



**IMPROVE YOUR LOSS  
RATIO AND  
#REDUCEFOODWASTE**

**GUIDELINE FOR THE FOOD SERVICE SECTOR  
2019**



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TAKING **COOPERATION** FORWARD

## **ABOUT THE PROJECT**

STREFOWA – Strategies to Reduce and Manage Food Waste in Central Europe is a three-year project in Central Europe to find and design new ideas dealing with food waste. Our aim is to reduce food waste or to treat it in a better, more useful way, along the whole supply chain.

>>> [reducefoodwaste.eu](http://reducefoodwaste.eu)

## FOREWORD

"Why is it important to prevent food waste? The answer is quite simple – we are talking about food, something that we need on a daily basis and that is produced with a lot of effort and heart by farmers. Appreciation and acceptance are the first crucial steps to set a sign. When we talk about preventing food waste, we talk about protecting the environment, animals and of course the future of our children. Our ambition has to be to set high expectations in ourselves and act responsibly. With a better understanding and improved knowledge about food handling, it is possible to stop prioritizing low food prizes. There are a lot of inspiring examples of food waste prevention measures in the food service business that already have been implemented in small steps. This way not food is saved –but also a lot of money!"

*(Siegfried Kröpflm, Gastronomie Consulting)*



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## ABOUT THIS GUIDELINE

The lifecycle of food ideally follows a continuous circle. Food gets produced, harvested, processed, marketed, distributed, purchased, consumed and managed as waste. This entire lifecycle is also called the food supply chain, with each step in the chain represented by a separate sector: primary production, food processing & marketing, retail, food service, consumers and waste management.



*Figure 1: Food Supply Chain*

Along the entire food supply chain – in each step and each sector – food is wasted, e.g. on the field during harvest, broken or spilled in the processing, left over in retail and food service and not consumed by final consumers. Food waste is therefore not a problem of one single sector; it is rather the cumulative effect of interlinked conditions. As the sectors often work hand in hand and interact in many ways there is a high potential to tackle the problem of food waste. Solutions encompassing several sectors or even across the entire food supply chain should be considered. Food, which might not be able to be used in one sector, could be an interesting resource for another one. This cross-sectoral cooperation is a core aspect of this guideline.

The guideline points out the aspects of individual responsibility and possible adaptation among one's own business. It shows internal and external reasons and problems causing food waste in a defined sector. Benefits, which are not exclusive for one specific sector, are collected. All presented ideas, sector specific and cross-sectoral ones, represent possible solutions how food can be used and treated instead of being wasted.

## THIS GUIDELINE AIMS

- to support people active in the food service sector with ideas and suggestions
- to prevent avoidable food losses at home on one hand and on the other it will provide consumers with the necessary knowledge
- to support other sectors along the supply chain.

## TARGET GROUP OF THIS GUIDELINE

Within this guideline the focus is laid on the avoidance of food waste during “dining out”, and therefore we only include the food service industry and not the much broader hospitality sector<sup>1</sup>.

This guideline offers solutions for both the commercial as well as the non-commercial segment.

- Commercial segment e. g. includes: restaurants, catering and banquets, transportation foodservice.
- Non-Commercial segment: prepares and serves food in support of some other establishment’s main function or purpose. Includes e.g. schools and universities, military, health care, business and industry, and clubs.

The guideline in general deals with all kind of food prepared outside home. There are food waste prevention measures that can be implemented in the food service sector (kitchen, service, management) directly; others need the cooperation with upstream and downstream actors of the supply chain, for example of suppliers or guests. The following figure (Figure 2) gives an overview of upstream and downstream parts of the supply chain that influence the food service sector and therefore must be considered when focusing on food waste prevention. External to the sector boundary, but highly related as they will directly influence food loss amounts, lies international and national legislation like hygiene regulations, public owners from food service establishments that can influence food waste prevention directly by public sector rules, but also suppliers and farmers as well as customers, guests or charity organisations that might take surplus food.

