

CAPACITY BUILDING FOR FOOD LOSS AND WASTE PREVENTION AND REDUCTION IN CITIES



**AJUNTAMENT
DE VALÈNCIA**

CEMAS

World
Sustainable
Urban Food
Centre of València

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In collaboration with EUFIC



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01

**INTRODUCTION:
LETTER FROM THE PRESIDENT OF CEMAS
CARLOS MUNDINA**

01. LETTER FROM THE PRESIDENT

CARLOS MUNDINA
PRESIDENT OF CEMAS
COUNCILLOR, CITY COUNCIL
OF VALENCIA



Every year, approximately 1.3 billion tonnes of food is lost or wasted which is one third of the world's food production. Moreover, according to FAO data, around 14% of the world's food production is lost after it is harvested and before it reaches the shops and 17% of our food ends up being wasted at a retail and consumer level, in particular in households. This data shows us that we are facing a global problem that needs to be resolved.

Food loss and wastage affect the food security of the poorest people - it is estimated that lost and wasted food could feed 1.26 billion people every year. It also affects economic development, with a direct negative impact on the income of both farmers and consumers as

well as affecting the environment. Producing food that will not be consumed wastes a large amount of resources used in production, such as land, water, energy and consumables, as well as unnecessary CO2 emissions.

Although this is a global problem, innovative local solutions are needed and cities have both the responsibility and the opportunity to lead the change towards a more sustainable model. Today more than half of the world's population lives in cities and by 2050 this figure is expected to rise to 70%. The urban environment consumes and manages most of the resources and it is here that the actions we take will have the greatest impact. Cities are also places where innovation happens, where modern technologies, policies and approaches

are created and implemented, which, if successful, can be scaled up and replicated at both national and European level.

Sharing experiences and knowledge between cities is key, as it allows us to learn from each other, find common themes and move together towards greater sustainability.

In the city of Valencia, progress has been made in recent decades towards green policies aiming for a more sustainable city. This is why we were the 2024 European Green Capital. This included the development of various projects aiming to prevent and reduce food loss and wastage.

So, we have come some way, but there is still a long way to go, and there is nothing better than learning from other cities, cities who are

facing similar challenges. We are confident that as cities, together, we will find efficient and effective ways to address and tackle the global challenge of food loss and waste. Cities are spaces where the exchange of ideas and collective progress converge.

CARLOS MUNDINA GÓMEZ | PRESIDENT OF CEMAS

02

**EUROPEAN AND
GLOBAL CONTEXT**

02. EUROPEAN AND GLOBAL CONTEXT OF FOOD LOSS AND WASTE

We waste one fifth of our food, while more than 780 million people suffer from hunger.

Food waste is a market failure resulting in more than a trillion dollars of food being thrown away every year. According to UN figures, the world wasted **1.05 billion tonnes** of food in 2022 which is equivalent to 19% of total food production. And we must not forget the social impact. While tonnes of food is wasted, 783 million people go hungry every year.

When we waste food, we also waste the water and energy that has been used for growing, harvesting, producing and transporting the food. This waste of resources is an **environmental failure**: food waste is responsible for 8-10% of global greenhouse gas emissions.

HALVING WASTE: A 2030 AGENDA TARGET

Goal 12.3 of the UN **Sustainable Development Goals** (SDGs) aims to halve food waste at retail

and consumer level and reduce food loss in supply chains, by 2030.

This target is part of SDG 12, which seeks to ensure sustainable consumption and production patterns which is fundamental to sustaining the livelihoods of current and future generations. The planet is running out of resources, yet the world's population continues to grow. The UN estimates that, if the current rate of growth continues, in **2050 three planets will be needed** to support today's lifestyle.

Putting a stop to food loss and waste can help us reduce inequality, achieve zero hunger and protect the planet's resources by promoting **fresher, more sustainable and healthier food**.

FOOD WASTE IN THE EUROPEAN UNION

According to the latest **EUFIC** data, in 2021, the European Union generated more than 58 million tonnes of food waste. This is equivalent to **131 kg per person each year**. The cost of this waste amounts to 132

billion euros and, in environmental terms, 252,000,000 tonnes of CO2 emissions.

Over half (54% or 31 million tonnes in 2020) of European union **food waste occurs at home**. Public awareness is essential to reduce this waste.

At the European level, more and more cities are working on local initiatives to reverse this situation. Given the wide range of stakeholders present in urban food systems and the complexity of the issue, adopting a multi-level, multi-stakeholder governance approach is key to designing effective and efficient initiatives.

A HIGH-LEVEL CONFERENCE TO TACKLE FOOD WASTE

The **World Sustainable Urban Food Centre of València** (CEMAS) is an initiative of the Valencia City Council to identify, classify, disseminate and raise awareness of the major challenges facing cities and the population in general in terms of food and nutrition.

CEMAS held a high-level event on 8 October 2024 in the city of **Valencia, European Green Capital 2024**. Co-organised by EUFIC, international experts met to analyse the current food waste situation in the European Union, exchange experiences and knowledge and create an opportunity for dialogue between cities, aiming to strengthen their capacity to **prevent and reduce food loss and waste**.

This publication summarises the various speeches, presentations and workshops held during the scientific meeting with the aim of compiling the initiatives developed by the participating cities to combat food loss and waste.



03

INTERNATIONAL DAY
8 OCTOBER 2024

03.1 INSTITUTIONAL WELCOME

CARLOS MUNDINA
PRESIDENT OF CEMAS

Valencia is the 2024 European Green Capital. This European Union award recognises the city's history of transformation, which began with the arrival of a new democratic government and its new urban vision.

These governments implemented a new urban vision based on more sustainable policies and the transformation of certain areas of the city. This fundamental work, which took decades to do, was key in the choice of Valencia as 2024 European Green Capital. Valencia is proud to be recognised but it is also a responsibility to continue working on a specific urban model based on health, justice and sustainability. To achieve this, we must highlight the strengths of the city of Valencia.

Being European Green Capital sets some challenges for the future which we are

working on. The choices we are making have a direct impact on our future. Our aim is for Valencia to remain at the forefront of green policies in the Mediterranean.

At this event, we will discuss a major challenge: food loss and food waste. According to FAO data, almost one third of the world's food production is lost or wasted every year, with serious economic, social and environmental costs.

As representatives of European cities, we must spearhead the transition to more sustainable cities, as our local administration is closest to the people who live there. 70% of the world's population is concentrated in urban areas. Therefore, we must focus our efforts on finding efficient policies are innovative and implementing modern technologies to meet this challenge.



With initiatives such as this meeting, we are looking to move towards the prevention and reduction of food waste by sharing projects in order to replicate successful ideas at national and European level.

In Valencia, there have been several initiatives to reduce food waste. One of them, rolled out by CEMAS with the participation of the Palacio de Congresos and the Lluís Alcanyís Foundation, aims to tackle food waste in the meetings and conference tourism sector. Despite this, we still have a lot of work ahead of us.

This forum is the ideal place to share experiences, allowing us to work together to face the challenge of the prevention and reduction of food waste. Together we will find more effective ways to achieve a more fair, healthy and sustainable future.

03.1 INSTITUTIONAL WELCOME

LAURA FERNANDEZ, DIRECTOR OF THE EUROPEAN FOOD INFORMATION COUNCIL (EUFIC)



The European Food Information Council (EUFIC) seeks to empower people to reduce food waste concentrated at the consumer level, but we also work on related objectives. For example, we help people to adopt a more sustainable diet because we know that our choices as consumers are important as well as how we consume and how we dispose of food.

Food loss and waste presents a moral and ethical dilemma, as well as economic loss and an environmental threat to biodiversity. It is a food security issue. Millions of tonnes of food go to waste in every country, while 800 million people in the world are hungry or undernourished.

In Europe alone, 20% of food production is wasted, while 33 million people cannot afford to eat every other day. This should not happen with the level of awareness we have.

We believe that we must think on a global scale and that the key element for local action is cities. This is why we must focus on action at the urban level, to eradicate food waste.



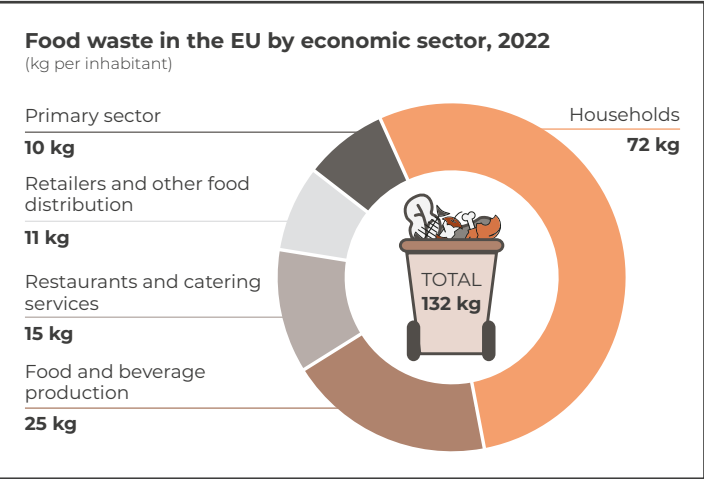
03.2 FOOD LOSS AND FOOD WASTE IN EUROPE

CRISTINA LISETCHI, EUROPEAN COMMISSION POLICY OFFICER (EC)

At the **European Commission**, we are committed to meeting the Sustainable Development Goals (SDGs), including SDG 12 (Responsible Consumption and Production), and its target 12.3, which sets out the need to **halve global per capita food waste** at retail and consumer level and reduce food loss in supply and production chains, including post-harvest losses. Despite all the commitments made and all the measures and actions taken, we are still not on track to meet the goals of the 2030 Agenda.

Recently, the report "SDG TARGET 12.3 On Food Loss And Waste: 2024 Progress Report" was published by **Champions 12.3**, a network of high-level executives working together to achieve this SDG. They state that the world is lagging behind in meeting this target and governments and businesses need to make more progress in reducing food waste.

The most recent statistics show that there has been **no change in recent years**. Member States have wasted the same amount of food over the last three years.



This graph shows 2022 statistics. Although we have not seen a breakthrough, we know that member states are working on methodologies and measurement systems, so we must be patient when looking for the latest trends.

In the European Union, **59 million tonnes of food waste** is generated annually, with one of the principal areas being at consumer level: more than half of food waste is produced at household level.

Measurement is at the heart of food waste prevention, as measuring allows us to understand and know where we need to focus our efforts.

How can we move forward and make progress? The European Commission has proposed legislation to set legally binding targets for member states to reduce their food waste.

Our proposals:

- ➊ **Reduce per capita retail and consumer food waste by 30%** (e.g. restaurants, ready meals and households).
- ➋ **Reduce food waste in processing and manufacturing by 10%.**

These goals, while less demanding than the SDGs, are just as ambitious. Through a review clause, they will be assessed in the light of progress made by member states.

The key points of this initiative are:

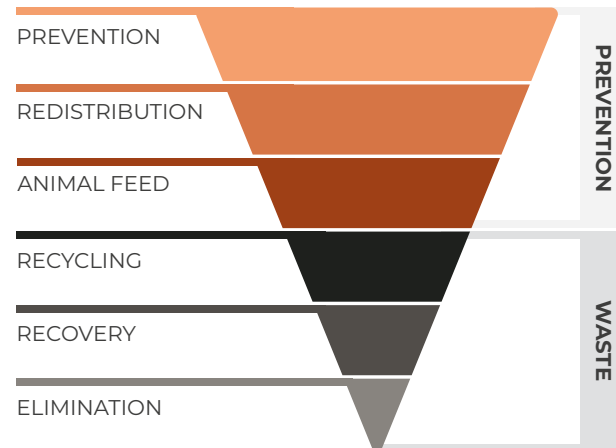
- **Legislative proposal** adopted by the European Commission on 5 July 2023.
- Part of the revision of the **Waste Framework Directive** (plus textile waste).

► A **step-by-step approach**: review progress, adapt targets (including beyond 2030) and reward early achievers.

► **Ongoing negotiations** with the European Parliament and the Council of the European Union.

Our aim was to propose an **achievable target for member states**, so we must adapt the objectives according to their progress. We are now in negotiations with the European Parliament and the Council of the European Union and hope to be able to adopt this legislation in the coming months.

However, we are not starting from scratch. We have a solid foundation on which we can build. Since 2016, when we implemented the first Action Plan addressing food waste as part of the **Circular Economy Action Plan**, we have worked on several initiatives. We now approach food waste from the perspective of sustainable food systems.

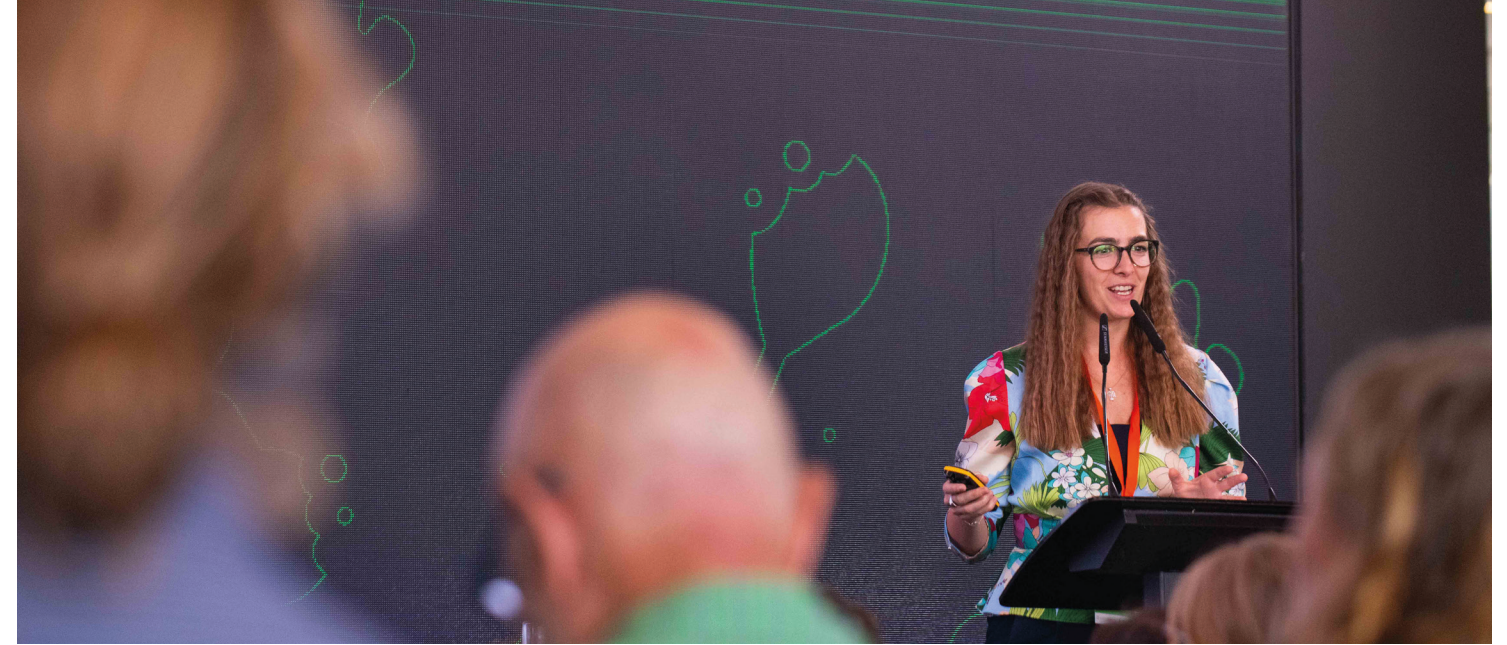


- **Legal obligations** for Member States to reduce, measure and monitor food waste.
- **Common European Union** methodology to consistently measure food waste.
- **Enabling food donations**
- **European Union guidelines** for food donations.
- **European Union Platform** on Food Losses and Waste.
- Optimising the **safe use of feed for animal nutrition**.
- European Union guidelines for the use of **food unfit for human consumption** as feed.
- Promoting **better understanding and use of date marking**.

Among the actions we have carried out, I would like to highlight one of our initiatives to prevent and **reduce food waste at consumer level**: a toolkit for public authorities and experts working in this field.

Among the different tools, which can be found on the website, the following stand out:

- Video tutorials to **learn how to use the tools**.
Video tutorials to:
 - **Tailor actions** to specific consumer groups.
 - **Measure** consumer food waste.
 - **Evaluate** the impact of your actions.
- **Practical tools**:
 - **Food waste action planner** to visualise the initiatives that can be implemented.
 - **Calculator of impacts**: to calculate the impact of each action.
- **Several leaflets**, available in all official languages of the European Union, with recommendations from experts.



There are also other recommendations from the **Platform for Action**. Within the European Union, there is the EU Platform on Food Losses and Food Waste, which has representation from Member State authorities (usually ministries of culture), agencies responsible for measurement or environment and other stakeholders from across the food supply chain including food banks, NGOs and citizens' organisations.

In 2019, around 70 organisations together with member states came together to create the **Recommendations for Action in Food Waste Prevention**. Despite the difficulties in its creation (due to the variety of agendas and priorities derived from a group with participants from diverse backgrounds), it is still a particularly useful and relevant tool.

We have recently **mapped the various existing voluntary commitments** in the field of food waste prevention. This is happening across Europe and involves multiple stakeholders and different levels of the food supply chain. The map is especially useful if you are looking

for expertise in this area and can support authorities in creating their own voluntary agreements or strengthening existing ones.

The main conclusions of these agreements are as follows:

- Prioritise stakeholder **participation and collaboration**.
- Invest** in monitoring and analysing data.
- Secure **long-term financing**.
- Clearly assign roles and responsibilities to stakeholders.
- Promote **innovative solutions and encourage best practices** to be replicated and turned into viable business models.
- Create a **supportive policy framework**.

We also have data on what people think about food waste, along with recommendations.

In 2023, we met with a group of **150 European Union citizens** for three weekends to work on food waste. In this key exercise, we discovered

how people defined food waste and how they thought it should be addressed. The end result

FUNDING OPPORTUNITIES

Various European Union funding programmes are available:

1. Grants for projects to reduce consumer food waste (Single Market Programme).

Total budget for 2024 - 2025: €4 million.
Next meeting: 2026.

