

# More Responsible Food Consumption



## Proposals to Prevent and Avoid Food Wastage







## CONTENTS

<b>INTRODUCTION:</b> Food should never go to waste	<b>3</b>
<b>UNDERSTANDING THE PROBLEM</b>	<b>4</b>
<b>The concept:</b> What is meant by food wastage?	5
<b>The methodology:</b> How was food wastage determined?	7
<b>The scope:</b> How much food goes to waste in Catalonia?	11
<b>The causes:</b> Why does food go to waste?	15
<b>The effects:</b> What is the impact of food wastage?	19
<b>PREVENTIVE ACTIONS</b>	<b>20</b>
The challenges	21
Actions by producers and manufacturers	22
Distribution and marketing actions	23
Catering and restaurant actions	25
Actions by the public	27
Other actions	28
<b>EXAMPLES TO LEARN FROM</b>	<b>30</b>
International experiences	31
Experiences in Catalonia and Spain	36

This publication is a summary of *Diagnosi del malbaratament alimentari a Catalunya* (Diagnosis of Food Wastage in Catalonia), which assesses the size of the problem, identifies the causes and suggests strategies and proposals to reduce the loss of edible food, as well as the associated social, economic and environmental impacts.

In this publication, the term *food wastage* is used to describe the misuse of food leading to the generation of waste that could be avoided with the use of better practices. The term used in the original Catalan document is *malbaratament alimentari*. The equivalent term used in the Bio Intelligence study is *avoidable food waste*.

The term *food waste* is used to describe both food wastage, that is the waste fraction that is avoidable with good practices, and the unavoidable food waste fraction.

## INTRODUCTION

# Food should never go to waste

Food is a **valuable resource that needs to be managed and consumed with the utmost care and responsibility**. The aim should be to use the full available nutritional capacity, regardless of current customs, conventions and social habits of use (such as overly generous portions or discarding leftovers). Therefore, no foodstuffs should be ever considered waste.

However, **food wastage** is a problem of developed societies, where **the loss of thousands of tonnes of food** occurs each year. Analysing the characteristics of domestic rubbish and organic waste from other sectors clarifies the scope and enables suitable corrective proposals to be applied.

With the aim of determining the characteristics of **food wastage in Catalonia**, the study produced by the UAB characterised almost six tonnes of waste from the NON-SEGREGATED fraction<sup>1</sup> and the so-called **organic fraction of municipal solid waste** (or OFMSW)<sup>2</sup> from the household, distribution and food service sectors throughout Catalonia. For the production sector, an estimate based on European data was used. The conclusions in this document therefore refer to the distribution, hospitality and domestic sectors, but do not consider production. The study also determines the food wastage profile for households and catering, as it followed a group of families and analysed waste from restaurants at the university to determine the differences.

Estimates of municipal waste generation in Catalonia suggest organic material represents 36% of the municipal waste generated. It is the largest portion in terms of quantity and the most relevant in terms of quality, as it is difficult to manage when mixed with other fractions. Of this 36%, 4% is the plant fraction and the main part, 32%, food waste, termed the **organic fraction of municipal solid waste** (OFMSW). One of the main contributions to the study was to give figures and show the size of the food wastage problem, which has been assessed at around 262,000 tonnes a year in Catalonia.

Reducing these figures requires the issue to be considered from a cross-disciplinary, multi-sided perspective, taking into account specific actions in each step of the food chain, while, at the same time, adopting other approaches in the economic, environmental, nutritional and cultural fields, among others, which affect how food is consumed socially.

Thus, this situation requires changes in behaviour and attitudes among all social agents, to **restore the value of food and consider food waste as a resource**.

---

1. NON-SEGREGATED FRACTION. The waste fraction from municipal waste after selective collection, which may still contain recoverable material.

2. OFMSW. The organic fraction from selective collection of municipal solid waste. This is biodegradable organic waste of plant and/or animal origin, consisting mainly of: waste from food preparation, food leftovers, food that has gone off and from small, non-woody plant waste (grass, fallen leaves, bunches of flowers, etc.) In Catalonia, this selective collection has spread to most areas.



# UNDERSTANDING THE PROBLEM



## THE CONCEPT

# What is meant by food wastage?

Food which goes unused, despite having nutritional value, is termed **food wastage**. Responsibility for food wastage is shared among all agents in the supply chain: from producers to consumers, and including distribution, retail and restaurants.

The concept of the **food chain** has a degree of linearity, as it begins with farm production and ends in the home or restaurant. However, the presence of other agents in managing food, its by-products and food waste, such as recoverers and recyclers, agrifood industries, and waste treatment plants, as well as nature itself, which provides food directly through gathering, hunting or fishing, makes the term **food cycle** more appropriate.

In this publication, the term food wastage refers to all **edible, prepared or cooked leftover food, edible food left on dishes or returned** (with skin, bone, shells or other inseparable parts), **food that has gone off**, as well as **food in good condition** (both packaged and unpackaged) that can be found in the selective collection circuits for the organic fraction of municipal solid waste (OFMSW) and the non-segregated fraction from households, restaurants and retail distribution.



## WHAT IS FOOD WASTAGE COMMONLY CALLED?

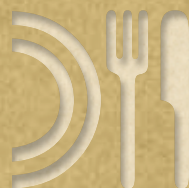
Colloquially, there are many ways of referring to leftover food. From general words, such as scraps, rubbish, remains or scrapings, to more specific words that are variations on crumbs, leftovers or reheated food.

This lexical variety indicates how leftover food used to be seen. Today, if one asks someone at random what they call food left on the plate, it would be hard enough for them to find two words, let alone a third.





## OTHER RELATED DEFINITIONS



### THE DEFINITIONS GIVEN BY OFFICIAL BODIES:

According to the FAO (United Nations Food and Agriculture Organisation), food waste\* or loss is 'the decrease in edible food mass throughout the *part of the* supply chain that specifically leads to edible food for human consumption. Food losses take place at production, postharvest and processing stages in the food supply chain'. In defining food waste and food loss, it also states that 'food losses or waste are the masses of food lost or wasted in *the part of* food chains *leading to* "edible products going to human consumption"'.

The United States Environmental Protection Agency defines food waste as the 'uneaten food and food preparation wastes from residences and commercial establishments such as grocery stores, restaurants, and produce stands, institutional cafeterias and kitchens, and industrial sources like employee lunchrooms.'

The USEPA goes on to define food processing waste as the 'food residues produced during agricultural and industrial operations'.

According to the document produced by the consultants Bio Intelligence, commissioned by the European Commission in 2010, 'food waste is composed of raw or cooked food materials and includes food loss before, during or after meal preparation in the household, as well as food discarded in the process of manufacturing, distribution, retail and food service activities. It comprises materials such as vegetable peelings, meat trimmings, and spoiled or excess ingredients or prepared food as well as bones, carcasses and organs. Food waste can be both edible and inedible'.

\* FAO describes as *food waste* the fraction designated *food wastage* in this document. The FAO report does not mention the fraction described as *food waste* in this publication, referring to avoidable and unavoidable food waste.

## THE METHODOLOGY

# How was food wastage determined?

To determine the figures for food wastage, **the organic and non-segregated fractions in selective collection circuits** were analysed, as the presence of food wastage in other circuits, such as glass, paper and, containers is irrelevant. The statistical data used in the study refer to 2010 and the characterisations conducted specifically to determine waste from a sample of municipalities were conducted from July to September 2011. The study characterised nearly 6 tonnes of non-segregated waste and organic fraction in Catalonia. The characterisation included some small municipalities to obtain a more varied spectrum, even though they did not meet the initial requirement of separating organic, commercial and domestic collections.

The **specific waste characterisations** analysed food waste from different sources (households, shops, etc.), grouped according to type. Thus, based on the classification used by the Waste Agency of Catalonia (ARC) to determine unsuitable waste found in the OFMSW, a classification table has been developed which lists the contents of fermentable organic waste (FOW) into various groups, so that food wastage can be identified correctly. Using the data obtained, specific values for the food fraction and food wastage from the non-segregated and organic fraction collection circuits were calculated and then extrapolated to all Catalan municipalities.

The **total value of food wastage** was thus obtained from the sum of the following factors:

- food wastage from the organic fraction collection circuits,
- food wastage from non-segregated fraction circuits in municipalities that have implemented OFMSW selective collection.
- food wastage from non-selective fraction circuits in municipalities that have not implemented OFMSW selective collection.

Food wastage was also assigned to different sectors of society based on two hypotheses: consumption of solid food is directly related to waste generation, and waste generation is directly related to the surface area of certain production sectors and economic activities.

Food wastage from homes and the distribution sector, the catering sector and public institutions was deduced from solid food consumption. However, waste from the subsector of municipal markets, supermarkets and grocery stores and the rest of the distribution sector was inferred from the waste generation ratio per surface unit extracted from the waste characterisations. In this way, the final result differentiated food wastage from households, grocery stores and supermarkets, municipal markets, retail distribution, catering and public institutions.





