

REDUCING FOOD WASTE WHEN EATING OUT – RESEARCH ON THE PERCEPTIONS OF BULGARIAN STUDENTS

DUDOVA, STANIMIRA¹

Abstract

Food waste is a critical global challenge with far-reaching environmental and social consequences. Addressing this issue requires understanding consumer behaviours, habits, and knowledge related to food waste. Research on food waste in eating out covers various aspects, including factors that contribute to food waste, consumer behaviour and potential solutions. Key to understanding the problem of food waste and to finding and implementing effective solutions is research into the knowledge and behaviour of young people, and students in particular, regarding dietary choices, eating habits, food waste and their attitudes towards food in general. This paper delves into the urgency of reducing food waste, encompassing its definition, stages in the food supply chain, and its relevance to achieving Sustainable Development Goals (SDGs). The European Union's efforts and Bulgaria's initiatives provide context to the broader discourse on food waste reduction. The European Commission has set out a number of policies and instruments aimed at reducing food loss and waste as part of the Circular Economy Action Plan and the Farm to Fork Strategy. In line with EU objectives, a National Programme for the Prevention and Reduction of Food Loss (2021-2026) has been developed in Bulgaria, which sets out the framework for joint action to reduce food loss and waste and for society to rethink its attitudes to food consumption and value. However, food waste problems at the consumer level in Bulgaria are understudied. The aim of the current study is to explore the personal perceptions and behaviours of Bulgarian students towards food waste when eating out. Information was collected through a structured online questionnaire. The survey was conducted during the academic year 2022/2023 among Bulgarian students of the University of National and World Economy in Sofia, Bulgaria. There were 123 participants between the ages of 18 and 35. The main findings of the study showed that over 50% of the respondents were of the opinion that the largest amount of food waste is generated when eating out. The majority of the respondents have stated that they throw away less than 5% of their food when eating out and they take the leftovers home „often“ or „sometimes“, which indicates that Bulgarian students eat most of the food they order when eating out and throw away a small portion of it. Overall, this research contributes to the understanding of food waste patterns and encourages targeted interventions to promote sustainable consumption among students and beyond.

Key words: food waste, eating out, students, Bulgaria

JEL codes: *Q18, Q53*

This work is supported by the UNWE Research Programme (Research Grant №15/2021)

¹ Department of Economics of Natural Resources, University of National and World Economy, Sofia, Bulgaria, e-mail: stanimira.dd@gmail.com

Introduction

Reducing food waste is an urgent global challenge and understanding consumer behaviour, habits and knowledge in relation to food waste is critical to developing effective strategies to reduce food waste.

Food waste refers to any food that is discarded, lost or uneaten and cannot be consumed by humans. This includes both edible and inedible parts of food, such as peelings, cores and bones. Food waste can occur at different stages of the food supply chain, including production, processing, distribution, retail and consumption.

Preventing food waste is paramount to reducing environmental impacts and achieving sustainable development goals.

The Sustainable Development Goals set by the UN in 2015 provide a comprehensive framework for global development, including specific targets related to reducing food waste. Target 12.3 aims to reduce food waste by 50% at the retail and consumer level, and to reduce food waste in production and supply chains by 2030. Achieving these goals requires a comprehensive approach involving different stakeholders such as governments, businesses, consumers and civil society. Key strategies include: raising awareness and promoting behaviour change through education campaigns and public awareness initiatives; improving food governance and infrastructure; strengthening policy frameworks and regulations; fostering collaboration and partnerships between governments, businesses, non-profit and community organisations through sharing best practices, implementing joint initiatives and driving systemic change.

Literature Review

Food loss and waste is a global problem. According to the Food and Agriculture Organization of the United Nations (FAO), nearly one-third of all food produced worldwide is lost or wasted somewhere along the food supply chain. In the European Union, this amounts to nearly 88 million tonnes of food per year (Recommendations and guidelines for a common European food waste policy framework, 2016). To prevent food loss and waste, the EU and Member States are putting in place measures to take action to reuse, recycle or repurpose food. The European Parliament's Waste Framework Directive 2008/98/EU sets out „measures to protect the environment and human health by preventing or reducing the production of waste“ (DIRECTIVE 2008/98/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives).