We have a new grant programme for 2026, under the Single Market Programme, which is likely to change its focus and will no longer be exclusively for projects addressing consumer food waste.

We have received 46 project applications and are waiting to evaluate them to determine the best ones, both in terms of research and innovation.

2. Horizon Europe: Fair, healthy and environmentally friendly food systems from primary production to consumption (2021 - 2024).

€55 million call for project proposals.

€55 million has been invested in projects addressing food waste from different perspectives. Some focus on marketing standards, others on climate change measures or citizen behaviour tools.

There is one agreement which is particularly relevant:

is a **list of 23 recommendations** for taking a more active role in the fight against food waste.

3. FutureFoodS, European partnership for a sustainable Future of Food Systems. Jointly financed, 70% by the member states and 30% by the EU Commission, this partnership also includes a call for transversal research projects which was published at the end of October 2024.

There are three themes for the submission of projects related to food loss and waste:

- ❶ The way forward towards sustainable and resilient food systems.
- ❷ New foods, fostering innovations in food design, processing and supply through the reorientation of demand and supply.
- ❸ Facilitating sustainable food choices: enabling environmental and dietary changes.

4. LIFE Programme - annual call for proposals.

The LIFE programme is an annual funding opportunity for environmental initiatives or actions related to urban sustainability. Projects to reduce food waste, prevention initiatives, awareness-raising campaigns and innovative solutions are also eligible. There are two calls for proposals that may be of interest:

- Standard Action Projects (SAPs) for the Circular Economy and Quality of Life - Environment.



- Standard Action Projects (SAPs) for the Circular Economy and Quality of Life - Governance.

INITIATIVES FOR EXCHANGE OF INFORMATION AND OPPORTUNITIES

1. Map of opportunities of the European Union Covenant of Mayors Initiative.

This initiative maps the available funding opportunities at the European level, including information on the recipients, the type of programmes and their scope.

2. European Union Food Losses and Waste Prevention Hub.

This platform, created a few years ago, aims to be a repository that includes all resources on new projects funded by member states, new policies, news and developments about food waste and food loss. It is free, allows users to submit information about their projects and has a monthly newsletter with information about funding programmes and new initiatives.

ANTONIO GARCÍA, DIRECTOR OF 2024 EUROPEAN GREEN CAPITAL, VALENCIA



Soon, the majority of the world's population will live in cities. This illustrates the importance of mitigating climate change and creating solutions for the food supply chain. As **2024 European Green Capital, Valencia** must communicate, educate and raise awareness of these challenges.

Food waste is a complex and important challenge. It is an environmental, social and economic failure. More than a trillion dollars of food is wasted every year while **783 million people go hungry**. We are doing something wrong.

Food waste is responsible for 8-10% of global greenhouse gas emissions: there is a direct link between the need to feed ourselves and pollution. We must improve the environment in which we live in order to improve our quality of life and that of future generations. Food waste impact statistics show that we are failing the environment and people.

As 2024 European Green Capital, Valencia

is fully committed to sustainability and the fight against food loss and waste. Receiving this title is not an award, but a symbol of our community's collective effort to create a more sustainable, greener and fairer environment.

One of the characteristics that has made Valencia a European Green Capital is the **FAO's recognition of the interaction between the city and the market garden**. For others, this may be an obstacle to growth has been a strength for Valencia, as the market garden is the city's larder, allowing us to feed ourselves and grow culturally around it.

We know that **cities have a key role to play** in reducing food waste and loss, because they are one of the places where the stakeholders involved in the supply chain are most concentrated. As European Green Capital, we are leading Europe in 2024 and we need to take advantage of this to learn from other cities and organisations in this area. These experiences will allow us to explore new ways to strengthen our local actions, from raising consumer awareness to measuring and managing food waste.

The UN Sustainable Development Goal SDG 12.3 calls on us to halve food waste by 2030. With the **European Green Deal**, we are working to accelerate the process and achieve a good score in the 2030 review.

It is an ambitious objective that requires the collaboration of multiple stakeholders from government, business and the general public. We know it will not be easy, but in Valencia we have learned that when we work together we can transform the most complex challenges into opportunities for improvement. For example, one of Valencia's star projects is the **Turia Garden**, the largest linear park in Europe. It was created from a catastrophe: Valencia suffered a flood in 1957 that forced the city to redirect the river, creating a large green lung in the city that is a place where people meet and spend time together.

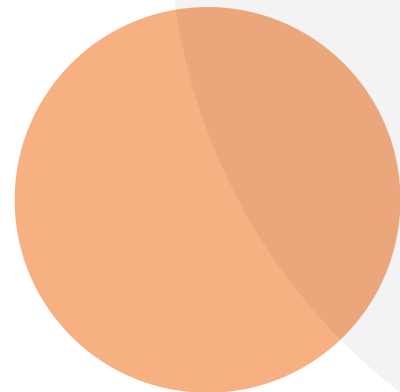
In this context, sustainable mobility and urban regeneration are the pillars of our European Green Capital project, which also play an essential role in building a more efficient

and fairer food system. Examples include the transformation of the old riverbed, now a green garden that connects the city, or the urban vegetable gardens within the park, sharing recreational space with cultivation.

The common goal that all areas of the city are working towards is being **more efficient**, both related to food and in any activity that impacts our environment. We must not forget that the actions we take today will shape the future of our cities and communities.

Sustainability is not an option, it is a necessity. And in Valencia we are determined to show you the way, sharing experiences and knowledge to achieve this much-needed change. Together we will find innovative solutions to tackle food waste and loss and contribute to a fairer, more prosperous and sustainable future. We are always actively listening: these words must be transformed into action.

VALERIA DE LAURENTIIS, PROJECT OFFICER ON FOOD WASTE AT THE JRC, EUROPEAN COMMISSION



The **Joint Research Centre (JRC)** is a research institution with a mission to provide independent, evidence-based scientific knowledge and data to support European Union policies.

In recent years, we have carried out extensive research looking at food waste. Through multidisciplinary research, we have developed results and tools that are available to help all stakeholders reduce food waste.

We know that food waste is a critical issue and we must develop our knowledge to understand how to tackle this challenge and where to focus our efforts.

As scientists, we need to be able to **measure in order to understand the reality of the problem**. For this reason,

we developed a model that quantifies the resource flows of the EU food system.

This model estimates the generation of food waste at each stage of the supply chain, by food group. This structure was used to disaggregate the data sent by each member state to the European Commission related to the generation of food waste, in order to know how much of each food group is wasted.

As a result, we were able to calculate the **environmental impact** of food waste. We use **life cycle analysis methodology**, a method that quantifies the impact of a product throughout its life cycle.

In the case of food and considering primary production, consumption and waste when not consumed, we calculated that food

waste generates **over 250 million tonnes of CO₂ equivalent** in the European Union, and is responsible for 16% of the total climate impact of Europe. We have also calculated that if the European Union's food waste were a member state, it would be the fifth largest emitting country.

If the European Commission's proposed food waste reduction targets are met, **more than 60 million tonnes of CO₂ equivalent** would be saved annually.

New statistics published by Eurostat confirm that most food waste occurs at consumer level: **70% of its generation is from households**, catering and retail. The figures show that we must focus our efforts on tackling food waste at the consumer level.

The **European Consumer Food Waste Forum** is a collaborative pilot project between the European Commission and an expert group of researchers and practitioners. We have been able to move from analysing what is happening to proposing recommendations by creating tools that can be used directly by stakeholders.

Our aim was to bridge the gap between scientific evidence and practical solutions to improve decision-making. The Forum looked at four key aspects to create actions to reduce consumer food waste. For each of them, we have developed tutorials and practical tools that are available online. All these tools are based on scientific evidence and look to share good practice.

Key points to consider:

1. WHAT IS MEASURED IS MANAGED

Measuring food waste and monitoring it over a period of time shows if the action put in place is effective. We developed two tutorials: the first one, **"How to measure food waste"**, gives an overview of existing measurement methodologies, such as surveys or direct weighing as well as advice on how to choose the method according to the context. The second, **"How to evaluate food waste prevention actions"**, is designed to help practitioners understand whether the actions they have taken are working and delivering the expected results.

2. I WANT MY INTERVENTION TO BE SUCCESSFUL

Behavioural science shows us that targeted actions are more effective. We created a third tutorial, **"How to design food waste prevention actions for specific consumer groups"**, to explain how to define a target audience and how to customise food waste prevention action according to their needs.

3. WHAT ARE THE BENEFITS OF MY ACTION IN THE PREVENTION PLAN?

We developed a **food waste prevention calculator** to calculate the benefits of the actions taken. This digital tool can convert quantities of food saved into environmental, economic and nutritional savings.

This web-based tool enables identification of the trade-offs that will result from an action in its design phase. For example,

if you want to design an action based on the redistribution of surplus food, the calculator allows you to calculate whether the emission savings from stopping the waste are greater than the emissions caused by transporting the food to a new location.

The calculator also provides positive messages that can be used to communicate the impact of the action, such as "avoiding this food waste saves the equivalent emissions of driving a car for 40 km".

4. HOW TO BE INSPIRED BY WHAT HAS WORKED IN THE PAST.

We have developed a **food waste action planner**, which ranks more than 70 real food waste prevention actions collected and evaluated by the Forum.

It is structured as a decision tree: first the location where the action will take place is selected, then the target audience and the geographical area and finally the type of initiative. Depending on the selection, the tool proposes real -life examples of actions using detailed reports alongside the information needed to replicate them. It also includes tutorials, practical tools and additional resources, such as information brochures for a specific target audience, translated into all official languages of the European Union and technical reports.

03.3 EXPERIENCES OF EXEMPLARY CITIES

In the second plenary session about **the experience of exemplary cities**, representatives of several European cities explained their innovative projects related to the prevention of food loss and food waste. These projects, together with those of other

cities, are summarised in section four of the book, "Exemplary European Cities' Initiatives to prevent food loss and waste": **Cagliari** (p. 82), **Warsaw** (p. 114), **Milan** (p. 92), **Courbevoie** (p. 84) and **Gothenburg** (p. 86).



CAGLIARI

ISABELLA LIGIA, STRATEGIC
PLANNING MANAGER

Before explaining our food policy, it is important to highlight that Cagliari is part of a metropolitan area together with 16 other municipalities. We work together using the **Metropolitan Strategic Plan**, which is mandatory as it forms part of our legislation.

When we started working together, we focused on analysing and understanding our context. We also focused on food policy, as we believe that **food is a tool to develop our sustainability now and in the future**. We are currently working on this issue at the **Metropolitan Innovation Lab**, a recently created urban public agency with the aim of sustainable development in the area, based on a system of open government.

One of the strategic actions is **Smart Food**, a food plan that considers the entire supply chain and stakeholders such as producers and consumers. This action has been supported by the mayor's offices of all the municipalities in the metropolitan area.

The Smart Food Action and Planning Plan, based on environmental analysis and active listening to stakeholders, aims to improve the quality of local production, promote healthy eating and fight against food waste.

We are the first group to study this problem in our area. We promote the Mediterranean diet, we have adopted a holistic approach to the food system and we also focus on healthy eating behaviours.

Our plan began with a **participatory process** involving stakeholders using the Lab Met online platform, which replicates Barcelona's best practice open government process.

Following this participatory process, we conducted a **public consultation**, developed the Food Plan and produced a manual of educational and training activities.

We have also developed "**living labs**", real test labs based on the co-creation of food-related innovations:

- **Pilot project** for the recovery of food surplus and waste.
- **Analysis of the school canteen system** in the Metropolitan Area and food-related education activities.
- **Guidelines** for the evaluation of sustainable and healthy products.
- **Impact assessment** and **monitoring model**.

In order to understand the results of the actions, the actions to be implemented and how they would be monitored and supervised was analysed. A SWOT analysis was developed to understand what food was like in the current context but also where it could change.

I believe that food should be free of interpretation at the different levels of government. It is important that both the world and the European Union understand that local solutions may be acceptable. Working **through a local food plan** which allows for an effective analysis of the real needs is necessary. For

example, in the context of Cagliari, awareness-raising and outreach are more important than technology. It is about acting locally and on time.

Four key aspects underpin the eating plan from a holistic perspective:

- 1 Food as a **social and educational resource**.
- 2 Food from a **health perspective**.
- 3 Food from the perspective of **sustainability**.
- 4 Food as a key element for **urban development**.

This needs a large investment of recovery and resilience funds to drive urban transformation through food, working together with other sectors and testing various projects.

We have a plan based on specific projects, based on the Sustainable Development Goals, the Common Agricultural Policy and the Sardinia 2030 Strategy. We aim to combine the financial services already included in our regional strategy to create a unified approach to product development.





1. FOOD AS A SOCIAL AND EDUCATIONAL RESOURCE

In this approach, we developed several actions:

- **Ortiamo.** Project to create urban gardens in areas of the metropolitan area that are undergoing redevelopment and to promote the use of these spaces as places for environmental regeneration, centres of production and positive social aggregation.
- **Fruit on the street.** The project plants fruit trees with social inclusion associations to promote food culture and social innovation.
- **Food education and sustainability seminars.** A series of seminars in food and gastronomy education at the University of Cagliari.
- **Sustainable and multifunctional agriculture training.** Free vocational training sessions for young people under 35, foreign citizens and women, which aim to promote specific skills related to sustainable and multifunctional agriculture.
- **Sustainable cooking training.** Free vocational training sessions for young people

under 35, foreign citizens and women, to promote specific skills related to sustainability in the kitchen, including the reduction of food waste or the reuse of leftovers.

- **Social dining - networking for eating together.** This project aims to develop a social food application and to bring individuals together to share a meal in a social context.
- **Nonni in pasta.** Workshops about traditional Sardinian cuisine to reinforce a sustainable approach to food. The initiative involves grandfathers and grandmothers, who pass on their knowledge of traditional cooking to younger generations through workshops in primary schools. This preserves local gastronomic traditions and promotes intergenerational exchange.
- **Nutrition Summer School.** The Cagliari metropolitan area will offer a summer school for children, based on food and physical activity, raising awareness of healthy and sustainable eating, food waste reduction, recycling and healthy lifestyles.

2. FOOD FROM A HEALTH PERSPECTIVE

- **Be Birdi.** Permanent communication campaign promoting sustainable, healthy food.
- **Food Observatory.**
- **Technical working group** to study mass catering.

- **La Frutta non si Butta** (Fruit is not wasted).
- **Healthy vegetarian corner** to raise awareness among athletes of the importance of sustainable, healthy nutrition.
- **Integrated food education pathways** in primary and secondary schools.

3. FOOD FROM THE PERSPECTIVE OF SUSTAINABILITY

- **Hub logistique solide.**
- **Technical Working Group** on Waste Management.
- **Technical support for innovation** in agri-food companies.

- **Funding and imagination competition** for startups.
- **Brutti ma buoni** (Ugly but good).
- **Sustainable sheep.**
- **Production project** to improve soil.

SOLIDARITY LOGISTICS HUB (HUB LOGISTICO SOLIDALE)

This project is made up of two parts: one digital and one physical. We have created an **exchange platform** for donors and recipients to stay in touch.

First, stakeholders join the **solidarity network** and provide donatable food. Secondly, the first level centres, which manage food, transport, storage and packaging, come into play. This is a **logistics centre**, which, in our case, is located close to food markets and the city centre. Next, the **second-level centres** are involved, which coordinate the distribution of food parcels to charitable associations that distribute to families in need. Finally, families in need join the solidarity network to receive food parcels via the associations involved.

Second-level centres are spread throughout the municipalities. The project also uses **electric vehicles** to minimise waste and pollution, optimising processes and helping to raise awareness.

Moreover, since 2022, we are part of the **Milan Urban Food Policy Pact**. Cagliari is one of the cities participating in the European Food Trails project and we hope to be part of Clever Food as well. We are part of a number of urban networks, including the **European Food Agenda** for action at European level, and other international cooperation initiatives.

WARSAW

NATALIA BOITOT, INTERNATIONAL PROJECT MANAGER

In Warsaw we are working on various actions related to the prevention and reduction of food waste, but today I will focus on our **Food Lab**.

Food Lab arose from the European Food Trails project, which highlights the key role of cities in the transformation of urban food systems through innovation and research. In this project, 11 municipalities together with 19 partners, including international researchers and organisations work together to establish

11 Living Labs in 11 cities. The aim was to create platforms connecting the various stakeholders in the food system.

To set up the laboratory, we used on a method developed by our Economic Development Department. Our motto is "**we want to develop together and co-create innovations for the food system**".

The work we do in the Food Lab is based on the following:

► **People-centred design.** Our approach is based on user-centred design and, to achieve this, we always interact with the target audience for which the solution is intended.

► **Systematic thinking.**

► **Change mechanism.** We always define our objectives as clearly as possible, follow up on the changes and try to measure and establish indicators to understand whether we have succeeded in achieving the change initially proposed.

► **Multidisciplinary team.** Our core team includes local authorities, researchers and designers. It is a multi-sectoral group of experts,

which is key to tackling a complex issue such as the food system.

► **Evidence-based approach.** We use an empirical approach which is complicated because we do not have a lot of data on food waste. We still do not have a good understanding of our food system because not much local research has been done, so we are also taking on the research.

► **Behavioural approach.** We aim not only to educate, but to change behaviour. We use behavioural information to design solutions and to drive new trends in our end-users.



We use a multi-stage process:

► **Redefining the key issue.** Define the target audience as well as the possible solution.

► **Exploring the situation.** Who is our target audience, how do they behave and what barriers prevent them from optimal behaviour?

► **Problem analysis.** What are the factors that

prevent positive behaviour?

► **Solution creation.** What intervention could facilitate the expected positive behaviour?

► **Testing and monitoring.** Do solutions influence the behaviour of beneficiaries? What positive behaviours do we expect from our target audience?

The main focus of our Food Lab is currently food waste and has two main target groups: small and medium-sized restaurants and organisations that benefit from food banks. As we want the Food Lab to continue after the project is complete, our lab aims to try to understand the problem of food waste and those responsible for it, in order to design public interventions.

KEY ITEM 1: PREVENTION AND REDUCTION OF FOOD WASTE IN SMALL AND MEDIUM-SIZED RESTAURANTS

First we started with empirical field research, collecting qualitative and quantitative data. We conducted expert interviews, double interviews, workshops and also tracked the flow of food in restaurants.