**TABLE OF MUNICIPAL WASTE CLASSIFICATION USED IN THE STUDY<sup>3</sup>**

FOW	1.	Fermentable waste.
	1.1	OFMSW food waste.
	1.1.1	Food waste from the preparation of non-served food.
	1.1.2	Leftover edible food prepared or cooked but not served.
	1.1.3	Leftover food and non-edible food (fruit peel removed at the table, shells, bones, etc.).
	1.1.4	Leftovers of edible served and returned food (pieces of cooked meat, fish and vegetables, leftover desserts, etc.) with the peel, bones, shells and non-separable parts.
	1.1.5	Waste food that has gone off in the conservation or storage processes before preparation.
	1.1.5.1	Unpackaged waste food that has gone off in the conservation or storage processes before preparation.
	1.1.5.2	Waste food in its original packaging that has gone off in the conservation or storage processes before preparation.
	1.1.6	Food in good condition.
	1.1.6.1	Unpackaged food in good condition.
	1.1.6.2	Food in good condition in its original packaging.
	1.1.7	Other waste food not classifiable in the above groups.
	1.2	Gardening waste.
	1.2.1	Small plant waste (withered flowers, weeds, grass, small pruned branches and twigs, fallen leaves, etc.).
	1.2.2	Small woody material (ice-cream spoons, toothpicks, chopsticks, etc.).
OFMSW	1.3	Dirty kitchen paper and tissues.
	1.4	Cork and pieces of wood used in food or the preparation of food packaging.
	1.5	Animal excrement without absorbent litter or soil.
	1.6	Other compostable materials (dishes, bags, wrapping, etc.).
Plant fraction (GF)	1.8	Gardening and pruning waste (larger and more woody). Natural wooden materials (spoons, rolling pins, pestles, etc.).
OTHER FOW	1.9	Dead non-food producing animals (rodents, dead pets, etc.).
Paper	2.	Paper.
	2.1	Paper not associated with food service.
	2.2	Paper towels, dirty paper for food use (associated with cake-making, baking parchment, etc.).
	2.3	Paper and cardboard used to serve food. Paper towels, dirty paper for food use (associated with cake-making, baking parchment, etc.).
Cardboard	3.	Cardboard.
	3.1	Cardboard for serving ready-made food (pizza boxes and cardboard fast-food packaging).
	3.2	Cardboard for food packaging.
	3.3	Cardboard for non-food packaging.
	3.4	Other types of cardboard. Non-packaging cardboard.
Glass	4.	Glass.
	4.1	Bottles and glass for food.
	4.2	Flat glass and non-packaging glass.

3. The groups that constitute food wastage are shown on a green background.



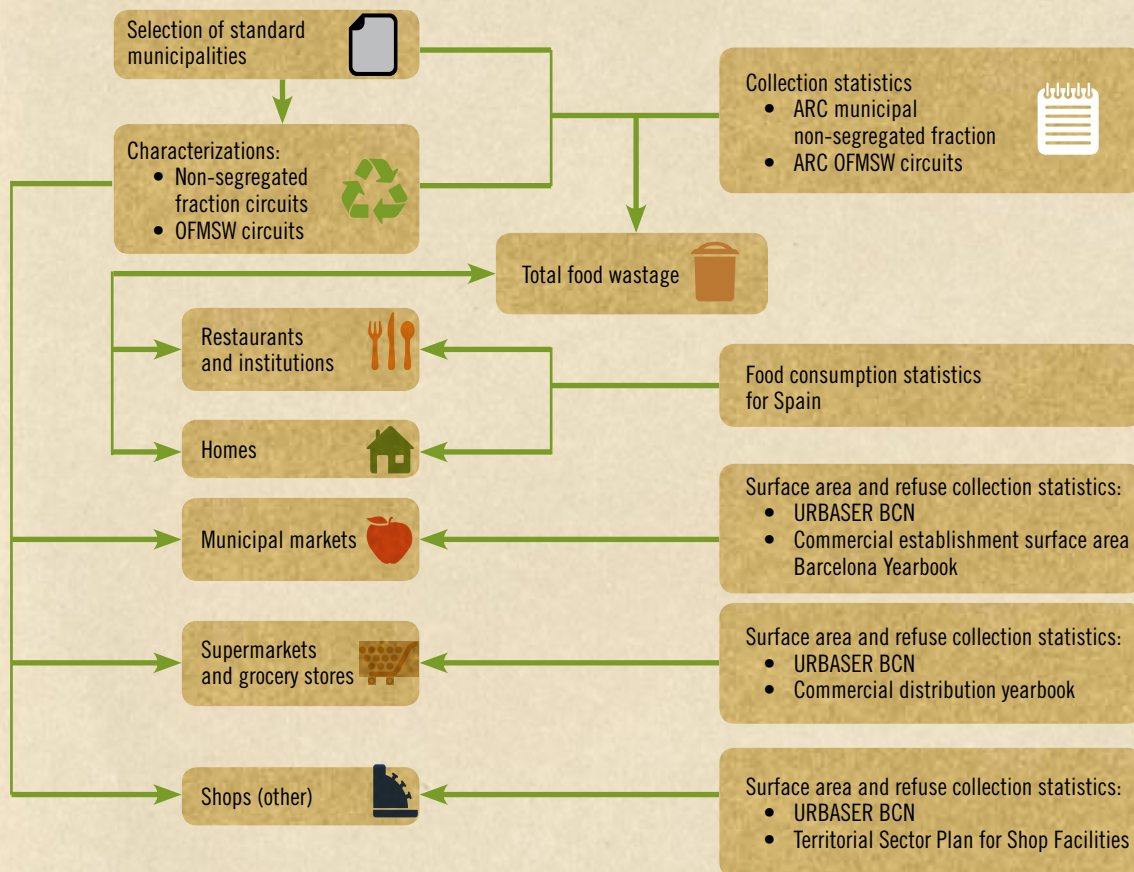
Mixed plastics and film	5	Compound (mixed) packaging.
	5.1	Mixed packaging made of cellulose, plastic and aluminium for drinks.
	5.2	Mixed packaging for solid foods.
	5.3	Cups made of cellulose and other components (paraffin, films, etc.).
	5.4	Compound packaging waste.
	6.	Plastics.
	6.1	Film.
	6.1.1	Food film.
	6.1.2	Non-food film.
	6.1.5	Other types of film not included in the above groups.
	6.2	Hard plastic bottles and jars (PP, PET, HDPE, LDPE, PVC, etc.)
	6.2.1	Plastics for drinks and food liquids (milk, oil, water, etc.).
	6.2.2	Plastics for drinks and non-food liquids (detergents, cosmetics, DIY products, etc.).
	6.2.3	Plastic food containers and tools.
	6.2.4	Non-food plastic containers and tools.
	6.2.5	Single-material plastic cups.
Plastic bags	6.3	Other plastic objects (PE, PP, PS, PVC, PA, etc.).
	6.4	Any other plastics.
Ferrous and non-ferrous metals	7.	Plastic bags (non-compostable) for rubbish, supermarkets, carrier and T-shirt bags.
	8.	Metals.
	8.1	Ferrous metal containers.
	8.1.1	Cans for solid foods.
	8.1.2	Drinks cans.
	8.1.3	Metal non-food containers.
	8.2	Non-ferrous metal containers.
	8.2.1	Cans for solid foods.
	8.2.2	Drinks cans.
	8.2.3	Metal non-food containers.
	8.2.4	Aluminium foil.
	8.3	Other metal.
Textiles	8.3.1	Other ferrous metals.
	8.3.2	Other non-ferrous metals.
Textiles for hygiene	9.	Textiles and footwear.
Hazardous	10.	Hygiene. Nappies, sanitary towels and, in general, bandages and gauzes from domestic use or incorporable into domestic use
Bulky waste	11.	Hazardous domestic waste.
Other	12.	Bulky waste.
	13.	Earth, rubble, sacks for cement and other aggregates.
	14.	Liquids.
	14.1	Food and drink liquids (not sauces) in their original unopened packaging.
	14.2	Liquid vegetable oil in its original unopened packaging.
	14.3	Digestible liquid products and water in packaging not considered in section 14.1.
	14.4	Non-food liquid in packaging.
	15.	Other.

Source: *Diagnosi del malbaratament alimentari a Catalunya*. Waste Agency of Catalonia and the Autonomous University of Barcelona, 2011.





## INFORMATION COLLECTION PROCEDURE AND SOURCE OF STUDY DATA



Source: *Diagnosi del malbaratament alimentari a Catalunya*. Waste Agency of Catalonia and the Autonomous University of Barcelona, 2011.



## THE SCOPE

# How much food goes to waste in Catalonia?

In Catalonia, **3.74 million tonnes of solid food are consumed (499 kg/person/year)**, of which 2.56 million are eaten and **1.18 are discarded in the form of food waste**.

Of these 1.18 million tonnes, 920,577 tonnes are unavoidable, as they are intrinsically associated with the consumption of food and come from waste food that is not normally eaten (vegetable and fruit peel, coffee grounds and tea leaves, pips and stones, fish bones, shells, etc.).

The rest of the discarded food, **262,471 tonnes**, is what has been classified in this diagnosis as **food wastage**, which is found in municipal waste collection. Waste from wholesale distribution, the agrifood industry or the primary sector is not considered here.

Of the total solid food products acquired by homes, restaurants and shops in Catalonia, **7% (34.9 kg/person per year) goes to waste**, the equivalent to discarding food consumed over 25.5 days, or feeding over 500,000 people for one year.

