

# THE ROLE OF BUSINESS IN A SUSTAINABLE FOOD TRANSITION



*The shift toward more sustainable food systems is one of the major challenges of our time. Alongside many other actors, businesses play a crucial role in changing how food is produced, distributed, and consumed. Through innovation, collaboration, and research, the private sector can help place sustainability at the centre of food systems, rather than treating it as an add-on.*



## INTRODUCTION TO THE BOOKLET

This booklet brings together research from Copenhagen Business School that explores different ways to create more fair, healthy and sustainable agri-food systems. The projects featured in this booklet look at a wide range of topics, from circular economy practices, new business, and governance models to policy initiatives and consumer behaviour, highlighting both the challenges and the opportunities involved in transforming food systems.

Each project responds to global sustainability goals while working at national, regional, and local levels, often in collaboration with European partners. Together, the projects show CBS's commitment to connecting academic research with real-world impact and contributing to the United Nations Sustainable Development Goals.

By linking research and practice, this booklet hopes to inspire readers to take informed and collective actions toward food systems that are not only efficient and profitable, but also fair and environmentally responsible.

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## Behavioural Insights for a Circular Society

BEACON investigates and tests behavioural changes that support sustainable lifestyles in the context of a Circular Society. Focusing on urban food systems in Copenhagen, the project explores real-world interventions aimed at reducing meat consumption and avoidable food waste. Findings are designed to inform broader consumption patterns and systemic changes in food environments.

**Timeline:** 2021 to 2025

**Geographical setting:** Copenhagen, Denmark

### Objectives

- Promote lifestyles that align with sustainable consumption corridors, by testing behavioural changes in everyday patterns.
- Advance the concept of a Circular Society, through theoretical and applied research on circular systems.
- Harness and apply behavioural insights, through implementing real-life interventions in the city of Copenhagen.
- Develop pathways for systemic change, by organizing multi-stakeholder workshops to co-create a roadmap towards circular food systems.

### Interventions

- A field experiment conducted at the Festivélo food market in July 2023 examined how providing CO<sub>2</sub> footprint information on meat products influences consumers' sustainable meal choices.
- A food waste reduction experiment carried out at Kulturhuset Islands Brygge from October to December 2023 tested how raising awareness and offering guidance on portion sizes can help reduce food waste in a restaurant setting.
- Several human-centered and co-creation workshops with diverse stakeholders were held to identify current barriers and concrete actions for advancing a circular food system.

**Project Website:** BEACON

**Role of CBS:** Lead researcher and project coordination

**Funding:** Funded by the Novo Nordisk Foundation: project number NNF21SA0069203

### CBS Researchers:

Prof. Lucia A. Reisch (PI), Assoc. Prof. Efthymios Altsitsiadis, Assoc. Prof. Jan M. Bauer, Postdoc Mohina Gandhi, Postdoc Alice Pizzo, Assoc. Prof. Maria Figueroa, Assoc. Professor Meike Janssen, Senior Advisor Isabel Froes, Academic Officer Anna Schmid

### Selected publications:

Dewies, M., & Reisch, L. A. (2025). META BI: A tool for describing behavioural interventions. *Behavioural Public Policy*, 1–28. <https://doi.org/10.1017/bpp.2025.10015>

Lohmann, P., Pizzo, A., Bauer, J. M., Khanna, T., Flecke, S. L., Callaghan, M., Minx, J., & Reisch, L. A. (2025). Demand-side interventions for sustainable food systems: A meta-analysis of food-policy interventions targeting food consumption and waste behaviours. *Nature Food* (forthcoming).

Pizzo, A., Suter, M., Bauer, J. M., & Reisch, L. A. (2025). Food waste salience and task knowledge to reduce individual food waste: A field experiment in a restaurant setting. *Journal of Behavioral and Experimental Economics*, 117. <https://doi.org/10.1016/j.socec.2025.102375>

Pizzo, A., Bauer, J. M., & Reisch, L. A. (2024). What shapes vegetarian food choices: Information or money? A field experiment. *Ecological Economics* (forthcoming).