Our aim is to **understand the different steps in the flow** to identify where food waste occurs, who is responsible for each activity and what factors minimise or increase food waste.

We also note that **Polish legislation** on food waste is unclear. We discovered that restaurant owners are cautious about donating food because there is a belief in Poland that donations are heavily taxed.

We have asked for an **analysis of the regulatory framework** to understand what the legislation states at regional, national and European Union level.

We conducted a survey to see if the results of our research matched the results of other restaurants. We ranked each of the factors to choose what to focus on as a city and university.

We decided to focus on donations and the exchange of surplus food, as restaurants were willing but reluctant due to the Polish legal framework which only allows food to be donated to charitable organisations.

We work alongside stakeholders and experts (e.g. food lawyers) to define the materials to be developed:

- ① A comprehensive and user-friendly **compendium of knowledge**.
- ② A **visual campaign based on the compendium** which was interactive and user-friendly.

Communication of the **restaurants' participation** in this action to consumers was another key aspect. Posters and stickers were created for them to display on their premises.

KEY ITEM 2: OPTIMISING FOOD MANAGEMENT IN THE CONTEXT OF THE REFUGEE CRISIS (FOOD BANK BENEFICIARIES)

In 2022, Warsaw faced a **refugee crisis caused by the war in Ukraine**. There were over one million refugees in the capital. The response of the Polish population was solidarity: at railway stations, citizens and residents brought home-cooked food to

refugees fleeing the war. At the Food Lab, we wanted to understand what was happening and what was recommended to optimise food management in this extreme situation.

We focused on research. The result was a report that outlines initiatives to help refugees and explains how to optimise food flows to avoid waste in the framework of food aid.

During the refugee crisis, the **number of beneficiaries doubled** and we discovered a pre-existing problem. Organisations received varying quantities of food, without prior notice and with a very short expiry date which complicated their management. The main problem was the **under-utilisation of donated food** by the Warsaw Food Bank recipients, especially bread, fruit and vegetables. The main barriers were storage space, high staff turnover and volunteers' lack of technical knowledge.

Here, we traced the food flows in the organisation. Following this study, we held workshops to discuss the results of the analysis. Together with the stakeholders, we designed an **intervention hypothesis**. The two solutions were, on the one hand, to **equip** recipient organisations with effective **tools** and expertise, such as an energy-efficient **storage system**. On the other hand, to encourage them to make better use of donated food by establishing new, more efficient processes.

We focused on the first solution. Together with our experts, we designed a smart storage system with a clear set of instructions to encourage a change in volunteering habits. In addition, we created a questionnaire to describe the solution we were implementing which we sent to all NGOs in Warsaw. We received

responses from 77 interested organisations. This shows that when you analyse what is happening in your local context and apply research results, you can design solutions tailored to end-users.

We also engaged retailers to understand the challenges they face for food donations, including legal ones. It is important to take them into account in order to encourage exchange and to see a different perspective.



MILAN

TERESA MATERIA,
HEAD OF THE FOOD
POVERTY OFFICE

Every time we waste food, we also waste the resources used for production and the chance to help people in vulnerable situations. In **Milan**, food aid and food waste are two sides of the same coin.

We are developing programmes to address this challenge with creative solutions, such as the school food recovery system, food aid centres, educational programmes in schools or tours to exchange knowledge and best practices with other municipalities.

1. FOOD AID HUBS

The municipality started this project in 2016, collaborating with several stakeholders: an NGO involved in Milan's food policies, the Polytechnic University of Milan and a consortium of companies for the collection of surplus food.

In each of the centres **there are warehouses**, including refrigeration units, where surplus

food is kept for subsequent redistribution. These spaces have become **relationship hubs** between public and private stakeholders and the place where people in need go to access healthy food.

Each of the centres is managed by an NGO, which is responsible for the collection and distribution of the food and delivery to families. The spaces where they are located are free of charge: some are provided by the municipalities and others by the NGOs themselves thanks to the support of donations from private sector stakeholders. All the stakeholders fight against food waste and this mixed funding ensures the long-term stability of the project.

Between 2018 and 2021, **five hubs** were launched in different parts of the city with their own characteristics. For example, one of the centres has a social market where families receive score cards to buy fruit and vegetables. Volunteers guide them to make healthy choices. This is a way to help families in need.

In the Hub located in the city centre, there is a bakery to give a second life to ingredients such as flour, sugar or eggs and make them into bread for the beneficiaries.

Another important initiative is the **Zero Food Waste Hub**, located in the wholesale market (Italy's main supply market). In 2023, this centre recovered more than **400 tonnes of fresh food**. It is redistributed thanks to the collaboration of more than 60 wholesalers operating in the market.

2021 was a turning point for the project. Milan won an award to recognise its environmental efforts and creative solutions related to sustainability and climate change. The city received almost one million euros to improve the hub network. For the distribution of these funds, a co-design workshop was held in March 2023 with the participation of stakeholders from different areas: public and private stakeholders, NGOs and research centres.

In September 2023, following the results of the workshop, a public call for projects was launched, focusing on three key areas:

- ① **Upgrading existing distribution centres.**
- ② **Launch of new centres.**
- ③ **Programme expansion** to include more open-air markets for fresh produce.

The process involved **over 20 NGOs**, including significant stakeholders such as the local food bank in Lombardy or the Italian Red Cross. These stakeholders defined a customised action plan with digital tools for tracking and coordinating donations and also launched three new hubs.

In 2023, the hubs recovered **over 600 tonnes** of food, helped feed more than **20,000 vulnerable people** and avoided emissions of over **1,000 tonnes of CO₂ equivalent** into the atmosphere.

One of the lessons we have learned from this project is the importance of **building strong partnerships** between stakeholders, but one that is flexible enough to overcome any logistical challenges and always approaching action using a data-driven approach. In the hubs, we rely on the Polytechnic University of Milan, which is responsible for collecting and monitoring the data and the impact of each hub.

We have also faced a **number of challenges**, such as finding suitable spaces for hubs or managing vastly different stakeholders. We resolved this with as open communication strategy and by working together with territorial institutions and regional governments in order to ensure the availability of spaces to expand the network.

2. SCHOOL-BASED EDUCATION AND RECOVERY PROGRAMMES

One of the most significant programs has been the program for the **recovery of bread and fruit** from school canteens that was launched in 2017. In this initiative, we collaborated with two key stakeholders: the Lombardy food bank, which created a programme for food recovery, and the municipal company responsible for the school canteen service, **Milano Ristorazione**.

One of the challenges was managing the variability of surplus food quantities from different schools, as well as coordinating collection from distinct locations. We managed to make this work thanks to the effective communication between Milano Ristorazione, the NGO, the local food bank and the schools. The next step is to involve more schools and transport the food by bicycle.

Another project carried out in schools is the educational campaign "**A tavola senza sprechi**", which means "zero waste at the table". We distributed **71,000 information leaflets** with activities and games for early years and primary schools to teach them about the value of food and the importance of not wasting it.

3. INITIATIVE STUDY TOURS

We also conducted tours for other municipalities to learn about our food waste programmes. For example, we held a **visit coordinated by the Milan Urban Food Policy Pact, C40 and Bloomberg Associates**. Ten European and US cities took part and visited Milan to learn first-hand about the food aid hub system. It was a success as some cities, such as Boston, are planning to **replicate the Milan model** and we continue to support them with advice on how to design their own creative solutions to address their problems.

COURBEVOIE

**ARASH DERAMBARSH,
COURBEVOIE VICE-MAYOR**

In 2016, France **passed a law against food waste**, becoming the first country to adopt this kind of legislation.

The law obliges **supermarkets whose surface area exceeds 400m² to donate** surplus food to NGOs. If they fail to do so, they are penalised with a €10,000 fine. Thanks to this legislation, more than 100 million portions a year are recovered, an **increase of more than 22% in food donations** to NGOs. Today, all supermarkets comply with the legislation.

This initiative does **not need any kind of taxation** that would have an impact on the population. The fight against food waste is free of charge for our citizens.

Food redistribution works as follows: supermarkets, where food distribution takes place, work with NGOs and French Red Cross volunteers to recover food and donate it to people in need.

In schools, we aim to establish a **healthy and**





sustainable diet that enables children to eat a balanced diet. Courbevoie offers a wide variety of **balanced menus**, with local and organic products, to fight against childhood obesity.

We also have "**La table tri connectée**" in the centres which allows us to monitor two key indicators: children's satisfaction with their food and the level of food waste they generate.

Thanks to these initiatives, Courbevoie is involved in all angles of the fight against food waste. Implemented actions are monitored by progress indicators with the aim of transforming Courbevoie into a pioneering and inspiring city.

Prior to this law, we saw that many supermarkets threw unsold food in the rubbish. It shocked for us, because in Europe, with 500 million people living on our continent, we have **100 million people living in poverty**.

Europe must take the lead. We have laws on our continent that can help the world. I would like to highlight three key points:

First, we cannot wait until 2030. We have solutions and we must implement them now to help the poorest people.

I believe that neither households nor consumers are to blame, even if the highest percentage of food waste occurs at that level. There are failures in the food chain. It is obviously a problem that affects us all, but I believe that the main culprit of food waste is the agri-food lobby, which has two main victims.

First, **producers**. The lobby has a monopoly on 80% of the supply chain and applies a lot of pressure because they undercut the value of their products and pay exceptionally low prices for their food.

The second victim of the system is **consumers**. We only need to look at the data on obesity and metabolic diseases. This is why we must transform the entire food chain.

When I went to the European Commission, I tried to widen French law and tabled an amendment that was not adopted. The agri-food lobby exerted a lot of pressure. However, I would like to emphasise that this initiative has zero cost for taxpaying citizens. We must form an **alliance of all the countries of the European Union**. We are convinced that our objective is important: we want to transpose the French law into the European context.

GOTHENBURG

**CHRISTINA LINNERHAG,
HEAD OF THE GOTHENBURG
FOOD UNIT**

The **Gothenburg model** for food waste is a project that ran from 2016 to 2018. It is now our working model in municipal kitchens and is used throughout the city. This **practical tool** is designed for kitchen staff and is based on small effective actions and daily working protocols.

Our objective was to **reduce food waste in kitchens by 50%** between January 2017 and December 2019. We trained kitchen staff to take daily measurements and record them in the planning system. They should also implement measures that are relevant to their context.

In 2016, the project started with **training more than 1,200 workers**, divided into small groups. Other stakeholders, such as scholarship holders and students, also took part.

In 2017, we shared our best practices with other municipalities who had public kitchens. The following year, in 2018, we reached 50% reduction in food waste in kitchens. In 2019, the model went from being a project to a **tool integrated into Gothenburg's daily working methodology**: the Swedish Food Agency published a handbook based on our work, the Gothenburg model.



To date, **25 Swedish cities and municipalities in Norway and Brazil** have implemented the

- It is important to **measure and record** daily because there is always some food waste.
- Menu **planning** is key and should be flexible.
- The hardest thing is to **calculate** portions, paying attention to actual consumption in order to adjust quantities.
- Routines for reporting absences must be established** in order to calculate the portions needed.
- Before purchasing, stocks, product absences and current **consumption** should be **reviewed**

Gothenburg model. The actions covered in this model are:

- Storage** is critical. Food must be kept at a temperature of 4°C to prolong its shelf life.
- It is important to **cook** only the food planned for. Exceeding the planned number of portions almost always results in food waste.
- Portions** should be **smaller** and we should avoid serving all the food onto the plate.
- We must deal with the **leftovers**. In our handbook, we outline options to avoid waste.

We also designed a **checklist** to reduce food waste on the plate.

The most important thing is there is **calm while eating**. School and school canteen staff should work together. Before students enter the dining room, teachers should tell them what they are going to eat that day so that they are prepared.

In the centres, we also celebrated international days such as World Food Waste Day. We put up informative posters for the students and we held some competitions: for example, if you do not waste food, you get a pancake as a prize.

In the city, we also have a plan to tackle food waste with two main objectives. Municipalities

must **reduce food waste to 30 grams per portion** by 2030. The municipal administrations collaborate and report their measurements and actions annually to the municipal management office. We also hold meetings twice a year.

Our second challenge is a **50% reduction in household food waste**. We run information campaigns on social media, websites and even on the screens of the Scandinavian stadium in Gothenburg, although it is difficult to estimate the impact of these actions.

At present, here are the food waste figures for Gothenburg:



- In early years, **47 grams of waste per portion**. We have started to quantify food waste from the plate, the point where most waste is generated.
- In schools, where we started measuring in 2017, the wastage is **35 grams per portion**. We are working to bring it down to 30 grams.
- In secondary schools, most food waste occurs at the plate. This age group is complicated because sometimes they do not go to the canteen, as there are long

queues and they do not want to wait. We have been working on this since 2018.

In old people's homes, the **current wastage is 112 grams per portion**. This is a significant amount and we have launched a pilot project to address this problem. It is complex because older people sometimes do not eat and a lot of food is wasted. As a result, we are considering reducing portions or looking for other alternatives.

UNITED NATIONS

**LILIANA ANNOVAZZI-JAKAB, UN
ECONOMIC AFFAIRS OFFICER**



The **United Nations Economic Commission for Europe (UNECE)** promotes local action to foster sustainable development, including the Sustainable Development Goals. This work includes intergovernmental initiatives, such as the UN Forum of Mayors, urban nature networks or other high-impact initiatives.

Thanks to rapid urbanisation, problems such as malnutrition, food waste management and food deserts have the greatest impact in cities and solutions need to be urgently implemented.

At UNECE, we started working on food loss and waste in 2009 and 2010. One of the main problems was to **localise** a large amount of the food in the **urban food chain**.

We recognise the **potential of cities** to drive meaningful change and foster sustainable

food systems. UNECE is working with local entities to understand and measure food availability in cities. We do this through a unique assessment methodology that maps food flows in urban areas, as well as through training and workshops.

The map of stakeholders involved in food systems is wide and varied. Many urban, rural and peri-urban actors are involved, as well as municipal organisations, civil society, the private sector, foundations and even individuals. They fulfill distinct functions: they provide, sell and exchange food and they also recover or redistribute food to prevent it from being lost or wasted. Although their impact is significant and much needed, these efforts are often uncoordinated and some stakeholders work in isolation.

In 2017 and 2018, we started to **bring together the many stakeholders**. We know that greater coordination and cooperation is needed, to connect resources, data and initiatives that can otherwise be spread around. In order to address the challenges of urban food systems, we have designed an application: **NaturEaTown (NET)**.

NET is a digital solution, based on **blockchain technology**, for managing resources, enabling municipalities to find, track and use food that would otherwise be wasted. NET offers a **tailor-made approach** to support local initiatives and unite all food system stakeholders on a single virtual platform.

The platform aims to create a **virtual network** to link participating cities, farmers, producers, distributors, retailers and NGOs. By bringing all actors in the food system together on a single digital platform, NET supports cities to:

- **Build on existing** food management efforts.
- **Make it easier to find** food
- Generate **clear and consistent data**.

NET empowers food systems to **trace food flows in the value chain**, identifying food surpluses and food at risk of being wasted. It finds, quantifies and tracks available food in and around a city, creating new opportunities tailored to local resources, policies and technological infrastructure.

The technology also makes it possible to **measure and manage food waste**. The main goal of collecting this information is to reduce food waste and loss in cities.

HOW IS NET USED?

- **Users post food** available for sale or donation.
- This food can be **recovered** or sent to external markets.
- Transaction data are included in the blockchain registry and can be used for **impact calculations and reporting**. Data can be reused.

The NET application can be used on both PCs and mobiles and collects data from all users. Components include a customised landing page for login, a platform for food exchange, a data portal for access to the generated data and data analysis tools. The data is the property of the public entity managing the platform.



Data has immense potential to expand successful projects. This platform:

- **Empowers the food system** with a data and information-based approach.
- **Measures** food waste and surpluses to identify areas for reduction.
- **Optimises urban food management** to develop more sustainable practices.
- **Plans** effective interventions for informed decision-making.

- **Identifies** new **business opportunities**.
- **Communicates impact** effectively, showing initiative results.
- Achieves **cost efficiency** and maximises resources.
- Increases **food security** and healthy dietary choices.
- **Broadens the scope** of adopted solutions by supporting large-scale food systems initiatives.

This has had positive results such as improving SDG and sustainable impact reporting, creating cooperation networks which include local producers, making reliable data available for planning, implementation and monitoring of policies, and improved waste management

and environmental footprinting. It also offers economic and business benefits, increases food security and healthy food choices.



03.4 WORKSHOPS



During the afternoon session, three parallel workshops were held to explore the best strategies and methods to combat food loss and waste from three different angles.

Participants were divided into three separate groups for the one-hour sessions and were able to attend and participate in each of the activities.

Cities that participated in the workshops: **Bergamo, Venice, Dublin, Oslo, Halandri, Barcelona, Valencia** (representatives of Redona, ToNoWaste and MagNuS), **Cagliari, Warsaw, Milan, Courbevoie** and **Gothenburg**, as well as participants from the **Milan Food Policy Act, Eurocities**, the **European Commission** and the **United Nations Economic Commission for Europe**.

WORKSHOP 1. TACKLING CONSUMER FOOD WASTE. WHAT CAN STAKEHOLDERS DO?

Moderated by: Francesco Cagnola, Junior Project Manager, MUFPP.

This workshop addressed **citizens' initiatives**, as well as specific elements related to different stakeholders, campaign types, target audiences, effective actions and messages, communication channels, measurable impact, national communication campaigns and invested resources.

Overall, the **main challenge is communication**. Official channels are often less effective than private channels, as is the case with social media. Some initial ideas:

- ▶ The **private sector** is more advanced than the public sector in many areas and is a **good example**.
- ▶ Public campaigns focus mainly on schools, public kitchens and public residences. **Reaching out to the general public requires a more targeted effort**.
- ▶ **Educating people younger than 20** about food waste and food loss **is crucial** for long-term behavioural change. After that, change is still possible, but it is more difficult.
- ▶ **Networking across sectors is key** to project success.
- ▶ **Measuring impact** is difficult due to the large amount of data available and the lack of clear and common metrics.
- ▶ A **clear roadmap** and **food policy strategy** is essential.