In 2016, the Council made a political commitment to a number of initiatives, including better monitoring of food waste, raising awareness among the general population, better understanding and use of 'best before' and 'use by' labels (including among consumers) and facilitating the donation of unsold food products to various charities and other organisations.

With the launch of the European Green Deal in December 2019, the Commission set out a number of policies and instruments aimed at reducing food loss and waste as part of the Circular Economy Action Plan and the Farm to Fork Strategy. The EU's objectives are to reduce the environmental and climate impacts of the EU food system and strengthen its resilience, to ensure food security in the face of climate change and biodiversity loss.

In Bulgaria, food waste problems at the consumer level are understudied, and this provides huge opportunities for researchers.

According to the National Statistical Institute (NSI) in 2018, 31.3% of Bulgarians could not afford to consume meat, chicken or fish every second day, and more than half of Bulgarians did not eat a nutritious diet. Below the poverty line were 22% of the country's population, with 26% of children aged 0-17 in Bulgaria at risk of poverty (Food and Basic Material Assistance Programme 2021-2027).

This situation calls for measures to change attitudes towards food wastage as the only way to ensure sustainable food production and consumption and to reduce the adverse impact of food systems on the environment.

In line with EU objectives, a National Programme for the Prevention and Reduction of Food Loss (2021-2026) has been developed in Bulgaria, which sets out the framework for joint action to reduce food loss and waste and for society to rethink its attitudes to food consumption and value. The programme includes the following areas of action:

- Prevention of food loss (unrealised surplus);
- Redistribution of unmarketable food for consumption by people in need;
- Public awareness and information on the problem of food loss and waste.

The national food waste prevention and reduction programme covers all stages of the food chain (or food production and supply chain): primary production; processing and manufacturing; retail and other food distribution; restaurants and catering services; households (consumption by the final consumer).

Research on food waste in eating out covers various aspects, including factors that contribute to food waste, consumer behaviour and potential solutions. Key to understanding the problem of food waste and to finding and implementing effective solutions is research into the knowledge and behaviour of young people, and students in particular, regarding dietary choices, eating habits, food waste and their attitudes towards food in general.

Understanding the root causes of food waste among students requires a multidimensional approach. Research in this area considers factors such as individual attitudes, knowledge, and awareness of food waste (Yagoub et al., 2022); social norms and peer influence (Stefan, Herpen, Tudoran, and Lähteenmäki, 2013); campus dining practices; and the presence of initiatives to reduce food waste (Smith, 2015). By gaining insight into these factors, interventions can be developed to effectively target student behaviour and promote more sustainable consumption patterns.

Some authors (Thyberg, and Tonjes, 2016) believe that age plays a significant role in food waste, with younger people tending to waste more compared to older people. In Australia, for example, 38% of individuals aged 18-24 spent more than A\$30 on food in a two-week period, while only 7% of individuals aged 70+ did so (Hamilton, Denniss, and Baker, 2005). A similar pattern was observed in the United Kingdom, where, according to Thyberg (2016), people over 65 wasted less food than the rest of the population.

However, it would not be correct to claim that all young people waste food. Authors Mondéjar-Jiménez, Ferrari, Secondi, and Principato (2016) investigated food wasting behaviour among Italian and Spanish young people following the Mediterranean diet, known for its environmentally sustainable practices and high consumption of perishable products. The study reveals that 59% of Italian youth households waste 15% or less of their edible food and 63% of Spanish youth report wasting 15% or less of their weekly food purchases. Furthermore, only 1.7% of Italian youth and 2% of Spanish youth waste more than 30% of their food.

Secondi, Principato, and Pratesi (2015) found that Italian youth are more aware of food waste and more likely to reduce it. Increased awareness of the consequences of food waste is known to influence young people's behaviour and they show a willingness to, for example, make shopping lists, which according to Secondi (2015) contributes to reducing food waste.

However, it is worth noting that diet and awareness may not be the only factors influencing the reduction of food waste; other determinants should also be considered.

A study (Ozanne, Ballantine, and McMaster, 2022) conducted among students living in shared apartments in an urban area in New Zealand revealed that lack of organization in meal planning and shopping, inadequate sorting and waste disposal infrastructure, and careless practices in managing the contents of refrigerators contribute to food waste. This analysis highlights the need for interventions and campaigns to promote more sustainable behaviour among this demographic.