Pizzo, A., Gravert, C., Bauer, J. M., & Reisch, L. A. (2024). Carbon Taxes Crowd Out Climate Concern: Experimental Evidence from Sustainable Consumer Choices. *SSRN Working Paper*. <http://dx.doi.org/10.2139/ssrn.5147485>





## Turning Human Sanitary Waste into Fertilizer

P2Green aims to shift from a linear agri-food resource model to a circular system that reconnects urban and rural areas. It focuses on recovering nitrogen (N) and phosphorus (P) from human sanitary waste, transforming it into safe, bio-based fertilizers, and thereby develops and matures innovative solutions for circular nutrient flows. The project is following a holistic symbiotic resource management approach following the 3R principle “Reduce, Reuse, Recover”. The project operates in three pilot regions and several follower regions across Europe.

**Timeline:** 2022 to 2026

**Geographical setting:** Sweden, Germany, Spain (Pilot regions); Italy, Hungary, France, Greece (Follower regions)

### Objectives:

- Develop new circular governance solutions for the transition from fork to farm to halt and eliminate N & P pollution by connecting blue urban with green rural infrastructure, focussing on circular nutrient flows of nitrogen (N) and phosphorus (P).
- Reduce the current usage of mineral fertilisers with innovative green bio-based fertilisers derived from human excreta.
- Minimise the pressure and dependence on the natural resources, specifically water and soil.

### Interventions:

- **Sweden:** This pilot region is collecting urine at public events, to process it into nutrient-rich fertilizer pellets for barley farming and finally beer production. The key goals of the region are to demonstrate the entire service chain involved in nutrient recovery, showcasing each step from collection to final fertilizer application. Targets: appr. 900 kg N and 90 kg P reclaimed annually.



- **Germany:** In this pilot region, urine and faecal matter, collected at festivals across Germany, are processed separately into recycling-fertilizers via nitrification, distillation, and composting. It is applied on field trials to grow rye and barley. Targets: appr. 1,140 kg N and 320 kg P reclaimed annually.
- **Spain:** The Spanish pilot region focuses on sustainable water and nutrient management using advanced water reclamation and smart irrigation technology. Reclaimed wastewater (from a local wastewater treatment plant) is utilized to irrigate mango and avocado crops. Smart fertigation tools ensure nutrient optimization and pollution control when applied to the crops. Targets: appr. 3,650 m<sup>3</sup> of safe, nutrient-rich water annually.

**Project Website:** P2Green

**Role of CBS:** Building the governance framework, stakeholder engagement and community management

**Funding:** Funded by the European Union: European Union's Horizon Europe research and innovation programme under grant agreement No° 101081883

**CBS Researchers:** Senior Advisor Isabel Froes, Academic Officer Anna Schmid, Postdoc Albina Dioba

### Selected publications:

Dioba, A., Schmid, A., Aliahmad, A., Struthers, D., & Fróes, I. (2025). Human excreta recycling in Sweden: a PESTEL-SWOT framework analysis – Review. *Journal of Environmental Management*, 389. <https://doi.org/10.1016/j.jenvman.2025.126242>

Schmid, A., Dioba, A., Froes, I. (2024). D4.3 Stakeholder engagement strategies. P2Green Project. Available here: <https://p2green.eu/open-sources/>

Dioba, A., Schmid, A., & Fróes, I. (2025, June). Key challenges and opportunities for expanding source-separating sanitation systems in the EU. In *Proceedings of the Academy of Management Annual Meeting* (Poster presentation). <https://doi.org/10.5465/AMPROC.2025.14329poster>



## From Farm to Fork, We Link the Sustainable Way

ROSETTA tackles food waste generated by marketing standards by developing estimation models and exploring alternative value chains. ROSETTA steps into unknown territory, diving into this complexity, the project aims to understand not only how much food waste occurs but also why and how to address it. Despite its prevalence, there is limited concrete evidence on the extent and impact of food waste due to marketing standards. Through a stakeholder-driven, transdisciplinary research approach, the project aims to create viable marketing alternatives that reduce waste and add value across the supply chain.

