

Food Waste in the Hospitality and Hotel Industry

Nikola Májková

Mendel University in Brno

e-mail: xmajkov1@mendelu.cz

Marie Večeřová

Mendel University in Brno

e-mail: xvecero2@mendelu.cz

Kateřina Provazník Ryglová

Mendel University in Brno

e-mail: katerina.ryglova@mendelu.cz

ORCID: [0000-0001-8511-5437](https://orcid.org/0000-0001-8511-5437)

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Abstract

This study investigated the issue of food waste in the hospitality sector, with a particular focus on hotels and guesthouses. Its aim was to identify key drivers of food waste generation, evaluate current mitigation strategies, and propose actionable recommendations to support more sustainable food management. A mixed-method approach was employed: first, qualitative interviews with hospitality managers provided in-depth insights into internal practices, followed by a structured questionnaire survey conducted among members of the professional body of hotels and restaurants domain. The findings show that while most establishments reported low levels of food waste (below 10%), systematic monitoring was rare. Buffet-style service emerged as the primary contributor to waste, largely due to guest behaviour. Hospitality professionals highlighted the potential of engaging guests through educational messaging, portion control, and improved planning. A majority of the respondents expressed readiness to adopt new strategies if proven effective. The research also pointed to the importance of training staff and optimising operations to reduce waste. This study explored a research gap with regionally grounded evidence, offering a novel contribution by combining empirical data with

practice-oriented solutions applicable to responsible food management in the tourism and hospitality industry.

Aim: These authors aimed to identify key drivers of food waste and evaluate existing mitigation strategies in the hospitality sector. It also contributes to broader discussions on sustainability and social responsibility in tourism by offering practical recommendations for more efficient food management.

Methodology: To achieve the stated objectives, a combination of qualitative and quantitative methods was employed. The respondents were selected from the database of the professional association AHR ČR (Association of Hotels and Restaurants of the Czech Republic), with the main selection criterion being the provision of any form of catering service. The research was geographically limited to South Moravia, which is the second most visited region in Czechia after the capital city of Prague. First, in-depth interviews were conducted with representatives of hotels and guesthouses. The aim was to explore existing food waste management practices, the extent to which data on food waste are analysed, and the barriers that limit further development in this area. The interviews were carried out in person, in Czech, during January 2025. Based on the findings from the qualitative phase, a questionnaire was developed using Google Forms. The survey was distributed to 240 hotels and guesthouses in South Moravia, selected from the AHR ČR database. The main aim was to assess awareness of food waste, the extent and types of waste generated, current monitoring practices, and perceived opportunities for reduction. The questionnaire included various question formats: single and multiple-choice, open-ended responses, and items rated on a seven-point Likert scale. Data collection took place in February and March 2025. The relationship between the type of accommodation facility and the level of food waste, as well as interest in adopting new measures, was examined. The collected data were analysed using descriptive statistics. Hypotheses were tested using contingency tables and the chi-squared test, with the p-value compared to a 5% significance level.

Results: The research found that most accommodation providers estimate their food waste to be under 6%, though precise monitoring is rare. Buffet-style service was identified as the main source of waste, largely due to guest behaviour. While some facilities have taken internal steps to reduce waste, guest-focused measures remain limited. No link was found between facility type and waste levels, but willingness to implement new strategies differed significantly.

Implications and recommendations: To reduce food waste, providers should combine better planning and portion control with guest engagement. Awareness signs, staff involvement, and smaller plates could help reduce waste without lowering service standards. Technology and charitable partnerships offer additional potential.

Originality/value: This study fills a regional research gap by exploring food waste in Czech hotels and guesthouses. It offers original insights based on a mixed-method approach and provides practical, low-cost recommendations for more sustainable food management in tourism.

Keywords: food waste, hospitality industry, sustainable tourism, hotel operations

1. Literature Review

1.1. Introduction

Food waste has become one of the most pressing global challenges, affecting not only the food industry but also environmental sustainability and socio-economic equity. According to Booking.com (2025), approximately one-third of all food produced worldwide is never consumed, ending up as waste. This loss represents an inefficient use of natural resources, contributes significantly to greenhouse gas emissions, and deepens social inequalities (Partner Booking, 2025).