Engaging youth in research to reduce food waste not only provides valuable insights into their behaviours and attitudes, but also empowers them to be agents of change. By involving them in the research process, they can become advocates for sustainable consumption and waste reduction, spreading awareness and influencing their peers and wider communities.

In order to gain a better understanding of the problem of food waste in Bulgaria, we conducted a survey among Bulgarian students to explore their personal perceptions and behaviours towards food waste and food wastage when eating out.

Methodology

The study is part of a project on „Patterns and causes of food waste during eating out“², whose main objectives are:

- To assess the state of the food waste problem in eating out by identifying the causes of waste generation;
- To explore the patterns of behaviour associated with food waste generation and to propose and evaluate possible solutions to reduce and prevent food waste in eating out.

The subjects of the study were Bulgarian students from the University of National and World Economy between the age of 18 and 35 and their perceptions of the reasons behind food waste when eating out.

The survey was conducted during the academic year 2022/2023 among Bulgarian students of the University of National and World Economy in Sofia, Bulgaria.

123 people from different faculties and majors, studying full-time or remotely, participated in the survey.

The survey consists of 30 mostly closed-ended questions, most of which are single-choice and others multiple-choice. A Likert scale was used for statements such as „People waste more food when they eat out“ and „Young people waste more food“ to test 5 possible responses ranging between „strongly disagree“ and „strongly agree“.

Information was collected through a structured online questionnaire developed using Microsoft Forms and sent out via university domain emails to ensure that only students from the UNWE would participate. This method was preferred due to some advantages of online questionnaires such as low cost, quick and easy distribution, convenience of completion through different mobile devices, instant feedback, quick and easy administration of the collected data.

Comparative and descriptive analysis were used to analyse the primary data collected.

Results and discussion

A total of 123 Bulgarian students participated in the survey, between the ages of 18 and 35. The distribution of respondents by age group is as follows: 24 fall into the 18-20 age group, 53 into the 21-23 age group (the largest number of respondents are from this group), 7 into the 24-26 age group, 10 into the 27-30 age group, 9 into the 31-35 age group and 20 into the over 35 age group. Of the total respondents, 28% or 34 were male and 72% or 89 were female. Nearly 70% of both male and female respondents thought that young people waste more food.

² As the implementation of the project „Patterns and causes of food waste generation in eating out“ is carried out by a research team, some of the questions in the survey have been analysed for the purpose of this report.

The following tables summarize some of the results of the survey related to students' perceptions and behaviours regarding food loss and food waste when eating out. From the results shown in Table 1, we can see that 52% of the respondents were of the opinion that the largest amount of food waste is generated when eating out, with the second largest amount of food waste being consumed in the household. These results are consistent with a similar survey (Yagoub et al., 2022) conducted among UAE students, which found that 38% of respondents believed that a large proportion of food is wasted at the consumption level. Based on this data, it should be noted that efforts should be directed towards educational campaigns to reduce food waste at the consumption stage.

Table 1. Respondents' views on stage at which food is likely to be wasted

Which stage of the food chain do you think is likely to generate the most food waste?						
Production	Distribution	Retail and wholesale	Food processing	Household food consumption	Eating out	Total
12	3	10	12	22	64	123
10%	2%	8%	10%	18%	52%	

Source: Authors' own calculations

Table 2 shows that the highest number of respondents (76%) indicated that they threw away less than 5% of their food when eating out, followed by those who threw away between 5% and 10%. Only 7% of respondents threw away between 10% and 15% and only one participant responded that they threw away more than 15% when eating out. These results indicate that Bulgarian students eat the majority of their food when eating out and throw away a small portion. In comparison, according to a report (Gunders, and Bloom, 2017) by the National Resources Defense Council, U.S. restaurant customers leave an average of 17% of the food they order uneaten, and 55% of those leftovers remain on the table. This is primarily due to the large portions served at most restaurants, but often people order more than they can eat or do not take the food home. To overcome this problem, efforts are needed from both educational institutions, through campaigns to explain the benefits of reducing food waste, and businesses, through portion control, incentives for take-aways, food donations, etc.

