

Circular Food Futures

Research Brief: Barriers, Opportunities
and Best Practices from Norway and Czechia

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Table of Contents

About us	3
Introduction	4
Mapping Stakeholders in the Czech Republic	8
Stakeholders and Organisations identified by CIVAC	16
Project Milestones: Workshop, Trip to Oslo and Final Event	21
Czech Stakeholders Workshop: Mapping Barriers and Opportunities	21
Key Barriers Identified by Participants	21
Recommended Solutions	22
Trip to Oslo: Learning from Norwegian Stakeholders	22
Final Event: Inspiration for Czech and Norwegian Stakeholders	23
Limitations	24
Conclusion	25
List of Abbreviations	26

About us

[Institute of Circular Economy](#) (INCIEN) is a non-governmental, non-profit organisation that has been promoting the circular economy since 2015. INCIEN was created because the current rate of natural resource exploitation is not sustainable and the circular economy offers a solution. The research team conducts studies that offer valuable know-how in the Czech environment. In one of its pillars, the Czech Circular Hotspot, we share examples of good practice and together we discover how to address specific industry challenges, for example through thematic working groups, webinars and conferences. We have conducted hundreds of consultations in the private and public sphere to monitor and optimise the development of circular measures on the ground. We are ready to move the Czech economy towards a circular future.

[Circular Values Cluster](#) (CIVAC) is a Norwegian organisation committed to advancing sustainability and circular economy. With a focus on education, research and sustainable solutions, CIVAC helps companies and public institutions transition to waste-minimising and resource-efficient models. They apply their expertise in waste management in Central Norway, where they lead several key projects. One of CIVAC's notable initiatives of 2021 is a regional waste analysis in Central Norway, involving 78 municipalities and 10 waste companies. This analysis informed strategies for improving waste management and efficiency in the region. CIVAC also generates reports for public waste companies, covering waste quantities, employee feedback and customer surveys. In addition, CIVAC plays a role in projects aimed at transforming green waste and establishing local glass collection systems, with 90% of all glass and metal packaging collected across Norway. Collaboration is central to CIVAC's work - they partner with private companies, public organisations and research institutions to create an impact. For example, they have led projects with Sintef and Mepex, and explored solutions like cleaning contaminated construction masses through the ReMass project. Through these initiatives, CIVAC drives sustainable waste management and positions itself as a leader in circular economy, demonstrating the impact of cross-sectoral collaboration.

The aims of the Circular Food Futures project, supported by Norwegian partner CIVAC, are to map the main barriers to the transition to a circular economy in the food sector, especially in the context of the Czech Republic, identify key opportunities and document best practices. We provide recommendations on how to leverage Norwegian experience and know-how, introducing examples of best practice from Norway with relevance to the Czech Republic, and vice versa. We also aim to connect key stakeholders in the food sector in both countries, contributing to the further development of circular strategies in the domestic food value chain.

Introduction

The European Green Deal aims to achieve climate neutrality by 2050 through a set of policy initiatives proposed by the European Commission (EC).¹ It includes measures to reduce greenhouse gas emissions, increase energy efficiency, promote renewable energy, protect biodiversity and make the transition to a circular economy. **Agriculture is a key sector within the Deal, with European Union (EU) goals related to ensuring food security, reducing the sector's environmental footprint, enhancing resilience and promoting sustainability from Farm to Fork.**²

The [Farm to Fork Strategy](#) outlines a set of actions to facilitate the EU's transition to a sustainable food system. As part of this initiative, the EC has proposed legally binding food waste reduction targets for EU Member States to meet by 2030, through an amendment to the [Waste Framework Directive](#). Under this proposal, Member States would be required to implement measures to reduce food waste by 10% in processing and manufacturing, and by 30% per capita at the retail and consumption levels, by the end of 2030.³ In Norway as well as in the Czech Republic, efforts are being made to transform the food system toward enhancing environmental sustainability, societal well-being and development in circular economy. Especially in the Czech Republic, farmland covers nearly 45% of the country, emphasising the importance of sustainable land management practices.^{4 5}

The current global food system, which increases availability of a wide variety of food to more people from around the world, has a substantial negative impact on the environment.⁶ Technological advancements in agriculture have significantly boosted food production, enough theoretically to feed the entire global population. However, this progress comes at the cost of the climate, biodiversity and human health.⁷ In fact, nearly 70% of global biodiversity loss is driven by current methods of food production and consumption.⁸ Food systems are also major drivers of deforestation, habitat loss and rising greenhouse gas emissions. Agriculture focused on monocultures and the excessive production of animal-based foods leads to soil degradation and the destruction of ecosystems that food production itself depends on.⁹

¹ The European Green Deal: Striving to be the first climate-neutral continent (European Commission, 2019)

² Agriculture and the Green Deal: A healthy food system for people and planet (European Commission)

³ Reducing food waste: how can science help? (European Commission, 2024)

⁴ Soil is a vital component of natural capital, hosting rich biodiversity and providing critical ecosystem services, such as food production, water purification and carbon storage (EEA, 2024)

⁵ An overview of Czechia's strategy to implement the EU's common agricultural policy (CAP) for the period 2023-27 at national level (European Commission)

⁶ The Plate of Change: WWF report on sustainable diets for Central Europe (WWF, 2024)

⁷ Policy issue: Agriculture puts pressure on the environment, but policies and better practices are helping to mitigate the impacts (OECD)

⁸ The Plate of Change: WWF report on sustainable diets for Central Europe (WWF, 2024)

⁹ Reducing Norway's footprint - bringing our production and consumption within planetary boundaries. Executive summary (WWF, 2022)

When considering the environmental impact, initiatives like the Ellen MacArthur Foundation's "Making nature-positive food the norm" outline the importance of shifting towards regenerative agricultural practices and food waste reduction.¹⁰ This initiative recognises the urgent need to address environmental impacts of food production and consumption, such as biodiversity loss, habitat destruction and soil degradation. Similarly, WWF Norway emphasises that transitioning to sustainable agricultural practices based on agroecology, which include minimising soil disturbance, maintaining permanent soil cover, increasing plant and species diversity, and enhancing nutrient cycling and circularity, is decisive.¹¹ By promoting regenerative agricultural practices, restoring ecosystems and reducing food waste and pollution, the initiative seeks to ensure that food production and consumption have a positive impact on nature.

