

# The Role and Awareness of Food Rescue Ngos in Hungary: Based on the Results of an Online Survey

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The issue of food waste is a significant global challenge that is closely linked to the United Nations Sustainable Development Goals (SDGs). Non-governmental organisations (NGOs) are of critical importance in addressing this issue, spearheading initiatives aimed at curbing overproduction and waste. This study introduces the principal non-governmental organisations (NGOs) engaged in food waste reduction and assesses the extent of public awareness of their activities in Hungary. The research is based on secondary data and an online survey of 231 respondents. It explores initiatives such as shopping communities, the Hungarian Food Bank Association, the No Leftovers program, and the Munch app. The findings indicate that food rescue organisations are not widely recognised, which constrains their potential impact. However, younger generations demonstrate greater engagement with digital food-saving solutions. The lack of public awareness underscores the necessity for enhanced marketing and educational initiatives. Furthermore, the study identifies a generational and socio-economic divide, with younger, higher-income individuals demonstrating a greater commitment to sustainable practices. The study offers insights into how NGOs can enhance their impact through the strategic use of technology and targeted communication.

## 1. Introduction

When analysing food waste prevention policies, it is essential to start with large entities such as the European Union and member states, given their influence on smaller NGOs and household behaviour. The EU and its member states are committed to achieving the Sustainable Development Goal (SDG) of halving per capita food waste by 2030, with strategies focused on the retail sector, the consumer level, and production chains. The Commission is integrating anti-waste measures into EU legislation with the aim of mobilising all actors in the food chain (European Commission, 2022a). The "farm to fork" strategy, which is central to the European Green Deal, aims to reduce food waste by 2023, emphasising sustainability in production, consumption, and technological advances (European Commission, 2022b). Hungary, as a member of the EU, aligns with these efforts through its Common Agricultural Policy, which promotes sustainable practices (European Council, 2024). Globally, countries and NGOs are working to reduce overproduction and waste. Research focusing on Hungarian NGOs aims to assess their impact and consumer perceptions, providing insights into the dynamics of sustainable behaviour, particularly with regard to household waste and recycling (European Commission, 2022b). This research, with its focus on digital platforms, makes an innovative contribution to environmental psychology and sustainability research (European Commission, 2022b).

NGOs play a key role in reducing food waste through multifaceted approaches that include social awareness campaigns, food rescue operations, emission reduction efforts, and awareness-raising initiatives. Research underscores the importance of NGO-led efforts in educating the public and facilitating coordination among waste management agencies (Alexander et al., 2023). Empirical evidence from a Canadian pilot project demonstrates the effectiveness of NGO interventions in diverting significant amounts of food and organic waste from landfills, resulting in significant emission reductions (Morone and Imbert, 2020).

However, critiques such as those articulated by Warshawsky (2015) underscore that NGOs alone will not address the root causes of food waste, highlighting the need for concerted action involving local communities, NGOs, and social institutions. Case studies from diverse locations, including Los Angeles (Warshawsky, 2015),

New Zealand (Thorsen et al., 2022), and South Africa (Serge Kubanza et al., 2022), highlight the proliferation of local initiatives aimed at curbing food waste.

Academic research supports increased government oversight of food-related businesses and households to reduce waste (Borges et al., 2019). Empirical studies elucidate the positive impact of NGO-led campaigns on public awareness, as evidenced by reduced food waste in various settings (Shu et al., 2023). Localised campaigns, as demonstrated in Upper Arlington, England, show notable success in changing attitudes and behaviours toward food consumption and waste disposal.

Initiatives such as food waste collection programs underscore the central role of community engagement and municipal governance in waste management efforts, resulting in tangible reductions in food waste over time. Effective communication among local stakeholders emerges as a linchpin for the success of such initiatives (Serge et al., 2022). The model proposed by Moggi et al. (2018) underscores how farmers' markets can serve as conduits for reducing food waste while addressing societal imperatives such as poverty alleviation and public health improvement through innovative corporate social responsibility practices.

Non-governmental organisations (NGOs) are at the vanguard of local initiatives aimed at reducing food waste through the implementation of a range of strategies and community engagement (Xu et al., 2016). Scholars have underscored the necessity for collaborative stakeholder involvement, government support, and awareness campaigns to advance sustainable food consumption. Previous research on food waste prevention policies has employed a range of methodologies, including case studies, pilot programs, and empirical research that has focused on the impact of initiatives.

