premises, markets, auctions, for each premises or stall and year:	- Of fishmongers, greengrocers 912,95 € - Rest of shops 457,14 €
10	Hypermarkets, Supermarkets and similar, for each and every year	- Of more than 1000 m ² of extension 9.132,64 € - Between 500 and 1000 m ² of extension 4.566,37 € - Between 100 and 500 m ² of extension 1.816,50 € - Less than 100 m ² area 913,14 €

11	Banks, savings banks, etc. for each location and year	- Of more than 1000 m ² of extension	4.566,37 €
		- Between 500 and 1000 m ² of extension	2.283,14 €
		- Between 100 and 500 m ² of extension	1.370,76 €
		- Less than 100 m ² area	912,95 €
12	Warehouses closed to the public and located in premises separate from the main establishment, for each one and year.		183,07 €
13	Posts, kiosks and any other installation on the public highway, for each and every year		134,52 €
14	Premises for religious, sports, cultural use, public establishments, per year		365,66 €
15	Premises dedicated to professional activities, for each premises and year		183,16 €
16	Any other business premises or premises for other uses, not included in the previous sections, for each premises and year.		365,66 €

In premises where more than one activity is carried out, tax shall be payable subject to the higher of the tariffs corresponding to each of the activities carried out.

There are some exemptions and bonuses, people with low incomes that do not exceed the Public Indicator of Multiple Effects Income (IPREM) (75% discount on the amount of the Tax), large families (50% discount on the amount of the Tax), unemployed people (75% discount on the amount of the Tax).

Collection system

Separate collection is established for:

<ul style="list-style-type: none"> ● paper/cardboard ● glass ● plastics ● residual waste ● metals ● green waste (pruning waste) ● debris 	<ul style="list-style-type: none"> ● clothing/textiles ● furniture, mattresses and other household effects ● batteries ● motor oil ● kitchen oil ● paints and varnishes
---	---

- Organic waste from households is included in the residual waste. There is no biowaste selective collection.

In the city, the following bins are used:

Fraction	Colour of the bin
Rest fraction incl. organic waste (residual waste)	Grey bin
Glass container (white and colored glass; bottles etc. no windows, bulbs, ...)	Light green bin
Paper and cardboard products	blue bin
Plastic packaging, cans & tins (compound packaging)	yellow bin

- While paper/cardboard, glass, plastics and residual waste are separately collected in special bins from households by a local waste management enterprise on behalf of the municipally authority (kerbside collection), other waste such as metals, debris, motor and kitchen oil, paints and varnishes can be disposed separately at several civic amenity sites (Clean Points, puntos limpios).
- There are also some specific bins spread over the city to collect clothing for charities or for the collection of batteries.
- Collection of bulky waste on demand for households (furniture) and enterprises (cardboards)
- In relation to the collection of bio-waste, the City Council plans to include the "fifth container" (1 blue paper, 2 yellow plastic, 3 green glass and 4 grey mixture). Currently, all the municipalities of Cantabria, including its capital Santander, are awaiting the regional plan for the treatment of bio-waste.

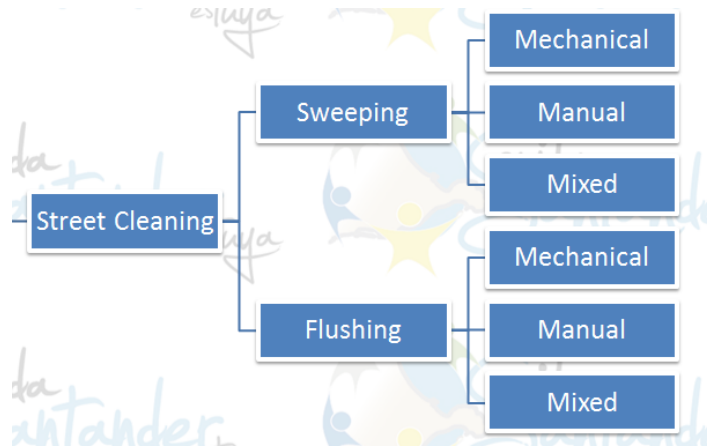
Organisation of waste collection for private enterprises

- Waste from touristic establishments like hotels, restaurants, camping sites or public structures such as museums, etc. are collected and treated together with waste fractions collected from households.
- During the summer time, there is a reinforcement of the waste collection by strengthening the workforce and increasing the collection frequency from once a day to twice a day. The reinforcement of the waste collection is in particular focused on some special collection routes covering most touristic zones in the city.

Organisation of street sweeping and street bins collection

Litter is part of the municipal solid waste. The street Cleaning is carried out by sweeping and flushing of non-potable water.

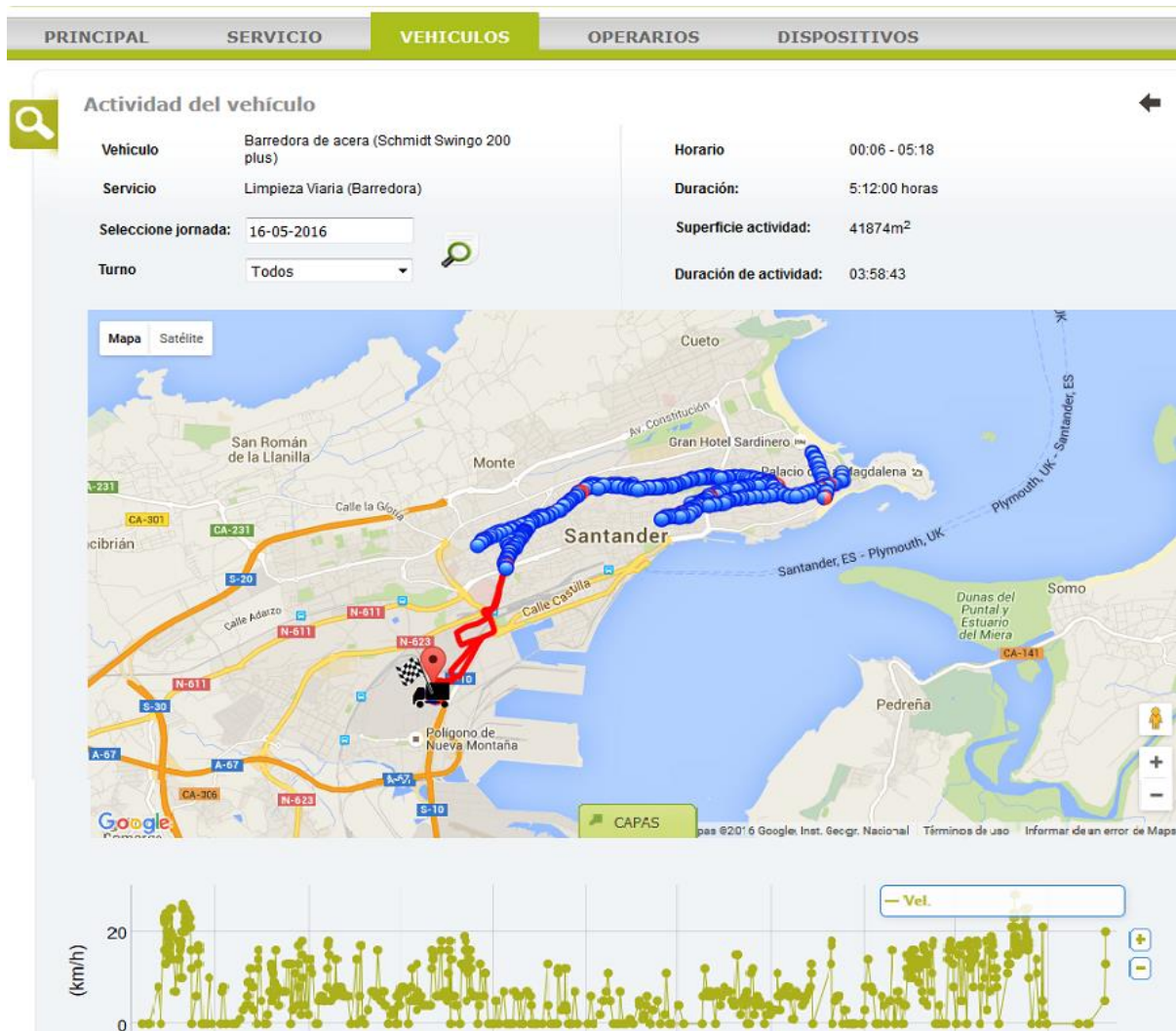




The street sweeping is organized in brigades of street operators. There are brigades organized by zones and streets that work daily in the street cleaning (mechanical, manual and mixed) and the emptying of the litter bins.

Each street operator carries a smartphone with which the route followed by this worker is traced and is easily located by the foreman of the group through a web platform.

The bins are identified with an NFC card so that when the operator empties the bin, it is registered on the platform. There are also automatic electric sweepers of adequate size for streets and sidewalks with a sensor that indicates the geolocation of the vehicle and traces the route in real time.



The inclusion of IoT technology has increased four times the efficiency of service management.

Waste treatment of the most relevant waste fractions

Waste fraction	First treatment destination	Treatment process
Residual waste	separation of organic and non-organic fraction in waste treatment plant Meruelo	<ul style="list-style-type: none"> recyclables are sent to recycling centres combustible fractions are incinerated on site organic fraction is sent to fermentation facility Non-combustible and non-recycling residues are sent to the non-hazardous on site waste dump
Separately collected recyclables (yellow and blue dumpster bins)		Recycling in special recycling and recovery centres
Glass		Recycling in recycling centres

Specific focus on certain waste fractions/management models

- “SmartSantander”: use of IT tools and innovative technologies (various sensors, Radio-frequency identification (RFID) and near field communication (NFC) tags to improve the urban waste management (by knowing in real time IT the locations and the status of rubbish bins and containers and also the fill level), GPS/GPRS tracking in order to optimize the waste logistics of urban waste, etc.
- App “Cuida Santander”, presenting the data collected to citizens/visitors, can be used to report events and incidences à Communication channel
- The data is monitored at the scale of the waste collection route, not the bins themselves. It is possible to assess the impact of tourism on waste production when looking at the data of the collection routes going through the touristic areas. Besides, as the data regarding waste collection is monitored at the scale of the waste collection route, it is possible to use this data for monitoring.

PRINCIPAL **SERVICIO** VEHICULOS OPERARIOS

Contenedor Envases: COSTE7669



Datos técnicos		Características	
Código RFID	E280110520002194E0150000	Nº Inc.	0
Modelo	Envases 2400L	Nº Reemp.	0
Capacidad	2400	Edo. Conservación	Buen Estado
Fecha de Alta	11-08-2014 08:37	Últimas Actividades	26-04-2016 07:12

Datos sensorizados		Estado Actual
Sensor	08EFAB0000000C84	
Batería	81 %	
Temperatura	12 °C	
Nivel de llenado	36 %	
Última Lectura	27-04-2016 09:51	

Ubicación: Calle los Ciruelos, 36
Coordenadas: 43.4582874, -3.8534512

Histórico de lecturas



EMPRESA CONCESIONARIA **ASCAN GEASER**

Página principal - Sección 1
Estado actual del parque de contenedores sensorizados y de las incidencias

Cuida Santander estuya

everismart suite - allWaste **everis**
an NTT DATA Company

PRINCIPAL **SERVICIO** VEHICULOS OPERARIOS

¿Qué está pasando?

Parque Contenedores

Envases

- Vacio (Green)
- Lleno (Red)
- Medio (Yellow)

Papel

- Vacio (Green)
- Lleno (Red)
- Medio (Yellow)

Incidencias

Incidencias actuales

- Contenedores (Orange)
- Papeles (Blue)
- Otros (Red)



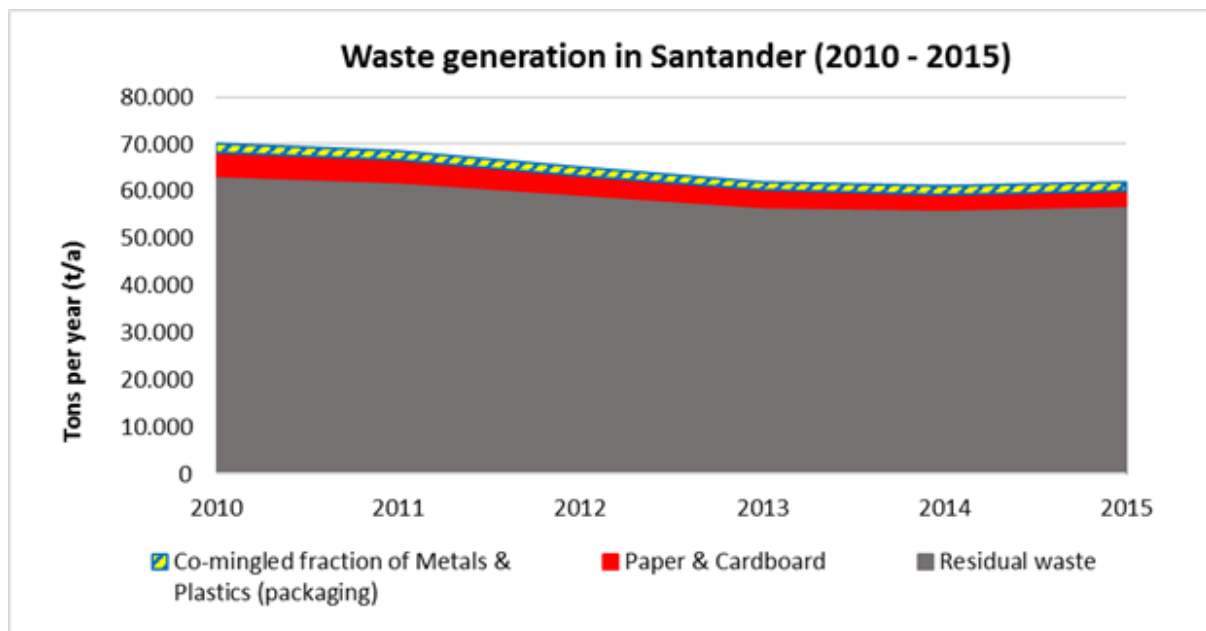
36.2% (Medio), 53.1% (Vacio), 10.7% (Lleno)

29.1% (Medio), 61% (Vacio), 10.9% (Lleno)

18.4% (Contenedores), 20.9% (Papeles), 60.7% (Otros)

NEC

Specificities and challenges regarding the performance of the collection of certain waste fractions



- Increase of the total municipal solid waste produced, mainly due to the increase of the recyclable waste produced and collected
- In the recent years, there has been an increase of the total municipal solid waste produced. Apparently, this is due to the end of the economic crisis, thus to the increase of consumption of goods and products in comparison with the period of the economic crisis.

Main priorities regarding waste management

- Campaign against litter (deposit of waste outside containers): awareness campaign to appeal to individual responsibility
- Measure to improve the cleanliness of the city: extra-large containers for bulky waste (main sources are: shops, catering establishments) and small waste on sidewalks (for gum, paper, butts, etc.)
- Reuse and raising awareness are key points in the case of Santander

- According to the majority (69%) of waste workers surveyed in Santander³⁷, awareness raising among citizens and businesses is the main priority for the pilot of Santander,



followed by behavioural change (56%) and optimizing waste treatment (44%).

Gender profile

General Director of environment, responsible for the urban solid waste collection service, and the head of the environment service are two women. They have been involved in designing waste management strategies.

Gender balance of the waste management team:

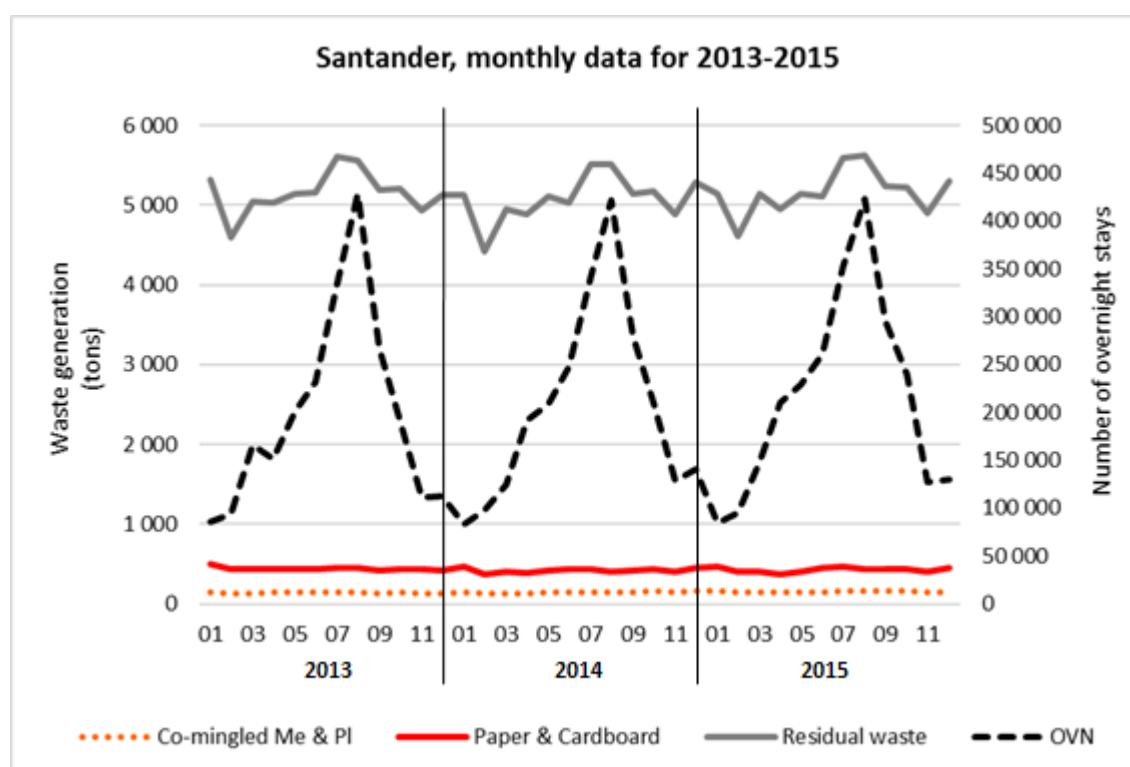
	male	female	Total	% Male	% Female
1 Managers and Senior Officials	3	2	5	60%	40%
2 Professional occupations	2	2	4	50%	50%
3 Associate Professional and Technical	11	0	11	100%	0%
4 Administrative and Secretarial	5	0	5	100%	0%
5 Skilled Trades Occupations	2	3	5	40%	60%
6 Personal Service Occupations	2	0	2	100%	0%
7 Sales and Customer Service Occupations	0	0	0	0%	0%
8 Process, Plant and Machine Operatives	155	0	155	100%	0%
9 Elementary Occupations	143	11	154	93%	7%
All occupations	323	18	341	94,7%	5,3%

³⁷ Sources: URBAN-WASTE deliverable D3.2 : Situation and behavioural analysis of consume and waste behaviour and patterns

Waste and tourism³⁸

Main impacts, influences and challenges of tourism on waste production and waste management identified

- Seasonal increase of waste is confirmed to be one of the main challenge in Santander according to the waste workers surveyed.
- Tourism significantly affects waste production in Santander according to 57% of tourism workers, while this was confirmed just by 28% of waste workers and 18% of tourists surveyed.
- Waste workers considered that the main waste producers in the tourism sector in Santander are hotels, restaurants and bars.



In Santander, summer months are the high season of tourism. Peaks in the number of overnight stays are clearly visible for all summer months from 2013-2015. For waste generation, a similar trend is visible, but the peaks are less pronounced. For this pilot case it can be assumed that all waste generated by hotels is represented by the data provided for analysis as waste from tourist establishments is collected and treated together waste streams collected from households.

³⁸ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Due to the fact that the share of tourists compared to local resident population is very small even in months of high tourism season (< 5 %) and the data set available for statistical analysis was small, no reliable results regarding the amount of residual waste per overnight stay could be produced.

Street bins and tourism	
Residual waste	2.259
Separately collected recyclables	2.071
Number of touristic waste producers (food and accommodation tourist infrastructure)	467

- During the summer, reinforcement of the workforce and increasing of the number of work shifts for waste collection, especially in the touristic zones
- Slight increase of MSW in the summer, with a significant increase in glass and slight increase of plastic waste, important increase of street sweeping waste and also from bins at beaches

Main priorities regarding waste production and management and tourism

- During the focus group, it has been mentioned that one of the main problems in Santander was the lack of social awareness regarding waste.

Main targets for the URBAN WASTE project

- 13 beaches at least with EMAS certification
- Awareness campaign implemented in the city (targeting cigarette butts, cans, other plastic waste), especially on buses and on the big walking streets
- Areas of improvement: extra-large containers for bulky waste, bins along sidewalks for small waste and litter

- **Stakeholders**

The municipality of Santander includes in its Community of Practice several stakeholders coming from different fields such as: food and beverage services, shops, event organizations, tour operator, local authority, university, association of hotels, NGO, waste management authority and municipal service provider for waste management. Thus the pilot case Santander has a good diversification in the type of stakeholders involved.

The hostelry association is particularly involved in the project, as they also participated to the Copenhagen meeting.

- **Gender approach**
- Men dominate management, professional and operative jobs, while women dominate administrative, secretarial, sales and customer services

- 19 men and 13 women. It would be useful, when recruiting new stakeholders to focus on encouraging more women.
- It may be useful when recruiting new stakeholders to focus on encouraging more women. There appears to be a serious engagement with gender equality as an issue, although jobs are stereotypically gendered. Santander noticed that they had a lot of female participants with a lot of influence due to their job position.

Selection of measures in Santander

Discussion on the list of measure forms during the first bilateral meeting

Existing measures	Comments
Collection of cooking oils from restaurants	This is already in place but they will see if this is something to work on, if there is a need to improve the actual system.

Interesting measures to implement	Comments
Awareness campaign on food waste with the support of local restaurants	The gastronomy aspect is also an important part of the tourism in Santander.
Waste sorting in hotel rooms	The AccorHotel group has a program called planet21 on sustainable actions, thus hotels from this group might participate to such action like waste sorting in hotel rooms.
Cooperation with local non-profit recovery organization	There is a big network of charities in Santander
Promotion of tap water and reusable flasks among tourists	It seems like an interesting and useful measure, but Santander was concerned about the finances. Apart from the URBAN WASTE budget, there is the possibility to find sponsors to finance the flasks for instance
Reuse initiative in camping sites	This could also be an interesting measure, it will be discussed with other stakeholders.







Measures that seem difficult to implement	Comments
Food tracking device	It is a very interesting idea but might be complex to implement since it is time consuming for private businesses. Then it would be interesting to create partnerships with local universities or schools (in hostelry or catering) with private restaurants or hotels willing to test it, to give them some support.
Pilot test with pay as you throw tax for businesses (tourist establishments)	This will depend on important political decisions and won't be possible within the framework of URBAN WASTE
Training courses / recycling and prevention advisors for businesses (tourist)	The measure could be useful but difficult because of human means, this could be done perhaps with schools.
Guidelines/instructions for waste sorting translated in foreign languages for tourists	This measure does not seem to be a priority as most of the tourists are Spanish tourists.

Other potential measures	Comments
Green procurement in hotels	
Workshop for kids in the summertime to disseminate URBAN WASTE strategies in the beaches areas	
A swap day combined with a communication campaign as organized in Copenhagen	

Measures selected during the 2nd Community of Practice event

Selected measures to be implemented	Comments
Communication campaign on reuse through swap markets	This a priority for Santander to implement that measure.
Promotion of tap water	All the data has already been provided to the waste app to localize the water fountains within the city. They also have put those data in open access on their website.
Awareness campaign on marine litter	One of the main actions that will be leaded within this measure will be to organize recycling workshops with kids on the beaches.
Translation of waste sorting instructions in different languages for national and foreign tourists to be provided to the touristic accommodations	
Organization of eco-events	To elaborate a charter with a package of actions, including mandatory actions and voluntary actions regarding waste management in the organization of big events.

Measures implemented in Santander

Measures implemented	Objectives & summary of actions
<p>Communication campaign on reuse through swap markets (measure n°9)</p> 	<p>Swap markets of goods that are no longer valuable to local citizens and tourists contribute to the promotion of reuse and prevent these from ending up in landfills or being treated in recycling plants. The Municipality of Santander, in collaboration with several NGOs, organized a swap market where local residents and tourists could exchange goods or donate non-perishable food products to participate.</p>
<p>Promotion of tap water (measure n°13)</p> 	<p>The promotion of tap water aims at decreasing the consumption of bottled water, in particular PET bottles. Tourists are particularly big consumers of bottled water when on holiday, both directly through their purchases and indirectly through their tourist lifestyle (hotels, restaurants, etc.). In order to promote the consumption of tap water and decrease the consumption of plastic bottles, the Municipality of Santander has included information on available public fountains around the city in the WasteApp, placed promotional stickers in fountains and offers reusable bottles as prizes through the WasteApp.</p>
<p>Waste sorting instructions translated into different languages (measure n°14)</p> 	<p>As the waste management system may be very different when on holiday, and the information is not necessarily easily accessible to tourists (language barriers, lack of information), waste sorting can be difficult for tourists. This measure intends to solve this problem by making it easier for tourists to understand the waste management system in Santander and therefore reduce the amount of litter produced by them.</p>
<p>Awareness campaign on marine litter (measure n°19)</p> 	<p>Marine litter originates mainly from land-based activities. It covers any solid material which has been deliberately discarded, or unintentionally lost on beaches and on shores or at sea, including materials transported into the marine environment from land by rivers, drainage or sewage systems or winds. Among the sea and land-based activities are included littering actions caused by tourism in coastal areas. To tackle this issue, the Municipality of Santander organized 30 recycling workshops in three local beaches, targeting mainly children.</p>
<p>Food tracking device (measure n°20)</p> 	<p>The food waste tracking device is used to quantify the food waste in 5 restaurants in Santander in order to generate knowledge on how much and what is wasted and when it is wasted. The gathered data can be used to reduce over production.</p>
<p>WasteApp (measure n°21)</p> 	<p>WasteApp measure represents, for the Municipality of Santander, a new innovative awareness campaign addressed to visitors and citizens. In order to collaborate with ULGC in the development and evaluation of the WasteApp in Santander, the Living lab methodology was followed, which is part of the general strategy as <i>Santander Smart city</i></p>

Main results and possible fine tuning in Santander

Communication campaign on reuse through swap markets (M09)

The Municipality of Santander used different promotion and communication materials, including 500 bracelets for participants, 3.000 brochures in Spanish and English, 2 flags, and one roll-up for dissemination purposes.

300 people attended the Swap Market, from which 70 donated (60% women) and swapped goods.

In total, 128 kilograms of goods were swapped and therefore saved from ending up in landfill or having to be treated in recycling plants.

Fine tuning

- ✓ Start the communication campaign at least one month before the event takes place.
- ✓ Organize a collect campaign one week before the swap market to ensure that there are different goods when the swap market starts.
- ✓ Organize the swap market with different goods categories, like toys to attract and involve parents with children.
- ✓ Organize if possible the swap market in conjunction with another event in the city to ensure a good participation.

Promotion of tap water (M13)

421 reusable bottles were distributed in different events. 102 public fountains have been identified and mapped in the WasteApp.

It is estimated that approximately 40.000 persons were reached daily through the communication campaigns launched in the municipal buses.

Waste sorting instructions translated into different languages (M14)

2,000 waste instructions translated into Spanish, English and French were distributed in 8 public and private points for sorting correctly glass, plastic, paper and mixed waste.

Taking into account that the instructions were also distributed online, it is estimated that at least 5,000 tourists have been reached.

Fine tuning

- ✓ Produce efficient instructions with realistic pictures, appropriate color and short sentences

Awareness campaign on marine litter (M19)

Santander in collaboration with the association “The Language of the Sea” organized a beach clean-up day in May with the participation of 210 people (53% women and 47% men). 385 kg of waste were collected. 5 beaches in the north of Spain were cleaned simultaneously.

30 recycling workshops were organised in the 3 different beaches between July and September 2018, with a participation of 304 people altogether.

From the total of participants, 232 people were aged between 5 and 10 years old (76.32%), 64 people between 11 and 16 years old (21.05%), 7 people between 17 and 60 years old (2.30%) and 1 person above 60 years old (0.33%).

The promotion of the measure was done through the municipal website, social networks and the network of the stakeholders.

Fine tuning

- ✓ Organize workshops and beach clean-up days when calendar of summer events is not too busy to ensure a good participation of people.

Food tracking device (M20)

5 restaurants were equipped with the food tracking device. Trainings were provided for each restaurant's personnel and managers. The trainings and application setting was adapted to each restaurant's internal processes.

WasteApp (M21)

4,000 WasteApp instructions leaflets distributed. 6 public and private sponsors involved. 277 containers were stuck with a QR codes for different fractions of waste: Glass 30, Paper 117 and Plastic 130.

Promotion of WasteAPP was done on the municipal web portal and during the "Environmental week" events.

The number of downloads reached 467 of which 222 have been registered (45% women, 40% men, other 0,4%, unknown 4,6%).

The number of recycling acts reached 648 with 457 related to plastic, 151 related to paper and 40 related to glass.

The number of swapped awards was 250: Santander's books, reusable bottles, children's drawing books, backpacks, caps and umbrellas.

Fine tuning

- ✓ use WasteApp as an official municipality tool for betting on using this innovative gambling experience to increase the awareness of visitors and citizens regarding waste
- ✓ launch WasteApp including municipal sponsors in order to ensure awards from the beginning
- ✓ QR stickers have to be adequate for outdoor use
- ✓ a self-explanatory sticker should be stuck near the QR codes on the containers to facilitate visitors participation
- ✓ organize specific events to promote the application and/or maintain a constant communication campaign, putting special emphasis on the days of tourists affluence

Future of measures in Santander

Communication campaign on reuse through swap markets (M09)

This measure will be continued by the Municipality of Santander and the following stakeholders: AMICA, SEO/BirdLife, ASCAN -GEASER, UTE Jardines de Santander, Ecocampus.

Promotion of tap water (M13)

This measure will be continued by the Municipality of Santander and the following stakeholders: FCC Aqualia, UTE Jardines de Santander, NH Santander , Ecocampus, Kells School.

Waste sorting instructions translated into different languages (M14)

This measure will be continued by the Municipality of Santander and the following stakeholders: AFID Congresos, AMICA , SEO/BirdLife, City Sightseeing Santander, ASCAN -GEASER, UTE Jardines de Santander, NH Santander , Ecocampus , Kells School.

Awareness campaign on marine litter (M19)

This measure will be continued by the Municipality of Santander and the following stakeholders: ASCAN –GEASER, ACCEI, Kells School.

Food tracking device (M20)

This measure will be continued by the following stakeholders: Grupo Deluz.

WasteApp (M21)

This measure will be continued by the Municipality of Santander and the following stakeholders: AFID Congresos, AMICA , SEO/BirdLife, Ecovidrio, City Sightseeing Santander, Fundación Leonardo Torres Quevedo, ASCAN -GEASER, Grupo Deluz, NH Santander, Ecocampus, Kells School.

Overview³⁹

Socio-economic and land use data

Type of pilot case	Municipality
Number of inhabitants	122.503 (2015)
Total area (km²)	205,5 km ²
Total urban area (km² and %)	33,1 km ² 16 % of total land area
Total nature & open space area (km² and %)	170,6 km ² 83 % of total land area
Total coastal area (km² and %)	41,4 km ² 20 % of total land area

Tourism

Average length of stay	3.5 days (2015)
Number of tourist accommodation establishments	<ul style="list-style-type: none"> hotels and similar accommodation : 140 (2015) holiday and other short-stay accommodation : 400 (2015) camping grounds, recreational vehicle parks and trailer parks: 3 (2019)
Total number of tourist arrivals at a touristic accommodation	202.294 (2016)
More frequent countries of origin of the tourists	France, Germany, UK, USA, Spain, Switzerland, Netherlands, Belgium, Russia, Poland

³⁹ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

- 1/3 of the tourists are staying in holiday and short-stay accommodations and camping sites while the other 2/3 in hotels

Type of tourism and activities

The tourist offer of the city of Syracuse is very rich and varied.

The Syracusan territory is one of the richest Sicilian areas of historical, archaeological and monumental evidence of Sicily (two UNESCO awards).

Religious tourism due to the fact that Syracuse was the first western Christian community founded by the apostle Paul and Bishop Marciano. Furthermore, Syracuse has catacombs similar in extension to those of Rome and finally, it became famous for the cult of the *Madonnina delle Lacrime* with the lacrimation of the Virgin Mary image in August 1953.

Another tourist attraction is quality food production, in the province of Syracuse there are several European awards among DOC DOP IGP DOCG.

Coastal and recreational maritime tourism for wonderful beaches and seabeds.

Cultural tourism during the period of the Classical Festivals, organized every year from May to mid-July.

As regards to the months October / November and January / February tourism registers a sharp drop.

We can distinguish a series of itineraries and related activities:

- Cultural and archaeological itinerary: visits to the Archaeological Park of Neapolis at the Paolo Orsi Archaeological Museum, to the remains of the ancient Temple of Apollo up to the island of Ortigia with its charming alleys.
- Naturalistic itineraries with visits to the Ciane River and Grotta del Monello Park, Cavagrande - Cassibile and the beaches and seabed of the Plemmirio natural reserve.
- Religious itineraries with the cult of Saint Lucia and the Madonna of tears.
- The other tourism directories concern cruise / pleasure boating and seaside tourism in reference to the Port of Syracuse and the beaches and seabeds.

Type of tourists

Regarding the type of tourists we find families, young people and over 60s.

Specificity in the type of tourist activity that should be taken in account:

- the historic center access routes have reduced mobility and shows signs of heavy gridlock
- the exponential increase of food services, represented especially by the number of restaurants, and the exponential increase of Bed & Breakfasts, holiday homes and landlords, is out of control.

Only in the course of 2019 the Administration started to listen the needs of the sector, plan services and impose quality control especially on non-hotel commercial users.

Waste data⁴⁰

Main types of waste prevention actions regarding Urban-Waste objectives



Syracuse waste prevention actions:

- Domestic composting (free distribution of composters, communication campaign)
- Courses for training “environment inspector” (volunteers)
- Promotion of Community Composting
- Participation in the European Week for Waste Reduction - EWWR
- Strengthening of Environmental Education initiatives for adults and schools
- Meetings with the productive categories (restaurateurs, tourist guides, etc.) on the theme of food waste with the participation of active associations on the topic

Organization of waste collection for households

Responsibility



The municipality of Syracuse is responsible for the collection of MSW. The collection itself is carried out by a private company (TEKRA) on behalf of the municipality.

The collection covers households and similar establishments.

The treatment belongs to the producer, in the case of urban waste is the responsibility of the Municipality.

Big producers are expected to collect differentiated waste (defined as special waste). The municipality is obliged to collect unsorted waste.

Financing system

Regarding the price paid by commercial producers for waste collection, the calculated tax is somehow proportional to the produced quantity (the waste is not weight, but the number of collections of the different bins is counted).



Besides, there are other mechanisms that can lower the price of the collection:

- on-site composting, households and similar establishments who uses a compost bin to dispose organic waste on their own, is entitled to a 15% reduction in the variable portion of the tax rate

⁴⁰ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

- on-demand collection, establishments who pay a private company to collect their waste can have a reduction on the municipal tax proportionally to what they pay for the private service

Collection system

In 2017, the Municipality of Syracuse implemented door-to-door collection in the whole municipality for the following five waste fractions:

- paper and cardboard
- plastics
- metal and aluminium
- glass
- organic waste

Regarding the extension of the separate collection to the whole municipality including the new waste fractions (plastics, metal and aluminium, glass, organic waste), the private society operating the collection has just been selected, and the collection should start in the autumn.

Syracuse door to door collection system:

- Brown bin – organic waste
- Yellow bag – plastic, metal and aluminium
- Blue bin - paper
- Green bin - glass

Household calendar:

- Organic waste - Wednesday and Friday (in Ortigia every day)
- Plastic, metal and aluminium - Thursday
- Paper - Friday
- Glass - Thursday
- Unsorted waste - Tuesday and Saturday

Non-domestic use calendar:

- Organic waste - from Monday to Sunday
- Plastic, metal and aluminium - Thursday and Saturday
- Paper - Friday
- Glass - Tuesday and Friday
- Unsorted waste - Tuesday and Saturday

The Municipality of Syracuse has a municipal collection centre (MCC) where citizens can bring their recyclable materials such as paper, cardboard (even bulky such as cardboard packaging), plastics, metal and aluminium, bulky waste and hazardous municipal waste.

The historical centre Ortigia and the marine quarter now are served by door-to-door collection.

Organisation of waste collection for private enterprises

The limit set by the Italian legislation is: «The quantitative limits inherent to the fractions of assimilated waste, expressed in kilograms per square meter, refer exclusively to the surfaces occupied by offices, canteens, bars, premises used for the service of workers or otherwise open to the public and in sales facilities with a surface area of less than 300 square meters". So, big producers registered at the National Register of Environmental Managers can authorized the collection. The choice of companies is free.

Organisation of street sweeping and street bins collection

The collection of the street bins and street sweeping is done by a private company on behalf of the municipality. Street sweeping waste includes waste of any kind or origin which is lying on streets and roads and in public areas, waste lying on sea and lake beaches and on the banks of the waterways, and green waste from public areas (such as gardens, parks, cemeteries). This collection is operated by the same private company as the one that collects household waste: IGM.



Waste treatment of the most relevant waste fractions

The residual waste is landfilled at 30km, in the province of Catania.

Treatment of separately collected waste fractions: a consortium is responsible for recovery and recycling of packaging, including steel, aluminium, paper, wood, plastic and glass waste.

All the waste fractions are sent out of the area of the Municipality of Syracuse for treatment, as Sicily has no treatment plants except for glass, which is treated in other municipalities of Sicily (Marsala and Trapani).

Waste fraction	First treatment destination	Treatment process
Mixed waste (unsorted)		landfilled
Packaging materials (steel, aluminium, paper, wood, plastic and glass)		sent to other municipalities (outside Sicily)
Glass		sent to other municipalities (in Sicily: Marsala and Trapani)

Specific focus on certain waste fractions/management models



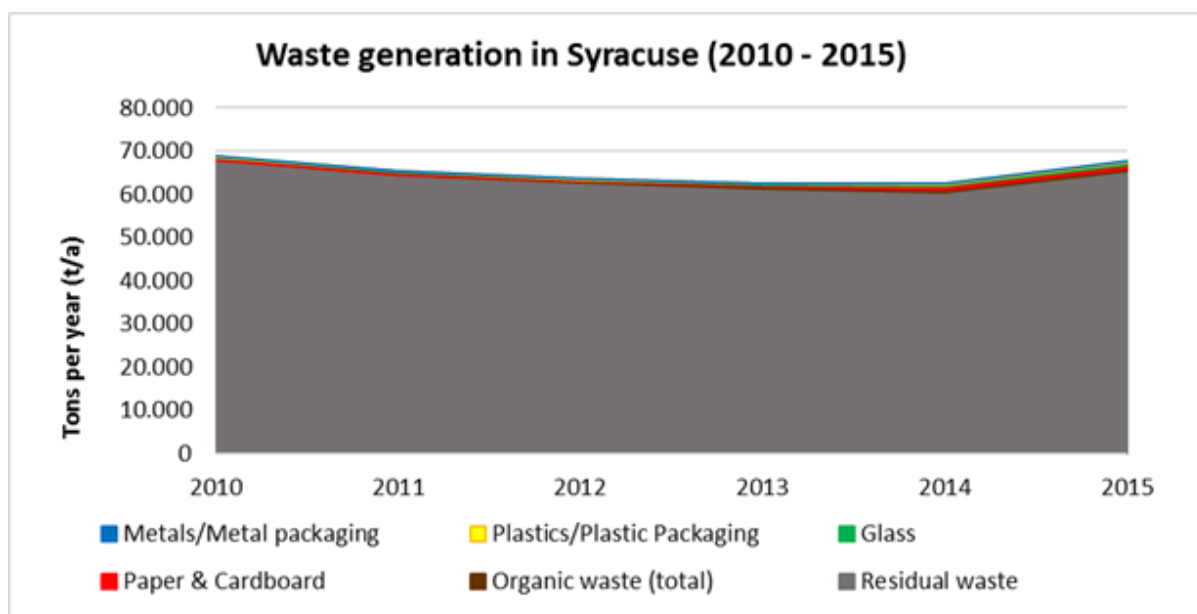
- Municipal collection center where citizens can bring recyclables (paper/cardboard, glass, plastics, metal and aluminum, bulky waste), with a tax incentive
- The municipal regulation “TARI 2017” established the **waste weighing system**: each citizen can confer waste to the collection center do the access and identification with his own health card or, in any case, an identity document to accumulate the "points" necessary to accrue the discount on waste tax. A discount that will be automatic in the bill on the variable part of the Tax.