SUMMARY OF THE EXPERIENCES OF EACH PARTICIPATING CITY

Oslo. They focus on public sector groups that they can control, such as schools, public kitchens, old people's homes and municipal workers. It is more effective to work with their own employees, around 55,000 people and to reach the general public through their families. They campaign through social media.

Bergamo. They shared three experiences. The first two were apps that were not completely successful. The first connected people with food surpluses to people suffering from food shortages. Launched just before the pandemic, few people participated. The second app was a game for people to compete to see who wasted the least. They only got 30 subscribers, which they believe is due to the exclusive use of official communication channels. The

third experience consisted of a municipal shop where vulnerable people could get free food. It was a success with more than 100 people visiting per day: event organisation was improved and multiple communication channels were used (including local press, social media, public and private websites).

Gothenburg. It has an effective model for reducing food waste based on measuring portions and waste in schools and public kitchens. This method has been adopted by other countries. The training of municipal employees, together with the creation of simple but effective public campaigns, was key to the success of this initiative.

Cagliari. They work with all stakeholders in the food system using social networks and facilitation groups. They had an educational digital game and workshops with students, teachers and civil servants. Misinformation as a





challenge and they propose involving political leaders and establishing impact indicators to measure the impact of actions through surveys.

Dublin. Initiatives such as Food Cloud (an NGO) and Eat the Streets (supported by the city council) combine food culture, debates and events aimed at a range of stakeholders. Eye-catching illustrations have been helpful. Still, communication is a challenge, as general campaigns do not always reach the public. Sectoral collaboration has been key to creating an impact on the population.

European Commission. On the consumer side, tools such as guides for campaigns in cities, schools and households are promoted. Their roadmap proposes diagnosis to understand the problems they face, prioritise actions and set objectives. It stresses the importance of involving as many stakeholders as possible. It also highlights financial incentives at municipal level. Food waste education is a priority.

Valencia. Representatives of several entities took part: public universities (University of Valencia, Universitat Politècnica de València), the City Council, the Official College of

Dietitians and Nutritionists (CoDuNiCoVa), educators and social organisations. In schools, innovative projects have been developed such as portion adjustment according to age and needs, activities designed by students to teach others and waste analysis of bins. Although changing habits among university students has been difficult, the talks and workshops have generated useful ideas, especially in linking human health to the health of the planet. Local markets promote fair prices and the consumption of seasonal products through direct sales with farmers. However, initiatives such as the collection of surpluses from already harvested fields or spontaneous markets make farmers and traders feel uneasy. Solutions such as tax incentives and better coordination between sectors are proposed.

UN (Geneva). The UN does not work directly with consumers, but recognises the urgent need for an urban food strategy with a clear roadmap for progress. Milan and French cities stand out as role models. The importance of food lobbies is emphasised.

Courbevoie. Consumers are the most important part of the fight against food waste. To make

progress, the current food system must be changed and children must be taught about it. In their experience, laws that impose fines on those responsible for food waste are effective. They call for a change in the food system.

Venice. Events such as the Saór Festival involve the whole community and have a substantial impact. Some schools donate leftover food to NGOs, with a planning and coordination protocol. They hope that more schools will participate but there are still barriers: lack of teacher involvement, health protocols for food storage and distribution. More external funding and integrated food strategies are needed.

Milan. Milan has been a leader in the fight against food waste since Expo 2015. It has an institutional plan and partnerships that prioritise food waste. It distributes educational material to thousands of schoolchildren and promotes sustainable habits. The campaigns have been extremely well attended. Citizen engagement with waste is strong and sustained.

Halandri. It has had a Food Waste Unit since 2022. It addresses the five stages of the

food chain, focusing on reducing waste and revaluing food (e.g. composting). They carry out workshops, meetings and campaigns in schools, dealing with issues related to agriculture and consumer nutrition.

Warsaw. They address food waste and loss as an issue related to climate change and energy efficiency. They have held discussions with citizens, from which 90 recommendations have emerged: 43 of these were validated by the municipality. They advocate broad participation, with representation from various sectors, beyond experts. They are inspired by models such as the French Climate Panel and the Milan Food Panel.

Barcelona. They shared the example of a prevention project in school canteens which has reduced food waste by 30%. They link food waste and loss with social justice and fair prices which has resulted in increased participation and volunteering. They promote direct purchases from producers and workshops on local food. Surveys show low understanding of the problem, which poses a communication challenge. They call for more stable funding and more long-term projects.

WORKSHOP CONCLUSIONS

BY BETTY CHANG (EUFIC)

One of the problems is that it **is difficult to reach the population using online channels**. One way to increase citizen participation is to raise awareness through an **activity-based approach**. For example, actions where school children are the ones who develop the activity and educate others, or giving financial incentives to citizens to help raise awareness of the importance of food waste. By **involving the community, public interest increases**.

Another issue addressed is the **lack of interdisciplinary collaboration**. The need to create networking events to involve multiple stakeholders and exchange their contacts in order to organise future initiatives related to food waste was discussed.

It can also be difficult to get stakeholders involved in food waste reduction initiatives. Therefore, the proposal is to **gather the opinions of the mayors**, so that they become involved in the initiatives to be developed in their municipalities and promote them among their local stakeholders.

Another issue discussed was the **difficulty of ensuring the long-term sustainability of food waste initiatives**. Many of them use European funding, which is often only for a short time. When applying for further funding, it is necessary to change the programme: as the same projects cannot be continued, they cannot be improved and long-term measurements cannot be achieved.

Encouraging cities to prioritise food loss and waste as a prominent issue **can be complicated**. Political will is needed to achieve a food policy strategy: this leads to greater funding opportunities and a roadmap for the long-term sustainability of the project.

It is also not easy to **collect data on actual food waste behaviour** in order to assess the impact of initiatives. This is particularly complicated when studying waste in households: more creative ways to carry out these measurements are needed. One option could be to conduct citizens surveys, with the aim of analysing whether there have been changes by comparing their behaviour before and after the initiative. Although some cities report having received positive feedback, it is not possible to know whether these initiatives have actually changed people's behaviour. In addition, working with waste management companies is proposed as they can provide data on organic waste in the population.

WORKSHOP 2. HOW TO FOSTER COLLABORATION AMONG MULTIPLE STAKEHOLDERS?

Moderated by: Laura Fernández,
Director of EUFIC

The second workshop was devoted to exploring ways to promote stakeholder collaboration. During the three sessions, some general ideas emerged:

- ▶ To foster **open and transparent communication**, it is crucial to build trust. Initial bilateral contacts help to create horizontal connections to ensure that everyone feels heard and represented.
- ▶ Public funding is useful to kick-start actions, but **initiatives need to be sustainable using local resources**.
- ▶ **Food Councils** are a useful tool to involve all stakeholders.
- ▶ The best way to **engage companies** in

the agri-food sector is through **voluntary agreements and incentives** that enhance their reputation and visibility. Regulations and coercive measures are seen as punitive.

▶ **Universities and research centres are key** to standardising data collection and evaluation methodologies.

▶ **Policies and strategies must be adapted to the local context** in order to cater for societal diversity.

All participants agreed on the need to start **establishing interdisciplinary and horizontal relationships** as an effective way to engage

stakeholders. **Trust** is critical and open and transparent communication channels are needed to achieve this.





SUMMARY OF THE EXPERIENCES OF EACH PARTICIPATING CITY

Valencia. Valencia emphasised the importance of creating participatory spaces that integrate diverse stakeholders, including political parties, the private sector and the media. At the University of Valencia, they are working on the student menus offered in canteens and options for composting organic waste. Mercavalència is taking part in a pilot project, but initially it was difficult to convince its private vendors to participate.

Milan. Their experience was similar to that of Mercavalència: initial acceptance was complicated, the Food Poverty Office acted as an intermediary. They stress the importance of constant dialogue and collective problem solving. During the pandemic, many solidarity

initiatives were launched, which were then turned into more structured policies. Surpluses should be delivered directly to the market and that everyone should share common spaces.

During the discussion of strategies to engage the private sector, most participants noted that coercive methods, such as fines, tend to have a negative impact on business.

Warsaw. It presented its Food Laboratory, a research centre. They shared best practices with foreign specialists through round tables and community meetings. They also invited competing companies to collaborate on common anti-waste campaigns. They found that they shared similar challenges and that working together was useful.

Halandri. Halandri researches and works with producers, retailers and the HORECA sector,

but fiscal measures have not been effective. On the other hand, events sharing good practice have worked better. Word of mouth has been key to involving all stakeholders. Incentives such as tax benefits and voluntary agreements are used, which are valued by companies for enhancing reputation and visibility.

Courbevoie. The deputy mayor talked about the mobilising power of citizens' petitions, such as one in 2016 that led to rapid legal change. They underlined that laws often target those who willingly waste. They also mentioned imposing decisions is sometimes necessary as goodwill is not always enough.

Gothenburg. They criticise the common tendency to work on food waste in isolation, creating data silos. To reverse the situation, they suggest sharing ideas and results with politicians to win their support. They recommend partnering with the media to put pressure on policy makers, appealing to the economic cost of waste. They also suggest adopting strategies similar to those of climate activism to raise awareness.

EUFIC. They highlight the value of the network of mayors, which has proven its effectiveness in other policy areas. They added that everyone is receptive to a good argument: the key is to get the message across well and to explain the positive effects an initiative will have in a specific context.

Dublin. They highlight the cost of inaction. This is why they set up an advisory centre and a partnership with universities. They point out that data collection can be perceived as a burden, so the objective and role of each stakeholder should be clearly defined. Compelling evidence is essential to convince policy makers.

The figures are not consistent. As food data is complex in nature, monitoring, assessment methodologies and measurements need to be standardised in order to be able to compare trends. To achieve this, collaboration with universities and research centres is essential.

Bergamo. Bergamo collects and analyses data with the support of public universities because private consultants are extremely expensive. They consider that public funds are only the starting point and that the local level is the ideal place to implement actions. Citizens are willing to participate and contribute resources if they perceive the objective to be worthwhile.

Oslo. Oslo managed to reduce household food waste by 18% thanks to the indirect impact of inflation (making people more reluctant to throw food away) and good media coverage. The Norwegian government signed an agreement with the food industry and this has already had positive results. Workshops have been organised and materials disseminated across all sectors to maintain the trend. To date, food waste has been reduced by 20%.

Venice. They presented two solidarity projects: a parish that organises meals cooked by immigrants with live music and the Solidarity Kitchen, which delivers food to vulnerable people without public funding. They have also learned from the failure of initiatives that are removed from local realities. They concluded that messages should be tailored to the target audience and that values such as respect and communication are key.

European Commission. Its representative highlighted the value of citizen panels as an effective tool. They pointed out successful experiences in the Netherlands, where



WORKSHOP CONCLUSIONS BY NURIA CHAPARRO (UPV)

The second workshop addressed how to **involve stakeholders** and the challenges involved. The importance of **creating safe and trusting spaces** where participants can share knowledge and experiences in a collaborative approach was underlined. In addition, the **need for political will**, institutional stability and adequate funding to support these initiatives was highlighted.

Various strategies to **encourage the involvement of the agri-food private sector** were discussed. On the one hand, regulations setting limits on negative practices (e.g. fines) were discussed, although these may be perceived as restrictive. On the other hand, **voluntary agreements and tax incentives** were seen as the most effective ways to foster collaboration and exchange between sectors. The importance of word of mouth between stakeholders in the food chain to build trusted networks was also highlighted.

The active **participation of civil society and the creation of a sense of ownership** were pointed out. It was stressed that people need to feel part of a community to get involved in the fight against food waste. Events and projects such as this workshop itself are essential to raise awareness, share knowledge and involve various social groups. Furthermore, policy makers need to **approach the problem** not only from a technical **perspective**, but also from an **emotional** one, to better connect with citizens.

The workshop also emphasised the **importance of data**: it is critical to collect, analyse and share data transparently between agencies. Measurement methodologies need to be harmonised to ensure comparable results. **Research is key to evaluation and monitoring and all stakeholders**, including people and businesses, should have access to this information. However, it was acknowledged that many administrations are already overstretched and lack the time or resources to take on more commitments.

Finally, the **sustainability of these actions in the long term** was discussed. It is essential to ensure the continued involvement of all actors, institutional stability and the existence of long-lasting laws. **Strong commitment from the private sector** is also needed and for business to feel part of the solution. Maintaining European funds and creating spaces where local communities feel that their voices are heard and valued in this collective effort should be continued.

randomly selected citizens, with the support of experts, generated innovative proposals to address challenges in the food system.

Sweden. Sweden has produced numerous practical materials and resources on food sustainability. Translating these tools into all European languages was proposed so that they can be used by other countries, thus optimising the time and resources invested in their development, as in the case of mobile applications.

Finally, participants reflected on **how to ensure the long-term sustainability of these initiatives** and what their **sources of funding** should be. The UNECE representative underlined the need for political stability and permanent food policy departments, and indicated that real change will come from organised citizens, supported by a strong legal framework preventing politics from holding back progress.

WORKSHOP 3. FOOD LOSS, WASTE MANAGEMENT AND RECOVERY (MEASUREMENT AND REUSE)

Chiara Roticiani, Project Manager, EURO CITIES.

In the last workshop, focused on the management and recovery of food loss and waste in terms of measurement and reuse,

participants looked at multiple topics including the role of public administration, ways to manage and recover, research and investments, main challenges and keys to success.

During the course of the workshop, some key ideas were discussed:

- ▶ **Food waste regulation should be standardised** in all European countries.
- ▶ **Local administrations can create a schedule** for entities in their city (hotels, restaurants, hospitals, schools) to store their surplus food and help with the logistics of redistribution to associations and NGOs.
- ▶ **Reward systems**, such as tax exemptions and zero food waste certificates, should be implemented. Prestige can play a vital role.
- ▶ A frequent problem for **smaller NGOs** is that they **often do not have** refrigerators **and do not have their** own means of transport.

- ▶ **Establish local centres** where everyone can meet and share their knowledge and work on initiatives.
- ▶ There is a need to **invest in research** and development for food reuse and food waste reduction.
- ▶ **Dissemination of knowledge** through networks for the exchange of good practice should be encouraged.
- ▶ **Data on food waste** should be collected at European level using unified and common indicators.

SUMMARY OF THE EXPERIENCES OF EACH PARTICIPATING CITY

UNECE. They work to prevent food waste through food quality standards. They have established partnerships with supermarkets and local producers to reduce food waste. They promote planting fruit trees and highlight the difficulty of harmonising legislation on food surpluses between countries. They underline the importance of formal and informal education to raise awareness about healthy eating and food waste.

Italy. Several participants pointed out that the stigma persists that accepting leftovers or surpluses is behaviour linked to poverty. In Venice, despite a decade of awareness-raising campaigns, the culture of throwing away leftovers persists. New projects, such as "No-waste School Kitchens", are recovering food from schools for redistribution to NGOs and vulnerable people. They have also launched an initiative that highlights the value of local gastronomic heritage to promote sustainability. Public administrations should develop

structural food policies. In Milan they have already done this and have a whole sector responsible for food policy. In Cagliari, they also work with school canteens to reduce food waste, testing food quantities and cooking techniques. In Turin, they have a programme that has brought together many associations to work on approaches to food policy.

Spain. Participants from the country mentioned the proposed national law that looks to force supermarkets to donate. However, the debate centres on whether entities should have the power to refuse donations. The quality and quantity of food must be assessed and selected. This law was finally passed in April 2025 (Law 1/2025, 1 April on the prevention of food losses and food waste).

Other representatives shared some good practices:

Barcelona. Mercabarna is one of the main fresh produce wholesale markets in Europe. A dedicated building was built, managed by the Barcelona Food Bank, where surplus food fit for human consumption is sorted. The rest



is composted. The Barcelona administration is working with other stakeholders on other initiatives, such as the collection of leftovers from the HORECA sector. They do not have a distribution centre, but are transported from the place of origin to the NGO directly. The Barcelona Food Bank functions as a hub, managing large donations from producers.

Universitat Politècnica de València. In their project, "Redona", students and Mercavalencia collaborate. The initiative uses an app to connect surplus food producers with NGOs. It is a simple system that registers and documents all donations which are automatically prepared for delivery.

Courbevoie. The French city has an outstanding track record in food waste prevention. In 2016, a progressive law was passed that enforces new sectors (supermarkets, restaurants, hospitals,

schools and homes) to manage their surplus food every year. Thanks to these measures, more than 400,000 portions have been saved. Initially, supermarkets were not allowed to donate food for sanitary reasons, but now multiple certified associations, with state logistical support, are responsible for storing and redistributing food to NGOs. The law transfers responsibility to these entities.

Dublin. Public administration is active in community development, educational provision, green schools, infrastructure provision and support for private enterprises.

Norway. Established a model for building public confidence. Various strategies and action plans have been implemented, including financial incentives, waste collection, information and educational campaigns.

WORKSHOP CONCLUSIONS BY LOLA ALMAZÁN (VIC)

In the final workshop, the **role of public administration** was discussed, and how it can help in the management and recovery of food loss and waste.

Coordination is particularly important.

Administrations can create local networks to facilitate organisation and cooperation between stakeholders to enable them to express their needs and promote several types of actions. The **role of legislation** is also key to the development of a structural food policy, as the Courbevoie representative highlighted.

The **importance of funding** was also highlighted. Many redistribution-based initiatives do not have sustainable business models. Local administrations can provide infrastructure, logistics and expertise to promote these projects.

Another highlight was the **use of incentives** as tools to change behaviour, both positive (e.g. tax reductions) and punitive (e.g. fines for bad practices). Local administrations also have a key role to play in cultural transformation and raising public awareness, although this process does take time. In countries such as Spain, there are little known tax advantages for food donations, so it is crucial that information is accessible and reaches all stakeholders.

It was stressed that **administrations must act promptly**, without waiting after taking over. It is essential to establish stable institutional frameworks, encourage participation, create monitoring and accountability systems

and share good practices. Leaders must encourage people to get actively involved.

Education and awareness-raising remain two major challenges. Cultural and regulatory barriers persist, such as those related to health legislation. Some cities shared good practices.