## FOOD SERVIS SECTOR BACKGROUND SYSTEM

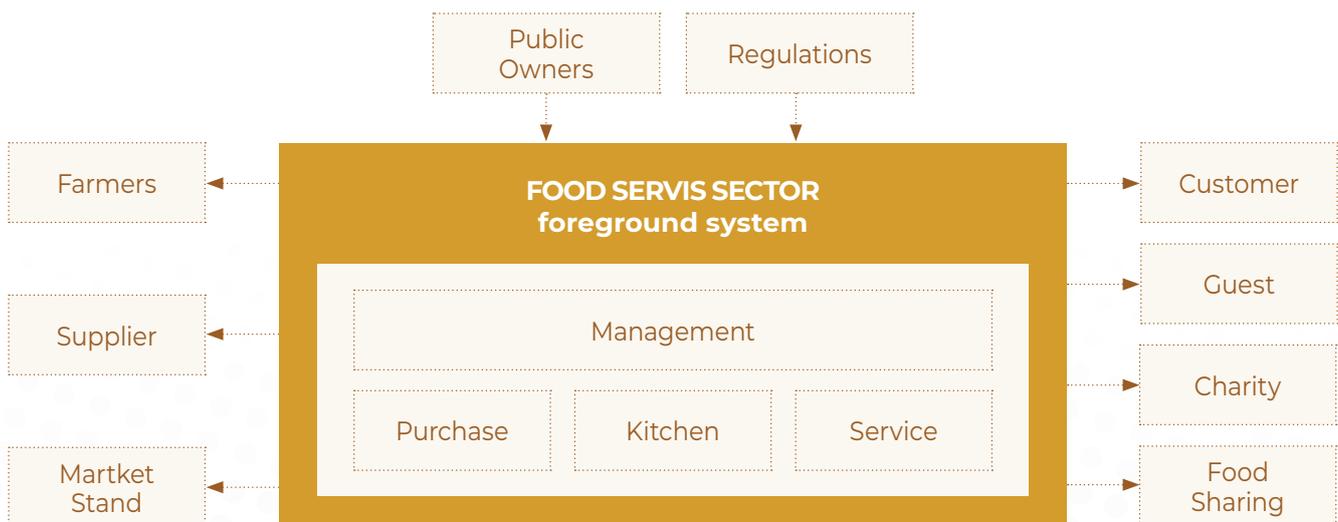


Figure 2: System Boundary Food Service Sector

<sup>1</sup> Food Service industry: Encompasses those places and companies responsible for any meal prepared outside the home (restaurants, school and hospital cafeterias, catering...)

Hospitality sector: focuses on customer satisfaction and meeting leisurely needs more than basic ones. Hospitality is the act of kindness in welcoming and looking after the basic needs of customers or strangers in relation to food, drink and accommodation (lodging, event planning, theme parks, transportation, cruise line).

## **BENEFITS OF TAKING ACTION AGAINST FOOD WASTE**

- Save money
- Be a better cook
- Get to know your community
- Protect the environment
- Become a role model – inspire others





# ABOUT FOOD WASTE

## WHAT IS FOOD WASTE?

**Food** is defined as any substance — whether processed, semi-processed, or raw — that is intended for human consumption including any substances that have been used in the manufacture, preparation, or treatment of food, excluding drinks.

**Inedible parts = unavoidable food waste:** refers to components associated with a food that in a particular food supply chain are not intended to be consumed by humans. This is food thrown away that has not been edible under normal circumstances for most of the inhabitants. Examples could include bones, rinds, or pits/stones. On the contrary, avoidable food waste comes from originally edible parts.

**Food waste** (including food loss) refers to food as well as associated inedible parts removed from the food supply chain. That means they are not used for normal human consumption.

**Inedible parts (Bones, skins...)**

**Preparation residues (skins, ...)**

**Consumption residues**

**Partially consumed food**

**Entirely uneaten food (as purchased, whole, unopened)**

**Non-avoidable**

**Non-avoidable**

**Avoidable**

**Avoidable**

**Avoidable**

## WHERE DOES THE FOOD WASTE OCCUR?

Food waste occurs along the entire supply chain; wherever food is produced, processed, traded or used.

## WHAT AMOUNTS ARE WE SPEAKING ABOUT?

Exact amounts of food waste are not known, as reliable data is scarce, due to data collection difficulties. Estimates range from 20–30 % loss of our total food production. Despite the inconsistent data situation, food waste is present in all areas of the food supply chain, with visible impacts.

## WHAT ARE THE CONSEQUENCES OF FOOD WASTE?

Food waste accounts for 3.3 gigatons of CO<sup>2</sup> emissions (cf. FAO, 2011). Huge quantities of water in production and processing are wasted on unconsumed food; moreover, food production uses large areas of agricultural land. Consequently, this causes negative impacts on biodiversity, soil, ground water and much more. From an economic point of view, both the direct and indirect costs of discarded food must be considered, e.g. caused by superfluous transport, infrastructure etc.

## WHAT IS BEING DONE ABOUT IT?

Every nation has individual legal acts which directly or indirectly interfere with the food waste issue, such as hygiene guidelines or packaging standards. In addition, public and private food waste prevention and management activities aim for reducing food waste via practical implementations or education, covering different areas, target groups or food types.

Despite these efforts, the food waste problem still exists, and further steps need to be taken – in all sectors. In a first step, the problem needs to be considered in detail and ideas and approaches have to be developed.

Individuals as well as groups can become active in their working environment and their communities. This guideline does not represent a general viewpoint but addresses parts of the supply chain to highlight practical approaches.