Discount in a year:

- between 100 and 200 kilos - 20 percent discount on the amount on the variable part of the Tax.
- between 200 and 400 kilos - 40 percent.

Data are automatically registered at the municipal offices, which process the discount.

Specificities and challenges regarding the performance of the collection of certain waste fractions



- In Syracuse, from 2012 onwards there is a strong increase in the collected amounts of paper & cardboard, glass, metals and plastics due to the implementation of two new collection platforms. Before 2012, waste was collected and managed by platforms in Catania (a province near Syracuse).
- Organic waste also shows a strong variation which can be explained by the fact that for organic waste from households there only was a trial collection from 2012-2013 in parts

of the city. The strong variations for green waste which has to be deposited at municipal waste collection centres can be explained by poor data quality. Only after 2012 with the new collection platforms in Syracuse has waste data improved.

- The recent increase in residual waste (between 2014 and 2015) is due to an increase of the number of tourists, and a temporary increase because of some changes in the waste collection system.

Main priorities regarding waste management

- Extending door-to-door collection and the waste fractions collected to all the municipality (already in progress for some suburban areas)
- Enhancing communication activities on the existing practices regarding waste management
- Communication campaign on vegetable oils and animal fats from households and other producers to promote specific management with the implementation of specific containers
- There is a strong will to connect the URBAN-WASTE project with the waste management plan and activities in order to create synergies.
- One important goal would be to raise awareness in touristic areas and provide more information on the separate waste collection system.
- Most (82%) of the waste management workers surveyed⁴¹, 22 in total, consider the improvement of the waste collection system as the main priority for improving waste management in Syracuse. The second option selected is awareness raising on citizens and businesses with a share of 59%. The following graph summarizes the share of the other responses.

⁴¹ Sources: URBAN-WASTE deliverable D3.2 : Situation and behavioural analysis of consume and waste behaviour and patterns



Gender profile

Gender balance of the waste management team:

9 functionaries are women, 8 functionaries are men, 1 responsible (man), 1 manager (man)
1 consultant woman.

Waste and tourism

Main impacts, influences and challenges of tourism on waste production and waste management identified

- According to the surveys tourism influence on waste production is considered significant just by the 30% of the tourists, 27% of tourist workers and 18% of waste workers surveyed.
- Street bins have been considered by waste workers (64%) to be the main source of waste coming from tourism, followed by hotels and restaurants (around 30%).
- Considering the main challenge presented by tourism in relation with waste management in Syracuse most of waste workers (68%) believe that seasonal increase of waste is the main challenge, followed by difficulties with waste handling by hotels, restaurants and other tourism related business and activities.

Unfortunately, the available data on waste amounts and tourist overnight stays did not allow to quantify the waste generation by tourism, and to get a graph to describe the situation.

- Increase of the waste produced, especially through catering activities and ships, during the summer
- In details, increase of MSW and residual waste in the summer and increase of glass in August, slight increase of plastics in the summer
- Cleanliness of the beaches intensified from May to October

Street bins and tourism	
Residual waste	2.300
Separately collected recyclables	736
Number of touristic waste producers (food and accommodation tourist infrastructure)	202

Main priorities regarding waste production and management and tourism

- Tourists and restaurants play a crucial role in waste production during the tourist season

Main targets for the URBAN-WASTE project

- Some hotels from the AccorHotels group participating within the program planet21

- Training sessions on sustainable waste management in enterprises, or companies and associations
- Provision of training and materials such as containers, composting boxes, reusable bags etc.
- Pilot project on composting
- There is a strong will to connect the URBAN-WASTE project with the waste management plan and activities in order to create synergies.
- One important goal would be to raise awareness in touristic areas and provide more information on the separate waste collection system.
- **Stakeholders**

Syracuse involved a wide range of stakeholders in its Community of Practice covering hotels and food and beverage companies, tourism associations and tour operators, university and research centres, environmental NGOs, transport providers, waste management services and local authorities (port authority, protected areas managers, regional authority) educational centres, and citizens' associations.

- Are there other elements to complete?

The municipality involved the high school on Tourism management.

- **Gender approach**

During the events that took place in Syracuse within URBAN-WASTE, there were more women than men, and among the women some of them have high job positions such as municipal councillors. Besides, among their stakeholders, there is an association for accessible tourism (for disabled people).

- Syracuse reported having invited a councilor for equal opportunities to meetings to help to increase the involvement of women across the public sector.
- Gender equality is a 'new theme' for Syracuse
- There seems to be quite a strong stereotypical gendered division of labour, on the available evidence.
- The list of stakeholders is rather male dominated. Hopefully, more stakeholders have now been identified and this has created a better gender balance.
- The focus group transcripts are all very brief and do not give much insight into participants' views.
- There are some indications that there is an intention to do more to redress gender equality in the future.

Selection of the measures in Syracuse

Discussion on the list of measure forms during the first bilateral meeting

Several suggestions came from participants within the first Community of Practice event. The main ideas were:

- To realize ecological islands in strategic points of the city where tourists arrive by bus to reach the historical center of the city Ortigia. At the moment the area present only little bins quite always full of not separated waste.
- To enhance education and awareness campaign addressing and targeting the communication based on the different actors, underlined in particular the vantages. For example communicate to hotels that they could reduce their waste tax based on their rate of waste separation could be an incentive to introduce in each room the right communication on waste management in the city and the possibility to separate waste thanks to the separated bins (paper – glass – plastic).
- To start working with students of hospitality training and catering institute using the instrument “food waste tracker”.
- To implement a composters community.
- Many participants underlined that it is very important to find the right tools to better cooperate with tourist operators - especially restaurants and hotels - since they play a crucial role in waste production during the touristic season.
- The project “Consume-less” with the application of the brand “ConsumelessMed” could also be an interesting project to develop synergies with the URBAN-WASTE project.




The six first measures defined as a priority for the municipality are indicated and ordered per priority thanks to a number in brackets in the following tables:

Existing measures	Comments
Organization of a joint communication campaign and cleaning day on marine litter (4)	This already exists at national scale but this could be reinforced at the scale of the municipality, also with artistic initiatives and projects.
Tax incentive for hotels or other touristic establishments sorting their waste	This is already going on through the current tax system.
On-site composting in restaurants or hotels	This already exists.

Interesting measures to implement	Comments
Development of bins for recyclable waste in strategic touristic areas (bus station, commercial areas, beaches, museums, main squares), such as “ecological islands” (1)	This is an important measure, as at the moment there are few public street bins for recyclable waste and they are too small. The extension of the network of these bins has to be defined regarding the location of the new bins and the organization.
Implementation and promotion of collection points for used cooking oils (2)	There are already some collection points but not enough, this could be further developed through the URBAN-WASTE project.
Translation of waste sorting instructions in different languages for foreign tourists to be provided to tourists with second homes, renters of touristic accommodations (3)	This is also an important measure as the municipality wants to inform more the tourists on the waste management, especially in a context of a new collection system.
Organization of eco-events and elaboration of an eco-event chart/guidelines (5)	This measure was proposed by the municipality of Syracuse as there are many events organized, especially in the summer. Thus, it would be interesting to include sustainable measures in the organization of the events. This could be supported by the realization of a chart, or guidelines, giving operational advices/protocol and good practices examples.
Test of the food waste tracking device in hotels or restaurants, in partnership with hospitality or catering institutes or universities	Even though this measure seems a bit difficult, the municipality of Syracuse will discuss it with the relevant stakeholders to see if they are willing to be involved for testing this app.
Distribution and promotion of doggy bags in restaurants	This measure seemed interesting but is not the priority at the moment.

Measures that seem difficult to implement	Comments
Implementation of waste sorting in hotel rooms	This measure seems rather difficult to implement and to convince hotel managers.

Measures implemented in Syracuse

Measures implemented	Objectives & summary of actions
<p>Collection points for used cooking oils (measure n°4)</p> 	<p>The measure aims at installing bins for collecting used cooking oils (UCO) of private accommodation close to the old city and the popular market. Facilities were mobilized to promote the initiative as well as events have been organized for collecting the UCO. The measure was supported by wide communication campaign</p>
<p>Sorting bins in public and touristic places (measure n°12)</p> 	<p>This measure aims at installing new bins for waste sorting collection in touristic points of interest.</p> <p>The measure was supported by a massive communication campaign about waste separated collection and waste reduction</p>
<p>Waste sorting instructions in foreign languages (measure n°14)</p> 	<p>Waste instructions leaflets distributed to the 23 facilities involved and 3 info-points, further than during the main events where the project Urbanwaste was promoted with a info-corner, also for interviews with tourists and citizens. The activity was also supported by a massive communication campaign about waste separated collection and waste reduction (stickers, Promocards, involvement of touristic info points, association of guides and facilities, social communication).</p>

Main results and possible fine tuning in Syracuse

Collection points for used cooking oils (M04)

1 bin for collecting used cooking oils (UCO) of private accommodation (citizens and tourists) with a capacity of 300 litres installed in a strategic place close to the old city and the popular market.

23 facilities and 3 touristic info-points were committed to promote the initiative. 6 tailored events have been organized for collecting the UCO (47 litres in 3 months). The measure was supported by a massive and wide communication campaign about waste separated collection and waste reduction (stickers, Promo cards, T-Shirt, info-point during main cultural and public events, involvement of touristic info points, association of guides and facilities, social communication).

Fine tuning

- ✓ Involve other types of facilities (i.e. hotels, supermarkets...) to increase the participation.
- ✓ Plan the involvement of stakeholders well in advance before the peak tourist season when they are available and not too busy.

Sorting bins in public and touristic places (M12)

26 new bins for waste sorting collection (paper+plastic+unsorted, single paper, single glass and plastic+cans) was installed in 5 touristic points of interest: "scalagrega", Archaeological Park, Santuario Madonna delle Lacrime, the touristic harbour and Molo Sant'Antonio.

The measure was supported by a massive communication campaign about waste separated collection and waste reduction: stickers, 3,850 promocards, info-points during main cultural and public events, involvement of touristic info points, association of guides and 23 facilities involved in the dissemination phase, and social communication.

Waste sorting instructions in foreign languages (M14)

3.850 Waste instructions leaflets translated in English distributed to the 23 facilities involved and 3 info-points, further than during the main events where the project URBAN-WASTE was promoted with a info-corner, also for interviews with tourists and citizens.

A map of touristic establishments providing tourists with waste instructions leaflets was realised.

The activity was also supported by a massive communication campaign about waste separated collection and waste reduction: stickers, promocards, involvement of touristic info points, association of guides and facilities, social communication.

Fine tuning

- ✓ Involve of stakeholders (facilities, guides) well in advance for the dissemination of instructions when they are not already busy in the management of touristic flows (summer season in Syracuse starts very early and finishes late).

Future of measures in Syracuse

Collection points for used cooking oils (M04)

The bins will be maintained and it is foreseen to install two other additional bins, one in the historical centre and one in the port area.

Sorting bins in public and touristic places (M12)

The sorting bins will be kept in the 5 selected areas, but the municipality is evaluating the possibility to install other bins in other two touristic areas.

Waste sorting instructions in foreign languages (M14)

The municipality of Syracuse will maintain the dissemination of the translated instructions.

More generally, in the new service management call (2020 - 2027), the municipality have decided to maintain the development of the 3 URBAN-WASTE measures. Furthermore, every year the measures will be promoted in two of the main events organized in Syracuse: the Ortigia film festival and the Ortigia Sound System Festival.

To better disseminate the measure, the administration will organize participation tables with extra-hotel facilities and information meetings for the distribution of the communication materials.



Tenerife

(Adeje, Arona, Puerto de la Cruz)

Overview⁴²

“Tenerife” pilot case does not comprise the whole island (Autonomous Community Canary Islands, Spain) but only the three municipalities of **Adeje**, **Arona** and **Puerto de la Cruz**.

Socio-economic and land use data

Type of pilot case	Municipality
Number of inhabitants	154.745 (2015)
Total area (km ²)	<ul style="list-style-type: none">• Puerto de la Cruz: 8,6 km²• Adeje: 106,0 km²• Arona: 81,9 km²
Total urban area (km ² and % of total area)	<ul style="list-style-type: none">• Puerto de la Cruz: 5,7 km² (66 %)• Adeje: 62,8 km² (59 %)• Arona: 53,8 km² (66 %)
Total nature & open space area (km ² and % of total area)	<ul style="list-style-type: none">• Puerto de la Cruz: 3,2 km² (37%)• Adeje: 40,3 km² (38 %)• Arona: 26,2 km² (32 %)
Total coastal area (km ² and % of total area)	<ul style="list-style-type: none">• Puerto de la Cruz: 5,4 km² (62 %)• Adeje: 13,5 km² (13 %)• Arona: 15,8 km² (19 %)

⁴² Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Tourism

Average length of stay	7 to 8 days (2015)														
Number of tourist accommodation establishments	<ul style="list-style-type: none"> hotels and similar accommodation in Puerto de la Cruz: 87 (2012) hotels and similar accommodation in Adeje: 111 (2012) hotels and similar accommodation in Arona: 112 (2015) 														
Total places of accommodation	<p>176.060 (first quarter 2019)</p> <ul style="list-style-type: none"> 97.555 (hotel) 78.505 (extra-hotel) Vacation Home: 15.556 Apartments: 48.741 Hotels: 88.529 Country House: 972 Country Hotel: 527 13 camping areas in Tenerife 														
Total number of tourist arrivals in hotels and similar accommodation	<ul style="list-style-type: none"> Tenerife pilot case: 3.550.534 (2015) Puerto de la Cruz: 671.857 (2015) Adeje: 1.630.080 (2015) Arona: 1.248.597 (2015) 														
More frequent countries of origin of the tourists in 2017 (Tourist > 16 years old visiting Tenerife)	<ul style="list-style-type: none"> United Kingdom: 39,2% Germany: 13,8% Península: 12,4% Italy: 4% Belgium: 3,8% Netherlands: 3,2% France: 3,1% Sweden: 2,5% Ireland: 2,3% Others: 15,6% <p>Percent of repeaters in the last 5 years (2017):</p> <table> <tr> <td>1. Norway: 57,7%</td> <td>8. Germany: 35%</td> </tr> <tr> <td>2. United Kingdom: 57,4%</td> <td>9. Netherlands: 33,9%</td> </tr> <tr> <td>3. Belgium: 53,1%</td> <td>10. Russia: 32,8%</td> </tr> <tr> <td>4. Denmark: 52,8%</td> <td>11. Switzerland + Austria: 28,4%</td> </tr> <tr> <td>5. Finland: 52,6%</td> <td>12. Spain: 24,4%</td> </tr> <tr> <td>6. Sweden: 48,9%</td> <td>13. France: 23,4%</td> </tr> <tr> <td>7. Ireland: 42,7%</td> <td>14. Italy: 22,8%</td> </tr> </table>	1. Norway: 57,7%	8. Germany: 35%	2. United Kingdom: 57,4%	9. Netherlands: 33,9%	3. Belgium: 53,1%	10. Russia: 32,8%	4. Denmark: 52,8%	11. Switzerland + Austria: 28,4%	5. Finland: 52,6%	12. Spain: 24,4%	6. Sweden: 48,9%	13. France: 23,4%	7. Ireland: 42,7%	14. Italy: 22,8%
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6. Sweden: 48,9%	13. France: 23,4%														
7. Ireland: 42,7%	14. Italy: 22,8%														

Puerto de la Cruz: ~80 hotels, average length of stay of 7 days

Adeje: ~100 hotels, average length of stay of 8 days

Arona: ~100 hotels, average length of stay of 8 days

Type of tourism and activities

Most frequent activities Tenerife tourism (2017)⁴³:

Practice some tourist activity: 40.6%

Sporting Activities: Trekking (10,5%); Golf (1,5%); Navigation (0,8%); Diving (1,4%); Apnea (0,2%); Surf/Bodyboard (0,8%); WindSurf/KiteSurf (0,3%); Kayak (0,5%); Bike (1,6%); MountainBike (0,4%); Climbing (1%); Paragliding(0,5%); Horse riding(0,2%)

Other activities: Thematic Park visit(31,4%); Cetacean observation (12,7%); Teide cable car ascent (11,4%); Health Care (7,5%); Museums, Concerts and Exhibitions (6,2%); Festivals and Popular Events (1,9%); Stars observation (2,1%); Birdwatching(0,8%);
Visit places of tourist interest: 38,5%

Frequent places: El Teide (37,6%); Santa Cruz (28,1%); Puerto de La Cruz (23%); Acantilado de los Gigantes (17,9%); La Laguna (17,7%); Garachico (17,7%); La Orotava (16,2%); Island Tour (16,1%); Icod de Los Vinos (16,1%); Barranco de Masca (13,4%); Playa de Las Teresitas (12,5%); Candelaria (10,2%); Anaga/Taganana (10,3%); Teno/Buenavista (7,8%); Excursion to another Canary Island (4,1%); Barranco del Infierno (3%); Other tours(1,3%).

Type of tourists⁴⁴

Tourism occupation, data 2017 (Canary Island) (%):

- Entrepreneurs and self-employed: 23,8
- Employee senior and middle positions: 35,2
- Auxiliary workers and workers: 15,3
- Students: 5
- Retirees: 18,6
- Unemployed/house helpers: 2,1

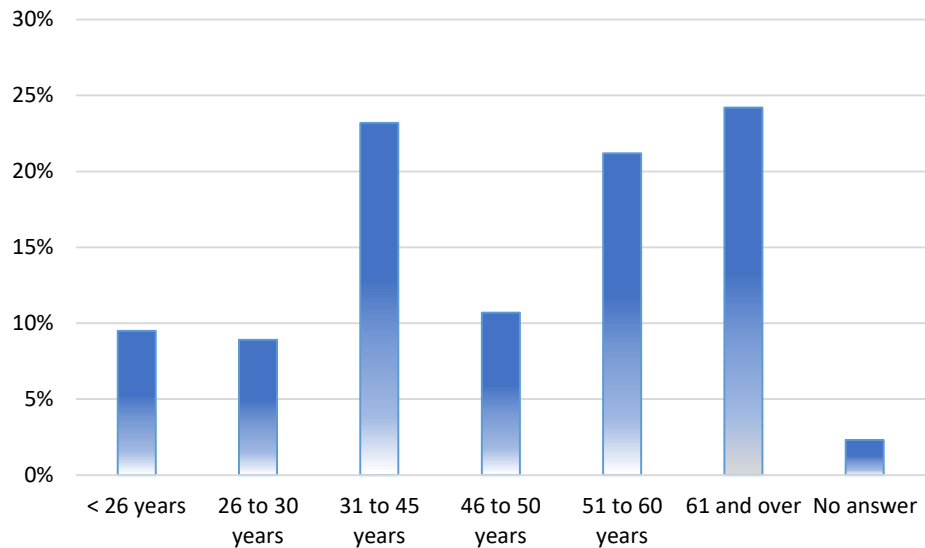
The most frequent way to travel to Tenerife is as a couple (60.7%), with 7.2% travelling with friends and 4.9% travelling alone. These being 89.5% adults and 10.5% children.

Familiar tourism represents 18,6% of tourists (2017) including parents travelling with their children (13.9%) and single-parent families (4.7%).

Extended family groups (grandparents, uncles, brothers, cousins, etc.): 4.9%.

⁴³ <https://www.webtenerife.com/investigacion/el-turista-de-tenerife/>

⁴⁴ https://turismodeislascanarias.com/sites/default/files/promotur_canarias_estacional_2017_0.pdf



Distribution of tourism by age (%)

Average age of tourists: **48 years**

Seasonality of the tourism⁴⁵

Tourist arrivals according to quarters:

First quarter:

- United Kingdom: 476.858
- Germany: 182.238
- Península: 136.780
- The Nordic countries: 192.052

Second quarter:

- United Kingdom: 516.719
- Germany: 157.696
- Península: 184.445
- The Nordic countries: 33.345

Third quarter:

- United Kingdom: 521.209
- Germany: 152.315
- Península: 181.392
- The Nordic countries: 20.994

Last quarter:

- United Kingdom: 504.189
- Germany: 218.804
- Península: 135.212
- The Nordic countries: 139.529

⁴⁵ https://turismodeislascanarias.com/sites/default/files/promotur_tenerife_estacional_2017_0.pdf

Main types of waste prevention actions regarding Urban-Waste objectives



- Some hotels or groups of hotels have implemented protocols (e.g. environmental guidelines) to reduce waste produced by tourist facilities.
- Provision of training and materials such as containers, composting boxes, reusable bags etc. Environmental consultants companies have trained the establishments adhering to the measures. These companies have delivered manuals and didactic material. In the other hand, Cabildo of Tenerife has distributed communication material and deposits for selective collection.

Organization of waste collection for households



Responsibility

- The collection of MSW is under the responsibility of the municipality and covers households as well as similar establishments. All household waste and bulky waste is collected by a private waste management company on behalf of the local waste management authority, with the exception of the following separately collected fractions: paper and paperboard, glass, packaging and other fractions such as clothing / textiles and used vegetable oils. Those fractions are collected by special private companies or by the waste management company hired by the EPR system (extended producer responsibility).
- Waste collection covers households and similar establishments, but hotels and industries are collected by private companies with their own contract. Indeed, waste coming from industries and commercial activities are considered as waste coming from large producers. No legal text defines at the moment what is a large producer and the minimum scale to consider.
- The selective collection is mandatory only for municipalities with more than 5,000 inhabitants. In that case the municipality has to implement a selective system for waste collection (bring banks or door-to-door for instance). Nevertheless, it is not mandatory for private establishments, nor households. A commission is studying the implementation of a fine system for bad behaviours in the next municipal order on waste management and to implement the pay-as you- throw principle.

⁴⁶ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Financing system

The tax paid by the citizens is based on the real costs of the service. The costs are standard and calculated based on the number of people living in the house, the square meter, etc.

It is the same principle for private establishments. For hotels, the tax is also calculated on the number of beds per hotel. Thus, the tax paid for waste collection by hotels is not the same in the 3 municipalities of the URBAN WASTE pilot area.



There is currently a project proposal from the Cabildo to develop an intelligent tax system, giving fines for bad behaviours regarding waste collection. To do so, some norms have to be defined, and a technical commission is working on this to include it in the future municipal order.

Collection system

On the whole island a system for waste separate collection is in place:

Fraction	Colour of the container
Mixed waste	grey container
Glass	green container
Paper and paperboard	blue container
Brics, plastic, cupboards and metal	yellow container
Organic waste	brown (new collection; available only in some municipalities; also already conducting a pilot composting experience)
Used cooking oil	orange container (currently, this service is only available in some municipalities but soon it shall be available in all the municipalities)
Used clothes	light blue container (only available in some municipalities)

Kerbside collection is established for bulky waste, WEEE, green waste, and great format waste and plastic/metal after calling a service number provided by the municipality. Paper/cardboard are picked up at some commercial areas, glass and also used cooking oils at restaurants and coffee shops.

Citizens have numerous containers for the different fractions of waste in the street. In addition to glass bins, there are cardboard bins, containers, clothes and footwear, oil...

There also exists one civic amenity site (punto limpio) each in Arona and Adeje to dispose further waste fractions in higher amounts. This service is only available for the citizens. At the civic amenity site, it is possible to dispose a large part of waste fractions (even some dangerous materials) e.g. WEEE, mineral oil, batteries, tonner, bulbs and fluorescent lamps, used cooking oil, paints, construction and demolition waste.

Regarding public street bins, there are street bins in public areas, like beaches (for instance in Arona) but it depends on the municipalities.

For private companies a loading and unloading plant (planta de transferencia) has been set up only for several fractions.

Organisation of waste collection for private enterprises

As the waste management tax for private companies with large waste production is higher than the one for households (there is a municipal order that regulates these public prices), some hotels do not use the municipal waste management system but have contracts with private waste management companies.

In Arona, the collection of waste from touristic establishments is carried out by both the local waste management authority and private enterprises.

In Adeje and Puerto Cruz, only the local waste management authority is responsible of touristic establishments’ waste management.

Organisation of street sweeping and street bins collection

n.a.

Waste treatment of the most relevant waste fractions

Waste fraction	First treatment destination	Treatment process
Mixed waste (unsorted)	Mechanical Biological Treatment Plant separating bulk waste from mixed waste container and into different fractions	Depending on fraction: <ul style="list-style-type: none"> ● reincorporated into corresponding channel ● stabilizing organic and bio waste in anaerobic plant ● landfilling inert material

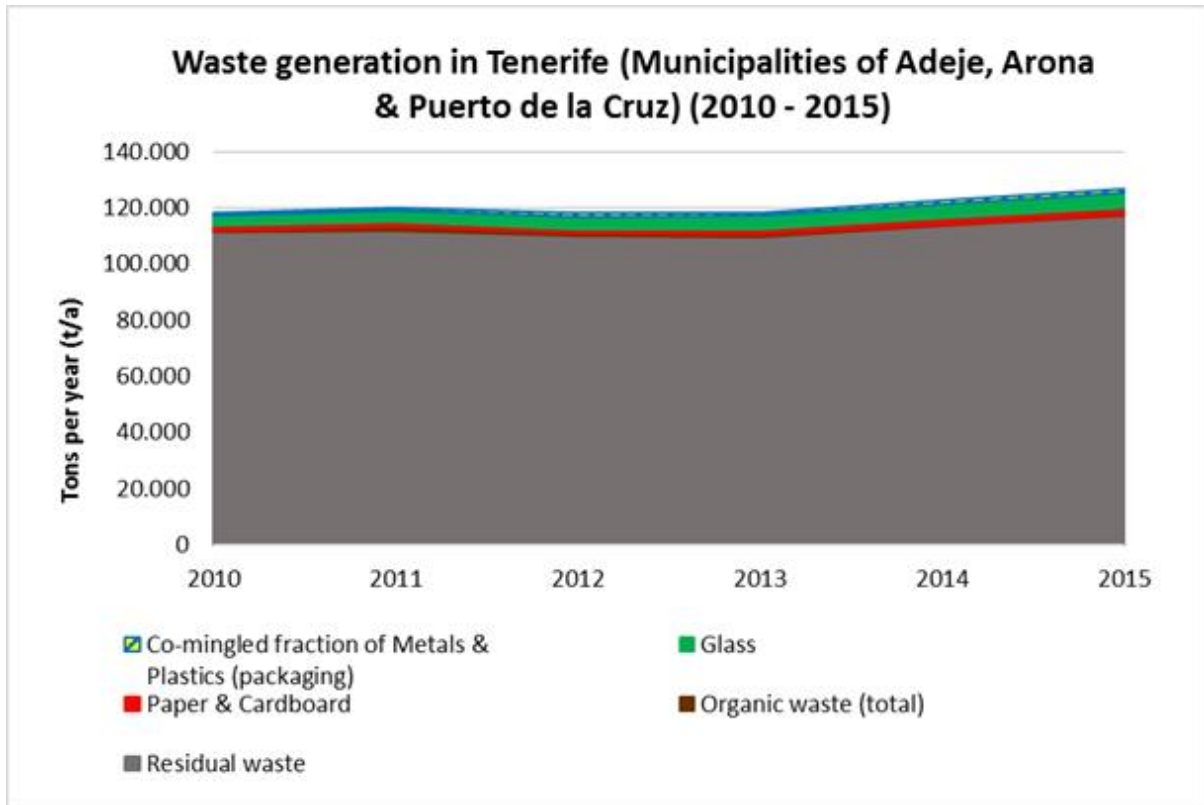
Paper and cardboard, plastics, metals, batteries, paints and dissolvent	sorted, reduced in volume, stored and correctly packed	shipped per container to mainland Spain
Glass	sorted, reduced in volume, stored and correctly packed	transported to Gran Canaria for recycling
Green waste		transported to composting plants (only some municipalities have one)
Used cooking oil		transferred to plants in Tenerife producing biodiesel and ecological fuel (same for mineral oil)

Specific focus on certain waste fractions/management models



- There is currently a project proposal from the Cabildo to develop an intelligent tax system, giving fines for bad behaviors regarding waste collection. To do so, some norms have to be defined, and a technical commission is working on this to include it in the future municipal order.
- The local government of Tenerife Island is currently developing a waste observatory with the idea of collecting as much as data as possible in order to know the waste streams in real time.

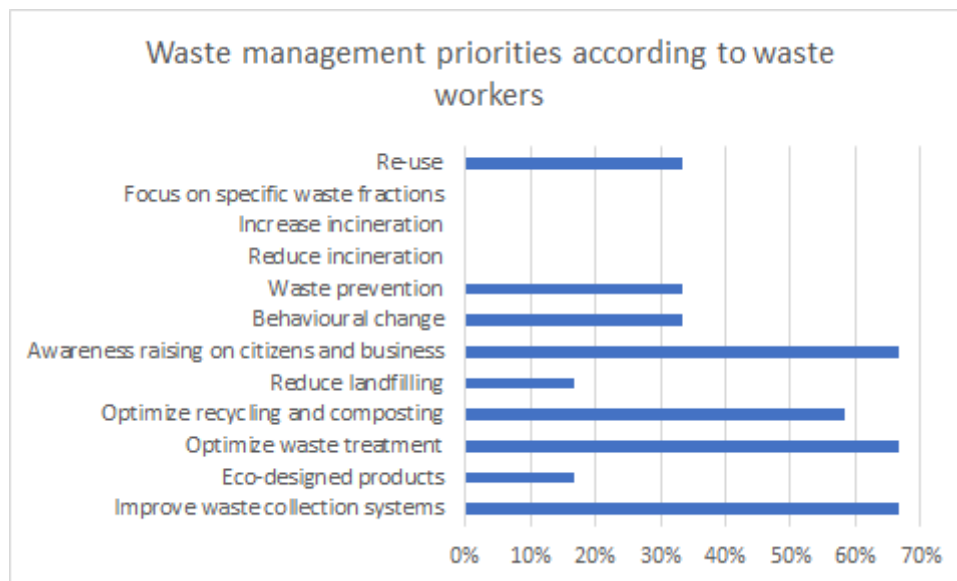
Specificities and challenges regarding the performance of the collection of certain waste fractions



- For paper & cardboard the variation can be attributed to a special announcement of waste collection service and advertising campaigns made for businesses with waste similar to household waste (special focus on paper & cardboard) in Arona.
- Regarding organic waste, for Adeje and Puerto de la Cruz a decreasing trend with quite strong variations is visible for green (garden) waste. This variation probably can be explained by seasonal campaigns, especially in parks and squares (tree pruning), and other factors such as the vacation of the person who compiled the data and was not replaced. For food waste from kitchens there is a peak in 2010 and 2011 which is probably due to special awareness campaigns for hotels, restaurants and bars in those years. In the following years, implementation might have failed because of the economic crisis. With the crisis there have been fewer awareness campaigns, trials of new collection systems, and other similar measures.
- Since 2009, an increase in the total amount of municipal solid waste was noticed for Adeje. This was linked with the end of the economic crisis, the increase of the tourism in this municipality and of the number of bins.

Main priorities regarding waste management in the pilot case

- The current priorities regarding waste management are to reach the European goals regarding waste management, to develop local consultation of citizens and to improve the waste management system.
- Waste workers involved in the survey⁴⁷, 12 respondents, strongly agree that Tenerife should improve the awareness raising campaign, and optimize the waste collection system and the recycling and composting activities. Nevertheless results may not be reliable, due to the low number of respondents involved.



Gender profile

Gender balance of the waste management team:

- 16 men and 1 women:
 - 1 men engineer
 - 1 women master
 - 15 men technical staff

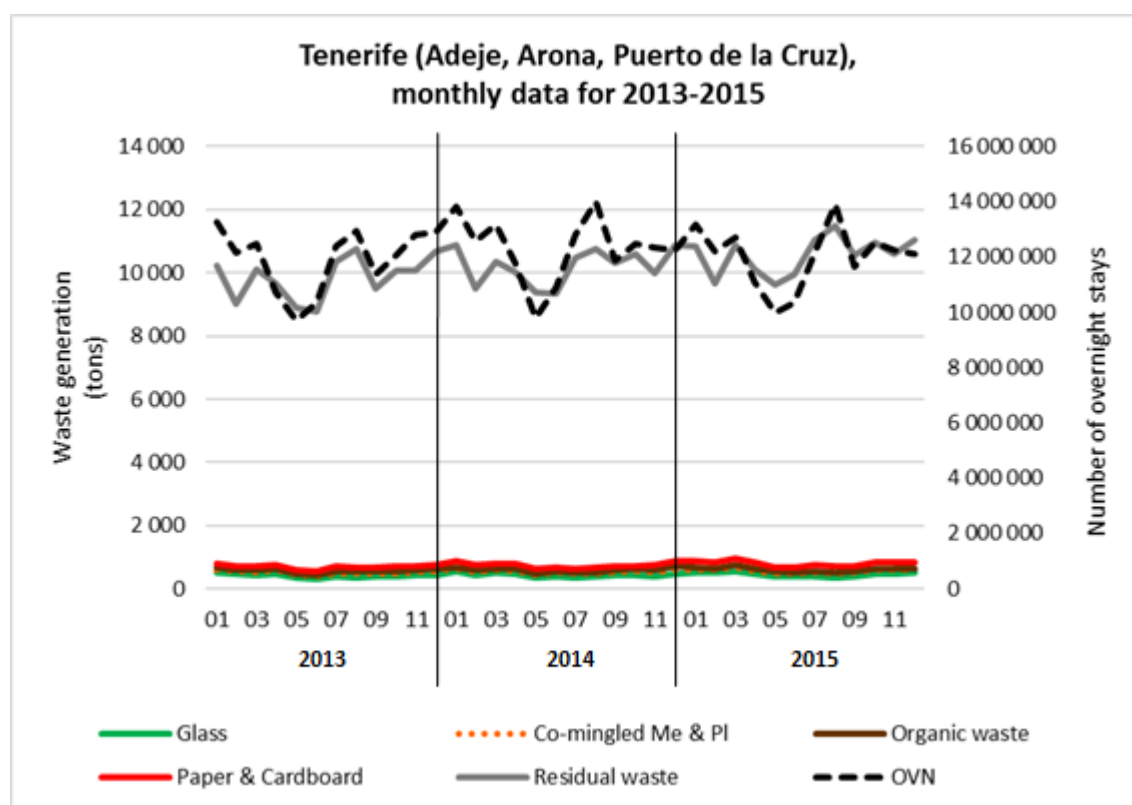
⁴⁷ Sources: URBAN-WASTE deliverable D3.2 : Situation and behavioural analysis of consume and waste behaviour and patterns

Waste and tourism⁴⁸

Main impacts, influences and challenges of tourism on waste production and waste management

The surveys conducted within URBAN-WASTE gathered interesting data regarding the influence of tourism on waste production:

- Indeed 80% of tourist workers and almost 70% of tourists consider that tourism significantly influences waste production, while just 50% of waste workers confirm this hypothesis.
- Concerning the main sources of waste production, waste workers agreed that restaurants (92% of respondents) and hotels (67%) are the two biggest producers.
- Moreover, surprisingly, the majority of waste workers (81%) indicated that seasonal increase of waste due to tourism seasonality is one of the main factors affecting waste management, followed by difficulties with waste handling by hotels (63%) and bins containers under capacity (54%).



The figure shows monthly variations in waste generation and tourist overnight stays. Both show very similar trends.

⁴⁸ Sources: URBAN-WASTE deliverables: D2.5, D2.7; data provided by the pilot case.

Residual waste generation from touristic activities ranges between 1,6 – 2,1 kg per overnight stay in the three municipalities.

Street bins and tourism	
Residual waste	no information available
Separately collected recyclables	no information available
Number of touristic waste producers (food and accommodation tourist infrastructure)	1192 Puerto de la Cruz: 408 Adeje: 338 Arona: 396

Regarding public street bins, there are street bins in public areas, like beaches (for instance in Arona) but it depends on the municipalities.

Main priorities regarding waste production and management and tourism

The main priorities regarding waste management and tourism in Tenerife seem to be:

- Improving waste sorting
- Handling biowaste
- Reducing waste production
- Improving information
- Raising awareness

Main targets for the URBAN WASTE project

Existing facts that could create synergies with URBAN-WASTE project:

- Some hotels from AccorHotels group are involved in the program planet21
- Some blue flags beaches
- Training sessions on sustainable waste management in enterprises or companies and associations
- Provision of training and materials such as containers, composting boxes, reusable bags, etc.
- Pilot projects on composting

Needs:

- Raising awareness and improving information access
- Biowaste selective collection

Stakeholders

Tenerife mainly involves among its stakeholders local waste management authorities, NGO working with awareness raising on recycling and minimizing waste and waste services providers.

Moreover, full partners of the project are the Cabildo de Tenerife, the local authority responsible for waste management, the government of Canary Islands, which represents the regional authority of the island, and ASOTEL, the association of hotels of the Islands, thus covering also the tourism and the public sector.

It could be relevant to also involve restaurants in order to implement measures targeting them.

Gender aspects

There seems to be a stereotypical gendered division of labour, on the evidence available from the waste management and tourism sectors.

The list of stakeholders didn't provide information about having a gender balance, or indeed more women than men to address this division of labour.

Selection of measures

Discussion on the list of measure forms during the first bilateral meeting





Existing measures	Comments
Replace disposable products in hotels' common areas and bedrooms	As this measure is already going on, this could be further developed within the URBAN WASTE project
Actions against food waste at buffets (panels against food waste, food size selection, use of edible leftovers, donation of unused food to charities) in hotels	Hotels are already paying attention to their food waste production. Remark: the donation of unused food to charities depends on specific norms

Interesting measures to implement	Comments
Food tracking device in hotels and restaurants	The presentation of this app has been sent to Tenerife -> waiting for a feedback on this measure
Distribution of small boxes/ pocket ashtrays for small litter (cigarette butts, chewing gums) in touristic areas	When discussing this measure, the partners agreed that marine litter is a very important topic in the case of Tenerife, and that additional measures regarding marine litter should be considered.

Measures that seem hard to implement	Comments
On site composting in hotels or camping sites	This seems rather difficult, but they could see if this can be duplicated since there is an ongoing project
Distribution and promotion of doggy bags in restaurants	This measure seems rather difficult in the local context
Promotion of tap water with the distribution of reusable flasks and possible cooperation with restaurants	This measure didn't seem so relevant with the local context since tap water is not drinkable
Translation of waste sorting instructions in different languages for foreign tourists to be provided to tourists with second homes, renters of touristic accommodations	Difficult to reach second homes/touristic accommodations since most of them are not declared
Providing cruise ships with waste sorting instructions to give to tourists arriving	This measure concerns the Port Authority and did not seem so relevant

Other potential measures	Comments
Distribution of textile bags to tourists in tourist commercial areas	This measure seems feasible but its financing has to be taken into account. There could be several options regarding the financing.
Measures concerning mostly touristic establishments and hotels	<ul style="list-style-type: none"> ● Sorting in hotel rooms ● Reuse initiatives in camping sites for tourists ● Recycling advisors and trainings for touristic establishments ● Pilot test with pay-as-you-throw tax for businesses (touristic establishments)
Measures concerning waste management in public areas	<ul style="list-style-type: none"> ● Special bins for plastic waste, for glass and for paper in public areas highly visited by tourists (beaches, airport, museums, parks) ● Providing the sailing community with guidelines for proper sorting and waste bags for sorting in the marinas

Measures implemented

Measures implemented	Objectives & summary of actions
<p>Food prevention at buffets and restaurants and food tracking device (measure n°2 and n°20)</p> 	<p>Around 12% of the total food waste in Europe is generated at tourist establishments such as buffets, restaurants, catering and canteens. This generates a large part of the total MSW in many tourist cities. Hotels engaged in URBAN-WASTE in Tenerife have committed to reduce and prevent food waste generated from their kitchens and buffets by reusing food scraps and leftovers, offering smaller sized plates, reduced portions, and by replacing rectangular trays for convex ones in buffets.</p>
<p>On-site composting in tourist establishments (measure n°3)</p> 	<p>Whenever organic waste is not collected separately in a city or region, on-site composting is presented as a sustainable alternative to recycle food waste generated in canteens, restaurants, buffets, etc. and turn it into a valuable fertilizer. The installation of an on-site electric composting machine, a shredder and biofilters in one hotel in Tenerife has allowed to reduce the amount of organic waste produced and to apply to its own gardens a high-value natural fertilizer.</p>
<p>Selective collection of biowaste from hotels and restaurants (measure n°5)</p> 	<p>An increasing number of cities includes separate waste collection systems as a strategy to increase the recycling rate of the different waste fractions as well as to improve the quality of such separation. Collection of biowaste has a great number of benefits (e.g. saving of landfill space, avoidance of greenhouse gas emissions, etc.) and it facilitates the separated treatment for production of high-quality compost or biogas. Through this measure, the participating establishments deepened in awareness and training of both personnel and guests with aims at improving the waste sorting of biowaste, which was collected via door-to-door system.</p>
<p>Recycling advisors for tourist establishments (measure n°11)</p> 	<p>Well informed and duly advised establishments will help, for instance, diverting large amounts of waste from the landfill and incineration plants to recycling. In Tenerife, four companies adhered to the project and provided trainings, guidance and monitoring of results in 9 touristic establishments with aims at reducing the amount of mixed waste produced and increase levels of recyclable waste fractions correctly sorted</p>

Main results and possible fine tuning

Food prevention at buffets and restaurants (M02) and food tracking device (M20)

4 hotels implemented the measure. 2 hotels offered reduced portions and other two reused edible leftovers in the kitchen, while another hotel offered reduced-sized plates and one more used convex trays in their buffet.

