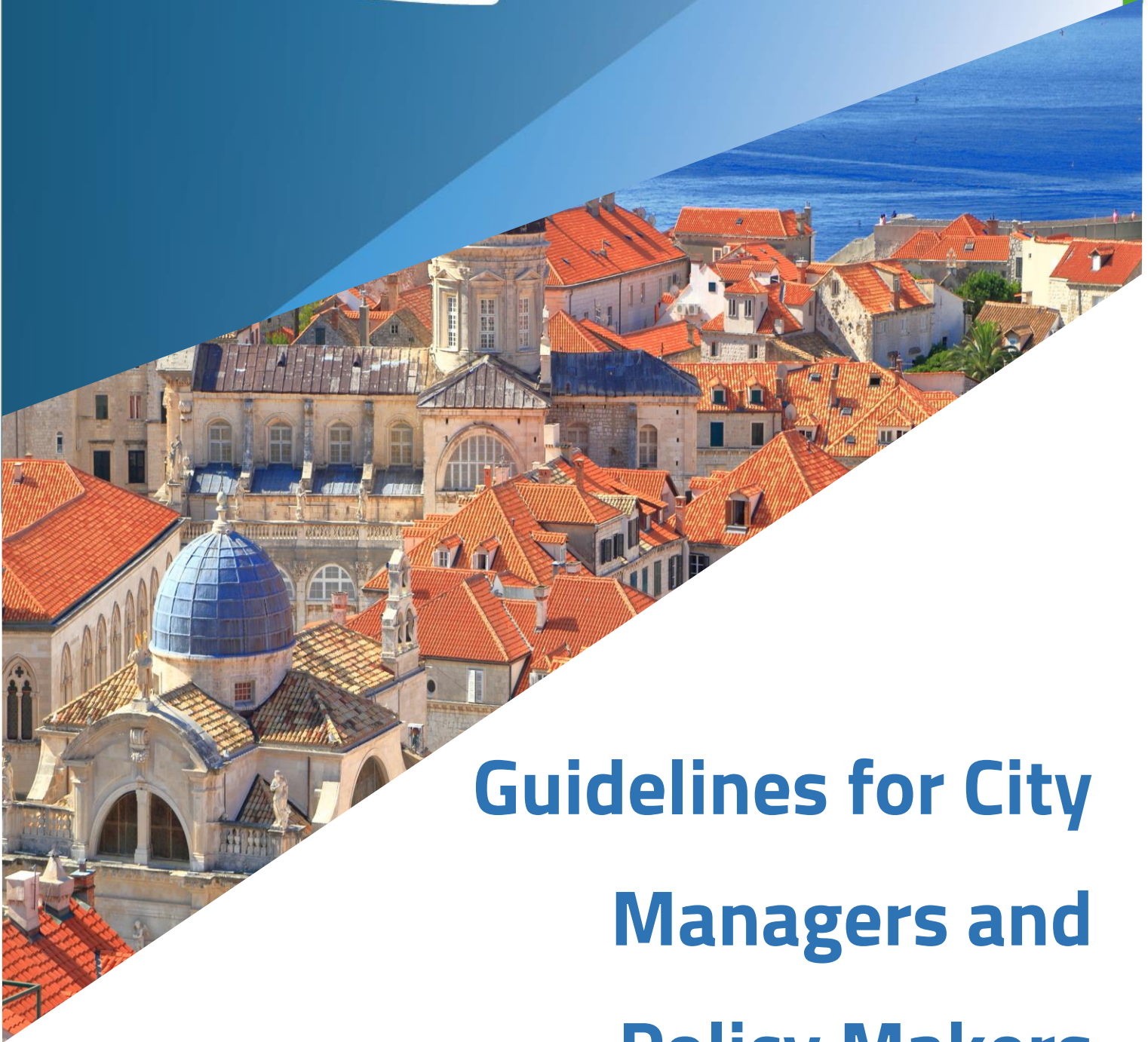




**URBAN
WASTE**
URBAN STRATEGIES FOR
WASTE MANAGEMENT
IN TOURIST CITIES



Guidelines for City Managers and Policy Makers

URBAN-WASTE

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Guidelines for City Managers and Policy Makers

URBAN-WASTE

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Abstract

This is one of the key deliverables of the project which comes at the end of its lifetime. It is a part of Work Package 7, which in fact has the objective to ensure the project’s afterlife and enhance its replicability potential. The Guidelines for City Managers have its own objective to deploy the project’s output outside and beyond the project consortium itself.

The Guidelines summarises and work and results achieved through Work Packages 2 (Urban Metabolism) and 3 (Mobilisation of Stakeholders) during the initial phase of the project, as well as Work Packages 4 (Development of Eco-Innovative Strategies and) and 6 (Implementation and Monitoring). Work Package 7 (Impact Assessment), which this particular deliverable belongs to, plays an important role in the Guidelines, as the deliverable also reports on the environmental, social and economic assessments.

List of abbreviations

ACR+	Association of Cities and Regions for Sustainable Resource Management
CE	Consulta Europa
UCPH	University of Copenhagen
MSW	Municipal Solid Waste
BOKU	University of Agricultural Sciences Vienna
GWP	Global Warming Potential
MSW	Municipal Solid Waste
LCA	Life Cycle Analysis
CoP	Community of Practices
CBA	Cost-benefit Analysis
PPP	Public-Private Partnership
tCO _{2eq}	Tonnes of CO ₂ equivalent
MNCA	Metropole Nice Cote d'Azur

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1. Preface

These Guidelines were drafted and published in order to support city managers and policy makers in replicating the URBAN-WASTE strategies in tourist cities. The Guidelines summarise the work that the project consortium done over the last 3 years including the initial mapping and identification of local stakeholders involved in waste management and tourism processes, community-based decision making, implementation of eco-innovative measures and the final environmental, social and economic impact assessments. These guidelines will allow city managers, including decision and policy makers, to understand the underlying liaisons between tourism and waste management processes and enable them to recreate some of the URBAN-WASTE processes in order to improve their local waste management practices and adapt them to their local tourism patterns.

Europe's cities are some of the world's greatest tourism destinations. The socio-economic impact of tourism is extraordinary in terms of jobs it creates, the contribution to local economies and much more, but it brings at the same time a range of negative externalities, including high levels of unsustainable resource consumption and waste production. In comparison with other cities, tourist cities have to face additional challenges related to waste prevention and management due to their geographical and climatic conditions, the seasonality of tourism flow and the specificity of tourism industry and of tourists as waste producers.

Over the last three years, URBAN-WASTE supported policy makers in answering these challenges and in developing strategies that aim at reducing the amount of municipal waste production and further support re-use, recycle, collection and disposal of waste in tourist cities. While doing so, URBAN-WASTE adopted and applied the urban metabolism approach to support the switch to a circular model where waste is considered as resource and reintegrated in the urban flow. All this was done in order to bring together the local authorities with the key actors in the local tourism industry and waste management in order to allow them to cooperate, complete each other and act for a more sustainable tourism in their local environments.

A number of different researches, exercises and processes during the project's lifetime and partners who worked on them helped understanding the key links between urban metabolism, waste management in tourism and what added values do healthy ecosystems bring to urban areas. These findings helped the cities to assess their own baseline scenarios and certain things and links work in their own local or regional reality. Local and regional reality in the project's 11 pilot cities and regions: Copenhagen, Dubrovnik – Neretva County, Lisbon, Nicosia, Ponta Delgada, Florence, Tenerife, Santander, Kavala, Metropole Nice – Cote d'Azur and Syracuse. The findings served as the basis for discussions with local and regional stakeholders who were brought together in Communities of Practices. The Communities were the place and opportunity to map, locate, identify and define each stakeholder's role in these processes and define the eco-innovative measures the pilots and their stakeholders would implement later on.

The fact that these 11 pilots were stretching from the easternmost part of the Mediterranean Sea to the middle of the Atlantic Ocean and from the subtropical island of Tenerife to the Nordic capital of Copenhagen means that the local realities were all but the same. This is why the project looked at these pilots through different categories in order to be able to understand their local characteristics better. These categories were reflecting the pilots' type of tourism, touristic offer, tourism seasonality, geographic and topographic characteristics and more.

The reader of these Guidelines will be walked through different phases of defining and creating waste management strategies, suggested methodology and expected outcomes of such strategies. It will provide them with the necessary knowledge, findings and observations that were done in the 11 pilots and proposed approaches and methodologies for reproducing and multiplying the URBAN-WASTE project's achievements.

2. Understanding the impact of tourism processes on waste arisings and waste management

Tourism as an industry plays an important role in many local and regional economies. There are such destinations in Europe who rely on tourism as one of the main the source of income not only for the local budget, but also for local businesses. Thus, developing the tourism offer, creating opportunities for local SMEs to operate and at the same time ensuring that the increasing number of tourists can be accommodate plays an important role in many local and regional authorities' strategies and priorities. Nevertheless, the tourism industry doesn't only bring certain financial gains but also employs a rather large share of people – 9.4% of all the employees in non-financial businesses. If the number of these employees is expanded to car and other rentals, travel agencies and tour operators and accommodation this share increases to 11.8% (Eurostat, 2016). However, the tourism industry must not be looked at only through economic benefits. There is much more behind as tourism plays an important role in many cities and regions urban processes and tourism processes must also be featured in environmental assessments and looked at through that perspective, too.

What the URBAN-WASTE project had as its objective from the very beginning was resource management and waste streams in the first place. This is why understanding tourism processes was an important prerequisite to assess and rate its impact on resource management. This step also lied the foundation for the eco-innovative measures the 11 pilot cities and regions were developing.

This brings us to the 11 pilot cities and regions (*pilots* from here onwards). The URBAN-WASTE project spanned over 11 of them, from Nicosia in the easternmost part of the Mediterranean to Ponta Delgada in the middle of the Atlantic Ocean and from the subtropical island of Tenerife to the Nordic capital of Copenhagen. One must understand that very few of these pilots can be considered same; they differ not only in topography, geography, climate, size and other similar characteristics but also in the type of tourism they have, the way people arrive to these destinations and the tourism intensity in general¹. All these characteristics make them different from each other, but also different to any other cities. Some of the challenges and occurrences that can be found and observed in various touristic destinations, also observed in our 11 pilots, are very often closely linked to tourism processes (hospitality, catering and specific tourism activities) and among others include larger amounts of food waste, larger use of single-use items and lower shares of selective waste collection. One of the objectives of the URBAN-WASTE project was indeed to identify these pilot-specific challenges and support policy and decision makers in answering those through adapting certain waste management practices to the pilots' tourism processes and vice versa, increasing the re-use and recycling rates, share of waste collected selectively and decrease waste production and its environmental impact, in general.

The methodology and approach that was chosen for the project's needs was the urban metabolism model, which is defined as the sum total of the technical and socioeconomic processes that occur in cities, resulting in growth, production of energy, and elimination of waste (Wolman, 1965 and Kennedy et al., 2007). Waste, and therewith waste from tourists occurring in the urban sphere, are main components of urban metabolism.

¹ Tourism intensity is the ratio of nights spent at tourist accommodation establishments relative to the total permanent resident population of the area.

2.1 Understanding waste management data as function of tourism activities

Waste collection systems in selected cities in general and in tourist establishments in particular differed substantially between the URBAN-WASTE pilots. There are cases where waste streams originating from tourism activities, mainly from hotels and restaurants, are collected either as municipal solid waste or as commercial waste. Based on city specific data it is therefore difficult to allocate quantities directly to tourism activities. This comes from the fact that such waste originating from tourism activities is often collected together with household waste and other waste similar to household waste.

Europe and its cities are diverse in terms of climate, architecture, socio-economic features and this reflects in the whole variety of waste management practices that different cities and regions deploy. One of the key consequences of this is the way different waste fractions are defined, perceived, collected and treated. One of the waste streams that is especially affected by these differences is the one that is generated by various industries and commerce, here including tourism. The fact that this waste can be assimilated to household waste or have a completely independent status being called simply commercial waste can also as a consequence different collection schemes and consecutive treatment. Therefore, knowing the nature of data and therefore this waste stream, where it comes from, who has the right and responsibility to collect it and treat it and how can it be aggregated with other data plays an important role in understanding whether this waste can be within the scope of an eco-innovative measure or strategy.

















2.2 Spatial structure and grouping of the pilots

Generic spatial or geographic features of a city, such as urban density, land use or the extent of nature areas, are important framing conditions for waste production as well as potentials for waste handling, e.g. in form of local treatment potentials. Any comparative analysis of the cities as well as the development of recommendations need to consider the difference in local conditions. Therefore, simplified spatial profiles allow a general comparison of the spatial structure of the pilots.

The grouping of the URBAN-WASTE pilots into 3 groups was based on their spatial characteristics. One group, being big cities or dense urban areas, are characterised by a high share of urban area and a low share of nature areas and a high density of population and roads. These destinations have a large number of hotels, but the hotel numbers are below the average in relation to the number of inhabitants. What also characterises this group is that these cities and regions can have significant tourism, but other activities related to the urban economy still have a bigger importance and can dilute the impact tourism has in terms of waste generation. The second type is large authorities such as big municipalities, regions and metropolitan areas, sometimes with big cities included, characterised by a considerable rural hinterland. Finally, there are small cities or municipalities that are characterized by high tourism intensity. This group includes all three municipalities forming the pilot region of Tenerife. However, the grouping allows discussing general differences in spatial context as well as challenges and conditions for sustainable tourism. This grouping is only based on the few spatial structure indicators, while many other aspects relevant for this exercise (e.g. waste production and treatment, governance structures) are not considered for this spatial analysis. However, it allows to understand some of the following observations and occurrences in different cities and regions representing these three groups, including the relative importance of tourism compared to the other activities in the cities and regions.

Table 1 summarises the former grouping and lists additional characteristics that could explain certain occurrences which will be examined and explained later on.

Table 1. The grouping of URBAN-WASTE pilots and their spatial and tourism characteristics

	Dense urban areas	Regions and metropolitan areas	Small municipalities/resorts
CITIES	Copenhagen, Lisbon, Florence, Nicosia, Santander	Dubrovnik – Neretva County, Nice - Cote d’Azur Metropolitan Area, Kavala, Ponta Delgada, Syracuse	Adeje, Arona, Puerto de la Cruz
SPATIAL CHARACTERISTICS	<ul style="list-style-type: none">  High share of urban are and low share of nature areas  High population density and roads density  Can have significant tourism but other urban activity activities have a bigger importance 	<ul style="list-style-type: none">  Big municipalities or regions including big cities  Still urban areas, but not necessarily dense  Considerable rural area and nature 	<ul style="list-style-type: none">  Intense tourism  Number of visitors tenfold higher than the local population
TOURISM CHARACTERISTICS	<ul style="list-style-type: none">  Low tourism intensity  Short stays, 2-3 days  Lot of daily commuters 	<ul style="list-style-type: none">  Medium tourism intensity  Tourists visiting several places in the area instead of staying in one place 	<ul style="list-style-type: none">  High tourism intensity  Long stays in one place  Groups and families

2.3 Waste generation resulting from tourist activities

The previously described approaches, both in the methodology chosen for this exercise and the way the pilots were grouped gave concrete results and observation in how much tourism really affects waste generation, types of waste being generated and waste management in general.

What is necessary to consider for evaluating waste generation resulting from tourist activities are above all quantitative data on waste generation, local resident population and nights spent by tourists. One key observation that is worth mentioning here, before starting to analyse this data is that looking at monthly data gives better correlations, better results and therefore better understanding of various trends than annual data.

The underlying reason for this is that tourism is rather seasonal in the European context as there are few areas in Europe that can be considered a year-long destination with a high tourism intensity attracting large numbers of tourists.

Analysing Tenerife² alone as a pilot region which could be somewhat considered as a year-long destination shows that there is in fact a positive correlation between the higher the number of nights spent by tourists (i.e. tourism intensity) and the residual waste production. This could easily indicate that tourism has a notable influence on the island’s waste generation, but as this particular analysis includes only annual data, certain conclusions and meaningful statements are difficult to be made. Looking at monthly data, which includes more data, on the other hand, shows a more significant trend.

Due to the seasonality of tourism in many European destinations, it is suggested to look at monthly data concerning both waste arisings and overnight stays in order to draw more precise conclusions on tourism’s impact on waste management

² The pilot case Tenerife consists of the three municipalities Adeje, Arona and Puerto de la Cruz.

After analysing monthly data which resulted in more statistically significant correlations, the conclusion and the suggested approach for examining the real impact tourism has on waste management is to look at monthly trends and available data.

In the URBAN-WASTE project pilots' case, some interesting observations were made, based on the available data but also the way pilots were previously grouped.

What the project observed in Lisbon was that during the months with the highest number of overnight stays (summer season), there is a significant drop in waste amounts. In fact, all recyclables as well as organic waste show very similar variations as residual waste, including a noticeable drop in collected amounts in months with a peak in tourist numbers. The following Figure 1 shows this trend.

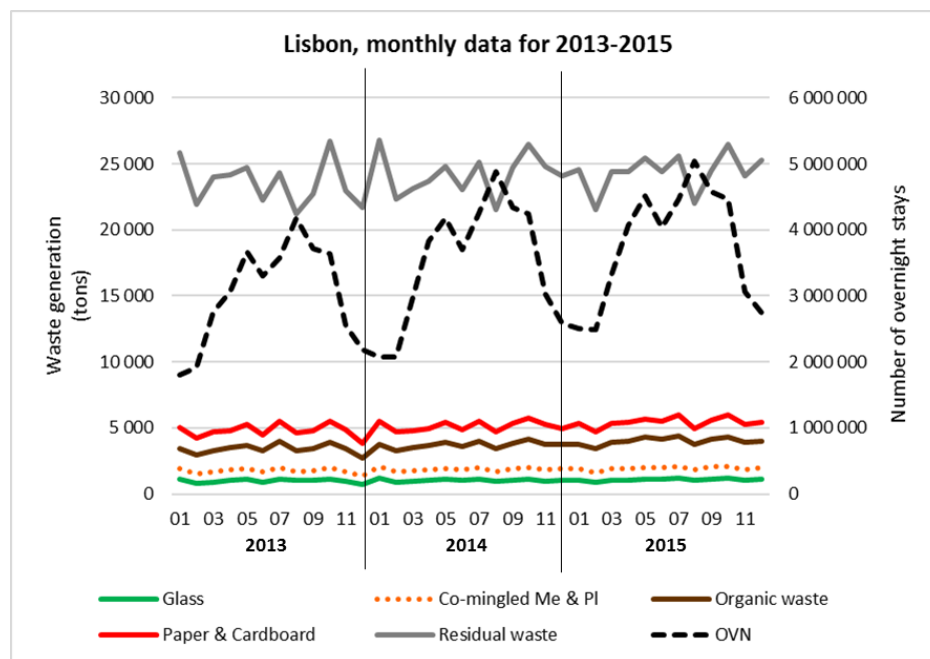


Figure 1. Comparison of waste generation and number of overnight stays in Lisbon (monthly data for 2013-2015)

The interesting fact is that the waste generation amounts increase again as the overnight stays decrease. The explanation lies in the fact that Lisbon was categorised as a dense urban area, with a low tourism intensity meaning it has a large local population which can counterweight the overnight stays. Certain spring months and summer holidays (especially August) are the periods when the local population goes on holidays and leaves Lisbon. At the same time, the commercial activity decreases which further contributes to the drop-in waste generation. This case of Lisbon perfectly describes the seasonality

A completely inverse trend was observed in smaller pilots, with smaller local population and a clear seasonality in terms of tourism. In Ponta Delgada, summer months are the high season of tourism. As showed in Figure 2, peaks in the number of overnight stays are clearly visible for all summer months from 2013-2015.

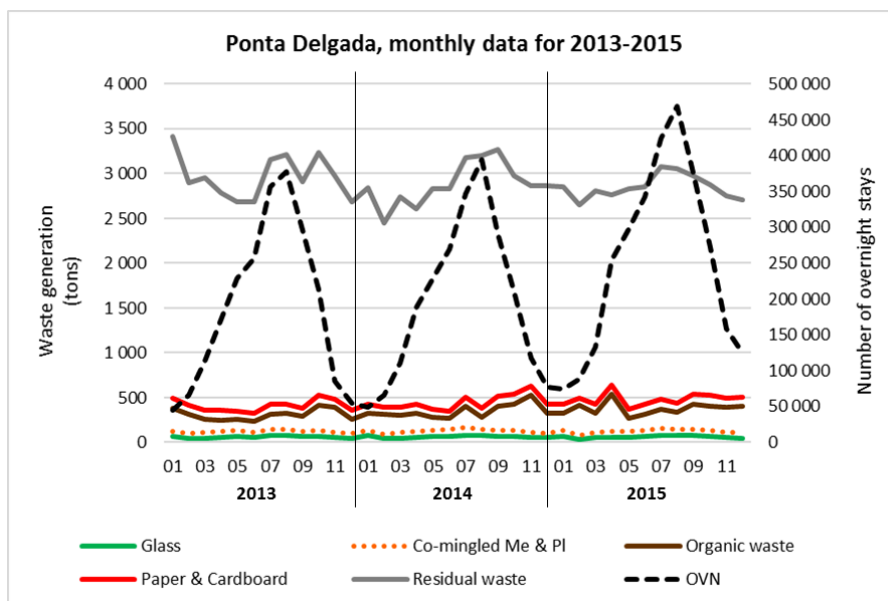


Figure 2. Comparison of waste generation and number of overnight stays in Ponta Delgada (monthly data for 2013-2015)

A very similar conclusion can be made for the city of Santander, which is also a popular summer destination. Figure 3 Shows similar trends for Santander like those in Ponta Delgada.