The analysis of the different areas of the study shows that **58% of food wastage occurs in the home** (151,800 tonnes). Supermarkets and grocery stores are responsible for 16%. Bars and restaurants are responsible for 12% of food wastage because their generation is associated with purchasing or cooking planning and portion size, among other factors. The retail food sector (greengrocers', butchers' fishmongers' and bakeries, etc.) represent 9% of all food wastage, with a total sales surface area similar to that of supermarkets and grocery stores. Institutional catering and restaurant services represent 4%, while municipal markets have the lowest percentage of food wastage, only 1%.



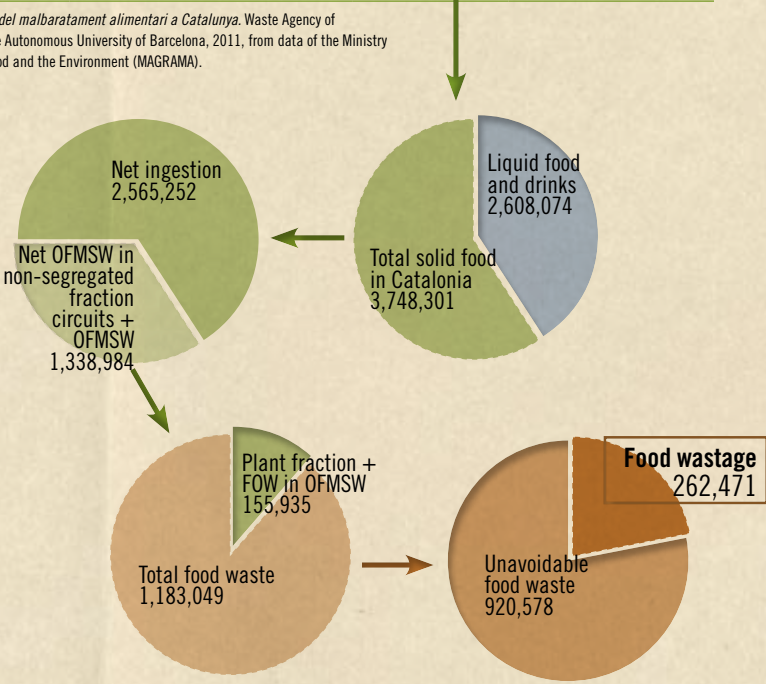
**262,471 TONNES OF  
FOOD WASTAGE**

**34.9 KG PER PERSON  
PER YEAR**

FOOD CONSUMPTION IN CATALONIA, BY SECTOR (2010)<sup>4</sup>

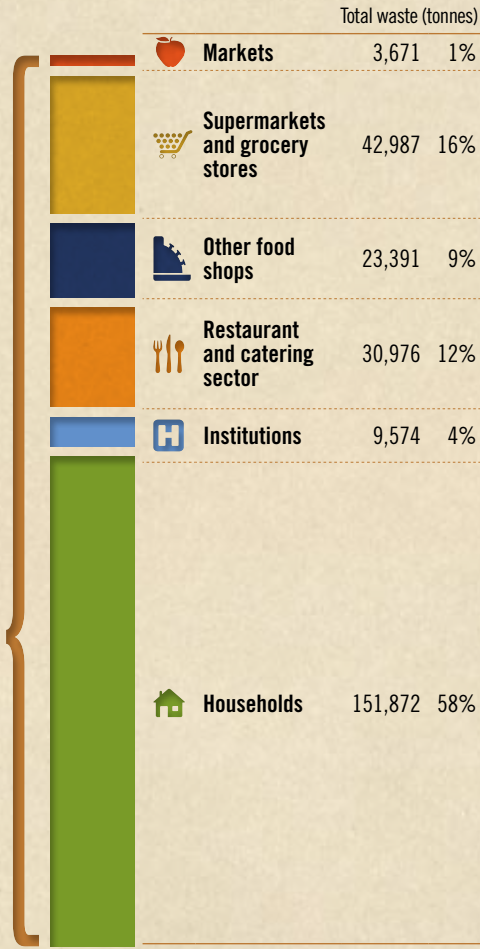
Sector	Total food in tonnes	Solid food weighting Spain	Total solid food Catalonia in tonnes	Food consumption in Catalonia by sector
Households	4,979,963	64%	3,167,515	84.5%
Hotels and restaurants	1,175,472	38%	442,127	11.8%
Institutions	200,938	68%	136,649	3.6%
<b>Total food</b>	<b>6,356,357</b>		<b>3,748,301</b>	<b>100%</b>

Source: *Diagnosi del malbaratament alimentari a Catalunya*. Waste Agency of Catalonia and the Autonomous University of Barcelona, 2011, from data of the Ministry of Agriculture, Food and the Environment (MAGRAMA).



Source: *Diagnosi del malbaratament alimentari a Catalunya*. Waste Agency of Catalonia and the Autonomous University of Barcelona, 2011.

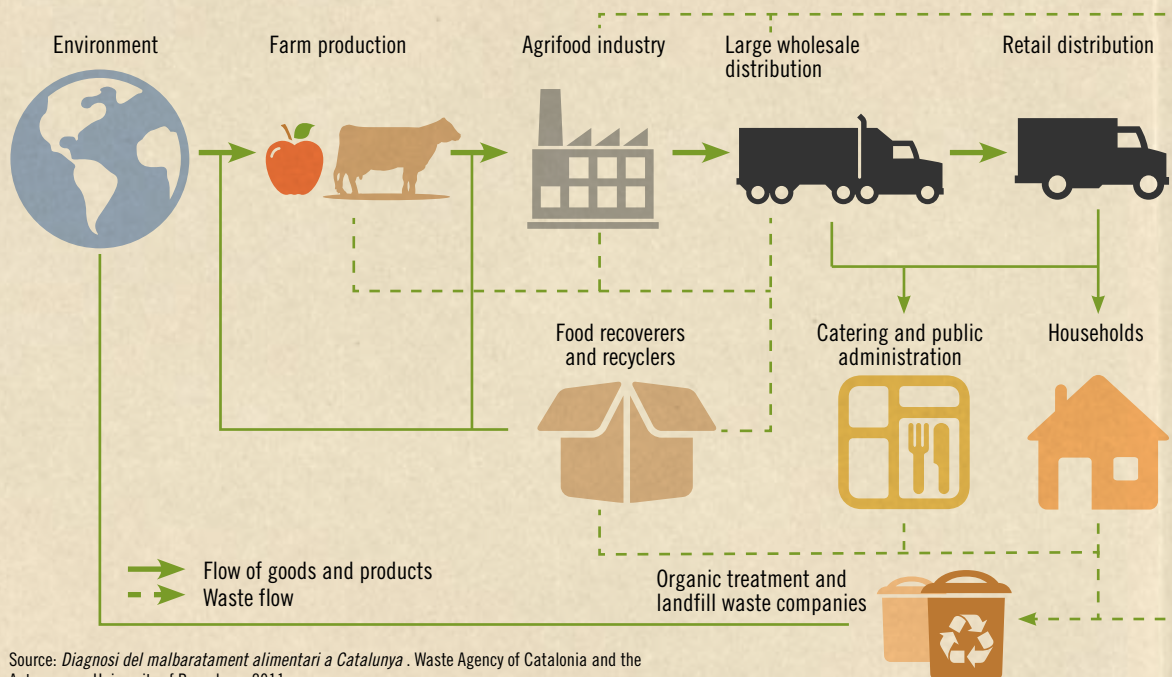
FOOD WASTAGE FIGURES FOR CATALONIA (2010)



4. The study on the composition of domestic waste, produced by the Waste Agency of Catalonia in 2006 showed that 36% of rubbish was organic materials, of which 32% was food fraction and the remaining 4% green fraction.



## FOOD PRODUCTION SYSTEM AND WASTE MANAGEMENT



Source: *Diagnosi del malbaratament alimentari a Catalunya*. Waste Agency of Catalonia and the Autonomous University of Barcelona, 2011.

### HOW DOES FOOD WASTAGE COME ABOUT?



**On the table:** uneaten food, edible food waste or food past its sell-by date.



**In households:** bad purchasing planning, leftovers from food preparation and cooking, incorrect interpretation of best-before and sell-by dates.



**Restaurants, catering and institutions (schools, nursing homes, hospitals, etc.):** leftover food or badly kept products.



**Distribution businesses:** food withdrawn due to appearance, products past their sell-by date or badly conserved (or close to sell-by or best-before date).



**Wholesale transport and distribution:** deteriorated or badly conserved food, in some cases due to a break in the cold chain.



**Agrifood industry:** losses associated with processing and production processes and resources that have lost food value (off-cuts, etc.).