3 hotels reduced respectively by 29%, 43% and 46% food waste on a 5 months period of monitoring.

Approximately 5,200 tourists were reached during the implementation.

Fine tuning

✓ Register daily number of guests to calculate the value of food waste produced per capita.

On-site composting in tourist establishments (M03)

1 hotel implemented the measure. One electric composting machine, shredder and biofilters were installed in the premises of the hotel.

15 employees were trained on the whole process (sorting organic waste correctly, use of the composter).

3,069 kg of food waste (fruits and vegetables) have been sent to the composter out of the 16,189 kg of organic waste produced in the hotel. Roughly 19% of food waste transformed into compost.

1,563 kg of compost has been produced and used in the hotel's gardens.

20,800 tourists potentially reached by the measure.

Selective collection of biowaste from hotels and restaurants (M05)

6 hotels implemented the measure. More than 25% of staff was trained to sort correctly waste. 4,167 kg of organic waste were collected in 5 months and sent to the organic matter treatment plant.

A communication campaign was done in the hotels and reached about 5,400 tourists.

Fine tuning

✓ Favour synergies and experience exchanges between hotels which simultaneously participate in measure to improve selective collection but also reduce buffet and kitchen waste.

Recycling advisors for tourist establishments (M11)

Advising took place in 9 hotel establishments. A total of 353 workers have been trained (25% of total staff).

Selective waste produced:

- Light packaging fraction increased from 2% to 27%.
- Paper fraction increased from 2% to 27%.

- Organic fraction varied from -43% to +81%
- In one hotel, the mixed fraction decreased by 45%

32.510 guests were potentially affected by the correct separation of waste during the two months of the measure implementation.

Fine tuning

- ✓ Monitor this measure on a longer period to obtain clear trends and conclusive results.

Future of measures in Tenerife

Food prevention at buffets and restaurants (M02) and food tracking device (M20)

The 4 hotels involved will continue to implement Food waste prevention.

On-site composting in tourist establishments (M03)

The involved hotel is very interested and is negotiating with the owning company of the electric composter.

Selective collection of biowaste from hotels and restaurants (M05)

The 6 tourist establishments involved is continuing to train employees. This forms part of the daily work routine of the hotels

Recycling advisors for tourist establishments (M11)

The 9 tourist establishments involved will continue the measure. Staff members changing from year to year will be duly trained.

4- Measure forms

(Presented in the following order)

Measure 01: Doggy bags

Measure 02: Food waste prevention at buffets and restaurants

Measure 03: On-site composting in tourist establishments

Measure 04: Collection points for used cooking oils

Measure 05: Selective collection of biowaste from hotels and restaurants

Measure 06: Partnerships between hotels and charities for reuse initiatives

Measure 07: Substitution of disposable products in hotels

Measure 08: Reuse initiative in camping sites

Measure 09: Communication campaign on reuse through swap markets

Measure 10: Waste sorting in hotel rooms

Measure 11: Recycling advisors for tourist establishments

Measure 12: Sorting bins in public and touristic places

Measure 13: Promotion of tap water consumption

Measure 14: Waste sorting instructions translated in foreign languages

Measure 15: Waste sorting in marinas

Measure 16: Information on waste sorting for cruise ships

Measure 17: Pocket boxes and ashtrays against litter

Measure 18: ECO-events guidelines

Measure 19: Awareness campaign on marine litter

Measure 20: Food waste tracking device

Measure 21: WasteApp

Measure 22: Food donation to charities



01 – Doggy bags

What is the measure about?

Description and scope of the measure

The distribution and promotion of small food containers to take home leftovers in restaurants, also called “doggy bags”, is an efficient way to reduce the production of food waste, considering that it is an important part of the waste produced by restaurants. Indeed, an average of 125 grams of edible food products are wasted per meal served in commercial restaurants⁴⁹. Restaurants and other food providers can propose doggy bags or other food and drink containers to their customers when they have leftovers to avoid producing food waste. A related measure would consist on the delivery of reusable bags to take away food from restaurants and other establishments offering food to take away. Interested restaurants and food providers could adopt this measure to reduce the amount of packaging and encourage customers to consider the benefits of waste prevention. In order to encourage customers to reuse these bags, every time they would take it to the restaurant and reuse it they would get a stamp on it. After reaching a certain number of stamps, the restaurant would reward them by, for instance, offering free desserts. An association of involved restaurants and other food providers could be created to provide a wider service. This measure will result in a win-win situation that contributes to waste prevention, as customers obtain a reward from their good practices and restaurants will save money from the reduced number of bags to be purchased.

Integration in a waste management plan

This action can be part of the prevention part of a waste management plan, in particular regarding food waste.

At the scale of private establishments, the measure can be easily adopted and included in the waste management plan of the restaurants. Every Environmental Management Systems, such as ISO 14001 or EMAS, which entities can be certified against include waste management plans and strategies where food waste prevention measures can be integrated.

⁴⁹ Source : ADEME-FAO (<http://www.gesper.eu/nos-actions/compostage-et-gaspillage-alimentaire/operation-gourmet-bag-doggy-bag.php>)

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Costs of a container, box or bag: 1.36€/doggy bag⁵⁰

Costs savings

- Implementing doggy bags would reduce the amount of food waste generated and, hence, the costs of treating this fraction would be reduced/avoided. In average, the general costs of incineration and landfilling of residual waste in EU are⁵¹ :
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton
- If commercial waste are collected and treated by the municipal waste management service, then the municipality could provide the restaurants and hotels with doggy bags in order to avoid municipal treatment costs. They could use the municipal logo on the doggy bags.

Financing options

- Restaurants and hotels could put their own logos on the reusable “doggy bags” in order to use them as promotional goodies.
- Restaurants and hotels could involve artists/designer in the design of the doggy bag and use them as promo material
- Doggy bag can be provided by pilot cities in partnership with voluntary restaurateurs. Pilot cities can provide restaurateurs a certain number of take-away boxes with the Project’s stamp, and communication tools to promote the action. Restaurants that join the action can be easily identifiable with a ‘gourmet bag’ stamp set on their shop windows.
- Pilots can implement a food waste reduction programme and promote it distributing free gourmet bags at highly frequented points with a wide food service offer. Gourmet bags can be placed at the entrance of each food service establishment/catering, for instance.

⁵⁰ Source: (<http://www.preventiondesdechets.org/le-gaspillage-alimentaire/>)

⁵¹ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

Type of stakeholders to involve

Main stakeholders to involve

- Restaurants, caterings and other food providers managers and staff
- Hoteliers and trade associations
- Kitchen staff (i.e. chef, kitchen assistants, etc.)
- Tourists/customers

Other possible stakeholders to involve

- Waste management department of local authorities
- Local sanitary agencies with a role on food safety surveillance
- Local designer for the design of the bag
- Suppliers of containers, boxes or bags

Description of the operational steps to follow

Depending on the type of stakeholders behind the initiative of doggy bags, several actions can be established to develop and promote the use of doggy bags in restaurants:

- selection of the type of containers/boxes/doggy bags
- creation of communication tools targeting restaurants owners and general public
- identification and involvement of restaurants (potential creation of an association of interested food providers) thanks to a specific sticker that can be stuck on the restaurant' front door so that customers can identify those restaurants as providing doggy bags
- equipment and training of the staff on the use of doggy bags
- awareness raising of the customers on the use of doggy bags (and system for reuse, stamps and rewards)

The information of the customers on this practice and its benefits, and the information of the restaurant owners, especially on the regulatory framework, are key factors during the implementation of this measure.

Gender aspects to consider

Who will do the additional work required, and will this increase the work load? Attention needs to be paid to whether this will lead to gender imbalance in workload, and how this will be managed. It is also important to bear in mind the gendering of the trainer/trainee relationship, and whether expertise can be found amongst the people already doing waste management tasks (e.g. cleaning/food preparation).

Examples of good practices

- Métropole Nice Côte d'Azur together with the Nice Côte d'Azur Chamber of Commerce and Industry launched a project to tackle food waste in restaurant, as part of their waste prevention plan. Pre-diagnostics were realized in the restaurants located in the highlands and the coastline areas of the metropolis. The diagnostic aimed at evaluating the quantity and the type of waste produced. The waste sorting instructions were also reminded and the doggy operation to reduce food waste was promoted. During the diagnostic, the voluntary establishments were given waste prevention kit and proposed to participate to a doggy bag initiative. The kit were composed of food containers for leftover, plastic bags to carry the food containers and bottles. One kit costs 1.36€. All the distributed kits have been paid by the municipality itself and provided for free to the participating restaurants. Around 80 restaurants now have been given the doggy bag kit and use it by proposing to their customers to take back home their leftovers.⁵²
- The Intermunicipal Waste Management company of Greater Porto (LIPOR), which is responsible for the management, recovery and treatment of the municipal waste produced in the eight associated municipalities around Porto, committed in 2016 to organic waste prevention thanks to a project called “Embrulha” (“Wrap it”). In order to reduce food waste in restaurants, LIPOR developed a new biodegradable doggy bag for customers to take food leftovers home. The implementation of such initiative was completely for free for restaurants and customers - as it was LIPOR and associated partners the responsible entities for purchasing all the materials. First, a pilot case was implemented for a week in 2016 so as to evaluate the potential success of the measure as well as the desired environmental and social impact. Given the good results achieved, LIPOR decided to re-launch and extend the project to 30 restaurants in 2017. Currently, the project involves 30 restaurants in the Porto Municipality and the target is to increase the participation.⁵³
- In Denmark, the NGO “Stop Wasting Food” (Stop Spild Af Mad) gives doggy bags (called “goodie bags” for free to restaurants, together with flyers and promotional material to reduce food waste in restaurants. The NGO has started a collaboration with Unilever for the bags. Together with the Danish Agriculture and Food Council, they also launched a trust based certification, called “Refood” label. Restaurants can sign up for the Refood label, and get doggy bags to give to their customers.⁵⁴

⁵² (<http://www.preventiondesdechets.org/le-gaspillage-alimentaire/>)

⁵³ *Embrulha project* (LIPOR) (<https://www.youtube.com/watch?v=GhZ5HIS6MaU>); (<http://www.lipor.pt/en/news/embrulha-wrap-it-re-launch-of-the-project-against-food-waste/>)

⁵⁴ <http://refoodlabel.dk/>

- The Scottish Government gives free doggy bags to voluntary Scottish restaurants to reduce food waste. These bags are branded with the “good to go” slogan. Around a hundred restaurants are now participating. Some interesting results came from the pilot scheme. It showed that food waste from leftovers could be reduced by 40% thanks to the doggy bags. Also, the research carried out by Zero Waste Scotland showed that three-quarters of the customers would like to be offered a doggy bag, and sometimes are too embarrassed to ask for it. Some restaurants even mentioned that offering doggy bags to their customers improved their sales: customers who could fear not being able to manage big portions order them anyway knowing they can take it back home.⁵⁵
- The “Oups Sour Bar” (in Ixelles, Belgium) is a snack-type restaurant which offers soups with bread, quiches, etc. to eat in or to take away. The restaurant has developed a waste reduction approach based on the implementation of reusable “take away” bags which was presented during the EWWR in 2009 (being implemented already since 2002). Food to take away was packaged in a reusable paper bag on which a stamp was put each time it was brought back and reused by customers. As a reward, customers would receive a dessert free of charge after a few reuses.⁵⁶

⁵⁵ How the humble doggy bag reduced food waste in Scotland by 40 per cent - Independent (<http://www.independent.co.uk/news/uk/home-news/hundreds-of-scottish-restaurants-sign-up-to-offer-customers-doggy-bags-to-reduce-food-waste-a7316731.html>)

⁵⁶ “Le grand mix des bonnes idées” (EWWR Guide of Good Practices, July 2012) (http://www.ewwr.eu/docs/case_studies/EWWR_Guide_GP_EN_LD.pdf)

Guidance for setting up monitoring indicators

Two groups of indicators are to be set:

1. The first group aims at monitoring involved stakeholders:

- Restaurants involved **[number]**

These two data will enable to compute the following indicator:

- Percentage of restaurants involved: $\text{Restaurants involved} / \text{Total number of restaurants in the pilot area} [\%]$

The pilot area can be the whole city or a part of it: down town, old town, port area...

- Mapping of restaurants that implement the measure **[Name and address]**

In case doggy bags are distributed to restaurants, the following indicators can be set:

- Number of doggy bags printed and distributed to restaurants **[number]**

2. The second group aims at monitoring waste production in involved restaurants and the performance of the measure:

- Quantity of waste produced **[kg]** or **[number of bins or garbage bags]**: the number of bins or garbage bags can be chosen as a unit of measurement if it is not possible to weight waste produced, the average weight of a fulfilled bin or bag will have to be estimated beforehand for further calculation

- Number of customers **[number]**

These last two data will enable to compute the following indicator:

- Quantity of waste produced per capita: $\text{Quantity of waste produced} / \text{Number of customers} [\text{kg} / \text{customer}]$

Time frame

It is recommended to start the monitoring at least one week before doggy bags are distributed to assess the effect of the measure on waste production.

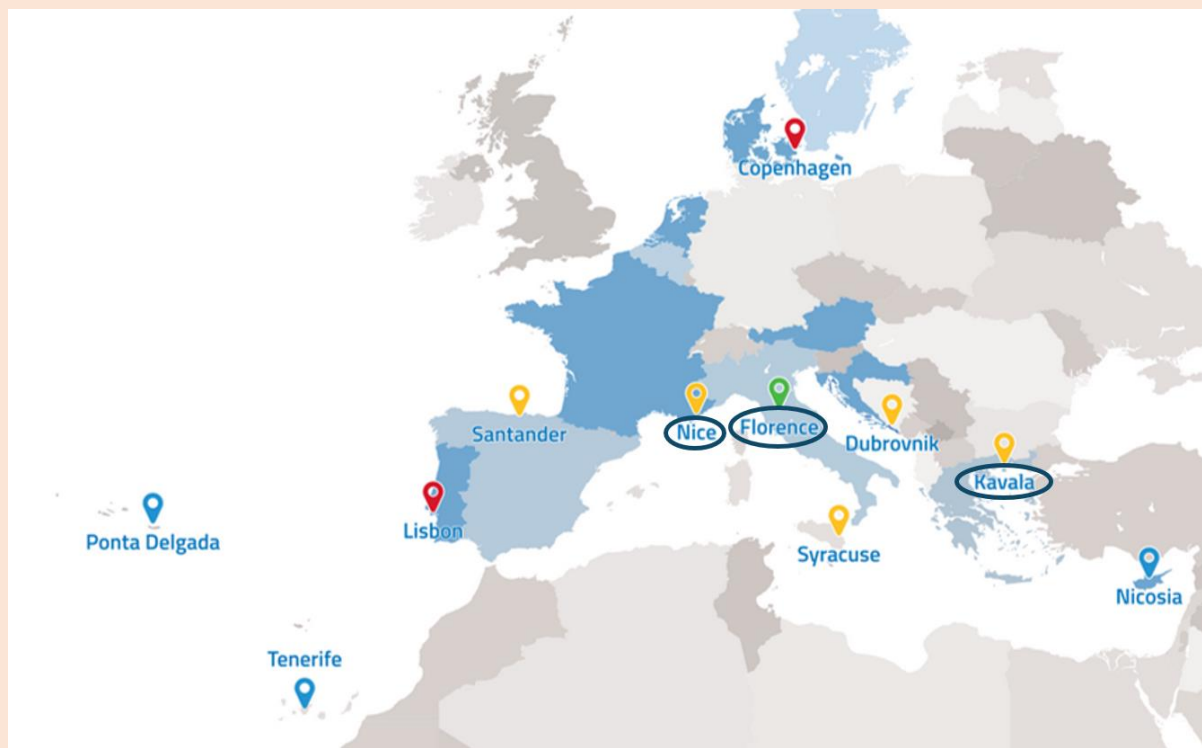
Quantity of waste produced and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Additional performance indicators

Depending on the means at disposal for monitoring, organic waste and unsorted waste can be registered separately (see measure n°20: Food tracking device):

- Quantity of organic waste produced **[kg]** or **[number of bins or garbage bags]**
- Quantity of unsorted waste produced **[kg]** or **[number of bins or garbage bags]**
- Doggy bags distributed to customers **[number]**

Lessons learnt from the implementation phase and fine tuning



Pilots implementing doggy bags within Urban Waste

Doggy bags have been implemented in Nice Metropole, Florence and Kavala from July to December 2018 in the framework of URBAN WASTE.

In Kavala, 5.000 doggy bags were printed and 400 distributed involving **7 restaurants**. In Nice Metropole, 9.000 printed and 4.000 distributed for **39 restaurants**. In Florence, 15.000 printed and 8.900 distributed for **128 restaurants**. In the three cities, doggy bag were offered for free, one condition to easier the setting the measure.

The relative success of Florence and Nice Metropole in terms of restaurants participation comparing to Kavala is mainly due to the fact that there was, in this city, a **tight follow-up of restaurants and regular visits and relaunches** via emails and phone calls by pilots. Moreover, deputy mayor for the environment in Florence and deputy major of Nice Metropole in charge of waste showed their **strong political support several times in the media at the beginning of the measure launch and during its implementation promoting involved restaurants and making them visible**.

The collection of monitoring data was challenging for the employees. Restaurants in Nice Metropole recorded waste bags (unsorted) every day at the end of the service and lead to a better collection of data but less accurate than in Kavala and Florence where food waste was weighted in kilogram with a device (see measure n°20). Involved restaurants gave up after a short time and could not provide sufficient data. The training for using the device took place in July during the peak period of tourists, hence too late.

Key points

- **Tight follow-up of restaurants and regular visits**
- **Organisation and training of personal to be made imperatively before the high season**
- **Media promotion of the restaurant to be made at the beginning of the implementation**
- **Strong and visible political support**



02 - Food waste prevention at buffets and restaurants

What is the measure about?

Description and scope of the measure

It is estimated that around 12% of the total food waste in Europe is generated at tourist establishments such as buffets, restaurants, catering and canteens⁵⁷. This issue requires special attention as it immensely contributes to the total municipal solid waste generation in many tourist cities in Europe.

To cope with this problem there exists a large number of actions and measures requiring different levels of commitment from the involved stakeholders but that are very effective and specific to target food waste prevention. In this respect, restaurants, bars and hotels can do a lot to reduce and minimize the amount of food waste by incorporating simple recycling and waste reduction strategies that would eliminate much of the waste otherwise mixed with residual waste and thrown away.

Some examples include:

- Prevention sign based (on consumer incentives or penalties)
 - consumers would be encouraged to take on its meal tray only the amount of food strictly necessary to meet its appetite. If at the end of the meal, the tray is shown empty and without leftovers, the consumer would receive an incentive or symbolic reward
- Adjustment of dishes size
 - evaluate and adjust the size of your meal portions if you find they are consistently being returned unfinished – and price offered menu items accordingly (remember that most people prefer food quality over quantity)
- as a side measure to prevent other waste fractions, use serving containers in sizes that meet the portion needs of your menu items without having excess packaging material
- Re-use of edible leftovers
 - E.g. vegetable and meat trimmings could be re-used for soup stock
- Preparation of foods to order
 - E.g. just in time ordering to minimize waste due to over-preparation

⁵⁷ Stenmarck, A., Jensen, C., Quedsted, T., Moates, G., Buksti, M., Cseh, B., Juul, S., Parry, A., Politano, A., Redlingshofer, B. and Scherhauer, S., 2016. *Estimates of European food waste levels*. IVL Swedish Environmental Research Institute. (<http://eu-fusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf>)

- Adjust inventory levels on perishables to minimize waste due to spoilage or dehydration and incorporate a good stock rotation policy
 - if a lot of dairy products are expired or vegetables or fruits get too dried, it might be a sign that a lot of products are being stocked and it is not being rotated properly

Whenever food waste cannot be prevented, consider donation of any extra food to a food

Integration in a waste management plan

The proposed measures can be easily adopted and included in the waste management plan of the restaurant or hotel. Every Environmental Management Systems, such as ISO 14001 or EMAS, which entities can be certified against include waste management plans and strategies where food waste prevention measures can be integrated.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Some of the examples of practices mentioned above will involve no extra cost for the buffet of restaurant implementing them. Nevertheless, the adjustment of dishes size will require the acquisition of new plates or the purchase of a sign to raise awareness among customers, which is expected to be a minimal cost.

Cost savings

- By preventing food waste at restaurants or buffets the number of bin lifts per week can be reduced and with this, the amount of food waste to be landfilled or incinerated. As a reference, average costs of incineration and landfilling of residual waste in EU are⁵⁸:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton
- In restaurants and bars serving meals, food waste can be a significant cost. Consider the following: the initial purchase cost of raw ingredients, the cost of storing the food, the cost of preparing and cooking the food and the cost of disposing food waste.
- It is estimated that the value of a kg of food waste costs the restaurant's owner about 2€. Therefore, if you are disposing of one ton of food waste a year, you are throwing away 2,000€ of potential profits. If you decrease your food waste by 25% you not only decrease your waste costs, but you could also potentially save up to 500€ on food and energy related costs⁵⁹

Financing options

- The prevention sign can be provided by the URBANWASTE project partners, following the design and the visual identity of the project.

⁵⁸ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

⁵⁹ *Calling time on waste. A publican's handbook to a leaner, greener cost base.*
(<http://www.tipperarycoco.ie/sites/default/files/Publications/Calling%20Time%20on%20Waste.pdf>)

Type of stakeholders to involve

For the effective introduction, implementation and continuous operation of the proposed measures a number of key stakeholders should be involved. These include (*whenever applicable*):

- Hotel or restaurant managers and staff
- Catering service providers
- Health, safety and environment responsible within the hotel, restaurant, etc.
- Kitchen staff (i.e. chef, kitchen assistants, etc.)
- Tourists/customers
- Food banks, NGOs and charities working on food waste prevention and donations

Other possible stakeholders to involve

- Waste management department of local authorities
- Waste management company/local authority in charge of municipal waste collection
- Trade and hoteliers associations
- Local sanitary agencies with a role on food safety surveillance

Description of the operational steps to follow

At municipal level

- Mapping of restaurants, hotels, canteens, etc. within the municipal boundaries.
- Organization of informative meetings and training sessions for identified establishments.
- Subscription of voluntary agreements and collaboration partnerships with participating establishments.
- Realization of communication campaigns at local level to engage participants.
- Regulative support to encourage establishments to implement food waste prevention measures (for instance, by reducing waste collection service taxes).
- Creation of a network with restaurants/buffets applying food waste prevention measures.
- Identification of those establishments thanks to a sticker/label recognizing the commitment on food waste prevention

At buffet/restaurant level

- The very first step should include the monitoring and identification of food waste so as to define an action plan and to address the challenges identified. Consider which type of food waste is being generated and where changes to reduce food waste could be made.
- Afterwards, a presentation and introduction of the measure should be provided to hotels and restaurant personnel, at all levels. Communication campaign materials and continuous support/training should be distributed to all stakeholders involved to ensure participation and a proper understanding and uptake of the measures.

- Staff should be asked and interviewed for their input and assistance on what and how things can be done to minimize waste and could be rewarded for good ideas (besides increasing their participation and involvement). Including them in the decision-making process can translate into a higher productivity, better morale, lower costs and most importantly, less food waste generated.
- Along the implementation and operation phases of the measure, it is very important to promote the new activities to customers. Clients will not only appreciate the efforts and concern from the restaurant or hotel, but they may potentially increase their support too (which would be translated into economic benefits). Restaurants could make use of a specific and common sticker/label within the city to show their clients they are operating such a measure of reducing food waste.
- The last step should consist and conclude with measuring the efficiency of the actions adopted when comparing the results obtained after a trial period. The communication of results could follow, by sharing on the media or posting them, for instance.
- On top of it, new trusted employees should be periodically designated to be the “eyes and ears” for supervision and management of the measure as well as to identify areas where participation/cooperation is somehow not taking place (either by specific areas of the kitchen or certain staff members). Keep a conversation with those not participating so as to determine if they understand the importance of the measure and the reasons behind their low interest.

Gender aspects to consider

Attention has to be paid regarding gender balance during the mobilisation of stakeholders. In hotels and restaurants, who will do the additional work required, and will this increase the work load? Attention needs to be paid to whether this will lead to gender imbalance in workload, and how this will be managed.

Communication campaign needs to be gender sensitive to avoid favouring one sex or another in the wording or the pictures used.

Example of good practices

- The campaign “Conscious consumption, Respect Environment” organised in Oeiras (Lisbon) on food waste prevention at buffets was based on consumer incentives to take on the meal tray only the amount of food strictly necessary to meet the nutritional needs and/or appetite. If at the end of the meal, the tray (soup, dessert and bread) is shown empty/without leftovers, the consumer received a poker chip equivalent to 10 g of non-perishable foods that are donated to charity institutions. The measure was proven to be an innovative solution to reduce the production of organic waste⁶⁰.
- “Menu Dose Certa” (*Right Portion Menu*) initiative was created by the Intermunicipal Waste Management company of Greater Porto (LIPOR), responsible for the management, recovery and treatment of the Municipal Waste produced in the eight associated municipalities around Porto.⁶¹ The pilot experience started in 2008 when a restaurant agreed to participate in the initiative. After the characterization of the waste generated in in May and June 2008 they served the size of the portions so they would have less food wasted. As a result, it was possible to reduce the amount of food waste generated by 48,5 kilos per customer at the restaurant per year. Thanks to this initiative, LIPOR was awarded with the Portuguese Sustainable Development Awards for its campaigns on waste prevention in 2009. Given the fact that the “Menu Dose Certa” was a success, LIPOR decided the same year to start the project “Dose Certa Project”. At the moment, 11 restaurants and 29 canteens have already implemented the project. The “Dose Certa Project” allows to reduce:
 - Kitchen waste flow: 0.34 kg/meal/year
 - Customer waste flow: 2.79 kg/meal/year
 - About 30% of the food waste generated in the kitchen and by the client.

⁶⁰ Case study: *Conscious consumption, respects environment*. EWWR Guide of Good practices. (http://www.ewwr.eu/docs/case_studies/EWWR_Guide_GP_EN_LD.pdf)

⁶¹ Waste Prevention Best Practice Factsheets: *Menu Dose Certa* (http://ec.europa.eu/environment/waste/prevention/pdf/MenuDoseCerta_Factsheet.pdf)
Dose Certa na Restauração (<http://www.lipor.pt/pt/residuos-urbanos/prevencao/dose-certa/dose-certa-na-restauracao/>)

Guidance for setting up monitoring indicators

Two groups of indicators are to be set:

1. The first group aims at monitoring involved stakeholders:

- Restaurants involved **[number]**

These two data will enable to compute the following indicator:

- Percentage of restaurants involved: $\text{Restaurants involved} / \text{Total number of restaurants in the pilot area} [\%]$

The pilot area can be the whole city or a part of it: down town, old town, port area...

- Mapping of restaurants that implement the measure **[Name and address]**

Additional indicators can be set to monitor restaurants or hotels implementing the following measures:

- half size portions proposed in the menu **[number]**
- incentives in order to avoid leftovers **[number]**
- reuse of edible leftovers in the kitchen/no food waste menu **[number]**
- just in time ordering **[number]**
- inventory on perishables/ stock rotation policy **[number]**
- waste monitoring using the Food Tracking Device **[number]**

2. The second group aims at monitoring waste production in involved restaurants and the performance of the measure:

- Quantity of **organic waste** produced **[kg]** or **[number of bins or garbage bags]**: the number of bins or garbage bags can be chosen as a unit of measurement if it is not possible to weight waste produced, the average weight of a fulfilled bin or bag will have to be estimated beforehand for further calculation
- Quantity of **mixed waste** produced **[kg]** or **[number of bins or garbage bags]**: *see remark of organic waste*
- Number of customers **[number]**

These last two data will enable to compute the following indicator:

- Quantity of waste produced per capita: $\text{Quantity of waste produced} / \text{Number of customers} [\text{kg} / \text{customer}]$

Time frame

It is recommended to start the monitoring at least one week before organic waste is collected separately to assess the effect of the measure on waste production.

Quantity of waste produced and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

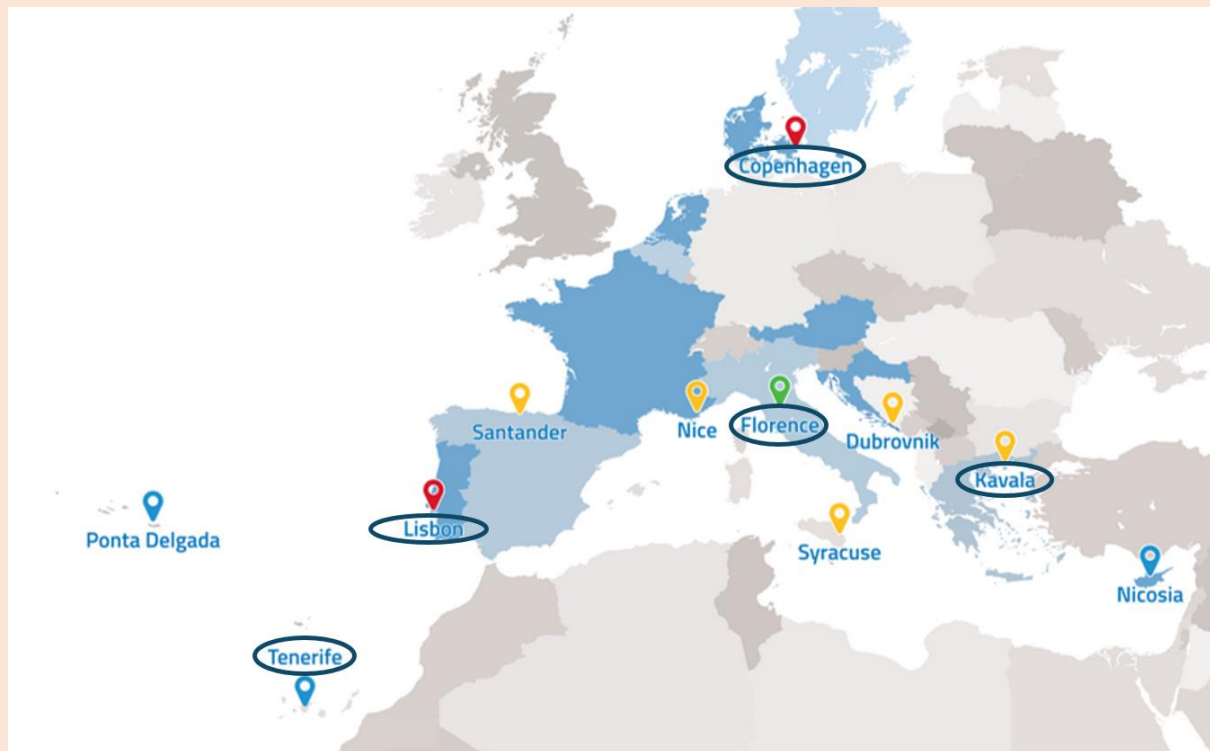
Additional performance indicators:

Depending on the means at disposal for monitoring, different fractions of organic waste can be estimated separately in % (see measure n°20: Food tracking device):

- Vegetables [%]
- Bread/pasta [%]
- Beef/lamb [%]
- Chicken/pork [%]
- Fish [%]
- Other to be specified [%]

These data can help to estimate the waste produced by different dishes of the menu.

Lessons learnt from the implementation phase and fine tuning



Pilots implementing food waste prevention at buffets and restaurants within URBAN-WASTE

4 hotels implemented the measure in **Copenhagen**, 128 restaurants in **Florence**, 3 hotels in **Kavala**, 4 hotels (with 1 hotel school) in **Lisbon** and 4 hotels in **Tenerife**.

In Copenhagen, Lisbon and Tenerife the food prevention was carried out in combination with the use of a food tracking device (measure 20) in order to monitor volume and types of fractions of food waste. In Florence, the measure was combined with the distribution of doggy bags (measure 1).

Hotels and restaurant invited their guests to take reduced size portions and several trips to the buffet, to minimize waste. They also offered reduced portions and used reduced-sized plates (convex trays) at their buffet. The measure was accompanied by a smooth and friendly communication towards guests to raise their awareness about food waste.

Edible left overs at the buffet were reused for the preparation of other dishes (i.e. spaghetti sauce from cooked tomatoes). Salads that had long-lasting qualities was reused into other dishes. Other edible left overs that could not be kept longer were reused for the lunch of the employees.

In Lisbon, the food waste prevention in two hotels leads to a **reduction of organic waste of 7% and 25% respectively**.

In Tenerife, **3 hotels reduced respectively by 29%, 43% and 46%** food waste on a 5 months period of monitoring.

To be noticed, in Copenhagen, Hotels belonging to the same group (Guldsmeden) ran a competition to motivate the kitchen staff to continuously reduce food waste.

Key points

- **The setting up of simple measures can lead rapidly to the reduction of important volume of food waste**
- **Launch the start-up phase earlier (not later end of winter) with stakeholders and define incentives for the initial planning and implementation of measures**
- **As far as possible rely on a stable and motivated team, turn-over of employees implies the multiplication of training sessions**
- **Mobilize restaurants by visiting them directly at the start-up phase and call and/or email regularly restaurants to keep contact. Carrying out daily follow-ups is highly recommended and necessary**
- **Organize regular promotional events with press conferences and other media dissemination (TV, videos).**



03 - On-site composting in tourist establishments

What is the measure about?

Description and scope of the measure

The following measure promotes the implementation of on-site composting of organic waste (i.e. vegetable and fruit peelings, egg shells, coffee bags, etc.) generated in tourist establishments such as restaurants, hotels, camping sites, etc. It is estimated that around 12% of the total food waste in Europe is generated at these type of establishments.⁶²

Whenever organic waste is not collected separately in your city or region, on-site composting is presented as a sustainable alternative to recycle food waste generated in canteens, restaurants, buffets, etc. and turn it into a valuable fertilizer.

For tourist establishments with sufficient space outside there exist compost bins that facilitate the degradation of organic waste into a high-quality compost. Another option to treat organic waste is to implement worm composting bins (also called vermicomposters), which make use of earthworms to digest food waste and produce vermicompost. It is estimated that 1 kg of earthworms can consume up to 1 kg of organic waste per day⁶³. Therefore, a small area in the backyard, rooftop, garden, etc. should be provided and dedicated to composting activities.

In case outdoor composting cannot be carried out due to limited space available, there are other options to undertake on-site composting, such as the use of electric composters. These are compact electronic appliances which have a reduced size and do not produce odors or leakages. Although these systems require an electricity supply, they can be easily installed in the kitchen or maintenance room, do not require labour intensive activities and produce a high-value natural fertilizer.

Besides food waste from the kitchen, green waste from gardens, green roofs, etc. such as plant cuttings, leaves and dead plants can be mixed and composted, which is actually necessary to obtain a good compost.

For food safety and hygiene issues, it is essential that putrescible waste that cannot be composted is periodically collected. In this sense, raw fish or meat and leftovers of cooked food should be avoided and not included in the compost bin.

Compost should be ready for use after 6-12 months (depending on the system, climate conditions, etc.), once it has turned dark brown and smells earthy. A great variety of outdoor

⁶² Stenmarck, A., Jensen, C., Quedsted, T., Moates, G., Buksti, M., Cseh, B., Juul, S., Parry, A., Politano, A., Redlingshofer, B. and Scherhauser, S., 2016. *Estimates of European food waste levels*. IVL Swedish Environmental Research Institute. (<http://eu-fusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf>)

⁶³ *Vermicomposting* (FAO) (<http://www.fao.org/docrep/007/y5104e/y5104e08.htm>)

bins as well as indoor electric composters are available nowadays so it is worth researching the market for each specific region.

The produced compost can be used as a fertilizer in green roofs, decorative plants, urban gardens, etc. providing an additional benefit to the establishment together with the decrease in organic waste disposed. This is of great importance for establishments growing their own plants and food, as it implies cost savings in fertilizers and it contributes to closing the nutrients' cycle (returning nutrients from vegetables and fruits back to the soil). In addition, compost could be sold in the market or donated to community gardens (using public/private areas), farmers associations, restaurant employees, non-profit organisations, etc.

Integration in a waste management plan

The proposed measure can be adopted and included in the waste management plan of the restaurant, hotel, camping site, etc. Environmental Management Systems, such as ISO 14001 or EMAS, which tourist establishments can be certified against include waste management plans and strategies where food waste prevention and recycling measures can be integrated.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- The cost of composting bins varies greatly depending on the type of bin/composter. As illustrative examples, the Municipality of Bristol provides at a reduced prices simple composting bins to households and restaurants for 12-15 pounds (depending on size)⁶⁴. Moreover, as for electric composters, Trafalgar's Bistro and Sweet Obsession bakery in Vancouver installed a \$25,000 composter⁶⁵.

Possible costs savings

- Installing composting bins in hotels and restaurants will contribute to the reduction of food waste generated, therefore, reducing or avoiding costs related to the treatment of residual waste. In average, the general costs of incineration and landfilling of residual waste in EU are⁶⁶:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton
- *Costs of fertilizers*: If restaurants or hotels grow their own food, the compost produced could be used for these crops instead of buying fertilizers (organic or non-organic), translating into cost savings. The average price in EU for ammonia fertilizers is 352.5 €/ton⁶⁷.

Revenues

- If restaurants or hotels do not grow their own food, the compost produced could be labeled and sold to interested actors, like farmers, after a quality control process has taken place. In average, the selling market price in Europe for agricultural purposes is 6.1 €/ton⁶⁸.

Financing options

- Municipalities could provide interested hotels and restaurants with composting bins free of charge in return of the compost produced, which could be used for fertilizing public

⁶⁴ Source: <https://www.bristol.gov.uk/bins-recycling/buy-a-compost-bin>

⁶⁵ Source: <http://vancouver.sun.com/news/staff-blogs/25000-composter-helps-vancouver-restaurants-reduce-waste-stream-by-98-per-cent>

⁶⁶ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

⁶⁷ Source : FAO (http://www.fao.org/fileadmin/templates/AMIS/images/Market_Monitor/fertilizer_prices.pdf)

⁶⁸ J. Barth, F. Amlinger, E. Favoino, S. Siebert, B. Kehres, R. Gottschall, M. Bieker, A, Löbig and W. Bidlingmaier (2008). *Compost Production and Use in the EU. Report for the European Commission DG/JRC*

parks. In the same way, restaurants could finance the initiative with the benefit obtained from the compost sold to farmers.

- Moreover, if restaurants and hotels would show customers that they are undertaking this initiative with stickers, for instance, it would serve as a marketing tool to increase the number of customers. The benefits obtained could help finance the investment made for the installation of the compost bins or electric composters.

Type of stakeholders to involve

For the effective introduction and successful implementation of the proposed measure, the following key stakeholders should be involved:

- Municipal government
- Waste management department of local authorities
- Waste management company/local authority in charge of municipal waste collection
- Tourist establishment (i.e. hotel, restaurant, etc.) manager
- Kitchen, buffet, canteen, etc. staff (i.e. chef, kitchen assistants, etc.)
- Local farmers, non-profit organisations, urban farming associations, etc.
- Suppliers of composting bins (e.g. outdoor composting bin, worm composting bin, electric composting bin, etc.)