**Timeline:** 2024 to 2026

**Geographical setting:** Ireland, Spain, Poland, Denmark, Greece

### Objectives:

- Assess food waste caused by marketing standards by actively engaging all key stakeholders across the food value chain and geographical context.
- Understand the origins and rationale behind public and private marketing standards, examining how they relate to consumer expectations and behaviour.
- Analyse value chain interactions to assess the contribution of each stage to the generation of food waste.
- Co-develop and validate alternative marketing models that reduce food waste and retain economic value.
- Provide policy recommendations based on empirical evidence.

**Project Website:** Rosetta

**Role of CBS:** Lead research partner on behavioural and systemic innovation

### CBS Researchers:

Assoc. Prof. Georgios Halkias, and Postdoc George Tsalis

**Funding:** Funded by the European Union: European Union's Horizon Europe research and innovation programme under grant agreement No° 101136427





#### Interventions:

- **Ireland (Focus on fruits & vegetables):** This pilot explores the “Vegetables of Gold” concept, developing value-added products from fruit and vegetables that don’t meet cosmetic standards but are safe to eat.
- **Spain (Focus on fruits & vegetables):** This pilot focuses up-cycling and repurposing solutions as well as alternative (e-commerce) channels create new market opportunities and minimize food waste caused by marketing standards.
- **Poland (Focus: cereals):** This pilot involves intervention that promote fibre-rich whole grain products and innovative bakery products aiming to valorise suboptimal cereals. It also assesses the environmental and social benefits of innovative grain-based products.
- **Denmark (Focus: dairy products):** This pilot aims to reduce dairy waste across the entire supply chain, refining shelf-life requirements for kitchen operators, wholesaler/distributors and large-scale catering suppliers. It evaluates the impact of shelf-life adjustments on waste reduction, by modifying ordering, stocking, and distribution patterns.
- **Greece (Focus: fruit, vegetables & meat):** This pilot explores alternative marketing and redistribution channels for suboptimal but safe foods, such as imperfect produce and near-expiry meat. The pilot supports vulnerable communities (e.g., through social kitchens), while it also monitors consumer behaviour through a mobile app to promote better food storage and waste prevention.





## Horticultural innovations in soil-friendly practices to ensure a sustainable future

The main objective of the Hort2thefuture project is to develop and support the adoption of more soil-friendly practices in horticulture. Especially, the project supports peat alternatives and soil health improvements. The project also addresses inefficient or inappropriate use of agricultural inputs and promotes sustainable innovations through multi-actor collaboration.

**Timeline:** 2024 to 2028

**Geographical setting:** Denmark, Norway, Germany, UK, Serbia, Spain, Italy, Belgium, Hungary, The Netherlands, North Macedonia, Croatia

### Objectives:

- Develop a methodological framework and tools for effective analysis of sustainability and Life Cycle Assessment.
- To develop low-cost, reliable, scalable peat-free growing media, using EU-sourced raw materials, which have significantly lower carbon and environmental footprints than peat.
- To develop and commercialize novel products and production systems that reduce input use in a range of horticultural production systems.
- To develop and commercialize novel products that improve soil structure and mitigate soil compaction in horticultural soil management practices.
- Facilitate behavioral change towards more sustainable practices through pilot sites for professional growers, a mobile app for amateur growers, better labelling and policy measures
- To stimulate behavioural change with growers and gardeners adopting more sustainable production systems.

### Interventions:

- Piloting of indicators with growers is underway, encompassing examples of open field, protected environments, and conventional and organic horticulture production systems in four countries: Hungary, Spain, Serbia and the UK.
- A database of suitable raw materials for new substrates, such as wood fibre, sphagnum moss, coir, miscanthus, hemp, compost, peat, bark and biochar has been established.
- Trials to optimise water use in open field systems through drip irrigation (cauliflower) (comparing irrigation determined using meteorological data and soil moisture sensors with expert opinion) are in progress and results collected for the first complete season.
- Trials of protected cultivations (strawberry, basil), comparing selected peat-free substrate blends. Trials in soil-based greenhouse cultivation (tomatoes and celery), and other field crops are established to measure soil moisture content, diseases and pests, crop productivity.
- Compost and other blends have been designed and characterised for use in neglected soils.
- Trials testing strategies with innovative processes of irrigation on tomato and pepper crops to reduce pesticide use and soil-borne diseases are being developed and underway.
- Trials with organic fertilizers are being optimised for subsequent use in sheltered cultivation of lettuce, as well as in the field with vegetables broccoli, cabbage, lettuce, onion and chives.