Finally, the **recovery of food waste through biogas, compost or fuel was discussed**, and there was a call for more investment in research and innovation, as well as a common European database with shared indicators. City-to-city urban networks and coordination with the SDGs were seen as key tools to move forward as a group.





03.5 EVENT CLOSURE

"Millions of people in the world suffer from hunger while we in the developed world give little importance to food. Before we waste food, we need to think about the enormous impact this has and its effect. For me this is a key issue and we must know how to communicate it to the public.

Again, thank you all for your participation and I look forward to continuing this important work next year. There is still much to be done. Not just from the European Union or individual countries, but from cities: we must walk together towards reducing food waste."

Carlos Mundina, President of CEMAS

04

EXEMPLARY EUROPEAN CITIES' INITIATIVES TO PREVENT FOOD LOSS AND WASTE

01 AMSTERDAM

THE NETHERLANDS | NO WASTE CHALLENGE 020

The initiative began on 5 February and ended on 9 September 2024. Wastewatchers and InstockMarket organised their own follow-up challenge against food waste in 2025.

DESCRIPTION

This initiative aimed to **reduce food waste in the hotel sector**. The participating hotels chose one of three challenges, worked on the challenge and shared their knowledge and results in three sessions (kick-off, follow-up and closure). There were also required to share the data with the City Council and the participating university.

The three challenges were:

- **Challenge 1.** Measure and reduce food waste using Orbisk, an innovative solution based on Artificial Intelligence.
- **Challenge 2.** Measure and reduce food waste with the help of Wastewatchers using simple methods and tips.
- **Challenge 3.** Buy and cook with food from InstockMarket's food recovery centre.

IMPACT

16 hotels took part in the project. Each challenge had a distinct direct impact:

- Participants in Challenge 1 (Orbisk) **recovered more than 3,500 kg of food**, equivalent to €20,000.
- Challenge 2 participants (with support from

Wastewatchers) **reduced their food waste by 26%**, equivalent to €0.09 per guest.

- Participants of Challenge 3 (Instockmarket) bought around 6,000 kg of recovered food, **avoiding more than 10,000 kg of CO₂ emissions**.

ACTORS INVOLVED

- 1 **Food Waste Free United Foundation.** Lead organiser and funding through a European project.
- 2 **City of Amsterdam.** Main organiser and funding.
- 3 **Green Hotel Club Amsterdam.** Co-organiser and responsible for communication.
- 4 **Koninklijke Horeca Nederland.** Association representing the hotel sector, co-organiser and responsible for communication.
- 5 **Wageningen University and Research.** Aggregated data analysis.
- 6 **Orbisk.** A company that offers advice and technology for measuring food waste.
- 7 **Wastewatchers.** A company that offers support and measurement of food waste.
- 8 **Instock market.** A company that recovers and redistributes food.

MAIN CHALLENGES

- **Find partners within budget to organise the challenges.** This was overcome thanks to funding from the European Union and the Food Waste Free United Foundation.
- **Understanding the actual needs of the hotel sector.** This challenge was solved with the help of Green Hotel Club, the HORECA KHN association and a series of interviews with hotel general managers.
- **Recruit sufficient participants.** This was made possible by having an attractive content and price offer, a multi-channel marketing strategy and the help of partner organisations that encouraged hotel registrations.

MEASURING SYSTEM

The companies associated with each challenge had **their own measurement systems**. All data generated was shared with the university and the City of Amsterdam to create an estimate of food waste in the HORECA sector and to compare the data with other initiatives.

FINANCIAL RESOURCES

The Foundation uses **Scale 12.3 European funds**. The City Council financed the initiative through **local funds** earmarked for food waste reduction.

LESSONS LEARNT

- The amount of food waste in the HORECA sector **can be reduced**.
- **Practical challenges help convince** others that action can and should be taken to reduce food waste.
- Although the challenge involved a lot of work, the results were positive, **strong relationships were created** and there is work on a common aim moving forward.

MULTI-LEVEL GOVERNANCE

This initiative focused at a **local level**, only taking place in the city.

KEYS TO SUCCESS

- 1 Find **committed people and organisations** to collaborate with.
- 2 Pay attention to **planning**, especially how and when organisations should communicate or report to the municipality.
- 3 In the process, **invite other stakeholders to copy**, continue or expand the initiative.



02 BARCELONA

SPAIN | FOODBACK

The initiative started in February 2022 and is ongoing.

DESCRIPTION

The initiative, developed by Mercabarna (Europe's leading wholesale fruit and vegetable market), aims to **reduce food waste by redistributing fresh food destined for waste** to people in vulnerable situations.

Food not fit for sale but fit for consumption

is provided by the companies operating in Mercabarna. The Formació i Treball foundation, dedicated to the training and employability of people at risk of social exclusion, classifies and stores the food and the Banc dels Aliments redistributes it to associations and social entities who deliver it to vulnerable people.

IMPACT

In 2024, the Foodback recovered **838 tonnes of food**. According to the Joint Research Centre's food loss prevention calculator, it has saved 1,034,784 kg CO₂ eq and 4,683,965 m³ of water. The recovered food has an **economic value** of around **€1,186,138**.

FINANCIAL RESOURCES

The initial investment made by Mercabarna was **approximately €1,000,000**, of which €800,000 was for the construction of the building and the adaptation of spaces and their refrigeration. The resources that cover the annual costs, €300,000, come from Mercabarna and the Fundació "la Caixa" and, to a lesser extent, from Barcelona City Council.

ACTORS INVOLVED

- Mercabarna wholesalers.** Suppliers of surplus fresh food not fit for sale but fit for consumption.
- Formació i Treball Foundation.** Responsible for recruitment, training and employability of people at risk of social exclusion.
- Banc dels Aliments.** Redistribution of food to associations and social entities that work with socially vulnerable people.
- Social organisations and NGOs.** Recipients of donations from the Banc dels Aliments and responsible for distribution to families and people

suffering from food insecurity.

- Mercabarna.** General coordination and as the public company managing the Unidad Alimentària site, providing a food recovery management service coordinating with multiple stakeholders.
- Municipal government.** Supporting the initiative, establishing a framework for action together with the municipal public health agency and aligning the initiative with local social and environmental impact objectives.

MEASURING SYSTEM

Mercabarna, Formació i Treball and Banc dels Aliments collect the data about the initiative. They record food that is recovered and redistributed, as well as food that arrives at the Green Point as waste.

MAIN CHALLENGES

- **Coordination of collection and storage of unsold fresh food from wholesalers.** Fresh food has a short shelf life and requires quick collection, with appropriate storage and timely redistribution to avoid waste. It usually needs refrigerated vehicles.
- **Food safety and quality control.** Strict regulations must be met to ensure the safe consumption of food and liability concerns may

LESSONS LEARNT

- **Collaboration** between social partners, business and government is key to preventing food waste. However, establishing a solid infrastructure is not enough.

MULTI-LEVEL GOVERNANCE

The following **nine organisations are collaborators** in Mercabarna's Foodback initiative: Mercabarna, Banc dels Aliments, Formació i Treball, Creu Roja, Càritas, Assocome, Fundació "la Caixa", Ajuntament de Barcelona and Generalitat de Catalunya.

discourage some companies from donating their surplus. The municipal public health agency has provided health protocols for food redistribution.

- **Financial and operational sustainability of the project.** The initiative requires ongoing funding for staff and infrastructure.
- **Involve companies in the project and in the prevention of food waste.** It is a daily challenge as companies focus on sales and do not have staff dedicated to food waste prevention.

- **Specific actions** should be promoted among companies in the agri-food sector, such as the development of waste prevention plans or infrastructure improvements aimed at preventing food waste.

- Co-design of the project between multiple stakeholders,** each contributing knowledge of their speciality: Mercabarna (wholesale trade), F. Banc dels Aliments (distribution of food) and F. Formació i Treball (training and employability). And the subsequent co-management of infrastructure and service between the same entities.
- Mercabarna creation of the **Integrated System for the management of surplus fruit and vegetables and waste**, consisting of a network of 13 intelligent containers in the central market pavilions, the Foodback and the Green Point. This has enabled a global overview of this topic alongside data and traceability.

- Economic incentives** offered to wholesale companies: zero cost for the surplus managed at the Foodback such as tax relief for donations in kind to the Food Bank for recovered food.
- The UPC-Mercabarna Chair for the fight against food waste 2021-23 provided **data** on the production of surplus and waste fruit and vegetables at the Mercabarna Food Unit.
- The **participation of multiple stakeholders** in the governance of the project from a public-private, social and academic perspective.

KEYS TO
SUCCESS

03.1 BERGAMO

ITALY | DISPENSA SOCIALE AND DISPENSA RE-STORE

Dispensa Sociale started in 2018 and Dispensa Re-Store in 2022. Both projects are still active.

DESCRIPTION

Dispensa Sociale **recovers food in good condition that is unsuitable for sale** (e.g. due to a packaging defect) and is discarded by businesses. It is then **redistributed to NGOs working with vulnerable people or used for educational purposes** to combat food waste. This project promotes the circular economy, the reduction of food waste, social inclusion, the development of skills and the integration into the labour market of people

with disabilities who contribute to this initiative through food selection and organisation.

The initiative has a spin-off project: **Dispensa Re-store**. This shop provides surplus food, such as imperfect fresh produce which is fit for consumption completely free of charge. It is open twice a week and is run by an educator and people in work integration programmes.

IMPACT

In 2023, Dispensa Sociale and Dispensa Re-Store rescued **135,186 kg of food**.

Dispensa Sociale carried out over **1,265 distributions** in the city and province of Bergamo, and at least **60 NGOs** collected food.

Dispensa Re-Store opened 94 times a year and had 623 unique customers. Thanks to the shop, more than 3,258 free food items were delivered.

In 2024, Dispensa Sociale and Dispensa Re-

Store rescued **169,937 kg of food** (an 8% increase compared to 2023).

Dispensa Sociale carried out more than **1,369 distributions** in the city and province of Bergamo, and at least **60 NGOs** collected food.

Dispensa Re-Store opened 96 times a year and had 616 unique customers. Thanks to the shop, more than 3,881 food baskets were distributed free of charge, an increase of 19% compared to 2023.

ACTORS INVOLVED

The **social cooperative Namasté** manages the two projects in collaboration with the City of Bergamo and other institutional bodies, non-profit organisations and companies. Various stakeholders such as fruit and vegetable **markets, supermarkets, farms, NGOs, schools and universities** are also involved.

FINANCIAL RESOURCES

Both initiatives are funded by the **City of Bergamo** and **private companies**. They also obtain regional and national funding through calls for proposals against food waste.

MAIN CHALLENGES

- **Reduction of food waste in the city and the local area**, especially in distribution.
- **Education and awareness raising in the community** and of institutions and stakeholders in the food chain on the fight against food waste.
- **Inclusion of vulnerable people** (with disabilities, psychiatric diagnosis, etc.) in recovery and distribution activities.
- Participation and creation of a **community of volunteers** in the area.
- **Free distribution/sharing** of collected surplus food.

MULTI-LEVEL GOVERNANCE

National legislation (Gadda Law or 166/2016) allows establishments to donate surplus to NGOs and receive discounts on their waste tax in return. The **City of Bergamo** promotes this among businesses.

MEASURING SYSTEM

The **Namasté cooperative** is responsible for measuring and collecting data on food loss and waste.

Data is collected on the quantity of food collected (in kg) and **classified into 5 macro-categories**: fresh produce, fruit and vegetables, dry produce, bread and beverages.

Each collection is **entered into the database** indicating date, donor and city. Donations to NGOs

LESSONS LEARNT

The three most important lessons for working on food waste:

- 1 Strengthen the **stakeholder community**.
- 2 **Communicate** projects to the public.
- 3 **Measure the impact** of projects.

KEYS TO SUCCESS

- 1 Create a **community** with the stakeholders.
- 2 Look for **partners and calls for proposals** to present innovative initiatives and launch new projects.
- 3 **Raise awareness** of the need to act against food waste.
- 4 **Collect data** to measure impact.

are recorded in digital format, noting the day and quantity of food collected. In Dispensa Re-Store only the number of people is recorded, no personal data is collected.

The staff, who are at risk of exclusion, are responsible for recording and processing this data using the **Bring the Food management software**, which gives them skills to reintegrate into the labour market.



03.2 BERGAMO

ITALY | ACTION AGAINST FOOD WASTE IN SCHOOL KITCHENS IN BERGAMO

This started with the tendering of school meals in 2021 and is ongoing.

DESCRIPTION

The City of Bergamo, in collaboration with the school catering company Sercar, has launched a series of **innovative projects to reduce food waste in schools**.

➊ **Menu reversal.** An experiment to highlight sides and main courses, often left by pupils, in school kitchens to encourage consumption.

➋ **Half portions.** This experiment, which has the approval of teachers, parents and the City of Bergamo, aims to encourage pupils' responsibility. Half portions are served first and the rest only if the pupil is hungry. Unserved food is kept to avoid waste.

➌ **Half a portion of bread at midday.** The bread ration is divided into two: one is served at snack time with a piece of fruit and the other at lunch. This reduces bread waste, which is recovered for redistribution to NGOs. This project also fulfils a social equity function: it replaces lunch at home, avoiding differences between pupils who can afford lunch and those who cannot.

➍ **Recycling of organic matter.** Sercar processes organic waste, donating it to companies for it to be made into animal feed or using it in schools as compost.

➎ **Volume reduction and recycling of organic material.** A machine has been installed in the kitchen centre that pulverises organic material derived from food processing, reducing its volume and weight by 80% to 90%. The liquid obtained is used to irrigate the green areas of these facilities. The resulting solids are used as fertiliser in the

municipal gardens of Bergamo.

➏ **Reuse of fruit and vegetable waste.** Through their social networks, Sercar shares ideas for reuse, such as recipes or tutorials.

Future projects to be undertaken:

➐ **"I don't waste" project.** At the start of the school year, Sercar will provide each student with a personalised, washable and reusable container to store food. Students will be able to take home any food they do not eat to avoid wasting it.

➑ **Zero-waste meals.** To raise awareness of the need to change daily habits and reduce waste, meals will be created that do not produce food waste or packaging.

➒ **The "Dish is Laughing" competition** in the context of the European Week for Waste Reduction. This project is made up of two phases: the first is an educational intervention using a video with real images of food waste in Bergamo's school kitchens which will be screened to start a discussion and introduce concepts related to nutrition, the environmental impact of food and the need to act against food waste; in the second phase, a competition will be held to measure the amount of food waste generated in school kitchens.

➓ **Supply centrifuges** to classrooms with kitchens. The aim is to reuse parts of fruit and vegetables that are not used or have aesthetic imperfections by extracting their juice.

IMPACT

Food waste is measured over **one week in winter and one week in spring**.

ACTORS INVOLVED

The City of Bergamo, school kitchens, teachers, school heads and non-profit associations are involved.

MAIN CHALLENGES

- ➔ **Reducing food waste in school kitchens.**
- ➔ **Increasing food education** to raise awareness among young people about food waste.

MEASURING SYSTEM

Sercar collects and analyses data which includes the **weight of food waste** and **what students are eating**.

FINANCIAL RESOURCES

These projects are financed using **municipal funds** and specific **national and European calls** for educational actions.

LESSONS LEARNT

➔ **Organising specific working groups** with stakeholders is essential to create concrete actions against food waste.

KEYS TO SUCCESS

It is important for municipalities to include **objectives and actions against food waste** in their tenders for school meals.

MULTI-LEVEL GOVERNANCE

National legislation (Gadda Law or 166/2016) allows establishments to donate surplus to NGOs and receive **discounts on their waste tax in return**.

The **City of Bergamo** is responsible for municipal waste management and promotes policies to combat food waste in school kitchens by redistributing food to vulnerable families.



04.1 BRUGES

BELGIUM | EU PROJECT: FLAVOUR

The European Flavour project ran from 2018 to 2022. Following the end of Flavour's funding period in August 2022, operational and financial resources were raised to expand the project to a region covering 10 cities and approximately 287,000 inhabitants. This allowed Ruddersstove to continue the initiative under the new name of De Voedselploeg.

DESCRIPTION

Through **Flavour** (a European Interreg 2seas programme project), the City of Bruges joined with 20 partners to create a **food distribution system that processes surplus food from supermarkets** and redistributes it to selected people.

This initiative, now managed by Voedselploeg, aimed to reduce food surplus in the city of Bruges and provide access to healthy food for vulnerable people, while promoting employability.

IMPACT

In **June 2020**, the distribution platform started collecting and distributing surplus food. That year, **34 tonnes of food were recovered**.

In **2021, 96 tonnes of food were recovered**. De Voedselploeg has expanded the initiative and now collects and distributes food in **10 towns** around Bruges. In 2023, 417 tonnes of food was recovered and in **2024, 321 tonnes** in the city of Bruges.

ACTORS INVOLVED

The food redistribution platform was created with the collaboration of **environment and social economy services**. The platform connects local stakeholders, coordinates the collection and distribution of food in Bruges and generates social employment.

Participants include stakeholders from the **social economy, food banks, social associations and supermarkets**.

MEASURING SYSTEM

Software is used to weigh and categorise accepted food in order to monitor and track donations to poverty-reduction organisations.

MAIN CHALLENGES

→ The expansion to 10 cities, together with the distribution of EU FEAD products by the regional food bank, is collectively financed until 2025. However, **financial sustainability has not yet been achieved**. An adapted business model will need to be developed for the project to continue beyond 2025.

MULTI-LEVEL GOVERNANCE

De Voedselploeg operates within a multi-level governance framework with **collaboration between local governments, regional actors and European funding sources**. This layered approach ensures coordinated action, shared responsibility and greater impact at all policy levels.

FINANCIAL RESOURCES

The European project had total funding of **EUR 4,330,155.00**, of which EUR 446,775.90 was allocated to the City of Bruges. The project received a grant of EUR 268,065.54 from ERDF funds.

The remaining financial resources after the EU project period consisted of contributions from the **10 cities/municipalities, the Flemish Government and sponsorships**.

LESSONS LEARNT

Public funding is essential to achieve the triple win (tackling food poverty, reducing ecological impact and creating employment opportunities), as the returns cannot be directly measured in financial terms.

