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MED4WASTE POLICY TOOLKIT ON MUNICIPAL WASTE MANAGEMENT

A Guide for Decision-Makers in the Mediterranean

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A Guide for Decision-Makers in the Mediterranean

This toolkit has been elaborated by MIO-ECSDE, partner of the Med4Waste project with contributions of key experts: Bassam Sabbagh, Alberto Zoratti and BETA Technological Center (UVIC-UCC), Med4Waste Project Lead.

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The Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO-ECSDE) is a non-profit Federation of 134 Non-Governmental Organizations (NGOs) working in the fields of environment and development in 28 countries of the Euro-Mediterranean area. Its mission is to protect the natural environment and cultural heritage and promote Sustainable Development in a peaceful Mediterranean by bringing together the efforts of NGOs, governments, international organisations, other socio-economic partners and networks. To learn more about MIO-ECSDE visit <https://mio-ecsde.org/>

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Med4Waste

a Mediterranean Dialogue for Waste Management Governance



The Med4Waste Partnership

About the project:

Med4Waste: a Mediterranean Dialogue for Waste Management Governance

Med4Waste is a 2-year-long capitalisation project (2021-2023) funded by the ENI CBC MED programme on the priority of waste management. The

objective of the Med4Waste project is to facilitate new governance models for integrated and efficient municipal waste management policies across the Mediterranean region, with emphasis on solid and particularly organic waste as well as circular economy, through adapting waste management plans, policies and other management actions and regula-

tory drivers. The project encompasses activities oriented at building skills, planning and decision-making capabilities of Mediterranean stakeholders from the public and private sectors, and based on the most successful practices previously implemented in the region. Moreover, Med4Waste focuses on the identification of successful and efficient waste

management practices developed by 5 other ENI CBC Med projects and their dissemination and mainstreaming into public policies and plans carried out by the relevant public or private stakeholders. The Union for the Mediterranean (UfM) supports the development and implementation of this project within the 2030 GreenerMed Agenda¹.

¹More information here: <https://ufmsecretariat.org/ufm-environment-agenda/>



An underwater photograph showing a large amount of plastic waste, including bags and fragments, floating in the water. A single striped fish is visible swimming near the debris. The scene is dimly lit, with light filtering from above, creating a somber and environmental atmosphere.

Executive Summary

The operational know-how of the Med4Waste project has been used to develop this **Policy Toolkit on Municipal Waste Management** (toolkit).

It synthesizes the main lessons learned stemming from (i) the Med4Waste activities oriented at building skills, planning and decision-making capacities of Mediterranean municipalities and waste management practitioners, (ii) the achievements and challenges of 5 other ENI CBC Med projects working on sustainable waste management (namely: [CEOMED](#), [CLIMA](#), [DECOST](#), [MED-InA](#), [REUSEMED](#)), (iii) insights and lessons learned from other projects and initiatives that Med4Waste partners accessed, and (iv) recommendations and know-how ob-

tained throughout the project's life-span and its partnership's expertise and experience.

It also takes note of the state of play in municipal solid waste management in Mediterranean countries, taking account of national and local contexts and policies while also addressing the main bottlenecks. These insights have led to policy recommendations for national, regional and local authorities seeking to enhance sustainable municipal waste management and specifically its organic component.

The present toolkit aims therefore to transmit to key Mediterranean actors a set of concise recommendations and policy guidelines to promote better governance in the sustainable use of resources and management of waste and facilitate

the implementation of the necessary steps to achieve a circular economy in the Mediterranean. Designing and implementing integrated waste management plans, creating a supportive environment for the private sector through incentive systems, investing in long-term awareness and education and active participation in regional and sub-regional (Mediterranean) cooperation efforts to tackle common waste management challenges are among the key suggestions. Emphasis is put on stakeholder engagement and public participation as well as strengthening capacity and competences, and enhancing synergies to effectively address the complexity and challenges of waste management systems.

Authorities of all governance levels can benefit

from the implementation of these recommendations and by doing so contribute to waste prevention and sustainable resource management, the promotion of reliable and accessible information for decision making and in fostering collaboration and innovation for more green, circular and just communities. Although the toolkit primarily addresses national, regional and local authorities of Mediterranean countries, it is of relevance to other stakeholders such as the private sector, non-governmental organizations, and community-based organisations as they all play important roles in all phases of the waste management hierarchy, including in investment plans, sorting initiatives, delivery of waste management services, monitoring, education and advocacy.

Introduction



Municipal waste management is a local issue with wider implications. Globally, the quantities of municipal solid waste generated are not precisely known, with estimates made by the World Bank and United Nations being based mainly on the quantities collected in urban settlements. According to World Bank data, about 2.24 billion tonnes of municipal solid waste was generated worldwide in 2020 and at least 33% of the waste generated was not managed in an “environmen-

tally safe manner”. This number is expected to grow to 3.88 billion metric tons by 2050, while in low-income countries, the amount of waste is expected to increase by more than three times.

Unfortunately, the consequences of doing little or even nothing to address waste management heavily burdens the environment, the economy and society overall. In the absence of waste regulations and their rigorous implementation and

enforcement, a generator of waste will tend to opt for the cheapest available course of action. On a larger scale, when significant quantities of municipal or industrial solid waste are dumped or burned in the open, the adverse impacts on air, surface and groundwater, soil and the coastal and marine environment, climate due to GHG emissions, and thus indirectly on public health, can be severe. Despite this, the public and political profile of waste

management is often lower than other utility services.

In spite of notable improvements in the collection, treatment, disposal, prevention, control and recycling of waste, municipal solid waste is still a significant issue in most Mediterranean countries. Only a few countries have reached full waste collection coverage. The collection of municipal solid waste remains particularly difficult in rural areas, where waste is usually illegally dumped or burned. Due to the large share of the population and human activities located in coastal regions bordering the Mediterranean Sea, waste is a significant pressure on coastal and marine environments, causing considerable pollution².

The key drivers of municipi-

pal solid waste generation in the Mediterranean are the same as anywhere else in the world: a complex combination of production and consumption patterns, increasing rate of urbanisation, irresponsible behaviour of individuals and economic sectors, weak enforcement and/or lack of policy and legislative frameworks and fragmented understanding of the problem due to the lack of fit-for-purpose data.

In particular in southern Mediterranean countries, the increasing trends in population³, especially in urban areas, growing tourism industries and standards of living are key drivers for waste issues. With the economies of these countries becoming increasingly open to international trade, growing consumption is generating changes in the production and

²EEA, 2014: <https://www.eea.europa.eu/publications/horizon-2020-mediterranean-report/file>

³The Mediterranean region is currently home to over 529 million people, 70% of whom live in urban areas, a figure which is expected to increase by an additional 130 million by 2050, in particular in the eastern and southern countries (UN, 2020).

composition of waste, including 'new' waste streams such as electronic and packaging waste. Furthermore, waste management in these countries is not a participatory process and both businesses and citizens are not usually actively involved in it.

Environmentally sound management of municipal waste in the Mediterranean suffers from multiple drawbacks and chronic problems that require strategic solutions and collaboration

among various institutions and stakeholders. An array of socioeconomic and political factors can affect the strategies adopted for municipal waste management in a particular country, as well as the extent of societal involvement in the process and, consequently, the sustainability of the process itself. These factors are region- and culture-dependent and as a result, countries are adopting different methods to cope with this rising challenge of urban waste management.

The economics of municipal solid waste are also intricate. In some cases, waste management can consume up to 40% of the budget of a municipality. Therefore, decisions pertaining to waste management operations, such as collection, recycling, and disposal, can constitute an economic burden for industries, municipalities and households.

A number of lessons could be drawn from national and regional initiatives, programs and

processes, successful or not, to inform how to effectively tackle the issue of waste management in the Mediterranean. Successful experiences show that there is an opportunity to improve waste management in many Mediterranean countries by exploiting the high share of organic waste and putting in place composting treatment plants, while positive impacts on the environment could be achieved by the reduction in greenhouse gas emissions and enhancing the quality of other materials

collected. The common denominator is that all Mediterranean countries must have as a basic goal the adoption of integrated waste management policies at local and regional (sub-national) levels and the introduction of selective collection systems and waste treatment complying with health and environmental standards. According to the [Horizon 2020 Mediterranean report \(EEA - UNEP/MAP, 2020\)](#) the growth rate in waste generation should be decreased by around 50%; the recycling

rates should be doubled; and at least half of unregulated waste dumps transformed into sanitary landfills. Tackling waste management is an opportunity for Mediterranean countries to address more than half of the high-level Sustainable Development Goals of the UN 2030 Agenda and support the transition to a green, circular and socially inclusive economy that can be based on sustainable consumption and production practices and nature-based solutions.

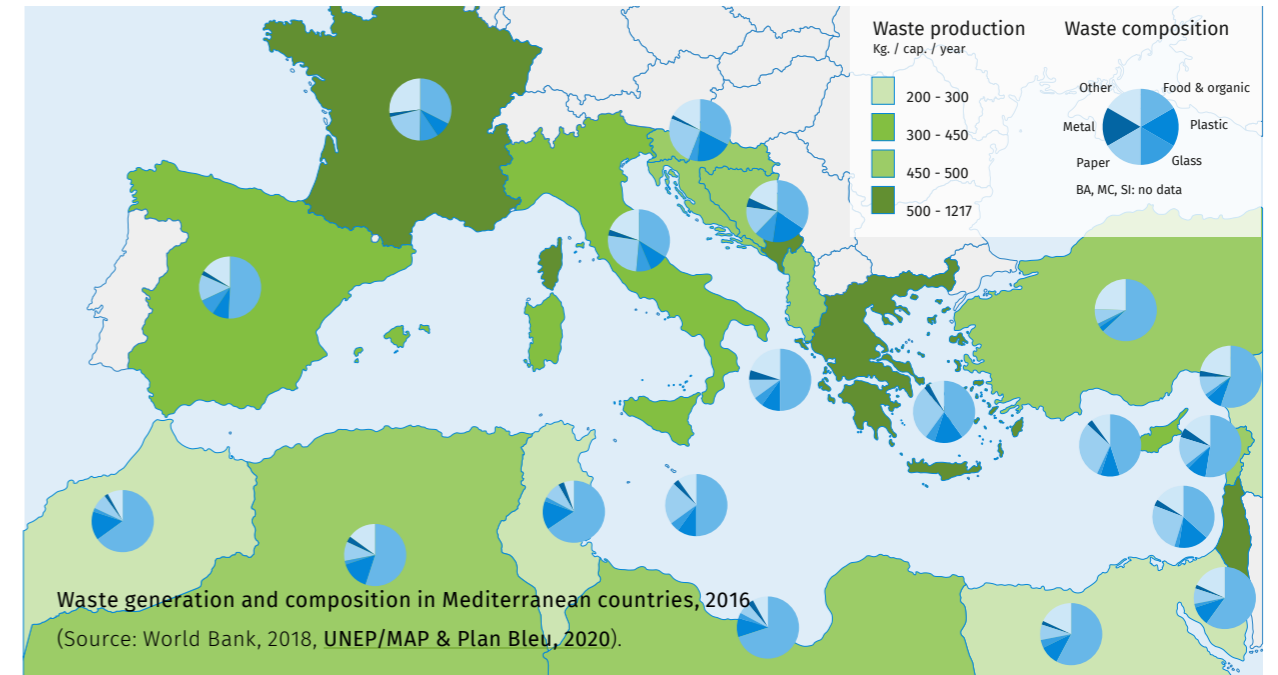


Status of municipal waste management in the Mediterranean



Municipal waste generation has been increasing across the whole region since 2014, a trend which is expected to continue in the absence of any evidence of decoupling from economic growth (EEA, 2020). More specifically, municipal waste production per capita in the Mediterranean region rose by 15% over 2010-2020 and it is estimated to reach almost 135 million by 2025. While the situation varies widely from one country to

another, and more particularly from one local area to the next, it is nonetheless fair to say that average municipal solid waste production in EU Mediterranean countries (average of 498 kg/year/capita in 2017) is almost twice as much as that currently generated in the southern shore of the region (see figure below). Evidence shows that although municipal solid waste generation remains high in the northern Mediterranean



countries, a decoupling of waste generation and economic development and population growth is starting to emerge in some of them (EEA, 2022). In the south, a steadily increasing trend in waste generation per capita has been recorded, which is expected to continue in the future (+29% in 2030 and +50% in 2050; World Bank, 2018) as a result of population growth and the predominant linear economic paradigm shared by the rest of the region. Pronounced differences between rural and urban areas still exist.