Description of the operational steps to follow

At municipal level

- Regulative support to encourage food waste generators to implement on-site composting (for instance, by reducing waste collection service taxes).
- Support for composting activities could consist in providing composters to interested tourist establishments and in organizing periodical controls of their correct use
- The municipality could create and update a map locating all the restaurants/hotels involved in such a measure

At restaurant/bar/hotel level⁶⁹

- Definition of responsibilities
 - Appointing of a responsible person (coordinator) to coordinate and promote the preparation, implementation and assessment of the measure
 - Training and appointing of a responsible person in charge of maintenance of composting bin and supervision of composting phases. Additionally, a “green team” including other staff members could support this task.
 - Keeping periodic meetings between coordinator and person in charge of composting
- Baseline analysis
 - Quantification assessment
(it is important to involve all workers in this step so that they believe in the measure as it was their responsibility too and they commit to its implementation)
- Place the bins for collection of organic waste close to where food waste is generated e.g. kitchen, bar area, etc. Make sure the bins are clearly labelled and train and inform staff of what can be composted.
- Depending on the type of on-site composting system carried out, follow specific instructions so as to periodicity to feed the composter, parameters to be controlled (e.g. humidity, temperature, balance between green and food waste), potential problems (e.g. odours, insects), etc.
- Awareness activities and training of kitchen staff. Stimulate and motivate workers and staff in the preparation and implementation of the measure (e.g. separation of food waste). Staff could be encouraged in the participation if they can receive part of the compost obtained and take it to their own house.
- Communication of results
 - It can be interesting to finally publish or release the results obtained after implementing the measure to motivate workers and encourage other tourist establishments, as well as to increase the number of customers.

NB: New trusted workers should be periodically designated to be the eyes and ears for supervision and management of the measure as well as to identify areas where participation is not taking place (either by specific area or staff members). Afterwards, keep a conversation with those not cooperating so as to determine if they understand the importance of the measure and the reasons behind their low interest.

⁶⁹ *Guía de hoteles más sostenibles (2010). Ajuntament de Barcelona – Agenda 21 – Publicacions – Guías de Educación Ambiental*
(http://w110.bcn.cat/MediAmbient/Continguts/Continguts_Transversals/Educacio_Ambiental/Documents/Fitxers/Guia_Hotels_Sostenibles_CAT.pdf)

Gender aspects to consider

Attention has to be paid regarding gender balance during the mobilization of stakeholders. In hotels and restaurants, who will do the additional work required, and will this increase the work load? Attention needs to be paid with who sorts the material.

Examples of good practices

- The French Metropole “Nice Côte d’Azur” (MNCA) in partnership with the chamber of commerce and industry, in the framework of the European project MED3R (2012-2015), tested in one hotel and several restaurants in Nice a thermal dryer that transforms food residues into dry, fertilizing organic matter. A food waste degrading digester has been tested also at the central kitchen of the University Hospital Center of Nice to produce compost⁷⁰.
- The Business Hotel Bratislava (Premium ****) in Slovakia (with 84 beds and 150 meals served per day) has been generating a total of 2 000 kg of food waste per year, including recurrent costs such as collection and landfilling taxes. In order to cope with this problem, the implementation of an electric composting system resulted in costs savings of approximately 330 €/year due to the reduction of collection and landfilling of biodegradable waste, administrative costs and cooling equipment. Moreover, the electric composter is able to generate 198 kg of substrate per year and the general return on investment was 2.3 years.⁷¹
- The Tower Hotel in Perthshire (Scotland) installed in 2006 an automated composting system that consumes less than 4 kWh per day and converts organic waste to compost in around 14 days (compared with 12 – 18 months for the basic compost heaps it replaced). Thanks to this initiative, 1.25 tons of food waste from the hotel kitchen and 1.25 tons of garden waste could be processed to produce 1.5 tons of compost in the first year after installation.⁷²

⁷⁰ European project MED3R (<http://ccitv.cote-azur.cci.fr/video-579-projet-europeen-med-3r--dechets-de-la-restauration> & <http://www.nicecotedazur.org/environnement/propret%C3%A9/plateforme-euro-m%C3%A9diterran%C3%A9enne-med3r>)

⁷¹ Solutions for catering equipment: Hotel Premium **** (JRK Waste Management s.r.o.) (<https://www.forlesswaste.com/wp-content/uploads/2015/12/hotel-premium-en.pdf>)

⁷² Best Environmental Management Practice in THE TOURISM SECTOR (Organic Waste Management) (<http://ec.europa.eu/environment/emas/takeagreenstep/pdf/BEMP-8.2-FINAL.pdf>)

Guidance for setting up monitoring indicators

Two groups of indicators are to be set:

1. The first group aims at monitoring involved stakeholders:

- Restaurants involved [**number**]

These two data will enable to compute the following indicator:

- Percentage of restaurants involved: $\text{Restaurants involved} / \text{Total number of restaurants in the pilot area} [\%]$

The pilot area can be the whole city or a part of it: down town, old town, port area...

- Mapping of restaurants that implement the measure [**Name and address**]

- Employees trained on composting [**%**]

- Composter distributed to participating hotels or restaurants [**number**]

2. The second group aims at monitoring organic waste sent to the composter:

- Organic waste sent to the composter [**kg**] or [**number of bins or garbage bags**]: the number of bins or garbage bags can be chosen as a unit of measurement if it is not possible to weight waste produced, the average weight of a fulfilled bin or bag will have to be estimated beforehand for further calculation

- Number of customers [**number**]

These last two data will enable to compute the following indicator:

- Quantity of organic waste sent to composter per capita: $\text{Quantity of organic waste sent to composter} / \text{Number of customers} [\text{kg} / \text{customer}]$

Time frame

It is recommended to start the monitoring at least one week before organic waste is collected to assess the effect of the measure on waste production.

Quantity of waste produced and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Note that [Quantity of organic waste sent to composter] ≠ [Quantity of organic waste sent to composter]. For exemple meat cannot be sent to the composter.

Lessons learnt from the implementation phase and fine tuning



Pilots implementing on-site composting within URBAN-WASTE

In **Tenerife**, 1 hotel implemented the measure. One electric composting machine, shredder and biofilters were installed in the premises of the hotel.

15 employees were trained on the whole process (sorting organic waste correctly, use of the composter).

3,069 kg of food waste (fruits and vegetables) have been sent to the composter out of the 16,189 kg of organic waste produced in the hotel. Roughly 19% of food waste transformed into compost.

1,563 kg of compost has been produced and used in the hotel's gardens.

20,800 tourists potentially reached by the measure.

Keypoints

- **Putting effort in the training and the motivation of the team is crucial for the success of the measure implementation**
- **As far as possible rely on a stable team, turn-over of employees implies the multiplication of training sessions.**



04 - Collection points for used cooking oil

What is the measure about?

Description and scope of the measure

This measure introduces the selective collection of used cooking oil (UCO) from restaurants, bars, hotels, etc. through the establishment of a collection scheme comprising a network of collection points.

As it is known, used cooking oil (incl. lard, dripping, hydrogenated and refined/unrefined vegetable oil) should not be dumped into the kitchen sink, this common practice implies important environmental pollution problems. As a liquid waste, it should not be disposed together with solid waste fractions either, and it consequently requires a special management and treatment. However, the adequate disposal of UCO is often not covered by special requirements or regulations.

The separation at source and the transportation to specific collection points (e.g. civic amenity sites or specific containers for kerbside collection) is hereby presented as a measure to help tackle the problem.

By separating cooking oil from the rest of municipal waste fractions, it will be possible to treat it accordingly and it will become a valuable resource having a very high recovery potential. In most cases, used cooking oil will be processed and transformed into biofuel for diesel engines, power generation or heating.

The transportation of used cooking oil generated at source can be carried out by the producer itself (e.g. citizens), although it is common for larger producers (e.g. restaurants, hotels, etc.) to hire private authorised waste managers that provide the service of collection and adequate management. In both cases, it will be necessary to implement and distribute specific on-site containers to facilitate the storage and further collection of used oils.

Whereas in some cases UCO collection is governed by public authorities, in other cities private companies are in charge of its management. In any case, the separate collection and treatment of used cooking oil is a widespread practice in many cities of Europe.

Integration in a waste management plan

This measure for collection and recycling of UCO can be easily integrated in the sustainable development plan, waste management plan or waste recycling strategy/policy of any municipality or city council.

How to implement this measure?

Costs

- Costs of specific containers for the collection the used cooking oil, which vary depending on the size and provider.

Cost savings

- As an example, during the CIVITAS project, it was published that participating restaurants saved about €0.30 per kg on disposal costs as well as €30,000 on costs of maintaining the sewerage system and wastewater treatment⁷³.

Revenues

- The recycling of UCO could provide a form of revenue for restaurants and hotels, which are sometimes compensated by cooking oil recyclers for their used oil. During 2017, the market price for UCO ranged between 600 and 820€/ton⁷⁴.

Type of stakeholders to involve

For the effective introduction, implementation and continuous operation of the proposed measure a number of key stakeholders should be involved. These include:

- Municipal government
- Waste management and energy department of local authorities
- Waste management company/local authority in charge of municipal waste collection
- Private companies authorised to collect/recycle UCO
- Suppliers of containers and bins for UCO disposal and collection
- Hotel, restaurant, bar managers and workers (kitchen staff)
- Householders and tourists

Description of the operational steps to follow

At municipal level

- Engagement and support from the municipal government and public authorities is essential already in the design phase, before the implementation of the measure (e.g. allocating and allowing public areas - such as public squares or schools - for collection of UCO).

⁷³ Source: <http://civitas.eu/measure/optimising-collection-used-cooking-oil>

⁷⁴ Source: <https://www.greenea.com/en/market-analysis/>

- Establishment of collection points, as numerous as possible, located in highly frequented areas and public places with high visibility (taking into consideration the theft risk):
 - Consider schools, public parking slots, supermarkets, municipal buildings, etc. to establish collection points.
 - Facilities where containers or bottles with UCO can be thrown inside could be a feasible option.
- Consider the implementation of a public-private partnership to incentive private oil providers to collect the UCO on-site when delivering new oil to the clients. The idea is to facilitate the UCO collection for the producers.
- Regular communication campaigns:
 - Householders and hotel, restaurant and bar managers must be informed about what, how and where to deliver UCO. They will be keener to recycle UCO if they think it is practical and easy to do (environmental reasons for recycling should be made explicit and preferably relating to individual behaviour).
 - The system should be advertised only after it is tested and is running accordingly.
 - Communication channels: newspapers, leaflets, outdoor billboards, lettering on vehicles, websites, social media and the collecting container itself.
- Promotional activities to increase participation:
 - Free of charge “oil pots” and special funnels could be delivered to producers to facilitate the pouring of UCO into plastic bottles and pots.
 - Contests or rewards for producers (e.g. local virgin olive oil, detergents or cleaning agents in exchange for UCO).
- All collaborating establishments (e.g. restaurants, hotels, etc.) should be registered and identified with a sticker and also receive containers for the collection of UCO.

In some situations, the produced biodiesel is sold to the market and partially provided back to the promoting organizers to use it, for example, in the municipal truck fleets.

At restaurant/bar/hotel level⁷⁵

- Definition of responsibilities:
 - Appointing of a responsible person (coordinator) to coordinate and promote the preparation, implementation and assessment of the measure.
 - Appointing of a responsible person (head of department) within each area of department in charge of applying the measure within his/her scope of activities.
 - Keeping periodic meetings between coordinator and heads of area.
- Baseline analysis:
 - Quantification assessment to identify improvements and priorities where to implement changes and optimise the use of resources.

⁷⁵ *Guía de hoteles más sostenibles (2010). Ajuntament de Barcelona – Agenda 21 – Publicacions – Guías de Educación Ambiental*

(http://w110.bcn.cat/MediAmbient/Continguts/Continguts_Transversals/Educacio_Ambiental/Documents/Fitxers/Guia_Hotels_Sostenibles_CAT.pdf)

- Provision of continuous awareness and training of personnel. Stimulate and motivate workers and staff in the preparation and implementation of the measure to increase their commitment.
- Publish or release the plan and ongoing results to motivate workers.

Gender aspects to consider

Who will do the additional work required, and will this increase the work load?

Attention needs to be paid to whether this will lead to gender imbalance in workload, and how this will be managed.

Examples of good practices

- City officials in Barcelona (Spain) begun handing out free “oil pots” in an attempt to get more citizens to deposit the material for eventual reuse. This initiative aims to reclaim as much of the used cooking oil as possible and there is no limit as to which oils can be recycled. In turn, oil will be kept from clogging drains and contaminating local water in addition to providing an alternative ingredient for soap, biodiesel and even paint. In 2010, the city initiated civic amenity sites (also known as “Green points”) and was able to collect 195,136 litres of oil – which is just 2.5% of the oil used each year in the city. With the new oil pots, and a new campaign launched by the city council, Barcelona hopes to transform this number significantly. The pot will make it easy for citizens to save any type of oil and allow them to easily drop the waste off at any Green Point in the city⁷⁶.
- In Valencia (Spain), the project ECOBUS designed strategies and a pilot scheme to collect UCO from households, restaurants and hotels for recycling and use as biofuel for diesel engines. Cooking oils could be recycled into an environmental friendly fuel and could be used by public transport in the city centre. During this project, 322,654 litres of eco-diesel were used and the amount of eco-diesel/diesel mixed used in the fleet was 1,778,140 litres. The buses covered a total of 3,228,783 km thanks to this initiative⁷⁷.
- At the “Le Manoir aux Quat’ Saisons” hotel (Oxford, UK), UCO (incl. oils and butters from cooking) is being recycled using a local company called “Arrow Oil” that supplies *Fat Bins* (“Le Manoir” and “Arrow Oil” split the cost of purchasing the bins 50-50). These bins are stored in a separate outdoor refrigerated unit to stop unwanted smells, leakages and pests and are collected on a weekly basis. The fat is recycled into biofuel and “Arrow Oil” gives back to the hotel 25p per litre (back in 2012). The biofuel produced is then used to fuel the “Arrow Oils” transportation trucks⁷⁸.
- Located in Spain, Ekogras is a pioneer in the collection of cooking oil in containers. It collects, transports and manages used edible oil. As an authorized manager, it recycles the food oil that has become waste and transforms it into raw material for the production of second generation biodiesel. Within URBANWASTE pilots should look for authorized

⁷⁶ Barcelona Promotes Kitchen Oil Recycling By Giving Out Free ‘Oilpots’ (<http://inhabitat.com/barcelona-promotes-kitchen-oil-recycling-by-giving-out-free-oilpots/>)

⁷⁷ ECOBUS: Collecting used cooking oils to their recycling as biofuel for diesel engines (http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=2124&docType=pdf)

⁷⁸ Reducing and Managing Food Waste in Hotels (Green Hotelier) <http://www.greenhotelier.org/know-how-guides/reducing-and-managing-food-waste-in-hotels/>

organisations that can collect, transport and manage the cooking oils to transform it into biodiesel⁷⁹.

- More examples of good practices related to UCO collection can be withdrawn from the RecOil project, which gathered information on different collection systems and promotional campaigns carried out in Portugal, Spain, Italy, Greece and Belgium. In total, 44 systems were analysed and the information obtained helped to identify common aspects as well as critical points.⁸⁰

⁷⁹ <http://www.ekogras.es/>

⁸⁰ RecOil Project (<https://www.recoilproject.eu/index.php/en/good-promotion-and-collection-practices>)

Guidance for setting up monitoring indicators

Two groups of indicators are to be set:

1. The first group aims at monitoring involved stakeholders:

- Restaurants involved [**number**]

These two data will enable to compute the following indicator:

- Percentage of restaurants or hotels involved: $\text{Restaurants involved} / \text{Total number of restaurants in the pilot area}$ [%]

The pilot area can be the whole city or a part of it: down town, old town, port area...

- Mapping of restaurants that implement the measure [**Name and address**]

- Bins for cooked oils collection distributed [**number**]

- Frequency of cooked oil collection with door-to-door system [**day/week**]

2. The second group aims at monitoring waste production in involved restaurants and the performance of the measure:

- Quantity of cooked oils collected [**kg**] or [**number of bins**]: the number of bins can be chosen as a unit of measurement if it is not possible to weight cooked oils collected, the average weight of a fulfilled bin will have to be estimated beforehand for further calculation

- Number of customers [**number**]

These last two data will enable to compute the following indicator:

- Quantity of cooked oils collected per capita: $\text{Quantity of cooked oils collected} / \text{Number of customers}$ [**kg / customer**]

Time frame

It is recommended to start the monitoring at least one week before doggy bags are distributed to assess the effect of the measure on waste production.

Quantity of waste produced and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Lessons learnt from the implementation phase and fine tuning



Pilot implementing collection points for used cooking oils within URBAN-WASTE

In **Syracuse**, 1 bin for collecting used cooking oils (UCO) of private accommodation (citizens and tourists) with a capacity of 300 litres was installed in a strategic place close to the old city and the popular market.

23 facilities and 3 touristic info-points were committed to promote the initiative. 6 tailored events have been organized for collecting the UCO (47 litres in 3 months). The measure has permitted to raise awareness.

20 tons from "door to door" collection was done in the whole cities, involving more than **160 facilities**. The urban waste bin located in Ortigia reached a small quantitative compare to the overall data, but in all the cities, facilitating and improving the overall collection (20 tons)

The measure was supported by a massive and wide communication campaign about waste separated collection and waste reduction (stickers, Promo cards, T-Shirt, info-point during main cultural and public events, involvement of touristic info points, association of guides and facilities, social communication).

Key points

- **Involve diverse facilities (i.e. hotels, supermarkets...)** to increase the participation.
- **Plan the involvement of stakeholders well in advance before the peak tourist season when they are available and not too busy.**



05 - Selective collection of biowaste from hotels and restaurants

What is the measure about?

Description and scope of the measure

This measure introduces the selective collection of biowaste (i.e. food waste plus green waste, if any) from hotels and restaurants through door-to-door collection or bring banks systems.

Nowadays, there is an increasing number of cities that include separate waste collection systems as a strategy to increase the recycling rate of the different waste fractions as well as to improve the quality of separation. The selective collection can be carried out by the municipality or through private waste collectors and the service is offered not only to households and residential areas but also to commercial businesses such as restaurants. Waste fractions subject to be separately collected include paper, plastic, glass and biowaste, among others.

The selective collection of biowaste in cities has a great number of benefits (e.g. saving of landfill space, avoidance of greenhouse gas emissions, etc.) and it facilitates the separated treatment for production of high-quality compost or biogas.

In door-to-door collection systems, the restaurant should separate biowaste at source and place it in a specific bin outside the front/back door in order to facilitate the collection by the authorised collection service provider, according to the frequency (daily, weekly) and schedule (time of collection) arranged. Instead of door-to-door systems, biowaste could also be transported to containers located in specific collection points or areas from which it will be picked-up by the authorised waste manager. This is the so-called bring bank system.

Integration in a waste management plan

The selective collection of biowaste can be integrated in the sustainable development plan, waste management plan or waste recycling strategy/policy of any municipality or city council. If the restaurant or hotel is located within an area with commercial waste collection service already in place, it would be possible to register and request biowaste collection as with the rest of businesses.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Costs related to the purchase of specific containers/bins for biowaste.
- Bio-waste collection is normally financed via municipal waste fees (tariffs are determined in the municipal waste removal ordinances).
- Although biowaste collection costs differ greatly from country to country, the following indicators developed by the IPCC for the EU can be taken as reference⁸¹:
 - Biowaste collection: 10-400€/ton
 - Composting separated biowaste: 35€/ton for open-windrow operations and 50€/ton for in-vessel processes

Possible costs savings

- The selective collection and treatment of biowaste from hotels and restaurants reduces costs in the sense that this fraction will not be treated together with the mixed fraction, avoiding incineration or landfilling costs. In average, the general costs of incineration and landfilling of residual waste in EU are⁸²:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Revenues

- With the selective collection of biowaste hotels and restaurants can produce compost, which could be labeled and sold to interested actors, like farmers, after a quality control process has taken place. In average, the selling market price in Europe for agricultural purposes is 6.1 €/ton⁸³.

Financing options

- Within URBANWASTE pilots could look for authorized organizations that can collect, transport and manage the biowaste and that use those to make compost or biogas. These companies usually provide their service for free, so there won't be any additional costs for the hotel/restaurant involved.

⁸¹ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

⁸² Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

⁸³ J. Barth, F. Amlinger, E. Favoino, S. Siebert, B. Kehres, R. Gottschall, M. Bieker, A, Löbig and W. Bidlingmaier (2008). *Compost Production and Use in the EU. Report for the European Commission DG/JRC*

Type of stakeholders to involve

For the effective introduction and successful implementation of the proposed measure the following stakeholders should be involved:

- Municipal government
- Waste management department of local authorities
- Waste management company/local authority in charge of municipal waste collection
- Hotels and restaurant managers and kitchen staff
- Waste management & treatment companies (composting and biogas plants)
- Supplier of containers and bins for separate disposal and collection of biowaste

Description of the operational steps to follow

In case the service of selective collection of biowaste is not provided, the following steps could be followed:

At municipal level

- A selective collection service should be in place with the support of the local government. This service could be provided either by the municipality or by private authorised waste collectors.
- Knowledge exchange with other municipalities experienced in the implementation of separate collection of biowaste is highly advised.
- Provide the restaurants/hotels with a map that registers all the areas served by a door-to-door selective biowaste collection service (with specific schedules) and the biowaste bring banks in order to help them accessing the system.
- Regulative support to promote and encourage bio-waste generators to separate organic waste and comply with the requirements of the collection service (e.g. schedule for collection, correct separation of waste at source, etc.) should be established (for instance, by reducing waste collection fees).
 - In regions where biowaste selective collection is not compulsory for large generators (and is not at their charge), the municipality could influence it by charging an additional fee to those generators not implementing a biowaste selective collection.
- Municipalities could provide free biowaste collection bins to restaurants (as it often happens with households).

At hotel and restaurant level⁸⁴

⁸⁴ *Guía de hoteles más sostenibles (2010). Ajuntament de Barcelona – Agenda 21 – Publicacions – Guías de Educación Ambiental*

(http://w110.bcn.cat/MediAmbient/Continguts/Continguts_Transversals/Educacio_Ambiental/Documents/Fitxers/Guia_Hotels_Sostenibles_CAT.pdf)

- Definition of responsibilities
 - Appointing of a responsible person (coordinator) to coordinate the implementation and assessment of the measure (at management level).
 - Training and appointing of a responsible person supervising the correct separation of biowaste at source and the disposal in the right bin (at kitchen level). Additionally, a “green team” including other staff members could support this task.
 - Every member of the kitchen staff must participate and be involved in the separation and disposal of biowaste.
 - Keeping periodic meetings between coordinator and all staff/person in charge of separating/disposing bio-waste.
 - The restaurant must be responsible and ensure that all organic waste is properly separated in the respective container.
- Place the bins for separated biowaste close to where food waste is generated (e.g. kitchen, bar area, etc.) and make sure they are clearly labelled.
- The restaurant should include a dedicated area where larger bins/containers with biowaste can be stored and accessible for collection by an authorised waste manager.
- Awareness activities and training of kitchen staff. Stimulate and motivate workers and staff in the preparation and implementation of the measure (e.g. correct separation of food waste). Train and inform them of what can be included in the bin.
- Communication of results
 - It can be interesting to finally publish or release the results obtained after implementing the measure to motivate workers and encourage other restaurants to join selective collection of biowaste.

Gender aspects to consider

Attention has to be paid regarding gender balance during the mobilization of stakeholders.

Who will write or contribute to the ‘good practice manual’ if such a document is produced.

In hotels and restaurants, who will do the additional work required, and will this increase the work load? Attention needs to be paid to whether this will lead to gender imbalance in workload, and how this will be managed. Especially, who separates and takes to ‘bring sites’? It is also important to bear in mind the gendering of the trainer/trainee relationship, and whether expertise can be found amongst the people already doing waste management tasks (e.g. food preparation).

Examples of good practices

- In Lisbon (Portugal), the municipality started in 2005 to selectively collect kitchen waste from restaurants, canteens and hotels via door-to-door collection schemes (biowaste collection has not been provided to households yet). Afterwards, the biowaste is sent to an anaerobic digestion plant managed by Valorsul. The quantity of annual collected biowaste has been steadily increasing from approx. 7,000 tons (in 2005) until more than 23,000 tons (in 2015).⁸⁵
- A similar measure, although carried out in hotels, is the “Iniciativa del Gremio de Hoteles de Barcelona”, which was an agreement signed by the municipality of Barcelona together with an association of more than 300 hotels with the common goal of increasing the sustainability levels in Barcelona. In this agreement, the municipality offered to hotels discounts in public tariffs and waste generation taxes, and promoted waste reduction (including biowaste) and separate collection campaigns while informing hotel managers about waste collection systems. This agreement acts as a framework to support involved hotels in complying with legislation regarding biowaste management and collection.⁸⁶
- Also in the region of Catalonia (Spain) a pilot project on separate collection of biowaste and biological treatment started in 1996 and is still going on. Bio-waste from households but also from commercial producers as markets, restaurants and caterers are collected via road containers or door-to-door schemes. Consequently, the separate collection of biowaste is currently available for 95% of the population in Catalonia and the municipalities are distributing aerated bins in combination with compostable bags to decrease odors and insects. The treatment for bio-waste consists in composting and anaerobic digestion combined with composting processes.⁸⁷
- The European project “SCOW” on the selective collection of organic waste for recycling in tourist areas developed, from 2013 to 2015, different low cost, technically simple and high-quality bio-waste collection and recycling models in territories with touristic areas and agricultural activity in Mediterranean zones. The goal of SCOW was to define and built up an innovative and sustainable bio-waste management system through effective collection and waste treatment into decentralised small-scale composting plants, situated near the bio-waste production areas and, at the same time, where the compost could be applied. The project contributed to the following outputs: a database of Good Practices,

⁸⁵ Câmara Municipal de Lisboa (<http://www.cm-lisboa.pt/en/living-in/urban-cleaning/waste-disposal>); Lisbon: Door-to-door selective collection (Regions For Recycling) (http://www.regions4recycling.eu/upload/public/Good-Practices/GP_Lisbon_door2door-collection.pdf)

⁸⁶ *Guía de hoteles más sostenibles (2010)*. Ajuntament de Barcelona – Agenda 21 – Publicaciones – Guías de Educación Ambiental (http://w110.bcn.cat/MediAmbient/Continguts/Continguts_Transversals/Educacio_Ambiental/Documents/Fitxers/Guia_Hotels_Sostenibles_CAT.pdf)

⁸⁷ *Catalonia: Biological Treatment and Separate Collection of Biowaste* (Regions For Recycling) (http://www.regions4recycling.eu/upload/public/Good-Practices/GP_ARC_Biowaste-collection.pdf)

a technical study of the key elements and management options, guidelines defining the SCOW management model and monitoring protocols, a handbook on small-scale composting facilities management and a database with the result indicators of the implemented management models.⁸⁸

- In the city of Copenhagen, most tourist establishments (e.g. restaurants, hotels, etc.) have made arrangement with private waste collectors, though some are serviced by the municipal waste collection. In general, all companies have a responsibility to sort their waste properly and make sure that it is treated environmentally appropriate. Biowaste is among the categories of waste to be separated and collected.⁸⁹

⁸⁸ SCOW EU Project (<http://www.biowaste-scow.eu/>)

⁸⁹ D2.7 – *Compendium of waste management practices in pilot cities and best practices in touristic cities*. Urban strategies for Waste Management in Tourist Cities.

Guidance for setting up monitoring indicators

Two groups of indicators are to be set:

1. The first group aims at monitoring involved stakeholders:
 - Restaurants involved [**number**]
 - These two data will enable to compute the following indicator:
 - Percentage of restaurants or hotels involved: $\text{Restaurants involved} / \text{Total number of restaurants in the pilot area}$ [%]
 - The pilot area can be the whole city or a part of it: down town, old town, port area...
 - Mapping of restaurants that implement the measure [**Name and address**]
 - Employees trained on biowaste collection [%]

 - Bins for biowaste collection distributed [**number**]
 - Frequency of biowaste collection with door-to-door system [**day/week**]
2. The second group aims at monitoring biowaste production in involved restaurants and the performance of the measure:
 - Quantity of biowaste collected [**kg**] or [**number of bins**]: the number of bins or bags can be chosen as a unit of measurement if it is not possible to weight biowaste collected, the average weight of a fulfilled bin will have to be estimated beforehand for further calculation
 - Number of customers [**number**]

These last two data will enable to compute the following indicator:

- Quantity of biowaste collected per capita: $\text{Quantity of biowaste collected} / \text{Number of customers}$ [**kg / customer**]

Time frame

It is recommended to start the monitoring at least one week before the starting phase to assess the effect of the measure on waste production.

Quantity of waste produced and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Lessons learnt from the implementation phase and fine tuning



Pilot implementing selective collection of biowaste from hotels and restaurants within URBAN-WASTE

In **Tenerife**, 6 hotels implemented the measure. More than 25% of staff was trained to sort correctly waste.

4,167 kg of organic waste were collected in 5 months and sent to the organic matter treatment plant.

A communication campaign was done in the hotels and reached about 5,400 tourists.

Key points

- **Putting effort in the training and the motivation of the team is crucial for the success of the measure implementation.**
- **Favour synergies and experience exchanges between hotels which simultaneously participate in measure to improve selective collection but also reduce buffet and kitchen waste.**



06 - Partnerships between hotels and charities for reuse initiatives

What is the measure about?

Description and scope of the measure

The following measure promotes the establishment of partnerships between hotels and charities or local associations for reuse initiatives (e.g. furniture, towels, bed linen, etc.)

Furniture, electrical equipment, towels, bed linen, etc. are often replaced at hotels and in many cases disposed as waste even when these are still functional. In this respect, hotels can liaise with charities, non-profit and social inclusion organisations to donate such items while promoting reuse initiatives.

Donated things from hotels could be first recovered, for instance, by social inclusion institutions or employment centres which are also authorised waste managers. After collection and before reuse, donated items could be properly managed and repaired, if necessary, by workers with special needs or at risk of social exclusion.

Examples of no longer required things from hotels which could be reused in collaboration with charities are:

- Electrical equipment and white goods: these include computers, printers, etc. and appliances such as washing machines, fridges and freezers, for instance. Many organisations accept donations of such goods for refurbishment and second-hand selling or for donation to individuals.
- Towels and bed linen: reuse worn or damaged items for cleaning cloths and donate serviceable linens, robes and guest slippers to charities or homeless shelters. Old hotel uniforms can be donated as well to charities or local theatres for costumes.
- Soaps, shampoos and other bathroom products: donation to charities or specialized organisations for making candles and other products.
- Furniture: used pieces of furniture can be donated as reusable items for refurbishment of low-income households, second-hand shops or donated to local charities, schools and small businesses.

Integration in a waste management plan

Partnerships and collaboration agreements with charities can be included in the waste management plan of the hotel, as a measure to reduce and prevent the amount of waste generated. It can also be part of the Corporate Social Responsibility (CSR) policy of the hotel, as it assesses the impact of the hotel activities on the environment and social well-being.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Transportation costs from the hotels to the charities. Take into account the vehicle, personnel and fuel related costs.

Cost savings

- The reuse of these goods will reduce the residual waste that would need to be treated by incineration or landfilled and, therefore, will reduce the costs incurred. In average, the general costs of incineration and landfilling of residual waste in EU are⁹⁰:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton
- Bulky waste collection costs: it varies greatly among Member States, but as an illustrative example, the cost in Tallinn is 7€-18€/m³ depending on the type of waste, size of container, collection frequency, collection area and service provider⁹¹.

Financing options

- By creating partnerships between hotels/restaurants and charities for reuse initiatives, an economically win-win situation takes place, where the first saves the costs of having bulky waste picked up, and the second could cover transportation expenses while receiving these goods free of charge.

Type of stakeholders to involve

For the effective introduction, implementation and continuous operation of the proposed measure, the following key stakeholders should be involved. These include:

- Hotel managers
- Maintenance and housekeeping department at the hotel (responsible person, cleaning staff, etc.)
- Local charities, second-hand shops, reuse centres and social inclusion organisations

⁹⁰ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

⁹¹ Source : EC. *Assessment of separate collection schemes in the 28 capitals of the EU*. Final report (2015)

Other possible stakeholders to involve

- Waste management department of local authorities
- Waste management company/local authority in charge of municipal waste collection
- Hoteliers associations
- Hotel product suppliers

Description of the operational steps to follow

At municipal level

- Mapping of hotels and charities, NGOs, second-hand shops, etc. within the municipal boundaries.
- Organization of informative meetings to encourage hotels and hotelier associations to undertake these initiatives and liaise with charities and similar organisations.
- Facilitation and support in the subscription of voluntary agreements and collaboration partnerships between participating entities.
- Realization of communication campaigns at local level to engage more participants.
- Regulative support to encourage hotels to implement reuse initiatives (e.g. free collection and transportation service of donated items to charities).
- Supporting reuse centres in order to multiply the number of this kind of structures (subsidies, technical support, etc.). This is important to spread the reuse model all over the city.

At hotel level

- The first step before launching any reuse initiative should be the monitoring and assessment of the type of waste generated in the hotel, including the identification of items and waste fractions which could be potentially reused.
- It is also important to ask hotel staff for their input and assistance on what things can be reused to minimize waste and reward them for good ideas. Including them in the decision-making process can pay dividends in higher productivity, better morale and most importantly, less waste.
- In that sense, employees should be able to benefit from the discarded goods from the hotel. Once the inventory of goods to be reused has been done, the hotel could organize a specific event for employees to pick things up or have a specific room to storage those things where employees could serve themselves under the reuse responsible's vigilance. Afterwards, items not collected by employees would be donated to charities.
- As some of the measures are connected to the behaviour and commitment of hotel clients (e.g. use of towels, bed linen, minibar fridge, etc.), it is important to communicate

with them about the environmental achievements so that they feel part of the initiative and become key participants in the reduction of generated waste.

- Suppliers must be also informed and updated on disposal policies and initiatives taken in the hotel, as this will reinforce collaboration with them and facilitate cooperation with other hotels interested in implementing similar measures.
- The establishment of collaboration agreements as well as effective communication channels with charities and other organisations will be essential to ensure the continuity of such initiative and a long-term effect.
- Hotels could use a reuse sticker/label that states they are participating in such a project.

At charity level

- Staff at the charity will be responsible for keeping track of which items are specifically donated from hotels and also for registering whenever these items are sold to customers. Charities should be able to measure how many of these items are sold and also to estimate the weight. A record book should be created and used for this purpose.

Gender aspects to consider

Who decides which charities benefit? Do the charities benefit women at least as much as men?

Who identifies and repairs? Who will identify and monitor the onward sales by the charities?

If women hotel staff are involved in identifying charities, then this could empower them.

Examples of good practices

- The Carlson Rezidor Hotel Group, with headquarters in Brussels (Belgium) and Minneapolis (USA) donates unwanted bed linens, mending kits and bathroom orphanages, hospitals, homes for the elderly and drug rehabilitation centres, working directly or through charitable organizations. Other beneficiaries include armed forces overseas and victims of natural disasters.⁹²
- Another example can be found at Taj Hotels and Resorts (India), where unwanted linen, hygiene products, uniforms, cutlery, plates, carpets and blankets (even kitchen and computer equipment and unclaimed articles from ‘lost and found’) are donated to charitable organizations.⁹³
- Some examples of organizations specialised in recovering functional electronic equipment which is obsolete but can be reused for social purposes are “Fundación Doctor Trueta” (Spain) and “Asociación TxT Tecnología para todos” of the Catalan University (Spain).⁹⁴ As to furniture and white goods, the Tayside Furniture Project (Scotland) collects unwanted quality furniture and passes the items to needy families in the area.⁹⁵
- An example of a social inclusion and special employment institution which is also an authorized waste manager is the “Asociación Intersectorial de Recuperadores y Empresas Sociales de Cataluña” (Spain). This organization includes the responsible environmental management of materials in the social inclusion of people with special needs.⁹⁶

⁹² *Responsible Businesses* (Radisson Blu) (<https://www.radissonblu.com/en/hotel-kiiev/responsible>)

⁹³ *A welcome sign: Hotels adopt reuse and recycling* (Waste Management World) (<https://waste-management-world.com/a/welcome-sign-hotels-adopt-reuse-and-recycling>)

⁹⁴ *Guía de hoteles más sostenibles (2010)*. Ajuntament de Barcelona – Agenda 21 – Publicacions – Guías de Educación Ambiental

(http://w110.bcn.cat/MediAmbient/Continguts/Continguts_Transversals/Educacio_Ambiental/Documents/Fitxers/Guia_Hotels_Sostenibles_CAT.pdf)

⁹⁵ *Tayside re-users* (<http://taysidereusers.co.uk/>)

⁹⁶ *Asociación Española de Recuperadores de Economía Social y Solidaria* (<http://www.aeress.org/>)

Guidance for setting up monitoring indicators

A monthly monitoring can be set up to register the stakeholders involved and the items donated to charities per type:

Monitoring indicators		month 1	month 2	month 3	month 4	month 5	month 6	total
Hotels involved	[number]							0
Charities involved	[number]							0
Other associations involved (specify).....	[number]							0
Other: please specify.....	[number]							0
Initiatives and events organized to promote donation	[number]							0
Items donated per type:								
bed linen	[number]							0
towels	[number]							0
furniture: small items	[number]							0
furniture: big items	[number]							0
electrical appliances: small items	[number]							0
specify kind of appliance								0
electrical appliances: big items	[number]							0
specify kind of appliance	specify							0
other: please specify.....	[number]							0

To assess the quantity of items donated in kg, the average weight of each item donated can be estimated in kg beforehand. Once the table above is fulfilled, the total number of items donated on a certain period (here 6 months) has to be multiplied by the estimated weight of each item to calculate the total amount of kg items donated.

Lessons learnt from the implementation phase and fine tuning

Partnerships between hotels and charities for reuse initiatives have not been implemented in any URBAN-WASTE pilot cases.



07 - Substitution of disposable products in hotels

What is the measure about?

Description and scope of the measure

This measure consists in the replacement of disposable products in hotels, including hotel rooms, common areas (e.g. dining rooms) and some services provided to customers (e.g. laundry service), if applicable. In this respect, by means of greener procurement policies, hotels can commit to buy recycled and reusable products and, on the other hand, minimize the purchase of disposable items.

Hotel rooms

One of the main problems of “welcome kits” in hotel rooms is the excessive plastic packaging of hygiene products for single use (e.g. shampoo, gel, etc.). In addition, these products are paid twice, as they include purchasing costs and waste treatment and management costs, which is something hotels can avoid by changing the purchasing policy.

In this sense, hotels can stop purchasing single-use products with individual packaging and start replacing, for instance, single-use bottles by soap and shampoo dispensers. Moreover, there is nowadays a large array of products that fit well into the decoration of the room while implying a waste prevention measure. In case some products must be purchased with individual packaging, hotels could try to select those having materials such as paper or cardboard and avoid plastic packaging.

A simple measure like the replacement of individual soap bottles in the bathroom by dispensers is estimated to reduce the total waste generated in hotels by 5 %.⁹⁷ Together with the replacement of soap bottles, fabric cloths could also be made available instead of disposable paper towels.

Dining rooms

Measures to be adopted in common areas include the replacement of disposable or plastic tableware and table cloths by reusable cutlery, glass bottles and table clothes made of fabric.

⁹⁷ *Guía de hoteles más sostenibles (2010). Ajuntament de Barcelona – Agenda 21 – Publicacions – Guías de Educación Ambiental*

(http://w110.bcn.cat/MediAmbient/Continguts/Continguts_Transversals/Educacio_Ambiental/Documents/Fitxers/Guia_Hotels_Sostenibles_CAT.pdf)

Hotel services

Laundry services in hotels normally use plastic bags to deliver clean clothes to customers. Often, these plastic bags end up as mixed waste or, in the best scenario, sorted as plastic waste to be recycled later on. Instead, hotels are advised to demand laundry services to replace plastic bags by fabric bags during transportation and delivery of clothes, towels, etc. This way, dirty clothes, towels, bed linen, etc. could be returned to the laundry service making use of the same fabric bags and be reused.

Integration in a waste management plan

The proposed measures for replacement of disposable materials could be embedded in the procurement policy established in the hotel. Moreover, hotels are usually certified against Environmental Management Systems (e.g. ISO 14001, EMAS, etc.) which include a waste management plan with different implemented measures and actions.

Furthermore, depending on the municipality, region or country, there exist specific regulations as to waste generation from businesses, including hotels, which could integrate goals and objectives of commercial waste generation, especially on a municipal level.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Costs related to the acquisition of reusable products (i.e. table cloths, naps, etc.) or dispensers to substitute single-use products. Although these costs would be more elevated at first, in the long term it will lead to cost savings.