While many countries have already implemented systematic research and policy responses to address this issue, food waste in the hospitality sector remains underexplored within the Central European context. This study was among the first to examine the causes and mitigation of food waste in hotels and guesthouses in Czechia, offering insights that may be transferable across the region.

Food waste generates three major types of impact: economic, environmental, and social. For businesses, it represents direct financial losses—not only through the cost of uneaten food, but also through disposal expenses. For example, reducing per capita food costs by just 3% in a large hotel (over 100 rooms) can lead to average annual savings of USD 150,000 (Partner Booking, 2025). From an environmental perspective, food waste carries a substantial carbon footprint due to emissions generated during food production, processing, and transportation (Too Good To Go, n.d.). The social dimension reflects global disparities, and while some regions manage food surpluses, others face severe shortages (Pilecká, 2017).

1.2. Views on Food Waste

There are many perspectives on the issue of food waste. For instance, the United Nations Environment Programme (UNEP) distinguishes between food loss occurring during harvesting, storage, and distribution, and food waste which occurs at the final stages of the food chain (Forbes et al., 2021).

Although food waste is a global problem, its sources and impact vary by context. According to the European Commission (n.d.), households are the largest contributors to food waste in Europe, accounting for 54% (around 72 kg per person annually). This is followed by the food and beverage manufacturing sector (19%, 25 kg per person), catering services (11%, 15 kg), and retail and other distribution (8%, 11 kg). The remaining 8% is attributed to primary production.

From an economic perspective, developed countries such as EU member states tend to produce food waste at the end of the supply chain. In contrast, in developing countries, waste is more often generated during the early phases of harvest, storage, and transport, due to weaker infrastructure and market systems (Gustavsson et al., 2011). In high-income countries, interventions such as raising consumer awareness can be relatively inexpensive and effective, while in lower-income regions, solutions may require significant investment in technology and logistics (Dohnal, 2020).

1.3. The Causes of Food Waste in Hotel Industry

Food waste in accommodation services results from both operational procedures and guest behaviour. Common causes include improper food handling and inadequate storage facilities (Food and Agriculture Organization of the United Nations, 2019). Inadequate demand forecasting, poor inventory control, and discrepancies between purchase and consumption also contribute to excessive waste (Principato, 2018). Inappropriate portion sizes—both in staff-served meals and self-service buffet formats—represent another critical factor (Food and Agriculture Organization of the United Nations, 2019).

1.4. Measures to Decrease Food Waste

The hospitality sector can implement several effective strategies to minimise food waste. Improved supply planning and storage management are key. According to Giorgi (2013), accurate supply forecasting based on historical data can reduce food waste by up to 20%.

Offering flexible portion sizes while maintaining guest satisfaction can lead to waste reductions of up to 30% (Food and Agriculture Organization of the United Nations, 2019). For hotels using buffet systems, simply reducing plate size can cut food waste by 20% without compromising service quality (Giorgi, 2013).

Guest communication also plays an essential role. Awareness signage encouraging guests to reduce waste has been shown to decrease buffet leftovers by as much as 15% (Giorgi, 2013).

2. Methodology

To achieve the stated objectives, a combination of qualitative and quantitative methods was employed. The respondents were selected from the database of the professional association AHR ČR (Association of Hotels and Restaurants of the Czech Republic), with the main selection criterion being the provision of any form of catering service. The research was geographically limited to South Moravia, the second most visited region in the Czech Republic after the capital city of Prague (Králíková, 2025).

First, in-depth interviews were conducted with representatives of hotels and guesthouses. The aim was to explore existing food waste management practices, the extent to which data on food waste were analysed, as well as the barriers that limit further development in this area. The interviews were carried out in person, in Czech, during January 2025.

Based on the findings from the qualitative phase, a questionnaire was developed using Google Forms. The survey was distributed to 240 hotels and guesthouses in South Moravia, selected from the AHR ČR database. The main aim was to assess awareness of food waste, the extent and types of waste generated, current monitoring practices, and perceived opportunities for reduction. The questionnaire included various question formats: single and multiple-choice, open-ended responses, and items rated on a seven-point Likert scale. Data collection took place in February and March 2025.