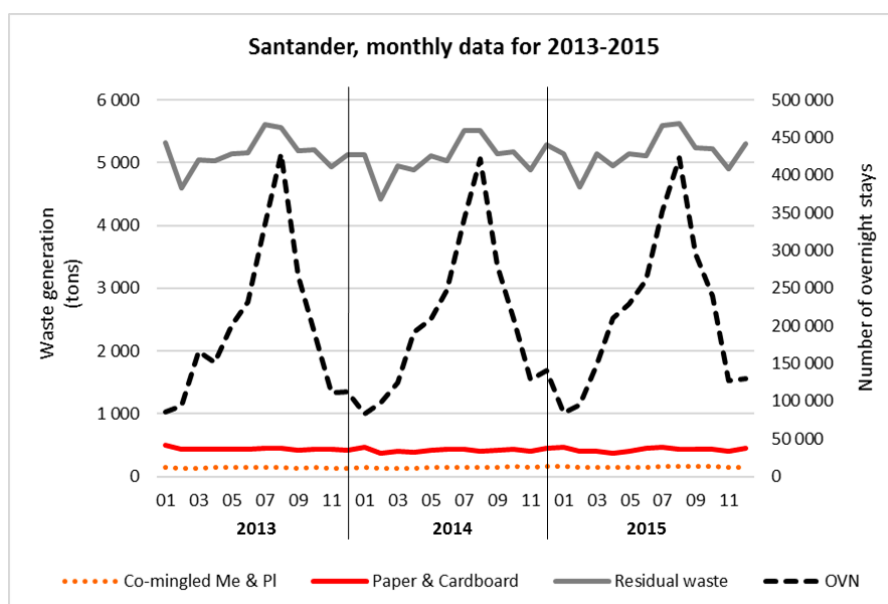


Figure 3. Comparison of waste generation and number of overnight stays in Santander (monthly data for 2013-2015)

A completely different tourism pattern can be observed in Tenerife, as a representative of the group including destinations with high tourism intensity, in Figure 4. A place like Tenerife, has the number of overnight stays is high nearly the whole year, except a decrease during spring. Concerning waste generation, a very similar trend is visible, but the peaks are less significant than those related to tourism data (the same applies to separately collected recyclables). However, by analysing biowaste data, a trend which matches the peaks in overnight stays was observed.

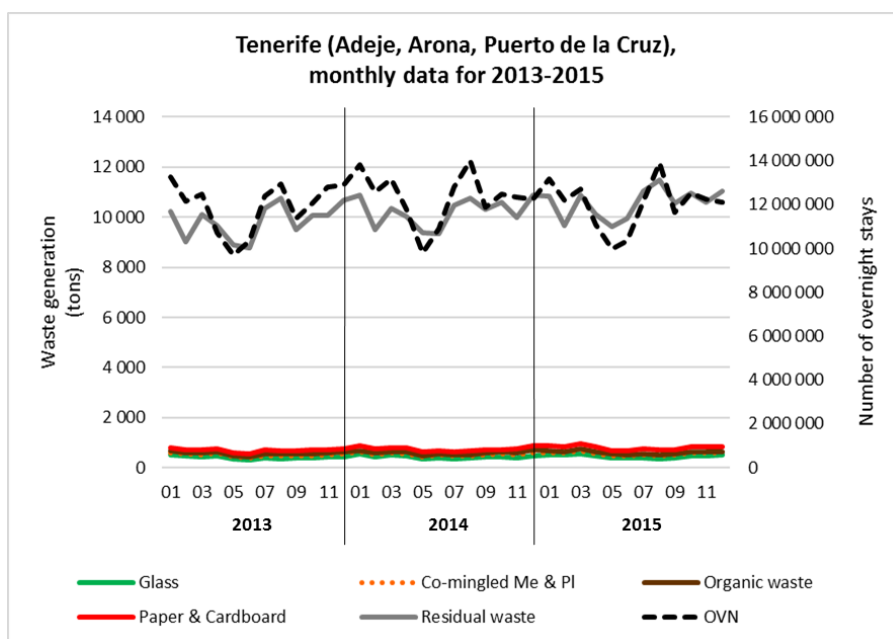


Figure 4. Comparison of waste generation and number of overnight stays in Tenerife (monthly data for 2013-2015)

When looking into specific waste streams, which also plays an important role in defining future strategies for better waste management in touristic areas, the project observed the following. The previous figures already proved that there is a clear correlation between waste generation per capita and tourism intensity. The higher the intensity of tourism is, meaning the higher the number of overnight stays per local resident, the more waste is produced per local resident. The following Figure 5 shows the accumulated data for Ponta Delgada, Santander and Tenerife.

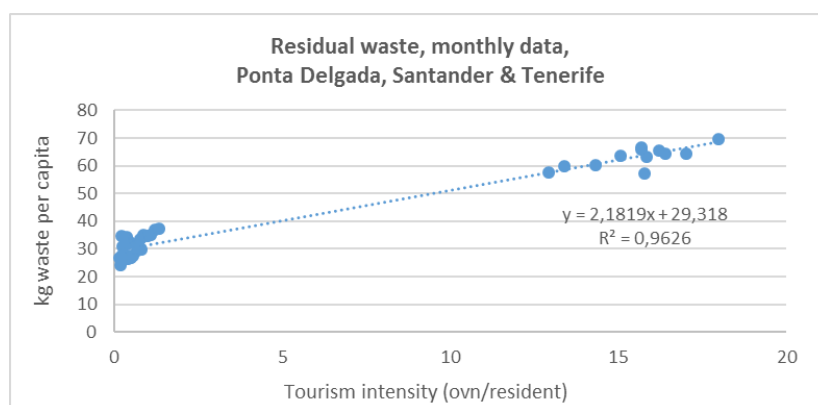


Figure 5. Correlation between residual waste generation per capita and tourism intensity in Ponta Delgada, Santander and Tenerife (monthly data for 2013-2015)

Analysing the other three most common waste fractions – paper and cardboard, glass and co-mingled packaging material is proven to show good indication in what direction the decision making should go and what waste streams should have a special focus when developing waste management strategies and specific measures.

The assessment of specific waste fractions must be done with a previous knowledge of the existing separate waste collection scheme and how different waste is disposed of and collected in order to be able to make conclusions that don't only reflect the quantitative results but also, the local or regional reality.

In case of paper and cardboard, no positive correlation was observed between the intensity of tourism and the generation of paper and cardboard waste per capita. This wasn't surprising since the link between this waste fraction and tourists was not expected. Reading local magazines and newspapers, for example, often will be restricted by foreign language. Cardboard from food packaging also might not be attributable to tourists in the same way they are to local residents. Another reason why the quantities of paper and cardboard decrease with the tourism intensity will be described in the paragraph on plastic and co-mingled packaging. However, the glass and co-mingled packaging material and the amounts collected are somewhat more interesting.

The reason why the amount of glass collected increases with the number of overnight stays is because the glass, mainly beverage bottles and similar come from tourism establishments such as hotels, bars, cafes, restaurants where such waste is generated. These amounts get collected separately due to existing schemes and the fact that this material is handled by the commerce which serve them. However, in case of co-mingled packaging waste (plastic and metal) which is in fact collected co-mingled in all three analysed pilots. The results presented in Figure 6 indicate that there is no positive correlation between the number of tourists (or overnight stays respectively) and the amounts of metals and plastics collected per capita.

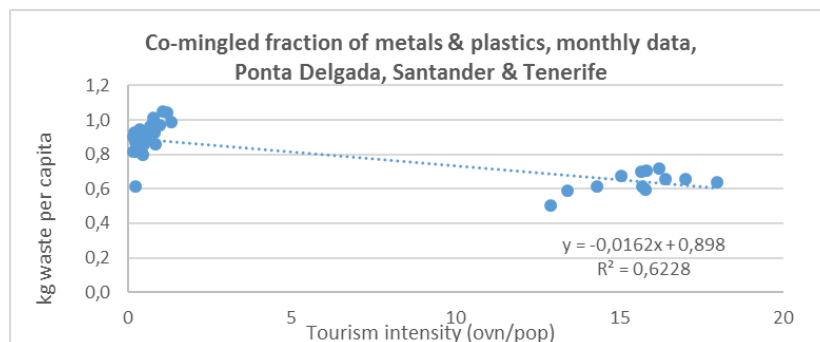


Figure 6. Correlation between co-mingled packaging waste collected per capita and tourism intensity in Ponta Delgada, Santander and Tenerife (monthly data for 2013-2015)

Although the amounts of separately collected co-mingled packaging waste are not significantly lower than the amounts collected during the off-season, the amounts of it, separately collected, are lower per capita during the month with high tourism activity. The underlying reason is that the plastic and metal packaging contribute significantly to the amounts of residual waste as they end up in that waste stream, rather than in the separately collected co-mingled packaging waste. Since most of this waste is generated in public spaces it rarely ends up in a designated container, but in common street bins. The rest of this waste coming from tourism activities can be generated in hotel rooms, or in private accommodations, but the reason why it still ends up in residual waste is the fact that the waste in hotel rooms is not selectively collected or the selective collection is not familiar to those staying in private accommodations. The same could be applied to paper and cardboard.

The few previous graphs and observations clearly explain why residual waste increases with the tourism intensity, while separately collected fractions (except glass) decrease.

Probably the best rationale behind these conclusions lays in the behavioural and consumption analysis of tourists. The 11 pilots run such a survey which resulted in valuable insight in consumption and waste behaviours of tourists and tourism processes in European travel destinations. Tourists from 39 different countries were among the 617 respondents. Looking at the responses coming from tourists can easily give answers on where the aforementioned conclusion comes from – from the behaviour “gap”. The gap literally defines the difference

between the way tourists perceive waste management and the importance they give to it when at home and when on holidays. Figures 7 and 8 visually show this gap in form of the responses coming from the tourists.

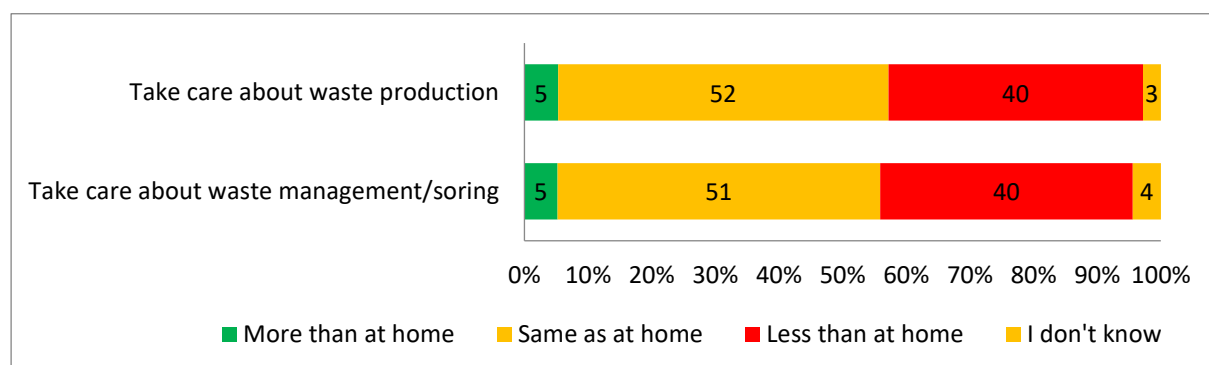


Figure 7. Share of respondents that take care of their waste production / sorting less, same or more when travelling than at home

Furthermore, Figure 8, also highlights the waste fractions of concern, those are the most affected by the behavioural gap.

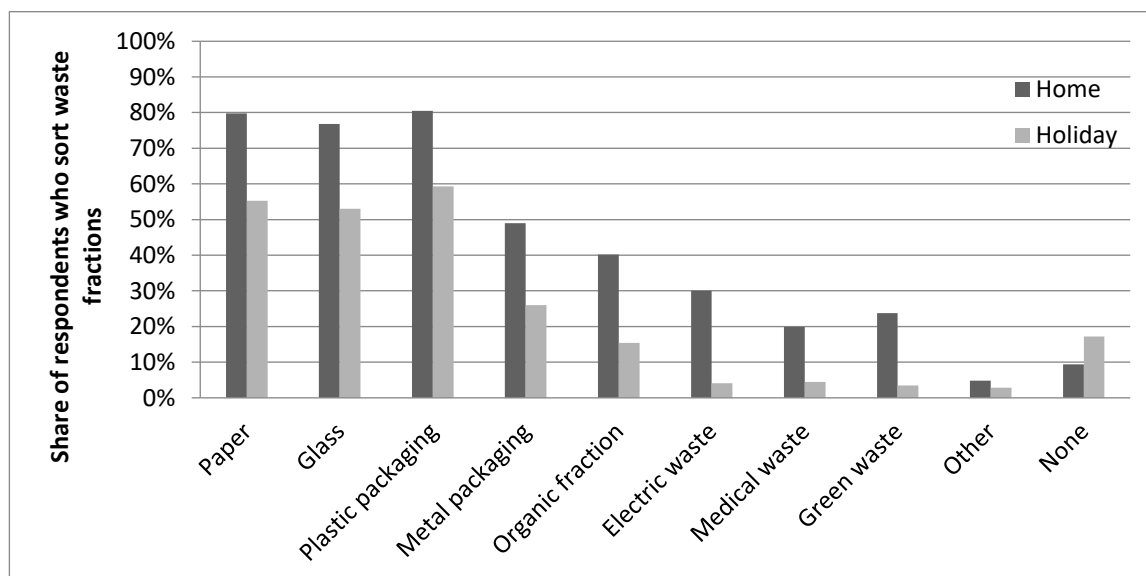


Figure 8. Share of respondents that sort waste fractions at home and when travelling

2.4 Defining the baseline scenario

After having observed the tourism patterns in the pilots and having understood the key principles and occurrences and before starting drafting conclusions and potential strategies and measures, it is necessary to ensure there is a baseline scenario or status quo, also known as the “business as usual” scenario, including all environmental, social and economic impacts. The assessment of the environmental status quo provides a general picture on the environmental impact of current waste management practice in the pilots and points out actual hotspots. Insights gained helps to identify improvement measures as well as to quantify the potential impact of a measure at a later stage.

As it was seen in previous chapters, at least in the case of most of the URBAN-WASTE pilots, the influence of tourism on waste generation is difficult to be proved mainly because of the lack of data. And it is well-known already that there is not only one possibility for proper waste management, but in fact every country and also

every city has its own solution based on the different framework conditions. There are some main issues to be taken into account when assessing the environmental impact of tourist activities in terms of waste management:

- Availability of data: most of the waste generated from tourists will end up in hotels, restaurants or other tourist accommodations. In some pilots, the waste from such establishments is collected separately and ends up as commercial waste, while in others it is collected together with household waste and ends up as municipal solid waste. And then, in some cities there is a mixture of both implemented.
- Treatment of residual waste: depending on the chosen treatment for residual waste (especially if there is any treatment at all, or this waste simply ends up on the landfill), this waste has more or less negative environmental impacts, whether produced by locals or tourists
- Share of recyclables: on the contrary to residual waste, the proportion of waste that is separately collected and recycled influences the environmental impact
- Separate collection/treatment of organic waste: a separate collection and recycling of organic waste will result in very high savings in terms of global warming potential
- Waste prevention: unlike previously mention factors, waste prevention does not only positively influence the global warming impact but also avoids any

Based on these key factors, specific measures on waste prevention and recycling will have different relative environmental impacts. As organic waste has a very high potential to influence the overall environmental performance of waste management it will be discussed separately.

The baseline scenario should take into consideration the different treatment options for residual waste and recycling activities a city has in place. Figure 9 shows the qualitative shares of different waste streams in the URBAN-WASTE pilots. In most of them the share of separate collected recyclables is still very low. However, the figures are in-line with country related figures.

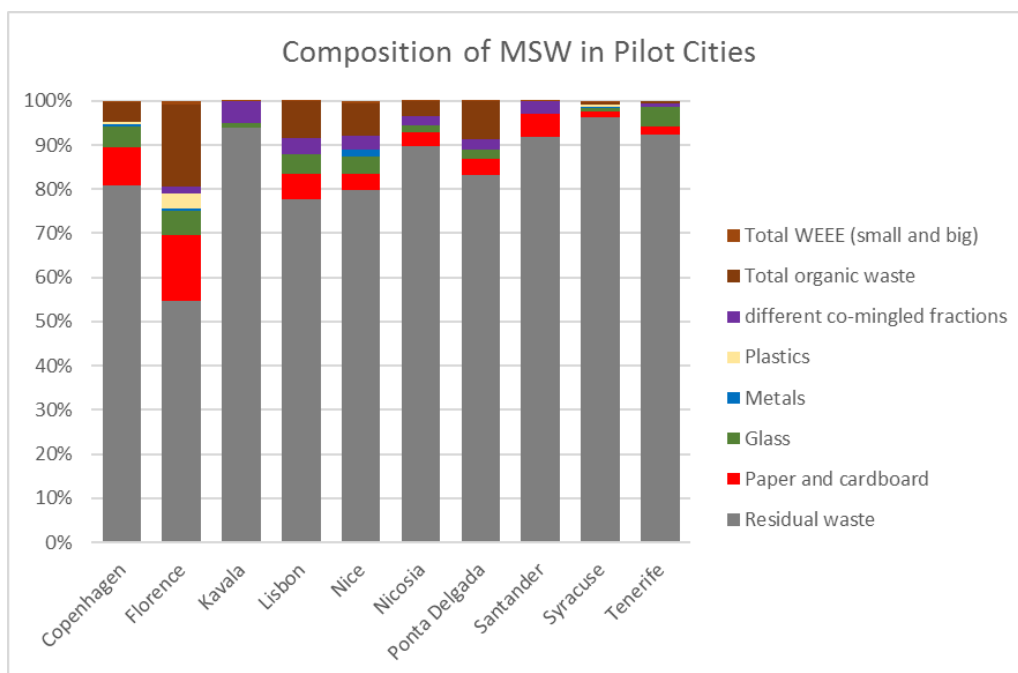


Figure 9. Shares of different MSW streams in the pilots (2015)

What is necessary to translate these shares of different waste streams into environmental impacts is to attach the respective treatment options. The treatment can include a whole set of options, from Mechanical Biological Treatment (MBT) and Waste-to-Energy (WTE) plants to direct landfilling with or without gas collection. In most of the pilots, recyclables are collected as co-mingled fraction in different compositions which are later sorted and each fraction is recycled separately.

The goal of this assessment is to define the baseline scenario in function of a reference unit. Therefore, the functional unit of the baseline scenario assessment in the URBAN-WASTE pilots was decided to be the treatment and recycling of kg waste produced per capita. This was the functional unit that the Life Cycle Analysis (LCA) modelling was based on.

When it comes to the biowaste, it was transformed into the global warming potential (GWP100) of current biowaste management options in the 11 pilots. The aim was to achieve a comparable value of the emissions from the current waste management regarding organic waste. The functional unit was set to 1 kg of organic waste.

Of course, different waste treatment measures produce different emissions and therefore have different environmental impacts. It also has to be taken into account, that recycling and also incineration of waste often has in total positive impacts as the production of energy out of waste or the production of secondary good leads to environmental benefits as the use of primary resources (e.g. fossil fuel) can be saved. These savings are expressed in negative values in diagrams.

According to the results, while landfilling has been confirmed as the worst waste final disposal alternative, composting and material recovery showed the best performance. An integrated system (MRF, composting, incineration and landfilling) is considered as a solution towards improved sustainability to overcome the existing waste management problems.

Figure 10 shows the overall Global Warming Potential per capita and year caused by waste generation and treatment for each pilot case. Negative values result from savings (credits) given to the use of secondary goods (products and energy) because of substitution of primary resources (for e.g. metal or plastic production) and fossil fuel (for energy production).