Waste composition differs across income levels, reflecting varied patterns of consumption. The composition of municipal solid waste across the Mediterranean is dominated by organic waste, especially in the southern Mediterranean countries (almost twice as much), while the northern part of the region produces proportionally more glass, paper and cardboard, and metal. Even though the data available for southern Mediterranean countries are limited (also due to the informal sector's strong role in the collection of recyclables), in

Waste treatment methods



- **Landfill** means the depositing of waste into or onto land, including specially engineered landfill and temporary storage of over one year.
- **Incineration** means thermal treatment of waste in an incineration plant.
- **Recycling** means any recovery operation by which waste materials are reprocessed into products, materials or substances, whether for the original or other purposes, excepting for use as fuel.
- **Composting** means the biological treatment (anaerobic or aerobic) of biodegradable matter, resulting in a recoverable product.



general there seems to be an increasing trend in the fraction of plastic generated in waste. On the other hand, with the exception of some countries, plastic-packaging waste generation per capita seems to have declined in almost all EU Mediterranean countries in recent years. In general, organic waste is still the biggest share of municipal solid waste, ranging from 40% in some countries to 68%. Changing consumption patterns, largely resulting from the importation of manufactured goods as well as needed behavioural change at the individual level, are driving change in waste composition.

Municipal solid waste is collected from the point of generation (residential, industrial commercial, institutional) to the point of treatment or disposal in several ways (door-to-door, community bins, curbside pick-up, self-delivered, etc.).

Municipal solid waste collection by or on behalf of local authorities calls for enormous financial and logistic means, which increases with the improvement of the waste collection rate. In southern

Mediterranean countries, most of the solid waste management budget is still allocated to waste collection. An important characteristic of the collection is the degree of separation at source, which has an impact on the amount of waste recycled and on the quality of the recycled material.

The most common disposal practices of waste in the region are burning and landfilling (usually in unmanaged dumpsites) while the share of recycling and composting represents less than 10% of the total collected amount, resulting in a loss of resources for the region. Although **waste treatment** in the Mediterranean has benefited from improvements in capacity and infrastructure, especially at waste-transfer stations and sanitary landfills, and by closing dumpsites, these efforts should be further encouraged and expanded to meet the expected increase in waste generation in the future. The disposal of waste into landfills and sanitary landfills as well as incineration declined during the last decade in northern Mediterranean countries mainly due to the enabling

EU regulatory framework, but increased in southern Mediterranean countries where waste is normally discharged into open dumps, because of relatively higher costs when compared to open dumping. In these countries, there have been improvements in both capacity and infrastructure. Such efforts should be further encouraged and expanded to meet the expected increase in waste generation in the future.

Although overall in the Mediterranean the capacity to deal with solid waste has been improving, it remains far from sufficient to cope with the growing volume of waste generated and, in particular, the plastic fraction. A change in the production and consumption paradigm, together with proper investment in collecting waste and creating new value chains from it, greater awareness and education, will not only prevent waste generation but will also have significant economic benefits for society.

Poor municipal waste management practices are one of the key reasons that make the Mediterranean Sea one of the most affected seas by marine litter worldwide. It is apparent that the Mediterranean economy is still marked by a lin-

ear system, which over-exploits natural resources, causes pollution and thus undermines fragile ecosystems. In a region considered a biodiversity and climate change hotspot, waste prevention and reduction through upstream solutions are urgently needed ([MedECC, 2020](#)).

Overall, the data collected on waste is limited mainly due to limited investments and human resources for data production, as concludes the [joint EEA and UNEP/MAP report](#) that took stock of the progress achieved under the UfM's Horizon 2020 Initiative for a Cleaner Mediterranean and challenges ahead. The production of reliable data and regular monitoring of waste streams remain insufficient to support informed decision-making in many countries. In most countries, further efforts are necessary to improve the access to data and information to ensure the capacity to produce indicators on waste generation and management. Moreover, it is fundamental to support capacity-building efforts and coordination among national institutions, to improve data harmonisation at the Mediterranean scale, to facilitate the creation of a comprehensive Mediterranean-level database, and to support effective cross-border decision-making.

Marine Litter in the Mediterranean



It is widely acknowledged that the Mediterranean Sea is one of the most affected seas by marine litter worldwide. Litter items found on Mediterranean beaches appear to originate primarily from recreational and tourism related activities, and poor municipal waste management practices. Inputs of plastics into the sea, as estimated in 2015, are at the level of over **260,000 tonnes per year or 730 tonnes per day**, depending on the coastal population, which may vary depending on the country ([UNEP/MAP, 2015](#)).

Common challenges for the Mediterranean

Mediterranean cities recognize the many health, environmental, and other concerns associated with inadequate solid waste management; nonetheless, they face many demographic, social, cultural, economic and environmental challenges in properly managing this waste. Mappings and assessments⁴ of recent national and municipal waste and circular economy policies and strategies in the Mediterranean, reveal a varying landscape and make clear that each country has its own specificities. However, shared, common challenges include:



Limited access to technical knowledge related to waste reduction, sorting and recycling



Increasing trends in waste generation



Difficulty in implementing existing strategies and policies




Lack of enabling environment for the engagement of the private sector




Political turnover



Policy fragmentation, lack of strong regulatory frameworks and policy incentives, including for the private sector




Improperly managed dumping sites




Limited financial and staff capacity




Lack of waste collection and disposal schemes




Limited data related to waste generation, composition and treatment



Limited available land



Lack of participatory planning



Informal sectors and activities within the solid waste management system



Low public awareness on waste prevention

⁴You can access the Med4Waste mapping and assessment exercise of local, regional and national policies in waste management in the Med4Waste partner countries here: <https://www.enicbcmcd.eu/mapping-and-assessment-relevant-local-regional-and-national-policies-waste>

Policy frameworks guiding solid waste management in the Mediterranean

By embracing a green circular economy, the Mediterranean region stands to gain resource efficiency, pollution reduction, economic opportunities, and enhanced well-being.

It can bolster resilience to climate change, safeguard its unique heritage, and serve as a global model for sustainable growth. Compared to other regions of the world, country and stakeholder commit-

ments affirmed through the below frameworks attest to the region's genuine efforts to transition to more sustainable practices and pave the way for green and circular action plans.

The UN SDGs

In the Mediterranean context, the [Sustainable Development Goals \(SDGs\) of the 2030 Agenda](#) provide a convergent focus and targets for long-term sustainability on key areas of inter-

vention to impact on the challenges mentioned above. The implementation of the SDGs is especially necessary in the Mediterranean region as it is one of the areas experiencing economic, social and environmental difficulties with rising development gaps between and within countries. Solid waste management can be directly linked to twelve out of seventeen SDGs and the progress towards sustainable development is an opportunity to improve the sector. At the same time, improved solid waste management combined with sustainable consumption and production aiming for a green and circular economy supports all of the SDG targets to be fulfilled.

The Barcelona Convention and the UNEP/MAP system

Waste management is recognised as a priority area in the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities (**LBS Protocol**) of the Barcelona Convention, the Strategic Action Programme to Address Pollution from Land-Based Activities in the Mediterranean Region (**SAP MED**) and the National Action Plans (**NAPs**) developed and implemented by the Mediterranean countries, which set priorities for the preparation of action plans, programmes and measures for the elimination of pollution from land-based sources and activities.

The [Mediterranean Strategy for Sustainable Development \(MSSD\) 2016-2025](#) provides an integrative policy framework for all stakeholders to translate the 2030 Agenda for Sustainable Development and at the regional, sub-regional, national and local levels in the Mediterranean region. The MSSD was adopted by all Mediterranean countries at the 19th Meeting of the Contracting Parties to the Barcelona Convention (COP 19) (Athens, Greece, 9-12 February 2016) ([Decision IG.22/2](#)) with the following vision: “A prosperous and peaceful Mediterranean region in which people enjoy a high quality of life and where sustainable development takes place within the carrying capacity of healthy ecosystems.

This is achieved through common objectives, strong involvement of all stakeholders, cooperation, solidarity, equity and participatory governance”. It is complemented by the [Regional Action Plan on Sustainable Consumption and Production \(SCP\) in the Mediterranean](#).

Under the MSSD 2016-2025 Objective 3 (Planning and managing sustainable Mediterranean cities), the Strategic Direction 3.4 “Promote sustainable waste management within the context of a more circular economy” addresses solid and liquid waste production and management, which remain a major concern in many urban regions in the Mediterra-

nean. It aims at the promotion of national measures for implementing innovative waste management solutions, in line with the waste hierarchy: prevention, reduction, reuse, sorting, recycling, recovery, and, as the least preferred option, disposal. Priorities are also to develop behavioral change schemes that will lead to reduction in waste volumes and to develop legal and financial frameworks to support sustainable waste management.

The MSSD 2016-2025 flagship Initiative 3.4.5 aims at the elaboration of a regional assessment of high-tech and low-tech solutions, including but not limited to awareness-raising and economic measures that have been implemented, with a view to their more widespread utilization in waste reduction efforts. A target associated with this strategic direction is to substantially reduce waste generation through prevention, reduction, recycling and reuse by 2030.

The EU Green Deal

The EU Commission introduced the [EU Green Deal](#) (EGD) in December 2019 and is intended as a roadmap to help the European Union transition to climate neutrality by reducing carbon emissions to 55% by 2030 and achieving carbon neutrality by 2050.

The European Green Deal sets out to reach these ambitious emission reduction targets by:

- pursuing green, affordable, and secure energy;
- introducing an industrial strategy for a clean and circular economy;
- tackling biodiversity loss;
- setting in motion sustainable and smart mobility;
- fostering sustainable agriculture and fisheries;
- ensuring zero pollution;
- making investments greener.

Essentially, the EU is focused on decoupling economic growth from resources use while ensuring that no person or place is left behind. One of the most fundamental ways for achieving this, as recognized by the EGD, will be by tackling Europe’s approach to waste and waste management.

[A circular economy action plan](#) has been devised to enable organizations to get a handle on waste management and bring the EU Green Deal’s plans to fruition. The plan is focused on implementing a regenerative growth model through the circularity of materials and by lowering consumption footprints. Additionally, the plan is committed to halving the amount of residual (non-recycled) municipal waste, such as food waste, by 2030, promoting safer and cleaner waste streams, and ensuring high-quality recycling. In turn, the waste obligations of businesses are to be changed, primarily by circular economy processes that subsequently encourage sustainable consumption.

An expanded strategy for plastics waste management. The [EU’s strategy for plastics](#) in a circular economy builds on existing EU measures to reduce plastic waste. The strategy looks to support further sustainable and safer consumption and production patterns for plastics, by ensuring that all plastic packaging is recyclable by 2030. Consequently, producers of plastics will be subject to new design constraints, prohibitions, and take-back requirements, which will build on the developments of Directive (EU) 2019/904 of the European Parliament on the reduction of the impact of certain plastic products on the environment. This has already led to various single-use plastic items being phased out and banned from the EU market, including straws, plates, and stirrers. The Directive also introduced a 77% separate collection target for plastic bottles by 2025, which will increase to 90% by 2029. Plastic producers, recyclers, retailers, and consumers are

The Mediterranean: the first regional sea to adopt a legally binding action plan for marine litter management



In 2013, the Mediterranean Sea became one of the first regional seas to adopt a legally binding [Regional Plan on Marine Litter Management in the Mediterranean](#).

Through this Regional Plan, the Contracting Parties to the Barcelona Convention have endorsed a series of measures aiming to prevent and reduce to the minimum marine litter pollution in the Mediterranean and its impact on ecosystem services, habitats, species, public health, and safety. The plan also aims to remove existing marine litter to the extent possible and enhance knowledge on marine litter. The Regional Plan was updated in 2021, introducing several amendments in four areas: employing economic instruments (such as fiscal incentives to curb pollution), promoting a circular economy, curtailing land-based and sea-based sources of marine litter, and pursuing ambitious targets for the reduction of plastic waste and microplastics. Additionally, in 2016, the [Regional Action Plan on Sustainable Consumption and Production](#) was adopted, encompassing a set of concrete measures that open pathways to the large-scale adoption of the [circular economy in the Mediterranean](#). Both plans are grounded in [the findings of monitoring and assessment](#) of the marine and coastal environment.