The relationship between the type of accommodation facility and the level of food waste, as well as interest in adopting new measures, was examined. The collected data were analysed using descriptive statistics. Hypotheses were tested using contingency tables and the chi-squared test, with the *p*-value compared to a 5% significance level.

3. Results

3.1. Qualitative Insights from Accommodation Providers

As part of the qualitative research, six interviews were conducted: three with guesthouses and three with hotels. Two of the hotels were categorised as four-star establishments, and the remaining facilities were rated three-star, based on the extended Hotelstars Union classification.

The interviews revealed that food waste was generally not perceived as a pressing internal issue by operators, but rather as a consequence of guest behaviour. The most problematic area was identified as the breakfast buffet, where guests tend to overfill their plates and subsequently return uneaten food. One hotel manager remarked, "You could say the fault is not on our side, but rather on the guest's side." Waste levels were estimated to be low, typically below 6%.

Guesthouses, on the other hand, tended to rely on their small scale and show lower levels of structured intervention. One recurring concern, however, was the reluctance to compromise perceived luxury: "From the service provider's perspective, we cannot afford to suggest to guests that they are not helping reduce waste. We simply can't afford to lower our standards," one respondent stated.

All the participants agreed that raising guest awareness was essential. One guesthouse representative noted, "We definitely need to talk about this more so that people realise what is being wasted due to their own behaviour."

3.2. Survey Results: Food Waste Levels and Interventions

The quantitative phase of the research targeted hotels and guesthouses in South Moravia that provide at least one daily meal. Out of 240 selected establishments, 175 were contacted via email with a link to the questionnaire, while the remainder were approached by phone. In total, 110 valid responses were received, yielding a response rate of 45.83%.

Among the respondents, 43 represented three-star establishments, 37 were guesthouses, 26 were four-star hotels, and there were also two five-star and two garni hotels. Regarding size, 62 respondents operated properties with 11 to 50 rooms, 24 with 10 or fewer rooms, 13 with 51 to 100 rooms, and 11 with more than 100 rooms.

The participants were first asked to estimate their level of food waste. Nearly half (52 respondents) reported a waste rate between 3% and 5.9%, while 35 indicated levels between 6% and 10%. Twelve facilities reported less than 3% food waste. Encouragingly, only 11 respondents stated they did not monitor food waste or were unaware of the extent, and no one reported food waste exceeding 10%. Nevertheless, systematic tracking was rare, with fewer than 8% of the respondents keeping precise records of waste levels. According to the survey, approximately 18% reported engagement in a formal sustainability certification, and over 40% indicated the existence of internal policies or goals addressing waste reduction. These findings support the higher level of structured engagement among hotels compared to smaller guesthouses.

As in the qualitative findings, buffet-style or plated meals were cited as major contributors to food waste, primarily due to guests expecting unlimited availability and leaving unfinished food on their plates.