Table 2. Food disposal when eating out

On average, what percentage of food do you throw away when you eat out?				
Less than 5%	Between 5% and 10%	Between 10% and 15%	More than 15%	Total
94	20	8	1	123
76%	16%	7%	1%	

Source: Authors' own calculations

The data in Table 3 shows that the highest percentage of respondents answered that they often take leftover food home, followed by those who answered „sometimes“. The final and definite answers, „never“ and „always“ had the lowest percentages, 6% and 18% respectively. Trying to understand how often people take leftovers home when eating out is not sufficient to offer theoretical explanations and practical measures to address food waste when eating out. Instead, there is a need to establish whether take-out of leftovers reduces food waste or shifts its location from restaurants to households (Talwar, Kaur, Yadav, Sharma, and Dhir, 2021). Talwar et al. (2021) propose to investigate the role of routine reuse of leftovers to better understand food waste generation and reduction.

Table 3. Take-home food leftovers

When you are eating out and have leftover food, how often do you take it home?					
Never	Seldom	Sometimes	Often	Always	Total
7	23	32	39	22	123
6%	19%	26%	32%	18%	

Source: Authors' own calculations

Conclusion

The growing trend towards eating out has contributed significantly to the increase in food waste generated at every level of the food chain. It is therefore essential to understand the causes of food waste and the factors that influence the desire and intention to reduce its harmful effects. Among the most important issues to be addressed is filling the gap in research on the knowledge and behaviour of Bulgarian youth on food waste. More attention needs to be paid to the analysis of everyday practices leading to food waste. A proper understanding of this issue could support the implementation of effective information campaigns to reduce food waste. Measures to reduce food waste should also be based on the interrelationship be-

tween all economic actors. By working together, researchers, educational institutions, public organisations and private businesses can provide relevant information relating both to the quantities of food wasted and to the economic and environmental consequences of food waste. In this way, the most effective tools and interventions to reduce food waste can be identified.

References

- Gunders, D., & Bloom, J. (2017, August). Wasted: How America is losing up to 40 percent of its food from farm to fork to landfill. R: 17-05-A. <https://www.nrdc.org/>
- Hamilton, C., Denniss, R., & Baker, D.G. (2005, March). Wasteful Consumption in Australia; Australia Institute: Canberra, Australia. ISSN 1322-5421.
- Mondéjar-Jiménez, J.A., Ferrari, G., Secondi, L., & Principato, L. (2016). From the table to waste: An exploratory study on behaviour towards food waste of Spanish and Italian youths, *Journal of Cleaner Production*, vol. 138, pp. 8–18.
- Ozanne, L. K., Ballantine, P. W., & McMaster, A. (2022). Understanding Food Waste Produced by University Students: A Social Practice Approach, *Journal of Sustainability*, vol. 14.
- Secondi, L., Principato, L., & Pratesi, C. A. (2015). Reducing food waste: An investigation on the behaviour of Italian youths, *British Food Journal*, vol. 117 (2), pp. 731–748.
- Smith, B. (2015). Food Waste and Behavior Change on Campus, Pacific Lutheran University, Tacoma, WA, USA.
- Stefan, V., van Herpen, E., Tudoran, A. A., & Lähteenmäki, L. (2013). Avoiding food waste by Romanian consumers: The importance of planning and shopping routines, *Journal of Food Quality and Preference*, vol. 28 (1), pp. 375–381.
- Talwar, S., et. al. (2021). Food waste and out-of-home-dining: antecedents and consequents of the decision to take away leftovers after dining at restaurants, *Journal of Sustainable Tourism*. 31(2):1-26.
- Thyberg, K.L., & Tonjes, D.J. (2016). Drivers of food waste and their implications for sustainable policy development, *Journal of Resources, Conservation and Recycling*, vol. 106, pp. 110-123.
- Yagoub, M. M., et. al. (2022). University Students' Perceptions of Food Waste in the UAE, *Journal of Sustainability*. 14(11196):18.
- Directive 2008/98/eu of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives
- Food and Agriculture Organization of the UN. Home | Food and Agriculture Organization of the United Nations (fao.org)
- Food and Basic Material Assistance Programme 2021-2027. <https://asp.government.bg/>

National Programme for the Prevention and Reduction of Food Loss (2021-2026).
<https://www.mzh.government.bg/>
Recommendations and guidelines for a common European food waste policy framework, 2016, <https://www.eu-fusions.org/>