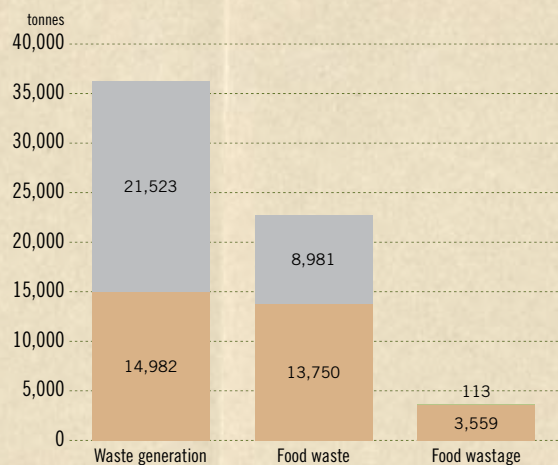


**Primary sector:** waste from harvesting, excessive production of animal-origin foods, unsold batches.

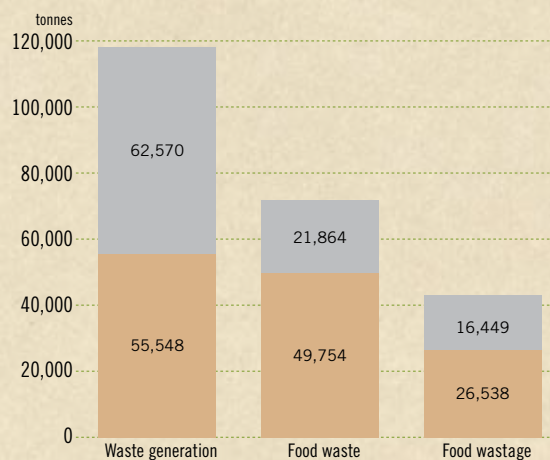
## FOOD WASTAGE IN CATALAN MARKETS, SUPERMARKETS AND FOOD SHOPS (2010)



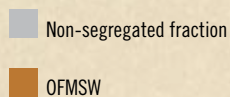
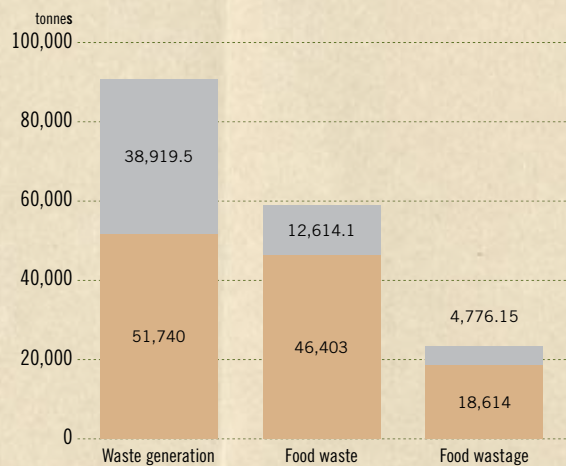
### Municipal markets



### Supermarkets and grocery stores



### Food shops



Source: *Diagnosi del malbaratament alimentari a Catalunya*. Waste Agency of Catalonia and the Autonomous University of Barcelona, 2011.



## THE CAUSES

# Why does food go to waste?

Raising collective awareness regarding food wastage and creating favourable social demand in all stages of the food chain, requires, firstly, a full understanding of the problem throughout the country, and secondly, the development of both communication tools and channels to disseminate the results. Thus, the first step to achieving effective food wastage reduction is **to establish where, how and why it occurs**.

The causes of waste are varied and may be common to companies and homes, with respect to factors such as portion size and problems with packaging and storage, amongst others. Food wastage also occurs **in all stages of the food chain process**, from primary production to the table.

The **main causes** of food wastage, by sector, are:



In **DISTRIBUTION**. This includes food transport from the producer to the retailer. Three main causes of waste have been identified:

- **Major market trends:** the growing demand for refrigerated food (fresh pasta, ready-made, packaged salads, fresh fruit juices, etc.) alters stock management and duration.
- **Natural restrictions:** seasonal nature of demand, duration of fresh products, weather fluctuations, etc.
- **Types of management:** errors in communications and demand forecasts, etc.

Of these three major causes, only the third is due to the human factor and, thus, can possibly be improved to reduce food wastage. Human error that causes food wastage in distribution can be found in:

- The lack of effective communication between different agents in the food cycle. If a practical communication system is not established to understand the needs of the agents in the supply chain, product losses can easily occur.
- The difficulties in sales forecasting in supermarkets. Although many already have a computerized system, the customer card, which collects details on customers' purchasing habits and trends, it is always difficult to make exact forecasts. This factor is much more important in seasonally affected sectors (ski and beach tourism, etc.).
- Control of the cold chain during transport. Management of this circuit is a critical point for food that needs to be transported at a given temperature. If it is not carried out properly, food loss occurs.





- Defects in food packaging, as products may have a shorter or longer life depending on the type used.
- Employee training, given that they do not always follow established procedures, especially during periods of high demand, where new temporary workers are hired who often have not been adequately trained.
- Product quality control by companies and disposal policies for products approaching the minimum duration date. Each company has its own method of controlling and discarding products depending on how it is applied. Usually, they follow aesthetic criteria that do not affect the health quality of the food.
- Responsibilities in waste management. Companies that have a clearly identified waste manager, and undertake correct selection and recovery, generate less waste than companies that do not. In Spain, companies do not really consider waste management an important element in business management, leading to deficiencies in the control of organic waste and food wastage. The authors suggest that awareness among Spanish managers is different from UK managers, thanks to government campaigns.

Also, from the interviews carried out with personnel, **additional causes** have been detected:

- Some distribution chains have clauses with their suppliers for unsold food to be withdrawn a few days before the minimum duration date is reached. This criterion is associated with the image of quality that supermarkets try to convey, by which withdrawn products cannot be sold at lower prices based on the sell-by or best-before date.
- Market strategies for passing surpluses from distributors to consumers (2x1), thus encouraging consumers to buy more than necessary, often leading to waste.
- Distributors tend to keep their shelves full of food until close to closing time as they think consumers do not trust food shops with empty shelves. This leads to food stocks on shelves under less favourable conditions than in store rooms.







**IN CATERING AND RESTAURANT SERVICES.** A recent study conducted in Great Britain revealed that two thirds of the food discarded in restaurant and catering services could have been eaten if it had been better managed, stored and/or prepared, and served in smaller portions. Thus, this sector provides a major opportunity for reducing waste if action is taken on the following factors:





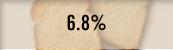
- **Portion size** and the offer on menus. The system of set menus, with no choice of portions and, occasionally, over-sized dishes mean consumers acquire food they might not want.
- **Logistics and planning of services** (booking and buffets) so that no food is left over, due to the variability in the number of consumers at a given moment.
- The **public's habits and attitudes**, given that they are still not used to taking home leftover food served in restaurants, to avoid waste.
- **Awareness of the problem in the sector.** Restaurant and catering companies still have not assimilated the concept or the need to reduce food wastage.



**In the HOME.** The amount of waste in households, combined with the large number of families, means any small action in savings or responsible behaviour has a positive multiplier effect. The factors influencing waste in the domestic sector are:

- **Awareness of what is eaten and what is thrown out.** Less value is given to food than in earlier days, added to the lack of awareness about what is thrown away. Despite the increased concern about environmental issues, food wastage has not been considered a problem in modern society until recently.
- The **population's socio-economic situation.** Single-parent or single-person homes create more waste food per person than a 4-person nuclear family, as supermarket portions are not designed for the former. It has also been noted that young people tend to eat out more and buy fourth or fifth-range products (from bag to dish or microwave packet to dish), types of food that can lead to waste at earlier stages in the food cycle.
- **Lack of planning when shopping:** the habit of always finding what you want, added to the fact that less planning goes into shopping means excess food and products that combine poorly are acquired, which are then kept in the cupboard, being more likely to go off.
- **Cultural attitudes.** There are various psychosocial reasons, termed 'culture', that encourage waste, such as the fact that using leftovers is not well considered, or serving more food than guests can eat in order to 'make a good impression on them'. In addition, there is the loss of culinary culture from generation to generation, along with recipes that use leftovers.
- **Lack of information and knowledge.** Storage techniques that extend the lifetime of food are not well known. Nor is there sufficient information on labelling or the difference between 'sell-by' and 'best-before'.

FOOD WASTAGE IN HOMES BY TYPE (2010)

Percentage of food wastage from organic	Organic types
 48.6%	Food that has gone off or past its sell-by date in the conservation or storage processes before preparation: packaged food past its sell-by date, inedible mouldy or rotten food.
 15.9%	Leftovers from edible, prepared or cooked food which has not been served: salad on trays, unserved leftover food, etc.
 25.0%	Leftovers of edible served or returned food (pieces of cooked meat, fish and vegetables, leftover desserts, etc.) with the peel, bones, shells and non-separable parts.
 3.7%	Food in good condition that has not been started, in or out of its packaging.
 6.8%	Bread, dry bread, or loaves of leftover bread, whole or bitten.

Source: *Diagnosi del malbaratament alimentari a Catalunya*. Waste Agency of Catalonia and the Autonomous University of Barcelona, 2011.

WHAT EXACTLY DOES THE SELL-BY DATE MEAN?

Regulations on the duration of food establish a minimum duration date, the purpose of which is to inform the consumer of the ‘best-before’ period. Rather than a food safety indication, it is an indication of homogenisation in European labelling standards. The best-before date does not impose any obligation to consume the food before the date indicated, it is just a recommendation.

The date is expressed as a ‘sell-by date’ only for those short-term perishable products that could represent a risk to human health if they go off.

However, the sell-by and best-before dates are mainly based on food-quality tests conducted by the manufacturer. There are no regulations to establish which tests should be conducted or which methodology should be used in order to assess best-before or sell-by dates.

Therefore, the best-before and sell-by dates are information from the manufacturer to the consumer. These dates are not set in regulations or legislation, neither are they subject to validations by the administration or any other authorised body. These dates are marked by the packaging manufacturer and the administration plays no role in setting them, beyond ensuring their existence on the label. Thus, a food product could be consumed after the minimum-duration date, either the best-before or the sell-by date, if kept in adequate storage conditions.