Food systems have not only environmental impacts but also significantly affect human health, and their transformation can bring positive changes in this area as well. In 2020, the Czech Ministry of Health published the [Strategic Framework for Health Development in the Czech Republic until 2030](#). Based on data from the World Health Organization, the framework highlights that adult obesity rates in the Czech Republic have risen sharply. Projections indicate that by 2030, 35% of adults will be affected by obesity.¹² Norway has also seen an increase in adult obesity – at nearly 16.5 % in 2020, up from 14% in 2019 and 12.6% in 2014. The EU average is 16%.¹³ According to senior medical officer Haakon Meyer at the National Institute of Health and Public Health (NIHP), it is not surprising that the proportion of individuals who are overweight or obese has risen in recent years, as this has been a longstanding trend for decades.¹⁴ NIHP states that only 23 % of men and 42 % of women aged 40 to 49 maintain a body mass index (BMI) of less than 25, which classifies them as having a normal weight. Norway appears to prioritise addressing the symptoms of weight gain rather than exploring its underlying causes. To date, there has been no comprehensive review that systematically compiles and synthesises scientific evidence from published articles to establish a clear consensus on the causes of obesity.¹⁵

WWF's "Plate of Change," developed for the Czech Republic, Slovakia and Hungary, highlights the need to transform food systems and promotes sustainable eating through the "Livewell" approach.¹⁶ The Livewell approach promotes a diet rich in plants – fruits, vegetables, pulses and whole grains – while moderating meat, dairy and eggs,

¹⁰ Ellen MacArthur Foundation, [The big food redesign: Regenerating nature with the circular economy](#) (2021)

¹¹ [Reducing Norway's footprint - bringing our production and consumption within planetary boundaries. Executive summary](#) (WWF, 2022)

¹² [Strategický rámec rozvoje péče o zdraví v České republice do roku 2030](#) (Ministerstvo zdravotnictví České republiky, 2019)

¹³ [Public Health Report: Overweight and obesity in Norway](#) (NIPH, 2024)

¹⁴ [Science Norway: Most Norwegians are overweight or obese](#) (2022)

¹⁵ [What is really causing the obesity epidemic? A review of reviews in children and adults](#) (Ross, Flynn and Plate, 2015)

¹⁶ [Achieving a healthy, sustainable diet is possible without constant more](#), confirms a WWF report (2024)

and reducing foods high in fat, salt and sugar, benefiting both human health and the planet. Life Cycle Assessments (LCAs) show that ruminant products (those derived from grazing animals) have a larger environmental footprint compared to other livestock products, and that livestock products have a greater environmental impact than plant-based products. This holds true not only for greenhouse gas emissions but also for other environmental impacts such as land use, water scarcity, acidification, and eutrophication.¹⁷ Additionally, food distribution remains unequal, contributing to both malnutrition and obesity globally.¹⁸ It is important to recognise that food choices are not just personal preferences, but also influenced by availability and affordability. To improve both human health and the environment, we must rethink our relationship with food, how we plan meals and what obstacles prevent us from changing habits. The key lies in transitioning to sustainable, diverse diets that can reduce emissions, improve health and restore ecosystems.¹⁹

In addition to addressing the environmental and health impacts of the food chain, reducing food waste is a priority. In 2021, the EU produced 58.4 million tonnes of food waste, encompassing both edible and inedible components. This amounts to approximately 131 kilograms of food waste per person each year.²⁰ Nearly 10% of the food made available to EU consumers – whether through retail, food services or households – goes to waste. Meanwhile, in 2022, 738.9 million people experienced hunger globally, 2.4 billion faced moderate to severe food insecurity and over 3.1 billion individuals lacked access to healthy diets.²¹ In 2023, household waste alone made up 54% of total food waste in the EU. Overall, the consumption stage accounts for the highest proportion of food waste, representing 70% of the total.²² Food waste is just one aspect of a broader issue, as food loss also has significant environmental and social consequences. In 2021, it is estimated that 13% of all food globally – equivalent to 931 million tonnes or 120 kilograms per person – was lost during the pre-consumption and retail stages, occurring after harvest and before reaching store shelves.²³ Strategies to reduce food loss and waste include a variety of approaches, including changes in production practices, technological improvements in post-harvest handling, treatment, storage and distribution, as well as targeted interventions. Additionally, effective information dissemination and behavioural reminders can help optimise food consumption, minimise waste and promote circular economy practices.²⁴ According to the Food and Agriculture Organization of the United Nations (FAO), investing in the circular economy to reduce food loss and waste

¹⁷ Policy paper: Environmental impacts along food supply chains (OECD, 2022)

¹⁸ Key facts - Obesity and overweight (WHO, 2024)

¹⁹ The Plate of Change: WWF report on sustainable diets for Central Europe (WWF, 2024)

²⁰ Reducing food waste: how can science help? (European Commission, 2024)

²¹ Achieving SDG2 without breaching the 1.5C threshold: A Global Roadmap (FAO, 2023)

²² Reducing food waste: how can science help? (European Commission, 2024)

²³ Sustainable Development Goal 12: Responsible consumption and production (FAO, 2023)

²⁴ Achieving SDG2 without breaching the 1.5C threshold: A Global Roadmap (FAO, 2023)

contributes to reducing GHG emissions while generating returns for investors and benefits that outweigh the costs.²⁵

WWF Norway shows that in order for the Norwegian economy to be in line with planetary boundaries, and contribute its proportional share to the global objective, a reduction of two thirds in overall footprint of consumption and production is needed. That is why Norway targets have been set to decrease food waste by 30% by 2025 and 59% by 2030.²⁶ Achieving this target does not entail merely reducing consumption or compromising individual well-being. While individual efforts are essential, it is imperative that individuals and families are not expected to bear this burden in isolation. Success requires a systemic change.²⁷ Current initiatives include new economic incentives and government regulations focused on promoting circularity. Annually, approximately 450,000 tonnes of food is wasted in Norway, split between the food industry and consumers.²⁸ The "Negotiated Agreement on Food Waste Reduction" between the Norwegian government and the food industry aims to halve edible food waste by 2030.²⁹ While the agreement is entered into voluntarily, it is binding for the parties involved, requiring both the food industry and the government to take responsibility for waste reduction and to collaborate effectively.

Similarly, the Czech Republic is actively working to reduce food waste through its [Circular Czechia 2040 Action Plan](#). The Plan includes measures to promote sustainable management of biological resources, improve soil quality, enhance composting and anaerobic digestion, and support research and development in bio-based materials.³⁰ In 2019, nearly half of the total mixed municipal waste – about 2.7 million tonnes – was sent to landfills. Of this, it is estimated that around 40% (over 1 million tonnes per year) consists of non-separated bio-waste from households and food services. This estimate is based on more than 70 physical analyses conducted by INCIEN over the past five years.