Cost savings

- Replacing single-use bottles for dispensers can lead to a reduction of acquisition costs. As explained below in one of the best practices identified, the “Hotel Pastor Park Plaza” saved up to 0.20\$ per overnight stay⁹⁸.
- The amount of plastic waste generated would be reduced and with this, the costs of treating it. Taking as a reference the average costs in EU of incineration or landfilling, avoided costs would be⁹⁹:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Type of stakeholders to involve

For the effective introduction, implementation and continuous operation of the proposed measures a number of key stakeholders should be involved. These include:

- Hotel managers
- Maintenance and housekeeping department at the hotel (responsible person, cleaning staff, etc.)
- Product suppliers
- Customers
- Waste management company/local authority in charge of municipal waste collection

Other possible stakeholders

- Waste management department of local authorities
- Hoteliers associations

Description of the operational steps to follow

⁹⁸ *Guía de hoteles más sostenibles (2010). Ajuntament de Barcelona – Agenda 21 – Publicaciones – Guías de Educación Ambiental*

(http://w110.bcn.cat/MediAmbient/Continguts/Continguts_Transversals/Educacio_Ambiental/Documents/Fitxers/Guia_Hotels_Sostenibles_CAT.pdf)

⁹⁹ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

At municipal level

- Mapping of hotels within the municipal boundaries and identification of green businesses and companies supplying eco-friendly products.
- Organization of informative meetings with hotels and hoteliers associations to promote the implementation of these measures.
- Realization of communication campaigns to engage more participants.
- Regulative support to encourage hotels to replace disposable products (for instance, by applying reductions in the waste fee, or establishing a territorial label promoting hotels with such measures implemented).

At hotel level

- The first step before the implementation of any measure should be the monitoring and assessment of waste generated in the hotel, including the identification of all waste fractions generated and their origin.

As the implementation phase should be supported and integrated in the purchasing policy, there is a number of actions to take in this respect:

- Once the real needs for purchasing have been identified (e.g. purchasing of plastic-free packaging soap for hotel rooms) and the objectives have been set, the purchasing policy should be revised and modified to meet the established goals.
- From that moment on, the requirements and objectives should be introduced in all provision and service contracts.
- requirements established (suppliers including environmental quality guarantees, ecolabels or certified against EMS will have higher chance to meet the hotel requirements)
- If there is an eco-label regarding that specific management, then the hotel could use a sticker to inform its clients about those eco-friendly actions.

As some of the measures are connected to the behaviour and commitment of hotel clients, it is very important to communicate with them about the environmental achievements so that they feel part of the initiative and become key participants in the reduction of generated waste.

Suppliers must be also informed and updated on purchasing policies and initiatives taken in the hotel, as this will reinforce collaboration with them and facilitate cooperation with other hotels interested in implementing similar measures.

Furthermore, hotel chains and associations sharing suppliers have more power and a better position to negotiate regarding environmental aspects and encourage the availability of environmental friendly products and services from suppliers.

Gender aspects to consider

Have men and women been consulted in deciding how best this can be done?

If women 'on the ground' participate in identifying how this can best be done, then this could be empowering.

Promoting the changes to guests may need to be gender sensitive (in that men and women use different products, and in different volumes).

Examples of good practices

- The Conca Park is a 205-room hotel in Sorrento (Italy) which proudly advertises its zero-waste achievement across their website. They undertook a number of initiatives to reduce their waste including replacing all single portion and disposable items, introduced water dispensers to reduce the use of bottled water, replaced a number of plastic items with recyclable or compostable materials and achieved over 80% recycled waste.¹⁰⁰
- In Swaffham (Norfolk, United Kingdom) the “Strattons Hotel” found that when it used 25 ml luxury miniature guest bathroom amenities, only 30% of the product was used and the rest was turned into waste. As a result, the hotel now supplies soap and shampoo in dispensers.¹⁰¹
- The “Hotel Postor Park Plaza”, 3* (United States) replaced plastic bottles by dispensers. As a result of the implementation of such measure, two million plastic bottles were not generated as waste per year. This implied costs savings of up to 0.20\$ per overnight stay which could be invested in the acquisition of higher quality hygiene products for customers.¹⁰²
- In order to make the Green Public Procurement (GPP) targets more compelling, the Tuscany Region (Italy) has issued the Regional Law n. 37/2012 on "Green purchases and guidelines for sustainable purchases in the public administration (amendments to the Regional Law n. 38 of the 13 July 2007). The article 3bis reads as follows: *“in order to enhance the protection of the environment, the Region promotes the integration of public procurement with environmental concerns and initiatives to orient citizens and operators of the public administration towards an environmentally sustainable behaviour, in compliance with European regulations and the national transposing law”*. The same Article 3 further introduces an important provision: *“to promote and encourage the advancement of a responsible behaviour towards the environment, in all cases where incentives are provided by the Region to local authorities, for actions that envisage procurement procedures for the acquisition of works, supplies and services involving green purchases, in the call the financing mechanism is subjected to a minimum percentage of at least 35% of green purchases”*¹⁰³.

¹⁰⁰ Conca Park Hotel – Zero Waste (<http://www.concapark.com/en/zero-waste-hotel-sorrento/>)

¹⁰¹ The greenest hotels in the land (The Guardian) (<https://www.theguardian.com/travel/2008/apr/24/green.hotels>)

¹⁰² *Guía de hoteles más sostenibles (2010). Ajuntament de Barcelona – Agenda 21 – Publicacions – Guías de Educación Ambiental*

(http://w110.bcn.cat/MediAmbient/Continguts/Continguts_Transversals/Educacio_Ambiental/Documents/Fitxers/Guia_Hotels_Sostenibles_CAT.pdf)

¹⁰³ D2.7 – *Compendium of waste management practices in pilot cities and best practices in touristic cities*. Urban strategies for Waste Management in Tourist Cities.

Guidance for setting up monitoring indicators

Two groups of indicators are to be set:

1. The first group aims at monitoring involved stakeholders:

- Hotels involved **[number]** & total number of hotels in the pilot area **[number]**

These two previous data will enable to compute the following indicator:

- Percentage of hotels involved: $\text{hotels involved} / \text{Total number of hotels in the pilot area} [\%]$

The pilot area can be the whole city or a part of it: down town, old town, port area...

- Mapping of hotels that implement the measure **[Name and address]**

- Rooms in the hotels involved that are equipped with dispenser **[number]**

- Total number of rooms in the hotels involved **[number]**

These two previous data will enable to compute the following indicator:

- Percentage of rooms that are equipped with dispenser: $\text{Number of rooms} / \text{Total number of rooms in the hotels involved} [\%]$

Hotels implementing the following measures:

- substitution of individually packaged single dose containers of shampoo, shower gel and soap with dispensers **[number]**
- sugar, jam, yogurt, butter, creams and similar food products served in bowls and jars **[number]**
- tap water offered **[number]**
- other: (specify).....**[number]**

- Single use containers purchased per day before measure was introduced **[number]**

- Single use containers purchased per day after measure was introduced **[number]**

- Soap and shampoo/shower gel dispensers purchased **[number]**

2. The second group aims at monitoring waste production in involved hotels and the performance of the measure:

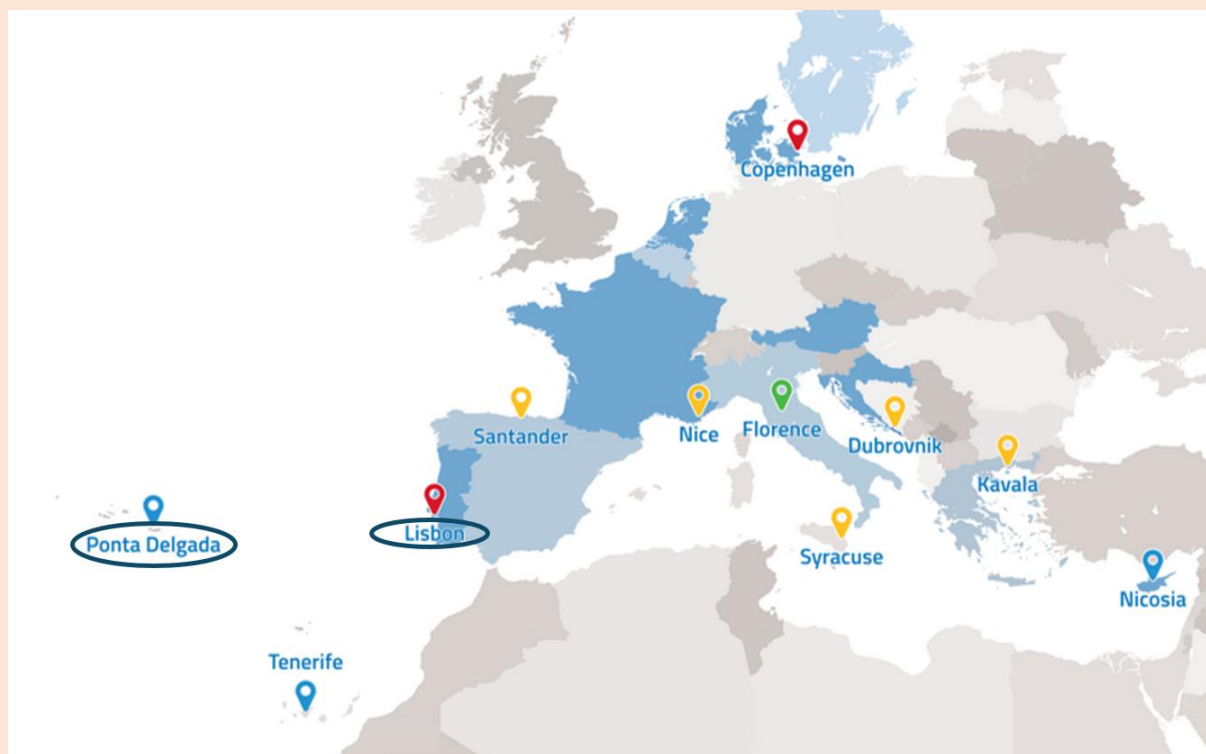
- Quantity of plastic waste produced **[kg]** or **[number of bins or garbage bags] in rooms and in common areas**: the number of bins or garbage bags can be chosen as a unit of measurement if it is not possible to weight waste produced, the average weight of a fulfilled bin or bag will have to be estimated beforehand for further calculation
- Quantity of mixed waste produced **[kg]** or **[number of bins or garbage bags] in rooms and in common areas**
- Number of customers **[number]**
- Occupancy rate (n. of rooms occupied / total of rooms) **[%]**

Time frame

It is recommended to start the monitoring at least one week before dispenser are installed to assess the effect of the measure on waste production.

Quantity of waste produced and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Lessons learnt from the implementation phase and fine tuning



Pilots implementing substitution of disposable products in hotels within URBAN-WASTE

Substitution of disposable products in hotels (M07)

In **Lisbon**, the measure was implemented in **169 rooms** of 1 Hotel in Lisbon, where disposable products were replaced by dispensers. In **Ponta Delgada**, 2 hotels were involved accounting a total of **213 rooms** equipped with dispensers.

A reduction of **19% of unsorted waste** was reached in Lisbon although the hotel occupation rate during the monitoring phase was only 62%.

1,350 kg of plastic waste were avoided in both hotels, and **1,620 kg of paper waste** were avoided in one Hotel.

Key points

- Plan the implementation of this measure well in advance of peak tourist season which needs time to be correctly organised.
- Strong efforts is necessary to mobilize hotels and increase their participation.



08 - Reuse initiative in camping sites

What is the measure about?

Description and scope of the measure

Camping sites, as any other tourist facility, generate a vast amount of waste. One of the main concerns here lays on the fact that many of the items dumped in waste containers (e.g. tents, camping equipment, etc.) could be reused. Tents, for instance, are very re-usable items but utterly un-recyclable and so those abandoned or thrown away will most probably end up in a landfill site, something that besides damaging the environment is expensive for camping owners and events organisers. This is a serious problem in camping sites used during festivals and other open-air events where thousands of people gather every year, leaving hundreds of tents behind as well as plastic bottles, abandoned mattresses, etc. As an example, in the Isle of Wight (England) it is estimated that one in five tents was left behind at the 2011 event, which means around 12,000 tents were abandoned and turned into trash.¹⁰⁴ The fact is many people leave their tents behind simply because they cannot get their pop up tents back in the bag at the end of the festival.

As a response to such problem, the following measure consists in the implementation of a "give box"¹⁰⁵ to give away items in camping sites and to facilitate reuse initiatives among campers and tourists.

"Give boxes" are normally large open boxes or even shelves, placed in a public area of the camping site (e.g. courtyard, waiting room, laundry room, etc.) where people can drop off second-hand goods they do not want to bring with them after leaving. No surveillance should be needed and these boxes could be available for campers 24/7. Collaboration between different camping sites could be also arranged so that items could be borrowed at one place and be dropped off in the next one, like travelling items. Products given away could also be donated to charities or social NGOs and be further reused.

Examples of items people could drop off and take with them are books and magazines, tents, camping shelters and gazebos, mattresses, chairs, roll mats, airbeds, blankets, charcoal and gas bottles, cutlery and other camping equipment, etc.

¹⁰⁴ Festival season: how to encourage sustainable behaviour among campers (2014, The Guardian) (<https://www.theguardian.com/sustainable-business/estival-season-waste-emissions-transport-sustainable-behaviour>)

¹⁰⁵ Give box (European Week for Waste reduction, EWWR) (http://www.ewwr.eu/docs/ewwr/reuse_givebox.pdf)

NB: other initiatives which specifically target festivals and camping sites can be consulted in “Measure 13: Promotion of tap water” and “Measure 18: Eco-event guidelines”.

Integration in a waste management plan

There are several Environmental Management Systems (EMS) against which camping sites can be certified, such as ECOCAMPING, ISO 14001 or EMAS. These programmes include sections for waste management strategies where reuse initiatives as the “give box” measure should be integrated and aligned with municipal, regional or national waste management-related regulations. Whenever not certified, camping sites can include this type of actions within the environmental policy and internal waste management plans.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Related to the acquisition of the “give boxes”, depending on the size and provider.

Saving costs

- The reuse of goods that camping visitors need no longer contributes to the reduction of waste generated and, therefore, decreases the costs associated to their treatment through incineration or landfilling. In average, the general costs of incineration and landfilling of residual waste in EU are¹⁰⁶:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Financing options

- Municipalities could provide camping sites with “give boxes” reused from market places (e.g. fruit boxes, vegetable boxes, etc.), therefore only incurring in transportation costs from the market places to the camp sites.

Type of stakeholders to involve

For the effective introduction, implementation and continuous operation of the proposed measures a number of key stakeholders should be involved. These include:

- Camping site owners
- Festival organisers (*if applicable*)
- Camping site staff
- Campers
- Retailers (tents and camping equipment)
- Charities, second hand shops, reuse centres and social communities
- Waste management company/local authority in charge of municipal waste collection
- If possible, designers associations to create new products using materials such as tent canvas

Other possible stakeholders

- Waste management department of local authorities
- Camping site associations (e.g. European Federation of Camping site Organisations and Holiday Park Associations)¹⁰⁷

¹⁰⁶ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

¹⁰⁷ European Federation of Campingsite Organisations and Holiday Park Associations (EFCO&HPA) (<http://www.campingeurope.com/>)

Description of the operational steps to follow

At municipal level

- Mapping of camping sites and charities, NGOs, second-hand shops, designers, etc. within the municipal boundaries.
- Organization of informative meetings to encourage camping sites to undertake these initiatives and liaise with charities and similar organisations for a potential collaboration.
- Facilitation and support in the subscription of voluntary agreements and collaboration partnerships between participating entities (i.e. camping sites, charities, etc.).
- Realization of communication campaigns at local level to engage more participants and raise awareness (e.g. provision of a “give box” in a public area).
- Regulative support to encourage camping sites to implement reuse measures (e.g. about permitting procedures and compliance with waste management legislation).

At camping site level

Previous steps before implementing the “give box” should include:

- Finding location and getting authorisation to place the box (at the campsite reception, for instance).
- Finding or building the box, and preparing a suitable template for the records book.
- Installing the box at the chosen location with instructions or a small poster explaining its purpose and functioning.
- Communication campaign: posters to inform campers should be displayed, not only within the camping site but also advertised via social media and the press, on the camping website, in the tourist office, etc.
- Training to camping site staff.
- To prevent waste generation, specific communication campaigns should be carried out by showing campers, festival participants and every other citizen how much waste is generated every year on site.

During the implementation phase

- Checking out the “give box” after its presentation to make sure it is not mistaken for a waste bin.
- Measuring the participation.
- Donors should inform campsite staff before giving away an item so that they can keep track on every item donated (a record book could be used to register donated items). Campers interested in collecting an item from the box should inform camping staff beforehand. Likewise, campsite staff should periodically monitor and register which items are left in and taken from the box.

- Monitoring the quantity of products being donated and reused (by estimation or by weighing the box every week for instance). In fact the idea is not to control everybody leaving or taking something.

After the implementation of the measure

- Compiling the final number of collected products (this will give an overview of how much waste is avoided by implementing the measure).
- Dissemination of the information gathered with pictures and other relevant feedback to the organisers and stakeholders involved.
- Maintenance of the “give box”.

Gender aspects to consider

Attention needs to be paid to gender balance of those developing the idea and who will organise the ‘give shelf/box’.

In addition, awareness raising amongst campers may need to be gender sensitive.

Examples of good practices

- The LOVE-YOUR-TENT initiative is a waste campaign, mostly active in the UK and Germany, designed to bond people with their tents and encourage them to reuse them instead of throwing them away. The organisers of this measure show campers, festival organisers and citizens how much waste there is and what happens to it, besides describing the costs involved.¹⁰⁸
- As part of plan to reduce waste produced by tourists, 5 municipalities in Vendée (West of France) have decided to implement measures aiming at reducing waste produced by tourism. After implementing a “give box” in a public area as a pilot test, the municipalities have promoted this measure to the camping sites located in their area. 25 camping sites were voluntary to install “give boxes” for promoting reuse initiatives among tourists. The “give boxes” have been made with recycled wood by a social inclusion association.¹⁰⁹

¹⁰⁸ LOVE YOUR TENT (<http://www.loveyourtent.com/>)

¹⁰⁹ Give boxes in camping sites in Vendée - Zero Waste France (<https://www.zerowastefrance.org/fr/articles/383-des-boites-a-dons-dans-les-campings-du-littoral-vendeen>)

Lessons learnt from the implementation phase and fine tuning

Reuse initiative in camping sites has not been implemented in any URBAN-WASTE pilot city.



09 - Communication campaign on reuse through swap markets

What is the measure about?

Description and scope of the measure

The following measure consists in the organisation of swap markets in public places to promote reuse initiatives as well as to raise awareness on waste generation. The principle is simple: every exchanged or reused product (e.g. clothes, books, toys, etc.) translates into waste prevented.

After reducing, reusing products is the second best option in the waste management hierarchy. In this sense, swap markets are a key measure to extend the lifespan of products and reduce the amount of waste generated by local citizens and tourists. Moreover, reuse has a strong value for sustainable development because it not only promotes environmental protection through waste prevention but it also implies social and economic benefits:¹¹⁰

Environmental benefits

- Reduction of waste generated.
- Prevention of pollution and reduction of greenhouse gas emissions.
- Decreased strain on natural resources.
- Preservation of the “embodied energy” originally used to manufacture products.

Social benefits

- Fight poverty by providing affordable/free products to low income households.
- Social inclusion by bringing disadvantaged people back in the labour market/society.
- Job creation in collection, sorting, testing, refurbishing & reselling of items and training opportunities in fields such as driving commercial vehicles, carpentry, electrical engineering, marketing or even handicraft/art.

Economic benefits

- Monetary savings for citizens (in purchases and disposal) and for the government (less social costs through job creation and training).
- Savings in energy, materials and chemicals embodied in the products.

Swap markets can include a wide range of products to be reused, but “clothes swap” might well be the most popular one. Second-hand clothes often have a bad reputation regarding their quality, but participating in such events can help overcome such prejudices. These events are very helpful to raise awareness so that they should be supported by strong communication campaigns on waste prevention and try to change consumption habits of citizens in a positive

¹¹⁰ European Week for Waste Reduction (EWWR) (<http://www.ewwr.eu/en/ideas/reuse>)

way. Awareness about the massive consumption and production of clothes should also be raised. Moreover, it is a great way to show that the same function of a product can be achieved by using a second-hand product instead of a new one. Events can be organised on public spaces, such as municipality halls, public squares and parks.

Citizens and tourists will gather to exchange goods, contribute to donations and discuss among them about waste prevention and reuse ideas.

Another type of swap initiative is the so called “fridge book exchange” which is focused on reuse and its promotion as a regular citizen’s behaviour from the ludic point of view. An old fridge is turned into a book-shelf with donated second-hand books and placed in the middle of the street or public library, inviting tourists and local citizens to take a book of their interest and, in exchange, leave another one already read. The idea of reuse is reinforced twice: by using the fridge as a bookshop and by swapping books.

Swap markets can also be organised at beach establishments, camping sites, museums, fun fairs and other establishments highly frequented by tourists such as hotels, tourist offices, etc.

Integration in a waste management plan

Depending on which entity is responsible for the organisation of the event (e.g. municipality, school, NGOs, etc.) these type of reuse measures could be integrated in a municipal waste management plan, environmental policy, local waste prevention strategy, etc.

Nowadays, most of the organising institutions undertake environmental actions within their annual activities. Reuse initiatives and waste prevention measures should be therefore included in their agenda.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Setting up the place for the swap market could include some expenses like the installation of tents to face the local weather, the supply of tables, carpets or boxes for the attendees to place their goods, etc. The costs will vary depending on the size of the market.
- Communication campaign costs. If dissemination is done through social media, there would be no extra costs apart from those associated to the effort of the person in charge of the task. If posters or leaflets are printed and spread around a specific area, the organizer would incur in some costs related to this.

Costs savings

- This reuse initiative implies a reduction in waste generated and, therefore, a reduction in the costs incurred in incineration and landfilling. In average, the general costs of incineration and landfilling of residual waste in EU are¹¹¹:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Financing options

- This measure could be financed within the URBAN-WASTE project thanks to the support of the stakeholders involved.

Type of stakeholders to involve

For the effective introduction and successful implementation of the proposed measures there is a number of key stakeholders that should be involved. These include:

- Municipal government
- Waste management department of local authorities
- Waste management company/local authority in charge of municipal waste collection
- Tourist establishment managers (beach establishments, camping sites, tourist villages, hotels, etc.)
- Tourist offices
- Environmental organisations, NGOs, social inclusion organisations, etc.
- Second-hand shop
- Charities (all left-over goods could be donated to charity organisations)
- Social media, journalists, etc.

¹¹¹ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

- Tourists and local citizens
- Volunteers

Description of the operational steps to follow

At municipal/private organization/individual level

Previous steps before the implementation of the swap market:

- Define the concept and the rules: swap party, exchange market, school event, etc.
- Organisation of logistics
 - Location to hold the activity (room, community hall, etc.).
 - Tables or stands for donors to put the products they bring to exchange.
 - Posters and instructions with information on the rules of exchange of products (e.g. number of tokens per product donated, product per product, etc.).
- Creation of event through social media to control the number of participants according to the location.
- Communication campaign with public media, press release and journalists invited to the event, display posters to inform the public and advertise via social networks and partners' channels.
- Preparation for reuse: checking, cleaning or repairing recovery operations by which products or components are prepared and so that they can be reused without any other pre-processing.

Steps during implementation of the measure

- Welcome the participants with a registration table (to monitor the number of participants and get their email for dissemination of results after the event).
- Meet participants to explain the purpose of waste prevention and reuse.
- Measure participation and monitor the quantity of products reused.
- Evaluation and provision of feedback to organisers.

Gender aspects to consider

Attention has to be paid regarding gender balance of those developing the idea.

Who sets up and monitors/maintains and collect data on who attends swap events, by male / female?

Communication campaign may need to be gender sensitive to maximise amongst men and women (a survey showed that women more likely to buy second hand goods when travelling)

Examples of good practices

- The City of Copenhagen (Denmark) allows citizens and businesses to reuse materials and products by expanding swapping options at the local recycling hubs and civic amenity sites. In this sense, the municipality guides citizens wishing to establish swapping facilities in their courtyards. Surveys have shown that if 150 courtyards would establish swapping facilities, 85 tons of waste would be saved, besides the municipality would save costs for collection and treatment of the items. Another survey showed that 98% of the city's citizens found that it is fine if other people reused items they had discarded.¹¹² As an example, the URBAN-WASTE project organised in April 2017 (through the Municipality of Copenhagen) the 1st Community of Practices (CoP) event together with a swap market at the City Hall Square. More than 2,000 people participated which translated into 3,000 kgs of swapped stuff¹¹³.
- The “4th Vic Schools Exchange Market” (Barcelona, Spain) consisted of a market for the exchange of certain kinds of items (e.g. sports material, comics, board games and toys) between primary school pupils aged between 8-10. The pupils brought along a maximum of 4 items from their homes that they no longer used and wanted to get rid of, in order to exchange them. On the previous days, pupils worked on the concepts of waste reduction and recycling in school, could find out how the market works and brought in the items they would like to exchange. Finally, they weighed all the items in school to determine the total amount of waste that was prevented in the market¹¹⁴.
- The “Fundación Centro de Recursos Ambientales de Navarra – CRANA” (Navarra, Spain) organized in 2012 a “fridge book swap market” in order to promote the reuse of second-hand books and turn the initiative into a regular citizen's practice from the ludic point of view. The general public was highly motivated by the originality of the activity and a total of 900 people participated in the initiative¹¹⁵.

¹¹² *Resource and Waste Management Plan 2018*. City of Copenhagen, The technical and Environmental Administration (http://kk.sites.itera.dk/apps/kk_pub2/pdf/1184_LfcAsFCDJS.pdf)

¹¹³ *An icebreaker title for Copenhagen after organising the first URBAN-WASTE Community of Practices event* (<http://www.urban-waste.eu/icebreaker-title-copenhagen-organising-first-urban-waste-community-practices-event/>)

¹¹⁴ 4th Vic Schools Exchange Market (http://www.ewwr.eu/docs/case_studies/ES_Cat_EWWR_Awards_Nominee_2013_CSF.pdf)

¹¹⁵ *Fridge Book Exchange* (http://www.ewwr.eu/docs/case_studies/EWWR_2012_Case%20studies_Administration_Navarra.pdf)

- In Stuttgart (Germany), an initiative on swapping toys was launched between two different kindergartens. The children from the Kindergarten Galileo visited the Kindergarten Sternschnuppe to swap toys. Every child brought one item (i.e. toy, game, book, car, teddy, etc.) that she/he did not want to keep anymore. At the beginning, the kindergarten teachers told children about waste generation and the caused problems. It was a very easy way to start speaking about waste and children got to know about a concrete solution for prevention: swapping and long use¹¹⁶.

¹¹⁶ *Swapping toys in the Kindergarten*

(http://www.ewwr.eu/docs/case_studies/EWWR_2012_Case%20Studies_Educational_Germany.pdf)

Guidance for setting up monitoring indicators

A monitoring can be set up to register, for each swap market organised, people and the type and number of products swapped:

Monitoring of actions, items, stakeholders and people involved etc.	event						total
	1	2	3	4	5	6	
Swaps markets organised [number]							0
People attending the event [number]							0
People donating during the event [number]							0
People taking items during the event [number]							0
Products swapped per type:							
clothes [number]							0
books [number]							0
furniture: small items [number]							0
furniture: big items [number]							0
other: please specify..... [number]							0

To assess the quantity of items swapped in kg, the average weight of each item swapped can be estimated in kg beforehand. Once the table above is fulfilled, the total number of items swapped on a certain period (here after 6 events) has to be multiplied by the estimated weight of each item to calculate the total amount of kg items swapped.

Lessons learnt from the implementation phase and fine tuning



Pilots implementing communication campaign on reuse through swap markets within URBAN-WASTE

In **Santander**, 300 people attended the Swap Market, from which 70 donated (60% women) and swapped goods.

In total, 128 kilograms of goods were swapped and therefore saved from ending up in landfill or having to be treated in recycling plants.

The Municipality of Santander used different promotion and communication materials, including 500 bracelets for participants, 3.000 brochures in Spanish and English, 2 flags, and one roll-up for dissemination purposes.

Key points

- **Start the communication campaign at least one month before the event takes place.**
- **Organize a collect campaign one week before the swap market to ensure that there are different goods when the swap market starts.**
- **Organize the swap market with different goods categories, like toys to attract and involve parents with children.**
- **Organize if possible the swap market in conjunction with another event in the city to ensure a good participation.**



10 - Waste sorting in hotel rooms

What is the measure about?

Description and scope of the measure

The following measure promotes the sorting of different waste fractions by guests in hotel rooms.

On average, hotels generate around 1 kg of waste per guest per night.¹¹⁷ Any product that cannot be reused and becomes waste should be sorted into its component fractions so that, as much as possible, it can be recovered for recycling. It is estimated that at least 70% of waste generated at hotels can be recycled, provided that there is a functional and effective separation and collection system in-situ.¹¹⁸ In order to achieve these results, it is essential to consider waste separation already in the hotel rooms and establish an appropriate sorting system.

Keeping in mind that comfort in rooms is a main objective in hotels, there are different environmental practices that can be implemented without reducing well-being of guests while generating environmental benefits. In most cases, hotel rooms only include a couple of waste bins, located in the bathroom and bedroom, where waste fractions are mixed. While bins located in the bathroom are intended for toilet waste, the one in the bedroom is used to collect all types of litter generated by guests (i.e. plastics, magazines, bio-waste, etc.). This is the bin that holds the largest potential to be adapted to a more sophisticated waste sorting and collection system.

For this purpose, individual small-sized bins adapted for separation of different fractions (i.e. paper, plastic, glass and food waste) are presented as a solution. An alternative could be the placement of several bins for different fractions in the room, although it would require more space and therefore it is less recommended.

The hotel will be responsible for waste sorting and management and will make sure that all waste fractions are properly separated in their respective container. Afterwards, an authorised waste manager can take care of the waste generated at the hotel and collect it periodically from the respective facilities.

¹¹⁷ *Environmental Management for Hotels (2008). The industry guide to sustainable operation. International Tourism Partnership* (<http://www.greenhotelier.org/wp-content/uploads/2014/09/4-Waste-for-web-1-1.pdf>)

¹¹⁸ *Guía de hoteles más sostenibles (2010). Ajuntament de Barcelona – Agenda 21 – Publicacions – Guías de Educación Ambiental*

(http://w110.bcn.cat/MediAmbient/Continguts/Continguts_Transversals/Educacio_Ambiental/Documents/Fitxers/Guia_Hotels_Sostenibles_CAT.pdf)

Integration in a waste management plan

Hotels are usually certified against Environmental Management Systems (e.g. ISO 14001, EMAS, etc.) which must include waste management plans with different measures and actions implemented to increase waste separation and recycling rates.

For instance, the EU Ecolabel requires a waste management plan to facilitate waste separation by guests, to sort waste and to avoid disposable products and single-dose food packaging (except where required by law).

Furthermore, depending on the municipality, region or country, there exist specific regulations as to waste generation and recycling from businesses (including hotels) which oblige waste generators to use collection systems differentiating among fractions (e.g. paper/cardboard, glass, packaging and bio-waste, used cooking oil, bulky waste, etc).

The proposed measure for waste sorting in hotel rooms could be easily embedded in the existing EMS and other internal waste management plans to comply with waste collection and recycling regulations.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Separate waste collection is normally financed via municipal waste fees (tariffs are determined in the municipal waste removal ordinances). Otherwise, the costs of collection will be determined by private authorized waste collectors.
- Hotels implementing this measure will incur in expenses related to the installation of sorting bins and bags, which will depend on the type and amount.

Costs savings

- As an illustrative example, the Hilton Tokyo Bay saved more than €365,900 between 1998 and 2006 after implementing their solid waste management recycling programme, despite an 8% rise in disposal costs over that period¹¹⁹.
- Improving the recycling rates at a room level will contribute to the reduction of mixed waste generated and thus, the costs of incineration or landfilling it. In this sense, the average costs of incineration and landfilling of residual waste in EU are¹²⁰:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Funding options

- Hotels could make visible that they carry out this initiative with a sticker or in their website for the customers to see. With a green marketing strategy hotels could increase the number of incoming customers and such profit could be invested back into this or other initiatives.

Type of stakeholders to involve

For the effective introduction, implementation and continuous operation of the proposed measure a number of key stakeholders should be involved. These include:

- Hotel manager
- Maintenance and housekeeping department at the hotel (i.e. responsible person, cleaning staff, etc.)
- Customers
- Waste management company/public authority in charge of waste collection
- Supplier of bins adapted for waste separation

¹¹⁹ Source : <https://waste-management-world.com/a/a-welcome-sign-hotels-adopt-reuse-and-recycling>

¹²⁰ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

Other possible stakeholders to involve that could promote the implementation of the action at territorial level:

- Waste management department of local authorities
- Hoteliers associations

Description of the operational steps to follow

At municipal level

- Mapping of hotels within the municipal boundaries, identifying the ones that are already involved in such a policy.
- Organization of informative meetings with hotels and hoteliers associations to promote the implementation of waste sorting in hotel rooms. Hotels that have already implemented such a system could be invited to explain their policy and share their experience.
- Realization of communication campaigns to engage more participants.
- Regulative support to encourage hotels to sort their waste (for instance, by applying reductions in the waste fee, or establishing a territorial label promoting hotels with such measures implemented).

At hotel level

Baseline study (waste review):

- The very first step should be the identification and quantification of waste generated and recycled at the hotel. Every waste fraction should be considered separately. By knowing how much waste is being generated before implementing the measure as well as which fractions end up as waste, it will be possible to link other measures such as the replacement of specific disposable products in hotel rooms. This step will not be necessary in case the information is already available.

Introduction and implementation phase:

- Awareness raising and training for the hotel cleaning staff as they must be involved so as to adopt the new working practices.
- Distribution in every room of individual small-sized bins adapted to separate different fractions.
- “Welcome kit” in hotel rooms should provide leaflets with guidance and instructions to guests regarding waste sorting in the room and the environmental commitments adopted by the hotel policy.
- An empty letter could be included in the “welcome kit” where guests could suggest other environmental practices to improve the overall performance of the hotel (e.g. food waste at buffets, substitution of disposable products, partnership between hotels/charities, etc).

- Use of different plastic bags with different colours, according to the waste collection system of the respective city (e.g. green-glass, blue-paper, brown-bio waste, etc.). An alternative could be the use of transparent plastic bags for every fraction so that the content of the bags can be checked avoiding mixing of fractions, most of all for the cleaning staff once they are collecting waste from the rooms to their bigger waste trolleys.

Operation phase:

- Collection and separate storing of the different fractions by cleaning staff until it is taken to higher capacity containers, becoming part of the waste management system of the hotel (with different containers per fraction including waste from other areas of the hotel such as kitchen, reception, etc.).
- Housekeeping/cleaning trolleys used by cleaning staff should be similarly divided to facilitate the work for cleaners and to speed up the process. It is particularly important to keep the same colours.
- Incessant encouragement for feedback from employees with suggestions and observations as a means of continuing to improve the new implemented measure.
- Constant training of the cleaning staff, with reminders. It could be relevant to define a referent on that measure within the cleaning staff so that they could refer to him/her for any doubt they have regarding this measure.

Gender aspects to consider

Who will do the additional work required, and will this increase the work load? Who will be the 'authorised waste manager'?

Who will train staff? As mostly women, they may well be waste managers at home. Should beware situations where 'expert professional men' are training women seen as not waste professionals.

Attention has to be paid also to gender balance of those developing the idea. (e.g. make particular use of those already cleaning the rooms – who are likely to be women). Where women cleaners are involved in setting up the scheme, could be empowering.

In addition, information to guests may need to be gender sensitive to maximise waste sorting by both men and women.

Examples of good practices

- The Neya Hotel in Lisbon has successfully implemented a waste sorting system in the 76 rooms of the hotel. Every room includes a bin for separation of residual waste, glass, paper and packaging (plastic and metal) fractions. This measure was implemented immediately after the hotel opened in 2011.¹²¹
- The “Orchard Garden Hotel” (San Francisco, United States), which is one of the “Top 10 Best Eco-Friendly Hotels in The U.S.” has implemented waste sorting and separate collection in every hotel room, including in-room recycling bins that separate glass and paper for thorough recycling.¹²²
- At a smaller scale, a 14-room hotel and restaurant in the UK, the “Strattons Hotel”, recycles or reuses 98% of waste and, in addition to the environmental and social benefits, it saves the business more than 1,000 € each year in waste disposal costs.¹²³
- The Hilton Slussen in Stockholm (Sweden) has implemented sorting bins in every room so that guests can sort their waste under three different categories and contribute to the recycling process:
 - Red box: hard plastics (e.g. shampoo bottles) and metal (e.g. bottle caps)
 - Green box: organic waste (e.g. apple cores)
 - Black box: paper (e.g. newspapers and magazines)

Since the introduction of the sorting and recycling scheme in 1997, more than 125 tons per month being sent to the landfill were reduced by 76%, reducing the total waste generated per guest-night up to 0.3 kg¹²⁴.

¹²¹ Neya Hotel, Lisbon (<http://www.neyahotels.com/en/hotel-overviewhtml-hotel-overviewhtml>)

¹²² The Orchard Garden Hotel (Green Initiatives) (<http://www.theorchardgardenhotel.com/hotel/green-initiatives>)

¹²³ Eco-Management and Audit Scheme (European Commission) (<http://ec.europa.eu/environment/emas/takeagreenstep/06-article.html>)

¹²⁴ Environmental Statement 2011 (Hilton Stockholm Slussen) (<https://www.esomar.org/uploads/public/events-and-awards/events/2014/digital-dimensions/documents/Hilton-Stockholm-Slussen-ENVIRONMENTAL-STATEMENT.pdf>)

Guidance for setting up monitoring indicators

Two groups of indicators are to be set:

1. The first group aims at monitoring involved stakeholders:

- Hotels involved **[number]** & total number of hotels in the pilot area **[number]**

These two previous data will enable to compute the following indicator:

- Percentage of hotels involved: $\text{hotels involved} / \text{Total number of hotels in the pilot area} [\%]$

The pilot area can be the whole city or a part of it: down town, old town, port area...

- Mapping of hotels that implement the measure **[Name and address]**
- Hotels promoting sorted collection of waste in rooms and common areas **[number]**

- Rooms in the hotels that correctly use bins for the separated collection **[number]**
- Total number of rooms in the hotels involved **[number]**

These two previous data will enable to compute the following indicator:

- Percentage of rooms that correctly use bins for the separated collection **[%]**

- Total number of recycling bins placed in hotels **[number]**

- Positive feedbacks about the initiative collected from clients **[%]**

2. The second group aims at monitoring waste production in involved hotels and the performance of the measure:

- Quantity of plastic waste produced **[kg]** or **[number of bins or garbage bags] in rooms and in common areas**: the number of bins or garbage bags can be chosen as a unit of measurement if it is not possible to weight waste produced, the average weight of a fulfilled bin or bag will have to be estimated beforehand for further calculation

- Quantity of paper waste produced **[kg]** or **[number of bins or garbage bags] in rooms and in common areas**

- Quantity of mixed waste produced **[kg]** or **[number of bins or garbage bags] in rooms and in common areas**

- Number of customers **[number]**

- Occupancy rate (n. of rooms occupied / total of rooms) **[%]**

Time frame

It is recommended to start the monitoring at least one week before dispenser are installed to assess the effect of the measure on waste production.

Quantity of waste produced and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Lessons learnt from the implementation phase and fine tuning



Pilots implementing waste sorting in hotel rooms measure within URBAN-WASTE

In **Lisbon**, 3 hotels encompassing in total **305 rooms** applied selective collection. Waste generated in these hotels was reduced by 12% and the volume of recycled waste in the hotel increased immediately to 72% while the occupancy rate was about only 46%. It should be noted that additional work due to waste sorting fell to women because they compose more than 80% of staff.

Key points

- **The staff has to be strongly motivated by raising their ecological awareness.**
- **Use new containers and colours bags in all locations to facilitate recycling and the adaptation of staff.**
- **Put strong efforts in the mobilization of hotels to increase their participation.**



11 - Recycling advisors for tourist establishments

What is the measure about?