KEYS TO SUCCESS

- Strong local collaboration**
 - City network
 - Partnerships
- Efficient logistics and technology**
 - Food registration software: accurate weighing, categorisation and tracking of food flows ensures transparency and efficiency.
 - Intelligent logistics: Optimising transport and storage helps reduce waste and maximise impact.
- Sustainable and social business model**
 - Triple-benefit approach
 - Inclusive employment
- Structural Funding**
 - Public funding until 2025 was key for the expansion phase, but a new business model or continued public support are needed for long-term sustainability.

04.2 BRUGES

BELGIUM | FOODWINNERS

2019-2022

DESCRIPTION

In Bruges, 4366 tonnes of food are wasted per year, which is equivalent to 7 - 14 kilograms of CO₂ per year. Reducing food waste was one of the pillars of the sustainable food strategy "**Brugge smaakt naar meer**" and the Bruges Towards Tomorrow climate plan. In 2018, a pilot project to reduce waste in healthcare facilities was successfully implemented.

The **objective of the Foodwinners initiative was to reduce food waste in Bruges households**. To achieve this, 50 ambassadors attended workshops to become experts in food waste reduction. Through nine challenges, they learned how to plan, shop, store and cook efficiently. They shared their experiences via an email campaign.

IMPACT

In the first year, **the campaign reached 500 people**. The result was positive: the ambassadors reduced, on average, **65% of food waste**. In 2021, 521 households in Bruges reduced their food waste by an average of 67%. Annually, they saved 19,662 kg of food, avoiding 62,918 kg of CO₂ emissions and saving €82,383.

By 2022, the City of Bruges aimed to reach 5000 local residents to reduce their food waste by 30%. They **reached 4809 citizens, who saved 55% of their food** (about 44,400 kg), saving €186,036 and **avoided 142,080 kg of CO₂ emissions**.

MEASURING SYSTEM

The initiative used the **same measurement protocols used by the Flemish government** in its study in order to compare the results.

At the start of the project, for CO₂ emissions calculation, it was assumed that each kilogram of feed consumed saved approximately 3.2 kilograms of CO₂ (Scherhauser et al. (2015) and EU FUSIONS).

MULTI-LEVEL GOVERNANCE

Reducing food waste is an important part of Bruges' local food strategy and also for the Flemish government.

FINANCIAL RESOURCES

The total budget (2019 - 2022) was **€135,119**. The initiative received a **75% grant from the Flemish Department of Environment** for €101,339.

MAIN CHALLENGES

In the first three years, savings of 30% were achieved. However, the initial amount of food waste decreased each year as the project progressed. Some of the causes may be:

- **The public was more aware and less wasteful.** For example, the test group that did not receive the newsletter with advice but were measured also managed to reduce their waste. Getting people to measure waste has a positive impact.
- **Participant profile.** Participants had less waste than the Flanders average, even in the initial measurement. Participants in this type of campaign are already aware of food waste, which explains their interest and participation. However, as participants start with lower than average food waste, the final improvement is also lower.
- **Food prices.** Food prices have increased since the start of the project, which may have led to a greater focus on food waste prevention in the initial measurement in year 3 compared to year 2.

ACTORS INVOLVED

Foodwin, through a public procurement process, was responsible for the **training of the 50 volunteer ambassadors**.

They also collaborated with **other stakeholders** such as volunteers, shared fridge initiatives, cooking clubs, training institutions, social welfare organisations, budget counselling services, community centres and neighbourhood committees and schools.

LESSONS LEARNT

- Look for **motivated ambassadors** to reduce food waste.
 - Participating in **the initiative should be fun**.
 - Involve multiple distinct groups: schools, social welfare associations, cookery clubs
 - Measurements** help to understand the problem, but you should allow participants to choose whether they want to measure or just need advice.
 - Ask **well-known people** to support your cause.
 - Use information **leaflets**.
 - Include **information aimed at reducing CO₂ emissions** in your emails: for example, where to buy local, seasonal fruit in your community or how to save fridge energy.
 - Reward the efforts** of the participants.
- A handbook was developed to inspire other cities.

KEYS TO SUCCESS

Fostering a close-knit community is essential to extend the project.

In the Food Winners initiative, **ambassadors** were used to help recruit the 5000 participants. Due to the COVID-19 pandemic, most **meetings were virtual** through platforms such as Slack or Facebook groups. Participants were able to share their results and stay connected with the ambassadors.

Cooking tips were shared on their website.

04.3 BRUGES

BELGIUM | INNOVATION FOR THE REDUCTION OF FOOD WASTE IN HEALTH CARE

2017 - 2018

DESCRIPTION

This initiative aimed to **reduce food waste in healthcare institutions** in order to raise public awareness, avoid unnecessary costs and reduce greenhouse gas emissions from food waste. To do this, **food waste was measured at various**

stages of the meal process, from the time the meals left the kitchen until they reached the patient. Then **health centre staff were trained** to carry out the measurements and identify the causes of food waste.

IMPACT

Reductions in food waste in healthcare were achieved, achieving a **37% reduction**. Approximately 39,236 kg of food was recovered, avoiding emissions of approximately 125,555.2 kg of CO₂.

MULTI-LEVEL GOVERNANCE

Regulations established by the Flemish government, in particular by OVAM (Public Waste Agency), have used the results of this project.

FINANCIAL RESOURCES

The initiative received a 50% subsidy from the **Flemish government** (OVAM) budget.

ACTORS INVOLVED

The initiative involved the **City of Bruges, the OVAM** (Public Waste Agency), the **Flemish government department WVG** and the company **Foodwin** (through public procurement). The participating health institutions were AZ Sint-Jan, AZ Sint-Lucas, de Kade - campus Het Anker, Riddersstove (Central kitchen OCMW Brugge) and the residential centres.

KEYS TO SUCCESS

- 1 **Participatory** approach
- 2 **Detailed measurements** according to the Soethoudt and Snels (Wageningen University) method.
- 3 Health institutions should be **responsible for their own measurements**.
- 4 **Intensive orientation** with workshops is required.

MAIN CHALLENGES

- **The health sector is diverse**. Multiple centres were involved: general and specialised hospitals, residential centres and smaller centres. Sometimes, food waste was related to how the institution worked. Some institutions have their own kitchen, while others use an external catering service.
- Therefore, **not all solutions were applicable to all centres**. However, the general approach to tackling food waste is the same in all health institutions.

MEASURING SYSTEM

FoodWin's method of analysis is based on the method developed by Wageningen University. It focuses on gathering the right information at the right time. The method was adapted to each specific situation and type of kitchen in the health institutions. The following five steps were followed in all cases:

- 1 **Identification of the type of food waste**. This was measured at various points along the meal route from the kitchen to the patient's room. We tried to find out root cause of wastage at each point.
- 2 **Categorisation of food**. For more information, food waste was categorised. For hot meals, four categories were used: starchy (rice, pasta, potatoes), vegetables, meat/fish/substitutes and soup.

LESSONS LEARNT

- 1 **All initiatives**, large or small, **help** to reduce food waste. Measuring each plate is not necessary. Sample measurements in some departments already provide a lot of information.
- 2 Following the initiative, AZ Sint-Lucas (Bruges) adopted an **intelligent menu ordering system** with a pre-set dish per day and a wide menu of pre-defined options of patient's choice. This new system required a major organisational change for patients, kitchen staff and the ordering process. After testing the new system for a few days, the hospital gathered enough information to optimise it.
- 3 A manual was developed to serve as inspiration for other cities.

- 3 **Additional data collection**. Food weighing data were supplemented with additional data, such as the number of patients, the weight of production in each product category and the number of absences.
- 4 **Execution**. The measurements were carried out by the institution's staff, following training and advice from FoodWin. It is important that the staff themselves were in charge of the measurements, as this raised their awareness and allowed them to see the results of their actions first hand.
- 5 **Results**. By looking at the weight of wasted food alongside the additional data, it was possible to estimate the results and calculate the indicators. The percentage of wasted food was compared to total production and to daily wastage per patient. The economic cost of food waste is an important indicator.



05 CAGLIARI

ITALI | SOLIDARITY HUBS SYSTEM
In progress.



DESCRIPTION

This initiative aims to **minimise the loss of fresh food** by redistributing surplus production to solidarity networks.

IMPACT

This initiative has had an **ecological and social impact**, thanks to the redistribution of production surpluses among the solidarity networks.

ACTORS INVOLVED

This project has involved **citizens** as well as **producers** and **markets**.

MEASURING SYSTEM

The project outlines a **system of indicators** to measure ecological impact, using **mobility, logistical, social and ecological footprint indices** (e.g. number of families, reduction of km2, etc.).

FINANCIAL RESOURCES

An investment of **€140,000** from **regional funds**.

MULTI-LEVEL GOVERNANCE

The initiative has been adapted at metropolitan level under the name **SMART FOOD**.

MAIN CHALLENGES

→ The food system has **no primary management**.

LESSONS LEARNT

Experience proved that the key is for **stakeholders to think and act together**.

KEYS TO SUCCESS

The project has been successfully implemented through **participatory campaigns** and proposals based on co-design and co-creation.



06 COURBEVOIE

FRANCE | CHARTER OF COMMITMENT TO REDUCE FOOD WASTE

2021 - now

DESCRIPTION

Since 2013, France has been developing a legislative process to combat food waste. In 2016, a milestone was reached. A **landmark law was passed** requiring food shops with a floor area of more than 400 m² to **donate unsold food to NGOs**. Since its inception, more than 10 million portions per year have been redistributed, an increase of 22% over 7 years.

The municipality of Courbevoie decided to go further. In February 2021, an unprecedented union was created. The city council, several voluntary supermarkets and a logistics start-up joined forces to **sign a letter of commitment against food waste**.

The letter of intent is ambitious and has three objectives:

- **Create synergies** so that everyone can combat food waste and adapt their practices accordingly.

- **Contribute to public awareness** on how to tackle food waste.

- **Help reduce the economic impact** of food waste.

The letter of intent, along with local stakeholders, is agreed annually and applies to all sectors of the city.

- ▶ In **2020**, it was applied to all **supermarkets** without area limitations.

- ▶ In **2021**, to **hospital catering** services.

- ▶ In **2022**, to **school catering services**.

- ▶ By **2023**, all **food-related businesses** (grocery shops, restaurants, markets, bakeries) were obliged to sign up.

- ▶ In **2024**, to **old people's homes**.

IMPACT

In the last four years, **the municipality has implemented four letters of intent**, encouraging supermarkets, hospitals, school kitchens, food shops and markets to actively participate in this policy.

The success of the initiative is measurable: **between 2021 and 2024, more than 400,000 portions** were recovered and distributed to **NGOs**.

ACTORS INVOLVED

- 1 The Commune of Courbevoie.
- 2 Supermarkets.
- 3 Hospitals.
- 4 NGOs and associations.
- 5 School kitchens.
- 6 Food shops.
- 7 Markets.



MAIN CHALLENGES

→ **The supply chain.** For the ecosystem to be effective, it relies on four pillars: those who give (supermarkets, kitchens), those who receive (charities), those who are in the middle (between those who give and those who receive) and the facilitator (the city of Courbevoie, in this case).

→ It can be **difficult to find the volunteers** needed to recover unsold food each day.

FINANCIAL RESOURCES

The initiative has **no cost to taxpayers**. The law **obliges supermarkets to donate** unsold food to NGOs and in return they get **tax benefits**.

Despite the positive impact of the new state legislation, Courbevoie decided to go further in reducing food waste. In 2020, the mayor launched a campaign to end food waste. The aim is to turn Courbevoie into a global laboratory.

These letters of intent, pioneered in France, have **multiple objectives**, all key to achieving the goal of **ending food loss and waste**:

- 1 **Create synergies** so that everyone can participate and adapt their practices.
- 2 **Raise awareness** among the general population about reducing food waste.
- 3 **Establish partnerships** for the donation of food to associations.
- 4 Organise **anti-waste promotions**, especially for

LESSONS LEARNT

▶ **Legislation is key** to achieving targets that have been set to prevent and reduce food waste.

MULTI-LEVEL GOVERNANCE

Since 2013, France has been developing a **legislative process** to combat food waste. In 2016, a milestone was reached. A law was passed **obliging food shops of larger than 400 m²** to donate unsold food to NGOs. National and local collaboration is essential in order for this law to succeed.

MEASURING SYSTEM

In France, to date, there is **no standardised measurement system**.

KEYS TO SUCCESS

products with an approaching expiration date.

5 Offer **bulk or unit sales** to adjust quantities purchased and reduce packaging.

6 Encourage the **purchase of fresh produce** through awareness-raising marketing campaigns (operation "Ugly Fruits and Vegetables", etc.).

7 **Adopt measures for waste recovery.** In 2022, the Commune of Courbevoie proposed, at a meeting with the National Assembly, amendments to the law against food waste. In particular, a reduction in the floor area of shops from 400 m² to 100 m² was proposed alongside an increase in fines from €10,000 to €20,000 for supermarkets that continue to throw away edible foodstuffs.

07 GOTHENBURG

SWEDEN | THE GOTHENBURG MODEL FOR REDUCED FOOD WASTE

Implementation: 01/06/2016 - 31/12/2018
The tool is still in use.

DESCRIPTION

It is a tool to **reduce food waste in municipal public kitchens**. The tool includes checklists with actions: measuring and monitoring,

menu planning, calculating portions, reporting attendance, purchasing, storing, cooking, serving and managing leftovers.

IMPACT

It has led to a **reduction in food waste**, which continues to reduce. An **updated version of the tool is being developed**, which includes calculation of wastage per plate.

The Swedish Food Agency has based its food waste reduction manual on **the Gothenburg Model** and it is used in many cities in Sweden and other countries, such as Sandefjord (Norway) and São Paulo (Brazil).

MEASURING SYSTEM

Measurements are **recorded in the Food Planning System** and all **staff are trained** to use it.

ACTORS INVOLVED

The **1200 public kitchen workers and their managers**. They understand the usefulness of the tool and have incorporated it into their daily work.

MAIN CHALLENGES

→ At the beginning, **the kitchen staff thought that the actions were too simple** and that little food waste was generated. From the organisation of the initiative, they were encouraged to implement appropriate actions for their kitchens and to measure their waste. After the initiative, the staff realised that they generated much more waste than they thought and that it was not that difficult to reduce it.

KEYS TO SUCCESS

The tool can be used in any kitchen, although translation into other languages may be useful.

LESSONS LEARNT

Small actions can make a big difference if we work together.

MULTI-LEVEL GOVERNANCE

Waste Plan 2030 which is implemented in the Gothenburg region includes targets for food waste: in public kitchens, it should not exceed 30 g of the main ration, and in households it should be reduced by 50% by 2030.

Local authorities work together to reduce food waste. The problem is that workers with other functions outside the kitchen do not engage in waste reduction because, according to them, it is "a kitchen job". In the updated Gothenburg model, a section has been designed to also involve head teachers, teachers and other school staff.

FINANCIAL RESOURCES

From 2016 to 2018, the initiative secured **funding from MIST** (environmental funding) for the recruitment of educators and the development of educational materials.

Since 2019, the tool has been implemented in daily work and **does not require funding**.



08 HALANDRI

GREECE | PREVENTION OF FOOD LOSS AND REDUCTION OF FOOD WASTE

Running since October 2022.

DESCRIPTION

The town of Halandri founded a Food Waste and Waste Prevention Unit in 2022 to **quantify and qualitatively assess waste** generated in the food

chain, to **raise awareness and educate the public** about sustainable food systems and the circular economy.

IMPACT

This initiative preventing food waste **promotes tangible change across Europe**, fostering sustainability and resource efficiency.

MULTI-LEVEL GOVERNANCE

There is **no specific regulation**. The only legislative obligation is in **national law 4819/2021**, which obliges certain categories of food waste producers to **report on the waste** they generate.

The town is responsible for waste management, social services (to recover surplus food), education and prevention of food waste among students, civil servants, food producers, the HORECA sector and the population in general. **The local government is committed to the cause** of prevention of food waste.

ACTORS INVOLVED

The main stakeholders are the **food waste producers located in Halandri** who are part of the five stages of the food chain:

- 1 **Fresh food producers** who sell their products in the markets.
- 2 Food and beverage **processing companies**.
- 3 **Retail shops**.
- 4 **HORECA**.
- 5 **Consumers**, i.e. households and institutions such as schools and nurseries.

MAIN CHALLENGES

Before October 2022, two major problems were identified:

- **Lack of information and data** related to food waste generation.
- **Lack of resources** (a dedicated collection system at the point of origin).

In 2022, a selective collection system for the organic fraction was implemented in most parts of the city. Continued campaigns are still necessary to prevent food waste and encourage

FINANCIAL RESOURCES

This initiative has been funded by three EU projects: **Horizon 2020 FoodRUs**, **Horizon ToNoWaste** and **Erasmus+ Food Connection**.

MEASURING SYSTEM

Standardised methods are used to measure food waste from various sources. These include weighing, questionnaires, interviews and compositional analysis.

the sustainable use of unavoidable bio-waste as a valuable resource. The town of Halandri has organised **several awareness-raising events and open learning laboratories** to encourage behavioural changes in people, including professionals, pupils and staff of schools and nurseries. The results of the Food Waste and Waste Prevention Unit's research have led to the publication of ten tips for the prevention of food waste in the home, ten tips for the HORECA sector and a book entitled "Cook smart and save food" which contains recipes with this objective in mind.

LESSONS LEARNT

- 1 **The public feels very positively** about the awareness and education campaign.
- 2 Food waste must be seen as a new stream to be recycled for recovery and **major information campaigns** are necessary.
- 3 Food waste **prevention campaigns** are needed, as well as **policy and fiscal instruments** on sustainable food systems.

KEYS TO SUCCESS

- 1 **Documentation and information** on the causes of food waste generation at all stages of the food chain.
- 2 **Scientific knowledge and technical skills** providing solutions for the recovery of food waste.



09 HELSINGBORG

SWEDEN | MEASURING FOOD WASTE IN SCHOOL KITCHENS

2018 - today

DESCRIPTION

In 2018, food waste in municipal schools started to be weighed daily. Before this initiative, waste was only measured during one week of each quarter but it is now part of the daily routine.

IMPACT

Since 2018, food waste has been halved. Currently, only 35 grams of each portion are wasted.