THE EFFECTS

# What is the impact of food wastage?

Producing, distributing and consuming food leads to a number of associated **environmental, social and economic repercussions**. Issues such as production techniques, distribution and marketing mechanisms or consumer habits, amongst others, are factors affecting the impact of the food cycle.

In a context such as the current economic crisis, and in a worldwide situation where nearly one billion people suffer from hunger, food wastage has a massive **social and ethical impact**. In **economic terms**, the annual expenditure on solid food products in Catalonia is estimated at €1,599 per person per year. Given that 7% is wasted, the economic loss is €112 per person per year.

In Catalonia, these figures represent **€841 million a year**, equivalent to approximately a tenth of the Government of Catalonia Health Ministry's spending in 2012.

From the environmental perspective, applying the concept of **ecological footprint** (ecologically productive area of the country - crops, pastures, forests or aquatic ecosystems - needed to produce the resources used and to assimilate the waste products by a given population with a given standard of living,) the impact of food wastage is **0.89 hectares per tonne of waste**. The 262,471 tonnes of food wastage are thus

equivalent to the use of 234,022 hectares or 20% of the total agricultural land in Catalonia.

With respect to greenhouse gas emissions from different phases in the life cycle of wasted food product, from production to managing the food as waste, emission generations exceeded **520,700 tonnes of CO<sub>2</sub> eq** in 2010, approximately the equivalent of emissions from 20,300 motor vehicles throughout their working life<sup>5</sup>.

**ESTIMATED COST OF FOOD CONSUMPTION AND WASTE IN CATALUNYA (2010)**

Sector	Solid food consumption	Food wastage
Cost (€)	€12,012,595,000	€841,171,000
Cost per person (€/p)	€1,599/inhab.	€112/inhab.

Source: Ministry of Agriculture, Food and the Environment.



**ECONOMIC LOSS  
IN WASTE:  
€112 PER PERSON  
(2010)**

5. According to standard Euro 4, a vehicle emits approximately 170 g CO<sub>2</sub> eq/km, with a mean lifetime of 150,000 km.

# PREVENTIVE ACTIONS





# The challenges

The main objective of prevention policies for the organic fraction must be to reduce waste throughout the whole life cycle of food, from farm to fork. The European Parliament indicates that the specific actions to achieve this goal must be based on two key objectives, considered cross-cutting:

Restoring **the value of food** and raising awareness of the economic, social and environmental importance of obtaining it.

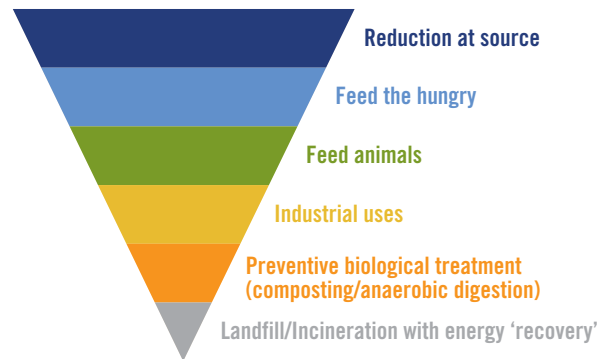
- Improved economic wellbeing, the ability to access any type of product and, above all, lack of awareness of the true effort involved in its production means that food has lost its true value, over and above its monetary value.
- The importance of food in family expenditure has been decreasing, while the productivity of agriculture and the food industry have been increasing and food markets becoming globalized. The fact that the food chain has grown and diversified makes it hard to understand the complexity of processes and the energy, social and environmental requirements involved, which are usually not reflected in the price of food.

Raising awareness that **discarded food is a resource**, even though regulations consider it waste.

- Compared to other types of waste, organic waste has a wide range of management options before it reaches the landfill. Establishing food surplus donation programmes for people in need or reprocessing excess food to make animal feed is preferable to sending it for final treatment.



## HIERARCHY OF ORGANIC WASTE MANAGEMENT



Source: US Environmental Protection Agency (USEPA).



# Actions

## BY PRODUCERS AND MANUFACTURERS

Production includes the whole of the primary sector, i.e. agriculture, livestock farming and fishing. Manufacture refers to the processing of food.

### **P1** - Environmental business clubs to reduce waste

#### **AIM**

To develop initiatives for reducing waste in the food industry by a training and experience exchange programme aimed at members of a business club.

#### **DESCRIPTION OF THE PROPOSAL**

Setting up a business club (similar to those already in existence in the United Kingdom) which promotes a specific training programme for the food industry and which works towards reducing waste, particularly organic waste. The idea is to create a meeting point to share reflections and experiences, and generate positive synergies amongst members.

### **P2** - Reducing waste as a priority action in corporate social responsibility

#### **AIM**

To encourage businesses in the agrifood sector to adopt measures to reduce food wastage, and include this concept in corporate social responsibility strategies.

#### **DESCRIPTION OF THE PROPOSAL**

Corporate social responsibility (CSR) is the way companies conduct their business, characterised by acting actively and voluntarily to improve the quality of life of their workers, the communities in which they operate and society in general, as well as minimising possible environmental impacts. Reduction of food wastage is an aspect that fits in perfectly with the definition of CSR, as it covers environmental, social and economic aspects, as well as producing savings in resources for companies and improved competitiveness.





## Actions

### PREVENTION ACTION IN DISTRIBUTION AND MARKETING

#### **P3** - Worker training to prevent food wastage

##### **AIM**

To train workers in the agricultural and agrifood sectors to be active in reducing food wastage in production processes.

##### **DESCRIPTION OF THE PROPOSAL**

In terms of a company's social responsibility policies, worker involvement is a key element in the success of proposed actions. In this context, raising awareness of the problem of food wastage both in general and within the organisation, identifying and implementing good prevention practices and establishing procedures for the correct separation of waste are measures that contribute to creating awareness of food use.

#### **P4** - Measures to improve supermarket product measurement

##### **AIM**

In supermarkets, to reduce the generation of waste from food past its sell-by or best-before date, as well as waste from fresh products.

##### **DESCRIPTION OF THE PROPOSAL**

Food wastage in the distribution sector is often linked to stock management and marketing strategies, in which the appearance of food or packaging flaws are reasons for discarding products.

Many supermarkets have now introduced improvements in the distribution chain to adjust product delivery to estimated demand, and other measures are starting to be applied, such as installing intelligent shelves in warehouses or logistic centres, indicating product stock and sell-by dates, or improving order preparation to facilitate the operator's task and installing preparation error control systems.

In regard to retail distribution, correct product management can be ensured through visual control of fresh food in order to remove products that have gone off and prevent decomposition from spreading to the rest, as well as reducing the price when the sell-by date is close or promoting innovative consumption campaigns.

## **P5** - Changes in management habits for products close to their sell-by date

### **AIM**

To steer the supermarket brand towards environmental and social responsibility by promoting actions to reduce food wastage and informing consumers about more responsible consumption habits.

### **DESCRIPTION OF THE PROPOSAL**

Products reaching their sell-by date are considered by many supermarkets as a factor that creates a poor image among customers. This has a direct effect on waste, because many shops remove products a few days before the sell-by or best-before date and treat them as waste.

Consumers have also been educated in a culture of plenty and perceive empty spaces on shelves and products near their minimum duration date as harmful to the supermarket image, hence grocery stores and supermarkets tend to fill shelves to give the image of unlimited supply.

Changing customer habits requires work on logistic and organisational aspects of the display area, applying green marketing campaigns, such as campaigns explaining the meaning and properties of food in reference to the sell-by dates, installing retractable shelves to match displayed stock to demand, installing filling lines to avoid the sensation of emptiness on shelves with few products, organising talks with experts on food safety and waste and adjusting product prices according to the proximity of the sell-by or best-before date.

## **P6** - Involving shop workers to avoid food wastage

### **AIM**

To involve shop workers in actions to prevent waste, as they are responsible for the commercial activity and come into direct contact with consumers.

### **DESCRIPTION OF THE PROPOSAL**

Having workers who are well trained in segregation and prevention of food waste at source (i.e. in logistic centres and stores) contributes to reducing waste. Food shop workers are the connection with the consumer in the food chain, and are thus the ideal information transmitters, creators of social and environmental conscience and knowledge disseminators.

In this sense, joint work between shop management, in-company prevention campaign teams and workers should be carried out to promote training programmes on the issue and to teach the differences between plant-origin and animal-origin waste, implementing correct packaging management and knowledge of good prevention practices.





## Actions

### PREVENTION ACTIONS IN THE CATERING AND RESTAURANT SERVICES

#### **P7** - Correct segregation of food waste at source

##### **AIM**

To improve segregation of the organic fraction in shops to help sort out resources that can still be used.

##### **DESCRIPTION OF THE ACTION**

Mixing different types of waste increases environmental impact and economic costs of collection and management, and leads to a clear loss of business opportunities in by-product recovery and food waste sectors. The main cause is incorrect or defective segregation at source, which prevents different organic waste from being used as raw materials for making animal feed or treatment to make compost.

Thus, it is necessary to prevent food waste management being channelled jointly with domestic municipal waste collection. This can be avoided by promoting municipal regulations so that all commercial collection is separated and carried out by an authorised waste manager. It is also a measure that encourages the recovery sector and reduces the cost of treating municipal waste.

#### **P8** - Normalising the habit of taking away leftover food from restaurants

##### **AIM**

To reduce the amount of food from leftover portions which cannot be reused in the kitchen, to avoid it going to waste.