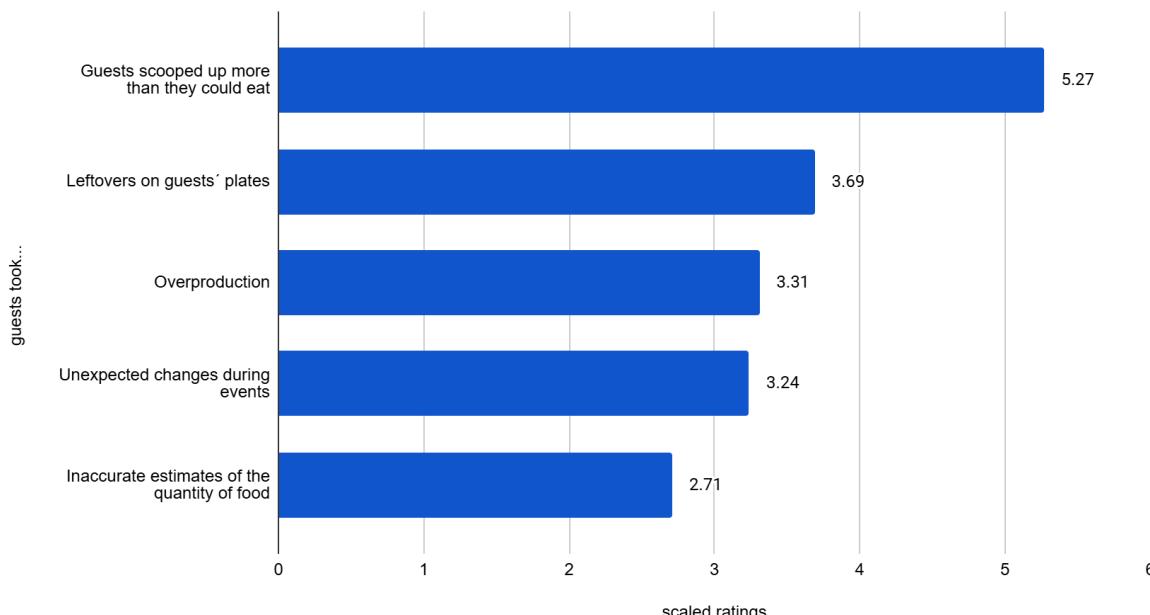


Fig. 1. Causes of food waste

Source: Nikola Májková's own work.

Figure 1 shows the most frequently cited causes of food waste. The respondents evaluated each item on a seven-point Likert scale, where higher scores indicated a stronger agreement with the factor's relevance.

Accommodation providers overwhelmingly attributed food waste to guest behaviour—particularly over-serving themselves or failing to finish meals. Changing meal preferences at the last minute was also noted. Operational shortcomings, such as poor forecasting or overproduction, were mentioned less frequently.

Although overall food waste levels were moderate, the study explored what happens to the waste that is generated. Most establishments reported separating organic and municipal waste, and many reused surplus food internally (e.g. through staff meals or repurposing). Donation of food or participation in charitable redistribution projects was the least utilised strategy.

Finally, the study examined which measures were currently in place and what additional interventions could be adopted. Many of the respondents had implemented improvements in procurement planning, staff training, and internal food tracking. However, guest communication remained underused, and only 12 establishments reported actively encouraging guests to reduce waste.

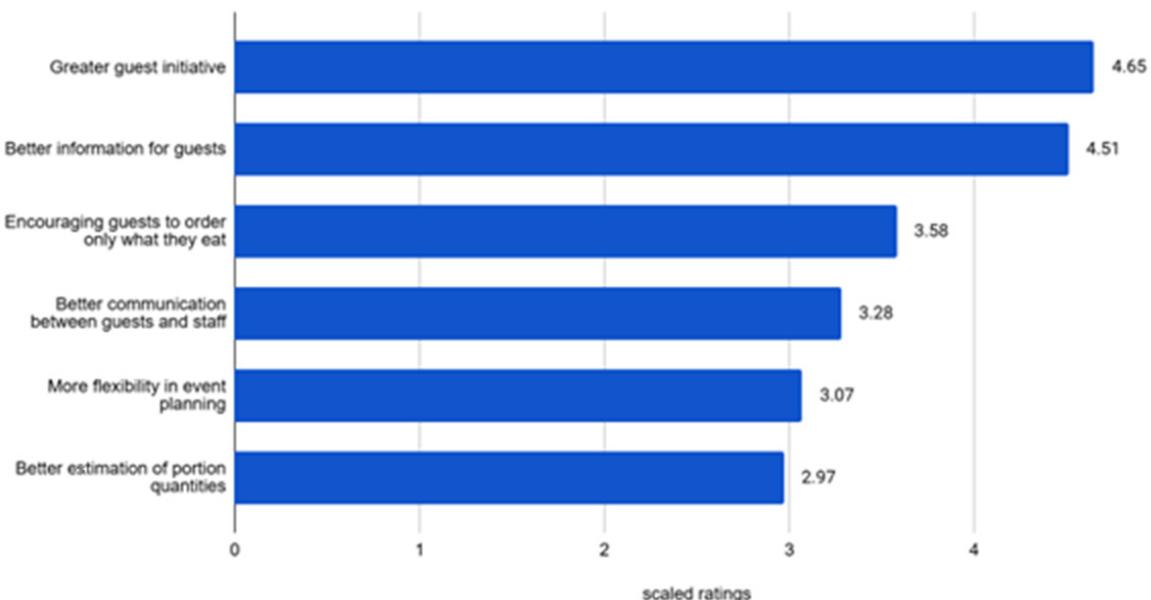


Fig. 2. Possible measures that could reduce food waste

Source: Nikola Májková's own work.