ACTORS INVOLVED

The initiative is aimed at chefs, with the objective of reducing food waste in kitchens. Last year, they started to work actively with pupils because leftovers are the main cause of school food waste.

MULTI-LEVEL GOVERNANCE

There are no national controls. Food waste data is sent at least every two years to the Swedish National Food Agency.



MAIN CHALLENGES

→ The main obstacle was to convince kitchen staff that the waste needed to be weighed because they thought it was an unnecessary additional task. However, the problem was solved when the catering manager introduced weighing into the work routine.

KEYS TO SUCCESS

- 1 It is important that the catering management introduces daily weighing and that time and energy is invested in raising awareness among kitchen staff. The most important thing is to offer personal feedback for the reported data, so that the importance of measuring food waste is understood.
- 2 It is also essential that kitchen staff become familiar with the management and reuse of leftovers.

LESSONS LEARNT

At the start, food waste records were kept by an external company and the City Council received monthly reports. Now, using the internal website, kitchen staff have access to their records to monitor data on a daily basis.

MEASURING SYSTEM

The municipality of Helsingborg has developed its own website for data recording where the kitchen staff in each school upload the quantities weighed daily. The website allows municipal staff to keep track of the quantities wasted in each of the centres on a daily basis.

FINANCIAL RESOURCES

In 2019, they received external funding from the climate change initiative (Naturvårdsverket) of approximately €90,700 (SEK 1 million). They have also received funding from the local climate compensation fund with the aim of reducing food waste from pupil food.



10.1 MILAN

ITALY | FOOD AID HUBS

Comenzó en 2016 y continúa activo.

DESCRIPTION

Food Aid Centres are **focal points for the collection and redistribution of surplus food**, avoiding waste. They are equipped with a refrigerated chamber to keep food fresh, shelves for dry food and an administrative area for data and procedure management.

There are currently **eight active centres** in Milan in multiple neighbourhoods. Food is **collected**

directly from markets, supermarkets and shops. A wide network of associations and NGOs is in charge of redistributing food to vulnerable people and managing daily activities.

The initiative won the prestigious **Earthshot Award** in 2021, allowing the project to expand and open three more centres in the city.

IMPACT

In 2015, the City of Milan promoted a more sustainable, resilient and inclusive urban food system.

Food Aid Centres respond to this priority by **promoting sustainability in the food chain** by **redistributing surplus food**. They contribute to the **reduction of greenhouse gas emissions** and address nutritional issues and social equity.

In 2023, 615 tonnes of food were recovered and redistributed to 144 non-profit organisations. As a result, 26,833 people were fed. The food aid centres prevented the emission of 1,414.5 tonnes of greenhouse gases by giving this food a second life.

In 2024, 793.5 tonnes of food was recovered and redistributed to 176 non-profit organisations. Thanks to this food recovery, 14,973 families and 126,274 people were fed. The food aid centres prevented the emission of 1,830 tonnes of greenhouse gases.

ACTORS INVOLVED

Multiple stakeholders have been involved in the design and implementation of this initiative:

- 1 **Project funding:** private foundations, donors and trade associations.
- 2 **Project management:** charities, NGOs, associations and food banks.
- 3 **Scientific partner:** Polytechnic University of Milan, responsible for data collection and monitoring the progress of the sites.
- 4 **City of Milan:** providing space for the centres, machinery and vehicles and promoter of the initiative.

MEASURING SYSTEM

The **Polytechnic University of Milan** analyses and compiles the data and **reports results every six months**. A co-design process was also applied to the selection of a supplier and the configuration of a management system for the collection, monitoring and optimisation of flow in and out of the centres.

MAIN CHALLENGES

→ **Multi-stakeholder participation.** To manage coordination and avoid internal conflicts, the active participation of stakeholders was promoted through a co-programming and co-planning approach consisting of meetings, workshops and a collaborative decision-making process. This approach contributed to strengthening the stakeholder community.

→ **Logistical and spacial challenges.** The recovery and redistribution process has efficiency and logistical challenges which are addressed through daily dialogue with third sector organisations, the implementation of a digital management platform to optimise and monitor flow and the identification of spaces (municipal or privately sponsored) to house the centres.

→ **Obtaining the necessary funding.**

KEYS TO SUCCESS

- 1 **Public awareness campaigns** are crucial to educate about the importance of reducing food waste and to support local food recovery initiatives.
- 2 The existence of a **specific Food Policy** provides clear structure and guidelines to implement food recovery programmes.
- 3 Collection and redistribution of surpluses was facilitated by the **geographical proximity and urban density** of the donation points along with

LESSONS LEARNT

➤ **Collaboration is essential.** Successful food waste reduction initiatives are due to the link between public institutions, private companies, non-profit organisations and local communities.

➤ **Raising public awareness** works to promote greater participation and encouraging individual responsibility for food waste.

➤ **Flexibility and adaptability.** Food recovery and redistribution programmes must be able to adapt to challenges such as logistical problems or changing food availability.

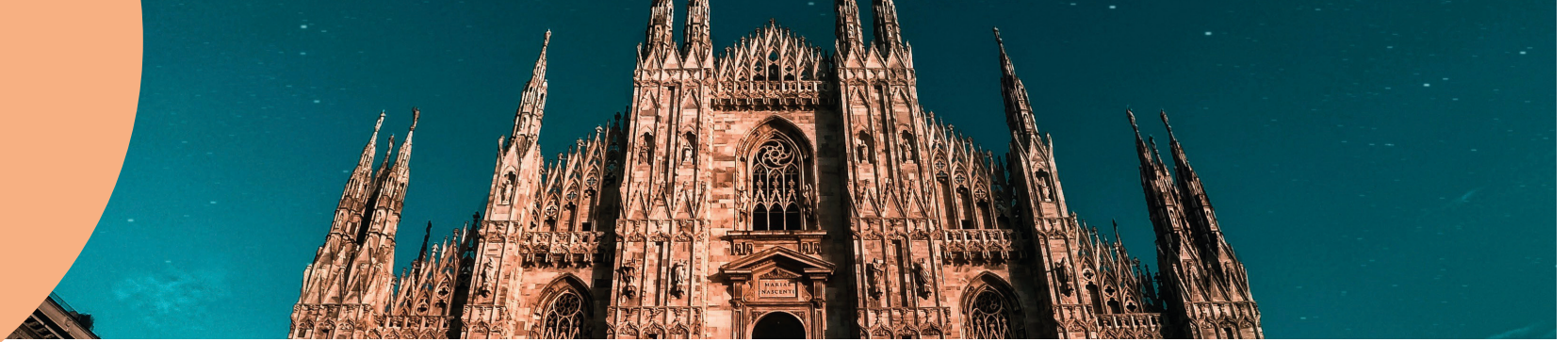
➤ **Data-driven approach.** Collecting and analysing data about food waste is crucial to measure the success of the initiative and decision-making.

➤ **Long-term planning.** Financial planning and fund diversification ensure the long-term viability of these initiatives.

the network of recipient organisations.

➤ **Cooperation between the various levels of governance and between the public and private stakeholders** ensured that resources are maximised.

➤ Involvement of all stakeholders by activating, maintaining and improving a **strong process of participation**.



FINANCIAL RESOURCES

The Food Aid Centres roll out was supported by **public funds and private donations** from companies and associations committed to reducing food waste. The **City of Milan** played an essential role, coordinating, in some cases, the Centre's spaces and human resources to support this initiative. In addition, **third sector organisations** provided expertise, transport and human resources to run the Food Aid Centres and ensure that the initiative is inclusive and well integrated into the local community. Diversification of financial resources enabled the expansion and strengthening of the network of Food Aid Centres.

The project was initiated thanks to the successful **collaboration between the Milan Food Policy and the Cariplo Foundation**. The network of Food Aid Centres was expanded after a donation of £1 million from the **Earthshot 2021 award**.

MULTI-LEVEL GOVERNANCE

Multi-level governance to reduce food waste requires a coordinated approach which harmonises **local, regional and national regulations**.

Nationally, strategies and frameworks for action are established in line with the Sustainable Development Goals (SDGs).

Regionally, responsible authorities adapt these national guidelines to the specific needs of their regions to ensure effective management of food resources and food systems. Additional regulations are also introduced to support local food recovery and redistribution initiatives.

At a local level, cities such as Milan have the skills to develop and implement food policies, manage food distribution and work with local stakeholders. Municipalities also play a key role in monitoring the results of these initiatives and adapting them to the local context, ensuring that they address both environmental and social objectives.

To avoid conflicts or contradictions, **regular coordination meetings** are held between the different levels of governance to align policy and strategy.



10.2 MILAN

ITALY | "ZERO WASTE AT THE TABLE" EDUCATIONAL MATERIAL FOR SCHOOL KITCHENS

2022 - completed.

DESCRIPTION

In order to raise awareness among children, a series of **educational leaflets** have been produced **with information and games** related to food waste.

This has been developed by the **City of Milan** together with the public company responsible for

school catering, **Milano Ristorazione**. Some of the initiatives developed are the "Fruit at lunchtime" project, which replaces lunch at home with a piece of seasonal fruit at school, or a "Snack bag", which allows pupils to store leftover bread, fruit or dessert in a reusable thermal bag to take home.

IMPACT

This is part of an **awareness campaign** aimed at **reducing food waste in school kitchens** and promoting **more sustainable habits**. A total of **71,000 copies** have been distributed to pre-school and primary school pupils, with versions appropriate for each educational level.

MAIN CHALLENGES

→ **Coordination between schools**. Effective communication enabled efficient logistics and a standardised protocol in all schools.

→ **Maintain consistent levels of participation across a wide audience**. Combining information with interactive games, the booklets successfully engaged 71,000 participating children.

→ **Measuring the effectiveness of projects**. Better data collection methods are needed to monitor the real impact of education initiatives on food waste. Investment in data collection methods and monitoring systems is being considered.

ACTORS INVOLVED

- 1 City of Milan**. The Food Policy Department is the main stakeholder responsible for the "Zero Waste at the Table" campaign.
- 2 School system**. Faculty and administrative staff have helped to implement educational materials and encourage students to participate in activities to reduce food waste.
- 3 Parents and families**. They are indirect stakeholders because the campaign also aims to raise awareness among families to change their habits and avoid food waste.
- 4 NGOs and organisations**, such as food aid centres, have supported with the logistics of collecting and redistributing surplus food.

10.3 MILAN

ITALY | BREAD AND FRUIT COLLECTION FROM SCHOOLS

The initiative started in 2017 with a pilot test in six primary schools. It is ongoing and has been extended to more schools.

DESCRIPTION

The City of Milan, via the public company responsible for school catering, Milan Ristorazione, has **implemented this initiative in school kitchens** to reduce food waste. Surplus food that has not been eaten by the students (bread and fruit) is **redistributed and donated**

to NGOs that support vulnerable people. The project also monitors surplus food in schools and redistributes it in collaboration with other programmes such as Siticibo (Food Bank of Lombardy) and neighbourhood associations.

IMPACT

This project has had a significant impact, reducing food waste and supporting social assistance programmes.

In 2022, 17,133 kg of bread and 38,834 kg of fruit were recovered and donated. In the **2023-2024** school year, **16,609.8 kg of bread and 40,053.4 kg of fruit** were redistributed.

LESSONS LEARNT

➤ **The importance of logistics and coordination** in the management of food surplus. The 2017 pilot project demonstrated that reverse logistics, i.e. collecting surplus in the final cleaning rounds, is an efficient way to recover food.

➤ It is essential to take into account **variability in the quantity of food** and **effective communication** between the multiple stakeholders involved.

➤ The creation of **strong links with third sector organisations and local associations** is key for the effective redistribution of surplus food.

ACTORS INVOLVED

➊ **Milano Ristorazione.** Responsible for management of food coordination in school kitchens and collection of surplus food.

➋ **Siticibo** (Food Bank). Social organisation in charge of redistributing collected surpluses to charitable institutions.

➌ **ONG.** Neighbourhood associations and volunteers who support the collection and distribution of food to people in vulnerable situations.

➍ **School staff** (teachers and workers). Support and facilitate the food recovery process in schools.

The City of Milan is evaluating **ways to replicate and expand the project**. One of the opportunities being reviewed is the **CARE project (Bicycle Action to Rescue Edibles)**, an action plan included in the European CULTIVATE project based on food recovery using bicycles to further reduce food waste with zero-emission transport.

KEYS TO SUCCESS



MEASURING SYSTEM

Currently, measurements are gathered via the individual efforts of partner staff. The City of Milan and Milano Ristorazione recognise the **need for a standardised system**.

Although there is no standardised protocol at a local, regional or national level, the municipality is working to improve data collection with the collaboration of local stakeholders and Siticibo.

MAIN CHALLENGES

The three main challenges have been:

➔ **Logistics.** Coordinating the recovery and redistribution of surplus food between the schools located in various parts of the city was complex due to the differing surplus amounts and their remote locations.

➔ **Communication.** Communication had to be optimised to avoid misunderstandings. This was resolved by using a shared map to monitor schools, surplus quantities and collection points.

➔ **Technology.** Among the obstacles was a lack of complete information on food surpluses and the difficulty of uniformly collecting data. To resolve this, a monitoring and data collection system is planned to ensure that measurements in the kitchens are consistent and comparable.

10.4 MILAN

ITALY | MILAN FOOD AID CENTRES STUDY VISIT

The study tour was held from 27 to 29 June 2023.

DESCRIPTION

The Milan food aid centres **attracted the interest of cities that are part of the Milan Urban Food Policy Pact**, the leading network of cities committed to transforming urban food systems.

Twelve European and US cities were selected for their commitment to reducing food waste and for being part of the MUFPP and C40 Cities networks

to take part in this study tour: Austin, Boston, Chicago, Los Angeles and Washington D.C. C., Amsterdam, Barcelona, Madrid, Oslo and Paris.

The trip was organised by the Milan Urban Food Policy Pact Secretariat in collaboration with C40 Cities, Bloomberg Associates and NRDC.

IMPACT

This **inspired participating cities to adopt similar strategies in their urban food systems**. A notable example is Boston which is initiating steps to replicate food aid centres with the support of Milan's food policy offices.

ACTORS INVOLVED

Local stakeholders that were involved were: IBVA, TDH, ABAL, POLIMI, Assolombarda, SNAM Foundation, SogeMi, MiRi, DIG, Bloomberg, C40, Cariplo.

11.1 OSLO

NORWAY | CUTFOODWASTE 2020 PROJECT

2017 - 2020

DESCRIPTION

With the aim of reducing food waste by 20% by 2020, Oslo took part in the **national "Cut Food Waste 2020" project**.

In Oslo, 20 old people's homes, 62 after-school

clubs and 59 early childhood education centres were involved. Participants **measured and reported their food waste** and actively worked on implementing **actions to reduce it**.

IMPACT

It raised food waste reduction awareness and the actions we need to take to reduce it.

FINANCIAL RESOURCES

The initiative was **financed with local funds**. The City Council has decided to invest in future initiatives without using funding from other sources. This local funding has been made possible by the cost savings from food waste measures.

KEYS TO SUCCESS

Clear regulation for people who work with food, explaining what measures to implement to reduce food waste.

ACTORS INVOLVED

The **municipality was the main** project manager, but as part of the national project **it worked with scientists and the private sector to** analyse food waste data to implement the correct measures.

MAIN CHALLENGES

→ Many of the kitchens **did not send the data** needed.

→ The **inferior quality of the data** meant that measurement periods could not be compared.

LESSONS LEARNT

Documenting and mapping food waste **requires a lot of effort**. New methods, systems and routines for measuring food waste need to be developed.

For an initiative to be successful, it needs to be **supported by the leaders of the affected areas** (those where food waste is most common).

It is important to have **resources for communication and coordination**.

Staff need **support and training**.

You need a **municipal food waste coordinator**. This issue is too complex to divide this responsibility between multiple workers.

11.2 OSLO

NORWAY | HOUSEHOLD FOOD WASTE COLLECTION - WASTE MANAGEMENT AGENCY

2010

DESCRIPTION

This initiative, started in 2010 and implemented throughout the city in 2013, is based on the **optical sorting of food waste for composting or biogas production**.

IMPACT

This important initiative **enables households to be aware of their food waste**, while reusing food waste for the production of biogas and compost.

11.3 OSLO

NORWAY | REDUCING FOOD WASTE IN THE MUNICIPALITIES PUBLIC KITCHENS

2023

DESCRIPTION

This initiative aims to **reduce food waste in municipal public kitchens by 50% by 2030..**

A food waste coordinator has been recruited to lead the reduction work to achieve this objective. **A digital tool or application is currently being developed** to enable the municipality to measure

kitchen waste. **An action plan is also being developed to implement the new tool** in kitchens with measures to reduce food waste.

Donation of surplus food and cooperation with suppliers are also being investigated.

IMPACT

The initiative has achieved **greater commitment towards reducing food waste** with someone coordinating the various local initiatives.

ACTORS INVOLVED

Staff from multiple sectors who are taking part in the development of the digital tool. They will share their experiences in reducing food waste within their agencies and sectors, including cooperation with suppliers.

KEYS TO SUCCESS

Political support is needed to reduce food waste and to have the resources needed.

MEASURING SYSTEM

A **local climate budget** is being prepared that will report on food waste using data from the **digital tool which is being developed.**



MAIN CHALLENGES

➔ **Obtain the funding needed to continue the project..** This obstacle has been overcome by demonstrating the impact of food waste on the climate, the environment and the economy.

LESSONS LEARNT

➔ Working to **reduce food waste is overly complex** and **involves multiple stakeholders..** **Achieving goals takes time**, it is important to be patient.

12 VALENCIA



12.1 VALENCIA

SPAIN | MAGNUS PROJECT (MAGNITUDE, NUTRITIONAL VALUE AND SUSTAINABILITY)

Promoting sustainable management for the reduction and prevention of food waste in tourism.
The MagNuS project started in 2022 and is ongoing.

DESCRIPTION

This project **evaluates and combats food waste at events and conferences held at the Valencia Conference Centre..** The MagNuS project quantifies organic waste generated at events,

classifies it by food groups, calculates the potential number of individuals who could be fed with the wasted food and assesses the energy and nutritional value.

