

PACKAGING AND DATE MARKING


How Innovation in Food Packaging can be a Good Ally Against Food Waste


FW is a shared challenge for consumers and industry alike.
*Can **smart packaging innovation** be part of the **solution**?*




INTRODUCTION


CHORIZO aims to:

 improve the understanding of how **social norms influence behaviour and FLW generation**.


 use this knowledge to improve the effectiveness of **decision-making and engagement** of food chain actors, towards zero food waste.

ZEROW aims to:


 Establishing a major driving force in **reducing FLW** by employing systemic innovation, supporting the ambitions: to halve FLW by 2030 and ensure the enabling conditions for near-zero FLW by 2050.

 This systemic innovation approach is based on the development of nine **Systemic Innovation Living Labs (SILLs)**, complemented by assessment activities, to ensure a long term environmental and economic sustainability of zero-FLW.

HORIZON-CL6-2021-FARM2FORK-01

 3 years (Oct. 2022 – Sept. 2025)

 14 partners / 10 countries

 6.095.569€

HORIZON-CL6-2021-FARM2FORK-01

 4 years (Jan 2022 – Dec 2025)

 46 partners / 17 countries

 11.999.735,50

AGENDA

- Importance of Packaging and Date Marking for the Food Industry
- Results on Food Industry Case Study (CHORIZO project)
- Results on Consumers Case Study (CHORIZO project)
- Showcasing of Smart Packaging (ZeroW project)



#1 IMPORTANCE OF PACKAGING & DATE MARKING FOR THE FOOD INDUSTRY

Packaging and date marking aren't just about wrapping food—they're about protecting health, reducing waste, and building trust from factory to fork.

✓ Why Packaging and Date Marking Matter

From Shelf Life to Sustainability

- Packaging and date marking are **critical tools** in reducing food waste across the supply chain.
- They influence **consumer decisions, storage behaviour, and discard timing.**
- Smart packaging helps **extend shelf life and monitor** product freshness.
- **Clear labelling** can prevent unnecessary disposal of safe, edible food.



✓ Industry Requirements and Demands

- Food Industry always comply with:
 - 🛡️ **Food safety** regulations
 - 🏆 Product **quality** standards
 - 👍 **Consumer** expectations and **acceptance**
- Innovative Packaging solutions must balance:
 - 💰 Functionality and cost
 - ♻️ Sustainability goals
 - 👥 Clarity and easy-to-use for consumers


Innovations are only impactful if **understood** and **accepted** by end-users.

✓ Industry Success Stories & Startups Leading the Way

- ⇒ **Bio-based packaging** that extends shelf life.
- ⇒ Smart labels that change color based on **freshness**.
- ⇒ Apps paired with QR codes to **educate consumers** on date marking and storage.

Our Solution

Bio2Coat 100% natural, **Edible coating** that extends the shelf life of fruits and vegetables



8 days

BIO2COAT

OSCILLUM



The image shows the Vinok logo, which consists of a stylized 'v' and 'k' with a sunburst effect. Next to it is a smartphone displaying the Vinok app. The app interface shows the product name 'Vinok Crianza', a bottle image, and various details like '75 CL', 'Tempranillo', 'Servir a 15-18°', and '14.5%'. At the bottom, there are buttons for 'MÁS VINOS', 'SOLICITA', and 'AJUSTA'.



#2 FOOD INDUSTRY RESULTS

CHORIZO project

In a world where food waste challenges are growing, the CHORIZO study reveals how the food industry is constantly innovating in packaging—not just to preserve products, but to bridge the communication gap with consumers and turn technology into impact.

Case Study on Smart Packaging and Date Marking



In-depth Interviews – 30 industries

- General questions about the industry
- Questions related to food waste (FW) during production
- Questions related to FW during storage
- Questions related to FW during RETAILERS
- Questions related to Social Norms linked to FW



Workshop – Discuss results, over 100 food industry participants

Objectives

- To understand the context and impact of **previous FLW prevention/reduction actions** in which the case study participants were involved.
- To understand the **rationale behind date marking** by food industries.
- To understand **economic practices towards returning, disposing or donating** food past the ‘best before’ date, and which are the social norms underpinning them.
- To understand **food industries’ acceptance of sustainable and smart food packaging** and the interactions with the perceived shelf life of products (consumer confidence on date marking), and ultimately FW.

In-depth Interviews – Findings and take-home messages

- Industries establish date marking according to law and regulations, although sometimes there are **external influences**, such as RETAIL dynamics.



- Industries believe that most consumers and clients **don't understand the difference between expiration dates and best-before dates**, thus don't act differently according to what it means.

- Industries believe that consumers **act differently depending on the context**, thus they are affected by Social Norms and that affects consumer criteria regarding date marking.