Although existing studies offer valuable insights into the roles of NGOs and the effectiveness of their interventions (Chowdhury, 2023), there remain significant gaps in the literature. In particular, there is a need for further research on the impact of EU-level initiatives on household behaviours and on the ways in which NGOs and digital platforms influence consumer practices. Additional research is required to evaluate the long-term efficacy of these digital tools in fostering sustainable behaviours. This study addresses these gaps by focusing on Hungarian NGOs' efforts to reduce food waste, with particular attention to public awareness, consumer perceptions, and the role of digital solutions, such as food-saving apps. Additionally, it explores engagement disparities across generations and socioeconomic groups. In doing so, the research contributes to understanding how NGOs can strategically leverage technology and targeted communication to enhance their impact and reduce household food waste.

The study introduces the most prominent NGOs engaged in reducing food waste and examines individuals' intentions and actions regarding household food waste reduction and recycling within their social circles. The study offers valuable insights into the dynamics of sustainable behaviour. The incorporation of digital platforms offers a novel perspective on environmental psychology and sustainability studies.

After reviewing the relevant national and international literature, the authors set the following research goals:

- To present the main activities and results of Hungarian NGOs working in the field of food waste reduction.
- To explore the main characteristics of Hungarian NGOs working in the field of food waste reduction, their main fields of activity and the main characteristics of their activities in Hungary.

It is of paramount importance to gain insight into local initiatives aimed at reducing food waste, as this poses a significant global challenge. The extant literature frequently neglects to acknowledge the distinctive contributions and innovative methodologies employed by Hungarian non-governmental organisations (NGOs). Instead, it tends to prioritise broader policy initiatives or individual behavioural changes. The disparate approaches of NGOs, varying degrees of public engagement, and insufficient assessment of digital tools result in lacunae in the extant research. This study addresses these deficiencies, enhancing our understanding of the roles that NGOs play in reducing food waste and providing insights for the promotion of sustainable consumption practices within communities. The research questions are investigated through the use of secondary data and an exploratory empirical study.

## 2. Methodology

For the first research objective, a list of NGOs whose work is significant in Hungary - shopping communities, the Hungarian Food Bank Association, and the No Leftovers program – were collected. The most innovative, effective and efficient NGOs and initiatives in terms of their operations and marketing activities will be presented in the paper.

The primary research was based on quantitative methodology. In December 2023, the researchers conducted an online questionnaire survey among Hungarians. The questionnaire was distributed on the social media channel Facebook, so the sampling technique was convenience sampling. In the end, 231 people were reached in the sample. The questionnaire was typically based on closed questions, namely metric and non-metric scales. Awareness of food purchasing was measured using a five-point Likert scale with endpoints 1: not at all typical

and 5: completely typical. Food waste reduction intentions (FWRI) were developed by Habib et al. (2023) and included the following items:

FWRI\_1. In the near future, I intend to encourage colleagues and friends to reduce household food waste.

FWRI\_2. I plan to take part in activities related to recycling household food waste

FWRI\_3. I will take part in household food waste recycling activities advocated in social media in the near future.

FWRI\_4. I plan to promote the recycling of household food waste to my friends, family, and peers.

FWRI\_5. I will encourage my friends, colleagues, and family to reduce household food waste.

Once the data had been cleaned, the analyses were conducted using the mathematical-statistical software package SPSS 26. Multivariate statistical analyses, specifically cross-tabulations, were employed to characterise each consumer group and to map the activities of the NGOs. A cross-tabulation analysis was employed to examine the existing relationships.

### 3. Results

Numerous NGOs operate at various levels below government jurisdiction, working with retailers, multinational corporations, farms, and the food service industry to address food waste. Shopping communities redistribute surplus food to reduce waste. Throughout the food supply chain, communities and organisations are implementing solutions that significantly reduce waste. Shopping communities pioneered in the United States are now established in Hungary through platforms such as Kiskosár and Szatyorbolt, which facilitate the sourcing of local products, emphasising community involvement and shared values. Szatyorbolt prioritises education through farm visits, experience sharing, and volunteer recruitment to promote environmental awareness. Products available through these platforms include vegetables, fruit, dairy, bakery, meat, staples and household goods, fostering a sustainable lifestyle ethos among consumers and producers alike.