More information at: <https://www.unep.org/unepmap/news/news/regional-plan-marine-litter-management-mediterranean-prevent-and-eliminate-pollution>



likely to have to adhere to new or revised reuse and recycling of end-of-life plastics schemes or policies as a result. Many businesses are already looking to get ahead of these changes and implement measures that move their operations away from plastic use or, where this is not possible, implement other schemes such as additional recycling and plastic credits. Plastic credit is a certificate that represents the collection of a specified weight (for example, one kilogram, one metric ton) of plastic waste recovered or recycled that would otherwise have ended up in the natural environment.

Revising the Waste Framework Directive. Several EU waste management laws will be, and in some cases have already been, reviewed as part of the transition to a resource-efficient and competitive European economy. Chief among these is the [Waste Framework Directive](#) (WFD), for which the European Commission sought comments through a series of public consultations on its intended proposal stemming from the European Green Deal and the Circular Economy Action Plan to improve waste management in the EU (currently in its adoption phase).

The Med4Waste project contributed to the revision of some of the policy areas of the WFD by presenting some of the complexities of the reality of the Mediterranean waste management sector and remarking that strong efforts need to be made in the EU Mediterranean countries to improve capacities and awareness on waste prevention and management.

To reach the ambitious targets set in the European Green Deal, the EU Biodiversity Strategy, the Zero Pollution Action Plan and the EU climate policy, a transformational effort is required. In support of existing EU legislation and programmes **EU Missions** aspire to bring concrete solutions to some of our greatest challenges. Relevant to waste manage-

ment are the [EU Mission “A Soil Deal for Europe”](#) and the [EU Mission “Restore our Ocean and Waters”](#). The latter supports an area-based “lighthouse” in the Mediterranean through the [BlueMissionMed Mediterranean Lighthouse](#).

The UfM’s 2030GreenerMed Agenda

Under the guidance of the UfM CoPresidency and with the support of the UfM Secretariat, since 2018 the online working group, the UfM ENV Task Forces and the UfM WG on ENV and CC assisted with the elaboration of the 2030 Agenda for a GreenerMed ([Towards 2030: Agenda for A Greener Med](#)). The core objective of the “2030GreenerMed” Agenda is to set the framework to coordinate, streamline and promote the efforts in the Mediterranean region – involving UfM member countries and other relevant stakeholders, including regional partners and local authorities, through a participatory approach, to:

- Support the transition towards a green, circular and socially inclusive economy, based on sustainable consumption and production practices and nature-based solutions.
- Prevent and reduce pollution on land, air, and sea; as well as
- Protect, preserve, manage, and restore natural resources in the Mediterranean region within an integrated ecosystem approach, including terrestrial, marine, and coastal dimensions.

The three thematic areas are closely interlinked and are addressed simultaneously. A fourth cross-cutting thematic area of high regional priority is the link with climate action for mitigation and adaptation. The multifaceted challenges in the Mediterranean underscore the pressing need for an urgent shift in behaviour and practices and the implementation of initiatives across the regions.

As an inclusive and open initiative, the 2030GreenerMed Agenda reflects the collaborative nature across the region for comprehensive efforts to implement sustainable management and a just transition towards a green and circular economy in the region. This widespread recognition of this pressing need to transition towards a green circular economy has been underpinned by a range of UfM policy frameworks and declara-

tions such as the 2021 [UfM Ministerial Declaration](#) of the 2nd UfM Ministerial Conference on Environment and Climate Action.

The UfM has supported the development and implementation of the Med4Waste project within the 2030GreenerMed Agenda. In particular, Med4Waste contributes to the Axis 2 “Prevent and reduce pollution on land, air and sea” as well as Axis

European policies and regulations addressing organic and bio waste



[Waste Framework Directive:](#)

- Sorting obligation for biowaste on 01/01/2024
- Importance of biowaste for reaching the 65% recycling target for municipal waste by 2035
- Upcoming targets on food waste prevention

The [Landfill Directive](#) addresses the importance of biowaste to reach the <10% municipal waste sent to landfilling by 2035.

The [Industrial Emission Directive](#) sets requirements for the operations of composting plants and anaerobic digestion plants above a certain capacity.

[EU Fertilising Products Regulation](#)

- Compost and digestate among the categories of fertilising products
- Set criteria covering safety, quality and labelling to be marketed in the EU
- Possibility to follow national criteria if not exported
- Rules on accreditation and external controls

1 “Support the transition towards a green, circular and socially inclusive economy”.

National Policies

Overall, legislation on waste management has been in place for several decades in EU Mediterranean countries, and the second EU Circular Economy Action Plan (2020), one of the key pillars of the European Green Deal is expected to drive progress towards waste prevention and improved waste recycling and recovery. All southern Mediterranean countries have policies, plans or strategies for waste management at both the national and subnational level, however waste prevention (the first and most preferred step in the [waste hierarchy](#)) is not addressed in most of them.

Under the Med4Waste project [a mapping and assessment of local, regional and national policies in waste management](#) was conducted focusing on the 6 project partner countries, namely: Greece, Italy, Jordan, Lebanon, Spain and Tunisia. Recent policy frameworks on waste management and related context within each country was reviewed in a non-exhaustive way, identifying main gaps and opportunities on approaching sustainable waste management and circular economy.

The policy recommendations presented in this toolkit (see Chapter 6) are based on the findings of this exercise, fully addressing the current landscape of national policies and regulations throughout the region.

Waste Prevention and Minimization



Understanding the waste stream helps local authorities and decision-makers develop targeted outreach campaigns and policy measures

For example, outreach campaigns could encourage large-scale organic waste generators (e.g., produce markets) to build biodigesters to generate biogas and digestate as a soil amendment, an additive that improves the soil from food waste.

Food waste, packaging material, and disposable products are some of the typical items in waste streams that can be targeted for waste prevention and minimization.

Municipalities can also use data from waste characterization studies to identify non-recyclable materials that should be targeted as part of waste prevention outreach strategies.

Best practices in achieving waste reduction in the Mediterranean



The overall aim of this ‘repository’ of 20 practices ([bestpractices-waste-med.net](#)) is to promote circular economy and waste reduction across the municipal waste management chain in the Mediterranean.

Its creation was part of the work programme of the EU-funded [Water and Environment Support \(WES\) in the ENI Neighbourhood South Region \(2019-2023\)](#): identify, document, and disseminate key best practices to improve the implementation of the 3Rs for municipal waste in eight countries of the southern Mediterranean: Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestine, and Tunisia.

WES consortium members [MIO-ECSDE](#), [ACR+](#) and [LDK Consultants](#) were in charge of the activity. This website contributes to the [UfM’s 2030GreenerMed Agenda](#) and very specifically to the launching of a Flagship Initiative of UNEP/MAP’s [Mediterranean Strategy for Sustainable Development \(MSSD 2016-2025\)](#) under Strategic Direction 3.4 “Promote sustainable waste management within the context of a more circular economy.”

In early 2021, WES (through MIO-ECSDE), UNEP/MAP, UfM and the Circle of Mediterranean Parliamentarians for Sustainable Development (COMPSUD) launched this collective effort to set the MSSD 2016-2025 Flagship Initiative 3.4.5 into motion.





Some key considerations for developing inclusive and integrated Municipal Waste Management Plans



Although when it comes to sustainable waste and resource management there is no silver bullet, for a successful way forward an integrated approach, where different technologies and solutions all together contribute to the common goal, need to be pursued.

Integrated solid waste management refers to the strategic approach to sustainable manage-

ment of solid wastes covering all sources and all aspects, covering generation, segregation, transfer, sorting, treatment, recovery and disposal in an integrated manner, with an emphasis on maximizing resource use efficiency.

An optimum integrated municipal solid waste management should satisfy all main pillars of sustainable development, aiming to minimize the total cost of the system

(economic), minimize the total greenhouse gas emissions (environmental), while maximizing the total social suitability of the system (social).

Planning integrated solid waste management plans has a strong technical component, but the organization and management of relationships between all stakeholders is of equal importance: **ensuring participation and building consensus**, is needed along the way. The process is not a one-off or linear process, but an on-going exercise, in need of regular revision and updating.

Planning is particularly important for implementing a municipal waste management system because of the large number and variety of stakeholders involved. Target groups should also be trained in various planning processes. This aspect is often overlooked and initiatives are often launched with little capacity building and training of staff.

Solid waste management system planning can involve a wide range of activities. Key steps that many Mediterranean municipalities have taken or should strive towards developing, are:

- Identifying, inventorying, and assessing resources
- Identifying needs
- Setting goals and objectives and establishing a common vision
- Evaluating municipal waste management options
- Defining recommended municipal waste management options
- Developing an implementation strategy (on a consensus basis)
- Securing funding for implementing the solid waste management system
- Monitoring and evaluating the system; adjusting along the way

The **collection of available knowledge, based on scientific evidence and mapping of available**

good practices is part of the first step in order to have a fully updated picture of the scenario, context and potential successful solutions. The local context, innovation and social inclusion, with attention to new green technologies accounting for social consequences and the promotion of employment and the protection of workers should frame and guide the process. In fact, the drafting of circular economy action plans with eco-social impact criteria makes it possible to systematise the ecological and social transition through monitorable and verifiable stages.

Mobilising political support, establishing working groups to carry out necessary steps and feasibility studies, analysing the current situation, predicting future capacity requirements, stakeholder engagement at all steps, developing or updating waste treatment and disposal facilities and strengthening the financial management framework through economic evaluations are key con-

siderations that should be strategically planned and implemented. It is also important that any municipal process takes into account the national planning process - if one exists.

Collaborative action can support local authorities in **unlocking the financing instruments and tools needed for effective waste management**. While local authorities are responsible for solid waste services, the private sector has long been both formally involved in the municipal solid waste sector through outsourcing arrangements, and informally involved through waste pick-up and sorting. Engaging the private sector in waste management can provide a solution to operational cost barriers (in some instances, solid waste management accounts for the largest portion of the municipal budget). To maximize the efficiency of the waste management system, use of innovative financial and technological solutions engaging the private sector, can be instrumental.

Any financing models should preferably be fee-based rather than tax-based, ringfenced⁵ and securing full cost-coverage for the provided services. **The guiding principles are: pollution prevention, the life-cycle concept, the polluter-pays principle, and the adequate internalization of costs (ISWA, 2021).**

To **encourage companies** to reduce waste, use renewable materials, promote the sharing and recovery of goods, etc. different incentives can be set up through different schemes, such as the pay-as-you-throw (PAYT) system, tax leveraging, fiscal incentives, grants and subgrants, in order to reward those companies that have shown that they have embarked on a path of transition towards a circular and eco-social economy. Several European and Mediterranean cities are looking for effective ways to create a good economic environment for sustainable companies by introducing incentive systems through tax reductions, and discount on the variable part

Waste characterization



Different types of waste call for different solid waste management strategies, so municipalities can greatly benefit from understanding their waste streams to design and implement a relevant applicable system. Information about the sources, quantity, and composition of waste provides the foundation for all stages of a successful solid waste management program. Understanding the waste stream helps local authorities to plan collection as well as storage facilities and develop appropriate infrastructure (e.g., knowing the quantity and type of organic waste generated will influence decisions about potential source segregation programs and appropriate size of a potential compost facility).

Public-Private Partnerships (PPPs)



These cooperative agreements between the public and private sector can help shift some financial burden and risk from the municipality to a private company.

Using these formalized contracts, private companies can construct, operate, and maintain waste facilities.

This agreement can be an advantage when technical expertise may be limited.

To be successful, such partnerships should be flexible, provide secure and proven products, ensure value for money and meet environmental requirements.

PPPs in the municipal waste sector are usually funded by collection fees, tipping fees, or other direct user charges or even by revenues from the sale of waste treatment byproducts, including biogas and compost.

⁵In business and finance, ringfencing or ring-fencing occurs when a portion of a company's assets or profits are financially separated without necessarily being operated as a separate entity.

of the waste management tariffs or by enhancing economic activities that have met the circular economy requirements to apply for reductions in waste collection taxes.