In-depth Interviews – Findings and take-home messages

- Some industries make **shelf-life extension studies** on products close to best-before or expiration date.



- Not always having products with long shelf-life brings **advantages** to the industries, some identify also **disadvantages**.

- Innovation in packaging is constant; the industry **spends a lot of time and money** to find the packaging that best meets their needs.



Discussion Workshop – Findings and take-home messages

 Clear information on packaging for better consumer understanding • **Improve Communication**

 More campaigns from industry and government • **Raise public awareness**

 Consumers, Industry workers, Policy makers • **Educate all actors**

 Education is key here too • **Highlight the role of efficient packaging to prevent FW**


 To support anti-waste efforts • **Implement strict and consistent legislation**

 Large companies adopting sustainable packaging innovations • **Leverage the ‘tractor effect’**



#3 PACKAGING AND DATE MARKING CONSUMERS

Consumers are frequently portrayed as misinterpreting date labels and discarding food prematurely. The blame is placed on lack of awareness and reliance on packaging cues. But is this behaviour truly widespread — ***or are we relying on assumptions rather than evidence?***



CONSUMER STUDIES

STUDY TYPES

Qualitative: 2 rounds of *In-Depth Interviews* (IDIs)

Quantitative: 1 *Online Survey* via MundoSabor

PARTICIPANTS

IDIs: 25 normative consumers + 5 with mental disabilities

Survey: 1170 consumers (ES, GR, NL, HU, EE)

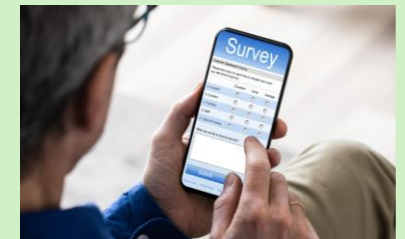
LOCATIONS

IDIs: conducted in 3 cities in Spain

Survey: distributed online across 5 EU countries

FOCUS AREAS

- ✓ Understanding of **date marking**.
- ✓ Perception and use of **smart packaging**.
- ✓ **Food waste habits**, motivations and emotional responses.
- ✓ Influence of **social norms** and **economic context**.





HABITS OBSERVED

- Consumers often rely on **smell and appearance** before discarding food.
- Many feel **guilt or frustration** when throwing food away.
- **Social norms** (e.g. “don’t waste food”, “eat everything on your plate”) strongly influence behaviour.

*"I feel angry with myself —
how did I let it expire?"*



KEY FINDINGS

- Only **50%** of consumers **understand the difference** between “*use by*” and “*best before*”.
- Most people **only look at the number**, not the type of date.
- **60%** say dates are **hard to find or interpret** on packaging.

IMPACT

- Leads to **premature disposal** of food.
- Especially affects **fresh products** like dairy, meat, and fruit.






PROBLEMS IDENTIFIED

- Packaging often **not adapted to household size**.
- **Offers and formats** encourage buying more than needed.
- **Poor reliability** leads to spoilage.

SMART PACKAGING

- **High interest** in smart packaging (e.g. colour-changing indicators).
- Seen as a **tool to reduce waste**, especially among older consumers.
- Some scepticism about **cost and practicality**.

-  Consumers are **motivated to reduce** food waste.
-  **Better education** on date marking is needed.
-  Smart packaging is welcomed but must be **clear, accessible and functional**.

*Empowering consumers through **clearer packaging and smarter solutions** is key to tackling food waste.*



QUICK QUIZ



Je hebt toegang nodig

Meld u aan met een account waarmee u dit formulier kunt bewerken of vraag de eigenaar om toegang.


▼ [Technische details](#)



#4 PACKAGING SHOWCASE

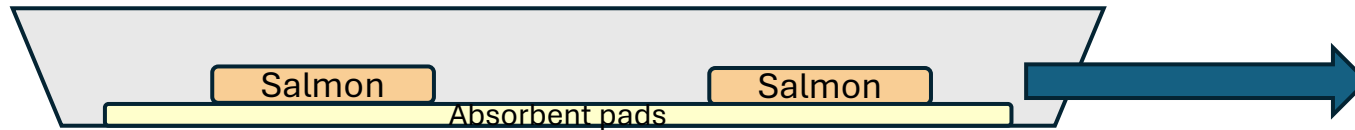
ZeroW project

Smart packaging is often hailed as a breakthrough in the fight against food waste. The smart tray promises better monitoring, clearer information, and improved shelf-life management. But is this innovation truly transformative — *or are we placing too much hope in technology alone?*



THE ZERO TRAY

Current commercialised trays – problems and need for improvement



The absorbent pads are an environmental problem, as increases the type of materials in the tray and it is not a complete solution to avoid the fresh food to be in touch with the **exudate liquids**.