The Hungarian Food Bank Association was founded in 2005. The Food Bank is a non-profit organisation and has been a member of the European Food Bank Association since 2006. With 24 member countries and 388 food banks across Europe, it distributes nearly 4.1 million portions of food every day, helping approximately 8.1 million people in need. The main goal of the Hungarian Food Bank Association is to connect the surplus food in Hungary with the hungry people in order to reduce food waste, alleviate hunger, and reduce the environmental impact. Its mission is to encourage all actors in the food chain to distribute surplus edible food to those in need instead of discarding it, contributing to both social and environmental sustainability. Hungary produces nearly 1.8 Mt of surplus food annually, enough to feed tens of thousands of hungry people. By preventing food waste, the food bank not only alleviates hunger but also saves energy and resources, reducing environmental damage (Hungarian Association of Food Banks, 2024).

In 2016, the National Food Chain Safety Office (NÉBIH) conducted the first survey on food waste in Hungarian households, which showed an average per capita food waste of 65.5 kg/y. Subsequent surveys in 2019 (NÉBIH, 2022a) and 2021 showed a significant improvement, with a reduction to 31.9 kg and 24 kg by 2022 (NÉBIH, 2022b). To address this issue, NÉBIH initiated the No Leftovers program in 2016, supported by the European Union's LIFE Environment sub-program. The program aims to raise consumer awareness and change harmful habits through educational materials and sector guides (Healthline, 2022). Essential to reducing food waste is understanding its categories-avoidable, unavoidable and recoverable-and are prioritizing the prevention of avoidable waste through behaviour change. Future efforts will emphasise innovative technological solutions and initiatives, such as the No Leftovers program, to combat food waste and address food insecurity.

An alternative approach to addressing food waste is the use of innovative mobile applications, which offer a promising alternative to traditional aid agencies and charity programs. With the growing momentum to combat food waste, driven in part by the proliferation of food banks and charitable initiatives, there is growing interest from investors, private equity firms, and individuals in innovative technological solutions, leading to the development and global promotion of various apps.

One notable example is the successful Too Good To Go app, which aims to minimise food waste by allowing restaurants and stores to sell excess food at discounted prices after business hours. Users can conveniently browse, pay and pick up food at designated times, creating a win-win situation for both sellers and consumers. Although currently unavailable in Hungary, a similar app called Munch fills this gap by offering discounted food that would otherwise go unsold. Developed by Hungarian students with a focus on combating food waste, Munch's popularity stems from its simplicity and the social experience it offers users. As a Hungarian startup that emphasizes both business and social-environmental goals, Munch shows significant potential for future growth due to its sustainable business model.

#### Results of the quantitative research

The online survey mainly reached women, young people and graduates with average or above-average income (Table 1). As a first step in the research, the respondents were divided into two groups by summing the scores

on the five statements of attitude towards food waste reduction intention and then examining the position and shape indicators. The mean of attitude was 13.77, its mode and median were 14, i.e. the responses follow a normal distribution. Respondents with a score below 14 were labelled as careless people, representing 61 % of the sample, while those with a score above 15 were labelled as conscious people, representing 39 % of the sample. Careless people who refuse to participate in initiatives to reduce household food waste may reflect a disconnect from or disregard for environmental stewardship. On the other hand, conscious people who demonstrate a strong commitment to reducing household food waste and actively participate in efforts to promote recycling and sustainability make a meaningful impact on reducing food waste in their communities.

*Table 1: Demographic composition of the sample*

Gender	female	male		
	68.4 %	31.6 %		
Age	18-29 y	30-45 y	46-64 y	65+ y
	57.1 %	16.0 %	24.2 %	2.6 %
Education	vocational certificate	secondary	higher education	
	1.3 %	77.5 %	21.2 %	
Residence	village	small town	City	
	24.0 %	41.0 %	35.0 %	
Financial situation	BTA*	Average	ATA*	
	15.2 %	52,4 %	32,5 %	
Change in financial situation in 1 y	worsened	no change	improved	
	36.8 %	44.6 %	18.6 %	

Source: Own research, n=231; Note \* Below the Average \*\* Above the Average

Adjusted standardised residuals (>2) show that the careless tend to be young and of average income, while the conscious are middle-aged or older and have above-average financial resources (Table 2). These results contradict the findings of Szűcs (2019), who found that awareness decreases as income levels increase.