##### **DESCRIPTION OF THE PROPOSAL**

In many countries, taking uneaten food home from a restaurant is a very widespread and socially acceptable custom. The establishment provides the customer with a food container, if required. This is an initiative that helps raise public awareness of the problem of food waste, to overcome the social prejudice and embarrassment associated with being seen asking for leftover food, and to value food per se (also in recognition and gratitude to the work of the cooks) and for the associated cost.

## **P9** - Matching the portion to customer demand

### **AIM**

To reduce the amount of food in leftover portions which are not reused in the kitchen, to avoid it being wasted.

### **DESCRIPTION OF THE PROPOSAL**

The system of set menus with over-sized dishes usually involves preparing excessive amounts of food which is often wasted, with an additional cost to customers. However, there are alternatives, such as the half-menu, half-portion or children's menu, which minimises the problem, although such practices are still not very widespread. Rethinking portions in order to reduce the amount of food served, acquiring the food by weight (salad, cuts of meat. etc.) or designing balanced dishes are other actions that help prevent waste in restaurants.

In the case of food by weight, this is a price based on amount or type, thus abandoning the habitual fixed price for all-you-can eat buffets, which often leads to dishes being filled with an excess of food. This modifies customer behaviour, as the purchase exactly matches the consumer's taste, appetite and budget, thus drastically reducing waste.

## **P10** - Assessing the level of food wastage in restaurants

### **AIM**

To produce an assessment aimed at reducing food wastage in restaurants. This identifies the causes of waste generation, permitting actions to be targeted while raising awareness of the problem among workers.

### **DESCRIPTION OF THE PROPOSAL**

The first step to reduce waste in restaurants is to establish what, how and why it is generated. A scheme to determine the source of the problem consists of accurately and regularly weighing all the organic waste produced in a kitchen, identifying where and why it is produced. Analysis of the data permits the level of waste to be quantified and options to be found to reduce it. For this to be possible, it requires active employee participation in both diagnosing the problem and suggesting possible solutions.

## **P11** - Consumption of local, seasonal products

### **AIM**

To promote the consumption of local, seasonal products and its advantages through awareness-raising and information campaigns and actions.

### **DESCRIPTION OF THE PROPOSAL**

The consumption of local and seasonal products has numerous environmental and health benefits, as they tend to have a higher nutrient content, are fresher and produce savings in economic and energy costs associated with transport and storage. They also contribute to waste prevention, as there is a better match between supply and demand at points of sale, and there is less likelihood of breaking the cold chain, with subsequent deterioration of products.

Promoting awareness-raising campaigns aimed at the public and restaurant and supermarket managers strengthens the local economy, supports the primary sector and reduces food wastage.





# Actions

## PUBLIC PREVENTION ACTIONS

### **P12** - Changes in purchasing and consumption habits

#### **AIM**

To promote information and awareness-raising campaigns aimed at consumers, with the support of social agents, to improve knowledge of the problem of waste and introduce changes in their consumption habits to prevent it.

#### **DESCRIPTION OF THE PROPOSAL**

Preventing waste in the various stages of the food chain requires a change of mentality among all the agents involved, but especially among the public. Valuing food, above and beyond the cost and nutritional content, and being fully aware of what is eaten and what is thrown away is the first step in reducing waste in the home. For this reason, actions should preferably be taken in those areas directly related to the consumer, promoting the adoption of more sustainable purchasing and consumption habits.

#### **Shops, supermarkets and grocery stores:**

- Plan shopping at home to avoid acquiring too much, or unnecessary, food especially fresh products.
- Choose formats that best match planned consumption and portions, as a quantity of food greater than our consumption capacity increases the risk of waste. Small or single-portion packaging should be avoided as, if demand for the product is greater, more packaging waste is produced.

- Understand labels and product quality guarantees better, depending on whether they have a sell-by date or a best-before date.
- Evaluate whether retailers have implemented good practices with regard to food treatment and handling.
- Consume local, seasonal products, as proximity makes it easier to regulate supply and demand; there is less likelihood of breaking the cold chain and, therefore, minimizing the chances of the products going off in transport. They are also better quality, and have less impact on energy and the environment, associated with transport and storage.

#### **At home:**

- Be better informed regarding the best ways of handling and conserving food to prolong its life.
- Look at the sell-by and best-before dates to better manage moving food in and out of the fridge and pantry.
- Plan menus and the required amounts of food.
- Store and re-use leftover food properly (food in closed jars and boxes, etc.).
- Improve segregation of organic waste so it can be adequately treated

#### **In restaurants:**

- Ask for the amount of food that suits your appetite and needs at a given moment.
- Take home leftover food to avoid waste.



### **P13** - Restoring the value of cooking

#### **AIM**

To rediscover the pleasure of home cooking using fresh, local, seasonal products. Valuing cooking means giving value to what you eat and, hence, to food.

#### **DESCRIPTION OF THE PROPOSAL**

With our modern lifestyle we have lost the pleasure of cooking. Although there are many programmes and activities teaching how to cook, fewer families do it every day, resulting in the loss of typical Mediterranean cooking. The premise 'you care only for what you love and love only what you know' could also be applied to food wastage, as valuing food improves its use and consumption.

Therefore, we must recover traditional cooking, working with community organizations and introducing cookery into the school curriculum, not just as a subject, but also as a topic related to other areas (chemistry and physics, social sciences, natural sciences, etc.).

### **P14** - Recovering the role of gleaners through work-social reinsertion programs.

#### **AIM**

To reduce food wastage in the primary sector.

#### **DESCRIPTION OF THE ACTION**

Although mechanical harvesters are increasingly productive, a small part of the harvest is always left in the fields. Manual harvesting is more effective, but more expensive. Apart from mechanical harvesting, other causes that explain food wastage are fruit with marks or bruising, or fruit whose calibre is considered unsuitable for sale.

All this food could be used by re-introducing the work of the gleaner, who used to go over the fields after the harvest had been collected. This could be done, for example, through voluntary agreements between owners and NGOs working in social and labour inclusion with people at risk of exclusion. The gathered produce could be sent to social and labour inclusion agrifood businesses or charities, such as food banks, to avoid it affecting the market price of products harvested in the standardized way.



**P15** - Information campaign to modify current management of category 3 animal by-products not intended for human consumption

**AIM**

To reduce the amount of food waste treated in composting plants or dumps, prioritizing management of animal by-products for feed manufacture.

**DESCRIPTION OF THE PROPOSAL**

According to the waste managers interviewed, most companies send food waste for composting or controlled disposal, and the opportunity to produce animal feed is wasted. Therefore, an information campaign is proposed aimed at companies to promote a change in the management of animal by-products not intended for human consumption (so-called ABP 3: whole or parts of animals, or products of animal origin, including raw milk, which are not intended for consumption for health or commercial reasons), which are produced in farms, slaughter houses, food companies, retailers or zoos, among others.

ABP 3 products can be used as primary materials for feed production, as long as they are adequately processed, prohibiting the feeding of animals with products derived from the same species or using waste from kitchens.

**P16** - Implementing food wastage reduction in public contracts for government catering services

**AIM**

To set an example of food wastage reduction in government agencies, by including this action in public contracts for catering services and food suppliers.

**DESCRIPTION OF THE ACTION**

The Government agreement on measures for public contracts, dating from December 2009, proposes drawing up guidelines to help include environmental criteria in contracts with ministries and publicly owned companies. Reducing food wastage is one of the environmental criteria that can be included in the terms and conditions of tenders to execute certain contracts (e.g. institutional canteens), which would translate into specific actions, such as applying measures to avoid waste in kitchens, adapting portions to user demand, undertaking selective collection of the organic fraction with an authorized waste manager, separate from municipal collection.

## EXAMPLES TO LEARN FROM





## EXPERIENCES

# International experiences

### E1

#### Waste reduction study in the agri-food industry

**UNIVERSITY OF HERTFORDSHIRE**

United Kingdom – 2001

With the aim of developing initiatives to reduce waste in the food industry, the Department of Environmental Sciences at the University of Hertfordshire undertook research based on the premise that waste reduction involves reducing the economic and environmental costs and improving efficiency. It produced highly significant results in the fields of general waste and food wastage reduction: improved food re-use rates; improvements in packaging design to reduce waste production; and improvements in stocking and transport logistics.

### E2

#### 'Buy one, get one free...later' campaign

**TESCO COMPANY**

United Kingdom – 2010

The 'Buy one, get one free later' campaign involved promoting products using 'two for one', with the option of leaving the second product for the next shopping trip. This offer is only valid for perishable products, and involves giving the consumer a voucher to be exchanged on their next shopping trip. The ticket has an expiry date to ensure the product is still in stock. Tesco is one of the leading supermarket chains in Great Britain. It has a Greener Living website, explaining various actions the chain has undertaken to make it more environmentally friendly.

TESCO greener living:

<http://www.tesco.com/greenerliving>

'Buy one get one free – Later':

[http://www.tesco.com/greenerliving/greener\\_tesco/what\\_tesco\\_is\\_doing/new\\_tesco\\_initiatives.page](http://www.tesco.com/greenerliving/greener_tesco/what_tesco_is_doing/new_tesco_initiatives.page)

### E3

#### 'Great Taste, Less Waste' campaign

**MORRISONS SUPERMARKETS**

United Kingdom – 2010

The 'Great Taste, Less Waste' campaign proposes different elements to help customers avoid waste while enjoying the food they buy in the supermarkets:

'More meals for your money' offers ideas on simple, nutritional recipes made from leftovers. The recipes are provided in the chain's magazine, in the shops, on the website and on its Facebook page.