At local level, the importance of **clustering start-ups and SMEs** should be underlined. This aims to group start-ups according to common criteria related to the circular economy, such as the sector of activity, the technology used, the reference

market, the geographical location, so as to allow the creation of innovation ecosystems that favour collaboration, sharing of resources, the competitiveness and growth of start-ups. Interaction with organised civil society, such as NGOs and trade associations, can encourage the redirection of economic resources to foster the growth of circular economy experiences.

Green sourcing and public purchasing methods

favour the circularity of products and services. Green Public Procurement linked to circular economy is defined in the EU's Communication (COM -2008- 400) "[Public procurement for a better environment](#)" as a process by which "public authorities purchase works, goods or services that seek to contribute to closed cycles of energy and materials in supply chains, while minimising, and at best avoiding, negative environmental impacts and the creation of waste throughout the life cycle of such works, goods or services."

Considering green procurement criteria to try to reduce the amount of waste that ends up in landfills by recycling and classifying the waste generated for subsequent recovery or reintroduction into the value chain is important. Within the procurement planning, innovative or improved solutions can be requested for products and services that meet the criteria of the circular economy thanks to "**pre-commercial procurements**" that allow public authorities to define characteristics of goods and services to be purchased, in order to meet sustainable and innovative parameters.

A key aspect of effective municipal waste management is **continuously communicating with and educating**, not only during select stages of system development. Understanding, acceptance and support is crucial for the development of new policy, for implementing and respecting this policy, for active participation, for respecting measures and achieving objectives, for the realization of important infrastructure projects, for knowledge sharing and solidarity. Informing waste generators (citizens, private sector) about waste management plans and activities encourages the use of collection services and participation in recycling and or-

ganic waste diversion programs. **Educational programmes** in schools and universities, but in other informal settings as well, on sustainable development, circular economy and sustainable resource management, benefits, roles and responsibilities, can only entrench the success of any integrated waste management system. Traditional awareness-raising programs include public meetings, media campaigns, community clean up events, competitions while new media offers many different options depending on local specificities.

Participatory processes and stakeholder engagement in waste management

Municipalities have found it necessary to engage the public to design, implement and monitor a robust municipal waste management plan and maintain long-term support. Operating such plans efficiently requires significant cooperation from waste generators (e.g., individual residents and businesses), waste handlers, the informal sector, and all other individuals and organisations impacted by the management of waste.

In its simplest terms, a **participatory approach** is one in which everyone who has a stake in an intervention has a voice, either in person or by representation. Anyone affected by a decision has the right to be involved in the decision-making process. This is the basic premise of a participatory approach and public participation. Public participation allows stakeholders to influence decisions that affect their lives. It

Pay-as-you-throw (PAYT)



PAYT is a scheme in which waste fees paid by users are modulated according to the amount of mixed waste delivered to the waste management system.

The aim of PAYT is to enact the polluter pays principle in a fair way and its adoption can lead to outstanding results in waste management performance, increasing the amount of waste that is separately collected and sent for recycling while reducing mixed waste.

In a well-functioning PAYT system, waste fees to users are based on a fixed plus variable fee component, to reflect the cost structure of waste management and align incentives for users (i.e. lower fee when less waste is produced) and waste collectors (i.e. revenue stability from the fixed fee component). Frontrunner waste authorities adopt waste fees where the variable fee component, depending on the quantity of waste collected, is at least 40%. A PAYT system can be focused on charging for residual waste only or also separated streams, still with the aim of fostering source separation and waste prevention.

Practically, the PAYT system can be implemented in various forms, typically as:

- volume-based schemes, where waste fees are charged based on the size of containers emptied;
- sack-based schemes, where waste fees are charged based on the number of waste sacks used, for example collecting only waste disposed in specific prepaid sacks;
- weight-based schemes where waste fees are charged based on the weight of the waste collected in a given container;
- frequency-based schemes where waste fees are charged based on the frequency with which a container is left out for collection. This approach can be combined with volume- and weight-based schemes.

More information at: <https://greenbestpractice.jrc.ec.europa.eu/node/7>

is the process by which an organisation/body consults with interested or affected individuals, communities, organisations, and public entities, before planning. Public participation is a two-way communication and collaborative problem-solving process with the goal of achieving better and more acceptable decisions.

Stakeholder involvement in the waste sector is linked to good governance which in turn rests on the three pillars of reliability, inclusiveness, and transparency. Guiding principles of stakeholder engagement are:

- **Integrity.** Transparent and clear purpose and scope.
- **Inclusiveness.** Accessible to all stakeholders whose full range of values and perspectives are sought.
- **Dialogue.** Open and genuine discussion supported by timely and accurate information.
- **Influence.** Input reflected in outcomes.

A participatory approach brings a broader range of people to the planning process, thus providing access to a broader range of perspectives and ideas. In addition, it enables a reality-check when it comes to the local context and specificities and thus it is instrumental in avoiding pitfalls caused by ignorance of the realities of the community or the target population. It brings transparency, prevents or deals with conflicts and leads to fewer misunderstandings, litigation and delays in decision-making and implementation in the long term, safeguarding and reinforcing democracy.

In sum, effective and meaningful participatory approaches are essential to:

- **enable high quality and democratic governance;**
- **strengthen civil capacity;**
- **develop and deliver programmes effectively and efficiently;**



Integrating the informal sector for improved waste management



In many Mediterranean countries, selective collection and sorting, and sometimes also recycling, are traditionally carried out by the informal sector.

Despite having been legally recognized in several countries, professionalization and formalization of the informal sector is yet to take place.

This would contribute to higher productivity, larger transparency and potential for better systemic coordination of the waste management system, and especially, it would promote the protection of health, as well as the access to dignified employment ([The Future of the Waste Management Sector, ISWA 2021](#)).



- **build public confidence and trust in decisions;**
- generate a **greater understanding** of public issues, concerns, priorities and solutions;
- **build broader support for programmes and initiatives;**
- **increase mutual learning through the sharing of information, data and experiences;**
- ensure that **decisions and policies incorporate knowledge and expertise** that otherwise might be overlooked;
- reflect a wider range of **public concerns and values in decision-making;**
- rapidly identify possible controversial aspects of an issue and help bring together different points of view to **achieve consensus in a collaborative manner.**

Debunking some common myths about waste management



Incineration is the solution.

Incinerators do not make municipal solid waste disappear. Indeed, they encourage waste generation and current patterns of production and consumption, which are at the root of solid waste problems. Incinerators are the most costly of all solid waste management options, result in air, water and odour pollution, and still need to be supplemented by landfills as they produce an ash that is far more toxic than ordinary domestic trash.

Waste treatment generates more money than the cost of the service.

Effective waste management is expensive, often comprising 20%–50% of municipal budgets. Operating this essential municipal service requires integrated systems that are efficient, sustainable, and socially supported. Proper sorting and recycling of some waste streams as well as high-quality compost production could generate income for municipalities. However, such income is unlikely to be larger than cost of treatment itself. Profit could be considered if you include the saving in disposal fees in countries where such tipping fees are high due to taxes.

Zero waste means producing absolutely no waste at all.

One of the biggest misconceptions about zero waste is the belief that it means producing absolutely no waste. Zero waste is a long-term target on the journey we have to start today. While the ultimate goal is to minimize waste as much as possible, achieving zero waste in the strictest sense is incredibly challenging, if not impossible, in today's societies. Reducing our waste footprint involves designing out waste from the product inception stage, creating reuse and repair models, and safely recycling products that cannot be reused. Even at the maximum of efforts made, there will be residual waste that would require disposal under controlled conditions.

Waste sorting at the source is the most critical part of waste management.

Some waste, specifically plastics, are not recyclable, so even if most of the recyclables are properly sorted, some residual waste will still have to be considered. At the same time, contaminants can ruin an entire load of recyclables. Participation rates and sorting efficiency must also be taken into consideration.

Producing plastics with biodegradability properties is a solution to littering.

Biodegradable plastics or “bioplastic” alternatives, including bio-based plastics and compostable plastics are not considered credible alternatives for single-use plastics. This is due to widespread misconceptions regarding the options for their end-of-life treatment, which in reality, are limited and present no added benefit relative to single-use plastics, except in very few applications. The only sustainable solution to slash the plastic crisis is to cut its production.



Med4Waste Policy Recommendations for transitioning the Mediterranean municipal solid waste sector to circularity

Overall, no “*one size fits all*” solution is suitable to promote sustainable waste management in the Mediterranean region, in view of its social, economic and political heterogeneity. However, the following policy recommendations proposed by Med4Waste, which are based on lessons learned from applied cases in the region, address a wide range of common challenges

covering all three aspects of sustainable development: environmental, social and economic. The recommendations address decision makers and other key stakeholders active at the sub-national/local, national and Mediterranean levels and aspire to enhance good governance of the urban waste sector and boost the region’s transition to circularity.



At the sub-national/local level

Recommendation 1:

Design and implementation of Integrated Municipal Waste Management Plans that guide territorial development towards a circular economy, involving all stakeholders and based on good practices and lessons learned.



Environmentally sound management measures of all waste, particularly hazardous, including through waste prevention and alignment with the waste hierarchy and circular economy objectives, and even ambitious zero-waste objectives and strategies, are catalytic for achieving sustainable cities and towns.

As no single municipal waste management approach is suitable for managing all materials and waste streams in all circumstances, local authorities should work toward developing tailor-made integrated plans that meet the specific needs and conditions of their area based

on participatory processes that take stock of stakeholder needs and concerns. Based on real challenges in the region, as a minimum, Mediterranean municipalities through these plans should aim to:

- achieve 100% collection coverage (for cities with a population of more than 1 million);
- avoid open burning of municipal solid wastes and similar wastes;
- replace open dumps with controlled disposal facilities;
- reduce landfilling and only consider for residual waste;
- build on existing recycling

systems and aim for high recycling targets for key waste streams in the area;

- integrate the informal sector within any proposed solid waste management system (leave no one behind);
- explore intermunicipal cooperation opportunities;
- monitor and report on progress; make adjustments to optimise results.

Recommendation 1a:

The very first and basic objective of any waste management system is to **provide professional collection and disposal services**, including at least full collection coverage in urban areas, substantial or full coverage in rural areas, and sound environmental practices at disposal sites. As a general rule, investing in more sophisticated infrastructure and technologies should be considered only after the basic level of service provision for the population is available. Implementing training programs in the sector and inducing a huge cultural paradigm shift is required, with the overall aim being to change the

view on waste management workers from low-status jobs at the bottom of the societal pyramid to essential agents of change in the green transition.

Door-to-Door collection systems for the management of household solid waste is increasingly being promoted as a feasible method for promoting sustainable development in many Mediterranean countries by improving the management of household wastes. This household-level waste management approach is increasingly being promoted since it induces behavioural changes at waste generation points in the long term and enhances consistency in waste collection.

Recommendation 1b:

Innovation and lessons learned brought about by pilot projects applied in an area should be considered in the Integrated Municipal Waste Management Plan of the said area and of others with similar features (scale, socio-economic, maturity of citizen perceptions, etc.).

Recommendation 1c:

Despite the mediation challenges, and time and resources re-

quired, a proper **stakeholder engagement** process from the design, to the implementation and monitoring of Integrated Municipal Waste Management Plans greatly facilitates the success of the effort, creating a sense of ownership, enhancing awareness and understanding of the process itself but also of the overarching goal of a circular and sustainable future. Efficient separation at source, Public-Private Partnerships, EPR schemes, new entrepreneurial initiatives, are only some of the spin-off benefits.

Recommendation 1d:

Break down the silos and ensure that the Integrated Municipal Waste Management Plan is intertwined with other municipal policies, such as food policies. Several local authorities in the Mediterranean basin are advancing their efforts to make food supply chains more efficient and sustainable, decreasing food loss and food waste. Overall, making sure that planning initiatives are cross-sectoral, secure a holistic planning paradigm and a common view on human ecosystems.

Recommendation 2: Addressing the organic waste stream as a priority

Recycling organic waste (usually the largest fraction of municipal waste), including food waste into compost provides a range of environmental benefits, including improved soil health, reduced greenhouse gas emissions, recovery of valuable nutrients, and mitigation of the impact of droughts. Effective organic waste management within an Integrated Municipal Waste Management Plan requires a **combination of centralised and decentralised approaches** such as composting and anaerobic digestion, which are feasible options in most Mediterranean cities and towns.