THE ZERO TRAY

Current commercialised trays – problems and need for improvement

Food exudate can significantly shorten the shelf life of packaged foods. This happens for several reasons:

- It promotes microbial growth
- It alters texture and flavor: The accumulation of liquids can negatively affect the sensory quality of the food.
- It generates unpleasant odors
- It compromises product presentation: Which impacts the consumer's perception of freshness.

Therefore, eliminating or controlling **exudates** is a key strategy to extend the shelf life of packaged fresh foods.

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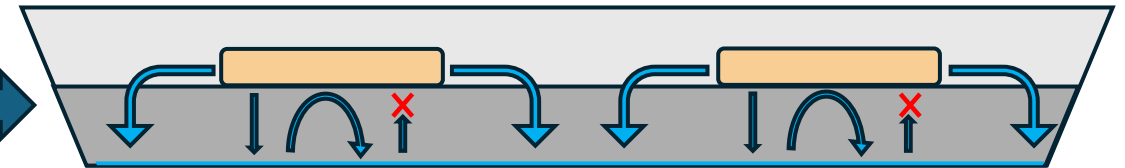
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Double-bottom tray improves sustainability and helps to extend the product shelf life

THE ZERO W TRAY

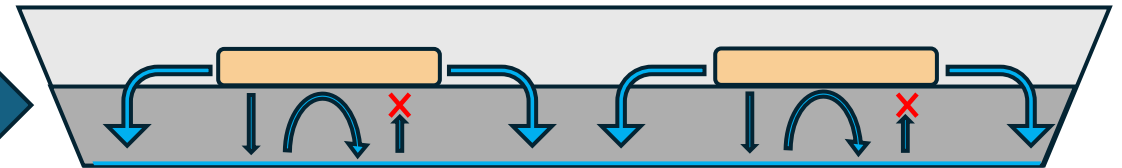
 **ZeroW tray** – designing to improve sustainability and product shelf life



A special design to collect the **exudates** in a double bottom geometry, as a key strategy to extend the shelf life of packaged fresh foods.

THE ZERO W TRAY

 **ZeroW tray** – designing to improve sustainability and product shelf life



The materials developed in the ZeroW tray (tray and lid film) are biobased and compostable to reduce the carbon footprint and increase the sustainability.

THE ZEROW TRAY

🔍 **ZeroW tray** – designing to improve sustainability and product shelf life



THE ZERO W TRAY

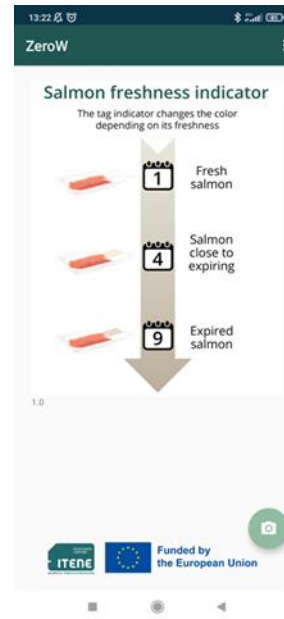
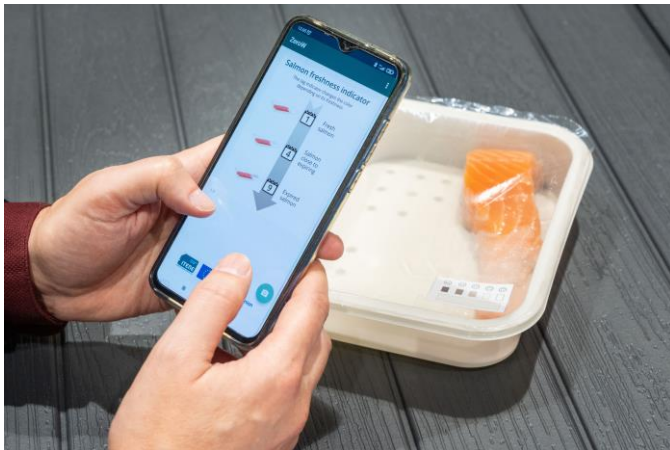
🔍 **ZeroW tray** – A smart label to manage stock and reduce food waste



A **smart label** based on the release of degradation metabolites can help retailers and consumers to manage their stock, according to the colour shown by the label, independently of the “**use by**” or “**best before**” date marking. A different colour or a colour gradient can help to distinguish the freshness degree of the food.

THE ZERO W TRAY

 **ZeroW tray** – A smart label to manage stock and reduce food waste



For accurate reading,
the colour change
can be read by a
mobile app.



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THANK YOU!



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Session 6: WRAP-UP