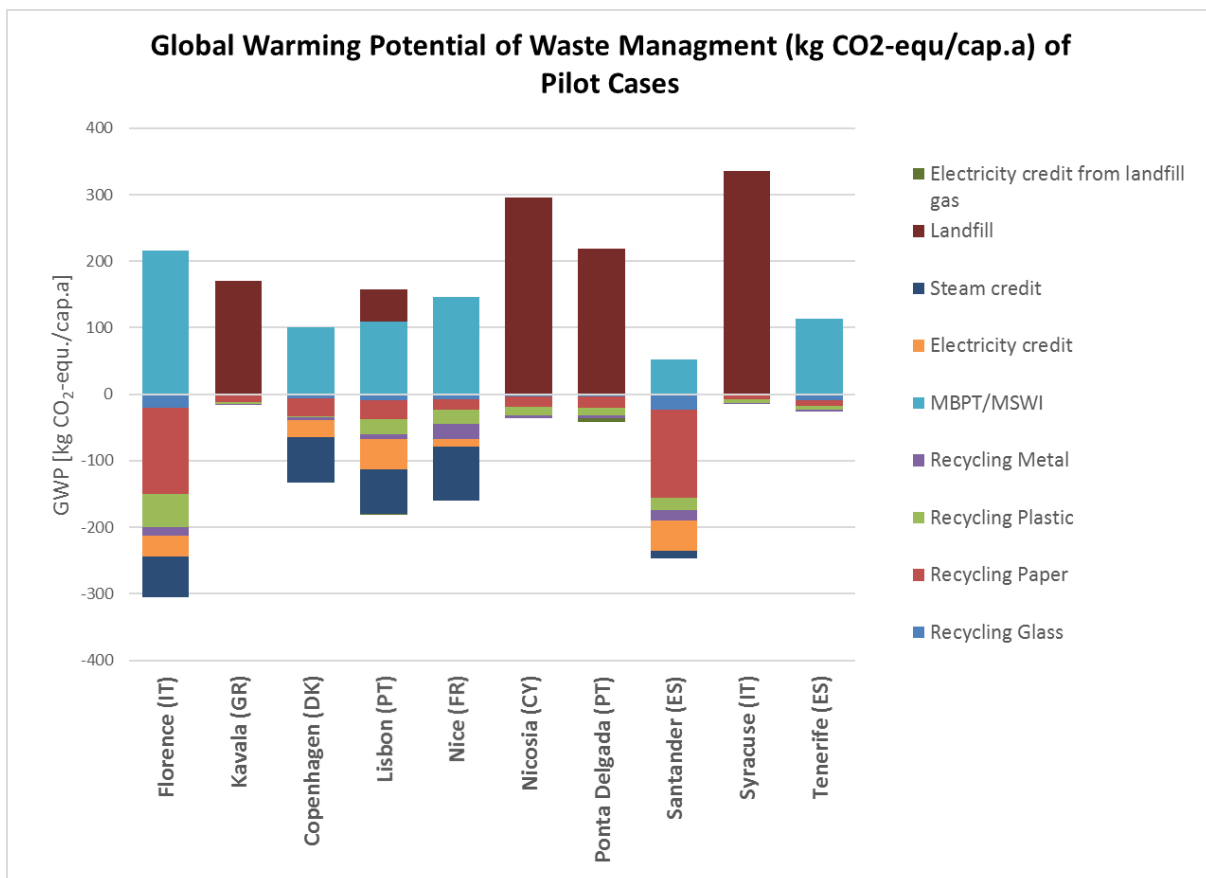


Figure 10. Global Warming Potential of waste management in pilot cases per capita and year (2015)

Two main issues can explain the big differences. First, the amount of waste generated; second the existing waste management system.

Concerning the Global Warming Potential, management of organic waste was identified as a hotspot. As shown in Figure 11, organic waste was treated differently in the pilot cases. Routes included landfill (LF), composting (COMP), incineration (INC) and anaerobic digestion (AD).

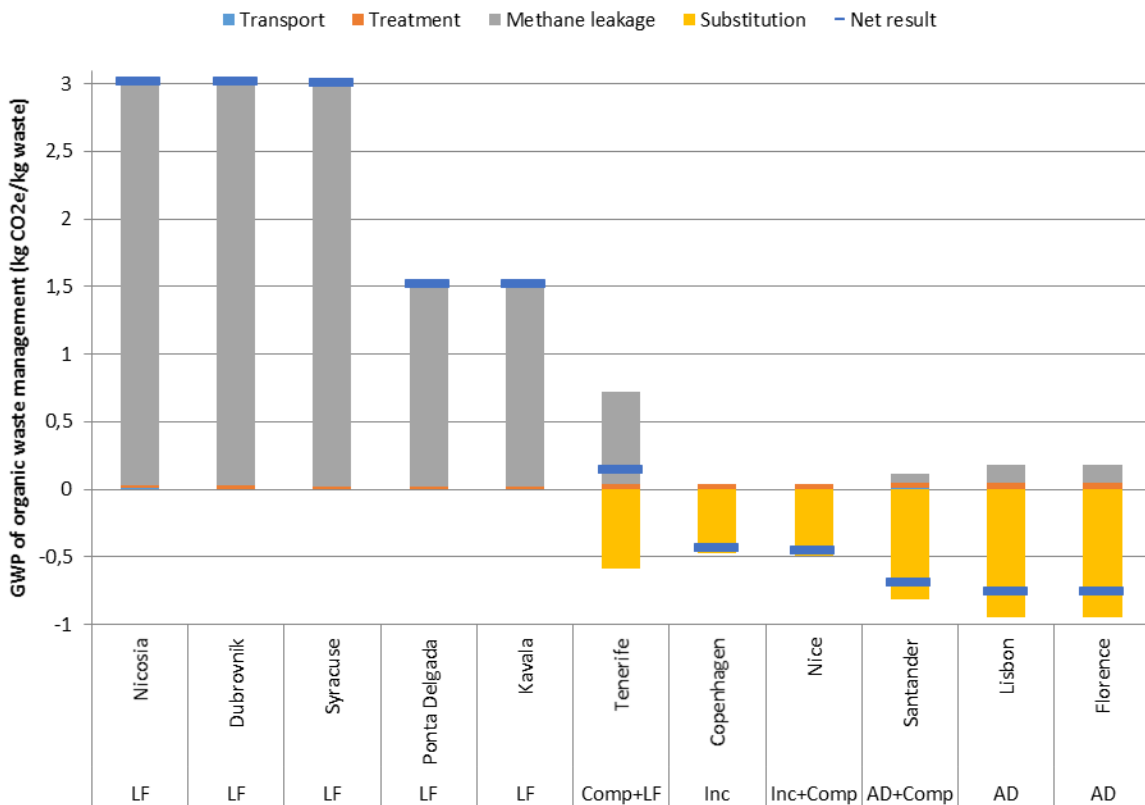


Figure 11. Performance of organic waste treatment in the 11 URBANWASTE pilot cases evaluated in terms of greenhouse gas emissions. The results for each pilot city sorted after the net GHG emissions from organic waste treatment correspond well to the waste hierarchy

Assessments like this gave the way to developing eco-innovative measures in all pilots. Since landfilling of organic waste causes greenhouse gas emissions due to methane leakage, this was the waste fraction and route with the highest impact. Pilot actions diverting organic waste send to landfill by both waste prevention as well as separate collection and treatment is seen as a substantial area of improvement. Significantly lower emissions were achieved in the cities collecting landfill gas or treating the organic waste with any other method. This was mainly due to less methane leakage but also to the substitution of other products when recycling nutrients and energy from the organic waste.

Food waste was identified as a waste fraction of the tourism industry leading to substantial emissions. Preventing food waste as well as introducing separate collection and appropriate treatment measures of food waste was identified area to develop improvement measures.

2.5 Key conclusions based on the assessments of existing waste management practices and occurrences

The Assessment of available data on current waste management practices and tourism in the project’s pilots highlighted their status and identified areas how cities can mitigate environmental impacts.

When assessing the impact tourism could have on waste arisings and waste management in general, the city or region of interest must be aware of its characteristics and look at its most evident characteristics in terms of both spatial and socio-economic features. Large cities have the possibility to mitigate the uneven waste arisings due to seasonality in tourism, as tourists basically replace the local population that goes away during the high seasons (summer and spring holidays). However, this is not the case with separately collected waste fractions. The trends do follow the residual waste production and it decreases with the arrival of tourists, but it is not because high tourist season produce less biowaste, glass and co-mingled packaging waste. The reason is that selective collection is often lower in case of tourism activities and tourists' behaviours in general. This waste is still being produced, in some cases in substantial quantities, but it doesn't find its way to the separate collection schemes.

Unlike in large cities, in smaller municipalities, regions or metropolitan areas, tourism activities reflect differently in waste occurrences. Such places are more vulnerable to seasonal variations when peak waste productions clearly follow the tourists' arrivals. The fact that the amounts of separately collected waste drop significantly during the high-season only reinforces this assumption mentioned earlier on, in case of big cities. It is obvious that these amounts go back to normal as the tourism activities decrease, since the amounts will mainly represent the waste produced by the local population which uses the provided separate collection scheme.

Tourist resorts and small municipalities, which can be considered as yearlong destinations for tourists have less distinct peaks and a rather consistent values in terms of waste generation. While the waste production can differ even up to around 14.5% from the average values (meaning even up to 29% between the low season and high season) in large cities and big municipalities or regions, small municipalities which hosts tourists all year long have this seasonality down to only around 5%. But this case highlights the separate collection issue as amounts of such waste (whether paper and cardboard or co-mingled packaging waste) are significantly lower than in the other case.

As it turned out that in most of the pilots, the contribution of tourists to the overall annual waste generation is statistically insignificant, general changes in the collection system of recyclables are not feasible in the interest of tourism alone, and might not even be feasible. Therefore, the focus in terms of waste prevention and recycling should be laid on measures that assist and complete existing systems.

Cities and regions that rely on landfilling and have low shares of separately collected waste have obviously the worst performance in terms of GWP and thus environmental impact. The fact that large quantities of biowaste end up at landfills doesn't help the overall performance. The separate collection of organic waste should be identified as a measure with a high impact in cities without organic waste treatment. Food waste as a part of biowaste and food wastage presents the most distinct negative environmental impact, much bigger than biowaste management. Thus, the main mitigation potential lies in food waste prevention, as a priority area where potential measures are expected to have a substantial impact. Speaking of the activities concerning food waste, other measures that could be complementary are those that reduce mixed packaging waste that normally cannot be recycled very well, like "coffee to go" cups or other disposable dishes.

Places that have a rather functional separate collection scheme in place that can absorb larger quantities of a particular waste (paper and cardboard, plastic packaging etc.) during the high season should expand it to tourism establishments the hospitality sector and reinforce it among tourists, too. One waste stream that clearly follows the number of overnight stays is glass and therefore a reinforcement of any available extended responsibility scheme (EPR) or other re-use principles for such packaging should be examined.

Besides activities dealing with biowaste including food waste and separate waste collection, the promotion of re-use activities shall also be kept in mind as promising to reduce tourist waste generation. Most identified international best practice examples connected to tourist waste management also refer to eco labelling and accompanying guidelines. Such measures can be efficient especially in big cities, where there is a substantial local population which could benefit from such schemes and contribute to their overall efficiency.


3. Mapping, identification and the involvement of key local stakeholders in the community-based development of eco-innovative measures

Once the initial assessment of waste arisings from tourism is done based on available data, various observations and conclusions can be made. The better and the more complete the data, the more reliable the trends are and therefore the initial input for further and more detailed insight and discussion. However, the question that emerges at this point is who to involve in this discussion and how to make sure that the further discussion would involve proper stakeholders and actors in both tourism and waste management value chains? These entities are the most important part of every single eco-innovative measure as they are the ones on the frontline, in front of the tourists but also local population. They are the first ones who could make a difference, as they are the first ones who come in touch with tourists. Furthermore, most of products that eventually become waste from tourism activities comes from them, whether as producers or retailers. From the policy and decision makers' point of view, this is an important follow-up step to the previous analysis of tourism and waste management trends, as they need to ensure that new measures and strategies match the needs, expectations, but also potentials and capacities of various local stakeholders, as well as expectations and targets defined by the local and regional authorities. The new measures and strategies must be based on mutual understanding in order to ensure fruitful and promising business models and other types of partnerships.

The inclusive and participatory decision making, consulting local stakeholders is on the rise and many local authorities started recognising it as a growing practice, as policy makers intend to seek to for more public participation in defining certain public processes and policies, especially those regarding environment³. Since the URBAN-WASTE project had a strong participatory approach from its very beginning when defining its objectives, the choice of such decision making was proven to be the key approach to a successful implementation of various measures and strategies. The reasons behind this conclusion lies in several benefits and advantages that such decision making brings to the table. While diversity in forms of different points of view, knowledge, assets and a whole range of values different stakeholders bring to the table, it also has specific benefits for the two sides – the policy makers and those affected by the future measures, strategies and policies in general.

3.1 Benefits of community-based decision making

Some of the advantages and benefits the authorities and the policy makers can achieve through such community-based decision making mainly reflect in the following characteristics of those decisions:

-  quality and durability of decisions is greater⁴; knowing the potentials and the capacities of local stakeholders and their motivations and expectations contributes to decisions and makes them more resistant to unexpected interruptions and possible failures

³ Glicker et al, 1999

⁴ e.g. Fischer, 2000; Beierle, 2002; Reed et al., 2008

- social consensus is more easily reached; stakeholders engagement increases public understanding of the issues and consequences of different choices and reveals both conflicts and agreements among different stakeholder groups. At the same time, open and inclusive stakeholder engagement, including representatives of different viewpoints, can sometimes resolve differences and build trust in the policy making process and therefore help secure public acceptance of decisions
- higher transparency and legitimacy; this is an advantage that goes very much in favour of local and regional authorities as it can ensure transparent and legitimate decision-making process and final decisions

Over the last 3 years, the URBAN-WASTE project also analysed some of the advantages and benefits that motivate local stakeholders to join such processes:

- equal treatment between small scale and large stakeholders and the possibility to have a say regardless the size of the stakeholder, influence it has or any other discriminatory aspect
- the feeling of ownership of a certain decision that directly affects the particular stakeholder
- the easy way to be a part of something innovative and participating in something that is coordinated by someone else; this is especially characteristic to smaller stakeholders who don't have enough capacities to run such campaigns and projects on their own
- contributing to a more sustainable tourism and making the destination more appealing to tourists and thus indirectly improving their businesses
- receiving attention through the decision-making process itself but also through increased visibility in communication materials, campaigns and dissemination



Testimonial on the motivation for joining a CoP from a business supervisor from Copenhagen

"It was good to hear presentations from three different event organisers on their experiences of creating greener and more sustainable festivals including practical experiences on what works and what not. Gathering different private and public stakeholders within the events sector can improve the service regarding permits, waste recycling activities but also suggestions for green mobility solutions such as shuttle buses or cycling and walking distances to public transport"

Overall, the most important advantage of such community-based approaches is the knowledge management and knowledge transfer. These two processes seek to organize, create, capture or distribute knowledge and ensure its availability for the participants. These are also the two key processes which allow the entire group to understand the trends pictured and described in the previous chapter.


3.2 Identification of local stakeholders and setting up the decision-making process


In case of URBAN-WASTE, the local stakeholder groups represented an entire variety of establishments and entities, including public authorities (which are not responsible for the policy but are affected by it), research organizations, formal and non-formal education establishments, companies and social enterprises, business support organizations and business associations, non-profit organizations, including associations, foundations, NGOs and civil society organizations.

Due to the variety of the project's pilots it was impossible to suggest a unique methodology for identifying appropriate stakeholders. The identification itself should be based on the trends and observations coming from the data assessment, it could be broken down into various waste streams, their origin and place of generation (beaches, urban areas, hospitality sector, green areas etc.), seasonality but also existing local and regional strategies that might need to be reinforced, public concern and another basis.

Community-based decision making can offer solutions to all challenges conventional decision making processes face, such as mistrust, low transparency and legitimacy, poor participation or the short lifetime of certain initiatives and strategies. Involving public and private entities in decision making also makes them more keen on participating as they feel a higher level of ownership.

What was common for all the 11 pilots was that the local stakeholders joined these initiatives from the two key value chains:

 The tourism value chain: representatives from restaurants, bar, hotels and other tourist establishments have been included. Those representatives had different functions and responsibilities including managerial ones or more specific such as environmental managers, social corporate responsibility managers, etc.

 Waste management authorities and companies, including both public and private organizations.

Worth mentioning is that running a survey among these target groups could give valuable input as well. The results from such inclusive surveys give very valuable input for the knowledge base which plays an important role in the initial

phase of the community-based decision making. It can give further explanations and enrich the findings solely based on tourism and waste management data. They can confirm but also discard many initially made presumptions, making the decision-making process focusing on what really matters. Based on the surveys done by URBAN-WASTE, bringing local stakeholders was proven to be necessary, as the three different group were quite coherent on whether they feel tourism affects waste production, as shown in Figure 12.

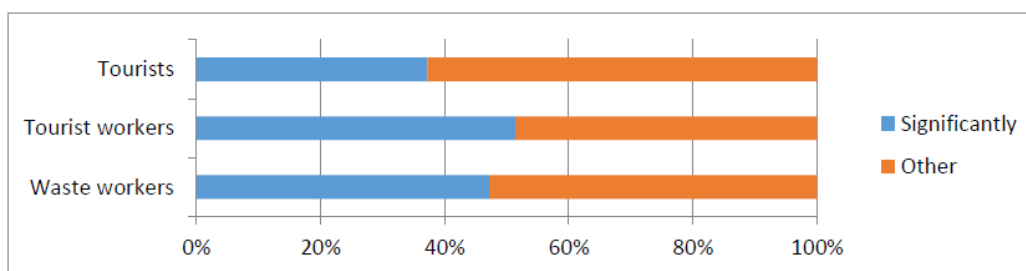


Figure 12. Share of respondents believing that tourism affects waste production “significantly”

This implies that in general tourists have a slightly different perception of the waste produced by tourism than tourist workers and waste workers. Based on this input, the survey led to further valuable discoveries in terms of what is exactly affected in waste management by tourism.

Figure 13 below shows some quite coherent concern over few impacts, which mainly confirm the observations from chapter 1. Increase in amounts of unsorted waste (and thus decrease in the share of selectively collected waste), increase of food waste, glass, plastic and other packaging waste were among those aspects which were identified nearly unanimously by both tourism workers and waste management workers.

Running a survey among the key stakeholder groups prior to setting up the decision making process itself can give valuable results which can further reinforce the observations and trends based on qualitative data and at the same time help with identifying the key stakeholders which need to be involved in the decision making.



Testimonial on the surveys from a hotel manager from Lisbon

“They were useful because listening to the voice of people who walk, visit and work in Lisbon on the daily basis can provide us with insight into problems, their suggestions and in general, what is out there to be improved. The CoPs that took place for the formulation of strategies were based on the reality and what really matters in Lisbon and not on ideas and solutions coming from other cities or countries.”

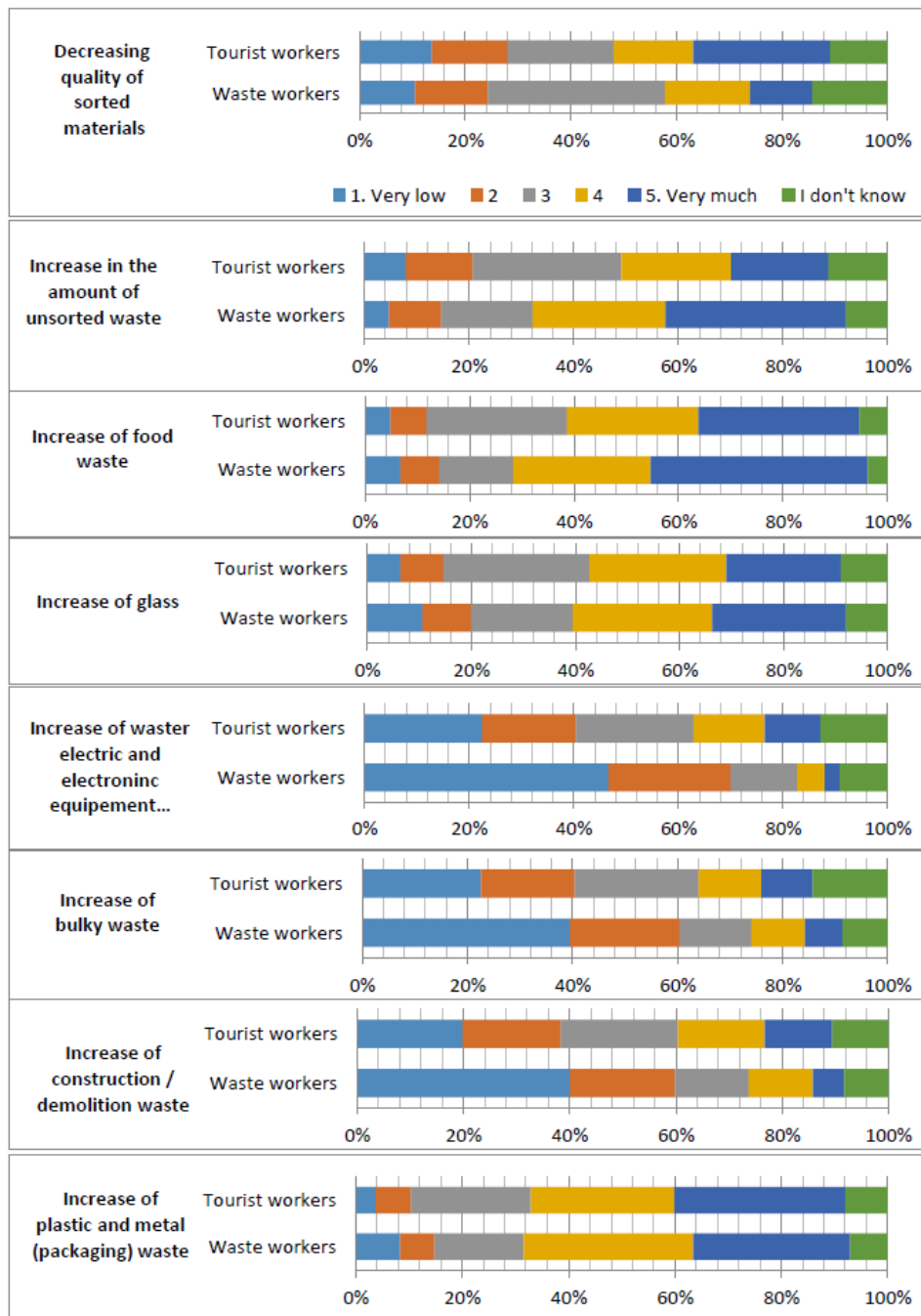


Figure 13. Main effect of tourism in waste production, according to waste workers and tourism workers

3.3 Running the decision-making process through Communities of Practices





The approach and methodology URBAN-WASTE used for the decision-making process and more specifically for the interaction with the local stakeholders, ensuring their equal participation and ensuring that they bring the most of their knowledge and experience to the table were called Communities of Practices (CoP). The literature defines CoP as a group of people who share a concern or a passion for something they do and deepen their

knowledge and expertise in this area by interaction and on an on-going basis. They are considered a spontaneous, natural phenomenon among people of a similar trade who occasionally meet to learn from each other, and are characterized by three key dimensions: mutual engagement, joint enterprise and shared repertoire.