## FACTS & FIGURES ABOUT FOOD WASTE

The food service sector turned out to be one of the largest producers of food waste after households. An Austrian study investigated the amount of food waste created in different types of food service outlets, including restaurants, hotels, workplace canteens and healthcare centres. The ratio between the amount of avoidable food waste and the food consumed (level of efficiency) ranged between 3 % to 46 % in all companies. Healthcare centres showed significantly higher loss ratios (median 27 %) compared to hotels (median 18 %), restaurants (median 13 %) and workplace canteens (median 13 %). Highest loss ratios have been detected in the catering industry with 36 %.

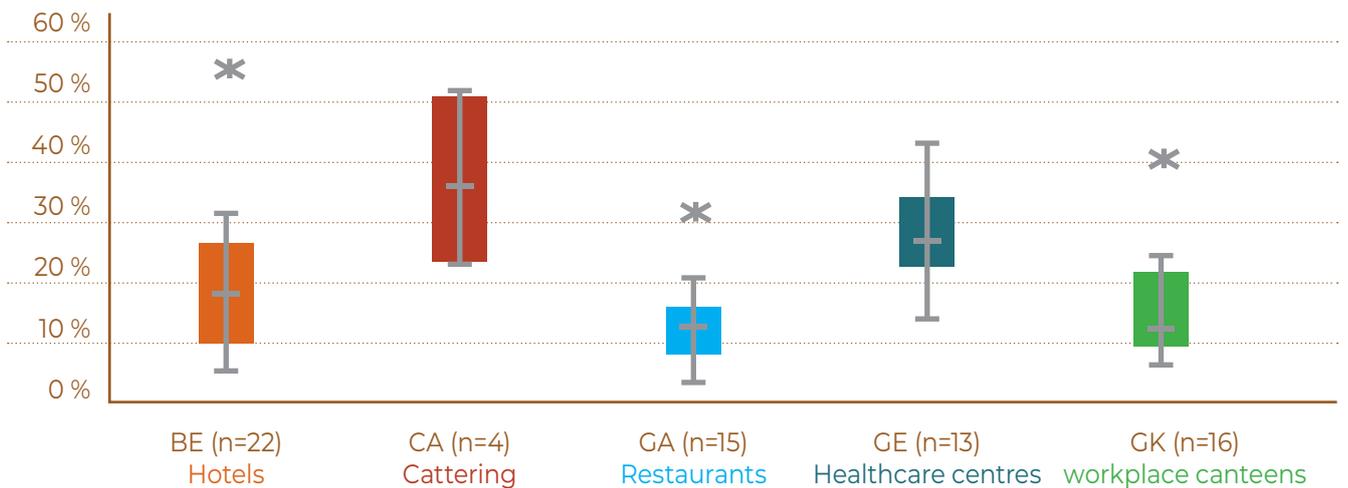
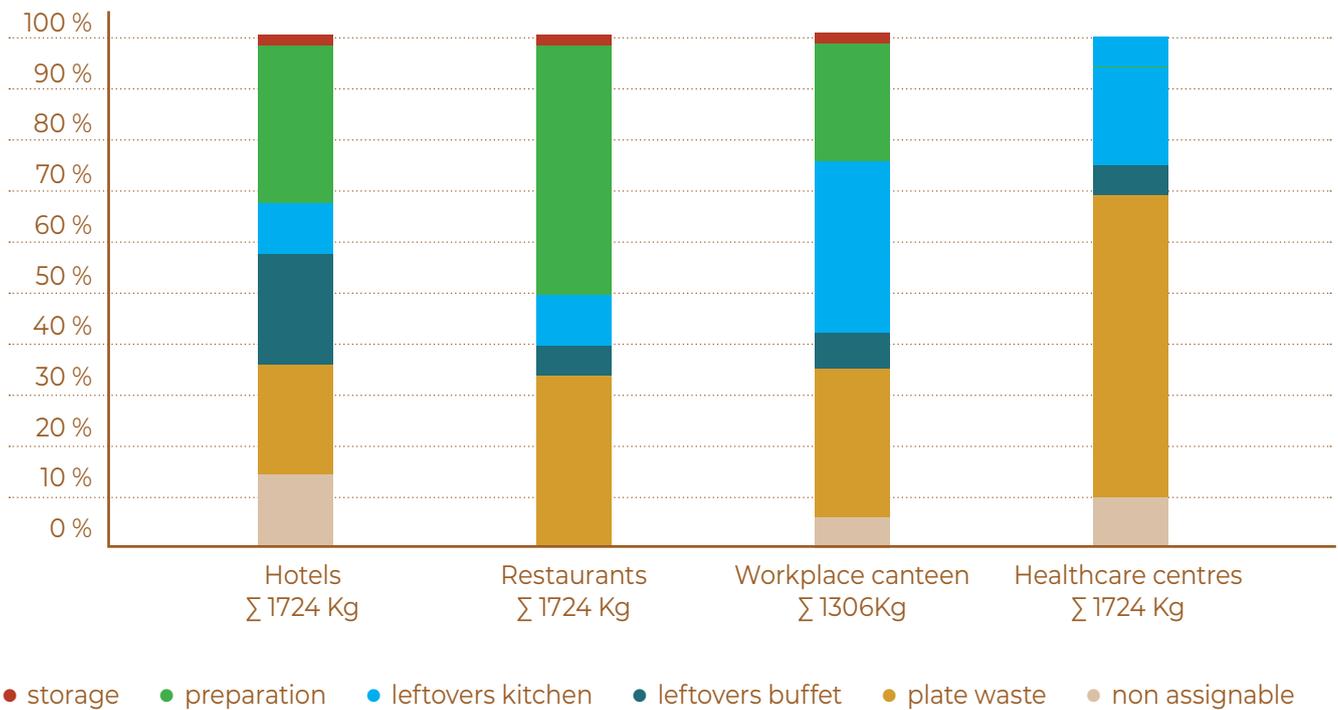