Best Kept labels have been introduced for the packaging of fresh food to explain the best way of storing it.

Morrisons Supermarkets is the fourth largest in the United Kingdom. It works to reduce the environmental impact of its business and, indirectly, that of the consumers of its products. It has a work line focusing specifically on food waste reduction.

'Making the most of our food'

[www.morrisons.co.uk/Documents/](http://www.morrisons.co.uk/Documents/)

[Morrisons Corporate Responsibility Review 2011.pdf](#)

## E4

### Food outlet

#### APPROVED FOOD ONLINE SUPERMARKET

United Kingdom – 2003

Approved Food is the largest online clearance supermarket for food and drink products in the UK, offering products close to their sell-by or best-before date, or just past the date but still in good condition. In some cases the product brand is deleted to avoid presenting a 'poor image' by selling it. They have a maximum duration of two or three days at prices much lower than traditional supermarkets.

Approved Food: [www.approvedfood.co.uk/bargains](http://www.approvedfood.co.uk/bargains)

## E5

### Automated food wastage tracking system

#### RESTAURANTS

United States – 2009

LeanPath methodology consists of weighing all organic waste before discarding it in the organic waste container or composter. ValuWaste scales are used, which record the weight and enable the source of the waste to be determined. All this information is sent to a software program that analyses the information and shows the results at the end of the day.

In 2009, the LeanPath methodology was applied to two Intel Café establishments in Oregon, USA, which serve approximately 12,000 meals a week. Before implementing the methodology, the two cafés produced 1,300 kg of food waste weekly, mainly due to over-production, passing the sell-by date, food going bad or losses in production. Application of the methodology helped reduce the weight of food waste by 47% during the study period.

Leanpath: [www.leanpath.com](http://www.leanpath.com)

Food Waste Prevention Case Study: Intel Corporation's

Cafés:

<http://www.leanpath.com/docs/>

[FoodWastePrevention\\_DEQ.pdf](#)

## E6

### 'Right Portion Menu' campaign

#### LIPOR RESTAURANTS AND WASTE MANAGER

Portugal – 2008

A campaign aimed at generating public awareness of food wastage in restaurants and reducing it by promoting balanced portions with reasonable amounts of food. The initiative was first promoted in a restaurant in the city of Espinho, and had major regional and national impact. It was extended to other restaurants by creating a competition to produce the best 'Right Portion Menu' recipe, which considered portion size and nutritional value.

The initiative has reduced food wastage in restaurants and increased public awareness of the issue, while promoting a more balanced diet. The Lipor waste manager set a target of reducing waste by 100 kg/person/year in the region, where 500 kg/person/year was generated.

LIPOR website: [www.lipor.pt](http://www.lipor.pt)

Zero Waste Portugal: Zero Waste Portugal

## E7

### A la carte menu in a hospital

#### HVIDOVRE HOSPITAL

Denmark – 2005

Low food intake by hospitalised patients is very frequent and produces significant amounts of food waste. Hvidovre hospital proposed a reorganization of the catering system to solve the problem. The hospital kitchen works as a conventional restaurant and the patients select their dishes from a menu. Orders are placed over the room phone. These changes in the catering service have led to a drop in food cooked (35%) and in final waste (72%).

Hvidovre Hospital: [www.hvidovrehospital.dk](http://www.hvidovrehospital.dk)

## E8

### Food wastage and prevention experience audits

#### UNIVERSITIES (CANTEENS)

United States – 2008

American universities have catering style canteens almost all of which share the same characteristics. Most are self-service with a fixed price. Large amounts of food were found to be going to waste, in both the kitchens (often based on the premise that the first customer should have the same menu options as the last) and by users.

For this reason, various universities have carried out waste audits to characterize the fractions generated (especially the organic fraction), concentrating particularly on food wastage. Preventive actions have also been promoted, such as video awareness-raising campaigns comparing consumption in developed countries with countries where there are problems of malnutrition. Pilot tests have also been conducted, limiting free portions.

University of Ohio (Office of Sustainability): [www.ohio.edu/sustainability/foodwasteaudits.htm](http://www.ohio.edu/sustainability/foodwasteaudits.htm)

National Wildlife Federation: [www.nwf.org/campusEcology/climateedu/articleView.cfm?iArticleID=18](http://www.nwf.org/campusEcology/climateedu/articleView.cfm?iArticleID=18)

University Business: [www.universitybusiness.com/article/colleges-reducing-food-waste-and-greening-earth](http://www.universitybusiness.com/article/colleges-reducing-food-waste-and-greening-earth)

Michigan State University (video of the experience): [www.youtube.com/watch?v=FtiGt3LTsTQ](http://www.youtube.com/watch?v=FtiGt3LTsTQ)

## E9

### Doggy bag RESTAURANTS

United States, Australia and other countries

One of the main sources of food wastage in restaurants is food left over after it has been served. In some countries, schemes have been introduced to let customers take leftover food home in so-called doggy bags. The most important aspect of this practice is that it requires a change in mentality among both restaurant owners and users. Legislation does not require restaurants to provide such bags, although customers can take their own container from home if they wish. It is the consumer's responsibility to store and handle the food, taking maximum care with respect to food safety.

NSW Food Authority:

<http://www.foodauthority.nsw.gov.au/industry/food-business-issues/doggy-bags>



## E10

### **'By-the-kilo Restaurant' campaign RESTAURANTS**

Brazil and Portugal – 2000

Initiative which aims to offer an alternative catering system that allows consumers to buy only the amount of food they want to eat, so that the menu does not have a set price. These are restaurants that usually have a wide variety of food and are low cost, always self-service, where customers pay after receiving the full, weighed plate.

<http://gobrazil.about.com/od/fooddrinkglossary/g/kilorest.htm>

<http://riotimesonline.com/brazil-news/rio-entertainment/rios-por-kilo-restaurant-phenomenon>

<http://www.easyexpat.com/es/rio-de-janeiro/ocios/restaurantes-pubs.htm>

## E11

### **'Love Food, Hate Waste' Campaign WRAP PUBLIC COMPANY**

United Kingdom – 2008

The campaign, promoted by the Waste and Resources Action Programme, shows how to reduce waste food through simple daily practices. According to a study by WRAP, 6.7 million tonnes of food is thrown away in UK homes every year, approximately one third of what they buy. This represents a cost of £10 billion a year. The campaign consists mainly of a website that offers practical information for consumers, including a food planning system and a proportions calculator, advice on correct food storage and recipes for cooking with leftovers.

WRAP: [www.wrap.org.uk](http://www.wrap.org.uk)

'Love Food, Hate Waste' campaign:  
[www.lovefoodhatewaste.com](http://www.lovefoodhatewaste.com)

## E12

### **'Save Food' study and campaign ALBAL COMPANY**

Europe – 2011

Campaign to raise awareness and encourage European consumers to act more conscientiously with food, and a diagnostic study produced in seven European Union countries. The most common causes of waste were identified as incorrect planning and storage, so that a lot of food goes off too quickly.

The initiative is mainly developed over the Internet (Facebook). It offers users information on the issue and serves as an open platform for discussion and exchange of opinions, as well as sharing knowledge, experiences and initiatives that might be of interest. Albal is a company that offers food solutions to keep it fresh, prepare it and store it in the kitchen.

Save Food: <http://es-es.facebook.com/albal.es>

## E13

### Pilot scheme in municipal schools TOWN OF HALMSTAD

Sweden – 2009

According to a diagnosis carried out in 11 primary and secondary schools, in 2008 1.6 tonnes of food were thrown away each week. As part of the the 'Interreg IV C Pre-Waste' project, a pilot scheme was carried out consisting of weighing all the food thrown away over 2-3 week periods. The results were presented as posters and the 'Eat well, feel well' campaign was promoted: Eat more vegetables and don't throw away food. Weighing the waste and informing staff and pupils of the results led to an 11% reduction in waste

Appetite For Action:

<http://schools.appetiteforaction.org.uk/how-to-get-started/>

Educational resource for schools, aimed at 8 to 10-year-olds:

[http://documentation.bruxellesenvironnement.be/documents/IF\\_Ecoles\\_prof\\_GA8-10\\_Gaspillage\\_alimentaire\\_FR.pdf](http://documentation.bruxellesenvironnement.be/documents/IF_Ecoles_prof_GA8-10_Gaspillage_alimentaire_FR.pdf)

## E14

### Citizens' 'Stop wasting food' movement 'STOP SPILD AF MAD' CONSUMERS ORGANIZATION

Denmark – 2008

'Stop Spild Af Mad' is a non-profit consumers' organization that works in the field of food wastage prevention. Through its website and Facebook page, it offers practical advice to the public on actions targeting other agents in the food chain (supermarkets, distributors, etc.). It has published the book *Stop spild af mad en kogebog med mere* [Stop wasting food, a cookery book and more], with the participation of well-known chefs, which contains recipes, ideas and methods for re-using all the food in the house, including leftovers. It has the support of more than 60 media outlets and inspired the Rema supermarket chain, with over 200 stores, to implement organic waste reduction strategies.