Description and scope of the measure

The following measure introduces the role of recycling advisors to help tourist establishments (e.g. hotels, restaurants, shops) sorting their waste and recycling.

The services offered by recycling advisors (i.e. training sessions, regular visits, monitoring, etc.) are of special importance in those cities where municipal governments are not in charge of the waste generated from private businesses and therefore waste management is a responsibility of each individual company (which at the same time must comply with waste regulations).

For instance, recycling advisors can inform establishments on the type of waste they can/cannot recycle and how/where to do so. This could be the case of Styrofoam (i.e. polystyrene foam used for packaging), which in some regions cannot be recycled and must be landfilled. Recycling advisors would inform businesses about alternative materials that could be recycled and strongly advise establishments to contact their suppliers and request the substitution of such materials by reusable or recyclable packaging.

Well informed and duly advised establishments will help, for instance, diverting large amounts of waste from the landfill and incineration plants to recycling. This is especially important for newly started businesses, although advisors should also liaise with organisations while facilitating collaboration and agreements among companies to intensify efforts and good practices.

Although all sectors should be covered (hotels, restaurants, shops, etc.), recycling advisors should always target and pay special attention to larger waste generators and so these establishments should be prioritized over smaller ones. In this respect, recycling advisors will pay regular and follow-up visits to establishments while monitoring the progress after the implementation of the recommended actions. Advisors will inform establishments about legislation and waste-related regulations (at all levels: local, municipal, national, etc.), will assess the scope for improvement and provide ad-hoc solutions. New practices could focus on changes of routine and daily activities, volume and type of generated waste, etc.

More examples of recycling solutions offered to establishments include:

- Hotels: all guests must have access to recycling bins, hotel managers considered as responsible for the guest's waste, special focus on waste fractions generated from guests and recycling: shoe boxes, shopping bags, bottles, newspapers, etc. (most common type of waste).
- Restaurants, bars, etc.: coalition and cooperation between restaurants, dry materials sorted out front, food waste out back.
- Shops: bag methods, sharing solutions with neighbouring establishments, special collection of hazardous waste like light bulbs, toner, batteries, etc.

Integration in a waste management plan

Whenever municipalities are not in charge of the waste management from tourist establishments, a service of recycling advisors could be available and offered to these establishments. This can be provided as a municipal service and be integrated in the sustainable development plan, waste management plan or waste prevention strategy/policy of the municipality or city council.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- The costs associated to this measure correspond mainly to the salaries paid to the recycling advisors. This salary would be determined by each municipality and would depend, among other factors, on whether the job is to be carried out part-time or full-time.
- Recycling advisors may use training materials or dissemination tools like posters or leaflets that would need to be financed as well.

Cost savings

- The implementation of recycling advisors will result in better practices from hotels and restaurants in regards of recycling practices. In this sense, the amount of residual waste will be reduced and, thus, leading to a reduction of the incineration or landfilling costs associated. In average, the general costs of incineration and landfilling of residual waste in EU are¹²⁵:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Financing options

- This initiative could be further developed with Public-Private Partnerships, where municipalities and private companies collaborate to facilitate recycling advisors for tourist establishments.

Type of stakeholders to involve

For the effective introduction and successful implementation of the proposed measure, the following key stakeholders should be involved:

- Municipal government
- Waste management department of local authorities
- Waste management company/local authority in charge of municipal waste collection
- Tourist establishment manager and staff (e.g. hotels, restaurants, shops, etc.)
- Business associations, chamber of commerce, etc.
- Environmental associations working on raising awareness on waste recycling and prevention
- Training expert

¹²⁵ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

Description of the operational steps to follow

At municipal level

- Creation of a recycling advisors team/unit.
- Baseline analysis of waste generation and management from tourist establishments at local/municipal level.
- Identification and mapping of businesses.
- Arrangement of regular visits and establishment of point of contacts.
- Analysis of waste management in the establishment and provision of ad-hoc training and recommendations/solutions, leaflets, etc.
- Monitoring of the actions implemented and results obtained.

At tourist establishment level

- Request of recycling advisory service.
- Appointing of responsible person within the establishment as coordinator of actions to be implemented and main point of contact with the recycling advisor.
- Implementation and assessment of recommended actions.

Gender aspects to consider

Attention needs to be paid to gender balance of those developing the idea. It is also important to bear in mind the gendering of the trainer/trainee relationship, and whether expertise can be found amongst the people already doing waste management tasks.

Examples of good practices

- In Copenhagen, the municipality has included recycling advisors within the services provided to tourist establishments. In the last 3 years, advisors have visited over 2,000 companies (incl. hotels, restaurants and shops) and contributed to recycling nearly 20,000 tons. This service consists of cooperation with newly started businesses, collaboration with the branch organisations, and intensified efforts on supervision and enforcement, among others.
- Advisory services for recycling could also be provided by private institutions. In April 2005, Hilton UK & Ireland announced a £7 million (€7.6 million) long-term agreement with specialist provider Environmental Waste Controls (EWC) to enhance its waste management and recycling programme across all its UK and Irish hotels. The programme has created a single point of management for all waste and recycling activities across the Group.¹²⁶

¹²⁶ *A welcome sign: Hotels adopt reuse and recycling* (Waste Management World) (<https://waste-management-world.com/a/a-welcome-sign-hotels-adopt-reuse-and-recycling>)

Guidance for setting up monitoring indicators

Two groups of indicators are to be set:

1. The first group aims at monitoring involved stakeholders:

Monitoring of actions, items, stakeholders and people involved etc.		total
Hotels trained	[number]	
Total [number] of hotels in the pilot area	[number]	
Percentage of hotels trained	[%]	
Restaurants trained	[number]	
Total [number] of restaurants in the pilot area	[number]	
Percentage of restaurants trained	[%]	
Other tourist facilities involved	[number]	
[number] of people trained	[number]	
Other: please, specify.....		

2. The second group aims at monitoring waste production in involved hotels and the performance of the measure:
 - Quantity of plastic waste produced **[kg]** or **[number of bins or garbage bags]** in **rooms and in common areas**: the number of bins or garbage bags can be chosen as a unit of measurement if it is not possible to weight waste produced, the average weight of a fulfilled bin or bag will have to be estimated beforehand for further calculation
 - Quantity of paper waste produced **[kg]** or **[number of bins or garbage bags]** in the establishment
 - Quantity of organic waste produced **[kg]** or **[number of bins or garbage bags]** in the establishment
 - Quantity of mixed waste produced **[kg]** or **[number of bins or garbage bags]** in the establishment
 - Number of customers **[number]**

Time frame

It is recommended to start the monitoring at least one week before dispenser are installed to assess the effect of the measure on waste production.

Quantity of waste produced and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Lessons learnt from the implementation phase and fine tuning



Pilots implementing recycling advisors for tourist establishments measure within URBAN-WASTE

In **Nicosia**, 89 facilities have been involved in training activities and informed through regular visits: 8 hotels, 40 restaurants and 41 others. The number of people trained was 117.

In **Ponta Delgada**, 40 restaurants were involved. This required the training of 87 staff members from all restaurants.

In **Tenerife**, advising took place in 9 hotels. A total of 353 workers have been trained.

A general assessment of participating restaurants showed a decrease of unsorted waste produced for each customer or transaction.

Changing the way employees manage waste have been difficult in certain cases because they are too busy in high season or because of the turnover in staff.

Keypoints

- **Plan the implementation of this measure well in advance of peak tourist season to train employees when they are not too busy.**
- **Organize training events not more than half a day because the facilities have not extra staff to participate.**
- **Put effort in the motivation of the team, all levels of staff have to be involved.**

- **As far as possible rely on a stable and motivated team, turn-over of employees implies the multiplication of training sessions.**
- **Organise regular visits or keep regularly contact with restaurants' manager to discuss problems and find solutions.**
- **Monitor this measure on a long enough period to obtain clear trends and conclusive results.**



12 - Sorting bins in public and touristic places

What is the measure about?

Description and scope of the measure

As highlighted by the surveys conducted within URBAN-WASTE project¹²⁷, tourists mention a lack of adequate information and scarce information rather than a lack of motivation when it comes to waste sorting on holiday. Indeed, depending on the type of accommodation sorting bins, in particular in sightseeing areas. Several cities have now developed waste sorting bins in public areas to encourage both tourists and residents to sort their waste also when they are not at home. Usually, these projects have started with pilot projects to verify the effectiveness of the chosen model.

Thus, implementing bins in the most frequented public and touristic areas (city centers, historical districts, tourist offices, beaches, train stations, airports, harbours, museums and parks) seems like a relevant way to increase the amount of waste sorted and recycled coming from the tourists and the residents.

Several key elements must be taken into account. The sorting bins must be well localised, visible and close to the bins for unsorted material (residual waste). Besides, the design of the bins is very important. In terms of capacity, several options are possible depending on the urban context (regular street bin, aerial column, half-buried or buried containers, vacuum collection). In terms of shape, the opening of the lid is a key aspect to control the quality of sorted waste (e.g. for paper bins, a very narrow opening to let only paper waste in). Finally, the signage is essential for influencing individual's behaviour and for the quality of the waste sorting (clear instructions).

The sorting bins, whether implemented in public areas collected by a public authority or in private touristic areas collected by private companies, must correspond to the waste collection system in place within the local municipality. Sorting waste fractions that couldn't be adequately treated and recycled afterwards because of a lack of infrastructure or logistical impediments would leave to counterproductive effects.

¹²⁷ Deliverable 3.2 "Situation and behavioural analysis of consume and waste behaviour and patterns"

Integration in a waste management plan

Waste sorting bins located in public areas should be integrated to the global waste management system in place in the area of implementation. The existing waste collection service should be adapted to the new scheme.

If located in private areas managed by private establishments, the waste sorting bins should be adapted to the public waste collection system if they are collected by the public authority, or to a feasible waste collection scheme operated by private companies. However, it is highly recommended to use the same colours as the ones used by the local municipal waste collection service in order to facilitate tourists' sorting gesture. Besides, this measure could be embedded in the environmental policy established in such private establishments.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Many factors have to be considered when implementing a system for sorting bins, in relation to the costs. For instance, the municipality or authority in charge will have to consider the cost of collection, number of bins/containers/bags, cost of each bin/container/bag, the amount of waste produced by person, among others, to calculate the total cost of the system.

Costs savings

- The cost of not recycling must also be considered in order to evaluate whether implementing the system is economically viable. In this sense, landfilling or incineration of the residual waste are assumed to be the alternative, where the average costs in EU are¹²⁸:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton
- By reusing or recycling materials, there are cost savings in relation to the raw materials that are no longer needed to be extracted/processed for the production of new goods. For example, in September 2017, the cost of virgin plastic ranged between 1.125 € and 2.070 €/ton in EU, depending on the type of polymer¹²⁹.

Revenues

- Sorting different fractions of waste will allow to give value to the different fractions of waste, since these could be sold as resources. Therefore, the market value of the different fractions to be recycled must be considered as well. As an illustrative example, the market price for recycled plastics in EU as of 2016, was 301 €/ton, where for glass the market value reached levels of 49-53 €/ton in 2014¹³⁰.

Type of stakeholders to involve

To implement this measure, whether initiated by public structures or private structures, the types of stakeholders to involve are:

- Municipal government.
- Urban planning department of local authorities.

¹²⁸ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

¹²⁹ Source : <http://www.plasticsnewseurope.com/article/20171211/PNE/171219995/european-petrochemical-feedstock-contract-prices>

¹³⁰ Source : EUROSTAT : *Recycling – secondary material price indicator*. (http://ec.europa.eu/eurostat/statistics-explained/index.php/Recycling_%E2%80%93_secondary_material_price_indicator#Plastic)

- Waste management department of local authorities.
- Waste management company/public authority in charge of municipal waste collection (including private areas).
- Managers of touristic places (e.g. beaches, museums, parks, train stations, airports, harbours, tourist offices, etc.).
- Suppliers of bins or containers adapted for waste separation.

Description of the operational steps to follow

Before implementing this measure at a big scale, these steps should be followed:

- Assessing the possible waste fractions to collect separately based on the current local waste collection scheme and the existing waste infrastructures for treatment and recycling.
- Identifying the most relevant areas for the implementation of the sorting bins, and the most relevant waste fractions to collect.
- Identifying the logical constraints for the implementation of the sorting bins.
- Defining the design of the bins based on the objectives previously identified.
- Defining the signaletic accompanying the sorting bins.

Implementation phase:

- Implementing a pilot test in relevant areas.
- Launching an initial communication campaign to raise awareness on waste sorting and to inform on the new system being implemented. Regularly, the waste management department of the local authority could organise awareness campaigns directly on the streets with specific waste advisors distributing leaflets, giving advice, showing the sorting bins, etc.
- Creating a map compiling all the sorting bins located on a touristic area and providing the tourist offices/touristic establishments with it.

Gender aspects to consider

Attention has to be paid to whether bins are easily accessible to all (height, weight, location).

As waste management tends to be male dominated in most case studies, ensure women are specifically involved to achieve gender balance.

Communication campaign needs to be gender sensitive to avoid favouring one sex or another: all people are to be involved in sorting waste.

Examples of good practices

- To facilitate the recycling of packaging materials (such as plastic bottles and cans) that are included in the Danish deposit-refund system, the City of Copenhagen, together with Dansk Return System (organisation in charge of the Danish deposit-refund system) and NGOs, has designed a new model of street bins. This design allows to discard plastic bottles and cans on the outside of the bin on “deposit-shelf”, so that people in need can collect them and earn some money through the deposit-refund system. This new system had the purpose to dignify the collection of refundable packaging by avoiding that people need to go through the waste to find the refundable packaging. Such bins have been implemented in different part of the city of Copenhagen.¹³¹
- In cities such as the URBAN-WASTE pilot cases Lisbon and Florence, the waste is collected through a bring banks system in the historical center. Thus, sorting containers are available for everyone in public areas of the city, enabling not only citizens but also tourists to sort their waste.
- Some initiatives for waste sorting in major tourist areas have also been developed in several countries. For example, the French National Railway Corporation (SNCF) has implemented waste sorting bins in several train stations¹³². Also, in some airports, there are bins for waste sorting, and even for the specific collection of plastic bottles before the security control points, such as in Paris Orly airport. At Copenhagen airport, specific bins for plastic bottles were placed to give money to charities thanks to the Danish deposit-refund system.
- The French initiative “Gestes propres”, previously called “Vacances propres” (“Clean holidays”) aims at reducing litter and improving waste sorting during holiday since 1971. To do so, a comprehensive scheme based on a national anti-littering campaign, actions to raise awareness among citizens and tourists, and the provision of sorting bags to voluntary municipalities is organised each year. “Gestes propres” has its own brand and distinctive garbage bags that can be found in many French municipalities, on beaches, in the mountains and other tourist areas, but also in big events such as the cycling event “Tour de France”. In 2016, more than 2.2 million bags were used and 20,000 tons of waste collected.¹³³

¹³¹ Copenhagen gives bottle collectors 'dignity' - The Local

(<https://www.thelocal.dk/20150611/new-copenhagen-project-gives-bottle-collectors-dignity>)

¹³² SNCF 2016 CSR report, p.77 (http://medias.sncf.com/sncfcom/rse/bilanrse/Rapport_RSE.pdf)

¹³³ Vacances propres becomes Gestes propres - (<http://www.ecoemballages.fr/actualite/vacances-propres-devient-gestes-propres>)

Guidance for setting up monitoring indicators

Data to be collected:

Monitoring of actions, items, stakeholders and people involved etc.		total
Sorting bins installed in public spaces (multiple: paper+plastic+unsorted)	[number]	
Sorting bins installed in public spaces (single: paper)	[number]	
Sorting bins installed in public spaces (single: plastic)	[number]	
Sorting bins installed in public spaces (other: specify)	[number]	
Sorting bins installed in private freely accessible spaces like bars.... (multiple: paper+plastic+unsorted)	[number]	
Sorting bins installed in private freely accessible spaces like bars....(single: paper)	[number]	
Sorting bins installed in private freely accessible spaces like bars.... (single: plastic)	[number]	
Sorting bins installed in private freely accessible spaces like bars.... (other: specify)	[number]	
Area of the city covered by the sorting bins installed	[m ²]	
Average number of daily emptying	[number]	
Brochures distributed to tourists	[number]	
Communication events organized	[number]	
Evaluation of people potentially reached by communication initiatives	[number]	
Other: please, specify.....		

A second group o data aims at monitoring waste collected thanks to the bins and the performance of the measure:

- Quantity of plastic waste collected [kg]
- Quantity of paper waste collected [kg]

Time frame

It is recommended to start the monitoring at least one week before implementation phase to assess the effect of the measure on waste production.

Quantity of waste produced can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Lessons learnt from the implementation phase and fine tuning



Pilots implementing sorting bins in public and touristic places measure within URBAN-WASTE

In **Kavala**, **25 new bins** for waste sorting collection of metal, plastic, paper and glass (blue bin) were installed in the port area of Kavala (2,5 ha), supported by a massive communication campaign about waste separated collection and waste involving 19 important media and 85 stakeholders.

During the monitoring phase, data showed an increase of the sorted fractions (plastic, glass, metal, and paper) of about 27%, managing to reduce the unsorted waste by 32%.

In **Syracuse**, **26 new bins** for waste sorting collection (paper+plastic+unsorted, single paper, single glass and plastic+cans) were installed in 5 touristic points of interest. The measure was supported by a massive communication campaign about waste separated collection and waste reduction. Waste sorting instructions translated in English (measure n°14) gave also clear advices to help tourists to sort waste properly.

Keypoints

- **Communication is crucial in particular the dissemination of clear instructions in different languages**



13 - Promotion of tap water

What is the measure about?

Description and scope of the measure

The promotion of tap water aims at decreasing the consumption of bottled water, in particular PET bottles. Tourists are particularly big consumers of bottled water when on holiday, both directly through their purchases than through their tourist lifestyle (hotels, restaurants, etc.).

Promoting tap water can be done by combining different approaches:

1. raising awareness through an information campaign on the environmental impacts of plastic bottles (energy consumption, gas emissions, marine litter, etc.)
2. increasing and improving the accessibility to tap water in public and private commercial areas
3. promoting and distributing reusable bottles

These approaches are even more essential when targeting tourists as they might not be aware of the possibility of drinking tap water at their holiday destination, nor where the facilities are. Also, they might not be equipped with reusable bottles.

The accessibility of tap water is a key factor for the success of this measure. Thus, it might be complicated to implement in a municipality with few or no public drinking fountains, unless an expansion of the network of public fountains is planned. On the contrary, giving access to the location of the public fountains or other sources of tap water (e.g. restaurants and bars offering free tap water) will make this measure more efficient. Some cities have edited printed and digital sightseeing maps localizing water drinking fountains, or even created their own mobile app to promote tap water.

Besides, partnerships can be built with the private sector to provide tap water, as it has already been done in several places around the world. Tourist establishments such as restaurants, bars, cafes, hotels, camping sites, etc. are particularly relevant when it comes to providing tap water to tourists. There are already cases of some establishments offering free tap water on demand to people equipped with refillable bottles, or offering free tap water to their customers. Other establishments also filter and possibly carbonate the water to make it sparkling and sell it at a lower price than bottled water or give it for free.

The distribution of reusable bottles, during touristic events or in touristic places is also an efficient way to disseminate the measure and raise awareness. This can also be done through partnerships with the private sector or NGOs.

The efficiency of the measure will depend on the local social norms for drinking tap water. If drinking and providing tap water is not a common habit in the area of implementation of the measure, a strong commitment will be needed from the local government to raise awareness not only of the tourists but also of citizens and local business owners. Making attractive water fountains through design contest is a possible way to make it part of the tourists' experience.

This measure could be combined with other specific measures on tap water targeting tourists, such as the following examples:

- ban of beverages in plastic bottles in critical areas such as national parks
- green procurement in hotels including the ban of bottled water

Integration in a waste management plan

This measure could be related to the prevention plan of the waste management plan of the municipality. It should also be integrated in other urban plans, such as the local urban planning scheme and the water supply management plan.

At the scale of private establishments, this measure can be part of environmental policy established of these establishments. Moreover, restaurants and hotels can be certified against Environmental Management Systems (e.g. ISO 14001, EMAS, etc.) which include a waste management plan with different measures and actions implemented.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of measure

Costs

- Costs associated to the expansion of the of drinking fountains network. For example, in 2008 the City Council of Edinburgh, estimated that the cost of installing one single fountain would be between £2.500 - £4.000¹³⁴. Maintenance costs should also be considered in the long term analysis.
- If maps showing the position of drinking fountains around a given area are printed, the promoter of the action would incur in expenses related to the printing of them as well as for the logistics. On the other hand, the same information could be shared with citizens through an application. Within the URBAN-WASTE project such application is already being developed and would be offered free of charge.
- Costs associated to the purchase of reusable bottles to be distributed among tourists and citizens free of charge.

Costs savings

- By using reusable bottles, there are cost savings in relation to the raw materials that are no longer needed to be extracted/processed for the production of plastic bottles. For example, in September 2017, the cost of virgin plastic ranged between 1.125 € - 2.070 €/ton in EU, depending on the type of polymer¹³⁵.
- Moreover, the municipality implementing this strategy will reduce the amount of plastic bottles to be disposed and treated, translating into a reduction in the costs of incineration or landfilling. As reference, the costs of these two treatment alternative in EU are¹³⁶:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

¹³⁴ Source: City of Edinburgh Council (2009). *Provision of Drinking Fountains in Edinburgh's Parks (Item no 7.1)*. Transport, Infrastructure and Environment Committee

¹³⁵ Source : <http://www.plasticsnewseurope.com/article/20171211/PNE/171219995/european-petrochemical-feedstock-contract-prices>

¹³⁶ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

Financing options

- This measure can be funded through the communication campaign of the URBAN-WASTE project. For example, the application WasteApp will show the location of drinking fountains around the pilot regions and cities, free of charge.

By selling reusable bottles instead of being distributed for free among tourists or citizens, the municipality or other organizer promoting the use of tap water could receive a direct benefit in order to finance the initiative.

Type of stakeholders to involve

Municipal government

- Water supply and sanitation department of local authorities
- Waste management department of local authorities
- Urban planning department of local authorities
- Tourist establishments' managers (e.g. bars, restaurants, cafes, hotels, etc.)
- Private companies or organizations willing to participate in the implementation

Other possible stakeholders to involve

- Local NGOs in the field of environment protection

Description of the operational steps to follow

This measure could be initiated by the municipal government, with the cooperation and support of the stakeholders previously indicated. These steps should be followed in order to define the possible means that could be allocated to the promotion of tap water:

- analysis of the current practices regarding the use of tap water
- analysis of the existing sources of tap water supply (public water fountains and private establishments) and definition of the most relevant areas of implementation of the measure
- establishments of partnerships with tourist establishments for providing tap water to their customers and/or with other private companies or organizations (e.g. organizers of festivals and public events) for supporting the implementation of the action
- creation of the communication and promotional material (e.g. posters, maps/APPs, reusable bottles)

Gender aspects to consider

As waste management tends to be male dominated in most case studies, ensure women are specifically involved to achieve gender balance in particular those developing the idea.

Communication campaign needs to be gender sensitive to avoid favouring one sex or another in the wording or the pictures used.

Examples of good practices

- As part of the URBAN-WASTE project activities, a distribution of reusable bottles has been organized during the Florence marathon, targeting both runners and tourists. It had the double purpose of promoting tap water and reusable bottles and flasks and raising awareness on plastic waste.¹³⁷
- The City of New York (USA) has launched since many years a campaign to promote tap water and to raise awareness on the impact of bottled water. This campaign aims at promoting the thousands of public water fountains of the city. Besides, the Department of Environmental Protection of the city has developed a program called “Water-on-the-go”. Within this program, portable drinking fountains are installed during the summer season in the most frequented areas of the cities, such as public places, city parks and busy pedestrian areas. An app has also been developed to help residents and tourists locate the public drinking fountains.¹³⁸
- After evaluating that plastic bottles represented 20% of the Grand Canyon’s waste stream and 30% of the park’s recyclables, the Grand Canyon National park (USA) has banned the sale of water packaged in individual disposable containers including plastic bottles. Water bottle filling stations have been installed in the most frequented areas of the park, which provide spring water from the park. Reusable water bottles are also available on sell at the retail outlets off the park.¹³⁹ In 2011, 23 American national parks had implemented such a measure.
- As part of the green policy of the Glastonbury festival (England) everyone is encouraged to bring reusable water bottles or to purchase stainless steel water bottle so that they can make serious reductions on the volume of plastic bottles onsite.¹⁴⁰
- The Network Rail in UK will introduce in 2018 drinking fountains at all main railway stations as part of government efforts to encourage the public to carry refillable water bottles. The initiative has been proposed by the UK Parliament to airport operators and motorway service stations as well¹⁴¹.

¹³⁷ <http://www.urban-waste.eu/events/urban-waste-incontra-turisti-e-maratoneti-piazza-duomo/>

¹³⁸ Can the drinking fountain make a comeback? (<https://www.citylab.com/life/2015/07/can-the-drinking-fountain-make-a-comeback/399098/>)

¹³⁹ Go Green and Refill Your Water Bottles (https://www.nps.gov/grca/planyourvisit/refilling_stations.htm)

¹⁴⁰ Green Glastonbury (<http://www.glastonburyfestivals.co.uk/information/green-glastonbury/our-green-policies/>)

¹⁴¹ <https://www.ft.com/content/9c8777e6-06a6-11e8-9650-9c0ad2d7c5b5>

Guidance for setting up monitoring indicators

The following data can be collected:

Monitoring of actions, items, stakeholders and people involved etc.		total
existing public potable water fountains that are placed in tourist areas	[number]	
new public potable water fountains that are placed in tourist areas	[number]	
Does the tap water need to be purified before it is distributed through fountains?	[yes-no]	
If yes (purified) how	[specify]	
reusable flasks and bottle distributed	[number]	
reusable flasks and bottle sold	[number]	
Weight of reusable bottle	[g]	
Material of reusable bottle	specify	
bars and restaurants serving tap water	[number]	
Evaluation of people potentially reached by the communication campaign and surveys on the use of tap water	[number]	
Fraction of single use bottles recycled	[%]	
Other : specify.....		

Collect data on water distribution at public fountain:

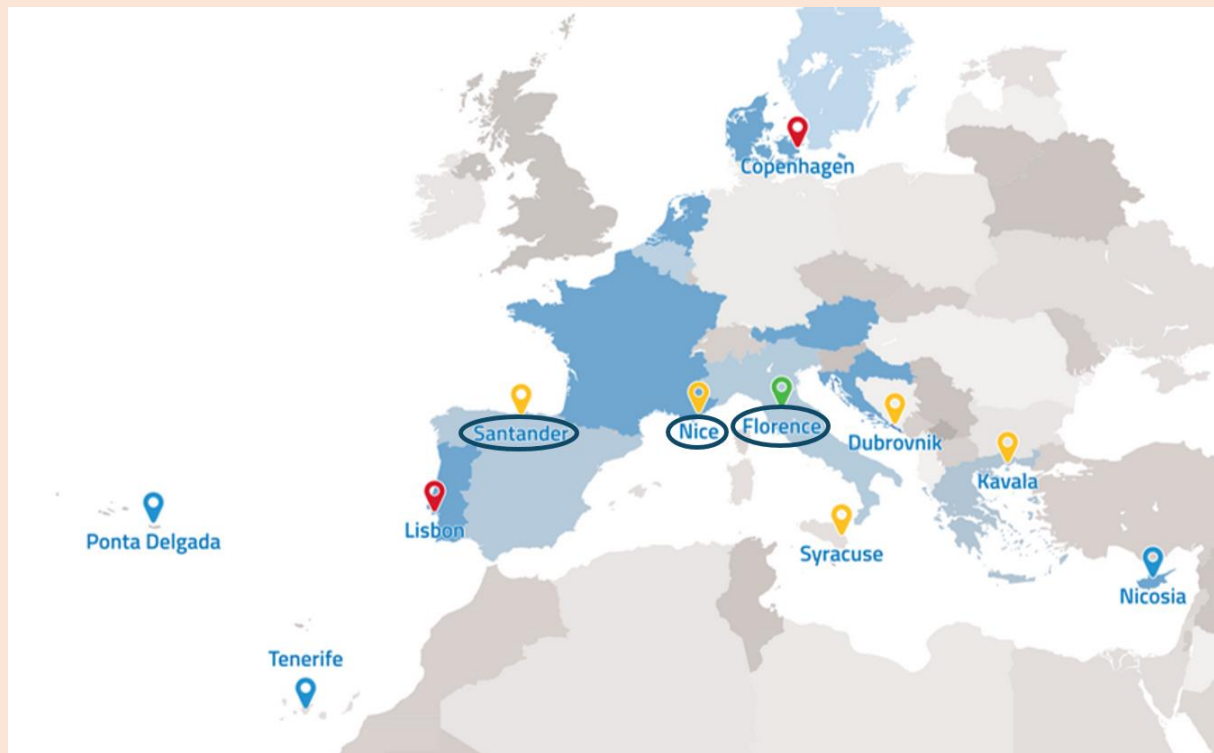
Quantity of water distributed through the automatic public water fountains	[litre]
--	---------

Time frame

It is recommended to start the monitoring of public fountain at least one week before implantation phase to assess the effect of the measure on waste production.

Quantity of water distributed can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Lessons learnt from the implementation phase and fine tuning



Pilots implementing promotion of tap water within URBAN-WASTE

In **Florence**, **1,550 flasks** were distributed to citizens and tourists during 4 events. 45,000 maps with the location of the 57 public fountains were distributed to tourists.

In **Nice Metropole**, **1,500 reusable plastic "eco cups"** have been distributed in tourist offices and on beach stands to tourists. Maps with the location of 30 public fountains were disseminated and stickers with the URBAN-WASTE logo and QR code for WasteApp.

In **Santander**, **421 reusable bottles** were distributed in different events. 102 public fountains have been identified and mapped in the WasteApp.

Florence and **Nice Metropole** have in parallel installed fountains (not in the framework of URBAN-WASTE) distributing fresh and sparkling water to promote Tap water in Florence and in Nice.

Key points

- **Profit from the summer events (festival, concert, professional show) to disseminate eco cups and promote tap water in addition to media communication**
- **Focus more on the promotion of public fountains and distribution of flasks than on the involvement of bars or restaurants willing to distribute tap water. The loss of income it causes by giving up the sale of water bottles are too prohibitive.**



14 - Translation and dissemination of waste sorting instructions in foreign languages

What is the measure about?

Description and scope of the measure

As the waste management system may be very different when on holiday, and the information not necessarily easily accessible to tourists (language barriers, lack of information), waste sorting can be difficult for tourists. In cities where many tourists stay in rented accommodations, this can affect the quality of the waste, in particular for recyclable fractions, and lead to an increase of littering during the touristic seasons. In this sense, making it easier for tourists to understand the waste management system can improve the quality and quantity of waste sorted by the tourists and reduce the amount of litter produced by them. To do so, the waste sorting instructions can be translated and made available to tourists renting holiday accommodations. Besides, the instructions could be complemented with the map of sorting bins if there is a bring banks system to collect waste on public areas.

This measure could be completed by the distribution of reusable waste sorting bags. Indeed, tourists do not always find the appropriate bins in their holiday accommodation to make it easy for them to sort in the accommodation.

Integration in a waste management plan

This action can be integrated in the communication actions of the waste management plan.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Costs associated to the printing and distribution of leaflets or posters.
- Translation costs that are expected to be low.
- Production of stickers or new signs to be placed in sorting bins.

Costs savings

- Having instructions translated into different languages would help tourist to better sort the waste generated and this translates into less waste being incinerated or landfilled. In this sense, the costs associated to these treatment alternatives would be saved. In average, the general costs of incineration and landfilling of residual waste in EU are¹⁴²:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Type of stakeholders to involve

- Waste management department of local authorities
- Waste management company/public authority in charge of municipal waste collection

Moreover, the following stakeholders should be involved for a wider dissemination of the waste management instructions:

- Tourist offices
- Owners and renters of tourist accommodations and secondary residences
- Companies, marketplaces of holiday rentals
- Local authorities in charge of collecting visitors' tax

Description of the operational steps to follow

The preliminary steps to implement this measure are:

- identifying the main nationalities of the tourists in the concerned area to define the languages in which the instructions will be translated
- obtaining the contact of the owners and renters of tourist accommodations and secondary residences in collaboration with the tourist department and offices, the authorities in charge of visitors' tax, and the main companies and marketplaces for holiday rentals
- disseminating the instructions in multiple languages through the contacts identified

¹⁴² Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

- creating a multi-languages communication campaign on sorting waste within the touristic areas, the airports, the train stations, etc.

Gender aspects to consider

Ensure instructions are gender sensitive and avoid favouring one sex or another in the communication material (wording, pictures etc.).

Examples of good practices

- Some municipalities, such as Keltakangas in Finland, have translated their waste sorting instructions in foreign languages and published leaflets that can easily be spread. Métropole Nice Côte d'Azur, in France, is currently doing so by translating the waste instructions in English, Spanish and Italian. The translated leaflets will be made available at the tourists offices and disseminated to the owners of tourist accommodations registered by the tourist offices.
- The City of Tallinn (Estonia) has translated in English the waste management instructions of the city on its official website. The web page gives information on the global functioning on waste in Tallinn, but also clear explanations on what should and what should not be disposed in the different types of recycling bins.¹⁴³

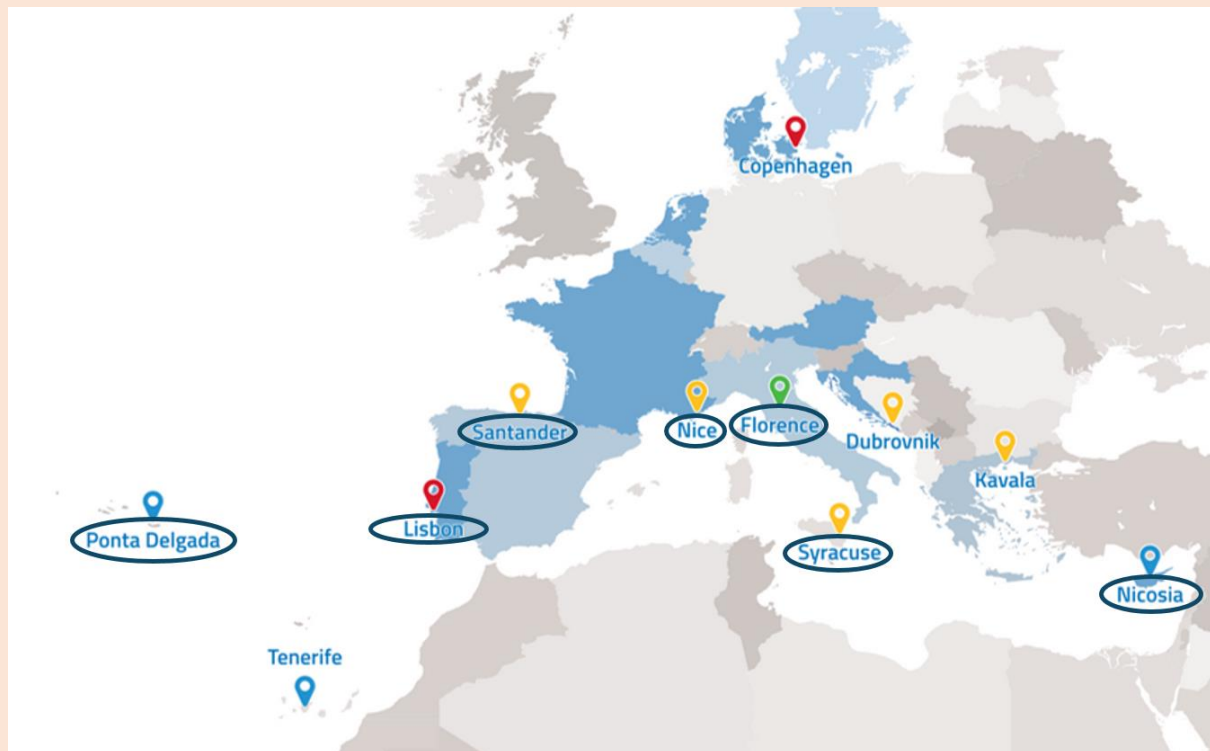
¹⁴³ <http://www.tallinn.ee/eng/A-Guide-to-Sorting-Waste>

Guidance for setting up monitoring indicators

The following data can be collected on a monthly basis:

Monitoring of actions, items, stakeholders and people involved	month 1	month 2	month 3	month 4	month 5	month 6	total
Tourist accommodations involved [number]							0
Total number of tourist accommodations in the pilot area [number]							0
Percentage of tourist accommodation involved %							0
Private houses rented to tourists involved [number]							0
Total number of private houses rented to tourist in the pilot area [number]							0
Percentage of private houses rented involved %							0
Public and private points of distribution (info point, etc.) involved [number]							0
Waste instructions leaflets distributed [number]							0
Waste e-instructions downloaded [number]							0
Evaluation of people potentially reached by communication initiatives [number]							0

Lessons learnt from the implementation phase and fine tuning



Pilots implementing food waste sorting instructions translated in foreign languages within URBAN-WASTE

Florence distributed 20,000 Multilanguage instructions (Italian and English), **Nice Metropole** 3,750 instructions (French, English, Italian and Spanish), **Nicosia** 1,840 instructions (Greek and English), **Ponta Delgada** 1,500 brochures (Portuguese and English), **Santander** 2,000 instructions (Spanish, English and French) and **Syracuse** 3.850 instructions (Italian and English).

The distribution relied on partners such as tourism offices, hotels, owners and renters of tourist accommodations, museums, info points but also municipal buses, taxi companies. The activity was also supported by communication campaigns about waste separated collection and waste reduction: stickers, promocards, social communication, web sites and media.

Key points

- Publish efficient instructions with realistic pictures, appropriate color and short sentences
- Involve stakeholders well in advance for the dissemination of instructions when they are not already busy in the management of touristic flows
- Enlarge involved stakeholders (i.e. hotels, restaurants, camping, airport, railway station...) to broaden dissemination of translated instructions
- Disseminate the instructions on the facilities' web site to expand the audience
- Mobilize stakeholders via different means of communication (e.g. emails, phone calls ...) to strengthen their participation



15 - Waste sorting in marinas

What is the measure about?

Description and scope of the measure

In marinas, the recreational sailors often do not know the waste management system in place and do not have the facilities to sort their waste. To better inform them and give them the possibility to sort their waste, some actions can be implemented. Providing the sailing tourists with reusable big bags for waste sorting (one bag per waste fraction separately collected) and information on waste management would help recreational sailors sorting and disposing their waste on land. Nevertheless, there must be facilities in the marina to throw the sorted waste in adequate bins.

Besides, additional actions can be developed at the same time such as distributors of disposable bags for residual waste in order to avoid marine litter for the unsortable fractions.

Integration in a waste management plan

This action can be directly integrated in the waste management plan, with the aim of improving waste sorting and reducing marine litter.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Many factors have to be considered when implementing a system for sorting bins, in relation to the costs. For instance, the municipality or authority in charge will have to consider the cost of collection, number of bins/containers/bags, cost of each bin/container/bag, the amount of waste produced by person, among others, to calculate the total cost of the system.

Costs savings

- The cost of not recycling must also be considered in order to evaluate whether implementing the system is economically viable. In this sense, landfilling or incineration would be assumed to be the alternative, where the average costs in EU are¹⁴⁴:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton
- By reusing or recycling materials, there are cost savings in relation to the raw materials that are no longer needed to be extracted/processed for the production of new goods. For example, in September 2017, the cost of virgin plastic ranged between 1.125 € and 2.070 €/ton in EU, depending on the type of polymer.¹⁴⁵

Revenues

- Waste sorting in marinas will allow to give value to the different fractions of waste, since these could be sold as resources. In this sense, the market value of the different fractions to be recycled must be considered as well. As illustrative examples, the market price for recycled plastics in EU as of 2016, was 301 €/ton, where for glass the market value reached levels of 49-53 €/ton in 2014¹⁴⁶.

Financing options

- Through the collaboration with consortiums of authorised waste collectors and recyclers that are interested in promoting this measure.
- Moreover, associations of plastic producers could contribute funding the initiative through an extended producer responsibility (EPR) scheme.