Figure 3: Level of efficiency (amount of avoidable food waste in relation to consumed food) per food service type.

It also turned out that there are differences concerning the composition of food waste between different sectors. The observed preparation loss was substantially low in healthcare centres which might be due to increased use of convenience food. On the other hand, the share of leftovers on the plate showed the highest level (59 %). In the case of hotels, a rather high share of leftovers from the buffet table and preparation loss could be recognised. Restaurants also revealed low levels of food loss caused by unserved meals (10 %). However, the share of food loss during kitchen preparation (48 %) showed the highest level. In workplace canteens, the main causes of food waste were kitchen leftovers resulting from overproduction (34 %) and plate waste (30 %). Also, differences we detected in the composition of product groups found in waste. E.g. in healthcare centres avoidable food loss consisted to a large extent of soup, in workplace canteens a high proportion of starch side dishes could be recognised.



4 and 5 show the composition of avoidable food waste (without unavoidable preparation loss) across various business types. Residues of fruit and vegetable waste as well as food loss from starch side dishes are a particularly important issue in hotels (in each case 18 %). When compared to the other food service sub-sectors, restaurants and workplace canteens showed large quantities of food waste originating from starch side dishes (25 % and 23 %), meat and fish (16 % and 12 %) and salad (21 % and 16 %). In healthcare centres avoidable food loss consisted to a great extent of soup, while meat and fish had the lowest share.