Recommendation 2a:

Mandatory separation rules can help drive organic diversion efforts and contribute to good quality compost, especially from municipal clearing of public spaces, garden pruning/clearing, open markets, and on the outskirts, of farms, poultry houses, greenhouses, and slaughterhouses. It is important that compost and digestate from organic waste treatment, are of good quality to ensure that they can be of economic value and marketable; they do not contaminate the land that they are applied on; and can help with soil restoration efforts.

Engaging stakeholders and citizens actively throughout the valorization process will promote ownership and active participation. In fact, community composting initiatives should focus on empowering civil society and in general have been successful in promoting an overall circular mentality and understanding of waste as value.

Recommendation 2b:
Institutional capacity building combined with comprehensive awareness and communications programmes are critical components of effective organic (and other types of) waste diversion schemes, helping boost diversion rates (among other ben-

efits). An understanding of the benefits of compost production and anaerobic digestion through nutrient recycling and of the role each actor has to play along the chain is of paramount importance. This can be done by conducting awareness campaigns targeting economic sectors,

residents, consumers, tourists, etc., educational programmes in schools, community consultations and events, as well as targeted capacity development. NGOs are valuable partners to local authorities and waste contractors in running such activities.

SIRCLES Policy Toolkit for circular economy employment and training



The SIRCLES model, implemented to tackle organic waste composting challenges in Mediterranean countries, offers crucial insights into sustainable waste management.

It encompasses technology, regulations, and awareness to establish effective collection and composting practices, adapting to local legal frameworks and citizen awareness levels. Lessons from seven pilot plants emphasize involving local institutions, fostering stakeholder collaboration, private sector engagement for financial viability, public awareness campaigns, and continuous education. These lessons result in policy recommendations for local authorities, including prioritizing awareness and education, understanding local contexts, fostering community engagement, and implementing incentive systems.

These insights underscore the importance of citizen involvement, industry participation, and educational collaboration for achieving circular economies in cities. Implementing these recommendations can create efficient biowaste collection and composting, reducing landfill waste and promoting circular economies by transforming biowaste into valuable compost for agriculture. Citizen participation, industry engagement, and sustainability education play pivotal roles in building resource-efficient urban environments, ensuring a better future for generations to come.

Read the full Policy Toolkit developed by the SIRCLES (Supporting Circular Economy Opportunities for Employment and Social Inclusion) project [here](#).

Recommendation 3: Ensuring access to financing schemes

Securing funds for the costs (planning and administrative, investment costs and operational costs) of waste management plans and facilities requires accessing financing either from internal or external sources, which can be challenging considering the unique economic, legal and regulatory conditions of each municipality. Special funds, disposal fees, tax exemptions and deposit-refund schemes are some of the successful strategies that municipalities can use to more effectively recover solid waste management costs. For example, the “Pay-As-You-Throw”

principle as a cost recovery system has been successfully piloted in several municipalities in the region. It provides an incentive for individuals and organizations to reduce waste generation and increase recycling rates. Tailor the pricing structure of the PAYT system to suit the local context and residents’ socio-economic conditions. Consider factors such as the number of household members, frequency of waste collection, and types of waste generated. Provide discounts or incentives for residents who actively participate in waste separation and recycling efforts.



Extended Producer Responsibility



Municipalities in Mediterranean countries may have limited access to sources of financing to cover all costs of solid waste management. In such cases where opportunities for using internal revenues are limited, some governments have used extended producer responsibility (EPR) systems to reduce the public’s financial burden for waste management. These systems, which are typically adopted at the national level, usually establish a legal requirement that producers assume responsibility for goods that have reached the end of their useful life. Governments have used numerous types of EPR instruments, often combining multiple instruments into one EPR package. Common EPR programs include:

- Product take-back requirements
- Performance standards
- Deposit-refund schemes
- Advance disposal fees
- Material taxes
- Eco-labels and awareness raising

More information:

- EU guide “Public procurement for a circular economy. Good practices and guidelines”: https://www.adepp.info/wp-content/uploads/2019/12/cp_european_commission_brochure_it.pdf
- EU Green Best Practice Community: <https://greenbestpractice.jrc.ec.europa.eu/node/7>
- Coripet: <https://coripet.it/pet-to-the-future-metodo/>



Recommendation 4:

Creating a supportive environment for the private sector through economic incentives addressed to circular start-ups and SMEs and supply chains to improve separated waste collection

Circular economy benefits businesses while enabling a healthier environment, decoupling economic and social development from resource use. The establishment of supply chain agreements between the main economic actors in an area (or country, depending on the scale) on the basis of an analysis of energy and production efficiency, supported where possible by tax incentives to companies or vouchers to consumers, will help reduce waste in the production chain and the production of post-sale waste.

Recommendation 4a: **Social enterprises** and their role in waste management (i.e., reuse, recycling, upcycling, recovery and disposal) should be further acknowledged and supported due to their ability to develop innovative solutions that increase productivity while delivering better services in social, health, and education services, especially for many disadvantaged social groups. Their significance lies in the fact that they have familiarity with unmet local needs and the entrepreneurial zeal to drive and facilitate extensive social impact while effectively managing municipal waste.

Recommendation 5:

Promoting the procurement of sustainable and circular products and services to create demand for circular solutions

Efficient use of resources, both own and external, through green procurement and other public purchasing methods favour the circularity of products and services. Green Procurement, Circular Public Procurement (CPP) and Pre-commercial Procurement Circular (PCPC), can be used as levers for new business models and overall resource efficiency.


Recommendation 5a: **Clear guidelines for public procurement** need to be de-

veloped that can support local companies, preferably social enterprises, the informal sector and/or cooperatives, for everything related to the provision of goods and services that can close the energy and materials cycle, favouring support for circular supply chains.

Recommendation 5b: Targeted **support for youth, women and vulnerable groups** within local waste labour markets goes hand in hand with the promotion of a just, green

transition, particularly in view of the fact that the green transition has a strong gender and youth dimension in the labour market. More specifically, promoting gender equality and the empowerment of women within the sector, adopting a transgenerational approach, given that youth is a key agent in the green transition, and including vulnerable groups in waste management systems offer concrete opportunities for employment and social inclusion.


Recommendation 6: Monitoring and evaluating municipal waste management plans and their progress; welcome digitalisation



Regular monitoring of waste collection data and coverage rates of municipal waste collection activities and evaluating progress towards circular economy goals, including citizen perceptions, will help to identify successes and areas for improvement of the effectiveness of the system: *“if you don’t measure it, you can’t manage it”*. Utilizing technology and **digital solutions**, such as electronic identification of waste collection and invoicing systems, to monitor and track waste collection data can help identify trends, opti-

mize collection routes, and provide accurate billing based on waste quantities. Regular evaluation of the performance of the implemented Integrated Municipal Waste Management Plan based on quantified data and indicators will allow for analysis and insights on waste generation trends, recycling rates, and cost-effectiveness. Applying AI and other digital solutions in forecasting, planning, operation and follow-up for waste management systems and technologies is the only way ahead.

Recommendation 7: Planning and investing in long-term awareness-raising and education



The awareness and active participation of public servants, citizens/consumers, and the industrial sector, play pivotal roles in affirming circular economy models within communities and towns/cities. Integrating relevant educational programmes in school and university curricula and enabling operational collaboration across academia, industries, local authorities and civil society, build a strong foundation for sustainable and resource-efficient urban environments, ensuring a better future by equipping generations to come with the knowledge and skills needed to construct environmentally responsible and resilient communities. On all accounts, circularity is a mindset and a behavioural choice that needs to be ‘cultivated’ at the level of youngsters, professionals and of the general public.

Recommendation 7a:

Setting up a qualified team and strategic approach for **customised communication to the different stakeholders**, is key for facilitating the adherence of citizens and economic actors to the objectives and goals included in the Integrated Municipal Waste Management Plan. Maintaining open and transparent communication with residents, sharing regular updates on the progress and achievements of the Plan, highlight success stories but also challenges, sharing data on waste reduction and recycling rates will build trust, shared responsibility and acceptance, and hence enforcement.

Recommendation 7b:

Re-skilling and **upskilling** of stakeholders to share the benefits of the green transition is a must. The shift towards green and circular economy requires the adoption of eco-innovation, life cycle-assessment and eco-design approaches by entrepreneurs, start-ups, SMEs, big companies, etc., as well as experts and Business Support Organizations. Capacities and knowledge should also be reinforced among policy makers. Financial actors and investors should gain knowledge about impact investment and understand the specific needs and potential of a circular economy. The support needed for local authorities, entrepreneurs, start-ups and companies should include capacity development, technical assistance, mentoring/coaching, networking, impact assessment.

In terms of the national-institutional setting needed to ensure a proper governance



Recommendation 8: Establish a comprehensive legal framework of national policies, plans and strategies for waste management in line with the circular economy framework to bring economic benefits

Laws and regulations need to be enriched or established where absent, setting principles, targets, roles and responsibilities, incentives and disincentives, economic instruments, enforcement provisions, and identify actions to meet them and set out a process for monitoring to support smooth implementation. This requires adequate staffing capacity at all levels. Institutional and regulatory gaps will only hinder progress. Establishing regulatory instruments that set rules to ban unsustainable waste treatment methods, govern priority waste streams, require authorisation for treatment facilities and set standards for their operation according to best available techniques should also be reflected in national policies. As far as the sustainable management of municipal waste, a decentralized approach with regional and/or local waste management plans is more effective with stakeholder engagement and decision-making taking place at the closest level to where services are provided to citizens.



Guidelines for fair waste taxation systems in Mediterranean countries



The adoption of highly efficient collection and treatment options by local authorities is driven mainly by social demand for environmentally friendly solutions, compliance with sector-specific legislation, and financial costs.

Different schemes of waste taxation that apply the polluter-pays principal such as the adoption of landfill and incineration taxes (at national and sub-national levels) and the Pay-As-You-Throw (PAYT) or Save-As-You-Throw (SAYT) schemes (at local level) (i) incentivize sustainable waste management, (ii) ensure the financial viability of waste management systems, and (iii) promote a fair cost distribution among citizens. As a result, these systems reduce waste generation, increase separate waste collection and, thus, increase recycling rates. However, common challenges in implementing such schemes include securing political support, curbing fraudulent practices (like waste “tourism”), addressing legal aspects (such as a fiscal ordinance), and adequate data monitoring and protection.

In the framework of the Med4Waste project, a report has been produced to provide **guidelines for fair waste taxation**. The report introduces three scenarios to contextualize these schemes to all Mediterranean countries, considering factors like existing waste collection systems and legal frameworks. More advanced models (such as door-to-door collection with electronic identification or collection systems based on closed smart containers) enable personalized PAYT schemes with data monitoring, while less advanced systems (e.g. open street containers) might only support environmental tax reductions for composting or recycling point use. Intermediate systems can implement PAYT schemes without individual data monitoring (e.g. frequency-based door-to-door collection). Case studies from Spain and Italy, where these schemes are being implemented years now, highlight the importance of technical requirements, the understanding of the local context, of data protection, continuous monitoring, bidirectional communication with taxpayers, and public awareness campaigns for implementing these schemes.

Access the “Fair waste taxation system in the Mediterranean region: keys aspects that can support the implementation of efficient waste management solutions” [here](#).

Recommendation 8a:

Simplification of the current regulatory regimes in the Mediterranean is called for, in order to make collaboration and cooperation between public authorities, the private sector and the informal sector more effective for the development of circular economy chains. Provisions that encourage the private sector to shift towards waste prevention and sharing and recovery of goods will boost the integration of the financial sector in the transition towards a green circular economy.

Recommendation 8b:

In line with national strategies, there should be an ambitious, clearly articulated **national waste prevention and resources management vision and overarching zero waste goal** with a strong political will to transition to a circular economy. This is often absent in many Mediterranean countries. Organic management of municipal waste should also be clearly addressed in national policies and complemented by clearly defined investment plans and financing opportunities for the promotion of development of decentralized approaches.

Recommendation 8c:

The ‘whole of government’ approach should be promoted and as a minimum, procurement of sustainable and circular products and services to create demand for circular solutions should be in place. The growing complexity of problems calls for collaborative responses, and an integrated approach to public service delivery based on ICT. E-government strategies can achieve enhancement of public sector capacity for better services; a networked government; efficiency; simpler procedures to boost business participation; business facilitation; simplification of life; and the list goes on.