Based on these features of a CoP, the cities initial task, already described in this chapter, is to identify and invite representatives of stakeholders to join a CoP and guide them through a participatory process, as well as present the initial knowledge basis. All this in order to provide a proper input and overview of waste management and its interaction with tourism processes. The general aim of these initial steps is to ensure that the participants of the CoP will be able to work equally, with the same level of awareness and knowledge on the issue, in order to be able to identify and define potential areas of improvement and furthermore, develop concrete eco-innovative measures.

Since such measures and strategies representing urban policies target citizens, businesses and even tourists as the end users, they all need to be considered experts able to contribute along with researchers and policy makers at the development of new strategies and policies.





Physical meetings aim at providing CoP members with information but also receiving their input and feedback on the following issues:

-  the current situation in waste prevention and management in the pilot area
-  specific challenges of the pilot area
-  existing technological and non-technological solutions, practices
-  potential prevention and management strategies.

The role of local or regional authority should thus be:

-  to schedule and organize the meetings of the CoPs
-  to provide and present information
-  to trigger a debate and exchange within the CoP

Few suggestions that could maximise the efficiency of CoPs include organising them along with other mass public events in order to increase the visibility and attract interest of some “not so obvious” participants or inviting an external facilitator to give the CoP a rather neutral setting, where none of the participants has a double role; nor the local/regional authority, nor the local stakeholders. The CoP events can also be organised in a number of different formats, depending on the number of participants, objectives, but also local culture, habits and in function of the atmosphere – formal or rather informal. Some of the possible setting include:









-  round table/panels presentations/workshops to discuss waste prevention and management challenges, objectives, strategies
-  laboratories with male and female adult and children based on role game about the sustainable use of resources and the importance of recycling
-  ‘green/info days/nights’ organized in the city with the collaboration of municipalities and the multidisciplinary team
-  focus group or interactive games with tourists (activities in the most touristic places, such as beaches, squares) to get feedback and input to the strategies






Testimonial on the different phases of the CoP from a hotel manager from Lisbon

“The first CoP was important for expressing the interest in participating in the project. The following ones were important to be able to follow each other progresses, to know the projects other cities are implementing and learn from each other based on our successes and mistakes. The meetings also helped not to lose focus, because if there were no regular CoPs the stakeholders would have been a little bit lost and without any information or support on the implementation phase. It was fundamental for us to follow the plans outlined in one of the CoPs and bring the project to a successful end.”

For optimal results and ensuring regular meetings and coherence the URBAN-WASTE project, based on its experience suggests at least 4 of these meetings with the following structures and objectives, as described in Table 2.

Table 2. The URBAN-WASTE model of organising CoPs and running the community-based decision-making process


First activity: public event to gather additional stakeholders and involve them in CoP	
Objective	<ul style="list-style-type: none">  Gather additional stakeholders and members of the CoPs  Explain the local/regional authorities' intentions and motivation behind the project  Present specific challenges/objectives of the area of concern
Type of event and logistical details	<ul style="list-style-type: none">  A one-day public open-air event/fair or at a big venue  The event could gather and host stands of other relevant organisations (e.g.: hotels with special environmental policies and practices, waste management companies, civil society organisations, environmental NGOs, environmental consultancies)  The programme should be a combination of informative presentations, explaining the authorities' intentions and motivations, as well as expected outcomes (so various stakeholders could understand whether it affects them or not), the principles of CoP and workshops with participation of different stakeholders on waste challenges and solutions of the pilot area with specific focus on tourism (this is to examine the interest of those at the event in such an exercise and get the initial feeling of their potential engagement)
Expected number of attendants	150
Suggestions	<ul style="list-style-type: none">  The event could be organized in conjunction with another event related with tourism, waste management or environmental management; this could ensure the participation of stakeholders who are a part of the two value chains described earlier on).  Leisure activities in conjunction (concerts, role games, etc.) can be considered to attract more people
Expected results	Final list of potential CoP members including around 50 participants (a list that includes participants directly invited to join a CoP and those who expressed their interest through the event)

Second activity: CoP workshop to collect input for the waste prevention and management strategies	
Objective	<ul style="list-style-type: none">  Collecting input and proposals for waste prevention and management strategies and creating the very first database of ideas
Type of event and logistical details	<ul style="list-style-type: none">  A half a day workshop, as an event for itself gathering representatives of different kind of organisations (research organizations, waste management companies, representatives of the tourism industry, environmental non-profit organisations and NGOs, environmental consultancies, civil society organizations)  This workshop would be the first session including a longer discussion which will be finalised during the next event.  The authorities should provide private physical space for the organization of the event  The programme could consist of: <ol style="list-style-type: none"> 1) discussion on waste management needs from the perspective of local authorities, tourism industry, civil society organizations 2) presentation of the qualitative and quantitative data on waste arisings, tourism patterns and survey results 3) presentation of existing good practices in waste management in the country or elsewhere in Europe

	4) debate for the proposal of waste prevention and management strategies
Expected number of attendants	50
Suggestions	<ul style="list-style-type: none"> • An external facilitator to foster the debate and structure the suggestions; an external facilitator also creates a neutral setting and puts all the participants in equal position • Methods should include those that can ensure equal participation, regardless the participants' background, previous knowledge, size of their organisations; possible methods include brainstorming, tour de table, working in smaller groups, etc.
Expected results	The first database of ideas and potential measures

Third activity: CoP workshop to select waste prevention and management strategies	
Objective	<ul style="list-style-type: none"> • Presenting a list of waste prevention and management measures analysed between the two CoP events and selecting those to be implemented by the responsible parties
Type of event and logistical details	<ul style="list-style-type: none"> • A one-day workshop, as an event for itself gathering representatives of different kind of organisations (research organizations, waste management companies, representatives of the tourism industry, environmental non-profit organisations and NGOs, environmental consultancies, civil society organizations); possibly the same participants of the previous workshop should attend. • The authorities should provide private physical space for the organization of the event • The programme could consist of: <ol style="list-style-type: none"> 1) presentation of the measures proposed by the public authorities and of related indicators 2) selecting 2-3 measures and discuss about implementation steps (including partnerships to be established)
Expected number of attendants	50
Suggestions	<ul style="list-style-type: none"> • An external facilitator to foster the debate and structure the suggestions; an external facilitator also creates a neutral setting and puts all the participants in equal position • Methods should include those that can ensure equal participation, regardless the participants' background, previous knowledge, size of their organisations; • The participants should start taking positions and defining their role in the potential measures
Expected results	Concrete measures selected and a follow up plan defining responsible parties

Fourth activity: presentation of the strategies and public signature of URBANWASTE PublicPrivate Partnerships	
Objective	<ul style="list-style-type: none"> • Presenting the selected measures to a wider public and the launch of the campaign/project • Signing ceremony of public-private partnerships (between the stakeholders and the authorities)
Type of event and logistical details	<ul style="list-style-type: none"> • A half a day conference/ceremony gathering all CoP members and representatives of public authorities • The programme could include: <ol style="list-style-type: none"> 1) Presentation of the strategies 2) Public signature of the partnerships 3) Symbolic activity marking the launch of the implementation phase

Expected number of attendants	50-100
Suggestions	 The event should contain a press conference in order to ensure visibility and also express the local authorities' intention to improve waste management and make tourism more sustainable
Expected results	Signed public-private partnerships and the launch of the campaign/project



Testimonial on CoP's benefits from a hotel manager from Tenerife

“Our hotel is traditionally involved in sustainable practices and this was an interesting project to participate in. It was a shame to see the food being thrown away, due to the Spanish law, so we decided to look at it as a useful resource. With the second (implementation) phase we positioned ourselves at the top of organic recycling on the island, not only because of the recycling itself but also from the marketing aspects towards our guests.”

4. Guidelines for gender equality and gender sensitivity in waste minimisation projects in tourist cities

Addressing gender in waste prevention and management was one of three specific objectives of the URBAN-WASTE project. It has, therefore, been a foundation for the project and consistent with the European Union's commitment to gender equality and gender mainstreaming across all its programmes. Gender considerations have played a significant part at all stages of the project, from the design of the original project to evaluation, which can, in turn inform future projects.

Figure 14 illustrates the ways in which gender has been embedded throughout the project, following the policy cycle used by the European Institute for Gender Equality to integrate gender mainstreaming.

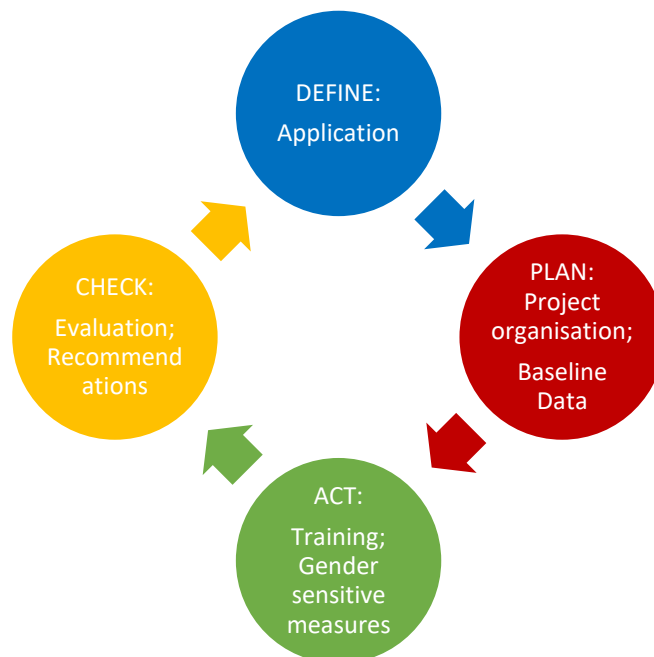


Figure 14. Gender sensitive policy cycle in Urban Waste - here

4.1 Why gender mainstream waste?

Waste management is one of the most masculine professions, in Europe as worldwide. While the EU does not have comparable data across Europe for waste management employment, the OECD has collected data for five of Urban Waste's case study countries, representing eight of the pilot cities. This finds that in the professions which collectively encompass water supply, sewerage, waste management and remediation activities, in 2017 men held 72% of the posts in Denmark; 77% in Greece; 78% in Portugal; 84% in Spain and 88% in Italy⁵.

⁵ OECD, 2017

Meanwhile, women consistently show a greater tendency to care more about minimising their and their households' waste, and are more ready to take action, as Table 3 demonstrates.



Testimonial on Gender mainstreaming from Santander

"The simple fact of taking into account gender equality in Urban Waste project-related activities is a way of influencing the organisation and the stakeholders."

From global data to the results of the Urban Waste project, research suggests that there is a link between countries or organisations which have greater gender equality and sensitivity and those which have better environmental performance⁶. The EU, drawing on the pioneering example of Norway in the early 2000s, promotes greater gender equality in the boardroom, based on evidence that more diverse decision-making bodies make for more resilient and effective decisions (European Commission, 2016). But apart from making good business sense, women and men have a legal right to equal opportunities within the EU and this principle informs EU decisions across the board, from employment to public participation in decision making to ensuring that policy impacts (for example pollution) do not discriminate against one group more than another.

Table 3: Gendered attitudes and behaviour towards avoiding waste in EU member states (Eurobarometer, 2018, Flash Eurobarometer 2015)

	Reduces/separates waste	Reduces consumption	Avoids food waste by only buying what is necessary*	Avoids buying over packaged goods	Drinks tap or bottled water	Reducing waste is not important
Female	73%	59%	85%	65%	70%	12%
Male	68%	52%	81%	59%	63%	20%

4.2 What did the baseline data tell us about gender sensitivity in the pilots?

At the start of the project, it was apparent that the level of gender awareness was, in most cases, low, and there were many misconceptions and over-estimations about the extent of gender equality in participants' own countries and organisations. This outward confidence was not usually borne out by EU and UN data, nor by the data provided (or not provided because not available) by most of the pilot cities themselves. A majority of pilots was dominated by male decision makers and data on stakeholders was often not gender disaggregated. But it was the case that the pilot organisations were less male dominant compared to waste management departments represented in the initial survey (75% of these were dominated by male decision makers). The survey also revealed that female waste organisation employees were more likely to prioritise behavioural strategies for minimising waste (3 of their top four selected) compared to men who chose operational strategies for 3 of their top 4.

⁶ Buckingham, 2011; Ergas and York, 2012; Urban Waste 2019

4.3 How participating pilots became more gender aware

By the end of the **three-year** Urban Waste project, women were more likely to hold the most senior post in pilot cities, seven had increased the proportion of female stakeholders and while one pilot city had increased only to 20% and one held their proportion of women steady at 31%, four other pilots had more than 50% of their stakeholders' women. Nine of the eleven pilot cities reported changes in their practices to become more gender equal and/or aware and it is interesting to note that, with two **exceptions, there** is a tendency for those cities which are most gender aware to have made the greatest gross CO₂e savings, while those who have made the least savings tend to have made the least progress on gender equality.



Testimonial on Gender mainstreaming from Nicosia

“We found the gender approach very useful. Men and women must have equal opportunities to participate and fulfill their different tasks in the workplace. The Urban Waste project helped us to become more familiar with this.”

All pilot cities were involved in the initial whole day training which formed the basis for the first mutual learning exercise in the 1st year of the project, and most participated in subsequent shorter trainings and mutual learning. Nine pilot cities participated in the gender webinars and found them useful. The first gender webinar, and one session at a mutual learning, focused on communications which led to pilot cities paying attention to how their messages would be received by men and women. For most cities this involved ensuring that the language and visual imagery was inclusive of all genders, being sure not to exclude or to stereotype any one gender. For a couple of cities, the communication focused on trying to appeal to male tourists who, notably, are less likely than women to be responsible with their waste. A fuller list of guidelines and recommendations is provided in Table 4.



Testimonial on Gender mainstreaming from Lisbon

“It’s important to keep addressing and raising [gender equality] to ensure equal treatment...this might raise awareness in establishments that don’t yet provide equal opportunities for all.”

Table 4. How to include gender in all projects and recommendations for doing so

How to include gender in all projects	
Define	<ul style="list-style-type: none"> All data provided/requested should be broken down by gender: employment at all levels; people who the policies will impact; target audiences etc.
Plan	<ul style="list-style-type: none"> When making or revising any plan, ensure that there is a diversity of women and men in groups making decisions (including women and men of different ages, ethnicities; with and with no children; with and with no disabilities. This is true professionally and for participation/consultation exercises. Ensure that the timing of any meetings, and the places where they are held, are equally accessible for all women, as well as men. (For example, avoid times when children would be dropped off or picked up from school.)
Act	<ul style="list-style-type: none"> Provide gender equality training for all staff Provide specialist training on gender for specific staff (e.g. gender sensitive communication; gender budgeting) Ensure that all projects are ‘gender proofed’. That is, assess the likely impact of all projects/initiatives on different women and men. Gender balanced panels/stakeholders will improve this.

<p>Check</p>	<ul style="list-style-type: none">  Evaluate the impact of projects/initiatives on women and men (e.g. who ended up doing more work?)  Have projects/initiatives helped you to achieve gender equality?
Specific recommendations for gender mainstreaming waste activities from pilots	
<p>Overall objective</p>	<p>Examples provided by pilot cities</p>
<p>Communications – make sure that your messages do not reinforce stereotypes (for example that decision makers are men or that women should be doing all the domestic waste disposal). Equally important for visual images as for language.</p>	<ul style="list-style-type: none">  Having noticed that open air festivals created a lot of litter, and that young men were the most likely to litter, Copenhagen used female and male ‘trash talkers’ at festivals and similar events to be able to communicate equally with men and women participants. Syracuse has already adopted this approach and found it useful.  Kavala is considering messages in their communication campaigns to ensure that they inspire and encourage men and women equally, while Santander has ensured that all the language used in their communications campaigns is gender sensitive.  An awareness-raising campaign was carried out in Santander in collaboration with Ecovidrio to promote the recycling of glass by supporting research into breast cancer, with a special container located in an emblematic square of the city.
<p>Staffing – take every opportunity to enable women to have an equal opportunity to be promoted as managers and decision makers with a plan to achieving parity. Jobs in each area of waste, from administrators to operatives, should be equally accessible to women and men.</p>	<ul style="list-style-type: none">  Ponta Delgada has introduced a requirement for all external waste collection and street cleaning contracts to have a minimum percentage of jobs that will be held by women.  Tuscany has family friendly policies in their offices (e.g. flexible hours/working from home) which makes it easy for parents to combine caring work with paid professional work, and does not therefore discriminate against carers of young children.  In Santander, the company providing waste management services provides gender training and awareness-raising within the company's training plans.  In Copenhagen, the politicians have agreed a target of a maximum 10 percentage points difference between male and female employees regarding directors/CEOs, heads of departments and head of units.
<p>Consultation and public participation – ensure that the conditions (e.g. times, places) and publicity encourage women and men from a range of situations to take part.</p>	<ul style="list-style-type: none">  Tenerife is searching for equal numbers of women and men to be speakers for congresses.
<p>Equipment – ensure that waste equipment is manageable by women and men equally.</p>	<ul style="list-style-type: none">  When implementing the food tracking device employees in the Nicosia partners used plastic bags, which enabled women and men with different lifting capabilities to manage the waste.  Nicosia also provided small bins with two wheels for recyclable glass when trialling recycling advisors in tourist establishments. As a result, everybody was able to use and transfer/move this kind of bin.
<p>Strategic – consider undertaking a strategic review of policies and organisational operations to ensure that they benefit from gender equality and awareness.</p>	<ul style="list-style-type: none">  Tuscany has been prompted to think about the possibility of including a gender strategy in regional waste planning.  Santander is recommending that they follow the general strategy maintained throughout the project (see Table 4.2), bearing in mind gender equality in all tasks. For example, in convening stakeholders, in focus groups, in Communities of Practice, in communication campaigns, in data collection, statistics, surveys and surveys.

5. Defining the eco-innovative strategies and their monitoring

The work resulting from the previous chapter and the outcomes from stakeholders' involvement should contain and provide the basis for future eco-innovative measures. The outcomes should reflect the positions, capacities and interest that have been identified within the city or region towards potential measures to be implemented. However, they still need to be well defined and shaped ensuring that they are accompanied with necessary monitoring principles which would further allow proper evaluation and impact assessment. As the objective of these Guideline is to provide city managers with the opportunity to recreate certain measures, further develop them or even develop new ones, the Annex II related to defining eco-innovative measures contains 21 examples of eco-innovative strategies that were developed within the URBAN-WASTE project's framework. They are categorised by theme, but also according to four categories: regulatory, economic, technological and informational measures. They are also grouped regarding the type of city they can be implemented: dense urban cities, coastal small municipalities etc.

Regulations and exiting European or national policies are very important aspect. This is why having a member of the CoP or someone following this process with a policy background is always a good idea. European regulation is a common framework for all the EU member states when developing national waste management strategies. However, every country has its own national waste management policies that might differ from one to another. Besides, national regulation provides local authorities in charge of waste management with general objectives and guiding principles, but waste management plans are mainly conducted at local scales. They also evolve periodically and differently according to the different countries. In any case, it is difficult to identify any serious barrier. However, some national or regional frameworks are more favourable in for prevention strategies, instruments for waste producers to sort or reduce their waste and similar.

*It is highly recommended
To keep an eye on the existing
policy frameworks, both national
and European, as they might hinder
some ideas and potential measures.
This is why a part of the CoP or
Someone following the process of
drafting measures should have a policy
background in order to ensure that
measures are coherent with
various existing legislation.*

5.1 Creating business models and setting up public – private partnerships

The URBAN-WASTE project decided to apply “Sustainable Business Models” that include the environmental and social impacts of the measures together with the economic ones. Assessing and highlighting the costs and benefits, but also the required competences, the timeline, existing opportunities such as policy measures, and the social and environmental impact (such as waste diversion, reduction of greenhouse gases, or positive outcomes for the staff) might contribute to make the measures more appealing to the key players and potential partners.

Generally, waste prevention and management strategies imply cost savings opportunities due to the fact that less waste generated and thus less costs occur when dealing with it. Nevertheless, in order to reduce the potential waste generated, often happens that one must incur in other expenses making it mandatory to identify

the economic balance of the measure. Specifically, a cost-benefit analysis (CBA) is a policy assessment method that quantifies in monetary terms the value of all consequences of a policy to all members of society. More generally, CBA applies to policies, programs, projects, regulations, demonstrations, and other government interventions⁷. In this context, the proposed tool attempts to apply the concept of CBA to the implementation of specific strategies. It is presented in Table 5.