¹⁴⁴ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

¹⁴⁵ Source : <http://www.plasticsnewseurope.com/article/20171211/PNE/171219995/european-petrochemical-feedstock-contract-prices>

¹⁴⁶ Source : EUROSTAT : *Recycling – secondary material price indicator*. (http://ec.europa.eu/eurostat/statistics-explained/index.php/Recycling_%E2%80%93_secondary_material_price_indicator#Plastic)

Type of stakeholders to involve

- Municipal government
- Waste management structure/company/local authority in charge of waste collection in the marina area
- Managers of the marinas
- Sailors associations
- Consortiums for the collection, recycling and recovery of plastic, glass, and other packaging waste
- Associations and professional organisations of plastic producers

Description of the operational steps to follow

This measure can be initiated by a municipality with the support of the above described stakeholders. The preliminary steps to implement this waste sorting measure in marinas are:

- contacting the responsible of the marina and the entity in charge of the waste collection in the marina
- diagnostic of the current situation (type of waste bins in the marinas, surveys among the recreational sailors regarding their behaviour and their willingness to sort waste, etc.)
- contacting possible partners to cofinance the measure
- purchasing and installing in the marina the facilities to throw the sorted waste in adequate bins
- elaboration of the communication material and purchase of the material
- launch of a communication campaign and distribution of the bags and waste instructions leaflets during the touristic season in the marina
- Sailors associations could create a map with all the marinas participating in such initiative and provide the recreational sailors with it.

Gender aspects to consider

Attention has to be paid to whether size of sorting materials put in place suit men, women and children, and the bags they use.

Any instructions provided for sorting waste needs to be gender sensitive to avoid favouring one sex or another in the wording or the pictures used.

Examples of good practices

- In France, the operation “I Sail, I sort” aims at encouraging recreational sailors to sort their waste on board and dispose it on land, rather than dumping their waste in the sea. The operation is based on a communication campaign (using flyers and posters distributed to the sailors and displayed in the marinas) to provide the sailors with guidelines for a proper management of their waste. The communication campaign is completed with the provision of the sailing community with reusable sorting bags for the recycling waste and the installation of bags distributors for residual waste at marinas. PlasticsEurope (European association of plastics producers) and ELIPSO (professional organization representing French plastics and flexible packaging) also took part in this initiative. Thanks to this partnership, the number of marinas involved in the operation could have been doubled. In 2016, 41 marinas participated, thus raising awareness of 191,000 recreational sailors.¹⁴⁷

¹⁴⁷ How to involve business in keeping our shared spaces clean - Clean Europe Network (http://www.cleaneuropenetwork.eu/pdf/best_practice-involving_businesses_in_litter_prevention-EN.pdf)

Lessons learnt from the implementation phase and fine tuning

Waste sorting in marinas has not been implemented in any URBAN-WASTE pilot cases.



16 - Information on waste sorting for cruise ships

What is the measure about?

Description and scope of the measure

Cruise ships are arriving to ports around the world, delivering the waste generated on board. Because of lack of space on the ships a lot of effort is put into sorting and compressing the waste on board. When in port the waste is unloaded - and if the waste is sorted in fractions fitting the waste management system of the receiving city - the waste can easily be recycled.

Clear communication about the waste handling can increase the amount of waste being recycled from the ships. If the waste is not sorted, but delivered as mixed compressed waste it is most likely that it will be incinerated or landfilled.

Communication from the port authority to the ships, about which fractions can be received, is therefore crucial for the waste handling before docking at port.

Integration in a waste management plan

Different integration is needed in the waste management planning depending on the responsibility of the waste management from the ships.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- The waste fee in ports are included in the fee to dock. Thereby the ships have no incentives to dump the waste at sea, both because it is illegal but also because there is no direct cost related to delivering waste at the port. If a ship wish to deliver waste going to special treatment or if it is waste in larger amounts than normal, eg. construction waste, a special fee is charged for the ship. Fees for collection and treatment depends on the containers and the type of waste fraction. In mediterranean ports, 55% of them charge fees between 50 and 100€/m³, 9% more than 100€/m³ and less than 50€/m³ for the other 36% of ports¹⁴⁸.

Cost savings

- The more informed cruise tourists are in relation to waste sorting, the less waste will end up as mixed fraction. Therefore, the amount of this fraction to be incinerated or landfilled will be reduced along with the costs associated to theses treatment options. In this sense, the average costs that would be saved of incineration and landfilling in EU are¹⁴⁹:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Type of stakeholders to involve

- Municipal government
- The port authority
- Waste management structure/company/local authority in charge of waste collection in the marina area
- Sailors associations
- Consortiums for the collection, recycling and recovery of plastic, glass, and other packaging waste

Description of the operational steps to follow for the implementation of the measure

This measure can be initiated by a municipality with the support of the above described stakeholders. The preliminary steps to implement information on waste sorting for cruise ship are:

¹⁴⁸ SPOUDAI Journal of Economics and Business, Vol.67 (2017), Issue 1, pp. 54-70

¹⁴⁹ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

- contacting the responsible of the marina and the entity in charge of the waste collection in the marina
- diagnostic of the current situation (type of waste bins in the marinas, surveys among the recreational sailors regarding their behaviour and their willingness to sort waste, etc.)
- contacting possible partners to cofinance the measure
- elaboration of the communication material if possible in the main foreign languages
- launch of a communication campaign and distribution of waste instructions leaflets during the touristic season in the marina

Gender aspects to consider

Ensure provided information is gender sensitive and avoid favouring one sex or another in the wording, pictures disseminated, etc.

Example of good practices

- In France, the operation “I Sail, I sort” aims at encouraging recreational sailors to sort their waste on board and dispose it on land, rather than dumping their waste in the sea. The operation is based on a communication campaign (using flyers and posters distributed to the sailors and displayed in the marinas) to provide the sailors with guidelines for a proper management of their waste. The communication campaign is completed with the provision of the sailing community with reusable sorting bags for the recycling waste and the installation of bags distributors for residual waste at marinas. PlasticsEurope (European association of plastics producers) and ELIPSO (professional organization representing French plastics and flexible packaging) also took part in this initiative. Thanks to this partnership, the number of marinas involved in the operation could have been doubled. In 2016, 41 marinas participated, thus raising awareness of 191,000 recreational sailors.¹⁵⁰

¹⁵⁰ How to involve business in keeping our shared spaces clean - Clean Europe Network (http://www.cleaneuropenetwork.eu/pdf/best_practice-involving_businesses_in_litter_prevention-EN.pdf)

Guidance for setting up monitoring indicators

Data to be collected:

Monitoring of actions, items, stakeholders and people involved etc.	total
communication initiative organized	[number]
brochures distributed	[number]
Evaluation of people potentially reached by communication initiatives	[number]
Other: please, specify.....	

A second group of data aims at monitoring waste collected from cruise ships and the performance of the measure:

- Quantity of plastic waste collected [kg]
- Quantity of paper waste collected [kg]
- Quantity of glass waste collected [kg]
- Quantity of mixt waste collected [kg]

Time frame

It is recommended to start the monitoring at least one week before implementation phase to assess the effect of the measure on waste production.

Quantity of waste produced can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Lessons learnt from the implementation phase and fine tuning



Pilots implementing information on waste sorting for cruise ships measure within URBAN-WASTE

Copenhagen-Malmø Port (CMP) has distributed by e-mail to all 343 cruise ships docking information on waste sorting. Cruise had to fill in a form on waste they need to handle, up to 24 different waste fractions when docking at the port. Cruise ships docking have managed sorting waste from app. 868,000 passengers and 290,000 staff members.

In **Dubrovnik- Neretva county** in Konavle Municipality, a total of 8,000 flyers were distributed to 783 ships encompassing in average 10 people on board (boat crew and the owners). About 7,830 people have been reached by this measure.

Keypoints

- As cruise ships are docking many different harbours in the EU, it is important that each harbour have similar requirements for waste sorting and handling.



17 - Pocket boxes and ashtrays against litter

What is the measure about?

Description and scope of the measure

Cigarette butts represent an important source of visual and environmental pollution in urban and natural areas, causing significant damages to the marine environment. Besides, smoking bans has lead in some countries to an increase of cigarette butts litter in front of establishments like restaurants and bars, train stations, etc.

To avoid this type of litter, small boxes or pocket ashtrays can be a solution as they can be used to temporarily store pieces of litter such as cigarette butts or chewing gums. Thus, distributing these small containers to tourists is a way both to raise awareness on littering and its effects and give them a concrete solution to handle litter. The most relevant areas to do so are the areas less or not equipped with street bins, such as beaches or natural parks, historical urban areas, and the areas the most impacted by littering.

Integration in a waste management plan

This measure can be part of an action plan on litter and integrated to the municipal or local waste management plan.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Depending on the provider of the boxes or ashtrays, the cost would vary. For instance, in the « 2017 Cigarette Litter Prevention Program » report from the organization « Keep America Beautiful » the cost is indicated as 3 USD per ashtray¹⁵¹.

Costs savings

- The municipal waste management authority or company would save up costs related to the street cleaning, which in some cases can be elevated. For instance, the City of London states that every year they spend around £3.8 million in cleaning their streets of cigarette butts litter¹⁵².

Revenues

- The organizer of the campaign could sell the portable boxes or ashtrays in order to obtain economic benefits. However, this is likely to reduce the impact of the awareness campaign itself.

Financing options

- Pilot partner can involve tourism establishment in this action. These establishments will be then responsible to distribute the boxes/ashtrays to their clients. They could take over the production costs and include their logo within the final products.
- Moreover, pilot partners could involve artists/designers in the design of the pocket boxes ashtrays. These company can act as private sponsor and in this case, their logo will then be included in the boxes/ashtrays giving visibility to the company.
- Boxes/ashtrays can be provided by pilot cities- paid by the URBANWASTE project- making use of the visual identity of the URBANWASTE project. Pilot cities can provide tourism establishments with a certain number of boxes with the Project's stamp, and communication tools to promote the action.

¹⁵¹ Source : <https://www.kab.org/sites/default/files/program-resources/2017%20Cigarette%20Litter%20Prevention%20Program%20Toolkit.pdf>

¹⁵² Source : <https://www.cityoflondon.gov.uk/services/transport-and-streets/clean-streets/Pages/smoking-related-litter.aspx>

- Implementing a penalty fine system to finance littering related initiatives. Some EU countries are enacting laws against cigarette butts littering, where most of them include penalty fines for the person responsible. In 2015, the Italian government approved a such a law and it involved fines of up to 300€¹⁵³.
- An extended producer responsibility (EPR) scheme for tobacco producer companies would contribute to fund the collection and recycling infrastructure, as well as public initiatives to avoid littering of cigarette butts.

Type of stakeholders to involve to implement the measure

- Municipal government
- Waste management department of local authorities
- Waste management company/public authority in charge of municipal waste collection and street sweeping

In collaboration with the following stakeholders:

- Environment protection associations
- Beaches managers
- Restaurants, bars, etc. managers
- Airport and train stations managers
- Tourist offices

Description of the operational steps to follow for the implementation of the measure

This measure can be initiated by a municipality or the local authority or waste management company in charge of waste collection and street sweeping if not the municipality. The preliminary steps before the distribution of the pocket boxes or ashtrays are:

- identification of the areas the most impacted by littering
- quantification of the number of boxes to distribute
- establishment of partnerships for financing and distributing the boxes and raising awareness on litter
- organization of the distribution and awareness campaign: where and when
- purchase and distribution of the material
- creating a map of all the distributing points of boxes/ashtrays to provide to the tourist establishments

¹⁵³ Source : <https://www.thelocal.it/20151223/italy-launches-300-fines-for-tossing-cigarettes>

Examples of good practices

- As part of the summer initiatives to keep Copenhagen clean, tourists can borrow ashtray at the beach to avoid the littering of cigarette butts in the sand. Moreover, pocket ashtrays are distributed by local shops within the city, to avoid littering in the street. To motivate citizens and visitors to participate and make efforts to keep the city clean, the City of Copenhagen launched a competition which consists in sharing pictures of oneself helping cleaning the streets of Copenhagen.¹⁵⁴
- In Gijón (Spain), EMULSA (the municipal structure in charge of the urban environment services) launched a special plan of cleaning on beaches and tourist zones during the summer 2017. Besides, as part of EMULSA's citizen environmental awareness campaign, an informative campaign among beach users was organized to raise awareness about littering from cigarette butts and the use of recycling bins for the waste generated by the beach users. The smokers were given promotional beach ashtray during this campaign.¹⁵⁵
- To avoid littering from cigarette butts, the city of Paris distributed 50,000 pockets ashtrays in five of the main train stations of the city, in partnership with the French National Railway Corporation (SNCF). Stations' square are particularly subject to cigarette butts littering. Not only this action aimed at reducing litter by providing smokers with a practical solution, it also aimed at raising awareness among smokers on the negative effects of cigarette butts on the environment.¹⁵⁶

¹⁵⁴ Summer initiatives to keep Copenhagen clean (<http://www.urban-waste.eu/summer-initiatives-keep-copenhagen-clean/>)

¹⁵⁵ Butts to the ashtrays, also on the beaches of Gijón
<http://cuidadoambiental.gijon.es/noticias/show/36451-las-colillas-a-los-ceniceros-tambien-en-las-playas>

¹⁵⁶ 50,000 pocket ashtrays distributed in front of Parisian train stations (<https://presse.paris.fr/agenda/mardi-prochain-50-000-cendriers-de-poche-distribues-devant-les-gares-parisiennes/>)

Lessons learnt from the implementation phase and fine tuning

Partnerships between hotels and charities for reuse initiatives have not been implemented in any URBAN-WASTE pilot cases.



18 - Eco-events guidelines

What is the measure about?

Description and scope of the measure

The organization of major touristic events, such as music and arts festivals, sports tournaments, or public conferences causes problems in terms of waste management and litter production. Having an eco-friendly approach and green policy when organising an event, thereby called “eco-event”, is a way to mitigate the impacts due to waste production during major events.

More and more municipalities and local authorities create their own guidelines and charters that can be facultative or mandatory, in order to help and encourage organizers of events to be more environmentally responsible.

Regarding waste, the main issues to be addressed from the conception of the event until its dismantling are:

- **prevention**, by taking as many actions as possible to reduce the sources of waste production from the visitors and the enterprises and professionals participating to the events
- **management**, by planning adequately the waste management of the residual waste and recyclable waste fractions during the event
- **reuse, recycling and recovery**, by ensuring that all the collected waste fractions are afterwards adequately treated

In order to address these issues, several means and tools should be used, such as:

- an efficient internal and external communication with the professionals and the visitors participating giving clear information on the waste management during the event and raising awareness on the impacts of waste production
- the integration of the objectives regarding waste prevention and management in the call for bids to select the private companies participating to the events
- the identification of the type and quantity of waste possibly produced during the event and solutions to decrease the several waste streams
- the organisation of an adequate logistic scheme for waste management during the event (including in the setting up and dismantling phases of the event)

To be as efficient as possible, the waste prevention and management scheme should be defined at the earliest possible stage of the event organisation. It should also be coherent with the local context (available treatment facilities in the area, regulations, etc.).

Examples of actions to include in guidelines for eco-events

The two following actions are essential for a successful waste management during an eco-event:

- establishing a dedicated staff or team of volunteers responsible for checking the waste management scheme (quality of the sorting, state of the bins, etc.) and informing the visitors on the specific waste management during the event
- organising an important communication campaign with adequate signaletic, clear instructions, visible bins and awareness raising on sustainable waste management

Other key actions are listed below by category:

- Waste prevention & reuse
 - promotion of tap water through the installation of drinking fountains
 - provision of reusable cups (eco cups) with a deposit system: some municipalities and local authorities lend reusable cups for the organizers of events
 - provision of reusable dishes and loan of mobile dishwashers
 - use of paper-free communication as much as possible
 - selection of useful and reusable products and goodies
 - establishment of partnerships between the organizers, non-profit associations and specialized enterprises of the reuse of bulky waste (furnishment, scenic design elements)
- Litter
 - communication on litter production and impacts (awareness messages, diffusion of videos)
 - provision of ashtrays and distribution of pocket ashtrays
 - ban of plastic bags and inflatable balls
- Waste sorting and recycling
 - communication with the local authority/waste department and waste management company in charge of waste collection and management to plan the waste management scheme of the event
 - installation of sufficient number of bins well located to collect residual waste and recyclable fractions (using the same colours as the ones used for the local authority's waste collection system)
 - training of the staff in charge of the waste management during the event
 - informing the participants on the solutions for waste sorting during the event and implementing a clear and visible signaletic for the sorting bins

- on-site composting of biodegradable waste if possible
- avoiding food waste through partnerships with charities to donate edible food non-consumed
- avoiding food waste by using informative posters at food stands to remind people not to buy too much food, for instance
- Call for bids for private companies/participants with environmental obligations:
 - green purchasing policies (see below)
 - obligation of waste sorting
 - donation of non-consumed edible food or reusable furniture/goods to charities
- Green purchasing policies (applicable for the organizers as well as the private enterprises and professionals participating)
 - avoid over packaged or single-use products
 - avoid drink bottles and cans and prefer drink dispensers
 - use of biodegradable dishes (when a composting option is possible and no reusable dishes option)
 - use of reusable products instead of disposable products
 - use of recyclable products when reusable option not possible
 - use of deconstructable facilities instead of destructible ones
 - use of eco-designed materials including recyclable elements

Integration in a waste management plan

These guidelines or charter for the organisation of eco-event can be included in the prevention plan of the waste management plan. For example, the city of Paris has made guidelines for the organization of eco-events that the organizers of events must sign and follow in order to obtain the right to use public land.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- If the service of developing the guidelines is carried out by the municipality or local authorities, the cost would be related to the regular salary of the employees. However, if this service is subcontracted from a company or organization, the organizer of the event would incur in these expenses.
- Printing costs, in case that these guidelines are intended to be physically distributed.
- Dissemination or promotion related costs of guidelines developed, so that the event organizers are aware of the availability of this guidelines.

Costs savings

- The proper implementation of eco-events guidelines would implicate a reduction on the amount of waste generated during a given event. Therefore, the amount of waste to be treated by incineration or to be landfilled is reduced accordingly. In EU the average cost of these alternatives are¹⁵⁷:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Type of stakeholders to involve

To be as relevant and adequate to the local context and current practices as possible, the guidelines should be drafted together with the following type of stakeholders:

- Municipal government and local authorities in the area of implementation
- Waste management department of local authorities
- Waste management company/local authority in charge of municipal waste collection
- Private companies operating in the field of waste management (in particular for the collection of specific waste fractions not collected by the entity in charge of municipal waste collection)
- Public and private organizers of events and associations of events organization
- Professionals and businesses providing services for events
- Associations and charities acting for environment protection, waste prevention, food donation, reuse, etc.

¹⁵⁷ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

Description of the operational steps to follow

This measure should be initiated by the municipality or other local public or non-profit organizations, but also directly by the event organizers. The following steps should be followed to draft the guidelines for the organisation of eco-events:

- identification of the available existing material and the potential material to purchase (reusable dishes, ecocups, mobile dishwasher, signaletic signs, reusable furniture, etc.)
- identification of the local events to target through the guidelines
- contact of the stakeholders to involve for the creation of the guidelines
- organisation of workshops and working groups to identify with the actors involved in events organisation:
 - the main produced waste streams in quantity and composition
 - the existing practices regarding waste prevention and management during events
- organisation of workshops and working groups to present
 - possible solutions for waste prevention and reduction and a better waste management during events
 - the content of the guidelines and their legal status (mandatory, partially mandatory, on a voluntary basis)
- validation of the guidelines by testing them with the organization of one or several events following the guidelines before implementing them in the whole area of implementation of the measure
- regular working groups to update the guidelines and obtain results and feedback

Gender aspects to consider

Ensure gender balance of those developing the idea in the staff. Pay attention to the identified charities and if they benefit women at least equally as men. If women are involved in identifying charities, then this could empower them.

Examples of good practices

- In the City of Copenhagen (Denmark), an initiative about “less disposable cups” has been in place since 1998, promoting the use of recyclable cups for all kinds of beverages served within the Tivoli amusement park. Thanks to this measure, which could be applied in festivals and campsites, cups are returned to vending machines that return the deposit to the guests. The cups are washed and sent into circulation again.¹⁵⁸
- As other local authorities in several countries, the URBAN-WASTE partner Métropole Nice Côte d’Azur (France) has made an “eco-event charter”, which is integrated to the local waste prevention plan.¹⁵⁹ The charter includes actions such as waste prevention, waste sorting and recycling. It also includes actions on eco-responsible suppliers and eco-friendly purchasing. Awareness raising is also part of the charter principles. The local music event “Nice Jazz Festival” applies the principles of this charter during the festival’s organization.
- The Glastonbury music festival (UK) has implemented several actions for a sustainable waste management taking place before, during, and after the festival, as part of its green policy. The actions combine the collection of litter 24 hours a day, the provision of recycling bins, the bans of certain materials, certain requirements are made to the suppliers (e.g. biodegradable food disposable packaging), or the promotion of reusable water bottles that can be filled at the festival water fountains. Moreover, the festival runs an educational campaign for visitors: those purchasing tickets received emails and guides to raise awareness on litter and waste management during the festival.¹⁶⁰

¹⁵⁸ Tivoli Corporate Social Responsibility Report (<http://www.tivoligardens.com/en/om/virksomheden/csr>)

¹⁵⁹ <http://www.nicecotedazur.org/environnement/outils-de-d%C3%A9veloppement-durable/eco-manifestation>

¹⁶⁰ Green Glastonbury (<http://www.glastonburyfestivals.co.uk/information/green-glastonbury/our-green-policies/>)

Guidance for setting up monitoring indicators

The following two groups of data can be collected at each event:

Monitoring of actions, items, stakeholders and people involved.	event 1	event 2	event 3	event 4	total
Guidelines distributed [number]					0
People attending the event [number]					0
Measures implemented: [number]					0
measures enhancing separated collection of paper [number]					0
measures enhancing separated collection of glass [number]					0
measures enhancing separated collection of plastic [number]					0
measures enhancing separated collection of organic waste [number]					0
measures enhancing tap water and drinks with dispenser [number]					0
measures enhancing reusable glass bottle [number]					0
measures enhancing minimization of single dose food [number]					0
measures enhancing food donation to charities [number]					0
other: specify..... [number]					0

Waste production monitoring	event 1	event 2	event 3	event 4	total
plastic waste collected (weighted) [kg]					0
paper waste collected (weighted) [kg]					0
organic waste collected (weighted) [kg]					0
glass waste collected (weighted) [kg]					0
unsorted waste collected (weighted) [kg]					0
<i>Second option in case it is not possible to weight waste produced:</i>					
bin (collecting plastic waste) filled in [number]					0
bin (collecting paper waste) filled in [number]					0
bin (collecting organic waste) filled in [number]					0
bin (collecting glass waste) filled in [number]					0
bin (collecting unsorted waste) filled in [number]					0
people attending the event [number]					0

Lessons learnt from the implementation phase and fine tuning



Pilot implementing Eco-events guidelines within URBAN-WASTE

Eco-event guidelines have been implemented in **Copenhagen** in three different events: Cirkus Summarum includes a large playground where drinks and candy are sold. Haven is a music and food festival where drinks and food are sold on the festival ground which easier waste handling. DHL is a relay running event. DHL proposed a lunch box for each runner and organized the waste sorting and collection at the event. However, each running team could organize their own lunch, which made food waste handling more difficult.

Making events greener is time consuming (workshops and follow-up). The concepts of events are very different so there is not one solution for waste recycling that fits all.

Waste amount depends a lot on weather conditions. If summer is a warm and sunny, food and drinks are more sold compared to a cold and rainy summer.

Key points

- **Concentrate the sale of drinks and food in few places easier the waste handling.**
- **Organize a competition between waste management teams for boosting recycling and motivate staff.**
- **Having direct communication with the event organizers to jointly find the best solutions is a guarantee of success.**
- **Set up waste sorting “islands” to make sorting materials visible and available for charities donation**
- **Using reusable and washable cups and jugs is very efficient to reduce plastic waste in events**



19 - Awareness campaign on marine litter

What is the measure about?

Description and scope of the measure

Marine litter is a global issue that threatens the marine environment and causes environmental, economic, social and health impacts. Marine litter originates from sea-based activities and from land-based activities, which represent the main sources of marine litter production. It covers any solid material which has been deliberately discarded, or unintentionally lost on beaches and on shores or at sea, including materials transported into the marine environment from land by rivers, draining or sewage systems or winds¹⁶¹. Among the sea and land-based activities are including littering actions caused by tourism (individual tourists' actions and touristic events), in particular recreational tourism in coastal areas. Different studies and surveys have shown clear evidence that plastic is the largest type of marine litter. Other abundant types include packaging material, smoking related material, and fishing material.¹⁶²

Several factors can possibly explain the marine litter originating from tourism related activities. The local context has a direct influence on the production of marine litter through parameters such as the cleanliness of the area and local people's behaviour, and the availability of facilities for litter disposal and clear instructions on waste disposal. There are also social reasons like the lack of awareness about littering and its impacts. Besides, the literature also mentions a "tourist culture" that encourages alternative behaviour, associated with a relaxation of domestic social norms while on holiday. This phenomena has been highlighted through URBAN-WASTE surveys targeting tourists¹⁶³.

Raising awareness of tourists on marine litter is therefore a way to prevent littering and its impacts. Informing the tourists on the damages caused by littering can influence positively their behaviour to a more eco-friendly attitude. Informing them on the waste facilities and the legal framework when relevant (e.g. fines for littering) can influence them to better manage their waste. Thus these two types of information should be provided through communication campaigns on marine litter.

¹⁶¹ Definition given by the OSPAR commission

¹⁶² Risk & Policy Analysts Limited, Feasibility study of introducing instruments to prevent littering, January 2013

¹⁶³ URBAN-WASTE deliverable 3.2 "Situation and behavioural analysis of consume and waste behaviour and patterns", November 2016

Raising awareness communication campaign can be combined with specific actions to support the campaign and increase its effects, such as educational workshops for children and teenagers, artistic reuse initiatives, etc.

This measure could also be combined with other waste and litter management measures, such as:

- the improvement of the quality of infrastructure for waste disposal in coastal areas and beaches
- the provision of pocket ashtrays or small boxes for waste disposal
- clean-up events (including the monitoring of the collected litter to improve the knowledge of the local context)
- legal instruments to dissuade and avoid littering (implementation of fines, ban of certain products such as plastic bags, single-use cutlery, etc.)

The combination of measures focusing on behaviour through education and awareness raising with measures focusing on prevention, measures focusing on litter and waste management and measures focusing on cleaning-up may increase the impacts of these measures by informing the tourists and giving them the opportunity to act and change their behaviour at the same time.

Integration in a waste management plan

If the area of implementation of this measure is under the responsibility of the local authority in charge of waste management, this action can be integrated in wider action plans regarding litter and communication campaigns.

Such a measure should be carefully planned by taking into account the existing private or associative initiatives regarding marine litter in the concerned area, to maximize the possible synergies.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Depending on the type of action the costs incurred would differ. For example, if the awareness campaign consists of information stands, the costs could be related to the printing of posters, of leaflets, employees, tables, or tents, to name a few. If the posters or leaflets are distributed among touristic places like tourism offices or restaurants, the related costs would include the printing and distribution of these.

Costs savings

- If the awareness campaign undertaken has a strong impact, the costs related to the cleaning of the beaches, and coastal areas in general, incurred by the municipal waste management authority of company would be reduced. As an example, in Belgium and the Netherlands the cost of cleaning up the beaches from all municipalities involve a total of €10.4 million every year¹⁶⁴.

Financing options

- Implementing a penalty fine system to finance part of littering related initiatives. Some EU countries are enacting laws against littering, where most of them include penalty fines for the person responsible. For instance, since 2007 on-the-spot fines of €150 are charged to responsible persons of littering in Ireland¹⁶⁵.

Type of stakeholders to involve

- Municipal government
- Waste management department of local authorities
- Waste management company/local authority in charge of cleaning and waste collection at the beach/coastal area
- Beach and coastal area manager

Besides, several types of stakeholders can be involved in the implementation of the action, based on the perimeter of the campaign:

- NGOs, associations and artists involved in marine environment protection and acting against marine litter

¹⁶⁴ Source : Mouat, J., Lozano, R. L. & Bateson, H. (2010). Economic Impacts of marine litter. KIMO International, pp. 43. From http://www.kimointernational.org/wp/wp-content/uploads/2017/09/KIMO_Economic-Impacts-of-Marine-Litter.pdf

¹⁶⁵ Source : <https://www.dccae.gov.ie/en-ie/environment/topics/waste/litter/Pages/Local-Authority-Litter-Fines-and-Expenditure-Statistics.aspx>

- Tourism and recreation sector (they can participate by informing tourists about the impacts of litter on the marine environment, giving funding to support local actions, providing pocket ashtrays, participating to clean-up activities, etc.)
- Retailers and local businesses (they can participate by providing information, but they can also implement complementary measures such as banning plastic bags, providing facilities for waste disposal to their customers, replacing disposable products by reusable products in particular for businesses serving food and beverages)
- Schools
- Local entrepreneurs with marine litter reuse and recovery projects

Description of the operational steps to follow

This measure should be managed jointly by the concerned municipality, the entity in charge of waste management in the concerned area, and the entity in charge of managing the concerned beaches or coastal areas (including cleaning of the areas).

Before defining the communication campaign, the preliminary steps detailed below consist in identifying more precisely the marine litter issue in the local context in order to adapt the campaign:

- analysis of the composition of marine litter in the concerned area through surveys and monitoring activities (which can be part of clean-up events) in order to identify:
 - the factors leading to litter production
 - the drivers for managing litter (legal, environmental, economic, social, other)
 - the main types of waste included in litter
 - the main target groups of litterers
- identification of the existing measures regarding marine litter (originating from the local authorities, voluntary groups and NGOs, private companies, and informal actions) and possible gaps

Afterwards, the following steps should be implemented to define the targets and the organisation of the campaign:

- creating partnerships with stakeholders from the local community
- defining the precise scope of the communication campaign
- associating possible actions to support the communication campaign
- defining the budget and the possible sources of funding

Gender aspects to consider

Ensure communication material is gender sensitive and avoid favouring one sex or another in the wording, pictures disseminated, etc. to maximise amongst men and women.

Examples of good practices

- The association Promemar (Proyectos Medioambientales Marinos), based in Tenerife, organizes sea and beach cleaning activities, awareness campaigns and educative program on marine litter and marine pollution. The waste collected during the cleaning activities are sorted, categorized, weighed and registered in the MARNOBA platform, in order to improve the knowledge about marine litter and to make evaluations.¹⁶⁶
- In Copenhagen, a company renting out kayaks set up the initiative of the “environmental kayak”. The company proposes people to use their “environmental kayak” for free, if they clean the harbor while kayaking. To do so, the kayak is equipped with a bucket and equipment for collecting waste. The collected waste is then weighted at the end. This initiative has been funded via a project for cultural activities around the harbor of Copenhagen.¹⁶⁷
- Eunomia, a consultancy member of the “Marine litter action network” has developed a “café accreditation scheme” project, in order to offer an environmental accreditation to beachside and waterfront cafés or restaurants who would implement some actions to minimize their impact on environment. The actions include for instance charging for single use items, offering money off to customers bringing their own mugs, using reusable cutlery instead of plastic, having recycling bins on their premises and providing bins in every toilet to prevent flushing of items causing marine pollution. Businesses willing to take part of this project would pay an annual fee covering the administration costs to get a dated certificate and a flag to be displayed in front of their establishment.¹⁶⁸

¹⁶⁶ Collaboration between Ecoembes and Promemar to make the ocean more sustainable (<https://www.ecoembes.com/es/ciudadanos/sala-de-prensa/ecoembes-y-promemar-colaboran-para-lograr-un-oceano-mas-sostenible>)

¹⁶⁷ Environmental kayak (<https://kayakrepublic.dk/diverse/miljoekajakken/>)

¹⁶⁸ Marine litter action network ([http://www.mcsuk.org/what we do/clean+seas+and+beaches/pollution+and+litter+problems/marine+litter+action+network](http://www.mcsuk.org/what_we_do/clean+seas+and+beaches/pollution+and+litter+problems/marine+litter+action+network))

- In Quiberon Bay (Brittany, France), one artist launched a project to raise awareness on marine litter by creating temporary “marine monsters” made of plastic litter found on the beaches of the area. As most of the big cleaning actions and collection campaign on the beaches take place in the spring, before the tourist seasons, she thought so few people were able to realize the real quantity of plastic litter produced by the tourists. Thus, creating these plastic monsters during the touristic season is a way to raise awareness of tourists on marine litter. The artist uses the social media to also disseminate her action all around the world, in particular through the Instagram account “Plastic monster”, and to raise similar initiatives in other places.¹⁶⁹

¹⁶⁹ Plastic monster - Huffington Post (http://www.huffingtonpost.fr/2016/04/21/dechets-plage-bretagne-initiative-ecologique_n_9748220.html)

Guidance for setting up monitoring indicators

Simple indicators can be used to evaluate the impact of the communication campaign on marine litter:

- Number of distributed leaflets [Number]
- Number of places where posters of the awareness campaign have been posted [Number]
- Number (estimated) of tourists present in the concerned area during the campaign [Number]

Surveys could give more detailed vision of the actual impact of the communication campaign on the tourists by asking information on their behaviour and their perception on marine litter BEFORE/AFTER the implementation of the measure.

- Organisation of surveys at the end of the implementation [Qualitative results on behaviour and perception level] and [Number of surveys]

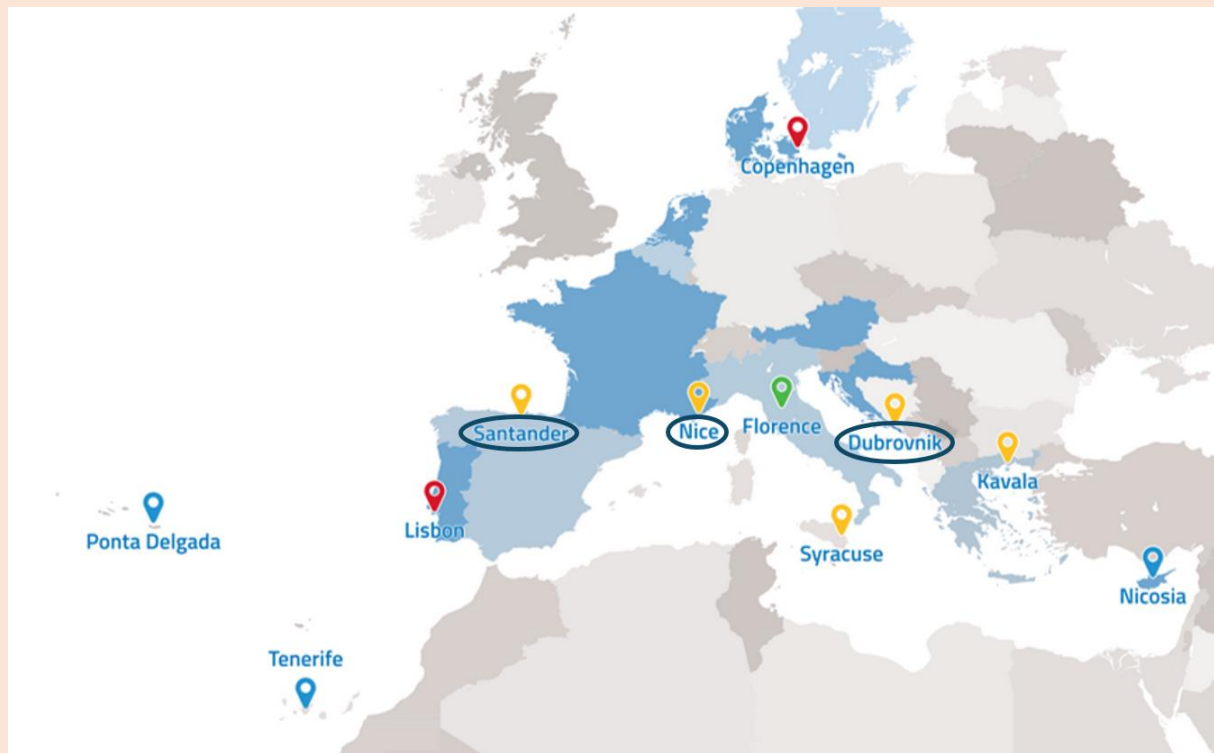
The quantification of the impacts of the measure on marine litter could also be measured by collecting data on litter, for instance during beach clean-up events. This should be realized before and after the campaign, in the same area, in order to assess differences in the quantity and type of sources and levels of beach litter.

- Quantity of waste collected during beach clean-up event per type of waste fraction [Kg]

Besides, these results could be disseminated to the public. The European methodologies should be followed when monitoring marine litter, such as the guidelines provided by the Marine Strategy Framework Directive. The monitoring can be done through the use of app such as the “Marine LitterWatch” developed by the European Environment Agency.

Monitoring of actions, items, stakeholders and people involved	total
Communication events organised	[number]
Beach clean up events organised	[number]
Number of people attending beach clean up events	[number]
Other kind of clean up/sorting waste events organised: please specify.....	[number]
Number of people attending other kind of clean up/sorting waste events	[number]
Brochure and leaflets distributed	[number]
Number of people attending communication events	[number]
Number of competent authorities (e.g. port authority) involved	[number]
Evaluation of people potentially reached by the campaign	[number]
other: please, specify.....	

Lessons learnt from the implementation phase and fine tuning



Pilots implementing awareness campaigns on marine litter within URBAN-WASTE

In **Dubrovnik**, 3 educational workshops were organized, attended by 160 people. 2,000 flyers were distributed during these events and other open events in summer.

In **Nice**, 16 communication events were organized. The number of people attending these events was 1,287. One clean-up day during the World Clean-up Day on 15th of September.

In **Santander**, 30 recycling workshops were organised in the 3 different beaches between in summer, with a participation of 304 people altogether. A beach clean-up day was organised in May with the participation of 210 people enabling the collection of 385 kg of waste.

In addition, all the three cities organized massive communication campaigns that reached several hundred thousand people: dissemination through very popular TV show, regional newspapers, radio stations and social media.

Keypoints

- **Massive communication campaigns on marine litter have important impact on people**
- **Workshops and beach clean-up days are more efficient when organized on a not too busy period to ensure a good participation of people.**
- **Strong partnership with associations to mobilize enough volunteers during the events is crucial.**



20 - Food tracking device

What is the measure about?

Description and scope of the measure

More than 40% of the waste generated at tourist establishments such as bars, restaurants and hotels with buffet serving meals is considered as food waste. This issue requires special attention as it immensely contributes to the total municipal solid waste generation in many tourist cities in Europe.

A first step in a systematic reduction of food waste is to quantify the problem in order to generate knowledge on how much is wasted, when is it wasted and what is wasted. Waste reducing measures can then be designed and prioritised based on where the problems are largest. Quantitative data can then be used to follow up on specific measures simply by comparing how much was wasted before and after the implementation. The use of the food waste tracker is therefore recommended to be used in combination with other actions to reduce food waste.

The food waste tracker can also be used as a direct measure to reduce food waste either by increasing awareness when the quantity of wasted food is visualised, or when the data is used to reduce over production. Since overproduction is a common problem in professional kitchens, statistics of food waste (especially serving losses or buffet waste) can be used to forecast the purchases and production of food so that the margins can be trimmed. When less food is produced in vain less waste are generated.

Integration in a waste management plan

The proposed measures can be easily adopted and included in the waste management plan of the restaurant or hotel. Every Environmental Management Systems, such as ISO 14001 or EMAS, which entities can be certified against include waste management plans and strategies where food waste prevention measures can be integrated. Since this measure focus on quantification the food waste tracker also produces necessary key figures to be used to document the development.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Costs of developing and installing the food track device in restaurants and buffets.
- Cost of maintaining the software of the device.

Cost savings

- It is estimated that the value of a kg of food waste costs the restaurant's owner about 2€. Therefore, if you are disposing of a ton of food waste a year, you are throwing away 2,000€ of potential profits. If you decrease your food waste by 25% you not only decrease your waste costs, but you could also potentially save up to 500€ on food and energy related costs¹⁷⁰.

Financing options

- Within the URBAN-WASTE project, the food track device and training is provided free of charge to interested restaurants and hotels within the pilot cases.