Figure 4: Food loss sorted by the area of origin across business types

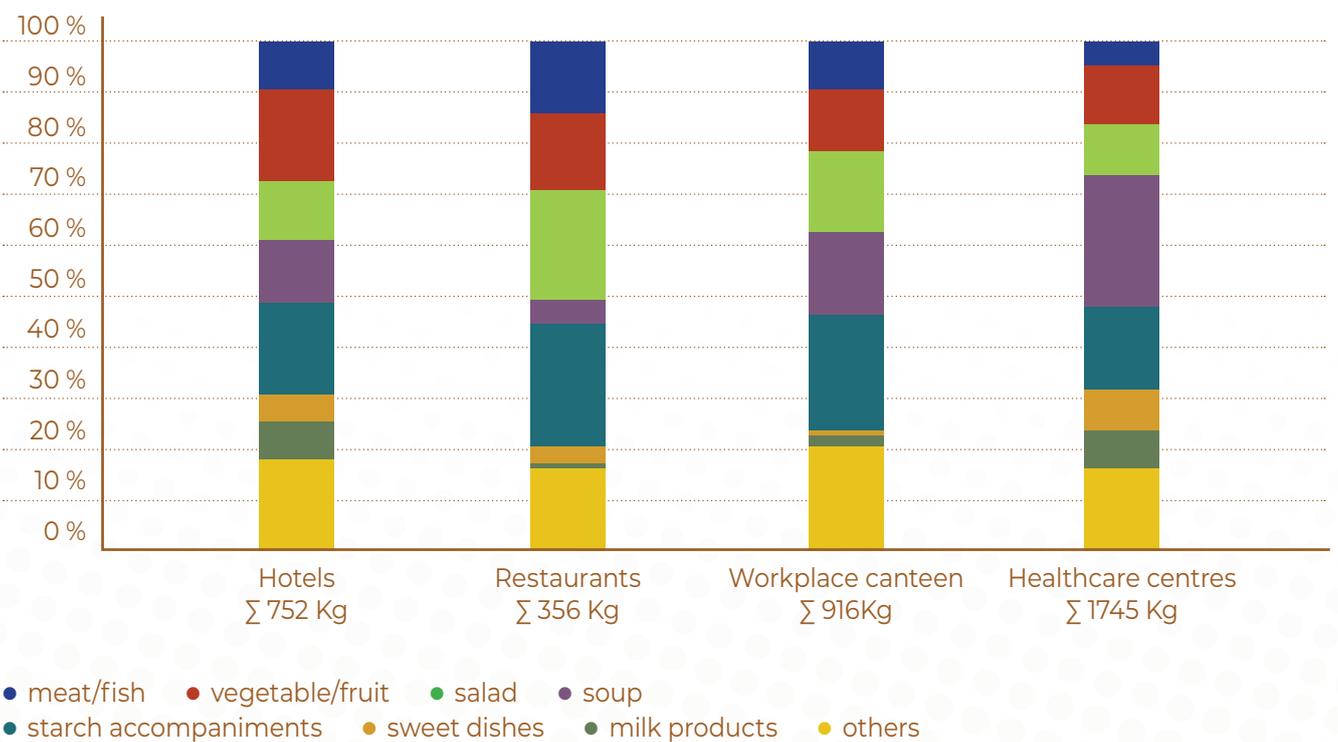


Figure 5: Composition of avoidable food waste across business types

## REASONS: WHY FOOD BECOMES FOOD WASTE

In the following section, the main reasons for food losses for each distinct area (storage loss, loss during kitchen preparation, unserved meals and leftovers on the plate and from the buffet table) are listed.

### PURCHASE PLANNING AND STORAGE

- Missing overview of stock.
- Seasonal availability and stock are not considered while preparing the menu.
- The bigger the menu the more food you must store, and consequently the more difficult it is to react in time and keep track of stock.
- Misunderstanding of “best before dates”. Although the “best before date” only guarantees certain quality features of a product (freshness, aroma, taste, nutrients) to be effective up to this point, food is frequently thrown away when this date is reached. The food will be safe to eat even after the “best before date”, if stored properly.



### KITCHEN LEFTOVERS

- Some components such as side dishes, salads or desserts are prepared in advance but not used.
- Unserved dishes are disposed of, although they still could be offered the next day if an appropriate storage can be guaranteed.
- Too much and different dishes are produced in advance because of oversized menu cards.
- In tourist accommodation there is often a lack of information flow between management and the kitchen. If the number of guests and especially short-term cancellations are not reported to the kitchen, the pre-produced amount of food cannot be adjusted.
- High standards concerning the appearance of products lead to high amounts of preparation residues.

## BUFFET LEFTOVERS

- Leftovers from the buffet have to be disposed of according to hygienic regulations.
- Guest expect a comprehensive selection and attractive presentation.
- Also, towards the end of the buffet opening hours you have to provide the full selection. If you use large containers, leftovers can be expected.
- Edible decoration is not touched but has to be disposed of.

## PLATE WASTE

- Plate waste represents the biggest stream of avoidable food waste in the food service sector. The following possible reasons have been identified:
- Too big standard portions / unappetizing recipes.
- Starch or vegetable side dishes are served as a regular component to each meal and not consumed.
- Lack of communication between guest, service and kitchen. Important information about the correct adjustment of portion size and special requests get lost.
- Edible decoration is normally not eaten by the guest.



# SOLUTIONS: WHAT CAN I DO?

## WHAT CAN I DO TO REDUCE FOOD WASTE:

In this section, solutions are presented for reducing food waste directly across the entire food service sector.

### Storage Leftovers

- **FIRST IN – FIRST OUT:** Based on the “first in – first out” principle, the newest products should be stored at the back of the shelf so that the oldest automatically get used first.
- **STORAGE INVENTORY LISTS:** The use of inventory lists of stored products (for dry, cold and deep-freeze storage) with purchase and best before dates will contribute to a high quantity of food processed at minimal food wastage. This can be implemented by suitable hard- or software.
- **STOCK LABELLING:** The use of small containers or trolleys for storing and labelling food (e.g. for items of the same type) will help to improve storage management.
- **SMALLER STOCKS:** Smaller stocks should be used since large inventories bind capital, require space, consume energy and tend to lead to food wastage.
- **OPTIMISATION OF STORAGE TEMPERATURE:** Appropriate storage environment will increase the usable life of fresh products and raw ingredients. Very often storage temperature is too high.
- **PRESERVATION OF FOOD:** Think of all possibilities of food preservation and refinement. Often it takes less time than you imagine.
- **CORRECT INTERPRETATION OF BEST BEFORE AND USE BY DATES:** Food is still safe to consume after the indicated “best before” day if stored properly. The best before label only indicates that food might lose its freshness or aroma and might not have the full taste. Therefore, it is proposed to check the food in terms of “look”, “smell”, and “taste” and then decide if you really have to throw it away.

### Kitchen Leftovers

- **PRE-PREPARED FOOD:** Pre-production of food in smaller batches will reduce the likelihood of excess food being unnecessarily prepared and thrown away.
- **PRECOOK LESS:** Reduce the amount of dishes that are precooked, reproduce if necessary.
- **CREATE NEW DISHES:** Unserved dishes could be processed into new dishes or new and innovative creations could be prepared.
- **OFFER PREPARED AND UNSERVED DISHES TO EMPLOYEES:** Unserved dishes could be offered to the staff while enabling a quality control at the same time.
- **FOOD PRESERVATION / INNOVATIVE COOKING:** Use innovative cooking techniques like sous vide or cook-chill to prepare the proper amount of food without quality losses while extending shelf life.
- **FREEZE FOR LATER:** Freeze or vacuum pack any extra food in portion sizes that are appropriate for later use.
- **SMALLER MENUS:** Smaller menus are easier to handle (concerning planning, storage and pre-production).
- **PREORDERED MENUS:** Try to convince your guests to pre-order their menu to be able to prepare the right amount.

