CHORIZO: Changing practices and Habits through Open, Responsible, and social Innovation towards ZerO food waste

FOOD WASTE AND SOCIAL NORMS:
INTERRELATION EXPLORED IN
SIX DIFFERENT CASE STUDIES

Food loss and waste can and should be drastically reduced and prevented to move towards a more sustainable food system. Many initiatives already took place around the world to tackle the food waste problem.

The CHORIZO project takes a step further by improving the understanding of how social norms, influence behaviour related to Food Loss and Waste (FLW) generation. This understanding will be achieved through research activities that focus on different contexts where food loss and waste happens; namely food waste generated at food processing and packaging, household, school, food services, hospitality, and food bank level.

Research on FW generation and related social norms in these six contexts is organized in six respective case studies (CS). This case study approach allows to identify and examine the role of social norms in food waste related behaviours in different contexts. This is crucial since social norms and how they impact behaviour is highly context dependent.

The case studies are executed as a collaboration of a group of partners with different roles in the food system, and they will combine their knowledge, expertise and network to generate new evidence on the interaction between social norms, behaviour, and food waste.

They will do this by performing research activities like interviews, questionnaires and focus groups to collect information from various relevant food system actors. These insights will then feed into innovation products and Agent-Based Models (ABMs) that will simulate the behaviour and interactions of food system actors in case study-related settings, providing insights on how social norms can lead to zero food waste scenarios.

Additionally, the case studies will support the validation of the communication & science education packages of the project.

Do you want to know more about the CHORIZO case studies? Then keep on reading!

The following figure presents the six Case Studies: how they are located around Europe and on what part of the food supply system they focus.
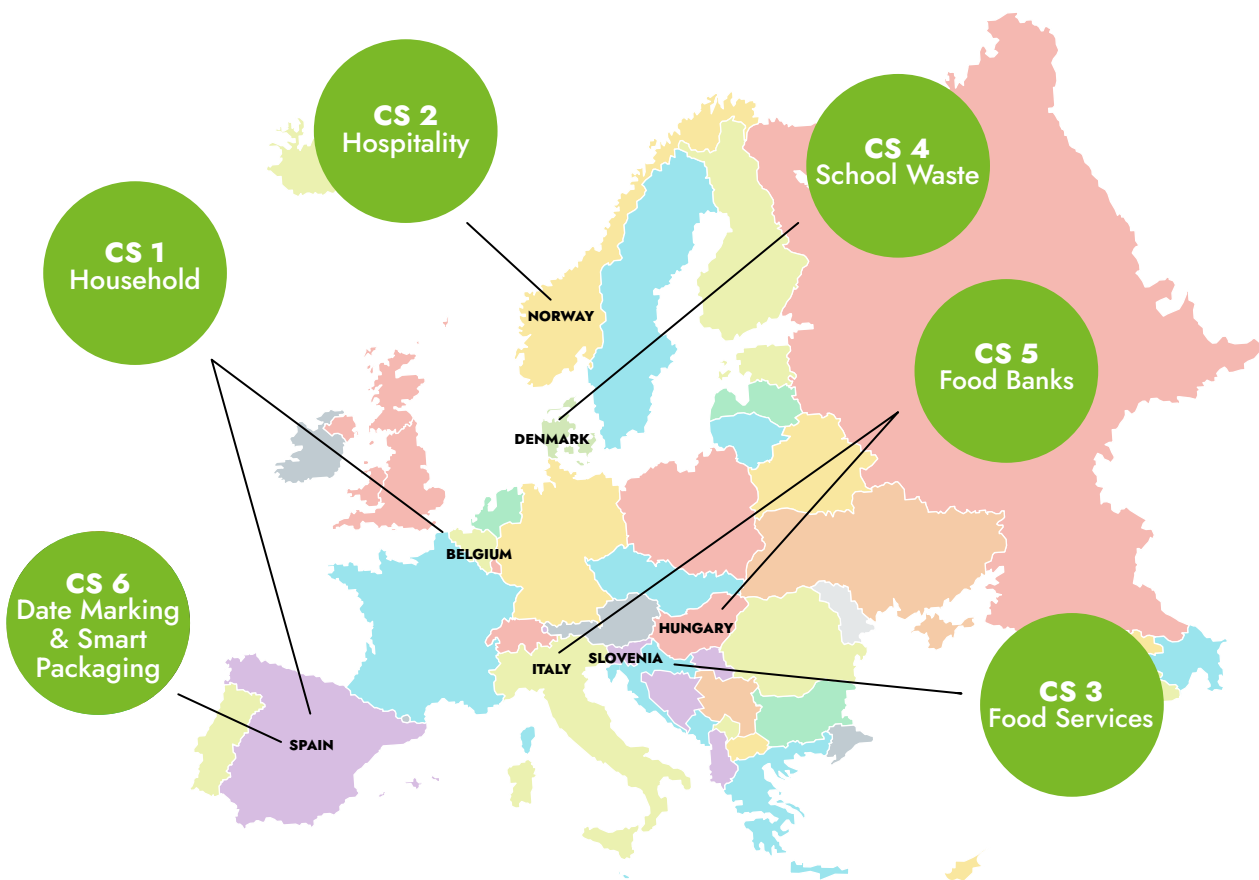
Case Study 1: **Household food waste in and off crisis periods**