Recommendation 8d:

Provide legal support and advance institutional improvements at regional and municipal levels. Regional waste management plans should be prepared in line with the national strategy/plan and municipal waste management plans should be prepared to guide local implementation. To do so, a process should be adopted to align municipal and regional waste management plans with the national strategy/plans. When building new

infrastructure and facilities, individual municipalities should be encouraged to follow the adopted plans to ensure cohesive development of the sector across the whole country. This would ensure the efficient use of limited public resources and the coordinated development of the sector. Inter-municipal cooperation in service provision should be promoted and could be supported by the central government through a variety of guidance tools and incentives, such as access to financial resources for capital investments.

Recommendation 8e:

Develop a national communication strategy on municipal waste management. Relevant national awareness and education campaigns (through formal, non-formal and informal education channels) aligned and harmonised with the global and Mediterranean-wide frameworks such as the [2030 Action Plan of the Mediterranean Strategy on Education for Sustainable Development](#) can greatly help in shifting mindsets and contributing to the creation of the enabling environment for smooth implementation of policies and regulations.

Harmonized awareness and education campaigns guided by the “Action Plan towards 2030” of the Mediterranean Strategy on Education for Sustainable Development (MSESD)



The MSESD promotes the integration of the principles, values and practices of sustainable development into all aspects of education and learning.

It was endorsed in 2014 by the Ministers for Environment and Climate Change of the Union for the Mediterranean (UfM)*. It was further included in the Athens Declaration of the Contracting Parties to the Barcelona Convention at COP 19.

The Strategy aims to ensure that national frameworks support ESD, promote sustainability through all levels and types of education, develop educators’ competencies, and promote materials, research and cooperation on ESD. Thus, the Strategy encourages the countries of the region to develop and incorporate ESD into all relevant subjects of their formal educational systems, as well as in non-formal and informal educational initiatives.

The MSESD was designed so that its implementation is driven by the countries’ priorities and initiatives addressing their specific needs and circumstances, serving as a flexible framework for the fulfilment of their regional/global but also national agendas. An Action Plan was adopted by the Nicosia ESD Ministerial Conference in 2016, providing the following guiding strategic elements:

1. Priority areas for institutional and operational interventions, with recommended activities and an indicative roadmap.
2. A set of identified common regional programmes and projects of institutional and non-thematic nature.
3. Priority thematic areas for region-wide programmes.
4. Proposed indicators for monitoring progress.

During 2022, the Action Plan was updated through a participatory process and exchange among competent stakeholders and actors. Consequently, the MSESD [“Action Plan towards 2030”](#) was adopted by the High-Level Meeting of Education and Environment Ministers of the Mediterranean (in the framework of the 9th Conference of the Environment for Europe, Nicosia, 5-7 October 2022). The “Action Plan towards 2030” aspires to develop the necessary knowledge, attitudes and competences - cognitive, socio-emotional and behavioural - of the people of the region, to learn, live and work in a just, creative, healthy and sustainable way for a green society and economy.

In the Bureau of the Mediterranean Committee on ESD that guides the implementation of the MSESD and its “Action Plan towards 2030” at the regional level, the following International Organizations participate: the UfM, UNEP/MAP, UNESCO, UNECE, the League of Arab States, together with Cyprus (chair), Greece, Lebanon, Morocco and Palestine. The Secretariat is jointly handled by MEIES / MIO-ECSDE and the UNESCO Chair on Management and Education for Sustainable Development in the Mediterranean. All these partners collaborate to advance ESD in the Mediterranean region.

*<https://ufmsecretariat.org/wp-content/uploads/2014/05/Mediterranean-Strategy-on-Education-for-sustainable-development-.pdf>

Recommendation 8d:**Continuous monitoring is needed to steer the sector in the desired direction.**

Waste management is a dynamic process requiring constant adjustments both in the regulatory framework as well as in actual operations. Thereto, reliable information on waste quantities, financial aspects, and market conditions is very important. Well-trained professional staff are needed to analyse the information and to propose adjustments. Continuous capacity building is therefore essential.

Although the establishment of data infrastructure has improved significantly, there has been little improvement in data availability and quality (EEA, 2020). Improvement of data and information coverage and quality is needed, as are efforts to develop and maintain dedicated data policies and governance structures, to make them fully fit-for-purpose and able to cope with new challenges (big data, digital economy) and emerging topics.



At the Mediterranean level

Recommendation 9: Active participation in regional cooperation efforts to tackle waste management challenges in the Mediterranean



The on-going efforts of the UfM, UNEP/MAP, the EU and other regional and sub-regional organisations and platforms, including of the private sector, academia, NGOs, etc. need to maintain the momentum and even enhance it further in order to speed up the much needed green and circular transition in the region, in spite of the geographical and socio-economic variations and complexities. Governments of all levels from Mediterranean countries must pro-actively participate, share experiences, seek partnerships and syner-

gies, gain from learning about case studies that demonstrate successes, challenges, and even failures, capitalise on state-of-the-art solutions and applicable research findings, within a region-wide approach.

Recommendation 9a:

Ambitious commitments have been adopted by Mediterranean countries. However, it is critical that political commitment is transposed to the operational level, by **updating national environmental legislation in line with regional decisions and policies**. This

should be achieved not only by involving the competent authorities but also by including other important stakeholders, such as civil society, industries and educational institutions, in governance mechanisms.

Recommendation 9b:

Harmonised, reliable waste data collection, population of commonly agreed indicators and contribution to global and regional assessments and reports provide the basis of solid decision making as well as for data-driven innovation in the sector.

Facilitating the transfer of innovative knowledge from scientists to policy makers through pairing schemes: A case study from Catalonia, Spain



Pairing schemes between scientists and policymakers can (i) bridge the gap between scientific expertise and policymaking, (ii) foster collaborative spaces to address complex challenges through mutual exchanges, and (iii) enable the co-creation of innovative solutions by translating scientific knowledge into effective policies.

This methodology was applied in the framework of a “Science-Policy Pairing Scheme on Municipal Organic Waste Management” in Catalonia (Spain) aiming to support Catalan public authorities in tackling local waste management related challenges. The programme included an open call for participants addressing waste management challenges in their local context, co-working sessions (in-person and online) fostering inclusive discussions and problem-solving, and visits to successful case studies. The applied methodology not only led to the identification of practical solutions but also ensured a broad understanding and commitment to implementing effective waste management strategies.

Designed to be transferable to other countries and local contexts, the methodology underscores the significance of collaborative initiatives by advancing sustainable practices in waste management for the benefit of local communities and the environment.

A comprehensive summary of the implemented methodology, lessons learnt, identified problems, possible solutions, and key recommendations is available [here](#).

Recommendation 9c: **Communicating a policy or decision-maker's success stories** is also very important and packaged in an attractive narrative, disseminated through various media can enhance visibility at region-wide level and also contribute to strengthening the science-policy-citizen interface.

Recommendation 9d: **Supporting collaborative and symbiotic cooperation of quadruple helix stakeholders** will encourage the uptake of sustainable waste management practices. Governments, companies, universities, non-governmental organizations and even citizens should be enabled to jointly implement research, disseminate and put into practice new solutions

and technologies. Mediterranean or sub-regional programmes should continue to be in place, to improve capacities of stakeholders to deliver the region's green transition. In coordination with existing cooperation schemes that foster stakeholder coordination, testing or piloting innovation should be welcomed via transfer and mainstreaming processes.



A guide to achieving effective Environmental Governance in the Mediterranean: The Mediterranean Accession Agenda to the Aarhus Convention



Multilateral environmental conventions and national legislation are important for the protection of the environment and the shift toward circularity.

Their successful implementation greatly relies on evidence-based, easily accessible information, effective public participation and access of all interested stakeholders to justice. These three essential components are furthered by the Aarhus Convention*. Currently, 12 Mediterranean countries and the European Union are already Parties to the Aarhus Convention. By securing effective access to information and to justice, as well as engagement of the public, accession to the Convention by the rest of the Mediterranean countries, can advance the implementation of Principle 10 of the Rio Declaration and facilitate the smooth roll-out of green and fair economy programmes, the 2030 Agenda for Sustainable Development with its Sustainable Development Goals, the Union for the Mediterranean's 2030 GreenerMed Agenda, the Mediterranean Strategy for Sustainable Development (MSSD) of the UNEP/MAP-Barcelona Convention system, the Mediterranean Strategy on Education for Sustainable Development, the compliance with, and enforcement of, the Barcelona Convention and its Protocols, and a series of national strategies and policies.

Being a Party to the Convention significantly contributes to countries' efforts to promote citizen-centric environmental governance and environmentally sound policies. It also encourages investments, particularly "green" ones, by having in place:

- an attractive and clear legal framework to encourage investments, capacity building support and bi- and multilateral cooperation,
- measures promoting social acceptance and conflict prevention, especially with regard to large infrastructure projects.

A Mediterranean Accession Agenda to the Aarhus Convention (MAAAC) has been elaborated to guide the region in a harmonised way. With EU support via the [WES](#) project and via a multi-stakeholder effort, the MAAAC was developed with the secretariat of the Aarhus Convention, the Union for the Mediterranean, the UNEP/MAP Barcelona Convention Secretariat, the UfM Parliamentary Assembly (Energy, Environment and Water Committee), the Circle of Mediterranean Parliamentarians for Sustainable Development, the Mediterranean Information Office for Environment and Sustainable Development and the MEPIELAN Centre.

The MAAAC provides all the information needed for a country to prepare and eventually put in motion the mechanisms needed to accede to the Aarhus Convention.

Read the full MAAAC in English [here](#)

Read the this news in French [here](#)

* Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Protecting your environment: [The power is in your hands – Quick guide to the Aarhus Convention](#)| UNECE – available in Arabic as well)



Snapshots of cases, practices and resources on waste management from the region

The section showcases examples from around the Mediterranean focusing on municipal waste, on various aspects of circular economy, including prevention, re-use, and recycling, and addressing different aspects and instruments.



The Zero Waste Municipality - Capannori

The story of the territory

The municipality of Capannori, in the province of Lucca (Italy) is among the most active municipalities in the development of an integrated approach to the circular economy, to the point that it was selected by the European Commission as a pilot city for the circular economy on the basis of a European selection evaluating more than 100 cities.

Capannori in 2007 was the first municipality in Italy to adhere to the 'Zero Waste' strategy. Since then, it has become a reference point on the international and national scene for waste management and the implementation of good environmental practices. The Capannori community has been, and still is, the protagonist of a cultural revolution that began with the introduction of the 'door-to-door' collection system and is evolving into a true circular economy system.



The Capannori model: incentives for sustainability

The Capannori model envisages the involvement of households and businesses, also through an incentive system progressively introduced over the years. From 2005 to 2016 both door-to-door collection and Pay as You Throw Tax System were reinforced. This was followed by the 'Zero Waste Families' project, which provides an incentive system to create more aware citizens

and further reduce waste. These are given a 10% discount on the variable part of the tariff, which is further reduced from 10% to 20% for 'home composting'. Added to this, in 2019, is the 20% discount on the variable part of the tariff for bars, restaurants and other establishments serving food, which continuously donate their food surpluses for social solidarity purposes. There are also greater incentives for small and medium-sized businesses that sell products in bulk and thus contribute to reducing the amount of packaging to be disposed of; in this case, too, an increase in the discount on the

bill has been envisaged, which will be calculated in proportion to the surface area dedicated within the premises to the sale of such products. From 2020 and 2021, the discount on the variable part of the tariff for those practising home composting has increased to 30%, while a reduction of 10% or 25%, depending on the good practices adopted, has been made possible on the variable part of the tariff. In 2022, the 'Adopt an earthworm' project for home self-composting by means of earthworms was launched, for which a 30% discount on the variable part of the tariff is provided.

The Zero Waste Research Center: a supply chain approach

The Zero Waste Research Center is an integral part of the Capannori Science Park, also known as the Technological Pole, is an infrastructure for advanced and qualified services for enterprises, technology transfer and innovation. It is managed directly by the municipality of Capannori in collaboration with the other partner organisations, the Province of Lucca and the Chamber of Commerce of Lucca. The Research Center plays a central role in supporting innovative start-ups providing space, equipment and business incubation services. This approach is included among the lines of work and research of the Technological Pole including a focus on nanotechnologies, for the development of applications of research on new materials and technology transfer to enterprises for the realisation of new products and new processes; and, finally, the project to consolidate a true district that promotes the sustainable and circular economy in the area of waste-to-energy.