## Buffet Leftovers

- **ADJUST CONTAINER SIZE:** For demand-based replenishment, smaller or separable container/units allow refilling the buffet items with less food while still providing a comprehensive selection. Also, the use of smaller plates encourages smaller portions.
- **PACKAGE-FREE FOOD OFFER:** Wherever possible, refillable bottles or dishes should be used instead of individually wrapped single-use packages (e.g. for butter, toppings), thereby reducing both food and packaging waste.
- **CLEAR LABELLING AT THE BUFFET:** Offering food with clear information helps guests recognize more quickly what kind of food is prepared (e.g. fish, meat, vegetarian, vegan, etc.). Labelling should also include information on used spices or additives supporting the guest to choose only the food they like.
- **DON`T USE EDIBLE DECORATION:** Try to design your decoration without using salads, fruits and vegetables, as they have to be thrown away afterward.
- **OFFER FRONT-COOKING:** If possible, prepare dishes immediately in front of guests according to a specific order. This allows preparing the ideal portion size – guests will prefer fresh cooking and only the actual amount of ordered food will have to be prepared.
- **PAYMENT PER WEIGHT NOT PER PLATE SIZE:** Where price is determined by the weight of food on one's plate, customers tend to fill up their plate more moderately, therefore waste less compared to a choice of plate size.

## Plate Leftovers

- **REVIEW OF STANDARD PORTION SIZE:** The use of recipes including grammage for each portion affects the calculation of food quantities. Standard portion sizes should be regularly reviewed and adapted by analyzing the plate leftovers (see information transfer).
- **PORTION SIZE FREELY SELECTABLE:** Introduce different portion sizes. The correct wording might be relevant! Guests might prefer “big” and “small” portions instead of “senior plate” or “mickey mouse plate”.
- **INTERACTIVE PORTION SIZE:** Instruct your staff to offer small portions if e.g. the guest wants to eat a starter, main course and dessert.
- **VARIABLE CHOICE OF SIDE DISHES:** Let your guests choose if and which salad, vegetables or satiating ingredient they prefer as a side order. A variable selection of side dishes (listed separately in the menu) allows an individual approach to the preferences of a guest.
- **INFORMATION TRANSFER:** Regular communication between service and kitchen is important. Feedback has to reach the responsible person to adjust the dishes, the portion size, the recipes or the menu. Feedback systems regarding quality and quantity of dishes served (in particular the return on half full dishes) may contribute to raising awareness and identifying additional preventive measures.
- **OFFER SECOND HELPING FOR FREE:** Serve small portions and offer to provide free of charge additional servings. You can save money and guests will like this additional service.

## Especially for Catering:

- Provide your offers per piece and not in total per person: This helps you to reduce the amount of additional prepared food that you would normally have to consider.

## HOW CAN I HELP OTHERS TO AVOID FOOD WASTE?

There are a lot of possibilities how you can reduce food waste in cooperation with your partners and your suppliers.

- **USE SECOND CHOICE PRODUCTS:** Too big or too small vegetables that cannot be sold in the supermarket might be the perfect solution for your creations. Cooperate with farmers and use leftovers from the fields. You will save money and have additional benefits by saving the time for peeling (if you take too big potatoes) or by providing your guest with a lovely side dish made from baby potatoes.
- **COOPERATE WITH LOCAL MARKETS:** Your local fruit supplier can provide you with ready-made fruit salads produced from overripe fruits.
- **USE LOCAL PRODUCTS IN SEASON AND PRESERVE FOOD:** If you buy fresh seasonal products and preserve them or already create delicious chutneys, marmalades, sauces, curries or similar in advance, you will save money and can use these goods from your own production later in your dishes. Very often during local season there is surplus production. No need to buy cheap foreign produce for your salsa-sauce or your home-made tomato ketchup. Local farmers will provide you with their surplus production for the same price as long as you consider the correct timing.

## WHAT CAN I DO WITH FOOD I CAN'T USE MYSELF

There are also various possibilities how to handle leftover dishes and plate residues before they become waste in cooperation with your customers.

### Kitchen Leftovers

- **DONATE FOOD:** Charity organisations will be happy to take over the leftovers. But also, private organisations like food sharing initiatives might help to reduce food waste.
- **LATE NIGHT OFFERS:** Use appropriate online platforms to inform the community on your surplus offer. Surplus food can be offered at lower prices via apps (e.g. Too Good To Go app). You don't have to dispose of your surplus, moreover, consumers get the dishes for a lower price and simultaneously discover your restaurant.