Around 50% of the FLW in the EU occurs at the household level[1], making households a key target for intervention when it comes to avoiding food waste generation. Therefore, **this case study aims to identify social norm** related drivers of household FW and investigate the role **of social interactions** in FW that is generated at household level. and how they impact behaviour is highly context dependent.

In addition, behavioural shifts relating to household FW that are induced by crises situations will be examined. More precisely, **the impact of the current Ukraine** war and consequent energy crisis on normative behaviour at household level will be explored.

For example, **how do changes in income and disruptions** of supply chains caused by the crisis impact normative behaviour that influences FW generation?

Examining the **war and energy crisis** induced shift will provide valuable knowledge on: (i) its short- to medium-term impact on social norms and FW behaviours; and (ii) the processes & dynamics leading to social norm and behavioural changes.

Two co-leaders are in charge of this CS, EV ILVO and CTIC CITA, from Belgium and Spain, respectively.

1 Caldeira et al. (2019) Quantification of food waste per product group along the food supply chain in the European Union: a mass flow analysis, Resources, Conservation & Recycling, https://doi.org/10.1016/j.resconrec.2019.06.011

Case Study 2: Hospitality food waste

Food Waste in the hospitality (hotel) sector occurs during **food storage, preparation of meals**, serving and consumption. Previous evidence has shown that considerable potential exists for reducing FW at out-of-home consumption level.

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Previous evidence has shown that considerable potential exists for reducing FW at out-of-home consumption level. Such reduction would not only benefits sustainability but would also result in significant economic savings. This holds especially true for buffet leftovers and food overproduction[2].

This case study will investigate **how communication** about food waste and the form of serving affect food waste generation at hospitality level, by e.g., investigating perceptions on portion size reduction or food affluence in buffets.

Additionally, it will explore **the interaction between employee** behaviour and hotel business practices (corporate social responsibility). This CS is led by NCH, partner from Norway, and NORCE joins as a CS member.

Case Study 3: Food services food waste

About 65% of **FW in restaurants** is considered as **avoidable**[3]. The reasons behind this, are mostly over-preparation, overfilled buffets, inappropriate portions, limited practice of consumers taking home their leftovers, preparation residues and over-ordering, overstocking and lack of adequate storage facilities.

While **overproduction could be reduced** by e.g. ordering food in advance, neither consumers are used to this, nor do restaurants are providing this option.

Restaurants usually prepare meals largely based on personal estimation and experience and **fresh ingredients** are mostly ordered one day ahead to retail.

This case study will build on **past/existing initiatives** in the region of Pomurje, Slovenia for reducing FW in restaurants, investigating the processes and behaviour at three layers: (i) retail and short food supply chains — delivery of fresh ingredients to restaurants, (ii) restaurants — storing and preparing food, managing FW and leftovers, (iii) consumers — ordering, leftovers perception.

More concretely, this case study will generate insights into **the role of social norms** at the interface of consumers, restaurants, and retailers, by e.g., investigating perceptions of up-front ordering, reduced portion sizes or leftover take away.