Table 5. CBA template quantifying in monetary terms the value of all consequences of a policy to all members of society

ECONOMIC COSTS	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Capital costs				
Operating costs				
<i>Material purchase</i>				
<i>Transportation</i>				
<i>Labour</i>				
<i>Other</i>				
Total economic costs				
ENVIRONMENTAL COSTS	YEAR 1	YEAR 2	YEAR 3	YEAR 4
GHG emissions				
Resources used				
<i>Water</i>				
<i>Electricity</i>				
<i>Raw materials</i>				
Total Environmental Costs				
TOTAL COSTS				

ECONOMIC BENEFITS	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Revenues				
<i>Sales of recovered/recycled materials</i>				
<i>Compost</i>				
Cost savings				
<i>Landfilling</i>				
<i>Incineration</i>				
Total Economic Benefits				
ENVIRONMENTAL BENEFITS	YEAR 1	YEAR 2	YEAR 3	YEAR 4
GHG emissions abated				
Resources saved				
<i>Water</i>				
<i>Electricity</i>				
<i>Raw materials</i>				
Total Environmental Benefits				
TOTAL BENEFITS				

NET COST/BENEFIT (TOTAL BENEFITS – TOTAL COSTS)				
--	--	--	--	--

Of course, for more short-term measures and strategies than long-term ones that span over several years, the CBA can be adapted to monthly analysis, too. In short terms, the different cost and benefit centres can be explained as it follows:

 Capital costs

These costs refer to the initial investment and setup costs of implementing a given measure. The promoter of the measure will incur in these expenses only once, at the beginning of the implementation of the measure. It is

⁷ Boardman, A. E., Greenberg, D. H., Vining, A. R., Weimer, D. L. (2011). *Cost-Benefits analysis: Concepts and Practice*. 4th Edition.

also referred as fixed costs and could be, for example, the installation of fountains to promote drinking water or the setup of infrastructure for the separate collection of different waste fractions.

Operating costs

These refer to the recurring costs of maintaining operations. They can be categorized in material purchase, labour and transportation. It must be considered that the implementation of some measures implies material purchase exclusively, where for others they would imply labour and transportation costs, as well. This will depend greatly on the nature of the measure selected. Thus, four sub-categories of operating costs have been included in the Table 3.

- *Material purchase*; related to the acquisition of materials necessary for the normal operation of the measure implemented.
- *Labour*; related to the personnel costs that the promoter of the strategy must incur in order to implement it, whenever personnel must be allocated specifically to carry out the task.
- *Transportation*; when the strategy requires transferring good from one location to another, related to reuse measures mainly.
- *Other*; like communication campaigns, fees collection or software maintenance, for instance.

GHG emissions

Correspond to the environmental costs in terms of GHG emissions produced by the implementation of a measure. This cost is expected to be very low, since the measures developed aim to the reduction and improved management of waste generated, rather than to generate more waste. However, even if it is at a low scale, the implementation of some measures will involve the generation of waste and, thus, GHG emissions associated to the treatment of these. For example, even if the use of “doggy bags” contributes to the reduction of food waste, these will become waste after its use and will need to be treated. Nevertheless, these costs will be difficult to calculate and are likely insignificant.

Resources used

Similar to the costs associated to GHG emissions, the implementation of some measures will involve the use of resources in terms of water, electricity and raw materials. Following the same example like above, these costs would relate to the environmental costs of producing doggy bags as of water, electricity and raw materials use. Likewise, it is a rather complicated task to calculate these values.

Apart from the environmental costs mentioned above (GHG emissions, water, electricity and raw material use), there are many other environmental effects not considered in this analysis for the sake of simplification, like biodiversity loss, land occupation, water erosion, nitrogen and phosphorus eutrophication or deforestation pressure, to name a few.

Revenues


Refer to direct benefits obtained through the implementation of a given measure. For instance, if restaurants carry out on-site composting of food waste and decide to sell the compost obtained to an interested stakeholder, this would be considered a direct benefit.

Cost savings

These correspond to the costs avoided by implementing a measure. Since most, if not all, measures relate to waste prevention or management in order to reduce the amount of waste generated, it can be considered that a common cost saving to all of them is the cost associated to landfilling or incineration. In other words, if less waste is generated due to the implementation of a measure, there will be less waste needed to be treated. The costs of landfilling or incineration vary greatly from country to country, and even from municipality to municipality. In this sense, each municipality should calculate such costs internally.

 GHG emissions abated

In contrast with the GHG emissions produced by implementing a given measure, these correspond to the GHG emissions avoided in relation to the waste reduction or prevention strategy. Typically, the costs of mitigating GHG emissions from waste are based on landfill methane as the baseline.

 Resources saved

Through recycling and reutilisation strategies the production of new goods is reduced and, thus, resources needed for its production in terms of water, electricity and raw material use.




The previous few exercises such as the CoP, policy overview, initial financial feasibility should result at the end in a more concrete format that defines not only the measure or strategy itself but also the roles of different entities and above all a format that materialise and makes a certain measure or strategy official. In all case, they should refer to an operative plan that details the implementation of the measures. The operative plan and its elements are presented in Figure 15.



Figure 15. Crucial parts of an operative plan which defines the measure itself

As previously highlighted, a successful strategy to tackle waste from tourism activities relies on the active involvement of the various actors in the local tourism value chain. Many of these players are private entities (restaurants, hotels, and other service providers). To secure their engagement, it is recommended to use several instruments, such as public-private partnership, and business models.

A public-private partnership (PPP) is a cooperative arrangement between public and private organisations, that can take several forms and be applied to various measures. The URBAN-WASTE pilots used such an approach by mainly for the following reasons:

-  Strengthen the stakeholders' involvement, by making it official through a signature
-  Clarify the roles and responsibilities of the different players
-  Overall enhance the success of the implementation

PPP can serve several purposes, and their role varies from a case to case. In some of them, such partnerships can be more focused on a general support in communication or organisation of activities, while in other cases they could be more related to specific actions.

PPP might be legally defined by a national framework, as it is the case in France where it is as a process which is ruled by the administrative law and defined as a type of contract involving private subcontractors for the financing or management of a public equipment, like the management of a highway. In this case, it is recommended to name them differently, e.g. "Charter of Commitment" and give them the form of voluntary agreements in which private partners agreed to implement specific measures.



Testimonial on the business models and PPP from an event organiser in Copenhagen

"Such documents made it possible to have a more holistic view on sustainable events. While sorting might not be so sexy itself, connecting it with sustainability and CO₂ savings bring more possibilities for green branding. The partnership also made it clear what waste fractions are important to recycle and prevent. Such an approach and having a European framework created a greater awareness."

The signature of such PPP can be done during a public event bringing together decision makers from the different pilots. Doing so will contribute to secure the engagement of the different players, but also will present their commitment in a positive and rewarding way. An example of such a declaration, signed between the local or regional authority can be seen in Figure 16 which comes from Metropole Nice Cote d'Azur, as a "Charter of Commitment".

Charte d'engagement pour lutter contre le gaspillage alimentaire



La Métropole Nice Côte d'Azur, sous l'impulsion de son président Christian Estrosi, poursuit ses démarches en faveur de la protection de l'environnement et du développement durable au travers de nombreuses initiatives innovantes et reproductibles. L'objectif est de construire, en collaboration avec les acteurs locaux, une collectivité exemplaire.

Elles relèvent aussi du projet « Urban Waste » financé par le programme européen de recherche et développement Horizon 2020 qui cible spécifiquement les villes touristiques. La Métropole Nice Côte d'Azur a adhéré à ce projet et souhaite y participer par des actions concrètes visant à réduire la quantité de déchets produite par les touristes. Parallèlement cette démarche s'inscrit également dans les objectifs de la Loi de Transition Energétique qui impose notamment une réduction de 10 % de la quantité des déchets produits entre 2015 et 2020.

Au sein de la Métropole Nice Côte d'Azur, la population touristique représente près de 5,7 millions de visiteurs par an, leur production de déchets n'étant par définition pas négligeable elle doit être maîtrisée par des actions spécifiques de sensibilisation des touristes à la bonne gestion de leurs déchets en essayant, autant que faire se peut, de limiter en amont leur production de déchets.

Dans le cadre du projet Urban Waste et suite à l'élaboration d'un plan opérationnel des restaurants volontaires et soucieux de lutter contre le gaspillage alimentaire s'engagent à mettre à disposition de leurs clients des "doggy bag"

Le restaurant,



certifie avoir reçu ce jour un kit de 100 "doggy bag".



**MÉTROPOLE
NICE CÔTE D'AZUR**

Ce projet a reçu des fonds dans le cadre du programme européen de recherche et d'innovation Horizon 2020 sous la convention de subvention no 690452



Figure 16. An example of a PPP in a form of a Charter of Commitments

5.2 Monitoring the implementation phase

The previously discussed business models and public-private partnership should make the involved parties understand their roles and responsibilities in the implementation of a certain strategy, as well as give the directions for its implementation.

The implementation of different measures and strategies in the 11 URBAN-WASTE pilots followed a simple set of steps as summarized in Figure 17.



Figure 17. The proposed steps in monitoring the implementation phase





Monitoring the measures is necessary to assess their impact and efficiency, and possibly to reallocate resources or modify the implementation. Monitoring requires an initial assessment of the situation before implementing the measure, to establish a baseline and be able to assess the improvements after the action is implemented, as described in Chapter 2.

It is also important to clearly define the monitoring system before implementing the action, to make sure that the initial situation is properly assessed in a consistent way, making then comparisons possible with the situation after the implementation of the action. It also allows to list and identify the data needed for their calculation, and to develop an adequate system for data collection and reporting.

The indicators have to be selected according to the objectives set, the possibility of data collection, and the operational needs (e.g. they might offer the possibility to assess the efficiency of the measure and to identify possible difficulties). Examples of indicators will be provided in part XXX where different types of measures are introduced.

Along with the indicators, it is important to define a protocol for data collection and reporting, ensuring that all participants report them in a consistent manner. The time frame of data collection should also be defined, to ensure sufficient precision in the results. If the collection of data requires too much resources, it is possible to resort to sampling, making sure that the measurement points are sufficient and done at the right times to be representative of the general situation.

For many measures, it is likely that data collection will have to be done by participating stakeholders. It is therefore useful to secure their commitment to do it in a proper way. To do so, several actions can be listed:

-  Specify the reporting requirements in the PPP or in the charter engagement
-  Provide a clear monitoring protocol, templates, and/or a reporting system to the participants
-  Provide adequate equipment for data collection (e.g. Food Waste Tracker⁸)
-  Organise sampling exercises



Testimonial on the monitoring phase by a hotel manager in Tenerife

“The monitoring was an important part of the implementation phase, because it helped us not only to make sure we succeed in it but also to verify and prove that the decisions we took to join this project were a good idea. As a hotel manager it therefore helped me to review some of our practices and turn them not only greener but also more profitable in terms of business. And when the monitoring is supported by an external organisation which also provided us with the Food Waste Tracker, the monitoring becomes even easier. I only had to provide a simple training for my staff.”

⁸ The Food Waste Tracker is a device that was developed by the Swedish University of Agricultural Sciences which was deployed in several hotels and restaurants among the 11 pilots. It served as a device that was measuring biowaste coming from both food preparation and leftover food. Hotels and restaurants were using it for different kind of meals (buffets, a la carte etc.) primarily for assessing the quantities but also for adapting the portions. The results were later used for the overall impact assessment.

6. Measuring the environmental, social and economic impact of eco-innovative strategies


The aim of this task is to provide quantitative and qualitative data that show how waste prevention and improved waste management practices deployed in a particular city or region have performed in comparison to the baseline scenario. The comparison of impacts of the “baseline” with “eco-innovative strategies” implemented is based on the data collected during the monitoring phase. This chapter will explore how to assess the sustainability performance of certain measures implemented over a given period of time. Assessment of this performance, including its environmental, social and economic features is important not only for the local or regional authority to prove its invested resources, human or financial, but also to get back to the local stakeholders who made these things happen and provide them with quantitative and qualitative results of these measures.

Some general observations and conclusions that can be mentioned already now is that simple and visible measures involving direct hands-on action were generally rated high in regards to potential for awareness raising. Cases where the training for staff were considered irrelevant, reflects that measures are perceived as rather simple and appropriate for a given establishment. Regarding job satisfaction and the perceived meaningfulness of measures can vary considerably. According to respondents’ comments, low ratings for these indicators can imply a low job satisfaction, but may also reflect that some work routines during the implementation of the measure were not noticeably different from the normal situation. In terms of some general economic observations, most of the costs related to measures were less than €2,000, in case of the URBAN-WASTE project, apart from the few cases where investment in container facilities and other larger equipment was part of the implementation



6.1 Understanding the comparisons and methodologies

This chapter will present some of the most remarkable results the URBAN-WASTE pilots achieved highlighting those eco-innovative strategies which worked well and are worth suggesting as a good practice. In order to understand where the results come from, one need to understand certain methodologies and assumptions used in the assessments. The assessments were made based on environmental, social and economic indicators.

The environmental impact assessment is limited to Global Warming Potential. Global warming potential was chosen because of its relevance high public and institutional interest, and as it is one of the most pressing environmental issues of our time. In order to be able to translate the environmental impact to GWP, three scenarios were looked at when tracking different waste streams’ pathways. The functional unit, which quantifies the performance of a measure is used as reference unit. In line with the goal and scope of avoiding waste and improving waste management strategies the functional unit was defined as 1 kg of waste prevented or 1 kg of waste send to recycling instead of incineration or landfill.

-  Material recycling: scrap to be recycled at end of life is sent to material recycling. Secondary material produced from scrap is credited for the substitution of primary material so as to distribute burdens

appropriately among the different product life cycles. These subsequent process steps are modelled using industry average inventories.

-  Energy recovery: In cases where materials are sent to waste incineration, they are linked to an inventory that accounts for waste composition and heating value as well as for regional efficiencies and heat-to-power output ratios. Credits are assigned for power and heat outputs using the regional grid mix and thermal energy from natural gas. The latter represents the cleanest fossil fuel and therefore results in a conservative estimate of the avoided burden.
-  Landfilling: In cases where materials are sent to landfills, they are linked to an inventory that accounts for waste composition, regional leakage rates, landfill gas capture as well as utilisation rates (flaring vs. power production). A credit is assigned for power output using the regional grid mix.

The social impact assessment was based on an online survey (included in Annex I) derived from the guidelines for Social Life Cycle Assessment (SLCA) from the United Nations Environmental Program (UNEP & SETAC, 2009). The method was limited to a smaller number of mostly qualitative indicators relevant to the current context, i.e. working hours, employment, training, perceived job satisfaction and meaningfulness in relation to the measures, within the stakeholder categories workers and managers.

The economic impact was assessed on the basis of costs [€] related to the implementation of a particular measure. Specifically, material and equipment investments, as well as cost savings opportunities, were assessed. The economic data was collected from the same survey as the social data, with expenditures split into pre-set intervals.




The measures that were implemented in URBAN-WASTE pilots ranged from waste prevention, increase of selective collection to awareness raising and environmental certification. Unfortunately, there were measures which could not be assessed through LCA, therefore not yielding any quantitative data. The scope of the measures covered various topics such as prevention, reuse, waste collection, sorting and recycling, and reflect the state of the art of waste disposal/minimisation in given cities and regions. The overview of the various measures can be found in Figure 16.

Prevention, reuse and recycling of organic waste	Prevention of disposable products	Increasing selective collection
“Doggy bags“ for food waste prevention	Substitution of disposable products in hotels	Collection points for used cooking oils
-	-	-
Food waste prevention at buffets and restaurants	Promotion of potable tap water	Waste sorting hotel rooms
-	-	-
Collection of biowaste at hotels and restaurants	Swap markets	Recycling advisors for tourist establishments
-		-
Donation of excess food from restaurants and hotels to charities		Installing sorting bins in public and touristic places
-		-
On site composting at tourism establishments		Providing waste sorting instructions in different languages
		-
		Providing information on waste sorting for cruise ships

Figure 16. Measures assessed by this chapter

Figure 17. gives the comparative analysis of GHG emissions saved per kg of waste treated or prevented. It might not be easy to interpret it easily and therefore the Guidelines will break it down to the different categories, as presented in Figure 16.

It is important to know that the results and achieved saving presented in Figure 17 disregard the number of restaurants or hotels, or any other beneficiary and presents the average savings per kilogram of waste prevented or treated. The results are therefore heavily dependent on the baseline scenario and they reflect several important factors and indicators:

-  The share of separate collection in a given city or region
-  The treatment options deployed in a given city or region (landfilling, material recovery/recycling, incineration or other energy recovery options)
-  The origin of the primary material or item (the impact of its transport)

The social and economic assessments will be described along with the measures and will complement them when making conclusions on the most appropriate measures for different cities or regions. Each measure will be allocated a colour code for the difficulty vs. benefits it implies. Green is used for measures with satisfying impacts, yellow for those with an impact which could be higher with some improvements or if implemented in a different setting and red for measures which didn't result in sufficiently positive impacts.

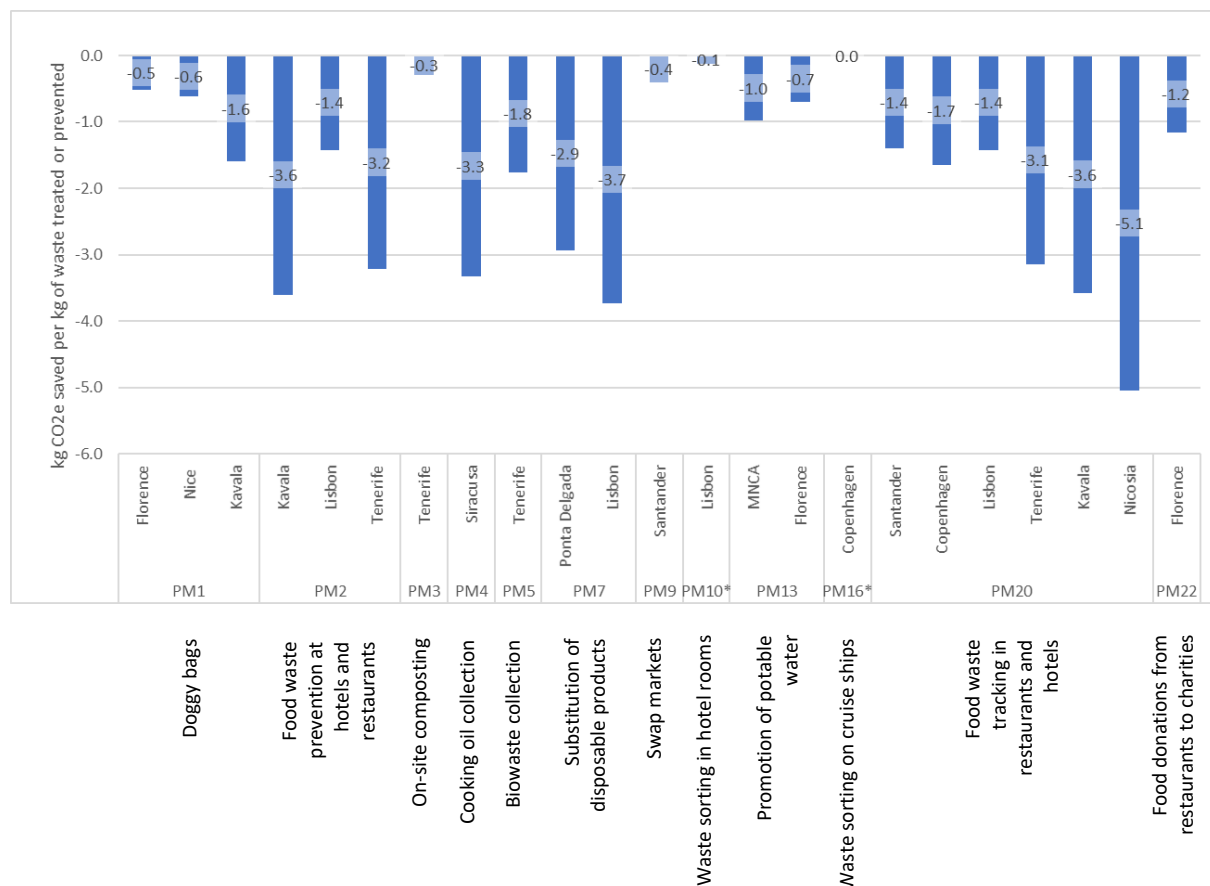


Figure 17. GHG emission saved per kg of waste treated or avoided

6.2 Prevention of disposable products

Tourism activities generate much short-life, disposable products that can be easily replaced by more environmentally sound solutions. Actions promoting the substitution of disposable products and the promotion of potable water can all avoid the production of plastic products and plastic waste, which have a high GWP. These actions also tend to lead to economic savings. This is especially the case with plastic soap containers and plastic bottles. When it comes to plastic soap containers, a hotel in Lisbon and another one in Ponta Delgada replaced them with reusable dispensers. Florence and Metropole Nice Cote d’Azur (MNCA) promoted potable drinking water in order to cut plastic water bottles going to waste. Santander tried to include a wider array of waste types, rather bulky, WEEE and paper and organized its first swap market. Table 4 summarises the impacts these measures had in the mentioned pilots.