IMPACT

The MagNuS project creates **critical learnings to implement sustainable practices in MICE** (Meetings, Incentives, Conventions and Exhibitions) tourism. The objective is to provide relevant information for operational and policy decisions to **reduce the environmental impact of food waste.**

ACTORS INVOLVED

Public stakeholders such as CEMAS, Palacio de Congresos de València, University of Valencia, Fundación Lluís Alcanyís, Instituto Valenciano de Investigaciones Agrarias, Universitat Politècnica de València and also **private stakeholder** such as the company Gourmet Catering and Events.

FINANCIAL RESOURCES

At the moment, the core funding for the project (operational costs, training and awareness programme) comes from **local funds allocated to CEMAS.**

MAIN CHALLENGES

Estimates of food waste in catering services were approximate. However, this project used direct, quantified measurements of food waste.

MEASURING SYSTEM

To calculate food waste, **measurements were carried out at event venues,** classifying waste by **food groups.** The food chain was not analysed. The MagNuS project was focused on addressing catering services in convention tourism.

LESSONS LEARNT

The four lessons learned through the MagNuS project were:

- 1 **The importance of accurate measurements:** direct and quantified measurements provide more valuable knowledge to create effective solutions against food waste.
- 2 **Standardisation and protocols.** Consistent protocols should be established across events and institutions in order to be able to compare data and assess progress.
- 3 **Awareness and participation:** Working with caterers illustrates the importance of training staff and raising their awareness of food waste reduction.
- 4 **Flexibility to overcome implementation challenges:** Reliable but flexible methods should be designed to respond to practical problems as they come up.

MULTI-LEVEL GOVERNANCE

- 1 **Coordinated regulations and policies.** Frameworks that align national, regional and local policies need to be established for consistency.
- 2 **Clear responsibilities.** Roles should be defined for each level of governance: national level for general policies, regional level for adaptation to the context and local level for urban implementation.
- 3 **Reduce potential conflict** by implementing intergovernmental communication channels to address contradictions and clarify roles and responsibilities.
- 4 **Local responsibilities.** Towns and cities focus on education, enforcement and community-based initiatives to ensure compliance and to raise awareness.

KEYS TO SUCCESS

In order to widen the MagNuS project, the following should be considered:

- 1 **Standardised measurement system and protocols:** consistent methods of measuring food waste should be implemented to enable comparison and monitoring of results. Protocols should be easy to follow and adapted to different contexts and levels (local, regional and national).
- 2 **Awareness and training:** key stakeholders

should be involved in training and awareness raising programmes to reduce food waste.

- 3 **Stakeholder involvement:** all stakeholders in the food chain, from suppliers to consumers, must be involved to achieve waste reduction.
- 4 **Continuous monitoring.** Practices should be reviewed periodically and adapted to ensure their effectiveness and relevance.

12.2 VALENCIA

SPAIN | ACTION PLAN AGAINST FOOD WASTE IN THE VALENCIA REGION

El proyecto se presentó en abril de 2019 y sigue en desarrollo en la actualidad.

DESCRIPTION

The main aim of the Action Plan is to **prevent and reduce food loss and food wastage**. To achieve this, objectives, contents and actions have been created and organised into four strategic pillars:

1 Legal and legislative angles.

2 Awareness-raising and training for citizens and stakeholders in the agricultural and food sector.

3 Innovation and research.

4 Collaboration networks and synergies.

IMPACT

The actions that were developed were aimed at different target audiences.

1 **Citizens and stakeholders in the food chain:** training and awareness-raising, seeking to increase interest in food waste.

2 **Schools:** food waste has been incorporated into the educational programme, which has been positively received by teachers and pupils.

3 **Stakeholders in the production sector:** measurements have been made of fruit tree crop losses which has generated interesting discussions with this sector.

FINANCIAL RESOURCES

Up until now, the initiative has received **budget from the regional government**, the Generalitat Valenciana, without needing external funding. In the future, other sources of funding and institutional support could be looked at in order to enable its continuation.

ACTORS INVOLVED

The target audience is broad and varies according to the initiative being promoted. So far, most of the participants have come from **schools** (teachers and students), alongside **stakeholders from the food chain** (agricultural technicians, managers of fruit and vegetable shops, producers) and **research** workers from the food industry, university professors **and the general public**.

MAIN CHALLENGES

→ The main challenge identified has been the **lack of awareness of the problems surrounding food loss and waste**. To tackle this, **information sessions** are being designed, such as 1:1 sessions, with the aim of encouraging greater understanding in order to tackle this problem.

→ It is not possible **to work to the same extent with all target audiences**. Food chain stakeholders, for example, are often less interested, even though their role is crucial. They feel they

have a lack of time and need to attend to other more urgent problems which means they do not yet prioritise food loss and waste.

→ But once a group comes to understand the problem, their awareness quickly increases and they become more interested in taking part in future action. **These** awareness-raising and understanding processes are key, but **need time and resources** to gradually become more commonplace in the general public.

MULTI-LEVEL GOVERNANCE

This Action Plan is a **regional initiative**, which complements existing initiatives at other levels.

It also **provides information and data to higher levels**, such as the national government or the European Union.

KEYS TO SUCCESS

1 **It is important to inform and motivate citizens** to adopt best practices by providing constructive criticism. People **should not be blamed**: the population should be encouraged to understand that everything counts.

2 It is important to **do this from a scientific perspective**: applying rigorous methods that favour standardisation, for example, in measurements, but also using collaborative networks, learning from other experiences and recognising that this problem needs the participation of society as a whole to achieve a solution.

LESSONS LEARNT

The main lesson learned is that **food waste is a problem at all levels of society** and this has been exacerbated by production and consumption globalisation in recent years.

However, progress towards reducing food loss can be made, and **we can tackle and respond to the problem. Even simple actions have a positive and motivating impact on the environment**.

MEASURING SYSTEM

Measurement is one of the main objectives and challenges of this Action Plan. Therefore, **multiple protocols have been designed and tested** in line with European regulations and scientific literature. So far, waste has been measured in: school canteens, catering facilities at mass events and directly on fruit discarded in the field.

12.3 VALENCIA

SPAIN | EUROPEAN TONOWASTE PROJECT: TOWARDS A NEW ZERO WASTE MINDSET BASED ON HOLISTIC ANALYSIS

The project started in September 2022 and will be finished in August 2026.

DESCRIPTION

The aim of this European project is to provide **objective, standardised and integrated information on the overall impact and benefits of daily actions that can be taken by the target audiences:** consumers, farmers, food chain companies and public decision-

makers. **New procedures have been created and tested in the three pilot cities,** Valencia (Spain), Vienna and Graz (Austria), with the collaboration of two partner cities, Halandri (Greece) and Hälsinglands (Sweden).

IMPACT

This project impacts Valencia at a local level:

- 1 **Development of a sustainability assessment tool**, together with other methodologies and tools, tested with various stakeholders from the local food chain.
- 2 **Implementation of three pilot actions to prevent and reduce** food loss and waste together with local stakeholders from the food chain.
- 3 **Promotion of an accelerator programme** for the development of sustainable business models to prevent and reduce food waste, directly impacting 10 start-ups.
- 4 **ToNoWaste Winter School**, a three-day interdisciplinary innovative education experience, held in February 2025.

ACTORS INVOLVED

The following local stakeholders are involved:

- 1 **Mercavalencia**, manager of the city's wholesale market.
- 2 **Cuinatur**, a sustainable local business supplying school canteens.
- 3 The **Federación de Cooperativas Agroalimentarias de la Comunitat Valenciana**, manager of a local citrus fruit cooperative.

Other stakeholders are also involved:

- 4 **Valencia Innovation Capital**, the innovation centre of Valencia City Council promoting entrepreneurship and innovation. This urban strategy includes an accelerator for sustainable agri-food initiatives, AgroLab, which takes part in the ToNoWaste project.
- 5 **Universitat Jaume I**, institution coordinating the project and supporting the pilot.
- 6 **ESIC**, Business school that supports work within the framework of sustainable business models.

MAIN CHALLENGES

The main obstacles are:

- Sufficient **communication of results** and processes.
- **Effective communication at all levels**, especially with local stakeholders in the food chain.
- The ability to **adapt to the results** obtained to unforeseen **circumstances**.

The project highlights the barrier of some local administrative processes which take a long time to resolve which affects the initiative's progress.

MEASURING SYSTEM

The ToNoWaste project has developed a **tool that evaluates the social, environmental and economic sustainability** of proposed actions, using a methodology based on indicators that can be adapted.

The ToNoWaste initiative highlights four key successes:

- 1 **Cross-sectoral collaboration.**
- 2 Focus on **sustainability and the circular economy.**
- 3 Involvement of **communities and stakeholders.**
- 4 The need for robust **data analysis** and decision-making tools.

KEYS TO SUCCESS

LESSONS LEARNT

- Food loss and waste is a complex issue that requires information to be clarified in order to **establish common ground** to work together with other stakeholders and countries.
- The importance of **involving multiple stakeholders** along the supply chain.
- The relevance of **effective communication** of processes and results.
- Everyone agrees on the need to reduce and prevent food loss, but **how to achieve** this is more challenging.
- Prevention and sustainability** need to be included when addressing food waste reduction.
- The importance of **collecting data** as a starting point for action and further quality measurement.

FINANCIAL RESOURCES

The ToNoWaste project is **financed by European funds**. Specifically, by the Horizon Europe programme, in the HORIZON-CL6-2021-FARM2FORK-01 call, project number 101059849.

MULTI-LEVEL GOVERNANCE

The coordinator of the pilot project is **Valencia Innovation Capital**, the Valencia City Council innovation centre. This public institution coordinates and energises the relationships between the partners involved, as well as the other pilot and participating cities, with the support of the UJI as the coordinating entity of the European project.

12.4 VALENCIA

SPAIN | REDONA

Duration 18 months: started in January 2024 and expects to be complete by June 2025.

DESCRIPTION

REDONA is a **application for communication and food management in Mercavalencia**, the main wholesale food market in the Valencia Region. This tool connects Mercavalencia wholesalers with

NGOs for the donation of fruit and vegetables fit for consumption (but not for sale) to vulnerable families and people suffering from food insecurity.

IMPACT

- **For Mercavalencia wholesalers:** improving the efficiency of management of surpluses and complying with legislation, facilitating access to tax benefits for food donations.
- **For NGOs and vulnerable people:** provide better information on food and improve their health through access to fresh produce.
- **For Valencia:** reduce the water and carbon footprint, improve the diet of all the city's residents and establish good practice in its main food market.

MEASURING SYSTEM

REDONA **quantifies and records the donations** made at Mercavalencia, **providing information** on the quantity of food offered, the food donated, the NGOs who have benefited, the number of portions delivered, the potential number of people fed and the carbon footprint saved by recovering food.

ACTORS INVOLVED

Five main stakeholders are involved:

- 1 **Mercavalencia wholesalers:** donations of fruits and vegetables, fit for consumption, that have been discarded from the market.
- 2 **NGO:** recipients of donations and distributors of food to vulnerable people and families.
- 3 **Naria Digital:** developer of the tool that connects wholesalers with NGOs.
- 4 **Mercavalencia:** provides the space where donations are made.
- 5 **Universitat Politècnica de València:** project coordinator managing implementation.

FINANCIAL RESOURCES

This initiative is an innovation project **funded by the Valencia 2030 Climate Mission**, an urban strategy from the City Council of Valencia.

MAIN CHALLENGES

The REDONA initiative responds to previously identified challenges in the food market, such as the **need to effectively manage food surpluses, a shortage of fresh produce** in NGO food donations and the **obligations** placed on **the primary sector** by new state legislation on food waste. The barriers solved by this project are:

→ **Donations made without a standardised, controlled system:** REDONA has created a new process that channels surpluses for donation and

records and quantifies the food donated.

→ **Lack of time for wholesalers to make donations:** the new process does not increase management time and also allows access to tax benefits under current legislation.

→ **Shortage of logistical information to channel donations:** the application allows NGOs to obtain real-time information on food availability to optimise the planning and organisation of deliveries.

LESSONS LEARNT

For smooth implementation, the REDONA initiative started as a **phased project** working with four wholesalers. Then the project will be scaled up to the rest of the fruit and vegetable wholesalers in Mercavalencia.

MULTI-LEVEL GOVERNANCE

REDONA meets the requirements of the **new state law on food loss prevention**. It is an alternative to food waste, prioritising donation to vulnerable individuals and families.

KEYS TO SUCCESS

- 1 **Traceability:** REDONA complies with the requirements of the current law (especially in relation to food safety), generating a mechanism allowing the documentation needed to declare donations at tax level.
- 2 **Trust:** different participation methodologies have been used, adapting the tool to their needs and creating a network of collaboration.

- 3 **Adaptability:** REDONA can be adapted to all types of wholesalers and social entities, regardless of their size.
- 4 **Economic benefits:** donations allow access to tax benefits, a key factor for the success of the project among wholesalers. The REDONA application generates all the necessary documentation to qualify for these deductions.

13 VENICE

ITALY | NO-WASTE SCHOOL KITCHENS

The No-waste school kitchens launched in 2021 and is still running today.

DESCRIPTION

This project was the **brainchild of a group of primary school parents** who asked the City of Venice education department to **recover food not eaten by students in school kitchens and donate it** to people at risk of social exclusion.

The initiative redistributes surplus food from some of Venice's school kitchens to two charities that run soup kitchens for people experiencing poverty.

IMPACT

- This project **reduces environmental impact** by recovering food that was destined to become waste and would not be donated.
- **Indirect economic benefits for NGOs.** They can invest the resources saved into other activities, improving the quantity and quality of the services they offer.
- **Generates cohesion in the community** because citizens actively participate in this initiative and it enables people at risk of exclusion to reintegrate into society.

ACTORS INVOLVED

The **City of Venice** coordinates the project with the **Municipal Company Multiservices of Social Economy (AMES)** and the **Association of Voluntary Services**.

Two NGOs receiving the food donations and the schools are also involved in the project.

MEASURING SYSTEM

Work is underway to **develop a tool to measure** food waste.

FINANCIAL RESOURCES

The project has a small **budget to cover the cost of fuel** for the volunteers' **travel expenses**. Thanks to a **donation from the Rotary Club**, four blast chillers were purchased and are now located in participating schools and two more will be donated to the schools in the coming months.



MAIN CHALLENGES

- **Finding NGOs** capable of receiving surplus food.
- **Technical issues** related to maintenance of the correct temperature during food transport.
- **Increased awareness** of schools and teachers involved in the project.

MULTI-LEVEL GOVERNANCE

Multi-level governance has been managed through:

- **Meetings** involving all stakeholders.
- Sharing the **annual reports** with the schools involved and people through a press release and

KEYS TO SUCCESS

- 1 **Motivation and involvement** of schools, kitchens and teaching staff.
- 2 Involvement of a **large group of volunteers**.
- 3 A **clear political mandate**.
- 4 **Promotion** of the project **through social media**,

LESSONS LEARNT

- The **importance of raising awareness among parents, schools and people** in general about the need to reduce food waste.
- Involve **NGOs as the main stakeholders** and sources for data collection.

via social media.

- **Involving local politicians** to give local media exposure to the project.
- **Sharing skills and defining the roles** of each stakeholder involved to develop the project.

press and word of mouth from parents.

- 5 **Benchmarking** against similar initiatives at a national level.
- 6 **Fundraising** for the implementation of the project with promotional activities.

14 WARSAW

POLAND | WARSAW FOOD LAB

The Warsaw Food Laboratory started creating solutions in 2021. The two pilot projects were launched in 2024.

DESCRIPTION

This initiative, developed by the City of Warsaw and SWPS University, looks to delve deeper into the challenges of urban food systems and to **cocreate effective public interventions** to address them.

It is currently focused on the **prevention and reduction of food waste**. The laboratory has investigated and identified food flows in cities and focused on various stages of food distribution.

Two innovative solutions have been implemented after a study of the food supply chain in restaurants and NGOs receiving

donations from food banks:

① Food waste prevention in the hospitality industry. A knowledge compendium has been designed to guide restaurants in food donations, together with a communication campaign to encourage the donation of surplus food to NGOs, in accordance with Polish law.

② Reducing food bank waste. To facilitate the management and distribution of food donations to NGOs, an intuitive storage system has been designed with new procedures to foster good practice.

IMPACT

This initiative has provided a safe, legal **procedure for restaurants donating food**, despite complex Polish legislation. **It has also helped NGOs** to optimise their donation management despite numerous challenges.

ACTORS INVOLVED

The Warsaw Food Lab **collaborates with various stakeholders**, such as restaurants, food lawyers, the Warsaw Food Bank, NGOs, retailers, food experts, chefs and businesses.

MEASURING SYSTEM

For each pilot, **the Theory of Change methodology** was used to produce the desired outcomes of the intervention, as well as monitoring and evaluation indicators.

There is no standardised protocol for measuring food waste at an administrative level.



MAIN CHALLENGES

→ **Lack of data, methodologies and knowledge about urban food waste.** The Warsaw Food Lab developed quantitative and qualitative research to better understand the challenges of the food system and the behaviour of the target audience.

→ **Reluctance of private and public stakeholders in the food chain to take risks.** In the public sector, this apprehension could be seen in procurement issues related to the creation and development of prototypes, despite innovative procurement procedures. Initially, NGOs showed little interest in participating until the pilot test was complete.

LESSONS LEARNT

Food waste is a complex problem. However, through **pilot testing and methodologies, the specific needs of the target groups have been identified** which addresses part of a challenging problem.

Cooperation and improved food management reduce food waste. The use of modern technologies can help.

One of the problems is that **the most vulnerable groups** (NGO beneficiaries) **are partly blamed** for food waste.

Cooperation with universities is needed to collect and analyse data through empirical research.

Existing legislation is confusing and fragmented, contributing to food waste.

Urban food policy should include and understand the diverse needs of the various stakeholders in the urban food system, as well as the city's policy objectives.

KEYS TO SUCCESS

① Political commitment, through an **empowered food waste ambassador**, is extremely important.

② Sufficient material and human resources are key to developing more policies and projects.

FINANCIAL RESOURCES

The Warsaw Food Lab is part of **the project "Building pathways towards FOOD 2030-led urban food policies" - "FOOD TRAILS"**, which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 101000812.

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