**Interventions:**

- Large scale pilot trial testing soil compaction using 6 cover crops, results are being finalised.
- Trials to determine the effect of the novel irrigation systems on compacted soils using both soil columns and field trials have been completed.
- Pilot sites for behavioural change, co-creating innovative interventions with professional horticultural growers have been established in Norway, Spain, Italy, Serbia and North Macedonia.
- Other developments: an LLM and chatbot user interface have been developed to analyse and help uncover the motivations, conceptualisations and practices of amateur gardeners.

Final products developed are tested with growers on pilot sites, with their feedback passed to producers and policymakers to guide broader adoption. A dedicated work package ensures project results are disseminated toward all relevant actors.

**Project Website:** Hort2theFuture

**Role of CBS:** Project management, research contribution to the behavioural change aspects of the project

**CBS Researchers:** Assoc. Prof. Milena Micevski, Postdoc Daniela Micu, Academic Officer Seidi Suurmets

**Funding:** Funded by the European Union: Horizon Europe Innovation Actions under grant agreement No° 101157434





## Empower consumers with labelling solutions that promote sustainable food choices for everyone

The food industry's sustainability efforts face many challenges, particularly in adopting sustainable solutions for packaging and production. TealHelix leverages digital and social technologies to innovate food labelling practices that empower consumers, reduce resistance to sustainable solutions, and promote informed decision-making, especially among vulnerable groups.

**Timeline:** 2024 to 2028

**Geographical Setting:** Lithuania, Latvia, Estonia, Greece, Poland, Germany

### Objectives:

- Identify consumer needs and expectations related to sustainability information on food products.
- Involve citizens in label innovation via co-creation and citizen science.
- Develop AI-powered applications and test behavioural interventions to motivate sustainable food choices.
- Design personalized tools and tailored communication to support vulnerable consumers.
- Define transparent standards and boundaries for sustainable food labelling.

### Interventions:

- **Claim Buster App:** Scan and verify sustainability claims on food products in real-time. Challenge your knowledge with games, earn badges, and make informed choices with confidence.
- **BetterMe App:** Uses gamification to help users adopt sustainable food habits with personalised recommendations.
- **Sustainable Food Compass:** A psychometric tool to assess consumers' food sustainability preferences, integrated into BetterMe.
- **Go-Green Hubs:** collaborative spaces where citizens, stakeholders and experts collaborate to test and refine sustainable solutions in real-world settings. These hubs will drive transparency, combat green-washing, and use inclusive strategies to engage all consumer types, from supportive to vulnerable.

**Project Website:** TealHelix

**Role of CBS:** Consumer behaviour research (i.e., identification of consumers' information needs), co-creation facilitation, pilot-testing, and communication and generalizability

**CBS Researchers:** Associate Prof. Efthymios Altsitsiadis, Associate Prof. Jan M. Bauer, Postdoc Giulia Priolo, Assistant Prof. Alice Pizzo

**Funding:** Funded by the European Union: European Union's Horizon Europe Research and Innovation programme under grant agreement No° 101136955 and from the Swiss State Secretariat for Education, Research and Innovation (SERI)



## Transforming EU Food Systems for a Sustainable Future

The project aims to make European food systems more sustainable, resilient, and inclusive, adapting to different levels of innovation maturity to drive regional transformation. Vision4Food promotes sustainable food system transitions (FST) across five European regions through Food Innovation Platforms (FIPs). The project builds capacity, co-develops regional acceleration agendas, and shares learnings across regions to support inclusive food governance. The project tackles key challenges in Europe's food systems, such as fragmented decision-making, low inclusivity, and a lack of regionally tailored solutions. The project focuses on empowering local actors through innovative governance models that drive the shift toward circular, climate-resilient, and inclusive food systems.