*Table 2: Correlations between customer groups and demographic variables*

Demographic variables	Careless	Conscious <sup>x2</sup> ;	p; Corr. stand. residual*	Cramer's V		Typical cluster	
				Careless	Conscious		
Age	15-29	66.7 %	42.2 %	13.469;	<b>3.7</b>	-3.7	careless
	30-45	12.1 %	22.2 %	0.004;	-2.1	<b>2.1</b>	conscious
	46-64	19.1 %	32.2 %	0.241	-2.3	<b>2.3</b>	conscious
Financial situation	BTA	18.4 %	10.0 %	14.043;	1.7	-1.7	none
	average	58.2 %	43.3 %	0.001;	<b>2.2</b>	-2.2	careless
	ATA	23.4 %	46.7 %	0.247	-3.7	<b>3.7</b>	conscious

Source: Own research, n=231; Note: corrected standardized residual

About 32 % of the respondents said that they were aware of the concept of buying communities, which is low, probably because the concept is hardly mentioned in the media, and this is exacerbated by the fact that 19.5 % of the respondents actually know about domestic buying communities. In terms of behaviour, the take-up rate is much lower. 6.1 % of respondents said that they occasionally or often buy groceries from a group purchasing organization. Conscious consumers (41.1 %) knew the concept of buying communities, and 73.8 % of the careless people did not have any idea about this concept. 27.8 % of the conscious people were aware of the buying communities. 22.2 % of the conscious and 5.7 % of the careless group of consumers had already used the services of buying communities.

Awareness of the No Leftovers program is almost similar, with 16.0 % of respondents having heard of it and even fewer, just 12 (5.2 %), having read any of the No Leftovers food waste reduction studies. These data also show that almost none of the respondents (98.7 %) had participated in a No Leftovers in Schools program.

Of the NGOs, only the food bank and the initiatives and collections organised by the food bank are best known, but even so, only 22.5 % of respondents are aware of the work of the food bank, and almost as many (26.0 %) have donated food at collections organised by the food bank, more deliberately (31.1 %) than inadvertently (22.7 %), but the relationship is not significant. Further, 17 % of the careless and 31.1 % of conscious consumers had knowledge about the activity of the Hungarian Food Association. The data suggest that food rescue

organisations are not well known among consumers and are, therefore, unlikely to play a major role in reducing food waste in everyday life. 43.3 % of the unaware and 52.2 % of the aware are aware of the differences between avoidable, non-avoidable and avoidable food waste. The food-saving app Munch is the most widely known, with 43.3 % of respondents having heard of it, interestingly 47.5 % of the careless and 36.7 % of the aware. However, despite this awareness, the proportion of people (6.1 %) who have already made a purchase using the app is negligible. The limited awareness of food rescue organisations is the result of a number of interrelated factors. A paucity of media coverage and outreach has resulted in a general dearth of public awareness regarding these initiatives. The complexity of the messaging can lead to confusion among individuals, and generational and socioeconomic factors can further affect engagement. The lack of discernible outcomes may diminish the motivation to engage. To enhance awareness, it is imperative to implement targeted marketing and community engagement strategies to effectively communicate the significance of food waste reduction initiatives.

#### 4. Conclusions and suggestions

This research examined the awareness and role of food rescue organisations and sustainable consumption practices in the reduction of food waste. A quantitative online survey was conducted to gather insights into consumer behaviour, with a particular focus on non-governmental organisations (NGOs) and food-saving technologies. Although the survey sample was exploratory and not fully representative, with an over-representation of younger students and women—demographics that typically exhibit greater interest in environmental issues—the findings revealed noteworthy trends. In contrast to the findings of Szűcs (2019), which indicated a decline in awareness with rising income, this study found that middle-aged and older individuals with above-average income demonstrated higher levels of awareness regarding food waste reduction practices. However, awareness of NGOs and community-based initiatives aimed at reducing food waste remains relatively low, indicating a need for further education and shifts in attitudes toward sustainability. From a broader perspective, these findings contribute to the larger effort to combat food waste and promote sustainable consumption patterns. These findings highlight the crucial roles of NGOs, businesses, and government bodies in raising public awareness and fostering practical solutions for reducing food waste. Additionally, the study indicates that food-saving technologies, particularly among younger demographics, have the potential to serve as effective instruments for facilitating sustainable shopping behaviours.

It would be beneficial for future research to include expert interviews with leaders of NGOs and volunteers in food-saving communities. This would facilitate a deeper understanding of their practices, challenges, and impact. Furthermore, an online content analysis of social media platforms, such as Facebook, could yield valuable insights into public engagement and the reception of initiatives aimed at reducing food waste. These approaches would assist in the identification of more efficacious strategies for the enhancement of societal awareness and the facilitation of participation in sustainable food practices.

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