Figure 2 outlines potential future measures, with most options involving the stronger engagement with guests. The respondents expressed support for better informing guests and encouraging them to take only what they can consume, whilst accommodation providers also recognised the need to improve portion estimation and event planning.

When asked about future intentions, nearly 69% of the respondents expressed their willingness to implement new food waste reduction strategies—primarily to improve sustainability, reduce costs, or enhance their reputation. The remaining 31% did not plan to take further action, citing either irrelevance to their operations or concerns about cost.

These findings highlight food waste as a current and relevant topic within the accommodation sector. They also provide a valuable foundation for the development and implementation of more effective mitigation strategies.

4. Discussion

One of the central findings of this research was the critical role that guests play in food waste generation within hospitality settings. This responsibility can be addressed through various approaches, including the use of visual communication tools. For example, a study conducted in a Swedish school canteen showed that an awareness campaign led to a 35% reduction in waste, suggesting that similar interventions could yield significant benefits in hotels and guesthouses (Malefors et al., 2022).

Operational optimisation also presents opportunities for improvement. Positioning staff at buffet stations to assist with portion sizes not only minimises waste but may also enhance guest satisfaction through personal interaction. Further recommended practices include continuous monitoring of ingredient shelf life, improved stock rotation, and the integration of surplus-based meals into daily menus, ultimately progressing towards a zero-waste kitchen model.

Currently none of the surveyed establishments has a systematic method for tracking food waste. Implementing such a system is essential for evaluating the impact of any measures taken. Research from German hotel kitchens supports this, where visual and weight-based assessments by staff led to a 64% reduction in food waste and an average saving of €9,000 per kitchen (Leverenz et al., 2021).

Principato (2018) identified poor demand forecasting and sub-optimal portion sizes as major causes of food waste at consumer level. These factors also emerged in the presented findings, highlighting the need for more accurate planning and flexible portioning.

The European Commission (2025) also emphasises the importance of guest communication and education in reducing food waste. This is in line with the authors' research, which demonstrates that combining educational and operational strategies can be particularly effective in the hospitality industry.

Additional evidence from Jakarta hotels underlines the importance of partnering with food banks and charitable organisations, further noting the reputational benefits of sustainable waste practices (Aditya & Kurniawati, 2023). Similarly, Filimonau and De Coteau (2019) highlighted the role of technology in waste reduction, reporting that smart monitoring systems can cut food waste by up to 30%. Their findings also pointed to the need for regular staff training and managerial involvement, suggesting that a systematic and technologically enhanced approach could also benefit accommodation providers in South Moravia.

The study revealed no significant relationship between accommodation type and food waste levels, however a strong correlation emerged between accommodation type and the intention to implement new measures. These insights may help target future interventions more effectively.

5. Conclusions

This study aimed not only to examine the issue of food waste in the hospitality sector, but also to explore its causes, consequences, and potential avenues for prevention.

The theoretical framework demonstrated that food waste carries serious environmental, economic, and social implications. Understanding the distinctions between various sources of waste is essential for designing effective interventions.

Empirical data were collected through in-depth interviews and a structured questionnaire survey. More than half of the respondents estimated their food waste to be below 6%, yet most of them did not track this systematically. Although many accommodation providers expressed a willingness to reduce waste, they often encounter difficulties in influencing guest behaviour. These findings reinforce the importance of engaging guests through targeted marketing and awareness-raising efforts.

In conclusion, food waste reduction is a significant challenge not only for individual businesses but for society as a whole. As this study has shown, accommodation providers can play a meaningful role by implementing better communication strategies, adopting monitoring systems, and promoting sustainable practices. Therefore, food waste management should be viewed not only as an operational necessity, but as a cornerstone of sustainable tourism development.