Type of stakeholders to involve

For the effective introduction, implementation and continuous operation of the proposed measure a number of key stakeholders should be involved. These include (*whenever applicable*):

- Kitchen staff (that uses the device to quantify waste)
- Kitchen managers (that uses the statistics to improve production planning)
- Hotel or restaurant managers (that uses key figures for benchmarking and systematic improvements)

Other possible stakeholders to involve:

- Waste management department of local authorities
- Waste management company/local authority in charge of municipal waste collection
- Hoteliers associations

¹⁷⁰ *Calling time on waste. A publican's handbook to a leaner, greener cost base.*

(<http://www.tipperarycoco.ie/sites/default/files/Publications/Calling%20Time%20on%20Waste.pdf>)

Description of the operational steps to follow

The food waste tracker helps the restaurant to simplify the procedure of quantifying food waste, this is done in the following steps:

1. The device is delivered to the kitchen.
2. The kitchen manager and/or members of staff are introduced to the food waste tracker by SLU, how to use it and how to interpret the collected data to facilitate a process of waste reduction. During the introduction the kitchen can receive help in setting up the device and adjust individual settings.
3. The kitchen staff/managers use the food waste tracker to quantify food waste and incorporate follow up meetings or similar in their day to day routines in order to use the generated statistics to facilitate a continuous improvement with focus on food waste reduction.
4. In order to keep the device performing as expected the kitchen staff can call technical support to get help during the project.
5. The performance of each kitchen is followed by the project since the recorded statistics are collected in a cloud service accessible for research purposes.

Gender aspects to consider

The first challenge concerning the implementation of this measure is to get staff engaged, therefore men and women need to be engaged equally.

It is also important to bear in mind the gendering of the trainer/trainee relationship, and whether expertise can be found amongst the people already doing waste management tasks.

Example of good practices

- In spring of 2014, the Sustainable Restaurant Association (SRA) in the UK started running the scheme “Food Save” to help hoteliers and restaurants understand and reduce their food waste. At the Bingham Hotel (London), as the pilot case, waste from preparation, spoilage and leftovers from the plates were separated and weighed for over a month in order to identify the sources of food waste. The “Food Save” team visited the hotel every week to review the results and identify actions for waste reduction (in collaboration with the kitchen staff). Once the trial was completed, the General Manager reported that the first challenge was to get staff on board, as changing habits and getting people to implement new activities can be complicated. But key to the success of the trial was to present the project to staff from the beginning, not only with an environmental message but also engaging staff in the business through their financial responsibility for reducing waste. He claimed that allowing staff to share in the success by allocating part of the savings to a staff football tournament was very helpful to engage staff. As a result of this initiative, food waste weight was reduced by 30%, representing an annual reduction of 2.4 tons (and 6.5 tons including packaging). Moreover, £109 was saved in food waste costs per week, representing a saving of £7.581 annually.¹⁷¹
- The Novotel Warsaw Centrum is a 4-star hotel with more than 700 rooms, event spaces and a modern bar and a restaurant. With the Planet 21 programme and several goals set for 2020, the hotel committed to reduce food waste by 30%. In order to achieve this result, a food tracking system was implemented in the kitchen in July 2016. Just after one week of measuring food waste in the kitchen, an average of 700 Kg was registered with the device. As a consequence, the team was able to quickly identify where waste was being generated within the operations carried out and make production adjustments. The staff at the hotel was empowered to identify opportunities that delivered quick results and they could access to regular data that was shared and daily discussed to track the impact they were having on food waste and sustainability.

¹⁷¹ *Reducing and Managing Food Waste in Hotels* (Green Hotelier) (<http://www.greenhotelier.org/know-how-guides/reducing-and-managing-food-waste-in-hotels/>)

A FoodSave Case study: the Bingham Hotel (FoodSave) (<http://www.foodsave.org/wp-content/uploads/2014/09/The-Bingham.pdf>)

After only 3 months of use, the 30% reduction target was overcome - in fact the Novotel Warsaw Centrum team managed to reduce their food waste by 67%. Moreover, by lowering food waste the hotel is saving an estimated of 111 tons of CO2 emissions every year, and this amount does not even consider energy savings from cooking less food or the reduction in water usage for growing, transporting and preparing the food.¹⁷²

¹⁷² *Winnov Case Study: Novotel Warsaw Centrum, July 2017* (Winnov)

(https://cdn2.hubspot.net/hubfs/650776/Case%20Studies/Case%20Study%20Novotel%20Warsaw%20_v2.pdf?t=1505841107382)

Guidance for setting up monitoring indicators

Two groups of indicators are to be set:

1. The first group aims at monitoring involved stakeholders:

- Restaurants involved **[number]**

These two data will enable to compute the following indicator:

- Percentage of restaurants involved: $\text{Restaurants involved} / \text{Total number of restaurants in the pilot area} [\%]$

The pilot area can be the whole city or a part of it: down town, old town, port area...

- Mapping of restaurants that implement the measure **[Name and address]**

Additional indicators can be set to monitor restaurants or hotels implementing the following measures:

- half size portions proposed in the menu **[number]**
- incentives in order to avoid leftovers **[number]**
- reuse of edible leftovers in the kitchen/no food waste menu **[number]**
- just in time ordering **[number]**
- inventory on perishables/ stock rotation policy **[number]**
- waste monitoring using the Food Tracking Device **[number]**

2. The second group aims at monitoring waste production in involved restaurants and the performance of the measure:

- Quantity of **organic waste** produced **[kg]** or **[number of bins or garbage bags]**: the number of bins or garbage bags can be chosen as a unit of measurement if it is not possible to weight waste produced, the average weight of a fulfilled bin or bag will have to be estimated beforehand for further calculation
- Quantity of **mixed waste** produced **[kg]** or **[number of bins or garbage bags]**: *see remark of organic waste*
- Number of customers **[number]**

These last two data will enable to compute the following indicator:

- Quantity of waste produced per capita: $\text{Quantity of waste produced} / \text{Number of customers} [\text{kg} / \text{customer}]$

Time frame

It is recommended to start the monitoring at least one week before organic waste is collected separately to assess the effect of the measure on waste production.

Quantity of waste produced and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

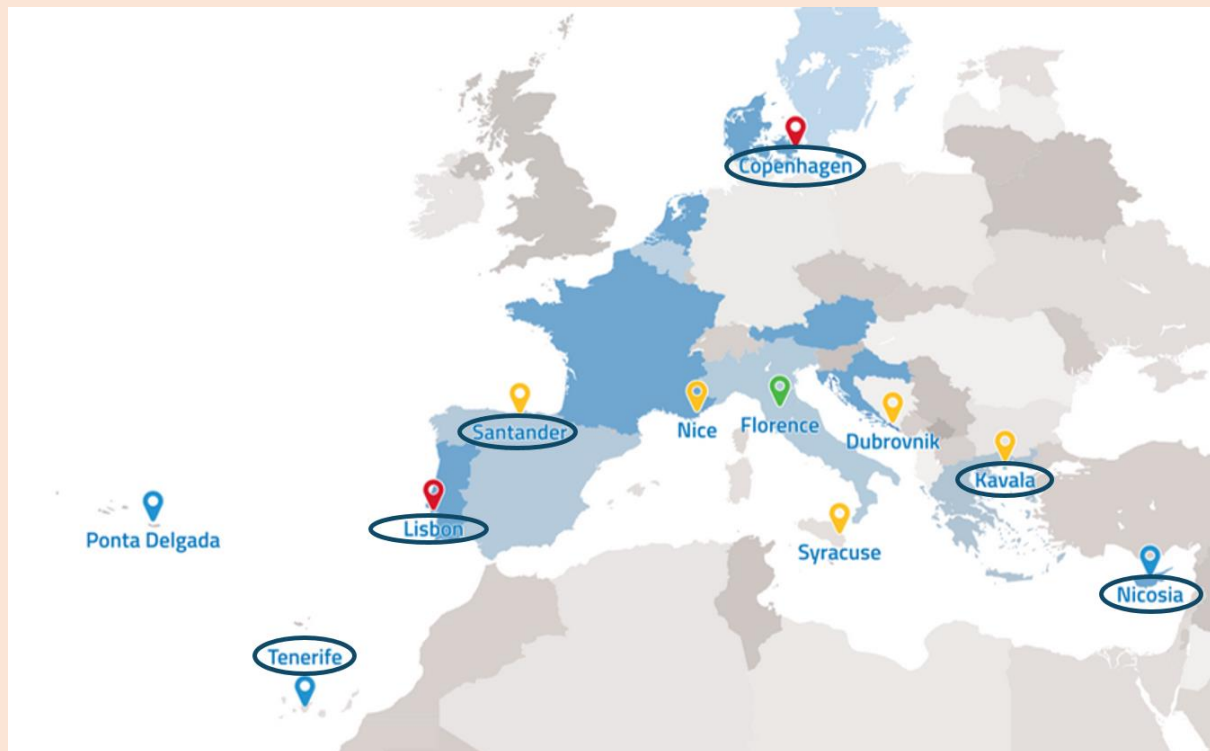
Additional performance indicators:

Different fractions of organic waste can be estimated separately in % .:

- Vegetables [%]
- Bread/pasta [%]
- Beef/lamb [%]
- Chicken/pork [%]
- Fish [%]
- Other to be specified [%]

These data can help to estimate the waste produced by different dishes of the menu.

Lessons learnt from the implementation phase and fine tuning



Pilots implementing food waste prevention at buffets and restaurants within URBAN-WASTE

The food tracking device was implemented in **Copenhagen** in 4 hotels and one hostel, **Kavala** in 7 restaurants, **Lisbon** in 2 hotels, **Nicosia** in 7 facilities, **Santander** in 5 restaurants and **Tenerife** in 4 hotels.

In Copenhagen, Kavala, Lisbon and Tenerife the tracking device was implemented in combination with the food waste prevention measure (measure n°2).

The food tracking has permitted in some restaurants to assess the production of food waste of certain dishes. It led to the modification of their content.

High rotation of the teams and excessive workload brought some difficulties to ensure their training and good conditions for the use of the food tracking device.

Keypoints

- **Launch starting phase and training earlier (not in summer)**
- **Train the personnel at least one month prior to the implementation of the device and reduce the number of categories to characterize food waste.**
- **As far as possible rely on a stable and motivated team, turn-over of employees implies the multiplication of training sessions**
- **Functions of the food tracking device have to be revised to easier its use, to enable daily report and comparison between entities**
- **Register daily number of guests to calculate the value of food waste produced per capita.**



21 - WasteApp

Description and scope of the measure

The aim of the WasteApp is to make tourists' behaviour more sustainable in terms of waste prevention, production, and management. Information on waste facilities (i.e location of the bins), waste management, tips for waste prevention, and location of public fountains for drinking tap water are provided to the tourists through the App.

The tourists are invited to participate in a gamification format where they are rewarded for their good behaviour. The good behaviour of the users refers to the action they perform in the pilot during their stay. They are rewarded for their good action in terms of waste management (introduce the waste in the appropriate recycling bins, don't leave trash in public space) and waste prevention (use of their own water bottle, instead of buying plastic bottle, using of reusable shopping bag, etc.).

Users are asked to prove their good behaviour through the usage of the WasteApp by scanning of QR code: at least 20 QR will be distributed and attached in the recycling bins within each pilot area. The tourist then have to scan the QR code to demonstrate that he/she was allocating the waste in the appropriate bin.

Each of those actions will allow the user to gain points. In particular, each action will give a number of 100 points to the user, with a maximum of two scans per day. Through the points accumulated during their stay users are then able to ask for rewards.

Rewards can be of different kind:

- Discount for services (i.e. 10% discount on dinner, breakfast, beverage, grocery; 10% discount for clothes, etc.)
- Promotional gadget (magnet of the city, postcards)
- Customized Eco-gadget (water bottle, reusable-shopping bag, etc.)
- Discount/Free ticket (i.e. provide discount on museum, cinemas, or transport tickets)

Each reward is related to a certain amount of points (i.e. 50 points for one free bus ticket). The nature of the reward and the number of items made available will be agreed between the interested entities and the managing authority.

Integration in a waste management plan

This measure can be part of an action plan on waste sorting and integrated to the municipal or local waste management plan.

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Costs of developing and maintaining the App are financed within the URBAN-WASTE project.

Costs savings

- Since the app shows where to find fountains/places to fill up tap water and sorting bins within a given area to encourage citizens to use tap water and to sort better the waste generated, this initiative will help to reduce the amount of waste that would need to be incinerated or landfilled and its costs. The average costs of these treatment alternatives in EU are¹⁷³:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Funding options

- After the URBAN-WASTE project has ended, funding to maintain and update the app could be provided by municipalities.

Type of stakeholders to involve to implement the measure

- Municipal government
- Waste management department of local authorities
- Waste management company/public authority in charge of municipal waste collection and street sweeping
- Private or public sponsors for rewarding tourists

In collaboration with the following stakeholders:

- Environment protection associations
- Beaches managers
- Restaurants, bars, etc. managers
- Airport and train stations managers
- Tourist offices
- City sighting companies

¹⁷³ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

Description of the operational steps to follow for the implementation of the measure

This measure can be initiated by a municipality or the local authority or waste management company in charge of waste collection and street sweeping if not the municipality. The different steps for launching the WasteApp are:

- organisation of preliminary meetings quantification of the number of boxes to distribute
- public sponsors search
- design and purchase the prize for rewarding good practices through WasteApp
- Include in WasteApp the georeferenced information of the fountains and the selected bins in the city
- deployments of the QR stickers in the city
- workshop for testing the WasteApp
- Promotion of WasteApp on the Web site of partners and through a communication campaign (local TV, newspaper, municipal web portal, video in municipal buses...)
- Regular communication campaign especially during the high season of tourism or during specific events (festival, concert,...) for promoting WasteApp through distribution of leaflets

Example of good practices

- Eco Island released on the island of São Miguel, in the Azores, was launched by the island's recycling and waste management company MUSAMI, is part of the "Commitment to the Environment – We Recycle" campaign. The aim is to advertise the area of restoration through recycling commitment and promoting good practices. Restaurants are encouraged to subscribe to a separation and recycling program for which they will receive a quality seal and the opportunity to have their location in GPS coordinates on the MUSAMI App, making easier to identify and present themselves as an eco-friendly establishments to any citizen or tourist who visits the island of São Miguel.

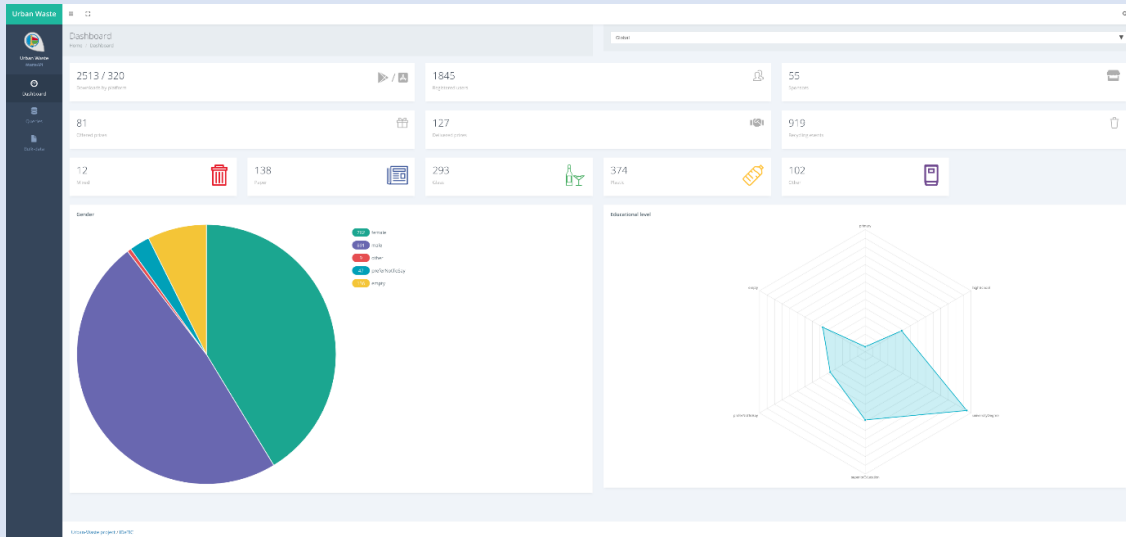
For the conservation of this award the restaurants are subject to periodic surveys in order to safeguard the continuity of the good practice towards waste. It's expected that Eco Island will see the participation of all restaurants on the island and soon try to engage more tourism industry entities, contributing to the awareness of tourism economic activity to the importance of waste separation, while at the same time contributing to an increase in the recycling rate.

- Cliiink¹⁷⁴ is a smartphone application that can be used in France in the cities of Aix-en-Provence, Avignon, Cannes, Grasse and Grenoble for recycling glass while giving the chance to win prizes at the same time. The points earned by users for recycling waste are converted into gift-tokens to be used in numerous distribution retail outlets. The application works in combination with containers equipped with sensors able to recognize if the object thrown is indeed glass. Each container has a Bluetooth connection that transmits to the user points on his smartphone in case of correct sorting. In Grasse 115 retailers are partners of the operation for rewarding users.

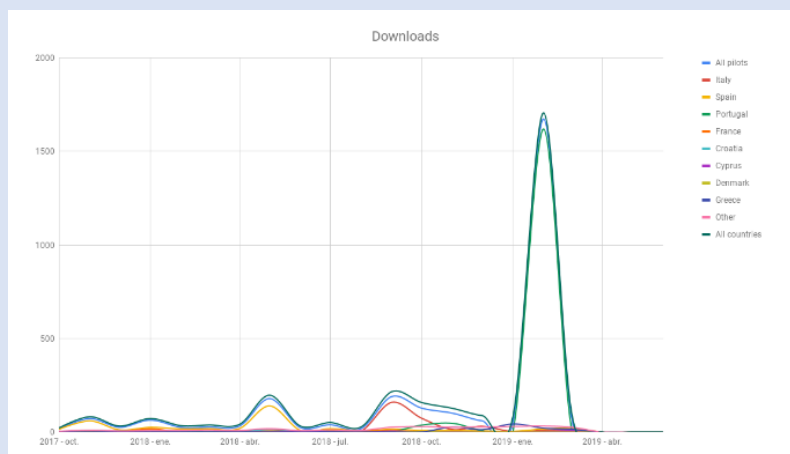
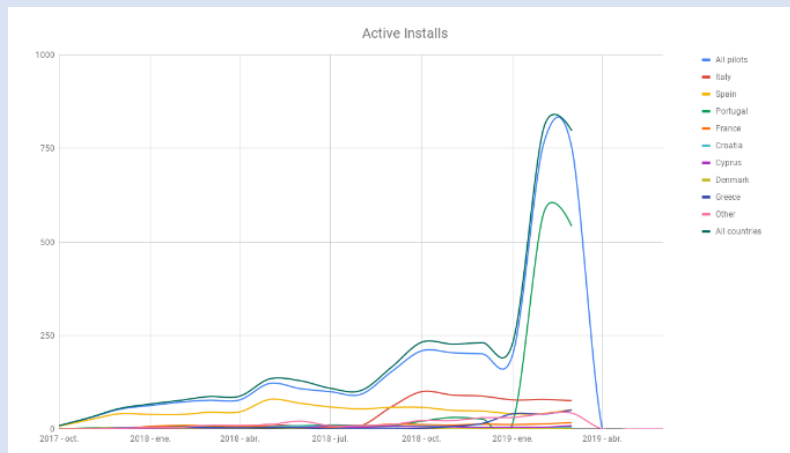
¹⁷⁴ <http://terradona.com/en/cms/46/cliink>

Monitoring indicators

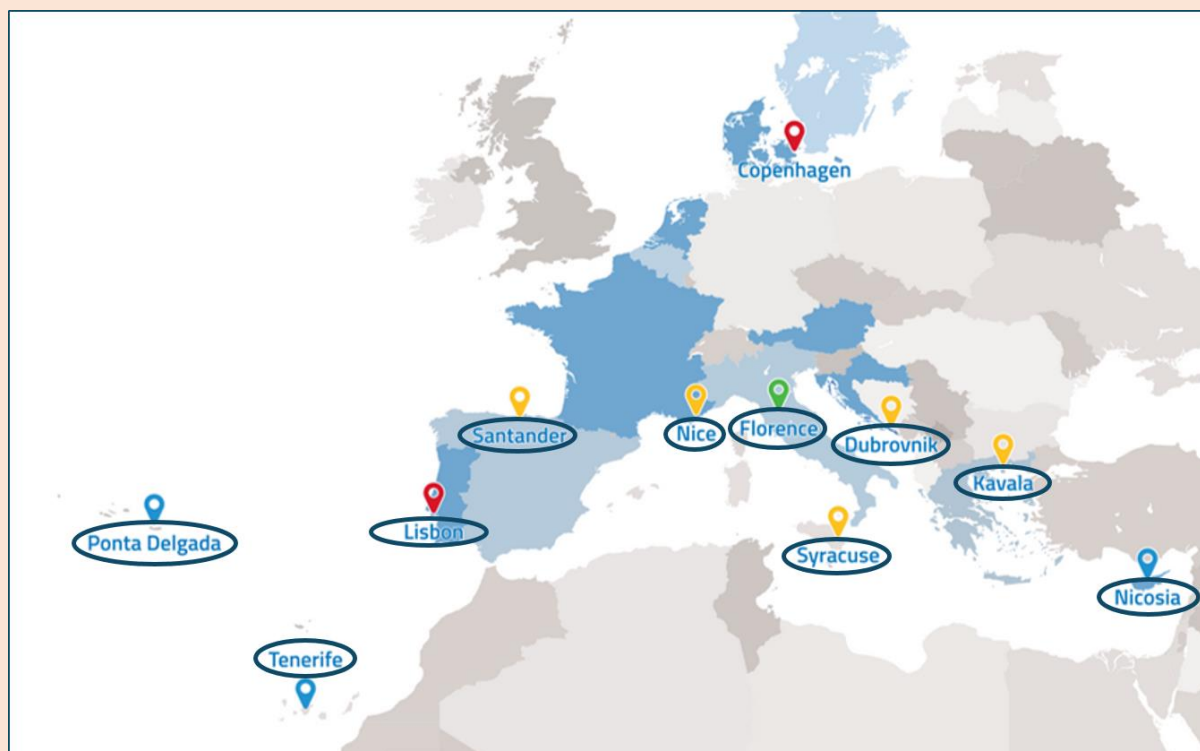
WasteApp back office enable different kind of reporting data broken down by gender, educational level on the different sorted waste.



The use of the application can also be evaluated through the number of downloads and active installation.



Lessons learnt from the implementation phase



Pilots promoting WasteApp within URBAN-WASTE

WasteApp have been promoted in Dubrovnik, Florence, Kavala, Lisbon, Nice metropole, Nicosia, Ponta Delgada, Santander, Syracuse and Tenerife from March 2018 to December 2018 in the framework of URBAN-WASTE through different communication campaigns.

In Copenhagen, due to technical problems that were resolved after the high season of tourism, WasteApp was not promoted.

The promotion of the WasteApp consisted in sticking QR code on a number of bins that varies from 9 (Dubrovnik) to 2,872 (Nice) depending on the pilot.

All the pilots have developed thorough communication campaign based, first, on the dissemination of leaflets for using WasteApp at different events, at touristic locations or tourist establishments, and second, on press releases, articles in local newspaper or TV reports in the different local media.

Despite efforts provided by pilot cities, the registered users of the WasteApp remained low. For all countries: 2,833 downloads and 733 active Installs.

Keypoints:

- use WasteApp as an official municipality tool for betting on using this innovative gambling experience to increase the awareness of visitors and citizens regarding waste
- launch WasteApp including municipal sponsors in order to ensure awards from the beginning

- **QR stickers have to be adequate for outdoor use**
- **a self-explanatory sticker should be stuck near the QR codes on the containers to facilitate visitors participation**
- **organize specific events to promote the application and/or maintain a constant communication campaign, putting special emphasis on the days of tourists affluence.**



22 - Food donation from restaurants and hotels to charities

What is the measure about?

Description and scope of the measure

More than 40% of the waste generated at tourist establishments such as restaurants, bars and hotels with buffet is considered as food waste. This issue requires special attention as it greatly contributes to the total municipal solid waste generation in many tourist cities in Europe.

Food waste refers to food intended for human consumption which is discarded, whether it has reached its expiry date or not. Usually, this happens whenever food has spoiled but it can be for other reasons such as oversupply in the restaurant or hotel, rigorous aesthetic standards for sale, or individual consumer purchasing/eating habits. Moreover, food can be considered as waste due to regulations on durability, date marketing or hygiene standards.

Restaurants, bars, hotels, etc. can adopt a series of measures to reduce food waste, as it is described in *“Measure n° 2: Food prevention at buffets and restaurants”*, such as the adjustment of dishes size or the implementation of just in time ordering.

However, whenever there is still leftover food, this can still be donated to food banks and charities for further consumption. In this respect, food donation from restaurants and buffets to food banks and non-profit organisations can do a lot to reduce and minimize the amount of food waste generated, otherwise mixed with residual waste and thrown away (as in most cases selective organic waste collection is not provided).

There is a great number of non-profit and social organisations in Europe that will collect excess and leftover food (including prepared food) to provide for the needy. Depending on the country, however, there may be various legal and health/safety requirements to consider. Many hotels and restaurants have already adopted this measure.

Moreover, the European Commission is taking this issue very seriously, as reducing food waste has an enormous potential for reducing resources necessary for food production. For instance, food waste prevention is an integral part of the Commission’s new Circular Economy Package to stimulate Europe’s transition towards a circular economy. More specifically, the EC is taking measures to clarify EU legislation related to waste and food and facilitate donations without compromising food safety.¹⁷⁵ In this sense, the Commission is developing a series of EU-wide food donation guidelines for donors and receivers of food surplus, including national guidelines,

¹⁷⁵ EU actions against food waste (EC) (https://ec.europa.eu/food/safety/food_waste/eu_actions_en)

recent studies and reports, online register of EU rules on food hygiene, etc. The EU food donation guidelines are expected to be finalized and adopted by the Commission by the end of 2017.¹⁷⁶

Strong legal and financial support from the EC and the respective state/local governments is of great importance here, as one of the main problems why restaurants and hotels do not donate leftover food is because they are scared of being sued.¹⁷⁷ In this sense, restaurants, bars, buffets, etc. should be better protected, as it is the case of the “Good Samaritan Law” (see *section with examples of good practices*), which protects restaurants from civil and criminal liability if a recipient would get ill or hurt as a result of consumed donated food. Donors are only culpable in cases of gross negligence or intentional misconduct (such as donating food from which others have already become sick). In order to be protected by the Good Samaritan Law, food donors have to comply with state and local food sanitation and label regulations, which vary widely. That is why guidelines around donation procedures need to be more uniform, so as to streamline the process.

Consequently, food donation from restaurants and buffets to food banks and non-profit organisations can do a lot to reduce and minimize the amount of food waste generated, otherwise mixed with residual waste and thrown away (as in most cases selective organic waste collection is not provided).

Integration in a waste management plan

The proposed measure can be adopted and included in the waste management plan of the restaurant, hotel or buffet. Every Environmental Management Systems, such as ISO 14001 or EMAS, which tourist establishments of this type can be certified against include waste management plans and strategies where food waste prevention measures can be integrated.

¹⁷⁶ *EU action to facilitate food donation and prevent food waste* (Anne-Laure Gassin, EC, DG Health & Food Safety) (https://ec.europa.eu/food/sites/food/files/safety/docs/fw_eu-platform_20161129_pres-eu-food-donation-guidelines.pdf)

¹⁷⁷ *Restaurants Officially Have No Excuse Not To Donate Leftover Food* (Eleanor Goldberg, 2016, Huffingtonpost) (http://www.huffingtonpost.com/entry/restaurants-that-dont-donate-because-of-liability-are-just-making-excuses-experts-say_us_577d6f92e4b0344d514dd20f)

How to implement this measure?

Economic aspects to consider and potential solutions for the financing of the measure

Costs

- Transportation and distribution from the restaurant/hotel to food banks or charities. However, this expense could be covered by the receiving part, depending on their capabilities.

Cost savings

- Some EU countries have implemented a tax credit system or deductions for donated food in order to encourage restaurants and hotels to donate more food instead of throwing it away. For example, in France and Spain, 60% and 35% accordingly, of the value of food donated can be claimed as tax credit¹⁷⁸.
- Moreover, the amount of food waste that would be incinerated or landfilled would decrease, avoiding the costs of these alternatives. In EU, the average costs are¹⁷⁹:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

Funding options

- With the tax credit or deductions from the donated food, the restaurant or hotel could if not fully finance, at least reduce the costs of transportation and distribution to food banks and charities.

Type of stakeholders to involve

For the effective introduction, implementation and continuous operation of the proposed measure, a number of key stakeholders should be involved. These include (*whenever applicable*):

- Hotel or restaurant managers
- Health, safety and environment responsible within the hotel, restaurant, etc.
- Catering service providers
- Kitchen staff (i.e. chef, kitchen assistants, waiters/waitresses, etc.)
- Customers

¹⁷⁸ Comparative Study on EU Member States' legislation and practices on food donation Executive summary (2014) European Economic and Social Committee. pp 5, retrieved from http://www.eesc.europa.eu/resources/docs/executive-summary_comparative-study-on-eu-member-states-legislation-and-practices-on-food-donation.pdf

¹⁷⁹ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

- Receiving organisations (food banks, charities and other non-profit social organizations working on food waste prevention and donations - recovering food from donors and redistributing it to charity organisations, or directly receiving food from donors)
- Homeless shelters, orphanages, homes for the elderly, drug rehabilitation centres, etc.

Other possible stakeholders to involve:

- Waste management department of local authorities
- Waste management company/local authority in charge of municipal waste collection
- Trade and hoteliers associations
- Local sanitary agencies with a role on food safety surveillance

Description of the operational steps to follow

At municipal level

- Mapping of restaurants, hotels, canteens, etc. within the municipal boundaries willing to participate as potential food donors.
- Mapping of food banks, charities and non-profit organizations involved in food donation activities within the municipal boundaries, as potential food receivers.
- Confirmation that identified and considered food donors/receivers meet all health and safety regulations.
- Organization of informative meetings and training sessions for identified establishments and charities (a brochure could be created and delivered to restaurants and hotels providing a list and contact details of food banks and relevant social organisations, as well as the list of formal conditions to be met)
- Facilitation and support in the subscription of voluntary agreements and collaboration partnerships with participating establishments and charities (as there are many aspects to be considered)¹⁸⁰
- Realization of communication campaigns at local level to engage participants.
- Regulative support and financial incentives to encourage restaurants, hotels, etc. to implement this measure so that donating food is more attractive than discarding it (e.g. tax reduction for food donors – they may be able to deduct a certain percentage of the value of donated food from their income corporate tax)

¹⁸⁰ *European Hospitality Industry Guidelines to Reduce Food Waste and Recommendations to Manage Food Donations* (HOTREC, Hospitality Europe) (http://www.hotrec.eu/Documents/Document/20170119161052-HOTREC_guidelines_on_food_waste_reduction_and_recommendations_to_manage_donations_-_Final.pdf)

At restaurant/hotel level

- Appointment of the owner/manager or specific employee to be in charge of food donations (this will avoid mismanagement of food surplus, pick-ups and schedule for collection, etc. and therefore prevent avoidable losses)
- Monitoring and identification of potential food to be donated so as to define the scope of the action plan (consider where, how much and which type of food waste is being generated in the kitchen, canteen, etc.).
- Before the initial donation is made, the establishment should contact its local health department and find out what laws exist (if any) that regulate donated “prepared-and-perishable” food, and then operators should make sure they can comply with them.
- A presentation and introduction of the measure should be provided to hotels and restaurant personnel, at all levels. Including them in the decision-making process can translate into a higher commitment and better morale of involved staff.
- Communication campaign materials and continuous support/training should be distributed to all involved stakeholders to ensure participation and a proper understanding and uptake of the measure.
- Examples of actions to adopt when donating fresh products include:¹⁸¹
 - Keep refrigerated items cold all the time; examine the items for any signs of decay, spoilage, mould or odours; store food products separately to prevent cross contamination; discard any cut items that have not been kept refrigerated, etc.
- Examples of actions to adopt when donating prepared food include:
 - Avoid dishes containing potentially hazardous foods that have been heated, chilled and reheated; store dishes in shallow, one-use recyclable aluminium pans or clear-plastic food-grade bags; package donations in smaller containers, such as shallow pans, rather than larger ones so that recipients can maintain the food’s temperature and prepare only the amounts that will be consumed at once, etc.
- The responsible person in the restaurant or hotel should also be aware of where the food is destined and how it will be stored and handled until it is consumed (even if the food was perfectly safe when it left the restaurant, it could be mistakenly allowed to cool or thaw somewhere in transit, which could be harmful).
- Along with the implementation of the measure, it is very important to promote the new activity to customers. Clients will not only appreciate the efforts and concerns from the restaurant or hotel, but they may potentially increase their support too (which would be translated into economic benefits). The participating establishment could place a specific sticker/label on its front door to promote the measure.
- The last step should consist and conclude with measuring the efficiency of the actions adopted when comparing the results obtained after a trial period.

¹⁸¹ *Food Donation: A Restaurateur’s Guide* (National Restaurant Association, U.S. Department of Agriculture) (<http://infohouse.p2ric.org/ref/12/11907.pdf>)

On top of it, new trusted employees should be periodically designated to be the “eyes and ears” for supervision and management of the measure as well as to identify areas where participation/cooperation is somehow not taking place (either by specific areas of the kitchen or certain staff members). Keep a conversation with those not participating so as to determine if they understand the importance of the measure and the reasons behind their low interest.

Gender aspects to consider

Who decides which charities benefit? Do the charities benefit women at least as much as men?

If women hotel staff are involved in identifying charities, then this could empower them.

Examples of good practices

- In France, fiscal instruments have been introduced so that it is more expensive for companies to send unmarketable food to anaerobic digestion than to donate it to food banks, sending appropriate financial signals in relation to the EU waste hierarchy. Therefore, food donors in France qualify for a tax credit equal to 60% of the value of the food donated, to a limit of 0.5% of revenue of companies that are subject to corporate income tax (i.e. taxes against profits earned by businesses during a given taxable period). The 60% tax credit on the net book value of the donated food and on its transportation and storage incentivizes food businesses operators to donate rather than send food surplus to the landfill. For example, if a buffet has in its possession one ton of surplus food estimated at 1000€ and the landfill taxes are 100€ the owner will lose 1100€ in order to discard the food. However, if the establishment donates the surplus food, not only will it save landfill costs, but it will also benefit from a tax credit of 600€. In this case, the owner will only lose 400€ instead of 1100€. ¹⁸²
- In Italy, the “Good Samaritan Law” (*Legge 25 giugno 2003, n. 155*) identifies the food bank as the final consumer of donated products. Food donors (e.g. restaurants, hotels, etc.) are thus liable for food safety and hygiene conditions only to food banks, rather than to individual consumers of food bank provisions. Given that the proper safety and hygiene framework is ensured by food banks upon receipt of donations, many stakeholders consider that this legislation provides an extra level of reassurance to donors that stimulates food donation without compromising necessary safeguards. ⁶
- The “Food Bank against hunger” is an initiative of the “Portuguese Federation of Food Banks Against Hunger” which aims to fight against waste by recovering food surpluses and lead to those who have food shortages, mobilizing people and companies which, on a voluntary basis, have associated with this cause. ¹⁸³
- The properties within Carlson Hotels Worldwide, Radisson Hotels & Resorts, Marriott International and Fairmont Hotels and Resorts donate untouched food from catering displays and trolleys to community projects such as homeless shelters, orphanages, homes for the elderly and drug rehabilitation centres, sometimes working through charitable organisations. ¹⁸⁴

- The “*Union Belge du Catering*”, which represents contract catering in Belgium, launched in 2012 a project called “*Excédents alimentaires*” (Food surpluses) with representatives

¹⁸² *Comparative Study on EU Member States' legislation and practices on food donation. Final report* (Deloitte, 2014) (http://www.eesc.europa.eu/sites/default/files/resources/docs/comparative-study-on-eu-member-states-legislation-and-practices-on-food-donation_finalreport_010714.pdf)

¹⁸³ *Federação Europeia de Bancos Alimentares* (<http://www.bancoalimentar.pt/>)

¹⁸⁴ *A welcome sign: Hotels adopt reuse and recycling* (Waste Management World) (<https://waste-management-world.com/a/a-welcome-sign-hotels-adopt-reuse-and-recycling>)

of Ministries, regional authorities, industries and social institutions. The objective was to encourage food donation to reduce food waste by diverting unavoidable food surplus while fighting against poverty. In this project, industry and local authorities joined forces and called on companies to increase efforts to avoid food waste and promote structural donations. Any food that can still be eaten, but no longer sold, may be distributed (provided it meets safety conditions such as not exceeding expiry date, cold chain compliance, etc.). Such food can be donated to food banks and social organisations.¹⁸⁵

- The Hilton Worldwide hotels announced in 2012 a multi-year partnership with Feeding America and the Global FoodBanking Network to secure food and reduce hunger in communities where it operates around the globe. This enabled hotels to collect safe, surplus food from conferences and daily food and beverage operations that would otherwise be thrown away and made it available for those in need. On the other hand, Feeding America and The Global FoodBanking Network connected Hilton Worldwide hotels with local food banks and their networks of local community agencies to facilitate food delivery to school feeding programs, food pantries, hospices, after-school programs and other community projects.¹⁸⁶

¹⁸⁵ *Food Waste Reduction, Case studies from the contract catering industry* (FoodService EUROPE, 2014)

(<http://www.foodserviceeurope.org/gallery/60/FoodServiceEurope%20database%20Food%20Waste%20-%20FINAL.pdf>)

¹⁸⁶ *Hilton takes steps forward to minimise food waste* (Holly Tuppen, 2012 - Green Hotelier)

(<http://www.greenhotelier.org/our-themes/waste/hilton-takes-steps-forward-to-minimise-food-waste/>)

Guidance for setting up monitoring indicators

Data to be collected:

Monitoring of actions, items, stakeholders and people involved etc.		total
Restaurants involved	[number]	
frequency of pick-ups and collection of food	[n. days per week]	
Total number of restaurants in the pilot area	[number]	
Percentage of restaurants involved	[%]	
Hotels involved	[number]	
frequency of pick-ups and collection of food	[n. days per week]	
Total number of hotels in the pilot area	[number]	
Percentage of hotels involved	[%]	
Canteens involved	[number]	
frequency of pick-ups and collection of food	[n. days per week]	
Total number of canteens in the pilot area	[number]	
Percentage of canteens involved	[%]	
Events with catering and buffets involved	[number]	
other: please specify.....	[number]	
Estimated composition of food donated		
Vegetables	[%]	
Bread/pasta	[%]	
Beef/lamb	[%]	
Chicken/pork	[%]	
Fish	[%]	
Other: please specify.....	[%]	
Communication and promotion campaigns and activities organised		

Following data aims at monitoring quantity of food donated and the performance of the measure:

- quantity of food donated **[kg]** or **[number of boxes/trays]**: the number of boxes or trays can be chosen as a unit of measurement if it is not possible to weight waste produced, the average weight of a fulfilled boxes or trays will have to be estimated beforehand for further calculation
- Number of customers **[number]**

Time frame

It is recommended to start the monitoring at least one week before dispenser are installed to assess the effect of the measure. Quantity of food donated and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

Lessons learnt from the implementation phase and fine tuning



Pilot implementing food donation from restaurants and hotels to charities within URBAN-WASTE

In **Florence**, 4 hotels and 2 charities were involved in food donation. 1 charity managing a canteen hosting about 114 poor people including adults and children. 50 table tabs promoting the initiative were distributed in the involved hotels.

The daily collection of the exceeding food prepared by the hotels were carried out by volunteers from charities.

5- Conclusion

- Food waste management measures (M01, M02, M5, M20 and M22) mobilized the most: seven pilots.
- Waste sorting instructions translated in foreign languages (M14) was selected by 6 pilots proving the importance to give clear instructions to tourists to sort waste correctly. Quality of information is the main variable explaining tourist behaviour when sorting waste (see D3.2)
- Simple measures can prove to be very efficient rapidly. Substitution of disposable products in hotel, reduction of food portions in dishes...
- Generally, measures were implemented late, in summer time, limiting therefore their real impact. Trainings have to be organised in winter or beginning of spring.
- In restaurants and hotels mobilizing and motivating staff is crucial when implementing waste prevention and reduction measures. All the level in staff have to be involved: managers, employees.
- Turnover of employees in the tourism sector can be very challenging to maintain a stable and well trained staff.
- Mobilization, follow-up and keeping tight contact with involved stakeholders is crucial but time consuming. It requires from pilots enough human resources and important communication means for carrying out this actions.
- Communication is all the more effective when supported by politicians. This has been obvious in Nice and Florence with the involvement of hundreds of restaurants.



**URBAN
WASTE**
URBAN STRATEGIES FOR
WASTE MANAGEMENT
IN TOURIST CITIES