Table 4. Summary of prevention of disposable products pilot measures

PREVENTION OF DISPOSABLE PRODUCTS	
Substitution of disposable products in hotels	
Description of the measure	340 reusable soap/shampoo dispensers were distributed in Lisbon and 213 in Ponta Delgada replacing single-use plastic containers. It was assumed that each dispenser is used for one year.
Environmental impact	This measure can be considered quite good in terms of GHG savings per kg of waste avoided or treated - 3.7 kg CO ₂ eq in case of Lisbon. The fact that Ponta Delgada is rather remote and the transport of the goods, as well as their treatment, results in higher GHG emissions makes this score slightly lower in the Azores – 2.9 kg CO ₂ eq. Lisbon’s score is in fact the second best among all the pilot measures, as it avoids waste generation and is a capital city, meaning the distances for the good and waste, later on, are shorter. So, in terms of plastic waste prevention this pilot measure scored better than the one in Florence and Metropole Nice Cote d’Azur (MNCA), which will be analysed later.
Social impact	The feedback coming from the staff, as well as managers, were rather positive as this measure didn’t increase anyone’s working hours, as the time necessary to change the single-use bottles was the same like refilling the dispensers, if they were empty. However, the hotel in Lisbon received certain complaints from the guests, as around 8 guests during the implementation phase preferred having single-use bottles. The meaningfulness of this pilot measure was rated rather high, from both managers’ and staff’s point of view. Women were estimated to undertake the majority of the implemented pilot measure; on the beneficiary side, women were less bothered with the replacement of disposable bottles than men as the hotel received significantly less requests.
Economic assessment	The hotel in Ponta Delgada didn’t report any change in costs, while Lisbon saw a decrease. “It becomes cheaper with the refills than the individual disposable bottles. The biggest cost were the dispensers which were purchased for all the rooms in the hotel”, the Lisbon hotel reported. The expenses were €500 in Ponta Delgada and €2,000 - €5,000 in Lisbon. The savings coming from less shampoo and soap wasted were estimated to less than €500 in Ponta Delgada and above €10,000 in Lisbon.

Promotion of potable water	
Description of the measure	Florence and MNCA put the highlight on their 3 water fountains and promoted them in order to cut the production of plastic water bottles. It was assumed that each reusable bottle would be refilled 7 times before being disposed of.
Environmental impact	The GHG savings of each kg of waste avoided by this pilot measure were among the lowest of them all, with only 0.7 kg CO ₂ eq in Florence and 0.98 kg CO ₂ eq in MNCA. The reason why MNCA scored better is because it has a worse recycling performance of plastic waste than Florence and therefore the GHG savings were better.
Social impact	This pilot measure didn't really change anything in terms of social impact, as the water fountains existed already; however, this measure was recognized by city managers and also staff as a measure that can increase the awareness. MNCA decided to install 4 new water fountains during the project.
Economic assessment	n/a
Swap markets	
Description of the measure	Santander organised the city's first swap market during the World Environment Day where the city wanted to boost the reuse principles in the city. Since the swap market included all types of goods and items, the functional unit for the environmental impact and the GHG savings was decided to be a kg of a book produced from virgin paper.
Environmental impact	The first swap market in Santander ended in 128 kg of goods and items swapped what resulted in a GHG saving of 0.41 kg CO ₂ eq per kg of waste avoided.
Social impact	This measure had a rather high social impact, as it scored 5/5 on the awareness raising potential scale and being a measure that is "out there" visible to the public. This measure does not require any specific training, but does result in extra working hours in case the swap market is not organized on a weekday. However, the city can also work on empowering the local population to start organising such events on their own. In any case, it was reported that the local authority in Santander liked the measure a lot and decided to turn it into an annual event.
Economic assessment	The costs of materials and equipment were €500 - €2,000 and represent communication materials and certain logistics. Unfortunately, the returns are not significant, almost non-existing but such events contribute to the awareness raising among the local population as it boosts the community engagement and allows them to recuperate a perfectly functional item instead of buying a new one.

The environmental impact assessment therefore shows that the baseline scenario plays an important role in the potential success of a measure. Florence and MNCA, being large municipalities and regions, which receive a lot of tourists and have a rather hot climate throughout the year, decided to go for the promotion of potable water and try to avoid the generation of plastic waste. The overall impact was remarkable, as the measure itself would have saved 41.7 t CO₂ eq and 50.4 t CO₂ eq if they took place all year long. However, once this result is aggregated

to the local reality, the waste management options and treatment as well as the GHG emission associated with the production of refillable bottles we can see that the GHG savings for the kg of avoided waste is not higher than 1 kg CO₂ eq. In case of Lisbon and Ponta Delgada, a city like Lisbon can achieve high savings considering the large number of hotels and being well positioned, close to the site of production of the reusable goods, therefore minimising the transportation's environmental impact. Ponta Delgada also took advantage of good environmental performance of reusable dispenser, but it was the distance that made it less efficient.

In terms of social and economic impact, these measures had a very high awareness raising potential as they were visible to the tourists and locals. So, this can be considered as an added value. Most of the measures did not result in extra working hours except the swap market as it was the local authority that organised it. Economically, most of the measures were using existing equipment, such as the water fountains or required moderate investments of few thousand Euros. However, even those investments resulted in returns as reported in the case of the hotel in Lisbon. The economic and social assessment also makes the promotion of potable water from water fountains an easy way to reduce environmental impact as it doesn't require much resources to sustain it, especially not human or financial resources (unless installing new water fountains).

6.3 Prevention, reuse and recycling of organic waste

The measures presented here have the objective to prevent biowaste production, whether in form of kitchen scraps or edible food waste. Some measures also refer to the recovery of food waste, in case it gets generated. The underlying principle behind these measures was the fact that biowaste has a comparatively larger GWP than other waste streams, which means that it represents a significant potential for cutting down GHG emissions. The Table 5 below summarises them in terms of environmental, social and economic impact and also gives a colour code, that indicates the replicability potential and overall potential achievements.

Table 5. Summary of prevention, reuse and recycling of organic waste

PREVENTION, REUSE AND RECYCLING OF ORGANIC WASTE	
Doggy bags	
Description of the measure	Doggy bags allow guests to take the uneaten part of the meal with them preventing it from becoming food waste at the restaurant. This measure does not only avoid food waste generation but can substitute another meal and thus prevent production, preparation and eventually more food waste.
Environmental impact	This measure requires a production of doggy bags. However, since the GWP potential is only 65 g CO ₂ eq, it is nearly negligible. In fact, the assessment shows that the overall GHG savings are roughly 5 times bigger than the production of doggy bags. This impact assessment assumes that at least half of the leftover food contained in the doggy bag is actually eaten, as it is difficult to track what happens with the food once it leaves the restaurant. This measure is a perfect one for describing the importance of the baseline scenario, as the pilots who implemented this measure – MNCA, Florence and Kavala have three completely different biowaste treatments. Although the results after 2 weeks of implementation report that Florence (210 kg) and MNCA (477 kg) saved much more food waste than Kavala (180 kg), the Greek city achieved much more remarkable savings in GHG emissions, as the food waste quantities that were avoided would have ended up in a landfill. Since landfilling biowaste has much bigger GWP than anaerobic digestion in Florence or composting and incineration in MNCA, the GHG savings per kg of avoided

food waste in Kavala were 1.6 kg CO₂eq, compared to 0.5 kg CO₂eq and 0.6 kg CO₂eq in MNCA and Florence respectively (it's worth mentioning that Florence has a GWP less intensive biowaste treatment, thus bigger saving in MNCA). The comparative analysis is shown in Figure 18.

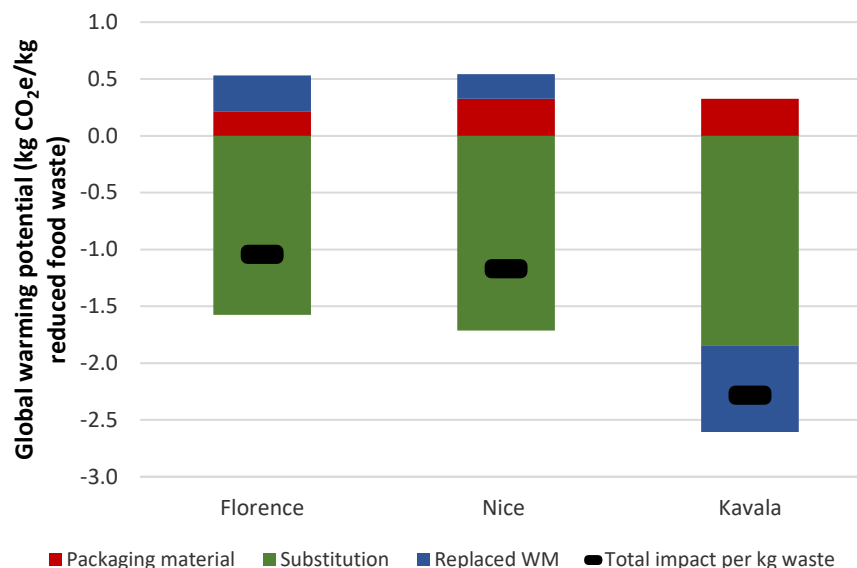


Figure 18. GWP potential of doggy bags in three participating pilots

Social impact

All participating restaurants reported that the workload did not change while implementing this measure. The training the staff received and the achievements and public acceptance even led the managers to consider further prevention options. The public acceptance contributed to a high score of awareness raising potential, 4.7/5, as they felt as a part of the solution. The public acceptance and awareness raising potential even increased in cases where the restaurants actively worked on their promotion. In terms of gender, the decisions to implement doggy bags came from men, however it was women who constituted the staff who had to implement the measure.

Economic assessment

n/a

Food waste prevention at buffets and restaurants

Description of the measure

Other measures tackling food waste were implemented: hotels serving surplus food to staff and competing with each other in biggest savings in Copenhagen or including food scraps and leftovers in the preparation of other dishes, optimising portions or rearranging the appearance of food in the buffet (using convex rather than flat tray to keep the appearance of a full tray) in Tenerife, among others.

Environmental impact

This measure did not require any material or any other equipment to be purchased or produced, except in Lisbon where the pilot included communication material. It was mainly relying on changing practices and innovative solutions. This is why both Kavala and Tenerife only had GHG savings. The baseline scenario was proven to be important again, as Kavala comes out as the most efficient with 3.6 kg CO₂eq per kg of food waste avoided, due to the fact that their food waste was diverted from landfilling. Tenerife's GHG saving

	<p>per kg of food waste avoided was 3.2 kg CO₂ eq and Lisbon's 1.4 kg CO₂ eq as Lisbon sends its food waste to anaerobic digestion plant and Tenerife composts or landfills it.</p>
Social impact	<p>The staff reported certain difficulties in the beginning what resulted in a lower job satisfaction feedback, 3.3/5, but it improved as the staff got used to the new practices and once they understood the reasons for the changes. On the contrary, managers were more satisfied with the new approaches.</p>
Economic assessment	<p>In most cases the initial costs were below €500 except in case on one restaurant in Tenerife which had costs of up to €5,000. However, what matters for the economic assessment are the savings. In some cases, the savings were below €500 mainly based on the avoided food waste, while there were cases of savings above €10,000 including savings gained by reducing and adjusting the food preparation. One hotel in Copenhagen reported saving of €1,050 per day.</p>

On-site composting at tourism establishments

Description of the measure	<p>One hotel in Tenerife went for an on-site composting practice, turning its own biowaste into compost which ended up in the hotel's gardens. Prior to the measure this biowaste was partly sent for an off-site composting with the rest sent to landfill.</p>
Environmental impact	<p>During the 5 months of the implementation, 34.57 kg of biowaste per day was added to the compost, composting the total of 3,071 kg of biowaste (out of 14,284 kg produced in that period). This resulted in 1,151.7 kg of compost. The overall GHG savings were only 0.33 kg CO₂ eq which is not high compared to other measures. This is mainly thanks to the avoided landfilled quantities and transportation savings as off-site composting was replaced by on-site composting. This measure could achieve much more if implemented in a city or region with worse waste management performances.</p>
Social impact	<p>Since only one hotel implemented this measure it is difficult to assess the social impact. Yet, he reported that the necessary training was quite burdensome in terms of time necessary for it.</p>
Economic assessment	<p>Of course, the equipment made the biggest share of the financial burden, up to €5,000, however the manager said that he preferred to wait for the assessment on the long term.</p>

Biowaste collection at hotels and restaurants

Description of the measure	<p>Six hotels and restaurants were involved in this measure, all in Tenerife. The overall objective was to install a separate collection scheme for the biowaste produced at these establishments.</p>
Environmental impact	<p>In order to assess the environmental impact, it was assumed that the produced compost would replace mineral fertilisers. One positive GWP comes from the transportation of this biowaste, as there was no selective collection before, so new routes had to be implemented. During the 5 summer months of implementation, 4.2 tonnes of biowaste was collected and sent for composting. The net reduction of this action was calculated to 1.1 kg CO₂ eq per kg of separately collected waste. The main benefit of this pilot measure is the large quantity of waste that can be separately collected. However, it could be difficult</p>

	to expand this measure much more due to the limitations in available capacities for its treatment.
Social impact	n/a
Economic assessment	n/a
Food donation from restaurants and hotels to charities	
Description of the measure	Six hotels in Florence led the food donations to charities measure which saved a total of 795 kg of food and 72 litres of beverages of the 5 months long implementation phase. Still, it was assumed that 20% of that donated food would end up as food waste as it wouldn't be entirely consumed.
Environmental impact	The donations had positive GWP impact from the transport, however it is fairly low compared to the reduced impact of the prevented food waste. Since donations replaced anaerobic digestion in case of Florence, a very small positive GWP impact occurred (as anaerobic digestion would replace fossil fuels). In any case, food donation in Florence resulted in a slightly lower GHG saving per kg of donated food compared to average GHG savings of other food prevention measures.
Social impact	This measure scored incredibly well on the social perspective. High job satisfactions and a lot of visibility and media coverage attracted ranked this measure quite high in terms of social impact. The feeling of giving charity also contributed a lot in this sense. Extra time that was necessary for this measure, 10 to 20 hours per week in one of the locations. Trainings were organized but they weren't rated as very necessary.
Economic assessment	Most of the establishment who implemented the measure said that no costs occurred or that the necessary equipment already existed. One establishment did spend between €500 and €2,000 on bottles, bags and food containers. The savings were low as well, since it was all about charity.

The results obtained from the impact assessment confirmed the initial expectation that food waste and biowaste prevention in general can score quite high savings in terms of GHG emissions. The comparison makes very much sense as the functional unit was always a kg of food waste that was featured in these GHG savings. The GHG savings ranged from 0.5 kg CO₂ eq to 3.6 kg CO₂ eq per kg of food waste. The differences were caused mainly by the material or equipment necessary for the execution of the measure. The best savings were therefore obtained in measures which were based on adapting the preparation of food waste and innovative and creative solutions to avoid food waste. Diverting biowaste and food waste from landfilling is always a good idea and positive trends were observed, however limited due to transportation. Another important observation is related to groups of cities who implemented the very same measure, the same way, yet had quite different achievements. These occurrences were often solely caused by the different baseline scenarios and how biowaste is treated in those cities and regions. Cities and regions that rely heavily on landfilling can reach impressive savings if they divert food waste from landfills. The same can be concluded in case of cities that rely on incineration, as it was the case in MNCA. An interesting fact is that cities and regions that use anaerobic digestion for biowaste treatment actually had a reduction in GHG savings compared to other cities without anaerobic digestion. This only reinforces the importance of a proper baseline scenario assessment.

On the other hand, nearly all the measures scored high in terms of social impact. This was caused by job satisfaction, the feeling that the measures make good visibility and promotion for these stakeholders and the fact that most of them didn't require much training or adaptation. Some of them did result in few extra hours of work, though. Economically, savings can be made in optimizing the portions and therefore wasting less waste, even up to €1,000 per day like in the case of Copenhagen. Some measures, especially the one that included charity donations, caused nearly no savings, but were considered very satisfactory due to the measure's charity nature.

6.4 Increasing selective collection

Bigger urban areas or metropolitan areas including capitals such as Lisbon, Copenhagen, Syracuse or Nicosia, already have existing selective collection due to the size of their territories or population that needs to be provided with such a system. Therefore, such cities and regions decided to go for the expansion of the selective collection system onto tourism establishments through sensibilisation and putting the same selective collection service on disposal for tourists. Some measures did not have enough quantitative nor qualitative data to be compared below and therefore they are left them out from Table 6.

Table 6. Summary of measures on increasing selective collection

INCREASING SELECTIVE COLLECTION	
Collection of cooking oils	
Description of the measure	Syracuse on the island of Sicily in the historical area of Ortigia which boasts with restaurants. Prior to this measure there was no such collection installed. The assessment in based on one collection point used by 23 restaurants (representing roughly 50% of all restaurants in the area) with the monitoring phase of two weeks. The collected oil would be transformed into biodiesel and industrial soaps instead of disposed of as residual waste at the local landfill.
Environmental impact	The measure resulted in 25 kg of cooking oil collected during the two weeks. The environmental assessment included the necessary transport of the collected oil, as well as the environmental assessment of the produced biodiesel and its combustion as a fuel. In fact, these two were the only positive contributors to GWP. Based on the landfill diversion as well as fossil fuel replacement, 1 kg of collected cooking oil resulted in GHG savings of 3.33 kg CO ₂ eq.
Social impact	Since there was no collection prior to this measure the number of working hours for the staff increased, but less than 10h per week. The training was rather straightforward and the measure didn't require any major briefing. Overall, the local pilot reported high job satisfaction, as it was a new practice in the pilot.
Economic assessment	While the savings from implementing this measure were below €500, mainly as the result of food waste reduction, the initial investment was rather high, up to €6,000.

Waste sorting in hotel rooms

Description of the measure

This measure had the objective to increase separate collection of waste in hotel rooms and hotels' common areas. 3 hotels in Lisbon deployed this practice weighing the separately collected waste before and after the implementation of it. The targeted fractions were paper, plastic packaging, glass and organic waste.

Prior to the implementation, the selective collection rate at the hotel was 65% and 74% afterwards. Of course, the residual waste decreased from 35% to 26%. The measure reached positive net GHG emission savings of 0.33 kg CO₂ eq. However, good selective collection performance resulted in GHG savings of 0.22 kg CO₂ eq already prior to the measure's implementation making this increase only slightly more impactful. Since the treatment options for different waste streams differs and the GWP of their treatment is different from one stream to another (the GHG emissions of landfilling glass is pretty neutral, while this is not the case for biowaste), it is worth looking at Figure 19 in order to understand where do biggest savings come from.

Environmental impact

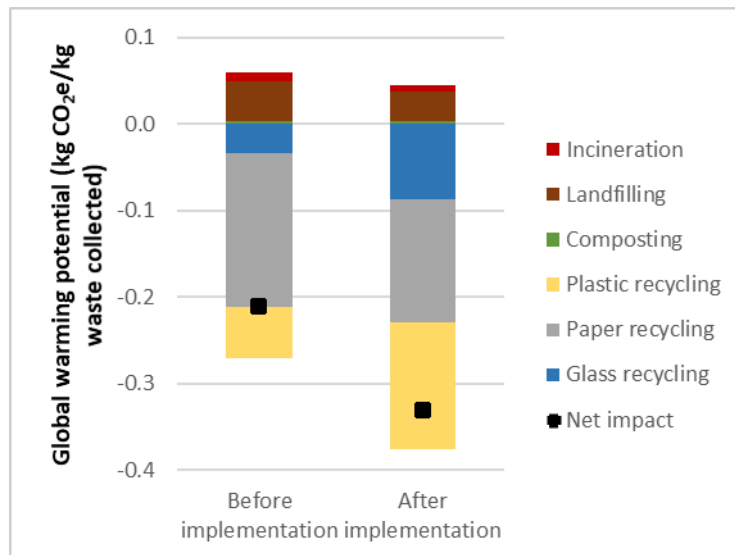


Figure 19. GWP potential of selective collection in hotels

Social impact

The workload increased slightly but the number of employees remained the same during the implementation phase. 6-10 employees received training and in general, the increase of selectively collected waste fractions, as well as the high rate for meaningfulness of the measure from both the staff and the management's perspective made the management consider other options for waste prevention in future.

Economic assessment

The labour costs increased slightly during implementation of the measure, but the expenses occurred in obtaining different waste bins and bags stayed low, below €500. The measure did result in a decrease of residual waste but these savings were not estimated.

Recycling advisors for tourism establishments	
Description of the measure	Nicosia and Ponta Delgada trained around 70 people combined who were responsible for visiting and consulting various tourism establishments (bars, restaurants, hotels) about waste prevention measures and potential improvements.
Environmental impact	Deploying this measure locally inspired the management of four establishments to consider further options for waste reduction measures such as changing the packaging of some products and improving the procurement practices.
Social impact	While the local authority in Ponta Delgada used its existing force, the one in Nicosia hired 2-5 more employees for the implementation of the measure. Both the management and the staff had rather high job satisfaction (4.2/5) as the measure enhanced the dialogue between the authorities and the local tourism establishments. The gender assessment showed that most of the management which was responsible for making decisions were men, while the recycling advisors were nearly balanced.
Economic assessment	Apart from hiring recycling advisors in Nicosia, only one location, also in Nicosia, had expenses on equipment in the range of €5,000 - €10,000.

Sorting bins in public spaces	
Description of the measure	Syracuse had the idea to increase the number of bins for selective collection in public spaces and areas frequented by tourists.
Environmental impact	n/a
Social impact	During the implementation of the measure the workload decreased for waste management workers as there were more bins and therefore larger capacities. This also reflected in their job satisfaction (4/5).
Economic assessment	The labour costs increased as there were more bins to be emptied within the selective collection scheme. These expenses were between €5,000 - €10,000. The economic savings were difficult to be estimated, but it was assumed that the increase of selectively collected waste would result in some incomes for the waste management company.