It is essential to prioritise systemic changes in the food sector, while also supporting these efforts by encouraging positive shifts in individual behaviour. These efforts not only benefit the environment but also enhance our health and overall well-being. **By working together – governments, businesses and individuals – we can achieve significant progress in food security, combating climate change and preserving biodiversity.**

²⁵ The fifth observance of the International Day of Awareness of Food Loss and Waste highlighted the critical need for financing to bolster efforts to reduce food loss and waste, contribute to achieving climate goals and advancing the 2030 Agenda for Sustainable Development (FAO, 2024)

²⁶ Reducing Norway's footprint - bringing our production and consumption within planetary boundaries. Executive summary (WWF, 2022)

²⁷ Reducing Norway's footprint - bringing our production and consumption within planetary boundaries. Executive summary (WWF, 2022)

²⁸ Norway: reducing food waste in the whole value chain (European Commission, 2024)

²⁹ The Norwegian Government and the food industry have signed an agreement to reduce food waste in Norway by 50 percent by 2030 (Ministry of Climate and Environment, 2017)

³⁰ Akční plán Cirkulární Česko 2040 pro období 2022-2027 (Ministerstvo životního prostředí, 2022)

Mapping Stakeholders in the Czech Republic

The key stakeholders driving the transition to a circular food system in the Czech Republic include representatives from the public sector, private companies, non-governmental organisations, and academia. Each of these categories of actors contributes their specific expertise and engages in activities throughout the food value chain – ranging from regulatory bodies, production, through processing and manufacturing, to sales, consumption, disposal, and recycling. In the area of production, which encompasses agriculture, livestock farming and fisheries, key players include farmers, livestock breeders, fishers and input suppliers. Processing and manufacturing involve producers, raw material suppliers, engineers, technicians, quality control specialists, and logistics companies, focusing on activities such as cleaning, preservation, packaging, and quality control. The final segment of the chain involves sales, consumption, and waste management, where distributors, retailers, restaurants, public institutions, food banks, municipalities, composting facilities, and biogas plants play a critical role in promoting sustainability and circular practices in the food industry.

The **public sector** in the Czech Republic plays a critical role in establishing policy frameworks, creating legislation, and securing funding for initiatives focused on sustainability and the circular economy. The [Ministry of the Environment](#) (MŽP), the [Ministry of Agriculture](#) (MZe) and the [Ministry for Regional Development](#) (MMR) are key entities in this area. The MŽP is engaged in the protection of natural resources and the promotion of policies aimed at reducing the impact of human activity on the environment, including the prevention of food waste. The Ministry of Agriculture contributes to the development of strategies for sustainable agriculture and food production. Meanwhile, the MMR actively participates in the [National Public Procurement Strategy](#) (NSZV), which aims to transform the approach to public procurement by focusing on formal processes and strategic frameworks that emphasise maximising value for money. The MMR seeks to identify best practices for establishing minimum mandatory criteria for public procurement of sustainable food, with the goal of promoting healthy and sustainable diets, including eco-friendly products, in schools and public institutions.³¹

One of the activities undertaken by MZe is the regulation of non-profit organisations and food banks, among other initiatives. According to the [Food and Tobacco Products Act](#), operators of food businesses with a sales area exceeding 400 m² are mandated to

³¹ Vláda schválila Národní strategii veřejného zadávání v České republice pro období 2024–2028 (NSZV) (Ministerstvo pro místní rozvoj, 2024)

provide food that, while not compliant with specific food safety requirements, remains safe for consumption, at no cost, to non-profit organisations engaged in the collection, storage and distribution of food to public benefit legal entities that offer food assistance. This provision primarily concerns food banks and other non-profit organisations recognised as eligible recipients of donated food. MZe has consistently offered financial support for the activities of food banks and similar entities that facilitate food collection through [Grant Program 18: Support for the Activities of Food Banks and Other Humanitarian Organisations](#). In 2022, food banks successfully collected a total of 9,691 tons of food.³²

In September 2024, MMR in collaboration with [CzechTourism](#) and representatives from the gastronomy sector, published the results of an analysis indicating that Czech gastronomy has significant potential and is well-positioned to attract different types of travellers, both domestically and internationally. The development of gastronomic choice outside of Prague, along with a focus on authentic seasonal produce and regional ingredients, represents key pillars that could elevate the Czech Republic among leading culinary destinations. One of the key findings of the analysis is that the quality of restaurants in the Czech Republic is not yet evenly distributed across the regions. Certain areas, particularly the South Moravian, South Bohemian and Karlovy Vary regions, demonstrate considerable potential; however, there remains room for improvement. International examples illustrate that high-quality gastronomy can play a crucial role in establishing experiential and sustainable tourist destinations.³³

Innovation centres are one of the key players supporting innovation and sustainability at the city level, particularly in the topics of smart cities and food waste. These topics are reflected in various initiatives they undertake. For example, the [Prague Innovation Institute](#) and the [Circular Schools program](#) focus on education and awareness of circular principles in the fields of bio & gastro, cultivation and reuse. **MSIC** and other partners are involved in the [CirkArena project](#). This project represents an innovative step towards transforming the economy of the Moravian-Silesian Region, with its goals and research topics directly related to the objectives of the Circular Czechia 2040 strategy.

The **CirkArena** project will focus on complex waste management solutions and innovations in the Moravian-Silesian Region, including an emphasis on organic waste, which constitutes a significant portion of municipal waste. This region, which produces the second-highest amount of waste in the Czech Republic, faces inadequate processing of organic waste, which is primarily managed through composting, anaerobic digestion or landfill disposal. However, CirkArena will develop innovative approaches for utilising organic waste, including the production of biogas and the extraction of chemicals such as alcohols and organic acids that could replace fossil

³² Ministerstvo zemědělství: plýtvání potravinami

³³ Výsledek analýzy: Česká gastronomie je na vzestupu a připravená obstat v mezinárodní konkurenci (Ministerstvo pro místní rozvoj, 2024)

resources. From the perspective of circular economy principles, cascade recycling is also crucial, and the project intends to employ this method for the efficient processing of organic waste. This approach allows for the recovery of as many valuable substances and raw materials as possible from waste materials, which can then be utilised across various sectors, from the food industry to the chemical industry. Furthermore, the project will help reduce food packaging waste while enhancing overall waste management practices. Beyond organic waste, the project also targets industrial and construction waste, which are specific to the region. Thus, the CirkArena project will not only facilitate the transformation of the region but, due to its innovative approach and alignment with European climate neutrality goals for 2050, may serve as a model for other regions in the Czech Republic and beyond.