**Timeline:** 2025 to 2027

**Geographical Setting:** Poland, Greece, Spain, Italy, Finland

### Objectives:

- Map innovation ecosystems and food value chains to uncover bottlenecks and opportunities for strengthening regional innovation capacity.
- Develop novel governance frameworks that enable effective collaboration, engage local actors and define tailored acceleration agendas.
- Establish regional FIPs for inclusive agenda setting, regional innovation reinforcement and solution development.
- Implement regional acceleration agendas across five EU regions, enabling practical solutions that reinforce regional innovation ecosystems and broaden their scope toward a holistic food systems approach.
- Inform EU food system policy through evidence and mutual learning.

### Interventions:

- **Poland:** The pilot supports the transition to a knowledge-based economy by boosting digitalization, aligning education with labour needs, and promoting science-business collaboration in the agri-food sector. It addresses water scarcity, climate resilience, and SME barriers such as low ICT use and limited global reach.
- **Greece:** The pilot aims to revitalize rural economies by promoting sustainable development, environmental solutions, and digital innovation. It addresses deindustrialization, underdeveloped services, and sectoral limitations, while leveraging strong agriculture, tourism, and transport assets.
- **Spain:** The pilot tackles rural depopulation, climate impacts, and food system sustainability through innovation in farming, waste management, and short supply chains. It builds on regional strengths in agri-food commercialization and EU engagement, aiming to boost tech adoption, animal welfare, and process optimization for SMEs.
- **Italy:** The pilot supports post-flood recovery and strengthens agri-food resilience by promoting precision agriculture, reduced input use, and biodiversity. It leverages a strong local innovation network while addressing skills gaps, tech costs, and succession challenges in SMEs.
- **Finland:** The pilot addresses climate impacts and low value-added in the food sector by advancing clean, local food chains, renewable energy use, and carbon-sequestering methods. It supports SMEs in boosting automation, processing, and data-driven production.

**Project Website:** Vision4Food

**Role of CBS:** lead analysis of FST barriers and stakeholder needs to foster inclusive innovation

**CBS Researchers:** Senior Advisor Isabel Froes, Postdoc Albina Dioba, and Academic Officer Anna Schmid

**Funding:** Funded by the European Union: Horizon Europe Coordination and Support Actions under grant agreement No° 101183145



## Modelling tipping points for the green transition of food consumption

PlantTip aims to find societal tipping points to trigger large-scale behavioural shifts in Danish consumers toward more sustainable lifestyles. Recognizing that current shifts toward sustainable diets remain limited and slow, the project explores how large-scale behavioural change can be catalysed to contribute meaning to greenhouse gas reduction. The project uses systems thinking and behavioural experimentation to model and simulate societal tipping points that can accelerate the green transition in food consumption.

**Timeline:** 2025 to 2028

**Geographical Setting:** Denmark

### Objectives:

- Experiment with and predict how different combinations of policy instruments, marketing strategies, consumer-oriented innovations, and social dynamics can activate societal tipping points.
- Develop agent-based models informed by social-behavioural experimentation data to simulate and understand complex system interactions.
- Identify actionable insights that can support large-scale shifts in consumer behaviour toward more sustainable dietary patterns.
- Advance understanding of how to effectively foster and scale sustainable behaviour beyond niche groups, contributing to Denmark's climate goals.

### Interventions:

- Conduct large-scale consumer experiments in Danish settings to explore how societal tipping points can accelerate the shift to more plant-rich and sustainable diets.

**Project Website:** PlantTip

**Role of CBS:** Lead institution on behavioural experimentation

**CBS Researchers:** Associate Prof. Meike Janssen, Assistant Prof. Alice Pizzo, and Postdoc Giulia Pirolo

**Funding:** Funded by the Novo Nordisk Foundation: project number NNF24SA0096529





## Accelerating an efficient green consumer transition

### Project Overview:

The aim of the PlantPro project is to accelerate an efficient green consumer transition towards more plant-rich diets and reduced food waste. The project identifies factors that drive consumer behaviour change towards more sustainable plant-rich diets and upcycled foods, and greater acceptance of sustainable food technologies. PlantPro contributes to reaching societal tipping points that will foster the green transition in Denmark.