Recycling advisors in the tourist establishments are not an active waste minimising act in itself but they contribute a lot by enhancing and focusing on behavioural change. The social assessment already showed the meaningfulness and potential for awareness raising. However, the success of the initiative depends on how many people receive the information and to what extent the message of recycling is translated into concrete action by the third person. The other measures, more concrete and quantifiable included the expansion of the selective collection scheme. However, due to the short implementation phase, the environmental impact was difficult to assess. However, providing tourists with the same services like locals could be backed up by the fact that still, more than half of the tourists do want to recycle and dispose of their waste selectively what could improve the selective collection in cities and regions, especially from sources currently untapped such as accommodations and other tourism establishments.

7. Replication potential of URBAN-WASTE strategies

The cities and regions, which participated in URBAN WASTE, have tested and implemented a range of measures developed in the project. Several of those have had already a positive impact on the general waste management in the respective locations. URBAN WASTE also hopes to contribute to a wider positive impact of waste management in European cities, not least with this report providing insights into the activities and results of the project. In this section, we will shortly outline the different situation of the pilot cities, the idea of replication and discuss some selected measures, to derive a simple framework for choosing measures to replicate.

7.1 Learning from whom?

Although the measures should be generally applicable, their implementation in the project refers to the specific context in each pilot. The 11 pilots represent very different situations. Figure 20 below shows the URBAN-WASTE pilots in terms of tourism (overnight stays) and waste generated compared to 500 other cities in Europe. All pilots are in the higher end of overnight stays per inhabitant. Only Nicosia is below the European median, which might have to do that the city is primarily a day-destination, with most of the accommodation facilities being along the coast of Cyprus.

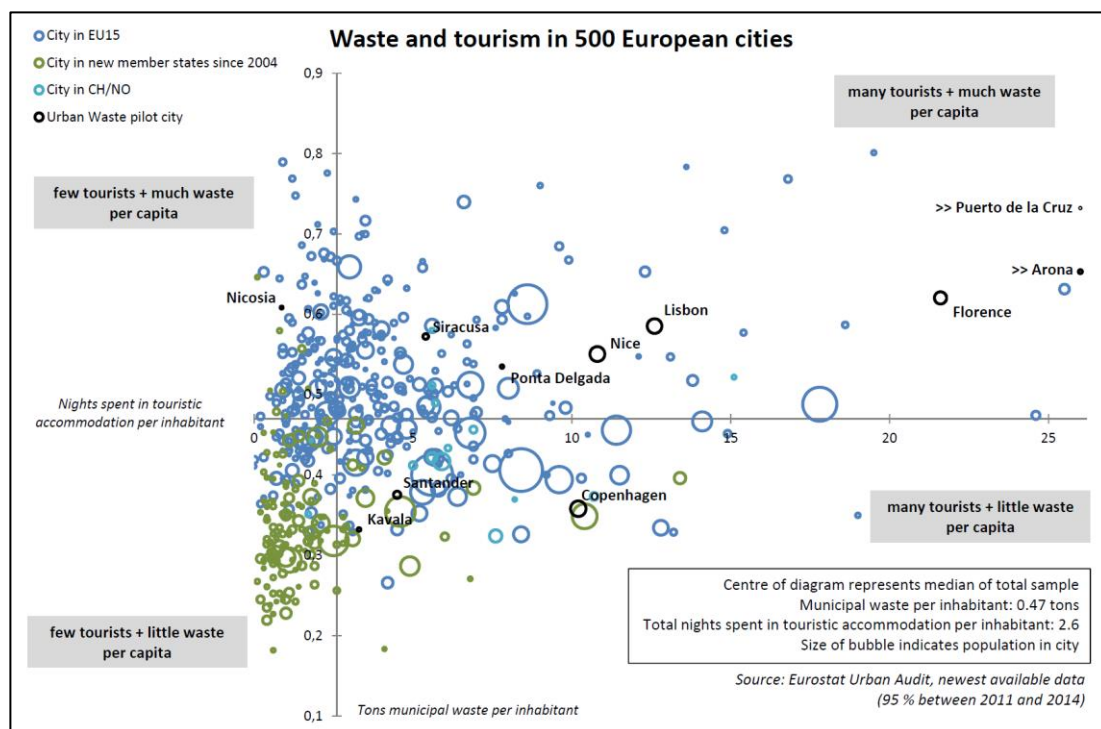


Figure 20. Waste and tourism in 500 European cities

7.2 How to replicate?

The above Figure 20 showed that there is a high number of cities in Europe in similar situations to our pilot cities and therefore a high potential to implement similar solutions. However, knowledge transfer as a basis for replication can have very different character⁹, including transplantation, learning and inspiration. A one-to-one transplantation of measures from one city to another is seldom possible. Cities need to be in a very similar situation, sharing a closely related context. In the context of URBAN-WASTE, this means e.g. similar regulatory framework, stakeholder constellations or city structure, tourism and waste.

However, knowledge transfer also implies softer means. Despite differences between the pilot cities and regions, learning from each other's experiences had offered well-organised opportunities for exchange (e.g. Communities of Practice). This led e.g. Santander to establish a Swap market following the example of Copenhagen. This requires a significant commitment of both, the 'supplier' of the solution and the 'demander', putting them in the position of the other to understand drivers, limitations and opportunities in play.

Finally, knowledge transfer can also have the looser character of inspiration. The context might be completely different, meaning that detailed steps cannot be replicated in the same way. But inspiration can spark a general discussion on ambitions and of what is possible. General goals and achievements of other cases inspire to develop solutions fitting the local context. For cities interested in solutions developed and implemented in URBAN-WASTE, inspiration will be the most obvious first contact, while moving up the knowledge transfer ladder from inspiration to learning when finding and diving into concrete cases.

7.3 What to replicate?

In previous chapters, the regulatory obstacles and the local implementation have been summarised. An important observation is, that several measures have been implemented in combination to increase their impact. Let's take the example of "Food donations to charities". Many pilot cities experienced regulatory obstacles related to sanitary rules on food donations, e.g. regarding temperature or edible dates. The local authority usually has no direct influence on these rules, limiting the potential for replication in these cases. However, e.g. Copenhagen and Florence both were able to work with it. In Florence, a wide range of stakeholders were included: region, municipality, city, regional resource recovery agency, trade associations, welfare/social associations and hotels. In Copenhagen, the measure was combined with the measure on Eco-Events. This combination allowed a limited, but very effective way to work with food donations.

Another example is "Sorting instructions for tourists". There are obviously no regulatory obstacles. However, it is difficult to qualify the impact of such soft measures, thus it was left out from chapter 6. Several of the pilot cities applied the measure, but Florence took it a step further by not only translating instructions, but combining print and online products and include interactive content in the latter, increasing the potential impact of the measure by taking advantage of multiple platforms/media.

In Santander, sorting glass was accompanied with a campaign fighting breast cancer and in Ponta Delgada the deployment of recycling advisors was embedded in a Partners Programme from the Municipal Association, giving out sustainability certifications. The latter also showed the importance of the recycling advisors showing up at various tourist establishments and providing advice on-site. To evaluate the impact of many measures, longer monitoring is therefore necessary. For cities looking for replication, the first step needs to get inspiration, before mapping their own possibilities and opportunities for deeper learning or even transplantation of measures.

⁹ Janssen-Jansen, Spaans, & van der Veen, 2008

Some measures might be easier to implement as the municipality has all the decision power and necessary resources are not so demanding. Other measures are more complex as they rely on the cooperation with private actors or require bigger infrastructure investment. However, those might also be the measures with the highest potential to enable a positive change. This was also reflected in the pilots, where e.g. 9 out of 11 stated that they would like to work on partnerships between hotels and charities for reuse initiatives. A measure which requires a close collaboration between several actors, which though can directly reduce waste and increase social benefit.

In any case, a city or a region interested in replicating any of the measures or developing its own must not ignore some crucial steps prior to defining or adapting measures – the local reality reflected in baseline scenario and the assessment of tourism trends and occurrences.






8. Conclusion

Cities and regions in Europe are full of good practices, some of them considered even best practices, replicable solutions and ideas. These practices, solutions and ideas must go beyond the limits and borders of where they were created. Recently, waste generation and solutions necessary for its management became increasingly important and a general public concern is on the rise, too. From being something that happens outside of people's sights, somewhere in a landfill or an incinerator waste management became something that we live alongside – whether in a festival, or on a beach, or in a sporting event etc. This why something that could be called “applied waste management” is becoming more and more a necessity – looking for waste management solutions for specific settings and circumstances.

The URBAN-WASTE project showed that the tourism industry, including its hospitality sector, goods and services, even the means of transports used by tourists is a rather unexplored area when it comes to applied waste management. As it was already mentioned, the number of tourists often do not outnumber the local population, except yearlong destinations and tiny coastal resorts. This means that in most cases city managers do not need to “invent hot water” for tourists. Although providing tourists with hot water would be appreciated from their side when on holidays. Circular economy as a concept has already reached many industries and processes in Europe and it is now the tourism's turn to adhere to it. What this project showed, with 11 most different cities and regions, is that there is a will for working together on improving and adapting waste management practices to different tourism processes. The amount of knowledge, know-how, skills and examples exchanged and tested over the 3-years period helped these cities and regions to be out there, famous for what they did and showing the way forward with these Guidelines.

These Guidelines are not only a proof that certain improvements could work and achieve certain GHG savings but also that the local community is happy to see such improvements. The social impact assessment that was explained in these Guidelines shows that such strategies, easily comparable with an adventure or an experiment, bring together the local community and makes it stronger and more aware of the problems around them.

Implementing a successful strategy to tackle waste generated by tourism can be achieved by adopting the following principles:

-  Establishing a precise baseline scenario is necessary to understand how tourism impact waste generation and management, and identify where priorities should be put;
-  Developing a collaborative approach with the different local stakeholders of the tourism sector (HORECA, tourism information, organisation managing touristic spots...) is essential to have a clear and concrete overview of the opportunities and barriers to be expected when implementing the measures. It is also a pre-requisite to ensure their involvement for the actual implementation of actions, for which they are likely to play an active role;
-  Adopting a gender mainstreaming approach for the initial assessment, the decision-making process, and the definition and implementation of measures in order to ensure that they target all tourists and to optimise their efficiency;
-  Securing the involvement of the local players by signing partnerships and commitments, and establishing detailed operative plans with a precise repartition of responsibility and adequate resources. Giving them visibility through public events and media coverage is also very important, as well as a consistent follow-up of their involvement;
-  Defining and implementing a proper monitoring system allowing to assess the results of the measures and involving the organisations implementing the measures is mandatory to optimise the general

strategy and improve the strategy. Assessing the environmental, economic, and social impact is also a good way to promote more tangible results to decision makers, potential participants, and the general public.

However, we don't only want to offer guidelines and ask cities and regions to copy the URBAN-WASTE approach, we also want to look for others who are doing similar things already, differently, for a common goal! A sustainable resource management. This is why we wanted to use URBAN-WASTE as a platform that acknowledges all these efforts that are being done across Europe. We want to honour these cities and regions, but also other local and regional stakeholders who recognized the challenges of sustainable resource management in tourism and who are already using various strategies, initiatives, European projects and other tools and platforms for dealing with these challenges. The URBAN-WASTE project wants to go beyond its own 11 pilot cities and regions and honour all those local and regional authorities who decided to go beyond conventional. The project launched the Charter of Commitments for Sustainable Resource Management and Circular Economy in January 2018 and now has names of 27 signatories.

ANNEX I: Eco-innovative Measure Forms



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 restaurants¹⁰. 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.

¹⁰ 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 bag¹¹

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 are¹² :
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton
- If commercial waste is 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.

¹¹ Source: (<http://www.preventiondesdechets.org/le-gaspillage-alimentaire/>)

¹² 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.¹³
- 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.¹⁴
- 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.¹⁵

¹³ (<http://www.preventiondesdechets.org/le-gaspillage-alimentaire/>)

¹⁴ *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/>)

¹⁵ <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.¹⁶
- 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.¹⁷

¹⁶ 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>)

¹⁷ “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 (unrestricted list):

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.

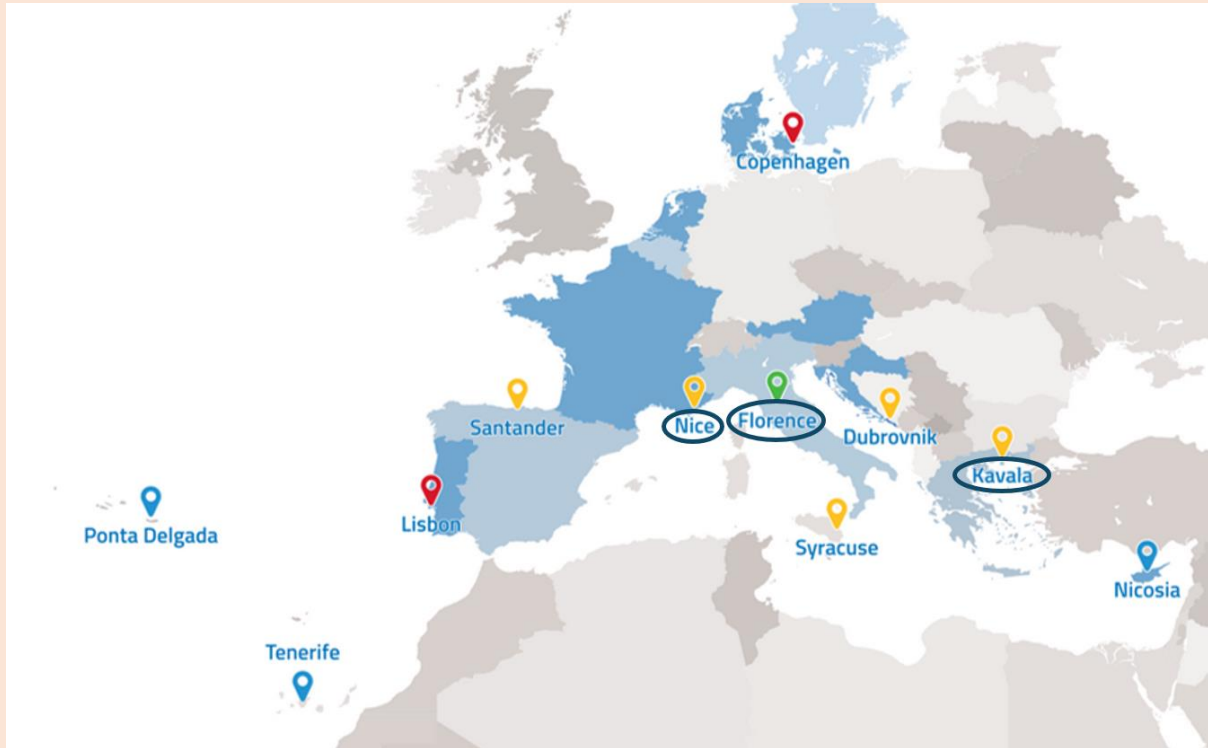
Quantity of waste produced and number of customers can be registered **continuously** (every day every week) or **randomly** (one day per week or every day one week per month).

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 1.900 distributed for **7 restaurants**. In the three cities, doggy bag were offered for free, one condition to easier the setting the measure.

The relative success of Nice Metropole in terms of restaurants participation comparing to the two other cities 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 Metropole of Nice.

Moreover, deputy major of Nice Metropole in charge of waste showed its **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**. In Florence, a video promoting the measure was also produced with the support of deputy mayor for the environment, but its dissemination took place in late 2018.

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**



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 canteens¹⁸. 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)

¹⁸ 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>)

- 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
- 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 are¹⁹:
 - 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 costs²⁰

Financing options

- The prevention sign can be provided by the URBANWASTE project partners, following the design and the visual identity of the project.

¹⁹ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

²⁰ *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 waste²¹.
- “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.²² 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.

²¹ Case study: Conscious consumption, respects environment. EWWR Guide of Good practices.

(http://www.ewwr.eu/docs/case_studies/EWWR_Guide_GP_EN_LD.pdf)

²² 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/>)



On-site composting at tourist establishments

Guidance for setting up monitoring indicators

Quantity of food waste generated (using weighing scales) per week/month/year BEFORE/AFTER the implementation of the action/measure [Kg]
Adherence of the public and other hotels/restaurants to the prevention measure/programme (percentage of new subscribers to communication campaigns, number of new participants, etc.) [%] or [Number]

Two groups of indicators are to be set (unrestricted list):

3. The first group aims at monitoring involved stakeholders:
4. The second group aims at monitoring waste production in involved restaurants and the performance of the measure:

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.

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.²³

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

²³ 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>)

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 day²⁴. 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 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.

²⁴ *Vermicomposting* (FAO) (<http://www.fao.org/docrep/007/y5104e/y5104e08.htm>)

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)²⁵. Moreover, as for electric composters, Trafalgar's Bistro and Sweet Obsession bakery in Vancouver installed a \$25,000 composter²⁶.

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 are²⁷:
 - 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 €/ton²⁸.

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 €/ton²⁹.

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

²⁵ Source: <https://www.bristol.gov.uk/bins-recycling/buy-a-compost-bin>

²⁶ Source: <http://vancouver.sun.com/news/staff-blogs/25000-composter-helps-vancouver-restaurants-reduce-waste-stream-by-98-per-cent>

²⁷ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

²⁸ Source : FAO (http://www.fao.org/fileadmin/templates/AMIS/images/Market_Monitor/fertilizer_prices.pdf)

²⁹ 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*

public 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 level³⁰

- 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.

³⁰ *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_HotelsSostenibles_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 compost³¹.
- 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.³²
- 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.³³

³¹ 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>)

³² 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>)

³³ 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

- Quantity of food waste generated and disposed (using weighing scales) per week/month/year BEFORE/AFTER the implementation of the action/measure [Kg]
- Quantity of food waste (using weighing scales) sent to the composter per week/month/year [Kg]
- Quantity of compost (using weighing scales) produced per week/month/year [Kg]
- Number of restaurants/hotels involved in on-site composting per year [Number]

Two groups of indicators are to be set:

5. The first group aims at monitoring involved stakeholders:
6. The second group aims at monitoring waste production in involved restaurants and the performance of the measure:

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.

Additional performance indicators



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 treatment³⁴.

Revenues

³⁴ Source: <http://civitas.eu/measure/optimising-collection-used-cooking-oil>

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€/ton³⁵.

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).
- 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).

³⁵ Source: <https://www.greenea.com/en/market-analysis/>

- 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 level³⁶

- 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.
- 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.

³⁶ *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_HotelsSostenibles_CAT.pdf)

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 city³⁷.
- 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 initiative³⁸.
- 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 trucks³⁹.

³⁷ Barcelona Promotes Kitchen Oil Recycling By Giving Out Free ‘Oilpots’ (<http://inhabitat.com/barcelona-promotes-kitchen-oil-recycling-by-giving-out-free-oilpots/>)

³⁸ 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)

³⁹ *Reducing and Managing Food Waste in Hotels* (Green Hotelier) <http://www.greenhotelier.org/know-how-guides/reducing-and-managing-food-waste-in-hotels/>

- 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 organisations that can collect, transport and manage the cooking oils to transform it into biodiesel⁴⁰.
- 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.⁴¹

Guidance for setting up monitoring indicators

- Number of collection points established per 100 inhabitants [Number]
- Number of individual/shared containers distributed for kerbside collection [Number]
- Mapping the collection points on private and public areas [Address, district or area]
- Quantity of UCO generated (using weighing scales) per hotel/restaurant per week/month/year [Litre]
- Quantity of UCO collected per week/month/year [Litre]
- Quantity of biofuel (and other products) produced from collected/recycled UCO [Litre/m3]
- Number of communication/promotion campaigns and other activities during implementation phase [Number]
- Adherence of the public and hotels/restaurants to the recycling measure (percentage of new subscribers to communication campaigns, n. of requests to become a registered producer, n. of new participants, etc.) [%] or [Number]

⁴⁰ <http://www.ekogras.es/>

⁴¹ RecOil Project (<https://www.recoilproject.eu/index.php/en/good-promotion-and-collection-practices>)



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 reference⁴²:
 - 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 are⁴³:
 - 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 €/ton⁴⁴.

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.

⁴² Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

⁴³ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

⁴⁴ 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 level⁴⁵

- 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.

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).

⁴⁵ *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_HotelsSostenibles_CAT.pdf

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).⁴⁶
- 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.⁴⁷
- 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.⁴⁸
- 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

⁴⁶ 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)

⁴⁷ *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_HotelsSostenibles_CAT.pdf)

⁴⁸ *Catalonia: Biological Treatment and Separate Collection of Biowaste* (Regions For Recycling) (http://www.regions4recycling.eu/upload/public/Good-Practices/GP_ARC_Biowaste-collection.pdf)

compost could be applied. The project contributed to the following outputs: a database of Good Practices, 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.⁴⁹

- 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.⁵⁰

Guidance for setting up monitoring indicators

- Biowaste selective collection coverage for hotels and restaurants (percentage and number of establishments covered in the municipality) [%] and [Number]
- Mapping with the area served by the door-to-door selective biowaste collection and biowaste bring banks in order to see how the biowaste selective collection is evolving [Area or district]
- Number of bins requested and distributed to hotels and restaurants for biowaste disposal and collection [Number]
- Frequency of biowaste collection with door-to-door system (n. of days per week when biowaste is collected by the authorised service provider) [Days/week or month]
- Separate biowaste collection coverage BEFORE/AFTER the implementation of the measure (percentage of waste fraction being separately collected at municipality level) [%]
- Residual waste collection coverage BEFORE/AFTER the implementation of the measure (percentage of residual waste fraction being collected at municipality level) [%]

⁴⁹ SCOW EU Project (<http://www.biowaste-scow.eu/>)

⁵⁰ D2.7 – *Compendium of waste management practices in pilot cities and best practices in touristic cities*. Urban strategies for Waste Management in Tourist Cities.