Recognising the importance of efficient and circular food waste management, **municipalities** are increasingly prioritising the search for effective solutions. For instance, the **City of Prague** (MHMP) has launched a pilot project for the collection of kitchen scraps using shared containers. These containers for kitchen waste are placed at 58 collection points alongside other separated waste in selected city districts.³⁴

Businesses and other organisations are driving innovation in circular economy, particularly in the food system. Companies such as **EFG, Zátíší Group, JRK, ReKáva, Carboneg, Delirest** and **Primirest, Perfect Canteen, Hilton** and online supermarkets **Rohlík** and **Košík** are examples of businesses that focus on reducing food waste and promoting sustainable practices. **Nestlé**, as a global player, has a significant impact on innovation in production processes and waste reduction not only in the Czech Republic but also globally. Projects such as **Nesnězeno, Too Good To Go** and **Kokoza** focus on combating food waste and supporting community gardens, raising awareness of circular solutions at a local level.³⁵

In recent years, food retail chains in the Czech Republic have increasingly focused on preventing food waste. A study conducted by the Zachraň Jídlo initiative examined the largest retail chains, such as **Albert, Lidl, Penny, Kaufland** and **Tesco**, with the aim of comparing the volume of available food to what was sold, donated or wasted.³⁶ While Tesco provided the most comprehensive data, it was not possible to conclusively determine which chain was the most successful in minimising waste. However, the findings reveal that all chains have implemented measures to reduce food waste, including lowering order volumes, improving demand forecasting and more efficiently utilising surplus food. Tesco stands out for its efforts and pressure on suppliers to report their food waste. In October 2024, Ekolist³⁷ reported that Tesco was throwing away 0.5% of its food offer, a significant improvement on the 2016/2017 financial year

³⁴ Pilotní projekt sběru kuchyňských zbytků pomocí sdílených nádob (město Praha)

³⁵ “Too Good To Go” App Expands in Czechia: Tackling Food Waste and Supporting Sustainability (2024)

³⁶ Eliminace potravinového odpadu v obchodních řetězcích: Co dělají čeští supermarketoví giganti pro udržitelnost? (Zachraň jídlo, 2023)

³⁷ Anketa: Z celkového objemu supermarketů vyhodí méně než procento potravin (Ekolist, 2024)

when the company began tracking and reporting waste. According to spokeswoman Iva Pavlouska, this is a drop of 80% since then. Last year, the Albert chain wasted 0.06% of its total food volume. Compared to 2016, which serves as a baseline, the proportion of food waste has fallen by 61%. The company has set a target to reduce food waste by 65% by the end of next year. Innovative approaches include discounting food nearing its expiration date and selling aesthetically imperfect products at reduced prices. Kaufland and Lidl focus on educating customers and raising awareness about food waste, with initiatives like [food boxes](#) offering discounted goods that are still of high quality despite not meeting aesthetic standards. Lidl pioneered this practice, followed by chains like [Globus](#), Albert, and Penny Market. A clear opportunity for some of these chains lies in transparent communication of their sustainability efforts to consumers. In this regard, Kaufland (e.g., its ["Don't Feed the Bin" campaign](#)) and Lidl, which leverages social media, are leading the way.³⁸ Czech supermarkets are not required to report waste data, making it challenging to obtain relevant information.

A specific sector within the food retail space is [online supermarkets](#), with Košík and Rohlík being key players in the Czech market. In terms of sustainability and the risk of food waste, the differences between physical and online supermarkets can be divided into several categories:

1. **Supply and storage:** Online supermarkets typically operate on the basis of centralised warehouses, from which goods are delivered directly to consumers. This model enables precise demand data to forecast customer needs, thereby optimising inventory levels across the entire supermarket. As a result, food items with shorter shelf lives are kept to a minimum, significantly reducing the risk of spoilage. In contrast, physical retail stores maintain decentralised inventories, which involve additional transportation phases between harvest of the given food and delivery of the food item to the customer. This decentralised approach complicates inventory management and increases the risk of food waste. A particular challenge arises in the produce section, where customers cannot select individual items. There is substantial pressure to maintain the aesthetic appeal of fruits and vegetables, which may lead to the disposal of unsold items to uphold visual standards and ensure customer satisfaction.
2. **Transportation** is managed directly by the retailer, whereas customers at physical stores are responsible for arranging their own transportation to buy and collect groceries. Consequently, it is difficult to determine which type of retail establishment has a greater impact on greenhouse gas emissions. However, it can be assumed that online supermarkets will strive to optimise their transportation logistics to be as environmentally friendly as possible. Conversely, the responsibility for ensuring food quality during transportation

³⁸ Eliminace potravinového odpadu v obchodních řetězcích: Co dělají čeští supermarketoví giganti pro udržitelnost? (Zachraň jídlo, 2023)

falls on the supermarket, which may lead to an increased risk of food waste for items that have already been purchased, particularly in the event of transportation delays or technical difficulties.

3. **Waste management:** Online supermarkets can more effectively reduce food waste by redistributing items approaching their expiration date or providing discounts to encourage sales and minimise waste. Some of these platforms collaborate with charitable organisations to donate unsold food items. While physical stores can implement similar initiatives, the logistics of monitoring and managing the sale of products nearing their expiration date can be more complex at each individual location. A significant challenge arises from supermarkets' efforts to provide a wide variety of products, enabling customers to choose from different options and brands, which may inadvertently contribute to increased waste.

Additionally, online supermarkets generate more packaging waste, primarily paper, with reusable bags as an alternative. There is room for improvement in zero-waste online shopping, such as Rohlík's "[Otoč Obal](#)" initiative (in English "Turn the Packaging" initiative) or Košík's "[Bez obalu](#)" section (in English "Without Packaging" section), though these options remain limited. For these reasons, online supermarkets have a greater potential to prevent food waste if they responsibly manage their resources and optimise the delivery process. Collaborations with non-profits and food banks provide added value in this regard.

Digital tools are also a promising way to improve food management and reduce waste. A good example is the [mobile app Nesnězeno](#), which connects consumers with businesses and stores, offering discounted meals and food packages. The app guarantees quality and discounts ranging from 50-70%, helping to prevent the disposal of ready-made meals at the end of the sales day. Nesnězeno began as a Czech student startup and merged with the Hungarian platform Munch in 2022.³⁹

The online farmers' market [Scuk.cz](#) allows consumers to purchase food directly from farmers. Orders are placed online in cycles of several days, after which the order is passed to the farmer, and customers pick up their orders at one of the many collection points across the Czech Republic.

Non-profit organisations, such as [Zachraň jídlo](#) (in English "Save Food", [Česká federace potravinových bank](#) (in English "Czech Federation of Food Banks") and [WWF Czechia](#) play a pivotal role in research, education, advocacy and awareness campaigns. Additionally, Zachraň Jídlo operates the "[Zachraň Oběd](#)" project (in English "Save Lunch" project), which serves as an intermediary to facilitate the donation of prepared meals.⁴⁰ These organisations not only raise public awareness about the issue of food waste but also collaborate with governmental institutions and

³⁹ Přidej se k boji proti plýtvání potravinami a dopřej si super dobroty (Nesnězeno)

⁴⁰ Projekt organizace Zachraň jídlo: Zachraň oběd

businesses to develop strategies that promote sustainable practices within the food sector. The [Food Bank Prague](#), in addition to redistributing and preserving food, also engages in educational initiatives.⁴¹ The [Association of School Canteen Operators](#) focuses on implementing practical solutions at the level of educational institutions and school canteens, thereby contributing to the cultivation of a new generation that recognizes the importance of sustainable food management.