### Plate Leftovers

- **DOGGY BAG:** Actively offer doggy bags. Guests are sometimes ashamed to ask for a takeout container. If you offer to wrap their leftovers, they will appreciate this as additional service.

### Especially for Catering:

- **EDUCATE YOUR CUSTOMERS AND GUESTS:** Inform your customers about the effect that wrong figures concerning the expected number of participants have on food waste. Also inform guests about the consequences of registering and not showing up to a buffet.

## LINKS & REFERENCES

### #REDUCEFOODWASTE - TOOL

Use the Reducefoodwaste-Tool to find out what is going on to reduce food waste along the food supply chain in your area! This tool will introduce you to a lot of important stakeholders in Europe and besides that you can find tips and tricks to prevent food waste at home and for instance find brand new educational materials or start-ups.

<https://tool.reducefoodwaste.eu/>

### REFERENCES

- **Hrad, M.; Ottner, R.; Lebersorger, S.; Schneider, F. und Obersteiner, G. (2016):** Vermeidung von Lebensmittelabfall in Gastronomie, Beherbergung und Großküchen – Erweiterung weitere Betriebe – Endbericht. Wien: Selbstverlag. Verfügbar unter:
- [https://united-against-waste.at/wp-content/uploads/2015/05/Endbericht\\_BOKU\\_2016\\_02\\_19.pdf](https://united-against-waste.at/wp-content/uploads/2015/05/Endbericht_BOKU_2016_02_19.pdf)

# IMPROVE YOUR LOSS RATIO AND #REDUCEFOODWASTE

## FOR FOOD SERVICE



### REASONS

#### WHY FOOD IS WASTED IN THE SERVICE SECTOR INSTEAD OF BEING EATEN



##### **PURCHASE PLANNING AND STORAGE**

- Not keeping track of stock
- Too big menus
- Handling of expiration dates



##### **KITCHEN**

- Too much is produced (in advance)
- High standards concerning appearance of certain products
- Lack of information between management and kitchen



##### **LEFTOVERS BUFFET**

- Hygienic regulations
- Too large containers
- Edible decoration



##### **PLATE WASTE**

- Insufficient communication between kitchen, service and guests
- Edible decoration
- Too big standard portions (especially sides)

#### FOOD SUPPLY CHAIN



Primary Production  
Factsheet #1

Food Processing

Retail  
Factsheet #2

cooperation  
arrow

Food Service  
Factsheet #3

Consumers  
Factsheet #4

Waste Management  
Factsheet #5



## HOW TO REDUCE FOOD WASTE IN MY FOOD SERVICE BUSINESS

### PURCHASE PLANNING AND STORAGE

- Work with first in first out principle
- Keep records of your purchases
- Be aware of the correct interpretation of “Best before” and “Use by” dates
- Freeze and preserve food in time
- Optimize your storage temperature

### KITCHEN

- Pre-cook less
- Create new dishes
- Offer surplus food to employees
- Use innovative cooking techniques
- Improve your peeling and cutting techniques
- Offer flexible menus of the day
- Downsize your menu
- Introduce pre-ordered dishes
- Use surplus food for appetizers

### BUFFET

- Adjust container size
- Renounce edible decoration

### GUESTS

- Offer selectable portion sizes
- Offer a second helping for free
- Variable choice of supplements
- Improve communication between kitchen, service and guests
- Offer a Doggy Bag
- Educate your guests e.g. with information boards next to the buffet or within the menu

## HOW TO USE FOOD THAT CAN'T BE AVOIDED FROM BEING WASTE

### COOPERATE WITH LOCAL MARKETS AND FARMERS TO USE REJECTED OR OVERPRODUCED PRODUCE

### DONATE FOOD

### OFFER YOUR FOOD AT CHEAPER PRICES BEFORE CLOSING (late night offers)

## BENEFITS

SAVE MONEY!

CREATE REGIONAL VALUE!

EDUCATE CONSUMERS AND GET TO KNOW YOUR COMMUNITY!

INSPIRE OTHERS - BECOME A ROLE MODEL!

CONTRIBUTE TO ENVIRONMENTAL AND CLIMATE PROTECTION!