**Timeline:** 2021 to 2024

**Geographical Setting:** Denmark

### Objectives:

- Identify key success factors in industry and societal transitions
- Map driving factors that determine acceptance and behaviour across consumer segments.
- Measure the effect of structural interventions, information, and motivation on behavioural change in public and private settings under real-life conditions.
- Deliver a catalogue of marketing and policy actions.

### Interventions:

- One field experiment in real online supermarket in 2023 placed plant-based foods in different supermarket sections (e.g. meat alternatives in the meat section, meat alternatives in the vegetable section etc.) to understand nudging in supermarkets.
- Second field experiment in supermarket in Copenhagen in 2023, placing plant-based recipes as posters (incl. bundling placement) at point of sales.

**Project Website:** PlantPro

**Role of CBS:** Lead institution on field experiments with retailers and consumer segmentation

**CBS Researchers:** Associate Prof. Meike Janssen, Postdoc Maureen Schulze

**Funding:** Innovation Fund Denmark

### Selected publications:

Schulze, M., Janssen, M., & Aschemann-Witzel, J. (2024). How to move the transition to sustainable food consumption towards a societal tipping point. *Technological Forecasting and Social Change*, 203, 123329. <https://doi.org/10.1016/j.techfore.2024.123329>

Schulze, M., & Janssen, M. (2024). Self-determined or non-self-determined? Exploring consumer motivation for sustainable food choices. *Sustainable Production and Consumption*, 45, 57-66. <https://doi.org/10.1016/j.spc.2023.12.028>

Aschemann-Witzel, J., Mulders, M.D.G.H., Janssen, M., & Perez-Cueto, F. J. (2023). Tipping the next customer on the shoulder? A segmentation study and discussion of targeted marketing to further plant-rich dietary transition. *Cleaner and Responsible Consumption*, 11, 100154. <https://doi.org/10.1016/j.clrc.2023.100154>

Aschemann-Witzel, J., Janssen, M. (2022). The role of policy actions to accelerate food consumer behaviour change. *Agricultural and Food Economics*, 10(1), 22. <https://doi.org/10.1186/s40100-022-00230-x>





## **Towards more sustainable food provision**

VISIONARY focuses on the green transition in the food system. The project aims to support Europe's food system transitions, by identifying what factors underlie the path dependencies and lock-ins in current unsustainable food systems, hindering sustainable food provision. The project lies particular focus on stakeholder engagement to move towards a more sustainable food provision for key stakeholders such as practitioners, for policy makers and for scientist.

**Timeline:** 2022 - 2026

**Geographical Setting:** Denmark, Germany, Spain, Italy, Hungary, Poland, Romania, United Kingdom

### **Objectives:**

- Identify barriers and appropriate behavioural interventions (nudges, education, incentives) for farmers and consumers.
- Improve capacities for researchers in behavioural and experimental research, policy makers and value chain actors to utilize such research.
- Make Europe's food provision more sustainable for practitioners, policy stakeholders and scientists.

**Project Website:** Visionary

**Role of CBS:** Lead of work package on 'Value chain initiatives and business models', consumer insights on how to reduce the climate impact of food consumption.

**CBS Researchers:** Associate Prof. Meike Janssen

**Funding:** Funded by the European Union: Horizon Research and Innovation Action under grant agreement No° 101060538



## SUSTAINABLE DEVELOPMENT GOALS AND PROJECT ALIGNMENT

*An overview of CBS initiatives linked to the UN Sustainable Development Goals*

2. Vision4Food
3. BEACON, TealHelix, Vision4Food, PlantPro, PlantTip, Visionary
6. P2GreeN
9. TealHelix, Vision4Food, P2GreeN
11. BEACON, P2GreeN, Vision4Food
12. BEACON, P2GreeN, ROSETTA, Hort2theFuture, TealHelix, Vision4Food
13. BEACON, P2GreeN, ROSETTA, TealHelix, Vision4Food, PlantTip, PlantPro, Visionary, Hort2theFuture
15. Hort2theFuture
17. Hort2theFuture, Vision4Food







**CBS**