The collaboration among organisations such as Zachraň Jídlo, Mendel University in Brno, the research organisation INESAN and GREEN Solution, under the [Prague Food Waste project](#), focuses on measuring the volume of food waste in Prague and developing recommendations for public administration on how to prevent it. One of the surveys conducted by the non-profit organisation Zachraň Jídlo is titled "[Eliminating Food Waste in Retail Chains](#)," which involves inquiries directed at various retail chains regarding their food waste practices.⁴² Noteworthy findings from this survey include discontinuation of 1+1 promotional events at Tesco stores. Such promotions can encourage consumers to purchase larger quantities than they can consume before spoilage. Another sustainability measure that emerged from the responses involves utilising food that does not meet aesthetic standards but remains of high quality. For example, Tesco, in collaboration with [La Lorraine](#) bakery, repurposes aesthetically unpleasing kaiser rolls into so-called pizza buns, which are then sold instead of being discarded. Similarly, Albert has begun using unattractive bananas to bake banana bread directly in one of its stores.

A recent survey conducted by the Zachraň Jídlo initiative among Czech farmers, titled "[Barriers and Opportunities for Utilising 'Imperfect' Agricultural Produce](#)," reveals that while consumer education is essential, an excessive emphasis on aesthetic standards in retail results in significant waste on the part of farmers.⁴³ It is important for customers to have the opportunity to purchase imperfect vegetables regularly; this shift should be accompanied by an awareness campaign that articulates the value of these products. There is a pressing need to organise educational campaigns against food waste aimed at final consumers, with nationwide reach and supported by diverse partners, including government agencies, businesses, academic institutions and non-profit organisations. Retailers themselves occupy a unique position, as they are in direct contact with final consumers, enabling them to explain the rationale behind selling "imperfect" fruits and vegetables, as well as the broader implications of food waste.⁴⁴

Regarding kitchen waste as the final stage of the food chain, [INCIEN](#) has led a Working Group on Kitchen Waste under the Czech Circular Hotspot, which examined the phases of sorting and processing from both citizens' and the waste management

⁴¹ Potravinová banka Praha

⁴² Eliminace potravinového odpadu v obchodních řetězcích: Co dělají čeští supermarketoví giganti pro udržitelnost? (Zachraň jídlo, 2023)

⁴³ Dokument, který shrnuje naše poznatky o „křivé“ zelenině a ovoci (Zachraň jídlo, 2017)

⁴⁴ Překážky a příležitosti pro využití "křivé" zemědělské produkce (Zachraň jídlo, 2017)

system's perspectives. According to INCIEN's waste analysis data, biodegradable kitchen waste makes up 30-45% of the weight of the contents of black mixed municipal waste bins. For this reason, the working group sought to identify the main barriers to sorting and processing kitchen waste. These include low awareness of the negative environmental impact of unsorted kitchen waste and the difficulty of sorting waste – many citizens find sorting kitchen bio-waste to be inconvenient and complicated, and they are not sufficiently financially incentivised to do so. Systemic barriers in kitchen waste processing include:

- the lack of a unified system for sorting and collecting kitchen waste, leading to significant differences in approaches across municipalities in the Czech Republic;
- insufficient waste management infrastructure;
- restrictive legislation regarding waste management fees, which does not incentivise citizen participation;
- the high financial cost of establishing a unified system, with initial expenses including containers, collection vehicles and monitoring systems.

Academic institutions and research organisations play a pivotal role in the circular food system in the Czech Republic, particularly in research and innovation. Notable institutions, such as [Mendel University](#) (Mendelu), [Institute of Sociology of the Czech Academy of Sciences](#), and the [Czech University of Life Sciences](#) in Prague (CZU), are at the forefront of research in sustainable agriculture, food technologies and circular economy practices. The Institute of Sociology of the Czech Academy of Sciences conducts public opinion research and regularly organises conferences. Recently, one of their conferences entitled "[The Future of Food Consumption: Reducing Waste and Promoting Self-Sufficiency as Pathways to More Sustainable Food Management](#)" addressed current challenges and strategies related to sustainable food practices.⁴⁵ Additionally, the [Czech Technical University](#) (ČVUT) and the [University of Economics](#) (VŠE), contribute to the development of technical and economic solutions that aid both businesses and the public sector in integrating circular principles into practice. The [Faculty of Social Sciences at Charles University](#) (FSV UK) emphasises the social and political dimensions of this transition, examining consumer attitudes and the regulatory environment while contributing to research on behaviour change and social innovation. Furthermore, [INESAN](#) is actively involved in various projects aimed at reducing food waste, including initiatives such as [Prague Food Waste](#) and Generation Z Waste.

Generation Z, defined as individuals born between 1995 and 2010, constitutes a significant portion of the current student population and exhibits a higher rate of food waste compared to previous generations. Estimates indicate that this demographic wastes approximately 43.4 grams of food per person per day. Notably, young

⁴⁵ Výsledky výzkumu zaměřeného na plýtvání potravinami, nákupní a spotřební chování českých domácností (Akademie věd České republiky, 2024)

individuals living with their parents waste nearly half as much. These findings emerge from the first year of a three-year research project titled "[Wasteful Generation](#)," led by a research team from Mendel University in collaboration with various partners.⁴⁶ The results provide critical insights into how food waste behaviour changes as young people transition to independent living. As part of the project, [GREEN Solution](#) conducted analyses of mixed municipal waste, focusing on the biological components at student dormitories, with samples collected during three different seasons - spring, autumn, and winter. The highest proportion of food waste, specifically 20.7% of the total mixed waste, was observed in autumn, with the most frequently discarded items being fruits, vegetables, and bread. The research also revealed that students living independently waste more food than those residing with their parents or in other types of households. To support efforts in reducing food waste, the [campaign "Don't Be Trash"](#) was launched on social media in September 2024, accompanied by educational lectures at universities throughout the Czech Republic. The research will continue by measuring waste quantities in dormitories and monitoring whether these interventions lead to behavioural changes among students towards more sustainable food management practices. In the final phase of the project, these interventions will be concluded to assess their long-term effectiveness.

⁴⁶ Jak je na tom generace Z s plýtváním potravinami? (Třetí ruka, 2024)

Stakeholders and Organisations identified by CIVAC

Similar to their Czech counterparts, each of the initiatives and stakeholders mentioned in this section brings their unique expertise and contributes to activities throughout the entire food value chain. It is important to emphasise that these stakeholders were specifically highlighted by the project partner CIVAC, whose activities primarily focus on Central Norway. We acknowledge that numerous other organisations and stakeholders are engaged in the circular food value chain; however, these selected actors were chosen by our partner as examples of best practices and sources of inspiration for the Czech context under comparable conditions.