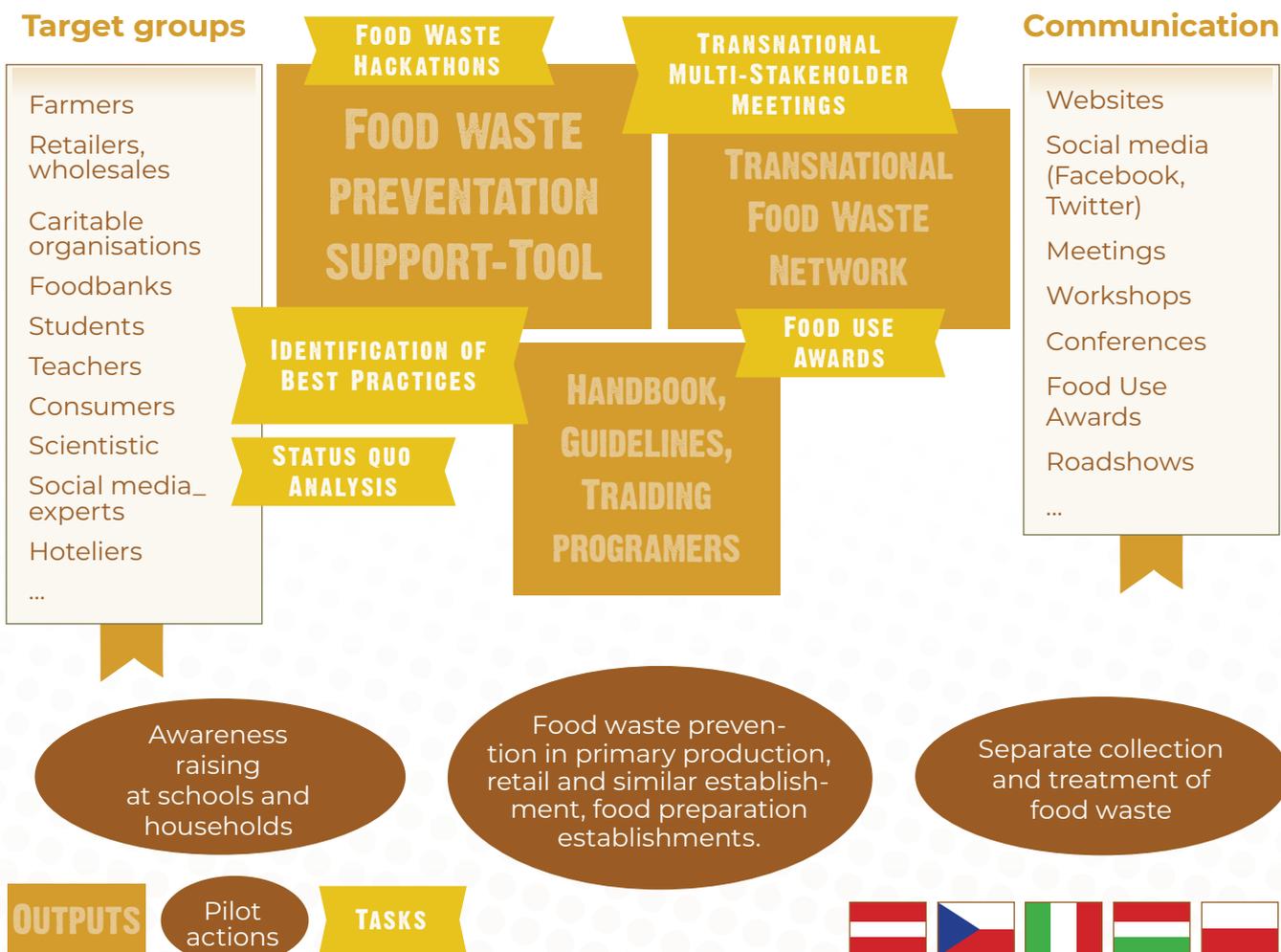
# ABOUT STREFOWA

>>> [www.interreg-central.eu/STREFOWA](http://www.interreg-central.eu/STREFOWA) >>> [www.reducefoodwaste.eu](http://www.reducefoodwaste.eu)

**Strefowa** (**Str**ategies to **Re**duce and **Ma**nage **Food Waste** in Central Europa) is a three-year project implemented in the Central Europe region funded by the Interreg CENTRAL EUROPE Programme that encourages cooperation shared challenges in central Europe. Therefore nine partners in five different Central Europe Countries (Austria, Hungary, Poland, Czech Republic, Italy) are working together. The aim is to reduce food waste or to treat it in a better, more useful way as well as to connect relevant actors in order to achieve a reduction of environmental impacts (e.g. GHG emissions) along the whole supply chain.

The most relevant outputs of this project are:

- **Food waste prevention support – Tool** (<https://tool.reducefoodwaste.eu/#/>)  
Based on best practice examples and project outcomes, a tailor-made web based software tool provides specific information for different stakeholder groups to prevent and treat food waste.
- **Implementation of Pilot and Demonstration Action**  
Food waste prevention measures as well as the feasibility of food waste separation and separate collection have been tested and evaluated within 16 pilot actions taking place in different partner countries. Newly acquired knowledge will now be accessible for others.
- **Establishment of an appropriate Transnational Stakeholder Platform**  
Stakeholders that are willing to work together are identified and connected through a Transnational Stakeholder Platform.
- **Best Practice Guidelines and Training Programmes**  
Guidelines and training programmes in regard to prevention, reduction and treatment of food waste have been developed and tested for relevant stakeholder groups along the food supply chain. They are based on current scientific findings and best practice examples.





<https://www.interreg-central.eu/STREFOVA>



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 **Bundesministerium  
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