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 are⁵¹:
 - Incineration of residual waste: 64€/tonne
 - Landfilling residual waste: 56€/tonne
- 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 provider⁵².

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

⁵¹ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

⁵² 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.⁵³
- 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.⁵⁴
- 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).⁵⁵ 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.⁵⁶
- 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.⁵⁷

⁵³ *Responsible Businesses* (Radisson Blu) (<https://www.radissonblu.com/en/hotel-kiiev/responsible>)

⁵⁴ *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>)

⁵⁵ *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_HotelsSostenibles_CAT.pdf)

⁵⁶ *Tayside re-users* (<http://taysidereusers.co.uk/>)

⁵⁷ *Asociación Española de Recuperadores de Economía Social y Solidaria* (<http://www.aeress.org/>)

Guidance for setting up monitoring indicators

- Number of items disposed of by the hotel per month/year which could potentially be donated to charities and other institutions [Number]
- Number of items donated per month/year to charities and other institutions [Number]
- Number of effectively reused items per month/year [Number]
- Weight (estimated) of donated items per month/year [Kg]
- Weight (estimated) of effectively reused items per month/year [Kg]
- Number (estimated) of jobs created/supported by reuse initiatives [Number]
- Mapping of the hotels involved in such a project per month [Address]



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%.⁵⁸ 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.

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.

⁵⁸ *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_HotelsSostenibles_CAT.pdf)

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 stay⁵⁹.
- 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 be⁶⁰:
 - Incineration of residual waste: 64€/tonne
 - Landfilling residual waste: 56€/tonne

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

⁵⁹ *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_HotelsSostenibles_CAT.pdf)

⁶⁰ 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

- 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 environmentally 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.⁶¹
- 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.⁶²
- 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.⁶³
- 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*

⁶¹ Conca Park Hotel – Zero Waste (<http://www.concapark.com/en/zero-waste-hotel-sorrento/>)

⁶² The greenest hotels in the land (The Guardian) (<https://www.theguardian.com/travel/2008/apr/24/green.hotels>)

⁶³ *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_HotelsSostenibles_CAT.pdf)

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"⁶⁴.

Guidance for setting up monitoring indicators

- Quantity of waste generated/collected in rooms and common areas (using weighing scales) per week/month/year BEFORE/AFTER the implementation of the action/measure [Kg]
- Number of new or revised procurement contracts signed by the hotel with specific suppliers that substitute procurement contracts for purchasing disposable products during implementation phase [Number]
- Quantity of disposable products purchased (using weighing scales) per type of disposable product per week/month/year BEFORE/AFTER the implementation of the action/measure [Number] or [Kg]
- Mapping of the hotels choosing to decrease their use of disposable products [Address]



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

⁶⁴ D2.7 – Compendium of waste management practices in pilot cities and best practices in touristic cities. Urban strategies for Waste Management in Tourist Cities.

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.⁶⁵ 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"⁶⁶ 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.

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.

⁶⁵ 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>)

⁶⁶ Give box (European Week for Waste reduction, EWWR) (http://www.ewwr.eu/docs/ewwr/reuse_givebox.pdf)

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 are⁶⁷:
 - 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)⁶⁸

⁶⁷ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

⁶⁸ 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.⁶⁹
- 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.⁷⁰

⁶⁹ LOVE YOUR TENT (<http://www.loveyourtent.com/>)

⁷⁰ 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>)

Guidance for setting up monitoring indicators

- Participation per day/week/month (n. of people donating and taking items). People should be able to easily register themselves each time they put something within the give box [Number]
- Number and quantity (estimated from the record book) of donated and collected products per type of product per day/week/month/year [Number] and [Kg]
- Quantity of waste generated per camper per day/week/month/year BEFORE/AFTER implementation of the measure [Kg]



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:⁷¹

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.

⁷¹ European Week for Waste Reduction (EWWR) (<http://www.ewwr.eu/en/ideas/reuse>)

- 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 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 are⁷²:
 - 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 shops

⁷² Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

- Charities (all left-over goods could be donated to charity organisations)
- Social media, journalists, etc.
- 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).



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.⁷³ 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.⁷⁴ 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.

⁷³ *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>)

⁷⁴ *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_HotelsSostenibles_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 period⁷⁵.

⁷⁵ Source : <https://waste-management-world.com/a/a-welcome-sign-hotels-adopt-reuse-and-recycling>

- 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 are⁷⁶:
 - Incineration of residual waste: 64€/tonne
 - Landfilling residual waste: 56€/tonne

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

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.

⁷⁶ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

- 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 2011.⁷⁷
- 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.⁷⁸
- 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.⁷⁹

⁷⁷ Neya Hotel, Lisbon (<http://www.neyahotels.com/en/hotel-overviewhtml-hotel-overviewhtml>)

⁷⁸ The Orchard Garden Hotel (Green Initiatives) (<http://www.theorchardgardenhotel.com/hotel/green-initiatives>)

⁷⁹ Eco-Management and Audit Scheme (European Commission) (<http://ec.europa.eu/environment/emas/takeagreenstep/06-article.html>)

- 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)

Guidance for setting up monitoring indicators

- Quantity of collected waste (using weighing scales) per fraction in rooms per week/month/year BEFORE/AFTER the implementation of the measure [Kg]
 - Separate collection rate per waste fraction at hotel level BEFORE/AFTER implementation of the measure [%]
 - Number of recycling bins placed in rooms [Number]
 - Mapping of the hotels that implemented such a separation in their rooms [Name and address of the hotel]



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 are⁸⁰:
 - 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

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.

⁸⁰ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

- 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.⁸¹

Guidance for setting up monitoring indicators

⁸¹ 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>)



- Quantity of generated waste (using weighing scales) per fraction per month/year from a given establishment (e.g. restaurant, hotel, shop, etc.) BEFORE/AFTER getting advice/training from recycling advisors [Kg]
- Quantity of waste recycled (using weighing scales) and diverted from the landfill or incineration plant per fraction per month/year AFTER getting advice/training from recycling advisors [Kg]
- Number of establishments, branch organisations, etc. requesting recycling advice services [Number]
- Mapping of the establishments that received this specific training [Name and address of the hotel]

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 project⁸², 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

⁸² Deliverable 3.2 "Situation and behavioural analysis of consume and waste behaviour and patterns"

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.

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 are⁸³:
 - Incineration of residual waste: 64€/ton

⁸³ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

- 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 polymer⁸⁴.

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 2014⁸⁵.

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.
- 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 signalitic accompanying the sorting bins.

⁸⁴ Source : <http://www.plasticsnewseurope.com/article/20171211/PNE/171219995/european-petrochemical-feedstock-contract-prices>

⁸⁵ 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)

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.⁸⁶
- 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

⁸⁶ Copenhagen gives bottle collectors 'dignity' - The Local
(<https://www.thelocal.dk/20150611/new-copenhagen-project-gives-bottle-collectors-dignity>)

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 stations⁸⁷. 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.⁸⁸

Guidance for setting up monitoring indicators

Depending on the means and technologies available to monitor the collected waste, several indicators can be used to assess this measure:

- Number of sorting bins installed in public spaces per 100m² per waste fraction [Number]
- Composition of the waste in the sorting bins (percentage of recyclable or recoverable waste per waste fraction) [%]
- Number of bags collected per week/month/year per waste fraction [Number]
- Quantity of waste collected per week/month/year per waste fraction [Kg]
- Composition of the waste from street bins (for residual waste) BEFORE/AFTER the implementation of the sorting bins (percentage of recyclable or recoverable waste) [%]
- Composition of the residual municipal waste BEFORE/AFTER the implementation of the sorting bins (percentage of recyclable or recoverable waste) [%]
- Mapping all the public sorting bins located on a touristic area [Address of each bin]

⁸⁷ SNCF 2016 CSR report, p.77 (http://medias.sncf.com/sncfcom/rse/bilanrse/Rapport_RSE.pdf)

⁸⁸ Vacances propres becomes Gestes propres - (<http://www.ecoemballages.fr/actualite/vacances-propres-devient-gestes-propres>)



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 be 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 - £4.000⁸⁹. 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 polymer⁹⁰.
- 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 are⁹¹:
 - Incineration of residual waste: 64€/ton
 - Landfilling residual waste: 56€/ton

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.

⁸⁹ Source: City of Edinburgh Council (2009). *Provision of Drinking Fountains in Edinburgh's Parks (Item no 7.1)*. Transport, Infrastructure and Environment Committee

⁹⁰ Source : <http://www.plasticsnewseurope.com/article/20171211/PNE/171219995/european-petrochemical-feedstock-contract-prices>

⁹¹ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

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.⁹²

- 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.⁹³
- 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.⁹⁴ 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.⁹⁵
- 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 well⁹⁶.

Guidance for setting up monitoring indicators

Several indicators can be jointly used to monitor the measure:

⁹² <http://www.urban-waste.eu/events/urban-waste-incontra-turisti-e-maratoneti-piazza-duomo/>

⁹³ Can the drinking fountain make a comeback? (<https://www.citylab.com/life/2015/07/can-the-drinking-fountain-make-a-comeback/399098/>)

⁹⁴ Go Green and Refill Your Water Bottles (https://www.nps.gov/grca/planyourvisit/refilling_stations.htm)

⁹⁵ Green Glastonbury (<http://www.glastonburyfestivals.co.uk/information/green-glastonbury/our-green-policies/>)

⁹⁶ <https://www.ft.com/content/9c8777e6-06a6-11e8-9650-9c0ad2d7c5b5>

- Quantity of water distributed through the public water fountains BEFORE/AFTER the campaign for a similar period of time [Litre or m3/day]
- Number of distributed reusable bottles [Number]
- Number (estimated) of people reached by the communication campaign and surveys on the use of tap water [Number]
- Number of private establishments participating [Number]
- Quantity (estimated) of plastic waste prevented based on the quantity of litres of water distributed through the public water fountains (and by private establishments participating, if feasible) [Kg]



8.1 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 are⁹⁷:
 - Incineration of residual waste: 64€/tonne
 - Landfilling residual waste: 56€/tonne

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
- 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.).

⁹⁷ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

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.⁹⁸

Guidance for setting up monitoring indicators

Different indicators can be used to monitor this action depending on the statistics and data available:

- Number of distributed waste instructions leaflets [Number]
- Mapping of touristic establishments that provide tourists with waste instructions leaflets [Name and address of the establishment]
- Number of tourists potentially affected by the measure [Number]
- Quantity of waste collected per fraction in the concerned area BEFORE/AFTER the implementation of the measure during the most relevant touristic season comparing the same period of the year (monthly or daily data from the year(s) before could be used) [Kg]
- Quantity of recycled waste per sorted waste fraction in the concerned area BEFORE/AFTER the implementation of the measure during the most relevant touristic season comparing the same period of the year (monthly or daily data from the year(s) before could be used) [Kg]

⁹⁸ <http://www.tallinn.ee/eng/A-Guide-to-Sorting-Waste>



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 are⁹⁹:
 - 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.¹⁰⁰

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 2014¹⁰¹.

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.

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

⁹⁹ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

¹⁰⁰ Source : <http://www.plasticsnewseurope.com/article/20171211/PNE/171219995/european-petrochemical-feedstock-contract-prices>

¹⁰¹ 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)

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.¹⁰²

Guidance for setting up monitoring indicators

The following indicators can be used to monitor the measure:

- Number of sorting bags distributed per waste fraction per week/month/year [Number]
- Number of distributed bags for residual waste per week/month/year [Number]
- Quantity of waste separately collected per sorted waste fraction per month/year in the marina BEFORE/AFTER the implementation of the measure [Kg or ton]
- Composition of residual waste per type of fraction in the marina BEFORE/AFTER the implementation of the measure [%]



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.

¹⁰² 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)

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 ports¹⁰³.

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 are¹⁰⁴:
 - 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

¹⁰³ SPOUDAI Journal of Economics and Business, Vol.67 (2017), Issue 1, pp. 54-70

¹⁰⁴ 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 with the support of the above described stakeholders. The preliminary steps to implement information on waste sorting for cruise ship 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
- 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.¹⁰⁵

¹⁰⁵ 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)



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 ashtray¹⁰⁶.

¹⁰⁶ Source : <https://www.kab.org/sites/default/files/program-resources/2017%20Cigarette%20Litter%20Prevention%20Program%20Toolkit.pdf>

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 litter¹⁰⁷.

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.
- 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€¹⁰⁸.
- 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

¹⁰⁷ Source : <https://www.cityoflondon.gov.uk/services/transport-and-streets/clean-streets/Pages/smoking-related-litter.aspx>

¹⁰⁸ Source : <https://www.thelocal.it/20151223/italy-launches-300-fines-for-tossing-cigarettes>

- 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

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.¹⁰⁹
- 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

¹⁰⁹ Summer initiatives to keep Copenhagen clean (<http://www.urban-waste.eu/summer-initiatives-keep-copenhagen-clean/>)

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. ¹¹⁰

- 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.¹¹¹

Guidance for setting up monitoring indicators

The quantification of the impacts of this type of measure is rather complex. The following indicators can be used to quantitatively monitor the measure:

- Number of distributed boxes/ashtrays [Number]
- Quantity of waste from street sweeping in the selected areas at the same period BEFORE/AFTER the distribution (for instance with monthly data from the year before the action) [Kg or ton]
- Composition of street sweeping waste to notice any changes such as the decrease of cigarette butts (percentage per waste fraction) [%]

Another way to qualitatively evaluate this measure could be:

- Organisation of satisfaction surveys at the end of the implementation [Satisfaction level] and [Number of surveys]

¹¹⁰ 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>

¹¹¹ 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/>)



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 signalétique 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 are¹¹²:
 - Incineration of residual waste: 64€/tonne
 - Landfilling residual waste: 56€/tonne

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.

¹¹² 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.¹¹³
- 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.¹¹⁴ 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.¹¹⁵

¹¹³ Tivoli Corporate Social Responsibility Report (<http://www.tivoligardens.com/en/om/virksomheden/csr>)

¹¹⁴ <http://www.nicecotedazur.org/environnement/outils-de-d%C3%A9veloppement-durable/eco-manifestation>

¹¹⁵ Green Glastonbury (<http://www.glastonburyfestivals.co.uk/information/green-glastonbury/our-green-policies/>)

Guidance for setting up monitoring indicators

The efficiency of the guidelines should be monitored during events following these guidelines with, if possible, a comparison with the waste production and recycling of a previous year of the same event. The following indicators should be monitored or estimated:

- Quantity of collected waste per waste fraction (recyclable fractions and residual waste) (if possible, per visitor) [Kg] or [Kg/inhab.]
- Achieved separate collection rate (percentage of recyclable fractions collected over total quantity of collected waste) [%]
- Quantity of avoided waste through the use of reusable products and the implementation of other waste prevention & reuse actions (if possible, per visitor) [Kg] or [Kg/inhab.]
- Quantity of reused goods thanks to partnerships (if possible, per visitor) [Kg] or [Kg/inhab.]
- Quantity of avoided food waste through food donation (if possible, per visitor) [Kg] or [Kg/inhab.]
- Quantity of picked-up litter (if possible, per visitor) [Kg] or [Kg/inhab.]



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 winds¹¹⁶. 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.

¹¹⁶ Definition given by the OSPAR commission

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.¹¹⁷

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 tourists¹¹⁸.

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.

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

¹¹⁷ Risk & Policy Analysts Limited, Feasibility study of introducing instruments to prevent littering, January 2013

¹¹⁸ URBAN-WASTE deliverable 3.2 "Situation and behavioural analysis of consume and waste behaviour and patterns", November 2016

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.

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 year¹¹⁹.

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 Ireland¹²⁰.

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

¹¹⁹ 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

¹²⁰ Source : <https://www.dcaae.gov.ie/en-ie/environment/topics/waste/litter/Pages/Local-Authority-Litter-Fines-and-Expenditure-Statistics.aspx>

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
- 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.¹²¹
- 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.¹²²
- 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.¹²³
- 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

¹²¹ 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>)

¹²² Environmental kayak (<https://kayakrepublic.dk/diverse/miljoekajakken/>)

¹²³ 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))

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.¹²⁴

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.

¹²⁴ Plastic monster - Huffington Post (http://www.huffingtonpost.fr/2016/04/21/dechets-plage-bretagne-initiative-ecologique_n_9748220.html)



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 costs¹²⁵.

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

¹²⁵ *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.¹²⁶
- 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. 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.¹²⁷

¹²⁶ *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>)

¹²⁷ *Winnow Case Study: Novotel Warsaw Centrum, July 2017* (Winnow)

(https://cdn2.hubspot.net/hubfs/650776/Case%20Studies/Case%20Study%20Novotel%20Warsaw%20_v2.pdf?t=1505841107382)

Guidance for setting up monitoring indicators

Since the food waste tracker focus on waste quantification, the monitoring is a built in function in this measure, and it is therefore most useful in combination with other waste reducing measures (see “Measure n.2 Food prevention at buffets and restaurants”).

Useful indicators:

- Quantity of food waste per day/week [Kg]
- Quantity of food waste per served portion [Kg]
- Quantity of food waste in relation to quantity of served food [%]

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.¹²⁸ 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 stuff¹²⁹.
- 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 market¹³⁰.
- 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 initiative¹³¹.

¹²⁸ *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)

¹²⁹ *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/>)

¹³⁰ *4th Vic Schools Exchange Market* (http://www.ewwr.eu/docs/case_studies/ES_Cat_EWWR_Awards_Nominee_2013_CSF.pdf)

¹³¹ *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 use¹³².

¹³² *Swapping toys in the Kindergarten*

(http://www.ewwr.eu/docs/case_studies/EWWR_2012_Case%20Studies_Educational_Germany.pdf)

Guidance for up monitoring indicators

- Number of swaps markets organised during implementation phase [Number]
- Participation at event (n. of people from general public attending the event) [Number]
- Participation in exchanges at event (n. of people donating/taking items during event) [Number]
- Number of products swapped per type (e.g. clothes, furniture, books, etc.) [Number]
- Weight (estimated) of reused items [Kg]

Quantity of food waste generated (using weighing scales) per week/month/year BEFORE/AFTER the implementation of the action/measure [Kg]

Adherence of the public and other hotels/restaurants to the prevention measure/programme (percentage of new subscribers to communication campaigns, number of new participants, etc.) [%] or [Number]

Two groups of indicators are to be set (unrestricted list):

7. The first group aims at monitoring involved stakeholders:
8. The second group aims at monitoring waste production in involved restaurants and the performance of the measure:

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.

Additional performance indicators



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 nº 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.¹³³ 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, recent studies and reports, online register of EU rules

¹³³ EU actions against food waste (EC) (https://ec.europa.eu/food/safety/food_waste/eu_actions_en)

on food hygiene, etc. The EU food donation guidelines are expected to be finalized and adopted by the Commission by the end of 2017.¹³⁴

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.¹³⁵ 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.

¹³⁴ 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)

¹³⁵ 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 credit¹³⁶.
- 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 are¹³⁷:
 - 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.)

¹³⁶ *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

¹³⁷ Source : IPCC (https://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch10s10-4-7.html)

- Customers
- 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)¹³⁸
- 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)

¹³⁸ *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:¹³⁹
 - 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.

¹³⁹ *Food Donation: A Restaurateur’s Guide* (National Restaurant Association, U.S. Department of Agriculture) (<http://infohouse.p2ric.org/ref/12/11907.pdf>)

- The last step should consist and conclude with measuring the efficiency of the actions adopted when comparing the results obtained after a trial period.

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€. ¹⁴⁰
- 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

¹⁴⁰ *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)

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.¹⁴¹
- 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.¹⁴²
- The “*Union Belge du Catering*”, which represents contract catering in Belgium, launched in 2012 a project called “*Excédents alimentaires*” (Food surpluses) with representatives 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.¹⁴³
- 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.¹⁴⁴

¹⁴¹ *Federação Europeia de Bancos Alimentares* (<http://www.bancoalimentar.pt/>)

¹⁴² *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>)

¹⁴³ *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>)

¹⁴⁴ *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

- Quantity of food waste generated (using weighing scales) per week/month/year BEFORE/AFTER the implementation of the measure [Kg]
- Quantity of food donated (using weighing scales) per week/month/year [Kg]
- Frequency of pick-ups and collection of food donated from the restaurant, hotel, etc. per week/month [Days per week/month]
- Adherence of additional hotels/restaurants to the prevention measure (percentage of new subscribers to communication campaigns, number of new participants, etc.) [%] or [Number]
- Number of communication and promotion campaigns and activities organised during implementation phase [Number]
- Mapping all the participating establishments within the local municipality with distinct coloured codes for the donors and the beneficiaries [Name and address of the establishment]



**URBAN
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