The **public sector** in Norway plays a pivotal role in implementing systematic circular solutions within the food value chain, much like in the Czech Republic. By engaging a diverse range of businesses, organisations and citizens in more sustainable resource management practices related to food, it significantly contributes to the achievement of circular economy goals. The public sector is essential in establishing political frameworks, formulating legislation, and securing funding for sustainability initiatives. Key actors in this domain include the [Ministry of Climate and Environment](#) (in Norwegian, Klima- og miljødepartementet), the [Ministry of Agriculture and Food](#) (in Norwegian, Landbruks- og matdepartementet), and the [Ministry of Local Government and Regional Development](#) (in Norwegian, Kommunal- og distriktsdepartementet).

The Ministry of Climate and Environment focuses on the protection of natural resources, reduction of emissions and implementation of environmental policies.⁴⁷ Norway's food security strategy aims to enhance the resilience and sustainability of the country's food system. This plan underscores the importance of ensuring sufficient and safe access to food for all residents, which includes not only improving production methods and protecting resources but also considering environmental, social and economic sustainability factors. A critical objective of the strategy is climate adaptation while ensuring the high quality of food, thereby strengthening both domestic production and imports. The strategy relies on collaboration among governmental institutions, the private sector and the scientific community to innovate and improve the efficiency of the food system, supporting economic stability, public

⁴⁷ The Ministry of Climate and Environment has a particular responsibility for carrying out the environmental policies of the Government

health and environmental protection.⁴⁸ In addition to domestic initiatives, Norway is significantly engaged at the international level.⁴⁹ The Norwegian government has extended its initiative to protect tropical rainforests until 2035, representing a key step in combating global deforestation and preserving biodiversity worldwide. This initiative also contributes to the reduction of greenhouse gas emissions and the promotion of sustainable development in tropical regions, which positively impacts global food security and sustainable agriculture.

The Ministry of Agriculture and Food plays a key role in promoting sustainable agriculture, rural development and food security. A significant aspect of its initiatives is the [Svalbard Global Seed Vault](#), a unique facility located on Svalbard that serves as an international seed bank. As of May 2025, the largest repository of agricultural diversity in the world has increased its collection to 1.29 million seed samples.⁵⁰ It preserves global seed stocks from a variety of crops, which is essential for maintaining biodiversity and ensuring long-term food security in the face of crises such as climate change and natural disasters. Additionally, the Ministry focuses on supporting sustainable agricultural practices, organic food production and reducing food waste, thereby contributing to the circular economy within the agricultural sector.

Key objectives of the Ministry of Local Government and Regional Development are fostering balanced regional development, strengthening local governance and ensuring equal opportunities for residents across all regions of Norway. The Ministry supports infrastructure projects and rural development initiatives, with a focus on promoting sustainable growth in less populated areas. Additionally, it places particular emphasis on incorporating the perspectives of Indigenous Sámi populations into regional and local policies.⁵¹

In addition to ministries, county authorities and local governments are also important actors in the food chain in Norway, with a total of 11 counties and 357 municipalities.⁵² These local governments actively participate in initiatives related to the production, processing and management of food-related waste. [CIVAC](#) collaborates through its cluster with 26 businesses and institutions in the Trøndelag, Møre og Romsdal, Nordland, and Innlandet regions, which are located in central Norway and are known for their food industry activities. CIVAC oversees the cooperation among 15 inter-municipal companies that collectively serve a population of approximately 1.1 million residents and manage around 550,000 tons of waste annually. Within the

⁴⁸ Norway's strategy for promoting food security in development policy (Ministry of Foreign Affairs, 2022)

⁴⁹ The Government Extends Tropical Forest Initiative to 2035. Preserving the rainforests is the most impactful climate and nature action Norway supports internationally (Ministry of Climate and Environment, 2024)

⁵⁰ Svalbard Global Seed Vault welcomes shipments from four new depositors. The world's largest repository of crop diversity raises the number of the samples in its care to 1.29 million (Ministry of Agriculture and Food, 2024)

⁵¹ The Government believes that public health policy has paid too little attention to factors that affect public health and living conditions in the Sámi population (Ministry of Local Government and Regional Development, 2024)

⁵² List of municipalities of Norway

CIVAC cluster, [ReMidt](#) and [TRV](#) are key partners that provide services tailored to both urban and rural systems.

The [Municipality of Oslo](#) is currently actively engaged in various initiatives aimed at promoting food sustainability. The city is also investing in educational programmes and campaigns, primarily targeting elementary schools, with plans to extend these efforts to preschools upon the completion of the current project. These programmes focus on reducing food waste, promoting healthy eating, and encouraging circular principles within the food sector. Another significant development is the expansion of urban gardening and community gardens, which foster local food production and contribute to environmental sustainability.

Businesses and other organisations play a vital role in the development and innovation of the food sector and circular economy. One significant association is [Samfunnbedriftene](#), which unites municipalities and their companies focused on public services. As the largest employer and interest organisation for municipalities in Norway, Samfunnbedriftene encompasses approximately 600 members from various sectors, including waste management, water management and sewage, economics and industry, as well as nature and parks. The organisation also offers educational programmes aimed at enhancing waste management efficiency and recycling, thereby contributing to the sustainability of urban services. Furthermore, it is involved in the implementation of innovative technologies to optimise waste management and collaborates with municipalities to integrate circular economy strategies.

Another notable organisation is [SjømatNorge](#), which represents the Norwegian seafood and fishing sector. As the national association for the fishing and aquaculture industries, it is the largest organisation in this field in Norway, covering the entire value chain from fjord to table. SjømatNorge actively contributes to improving ecological standards in fish farming, including the implementation of sustainable feed mixtures and innovative technologies that help minimise waste. [SirkNorge](#) is a Norwegian organisation focused on recycling and circular economy, bringing together the Norwegian waste and recycling industry along with its relevant stakeholders. It represents more than 200 public and private companies engaged in waste management, recycling and recycled materials, either directly or as consultants, advisors or suppliers. [Norsk Bonde- og Småbrukarlag](#) (in English “Norwegian Farmers’ Union”) operates in agricultural policy and focuses on small-scale farmers. Its mission is to ensure that small farmers have equitable access to resources and opportunities to transition to more sustainable agricultural practices without jeopardising their income. [Norges Bygdekvinnelag](#) (in English “Norwegian Rural Women’s Association”) is dedicated to empowering rural women. This organisation emphasises education about Norwegian food traditions and cultural heritage while working to improve living conditions and communities in rural areas. [Norges Bondelag](#) (in English “Norwegian Farmers’ Association”) seeks to support the Norwegian agricultural community. It actively advocates for sustainable agriculture

through the [Klimasmart Landbruk](#) initiative, which assists farmers in implementing measures to reduce greenhouse gas emissions. Their comprehensive approach to the role of farmers enables them to influence changes across various aspects of the food system.