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Marnowanie żywności w branży hotelarskiej

Streszczenie

Cel: Autorzy niniejszego opracowania postawili sobie za cel zidentyfikowanie głównych czynników powodujących marnotrawstwo żywności oraz ocenę istniejących strategii ograniczających to zjawisko w sektorze hotelarskim. Opracowanie stanowi również wkład w szerszą dyskusję na temat zrównoważonego rozwoju i odpowiedzialności społecznej w turystyce, oferując praktyczne zalecenia dotyczące bardziej efektywnego zarządzania żywnością.

Metodyka: Aby osiągnąć wyznaczone cele, zastosowano połączenie metod jakościowych i ilościowych. Respondenci zostali wybrani z bazy danych stowarzyszenia zawodowego AHR ČR (Stowarzyszenie Hoteli i Restauracji Republiki Czeskiej), a głównym kryterium wyboru było świadczenie jakiekolwiek formy usług gastronomicznych. Badania ograniczono geograficznie do południowych Moraw, które są drugim najczęściej odwiedzanym regionem Czech po stolicy kraju, Pradze.

Najpierw przeprowadzono pogłębione wywiady z przedstawicielami hoteli i pensjonatów. Celem było zbadanie istniejących praktyk w zakresie gospodarowania odpadami spożywczymi, a także analiza danych dotyczących marnowania żywności oraz barier ograniczających dalszy rozwój w tym obszarze. Wywiady przeprowadzono osobiście, w języku czeskim, w styczniu 2025 r.

Na podstawie wyników fazy jakościowej opracowano kwestionariusz przy użyciu Google Forms. Ankieta została rozesłana do 240 hoteli i pensjonatów w południowych Morawach, wybranych z bazy danych AHR ČR. Głównym celem było oszacowanie świadomości w zakresie marnotrawstwa żywności, rodzajów wytwarzanych odpadów oraz aktualnych praktyk monitorowania i ograniczania marnotrawstwa. Kwestionariusz zawierał różne formy pytań: pytania jednokrotnego i wielokrotnego wyboru, pytania otwarte oraz pytania oceniane w siedmiostopniowej skali Likerta. Dane zebrano w lutym i marcu 2025 r.

Zbadano również związek między rodzajem obiektu noclegowego a poziomem marnotrawstwa żywności, a także zainteresowaniem wprowadzenia nowych środków. Zebrane dane zostały przeanalizowane przy użyciu statystyk opisowych. Hipotezy zostały przetestowane przy użyciu tabel kontyngencyjnych i testu chi-kwadrat, a wartość porównano z poziomem istotności 5%.

Wyniki: Badania wykazały, że większość dostawców usług noclegowych szacuje swoje straty żywności na poniżej 6%, choć rzadko przeprowadza się dokładne kontrole. Jako główne źródło marnotrawstwa wskazano obsługę w formie bufetu, przede wszystkim ze względu na zachowanie gości. Chociaż niektóre obiekty podjęły wewnętrzne działania mające na celu zmniejszenie marnotrawstwa, środki ukierunkowane na gości pozostają ograniczone. Nie stwierdzono związku między rodzajem obiektu a poziomem marnotrawstwa, ale gotowość do wdrażania nowych strategii znacznie się różniła.

Implikacje i rekomendacje: Aby ograniczyć marnotrawstwo żywności, dostawcy powinni połączyć lepsze planowanie i kontrolę porcji z zaangażowaniem gości. Znaki informacyjne, aktywna postawa personelu i mniejsze talerze mogą pomóc w ograniczeniu marnotrawstwa bez obniżania standardów obsługi. Dodatkowy potencjał oferują technologie i partnerstwa charytatywne.

Oryginalność/wartość: Badanie to wypełnia lukę w badaniach regionalnych, analizując problem marnotrawstwa żywności w czeskich hotelach i pensjonatach. Zawiera oryginalne spostrzeżenia oparte na podejściu mieszanym i przedstawia praktyczne, niedrogie zalecenia dotyczące bardziej zrównoważonego zarządzania żywnością w turystyce.

Słowa kluczowe: marnotrawstwo żywności, branża hotelarska, zrównoważona turystyka, działalność hotelarska