This CS is led by ITC, partner from Slovenia, and PCCI joins as a CS member.

2 Okumus, B. (2019) How do hotels manage food waste? Evidence from hotels in Orlando, Florida. Journal of Hospitality Marketing and Management, 20 (1), doi: org/10.1080/19368623.2019.1618775; Leverenz, D. et al. (2021) Reducing food waste in hotel kitchens based on self-reported data, Industrial Marketing Management, 93, doi: 10.1016/j.indmarman.2020.08.008.
3 KuttMatsvinn (2020) Final Report; Irish Environmental Protection Agency (2021) How much food do we waste in Ireland?

Case Study 4: School waste and relation with obesity and malnutrition

Children are the consumers of the future and **schools play a key role** in both the intake of meals, and in nudging behavioural change. consumption level.

It is thus crucial to understand **school children's behavioural drivers to food waste and identify the potential** trade-offs between FW and dietary quality, and by extension health, as habits at the young age may be difficult to change in adult life (e.g. low plate waste might occur due to overconsumption and obesity, or increased FW might be due to a high-quality diet including a large share of fruits and vegetables, which have higher rates of waste[4]).

As such, there is a need to better understand food waste **knowledge and to develop educational interventions** that can increase it.

Moreover, as children's behaviour develop**s in a social context, we need to understand the relevant interactions with their families,** peers and the school learning environment which influence food waste and dietary decisions.

Also, in relation to social norms, **it is vital to understand all the school actors** (such as headmasters, teachers or parents) roles in changing pupils' behaviour on responsible food consumption. This can help improve the **design of effective education packages** to address trade-offs among multiple objectives and to foster significant, long lasting behavioural changes by all involved stakeholder across generations.

In particular, **there is a need to broaden the scope of food waste literacy training and education** to not only take place in the school canteen and in home economics classes, but also to be integrated across the curriculum in the Science classes and in the teaching of the SDG's.

Case Study led by UCPH, from Denmark, helped by two schools from the country.

Case Study 5: Food waste in a food banks' mediated supply chain

Food banks play a key role between corporate actors, other NGOs and consumers, requiring the capability of effectively mediating the different food chain actors' motivations and behaviour.

Moreover, there are **two inherent conflicts food banks** must balance: (i) the increasing pressure towards preventing surplus food upstream the food chain and the need to address food insecurity through this surplus; (ii) the need to address food insecurity without contributing to malnutrition.

Understand what **drivers/social norms influence companies** in choosing to donate food is vital to move forward with more efficient food bank approaches.

The leader of this CS is HFBA, from Hungary, and supported by the University of Bologna (UNIBO).

4 Conrad, Z. et al. (2018) Relationship between food waste, diet quality, and environmental sustainability, PLOS One, 13(4), doi:10.1371/journal.pone.0195405.

Case Study 6: Food waste in relation to date marking and sustainable and smart food packaging

It is estimated that up to 10% of the FW generated annually in the EU is linked to improper date marking[5]. **Date marking is often confusing to consumers.** Misinterpretations lead to earlier than necessary food disposal. The use of 'use by' and 'best before' labels contribute to this confusion.

Moreover, **consumers' perception** of date marking validity can prevent the diffusion of new technologies (e.g., sustainable, and smart packaging) that can extend product shelf life, when one would expect that such technologies would strengthen confidence in date marking.

Finally, **smart packaging could extend the life of products**, effectively reducing FW if clear directions and a timeline are provided in the packaging to preserve products once open.

In relation to social norms, it is crucial to understand how **date marking influences consumer behaviour** to consume or waste food, and which are the social norms underpinning it (by e.g. investigating consumers perception/understanding of expiration dates). Also, it is important to understand the rationale behind marking by food industries.

This case study will contribute to knowledge-building in these areas.

This case study is led by CTIC CITA, from Spain, in collaboration with FIAB.

> Social norms are one of the key factors that influence behaviours. Understanding social norms is thus a starting point to shifting behaviours toward greater sustainability.

5 ICF et al. (2018) Market study on date marking and other information provided on food labels and food waste prevention, Publications Office of the European Union, doi: 10.2875/808514..