Regarding enterprises, the [Norwegian Centre for Circular Economy](#) (NCEE) facilitates the transition to a circular economy by promoting innovation, collaboration and research focused on sustainable practices and resource efficiency. [Ecopro](#), a biogas facility located in Verdal, processes a significant portion of food waste from central Norway into biogas and fertilisers. The biogas produced is sold to [Ecogas](#), while local farmers utilise the resulting fertiliser. This process enhances sustainability and promotes effective resource utilisation in the region, thereby supporting the circular economy and waste reduction. [Invertapro](#) specialises in the processing of organic waste, transforming it into high-quality fertilisers. It recycles food scraps and employs natural processes to produce nutrients for agriculture.

Another active organisation in Norway is [Too Good To Go](#), a certified B Corporation that aims to inspire individuals and businesses to combat food waste. Among sustainable initiatives undertaken by supermarkets is [Meny](#), which collaborates with [Link Retail](#) to implement digital solutions designed to reduce bread waste. Through this technology, Meny has successfully saved over one million pieces of bread within ten months, translating to an annual savings of nearly 2 million euros and a reduction of 840 tons of CO2 emissions. The solution incorporates precise ordering routines and enhanced production planning.⁵³ Another supermarket striving for greater sustainability is [Oda](#), which introduced a "climate receipt" in January 2021. This receipt displays the environmental impact of customers' orders.⁵⁴ This initiative aims to raise awareness about the environmental implications of shopping and to help customers in making more environmentally responsible choices. In its [sustainability report for 2022](#), Oda highlighted several key initiatives aimed at environmental protection. Noteworthy achievements include the saving of approximately 3 million hours for customers who would otherwise spend time in physical stores, as well as a 25% increase in employees covered by collective agreements. Oda has experienced a significant surge in sales of vegan and plant-based products, with increases of 64% and 300% since 2019, respectively. Furthermore, Oda has made substantial investments in diversity and inclusion, leading to a 21% increase in the representation of women in management positions.

Non-profit organisations. Among the key actors identified by CIVAC is [Matsentralen Norge](#), which focuses on redistributing food to those in need through its network of food banks across the country, thereby combating food waste. In 2022 alone, Matsentralen Norge rescued over 5,508 tons of food and supported more than 500 organisations, thus not only reducing food waste but also assisting vulnerable

⁵³ One million breads saved in 10 months, at the Norwegian grocery chain MENY

⁵⁴ Supermarket Oda: Sustainability Report 2022

populations. [WWF Norway](#) is primarily known for its initiatives in nature conservation and biodiversity. While its current focus does not specifically address food issues, the organisation is engaged in broader ecological matters, such as protecting natural habitats and endangered species, thereby contributing to sustainability and ecosystem balance. [Matvett](#) is dedicated to minimising food waste and promoting sustainable eating practices. This organisation concentrates on preventing and reducing food waste within Norway's food and catering industries. It collaborates with governmental bodies and research institutions to support stakeholders in the sector, enabling them to adopt more efficient food waste management practices. [Stiftelsen Norsk Mat](#) (in English “Norwegian Food Foundation”) is an independent foundation aimed at enhancing the diversity, quality and value of Norwegian food production. It administers three certification schemes that provide consumers with assurance and information regarding the origin and quality of food: Enjoy Norway, Protected Designations and Specialty.

Academic institutions and research organisations. Among the prominent research institutions is [NIBIO](#) (in English “Norwegian Institute of Bioeconomy Research”), which specialises in the sustainable utilisation of natural resources and the promotion of sustainable agricultural practices. [Nofima](#) is another key institution, concentrating on applied research in the fields of food and fisheries, thereby contributing significantly to innovation within the food sector. Additionally, [NORSUS](#) is an organisation dedicated to sustainability and the circular economy, while the [Green Competence Center Mære-Skjetlein](#) supports innovations in agriculture and aquaculture. A notable player in this landscape is [SINTEF](#), one of the largest research institutes in Europe, which engages in a diverse array of fields, including food technology and environmental protection. In collaboration with the Norwegian supermarket chain [REMA 1000](#), SINTEF has developed one of the most energy-efficient supermarkets in Norway, located in Kroppanmarka, Trondheim. Opened in 2013, this store consumes 30% less energy compared to similar establishments, exemplifying the potential for sustainability in retail operations.

Universities, such as [Nord Universitet, NTNU](#) (in English “Norwegian University of Science and Technology”), and [NMBU](#) (in English “Norwegian University of Life Sciences”), actively engage in research and education related to circular economy and sustainability. These universities not only prepare future professionals but also contribute to research projects aimed at developing new technologies and methods for the efficient utilisation of resources within the food system. By collaborating, these institutions establish a robust platform for fostering innovations essential for transforming the food sector towards greater sustainability and efficiency.

Project Milestones: Workshop, Trip to Oslo and Final Event

Czech Stakeholders Workshop: Mapping Barriers and Opportunities

The workshop organised by INCIEN as part of the Circular Food Futures project brought together representatives from various sectors, including governmental institutions, businesses and non-profit organisations involved in the food value chain. During the workshop, we focused on key aspects of the food value chain, analysing it from the initial stages of food production through processing, distribution, retail and consumption, all the way to its final phases, such as recycling and waste management. Participants engaged in discussions regarding the challenges and opportunities present at each stage of the value chain.

Key Barriers Identified by Participants

Key obstacles include a lack of government support for environmentally friendly solutions, which often prioritise economic aspects. Support for sustainable agriculture is constrained by low motivation among farmers, inadequate subsidy policies and pressure to maintain low prices. Furthermore, there is a notable absence of standards for circular production and sustainable packaging. The fragmentation of the food value chain among various stakeholders, coupled with the lack of a legislative framework involving the Ministry of the Environment, the Ministry of Agriculture, farmers and processors, hinders collaboration and coordination of activities. Additionally, it is important to highlight that consumer standards, aesthetic pressures and industrial agriculture practices that degrade soil contribute to increased food waste. Excessive livestock production and the use of leased land further intensify the strain on natural resources. Public awareness regarding the significance of soil conservation and the importance of consuming local foods is insufficient and there is also a lack of policies promoting healthy nutrition. Other challenges include low demand for organic products, inadequate infrastructure for organic waste management and inconsistent waste disposal systems, along with ineffective monitoring of food waste.

Recommended Solutions

Workshop participants proposed several solutions for integrating circularity principles into the food value chain in the Czech Republic. A key measure involves resource conservation and waste prevention, supported by awareness campaigns and the incorporation of circularity concepts into educational programs. State support for ecological solutions through legislation and policy is also crucial. Additionally, it is essential to establish a framework that enhances connectivity among food value chain stakeholders. To reduce food waste, participants suggested relaxing aesthetic standards and engaging major purchasers in the process. They also recommended promoting the use of organic fertilisers, increasing plant-based diets and raising awareness about overall lower and sustainable meat consumption. Regarding waste management, the need for a unified system for processing organic waste and enhancing public awareness was emphasised.