Citizen participation and involvement

Part of the citizenship involvement came through the "Circular-city participation project", implemented and promoted since 2017 by the administration and co-financed by the Region of Tuscany. A project imagined to stimulate, accompany and strengthen innovative civil society projects on the subject of sustainability, recycling and creative reuse through the allocation of economic resources as co-financing; to incentivise flexible and lasting forms of citizen participation; to experiment with forms of collaboration between citizens, the Authority and the community with more agile solutions than normal administrative action.

Links

<https://www.comune.capannori.lu.it/grandi-temi/rifiuti-zero/>

<https://www.comune.capannori.lu.it/grandi-temi/innovare-per-crescere/>

<https://www.comune.capannori.lu.it/grandi-temi/innovare-per-crescere/circularicity-i-progetti-e-i-risultati/>



Nabeul fair jobs for a green initiative

The story of the territory

Within the broader Tunisian and Maghreb initiative in support of the “Municipal Alliance for Energy Transition”, the city of Nabeul in Tunisia has decided to implement a pilot project capable of combining sustainable waste management with the creation of good working conditions, while promoting the recycling of differentiable waste.





This initiative was included in the COOP-VERD project and was carried out thanks to the cooperation between different local authorities and civil society realities, including the city of Nabeul, the Eco-Tourism Environment Association, the city of Nabeul, the Eco-Tourism Environment Association, the city of Barcelona, the Metropolitan Area of Barcelona and MedCities.

The preparation of the intervention was preceded by a thorough analysis of the environmental and social needs of the city, in particular through surveys, interviews and field observations carried out thanks to the involvement of about eighty waste collectors present in Nabeul, and the main actors that feed the waste materials collection chain.

The main objective of the project is the recovery and enhancement of plastic, with parallel work to improve the working conditions of the collectors

and supply for the citizens of an Eco-point where to optimize the collection of plastic materials and where to increase the added value of the plastic collected, thanks to the possibility of producing pressed plastic bales, thanks to an automatic press, which allows an improvement in income for the people involved.

The Eco-Point is a selection plant created in the city center reduces the distances between collectors and the places of waste production, avoiding intermediaries and taking into account the social criteria of the beneficiaries of the center.

Better working conditions while respecting the environment

Among the main objectives of the intervention was the improvement of the working conditions of the collectors, which allowed them to be provided with medical and social coverage, overalls and adequate hygiene conditions, vaccination campaigns and training on the risks of work. The next step was the organization and formalization of informal workers, ensuring them greater economic sustainability.

At the same time, a communication campaign was developed aimed at the residents of the neighbourhood where the pilot project was developed, with the aim of encouraging separation and domestic recycling, and to involve citizens in a participatory process to decide on the installation of plastic recycling points in the neighbourhood. Thanks to a series of seminars and public initiatives, waste collectors had the opportunity to meet local, national and international actors to encourage an exchange of experiences and good practices.

Links

<https://medcities.org/project/coop-verd/>

<https://medurbantools.com/wp-content/uploads/2021/01/Plastic-waste-valorisation-Nabeul.pdf>



— The Chantier Vert city - Nice

The story of the territory

The municipality of Nice, Côte d'Azur, is experimenting with an innovative project to combine circular economy principles with environmental protection and labour rights within the construction sector. The new Chantier Vert Charter approach of the metropolitan city of Nice Côte d'Azur and the city of Nice applies to all works contracts held by them as of 30 September 2022 and was a proposal developed by a multidisciplinary team in cooperation with construction companies.





The new approach took the form of a charter summarising, in a list of criteria and rules, the general criteria of the new city policy such as reducing the consumption of primary resources and the production of waste from construction operations; guaranteeing the traceability of waste to its final destination in order to combat illegal dumping and protect the natural environment; controlling the overall costs of waste management; and promoting local employment, with a focus on occupational safety and combating undeclared work. The launch of a new culture of sustainability, therefore, sees the circular economy as a substantial element.

Chantier Vert: a new approach for the construction sector

The Chantier Vert approach translates into five themes, from site organisation to the management of secondary resources and site waste towards a circular economy circuit involving recovery and reuse wherever possible; from limiting visual and noise impact to water, energy and fuel consumption and, last but not least, reducing the site's environmental impact. The monitoring of the implementation of the Charter at construction sites is carried out during site meetings and then at the end of the construction site through a report detailing, among other things, the management of resources/waste, a sort of statement that is compared with the initial forecasts. The new charter introduces changes in the way construction sites are approached, which requires improving and updating the skills of the operators in charge of this work through dedicated training. The Chantier Vert charter is a true supply chain approach, which must be taken into account by the project manager and the various companies involved in the process.

Improving working conditions

Part of the criteria linked to the Chantier Vert deal with the reduction of risks for workers involved on the construction site, with a focus on the reduction of noise pollution and the replacement of health-damaging chemicals (such as organic solvents and mineral oils) with acrylic or plant-based alternatives. The agreement between the companies and the municipality also allows for better control of working conditions on the construction site and has, as a further objective, the support of the local economy and local employment.

Links

https://www.paca.developpement-durable.gouv.fr/IMG/pdf/annexe_5_charte_chantier_vert_cle09b813.pdf

https://www.cedis-formation.org/archives/c/Charte_Chantier_Vert.pdf



Rabat

A circular policy for a greener city

The story of the territory

At present, only a little more than 10% of the waste collected in Morocco is recovered for recycling which is why the country has given itself ten years to raise this percentage to 20%, according to the objectives of the National Strategy for Waste Reduction and Recovery launched in 2019, kick-starting a virtuous circuit that could create 25,000 jobs and contribute to 2% of the national GDP by 2030.



In order to achieve this, beyond compliance with the Sustainable Development Goals and the implementation of the agreements made within the UNFCCC, national regulations and especially the involvement of municipalities play a strategic role, given that the sectors of sustainable and integrated solid waste management and sanitation offer an opportunity for the transition from a linear to a circular economy. This is why the city of Rabat, as a green city, has embarked on an ambitious programme to develop the Bouregrag Valley and revive a sustainable economy.

Oum-Azza: the largest waste recovery centre in North Africa

Among the main objectives is the closure of uncontrolled landfills responsible for environmental pollution, climate change and damage to human health (Akreich, the Oulja landfill and the Ain Atik landfill), focusing on rational, ecological and economical waste management. This is why the Oum-Azza Recycling Centre is operational in 2017. Covering an area of 110 hectares, it has a

capacity to receive 850,000 T/year of waste from 13 municipalities, making it one of the largest waste recovery centres in North Africa and a real pilot project for testing the circular economy in Morocco. In the treatment and recovery of waste, a selective diversification of waste is envisaged, with a component linked to composting and recycling of RDF [Refuse derived fuel] for industrial use, the recovery of biogas with a forecast of 90,000 T/year when fully operational for the production of electricity. Today, the centre has six co-treatment plants, five pre-treatment platforms, serves 150 industrial customers and employs 70 people.

Promoting circular economy and fairer jobs

This is within a policy of creating decent work through the creation of social economy chains and dealing with informal work. Related to these goals, pathways have been put in place to recognise the profession of 'waste collector', through vocational training and career development for employees, many of whom are organised in cooperative form as team leaders, check clerks, payroll clerks. All this is accompanied by process to improve working conditions (health, safety, social protection). The cooperative relies on the collaboration of diverse local stakeholders: the international NGO, CARE; the operator of the Oum azza site, Teodem; the 13 communes of the region (including Rabat, Salé, Témara and Skhirate), the ministerial department in charge of the environment, the Office of Development and Cooperation and the informal reclaimers.

The project, which involves strong interaction between municipalities private sector scientific community and civil society, is in line with the country's real integrated development programme launched in 2014, a programme that aims to improve people's quality of life by preserving a balanced natural space for the current and future generation, in accordance with the principles of sustainable development and green cities.

Links

<https://www.aimf.asso.fr/wp-content/uploads/2021/10/At-Prep-2-Ftouhi.pptx>

<https://ma.boell.org/fr/2020/12/08/prendre-le-probleme-la-source>

<https://www.lavieeco.com/influences/climat/a-oum-azza-un-modele-reussi-de-valorisation-des-dechets-menagers/>

<https://bestpractices-waste-med.net/the-inclusion-of-the-informal-sector-in-the-oum-azza-landfill-the-attawafouk-cooperative/>



Participatory Circular Economy – Barcelona +Sustainable

The story of the territory

The municipality of Barcelona has managed to create an interesting model of participatory circular economy, involving citizens and businesses through the promotion of reuse, recycling and packaging reduction.

Barcelona+Sustainable is a network of more than 1,900 organisations committed to environmental, social and economic sustainability that collectively build a city that is responsible with people and the environment, and was implemented with the contribution of the European Urban Innovative Actions programme and in partnership with various public and private actors, including the University of Barcelona, the Trade Promotion Consortium and the Waste Management Association.



Participation and Co-responsibility

The citizenship participation was ensured through the creation of the Citizens' Council for Sustainability as an advisory and sectoral participation body, acting in areas related to sustainability.

All sectors of the network are represented in the council, as well as public administrations, city constituency bodies and municipal political groups.

The framework within which this all takes place is 'The Citizen's Commitment to Sustainability', a veritable road map towards a more sustainable city that envisages new strategies of involvement, co-responsibility

and participation of city organisations.

Among them is the 'Entities and Enterprises + Sustainable' group, a platform of entities, companies and other organisations that, by signing the Citizens Commitment for Sustainability, have taken joint responsibility for building a more sustainable Barcelona and pledge to contribute to it, each from their own sector.

The Waste Management Solution

The policy of the municipality of Barcelona is part of the broader Catalan Zero Waste Strategy, which proposes a change in the production and consumption model based on prevention, reuse, repair, recycling and composting. The achievement of waste reduction must necessarily be progressive and has as objectives the reduction of CO2 emissions and the decarbonisation of the economy. The Strategy has been elaborated, proposed and implemented thanks to the collaboration of the Catalan Foundation for Waste Prevention and Responsible Consumption, CEPA - Ecologists of Catalonia, the Catalan Association for Door-to-Door Waste Collection, the EMAS Club, as well as all Catalan public universities, all with the objective of promoting policies, technical and economic measures that enable the achievement of the set objectives, through specific commitments for each sector.


In line with the strategy, the Barcelona Plàstic Zero Commitment campaign aims to reducing the cost of waste collection through the elimination or reduction of single-use plastic in products, services or work spaces. The Compromís aims to bring together all the initiatives undertaken, mapping and valorising them, in order to put an end to the excessive consumption of single-use plastic and to inspire those who have not yet committed.

An activity that has also been supported by the municipality through tax incentives. In fact, in 2022, economic activities that have met the requirements of the ordinance can apply for a 10% reduction in the tax for the collection of urban and industrial waste assimilated to urban waste, which can be cumulated with the 10% already existing for contributions to the Citizens' Commitment to Sustainability.

Links

<https://www.barcelona.cat/barcelonasostenible/ca>

<https://ajuntament.barcelona.cat/ecologiaurbana/ca/que-fem-i-per-que/com-promis-ciutada/compromis-ciutada-per-la-sostenibilitat-barcelona-sostenible>

An aerial photograph of a coastal town, likely in Lebanon, showing buildings, a harbor, and waves crashing against a rocky shore. A large green rectangular box is overlaid on the right side of the image, containing text. A white double arrow points from the bottom of the green box towards the left.

Community -based response to the waste problem in Lebanese municipalities



The story of the territory

The Syrian crisis has entailed the exile of more than 3 million refugees to several countries, including to Lebanon, putting a significant pressure on already vulnerable public services and economic resources.

To contribute to the improvement of living conditions for Syrian refugees and the hosting communities, AFD financed four projects of local NGOs for a total of €3M. These projects all focused on the involvement and concertation of the local population and refugees, as a way to reduce the tensions between the communities. The arcenciel project implemented by arcenciel, a Lebanese based non-profit organization established in 1985 is one of them, addressing the issue of waste management and also project partner of ENI CBC Med project, CLIMA. Lebanon has been experiencing an acute crisis linked with waste management and the saturation of landfills. The refugee crisis added an increasing population that makes it challenging for municipalities to provide basic services to the population. There is a lack of infrastructure for waste collection and disposal, little possibilities to open new landfilling sites, and a general lack of financial and technical resources to provide a proper waste management at local level. In 2014, less than one quarter of waste was recycled, and about 30% was still disposed in uncontrolled landfills.