Stop Spild af Mad: [www.stopspildafmad.dk/](http://www.stopspildafmad.dk/)

## E15

### 'Freeganism' civic movement

Mainly United States and the United Kingdom – 2003

The word freegan is a combination of 'free' and 'vegan' The Freeganism movement involves different activities, including some related to food wastage. It involves dumpster diving to look for products thrown away by wholesalers, companies, nursing homes, offices, etc., and recover them for re-use. Collection is not limited to non-perishable goods, but includes food as well. There are groups such as Food not Bombs that recover food which would otherwise be wasted and use it to prepare food to share in public places with anyone who wants to.

A taste of freedom: [www.atasteoffreedom.org.uk/about.html](http://www.atasteoffreedom.org.uk/about.html)

Feeding 5000: [www.feeding5k.org/](http://www.feeding5k.org/)

Freegan Info: <http://freegan.info>

Intermon Oxfam 'Growth Programme'  
[www.intermonoxfam.org/ca/campanas/proyectos/creix](http://www.intermonoxfam.org/ca/campanas/proyectos/creix)

## E16

### Good practice guide for restaurants and catering services

**UCM ENVIRONNEMENT AND FED HO.RE.CA WALLONIE ASBL**

Belgium – 2009

The UCM is an inter-professional organization in the Walloon region that gives consultancy advice to businesses. Although it has traditionally focused on environmental obligations and adaptation mechanisms, it aims to go further and propose environmental improvements which, on a voluntary basis, might serve as opportunities for business progress. The compilation of good practices aimed at the restaurant sector was conducted in collaboration with the Walloon Region Hotel and Catering Federation (FED Ho.Re.Ca Wallonie Asbl). The collected experiences come from real cases applied to restaurants in the association. Publishing the good practice guide has two purposes: firstly, raising awareness in the catering sector of the importance of preventing food wastage, and secondly, publicizing measures to do so. There are three types of measures proposed: quality and freshness of products; valuing primary materials; and organizing all-you-can-eat buffets:

UCM Environment:

[www.ucm.be/ucm/ewcm.nsf](http://www.ucm.be/ucm/ewcm.nsf)

## E17

### 'Good Samaritan' laws

**GOVERNMENTS AND NATIONAL PARLIAMENTS**

United States and Italy – 2009

Often, companies working with fresh or cooked perishable food do not give food donations as they are concerned that deficient handling or conservation by charities could lead to food poisoning. This would affect the company image and make companies vulnerable to legal action, based on public health and food safety legislation.

The aim of 'Good Samaritan' laws is to facilitate donations of fresh food, especially perishable food, by companies to charities who distribute the food to people who need it, freeing the donor of liability with respect to possible legal action against them.

In the USA and Italy, legal transport and conservation requirements vary according to the social aims and type of agreement between donor and receiver. Specifically, charity agreements come under this type of legislation. Thus, charities find donors are less concerned and more trusting when donating food. In the case of Italy, donors receive full legal guarantees if the food is donated at their facilities. Charities have to comply with legislation on conservation, transport, storage and handling equivalent to that of the end user. Donors only have to guarantee that the food meets regulations at the time of donation.

[www.gpo.gov/fdsys/pkg/PLAW-104publ210/pdf/PLAW-104publ210.pdf](http://www.gpo.gov/fdsys/pkg/PLAW-104publ210/pdf/PLAW-104publ210.pdf)

[www.amiat.it/leg\\_amb/Legge%20155\\_2003buonSamaritano.pdf](http://www.amiat.it/leg_amb/Legge%20155_2003buonSamaritano.pdf)



## E18

### Food Bank

#### FOOD BANK FOUNDATION

Barcelona – 1987

The concept of the food bank started in Phoenix, Arizona (USA) in 1966, thanks to John van Engel. In 1984, the project was introduced in Europe via the Paris Food Bank and in 1987, the first food banks opened in Spain, with headquarters in Barcelona. Currently in Spain there are 52 food banks, one in each province, grouped together in the Spanish Federation (Federación Española de Bancos de Alimentos).

Since it was set up, the Federation has recovered, managed and fairly distributed non-sellable but consumable food in perfect condition, offering a surplus management service for donor companies and providing receivers with an obvious social benefit.

During 2011, 5,415 tonnes of food were collected from all the sectors involved (agri-food industry, hotels, distribution chains, fairs and other business and private initiatives), which reached around 115,000 recipients.

Barcelona Food Bank:

[www.bancdelsaliments.org](http://www.bancdelsaliments.org)

Federación española de Bancos de Alimentos (FESBAL):

<http://fesbal.org>

European Federation of Food Banks:

[www.eurofoodbank.org](http://www.eurofoodbank.org)

Global Foodbanking Network

[www.foodbanking.org](http://www.foodbanking.org)

## E19

### Consumer awareness-raising campaign BONPREU SUPERMARKET CHAIN

Barcelona – today

The Bonpreu supermarket chain has implemented the Espai del Consum (Consumer Space), a meeting point for customers. With the collaboration of producers and experts in various subjects, work is undertaken to improve the different aspects of consumption and food (manufacturers, products, establishments, consumption habits, etc.). In this sense, it serves as a space for information exchange and a platform for raising consumer awareness.

Various awareness-raising activities have been promoted, contributing to waste reduction among both supermarkets (especially with respect to stock management) and customers (isothermal bags, consumer information, etc.). The initiatives include the 'Mengem bé' (Let's eat well) campaign, which is closely linked to preventing food wastage, based on the commitment to work towards healthy, responsible and quality consumption.

Bonpreu – Consumption Space (Mengem bé):

[www.bonpreu.cat/pag1.php?idF=4&idSubF=158](http://www.bonpreu.cat/pag1.php?idF=4&idSubF=158)

## E20

### 'No food thrown away' campaign ASSOCIACIÓ ESPAI AMBIENTAL (ENVIRONMENTAL SPACE ASSOCIATION)

Barcelona – 2011

Espai Ambiental SCCL started the *De menjar, no en llencem ni mica!* (No food thrown away) campaign as an activity in the Sagrada Família Environmental Classroom by saying: 'Do you think you throw away a lot of food? It is calculated that each person throws away an average of 30 kg a year. Through good practices in shopping and cooking, a lot of this waste can be prevented. We will share some tricks and advice on doing it.'

In this context, a number of workshops have been designed, including the 'No food thrown away' workshop, as well as others on cooking with leftovers. This workshop is organized into two sessions: consumption and shopping planning habits and conserving food and cooking without excess. It also has a Facebook page, a Twitter account and a blog with the same name, which serves as a platform for disseminating knowledge and news, and for discussing issues related to food wastage:

Blog: <http://nollencemnimica.wordpress.com>

Campaign Facebook page:

[www.facebook.com/nollencemnimica#!/nollencemnimica](https://www.facebook.com/nollencemnimica#!/nollencemnimica)

Twitter: @nollencemnimica

## E21

### 'Recycle in the kitchen, use it all up!' campaign

#### L'ANOIA REGIONAL COUNCIL AND CAPELLADES TOWN COUNCIL

Region of L'Anoia – 2001 and 2011

L'Anoia Regional Council, together with Capellades Town Council, promoted a number of cookery recycling workshops with the aim of producing the book *Cuina d'aprofitament de L'Anoia*. The public was able to take part through workshops and by sending recipes to the blog [www.reciclatatalacuina.cat](http://www.reciclatatalacuina.cat). The campaign, under the name 'Recicla't a la cuina, aprofitem-ho tot!' (Recycle in the kitchen, use it all up!) aims to disseminate a form of sustainable, cheap cooking with a low environmental impact, which contributes to preventing waste in the kitchen and promoting selective domestic waste collection in homes in the region, thus strengthening public participation. Nineteen towns in the region took part, and cookery workshops were held open to the public, to publicize cooking to use up leftovers.

L'Anoia Regional Council:

<http://anoia.cat/actualitat/170-finalitzen-els-tallers-de-cuina-de-la-campanyareciclat-a-la-cuina-aprofitem-ho-tot>

## E22

### By-product management

#### BY-PRODUCT AND WASTE MANAGERS

Agramunt and Les Masies de Voltregà – 1995 and 1998

The companies Copiral and Promic are pioneers in recycling materials that are traditionally not recovered: by-products from the human food production process, which are recovered by producing raw materials for animal feed. The current legal framework is complicated by existing restrictions on the use of animal protein in producing feed for fattening and use for pet food.

The activity helps mitigate food wastage, as the following types of product are recycled: products past their sell-by date withdrawn from distribution and sales chains; products that have not reached their sell-by date, but which are to be withdrawn from the market due to distribution companies' marketing strategies; and products directly from factories that have not passed the corresponding quality controls.

COPIRAL, SL: [www.copiral.com](http://www.copiral.com)

PROMIC: [www.promic.es](http://www.promic.es)

## E23

### Optimization of distribution centre operations

#### DIA SUPERMARKETS

Spain – 2010

The DIA supermarkets distribution centres carry out various operations susceptible to human error which, if taken to the end of the chain, could lead to food wastage. Therefore DIA has implemented technological and procedural improvements in operations management at these centres, in order to improve the service in stores in terms of the quality of order preparation and release time. The aim of the measure is not to prevent waste, hence there is no specific data, but it is clear that any measure that improves the efficiency of the process and reduces errors will also reduce waste.

DIA: [www.diacorporate.com](http://www.diacorporate.com)