Trip to Oslo: Learning from Norwegian Stakeholders

Several key initiatives in Oslo focus on circular food systems and urban sustainability, offering valuable insights that may inform similar efforts in the Czech Republic.

Linderud: This community-supported agriculture (CSA) initiative engages local residents in urban farming and gardening. Linderud serves as a community garden that hosts social activities and cultivates over 40 varieties of fruits and vegetables through a network of local entrepreneurs and farmers. The concept of "City Mothers" enables women in the area to use farm spaces for gardening, promoting social integration. This initiative exemplifies how urban agriculture can serve as a social tool for community development, despite facing challenges such as strict composting regulations and reliance on external funding.

Losaeater: This urban art and agricultural project aims to reconnect people with nature and sustainable practices within a concrete urban environment. Initiated by city developers and further developed through the artistic group [FutureFarmers](#), Losaeater promotes cultural and biological diversity by preserving traditional seed varieties and offering workshops on sustainable food production. This model highlights the potential for integrating community aspects and sustainable agriculture into urban settings.

FUSILLI Project: This four-year EU initiative aims to transform food systems in 12 European cities, including Oslo. In Oslo, the project focuses on educating public kitchen staff and improving public procurement for sustainable dining. The goal is to create a "living lab" for healthy and sustainable food systems.

U.reist: Utilising hydroponic systems for food production, U.reist minimises transportation by selling products directly to restaurants and cafés within the same

building or vicinity and, at the same time, offers a green space to the surrounding people. The initiative also processes food scraps to prevent spoilage, demonstrating effective use of urban spaces for food production.

Geitmyra: This educational centre targets children from infancy to 18 years old, focusing on practical learning related to food cultivation, harvesting and preparation. Geitmyra emphasises healthy eating, food waste prevention and enhancing food literacy, which could inform similar educational programs in the Czech Republic. The location includes a city farm, composting facility, bee hive as well as educational spaces for children.

Matsentralen Norge: This network connects surplus food from the food industry with non-profit organisations aiding those in need. Matsentralen redistributes approximately 5 tons of edible food every ten minutes, significantly contributing to social and environmental sustainability. With a minimal percentage of food being discarded, Matsentralen not only provides nutritionally balanced meals but also educates the public about food waste. Recent efforts include a more selective approach to food recovery, prioritising vegetables and bread over processed items, supported by a coordinator assessing environmental impacts.

Based on these visits, we can identify several inspirations for the Czech Republic and use matchmaking with stakeholders in the Czech context.

Final Event: Inspiration for Czech and Norwegian Stakeholders

The final event brought together representatives of the Czech and Norwegian food sectors in both online and offline settings, providing a platform for discussion, questions, and the exchange of new ideas. Networking further facilitated connections between initiatives and participants with aligned goals. Thus, the conference was essential for concluding the project and presenting its outcomes to the sector-specific community.

Limitations

The thematic complexity of the food value chain constrained our ability to cover the entire spectrum of issues in both the Czech Republic and Norway within the given timeframe. For instance, civil movements are not included in this project.

Our primary objective in this initial project was to provide an overview of the food value chain landscape in each country and to gather foundational data regarding the current state to better understand the area INCIEN is to focus on in the future. Due to time limitations, we concentrated on projects in the capitals, such as Prague and Oslo, as well as in the Trondheim region of central Norway, where our Norwegian partner is actively involved. We recognise the opportunity to broaden this scope in the future to include perspectives from initiatives outside major cities. These factors are taken into account in our interpretation of findings and conclusions.

Conclusion

Based on our findings from the analysis of the food value chain in Norway and the Czech Republic, and the three key outputs of the Circular Food Futures project, we have identified several important insights that can contribute to more circular practices in the food sector. These insights also facilitate the sharing of recommendations between Norwegian and Czech stakeholders. The most critical conclusion of the project is that prevention is fundamental – if we can reduce the demand for a broad range of food products, the supply will decrease accordingly, thus reducing the overproduction of certain commodities. Lifestyle changes and shifts in consumer behaviour are essential, with a key focus on the start of the food chain to prevent solutions that fail to address the entire system.

Collaboration among various stakeholders and initiatives is also crucial for success. It is necessary to involve diverse fields, institutions, organisations, and individuals in this effort. The need for collaboration and the development of a unified, long-term sustainable strategy was emphasised, focusing on revised food labelling, limiting promotional activities, adopting more flexible food aesthetic standards, and implementing standardised waste management systems that integrate circular approaches. Among the recommendations from Norwegian partners, measures such as limiting promotional activities in retail, revising food labelling and engaging citizens in monitoring food waste stand out. There is also an emphasis on systematic and repeated data measurement, which allows for effective tracking of the impact of implemented measures and long-term strategies.

From the perspective of a non-governmental organisation focused on circularity, we recognise the need to participate in working groups and initiatives oriented toward circular food systems at the national level. Collaborating with key Czech partners such as WWF Czech Republic, Zachraň Jídlo and others already engaged in relevant projects and campaigns offers INCIEN opportunities to continue to further develop the topic of food and the circular economy. **We see potential in deepening Czech-Norwegian cooperation to mutually draw inspiration beyond the findings of this project.**

List of Abbreviations

INCIEN	Institute of Circular Economy
CIVAC	Circular Values Cluster
EC	European Commission
EU	European Union
WWF	World Wildlife Fund
NIHP	National Institute of Health and Public Health
BMI	Body mass index
LCAs	Life Cycle Assessments
FAO	Food and Agriculture Organization of the United Nations
GHG emission	Greenhouse gas emissions
MŽP	Ministry of the Environment (Ministerstvo životního prostředí České republiky)
MZe	Ministry of Agriculture (Ministerstvo zemědělství České republiky)
MMR	Ministry for Regional Development (Ministerstvo pro místní rozvoj České republiky)
NSZV	National Public Procurement Strategy (Národní strategie veřejného zadávání)
MSIC	Moravskoslezské inovační centrum
MHMP	City Hall of the Capital City of Prague (Magistrát hlavního města Prahy)
EFG	Energy Financial Group
Mendelu	Mendel University (Mendelova univerzita v Brně)
ČZU	Czech University of Life Sciences (Česká zemědělská univerzita v Praze)
ČVUT	Czech Technical University (České vysoké učení technické v Praze)
VŠE	University of Economics (Vysoká škola ekonomická v Praze)
FSV UK	Faculty of Social Sciences at Charles University (Fakulta sociálních věd Univerzity Karlovy)
NCEE	Norwegian Centre for Circular Economy
NIBIO	Norwegian Institute of Bioeconomy
NORSUS	Norwegian Institute for Sustainability Research
NTNU	Norwegian University of Science and Technology
NMBU	Norwegian University of Life Sciences
CSA	community-supported agriculture