Sustainable waste management systems with the support of a local NGO

The project led to the creation of 3 sorting centres in Tannayel, Baabda, and Damour, and to the creation of a waste collection system for recyclables in the 12 municipalities and about 600 different organisations. About 10 tonnes of recyclables are collected every day. Arcenciel sort about 1,800 tonnes of waste per year, mostly paper (60%), plastic (32%), and metal (6%). The project also led to the [publication of comprehensive guidelines](#), listing recommendations with very practical information and quantitative elements for designing waste collection equipment, collection routes, and sorting and treatment units, and indicative costs for most of the elements. In addition, arcenciel allowed the integration and creation of job opportunities for refugees in collection and sorting.

The project also contributed to providing a clearer understanding of the municipal waste service by the population, who saw the quantities of mixed waste decrease, along with the health risks linked with the exposure to waste.

Sustainable waste management systems in 12 Lebanese municipalities

The staff of the NGO underwent a “training of trainers”, reinforcing their technical capacities, and allowing them to deliver the proper messages and know-how to local communities and refugees. The involvement of refugees, who actively participated in the project, has helped to reduce the tension between them and the local communities. The collaboration with the municipalities, that can decide to entrust part of the waste services or awareness raising on the issue to local NGOs, is also regarded as a factor of success.

Links

<https://bestpractices-waste-med.net/implementing-source-separation-and-recycling-in-lebanese-municipalities-with-the-support-of-the-ngo-arcenciel/>

Arcenciel, Sorting and Recycling within Organizations and Municipalities, accessed on 26/08/2021, <https://www.arcenciel.org/projects/sorting-and-recycling-in-municipalities/>

Arcenciel (2018), Supporting municipalities hosting Syrian refugees through improving waste management systems in Lebanon, <https://www.swim-h2020.eu/wp-content/uploads/2018/03/6aGoraieb-Guidelines-for-Waste-Management-in-Refugee-Camps.pdf>



Circular Economy Action Plan - Valladolid

The story of the territory

Valladolid was one of the first Spanish cities to commit to the circular economy. In 2017, the city signed the Declaration of Seville, a document developed by Spanish cities to urge urban actions for the development of a circular economy.

The aim of the municipality of Valladolid is to stimulate the creation of new circular enterprises and to adapt the current linear business models to circular ones, combining combating unemployment with improving the environmental impact of production. The roadmap envisaged by the municipality includes a circular economy action plan (Plan de Acción de Economía Circular, PAEC) by the Department of Innovation, Economic Development, Employment and Trade, brings together in a single document the approach and proposals for action by Valladolid City Council on the circular economy.



Support to innovative and sustainable companies

These are specific calls for grants addressed to companies, business associations, non-profit organisations or research centres based in Valladolid. The projects can be of different types: training, awareness-raising and

dissemination, research studies and/or demonstration projects and market implementation projects for new products and services. Since 2017, grants of almost one million euros and almost 100 projects have been awarded and supported. Support for entrepreneurship has also been channelled through the Circular Labs²¹ project, whose strategic objective is to integrate the circular economy into new business models. To this end, entrepreneurs and start-ups

are provided with operational resources (self-assessment tools, marketplace, coworking spaces...), training to obtain the necessary skills and a favourable attitude towards new job opportunities and business ideas, and the integration of the circular economy into the entrepreneurial culture is promoted. Circular economy can be promoted also by public procurement in order to promote socially efficient, strategic, integral and sustainable procurement acting as drivers on

the market to achieve this new, more sustainable production and consumption model. This policy aims at guaranteeing quality and durability through measures such as requiring longer guarantee periods and the availability of spare parts; maximising efficient use; promoting reuse, repair and remanufacturing; and incorporating sustainability and proximity criteria in public procurement, i.e., in the public procurement of food from municipal catering establishments.

Incubation services for circular startups

Support for innovative companies is provided by incubation courses that stimulate entrepreneurship in the circular economy both for the creation of new companies and business models and for the introduction of circular economy principles in existing companies. Conceptualisation spaces for innovative solutions are offered, such as Circularthon, Circular Weekend and Circular Challenge, in which knowledge centres, companies, entrepreneurs and business associations can participate collaboratively; together with implementation spaces, such as the Innovation Hub and the Circular Lab, multifunctional spaces that generate synergies that help boost projects and companies. This is complemented by awareness-raising, through conferences and events, and training to provide the local productive fabric with the skills and capacities needed to foster the transition to the circular economy. This includes the promotion of specialised profiles through agreements and conventions with business organisations and trade unions, as well as training for the self-employed, entrepreneurs and SMEs and for third sector organisations and social cooperatives to promote the employability of vulnerable groups.

Links

http://www.valladolidadelante.es/sites/default/files/Circular%20Economy_Valladolid

<http://www.valladolidadelante.es/sites/default/files/PLAN%20DE%20ACCI%20C3%93N%20DE%20ECONOM%20C3%8DA%20CIRCULAR%2021-23.pdf>

<https://www.circularcityfundingguide.eu/case-studies/city-of-valladolid-economic-prosperity-through-circularity/>

<https://www.eoi.es/es/empresas/emprendedores/circular-labs>

https://ec.europa.eu/environment/gpp/pdf/Public_procurement_circular_economy_brochure.pdf



Tilos

The first Zero Waste Island in the Medi- terranean

The story of the territory

Tilos is a small island in the Aegean Sea that, with its 500 inhabitants, has become the first Zero Waste certified place in the world. Due to its characteristics and geographical location, the economy of Tilos is heavily dependent on seasonal mass tourism, which has often put pressure on the island's resource and waste management. Until the implementation of the project, each citizen produced over 770 kg of waste every year, and the municipality landfilled around 87% of it, having already planned to further expand the landfill site in the absence of an efficient waste separation system. The collaboration with Polygreen, a waste management company that is attentive to the ecological transition, made possible to address and solve a problem that is both environmentally impactful and economically costly.





Just Go Zero Tilos: a project for residents and tourists

Launched in June 2021, the project is based on a door-to-door waste collection system and a 'Circular Innovation Centre' where sorted waste is collected and processed. The centre includes a composting

section and 15 different sorting lines for recycling. The little waste that cannot be recycled (about 54 kg per capita per year) is used as an alternative fuel for cement production. This allows avoiding landfilling, allowing it to be closed. The proposal combines direct citizen participation, the support of the municipality and the use of an app that can be operated from a mobile phone. Residents can turn to the Zero Point Tilos Information Centre, located a few metres from the port of Tilos, to

receive guidance and the necessary materials for waste collection. A specific team raises the citizens' awareness in a personalised way on how to correctly handle what is no longer useful, differentiating between recyclable, non-recyclable and organic waste, which is collected door-to-door by the Just Go Zero Tilos Team on set days and times. The Just Go Zero app allows you to be informed in real time about the quantities recycled and the progress of overall waste management on the island.

A customised approach has been addressed to tourists who, upon arrival at the accommodation facility, will find information and specific equipment useful for separating organic, recyclable and non-recyclable materials and for placing them in the specific bins on the island. The Punto Zero Information Centre also provides a cloth bag for shopping and all the necessary information for an ecologically sustainable management of their stay on the island.

Tilos: a certified Zero Waste island

The Zero Waste Cities Certification is a European certification standard evaluated by third parties. Created by Zero Waste Europe (ZWE), and run by its sister organisation Mission Zero Academy (MiZA), its goal is to accelerate the transition to zero waste and the implementation of the circular economy in European towns and cities, at the local level.

Links

Just Go Zero Tilos project: <https://www.justgozero.com/en/tilos/>

Zero Waste Europe (ZWE) website: <https://zerowasteurope.eu/>

Appendix

The Med4Waste policy recommendations and their correlation to Med4Waste and other ENI CBC Med projects working on sustainable waste management (namely: [CEOMED](#), [CLIMA](#), [DECOST](#), [MED-InA](#), [REUSEMED](#)).

Governance level	Policy Recommendation	Linked ENI CBC Med projects/activities/outputs
»	Design and implementation of Integrated Municipal Waste Management Plans that guide territorial development towards a circular economy, involving all stakeholders and based on good practices and lessons learned. <ul style="list-style-type: none"> • Provide professional collection and disposal services. • Take stock of innovation and lessons learnt by pilot projects. • Design a proper stakeholder engagement process. • Break down the silos between municipal policies. 	Developing Integrated Municipal Waste Management Plans (under MED-InA and CLIMA) Mentoring scheme to improve waste management plans (Med4Waste) Benchmarking study on promising outputs (Med4Waste)
	Addressing the organic waste stream as a priority <ul style="list-style-type: none"> • Mandatory separation rules can help drive organic diversion efforts and contribute to good quality compost. • Institutional capacity building combined with comprehensive awareness and communications programmes are critical components of effective organic waste diversion schemes. 	Developing New Waste Management Models: Decentralised Composting (DECOST) Applications to monitor citizen's environmental performance (DECOST) Innovative Composting Technologies (CLIMA) Anaerobic Digestion (CEOMED) Developing Market Waste Valorization Guidelines (CEOMED)
	Ensuring access to financing schemes.	Supporting a Pay-As-You-Throw system (CLIMA)

	Policy Recommendation	Linked ENI CBC Med projects/activities/outputs
 Sub-national/local level	Creating a supportive environment for the private sector through economic incentives addressed to circular start-ups and SMEs and supply chains to improve separated waste collection. <ul style="list-style-type: none"> • Social enterprises and their role in waste management should be further acknowledged and supported. 	Supporting Circular Economy Start-Ups (MED-InA) Supporting Social Enterprises (CLIMA) Business Ecosystem Enabling Integrated Waste Management and Circular Economy Models Report (Med4Waste)
	Promoting the procurement of sustainable and circular products and services to create demand for circular solutions. <ul style="list-style-type: none"> • Clear guidelines for public procurement need to be defined. • Support youth, women and vulnerable groups within local waste labour markets. 	Developing Market Waste Valorization Guidelines (CEOMED)
	Monitoring and evaluating municipal waste management plans and their progress; welcome digitalisation.	Survey on Barriers for Reuse (REUSEMED) Developing a Digital Twin of Piloted Technologies (CEOMED) Mapping of Resources for Reuse (REUSEMED) Enhancing Digitalisation to connect users of the Reuse Circuits (REUSEMED)
	Planning and investing in long-term awareness-raising and education. <ul style="list-style-type: none"> • Setting up a qualified team and strategic approach for customised communication to the different stakeholders. • Re-skilling and upskilling of stakeholders to share the benefits of the green transition is a must. 	Targeted awareness raising campaigns by CEOMED, CLIMA, DECOST, MED-InA, REUSEMED, Med4Waste Municipality Staff Capacity Building (DECOST) Implementing Capacity-Building Plans and Training Programs for Municipal Staff (MED-InA) Med4ZeroWaste & Circular Economy Course (Med4Waste)
 National	Establish a comprehensive legal framework of national policies, plans and strategies for waste management in line with the circular economy framework to bring economic benefits. <ul style="list-style-type: none"> • Simplification of the current regulatory regimes in the Mediterranean. • Articulation of national waste prevention and resources management vision and overarching zero waste goal. • The 'whole of government' approach should be promoted and as a minimum. • Provide legal support and advance institutional improvements at regional and municipal levels. • Develop a national communication strategy on municipal waste management. • Continuous monitoring is needed to steer the sector in the desired direction. 	Mapping and assessment exercise of local, regional and national policies in waste management in the Med4Waste partner countries (Med4Waste)
	Active participation in regional cooperation efforts to tackle waste management challenges in the Mediterranean <ul style="list-style-type: none"> • Updating national environmental legislation in line with regional decisions and policies. • Harmonised, reliable waste data collection, population of commonly agreed indicators and contribution to global and regional assessments and reports. • Communicating a policy or decision-maker's success stories. • Supporting collaborative and symbiotic cooperation of quadruple helix stakeholders. 	Zero Waste Guidebook (MED-InA) Decision Support Tool on Zero Waste Public Policies (MED-InA) Good practices on REUSE (REUSEMED) Catalogue of promising outputs (Med4Waste)
 Mediterranean		



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