

Reducing plate waste in all-inclusive resorts: Strategy, precaution and barriers

Merve Çetin

ABSTRACT

Keywords:

Plate waste,
Tourist behavior,
Sustainable tourism.

Plate waste constitutes approximately a third of the food waste generated in the hospitality industry. Almost all this plate waste might also be prevented. This study intended to explore the strategies and measures tourists adopted for plate waste reduction and the barriers they encountered while implementing these measures. A qualitative research design was adopted for this purpose. Data were acquired through semi-structured interviews conducted with 23 tourists holidaying in an all-inclusive resort. Four themes emerged following the performed analyses: feelings about plate waste, strategies implemented for plate waste reduction, measures proposed for plate waste reduction, and barriers to plate waste reduction. This study contributes to understanding tourists' behavior to mitigate and avoid plate waste in the hospitality industry. The findings suggest important implications for policy makers, decision makers, industry representatives, businesses tackling plate waste, and other stakeholders responsible for reducing their waste and protecting the environment. Besides, academics working on tourists' behavior towards plate waste might benefit from this study. This study further provides a basis for reducing plate waste, thus minimizing the environmental damage caused by the tourism industry and developing interventions. Plate waste is a relatively novel and under-researched phenomenon, particularly in the hospitality industry. For this reason, this study contributes significantly to the existing literature about plate waste.

Article History:

Submitted: 11.05.2023

Revised: 25.08.2023

Revised: 04.09.2023

Accepted: 02.01.2024

Published Online: 04.01.2024

1. Introduction

Given its diverse social, economic, and environmental impacts (Pellegrini *et al.*, 2019; Wang *et al.*, 2017), food waste is a significant sustainability issue (Thyberg & Tonjes, 2016). This issue increases concerns over the environment and food adequacy and sparks social debates. (Alcorn *et al.*, 2020). It has also become an important research topic (Falasconi *et al.*, 2015; Knezevic *et al.*, 2019; Koivupuro *et al.*, 2012; Okumus *et al.*, 2020). Food waste bears a critical significance for the ever-growing hospitality industry. Food waste originated from this industry constitutes an essential component of all food waste. This industry is also the third biggest contributor to global food waste, subsequent to households and the agriculture industry (Stenmarck *et al.*, 2016).


Various studies have thus far examined food waste in the hospitality industry. Experimental studies about food waste measurement (Juvan *et al.*, 2018; Papargyropoulou *et al.*, 2016; Pirani & Arafat, 2016), causes of food waste (Heikkilä *et al.*, 2016; Juvan *et al.*, 2021; Okumus *et al.*, 2020; Sharma, 2020), and food waste prevention (Chang, 2022; Dolnicar *et al.*, 2020; Kallbekken & Sælen, 2013) are examples of the studies analyzing food waste in the hospitality industry. However, a bulk of these studies

investigated the causes of food waste from the perspectives of managers and employees.

In the hospitality industry, plate waste is a subcategory of food waste. It refers to the unconsumed food left on plates and is linked with tourists (Alcorn *et al.*, 2020). The amount of plate waste varies according to country, type of business, and meal. Research showed that tourists accounted for 15-400 gr plate waste per person (Dolnicar *et al.*, 2020; Juvan *et al.*, 2018; Papargyropoulou *et al.*, 2016). It was found that tourists produce more food waste, especially when on vacation, compared to food waste at home (Wang *et al.*, 2021). It is well-established that plate waste generated by tourists contributes considerably to food waste and can easily be avoided (Betz *et al.*, 2015; Chang, 2022; Juvan *et al.*, 2018; Kuo & Shih, 2016). This issue, however, is under-researched (Dolnicar *et al.*, 2020; Filimonau & de Coteau, 2019; Gössling & Peeters, 2015; Huang *et al.*, 2021). Since very few studies on food waste focused on tourists, they were the focus in the present study. For this reason, it is yet unclear how to promote tourist behavior to help reduce plate waste and how to work proactively towards this goal.

To date, this issue has not been extensively studied, albeit the clear urgency for research to determine the behavior

Research Paper

Merve Çetin: Assoc. Prof., Burdur Mehmet Akif Ersoy University, Burdur, Türkiye, Email: mgudek@mehmetakif.edu.tr, Orcid Id: 0000-0001-5254-7428 



This work is licensed under a Creative Commons Attribution (CC-BY) 4.0 License

and suggestions for plate waste reduction and the key factors that prevent it. To be frank, research on plate waste have focused primarily on determining its causes (Dolnicar & Juvan, 2019; Juvan *et al.*, 2021). For instance, Juvan *et al.* (2021) proposed a conceptual model for the drivers of plate waste. In this model, it was determined that such drivers as portioning, food quality, food familiarity, and laziness impacted plate waste. Some studies emphasized that relatively low public awareness and a lack of awareness of tourists' contribution to their own plate waste escalated the amount of plate waste (Aschemann-Witzel *et al.*, 2015; Li & Wang, 2020; Okumus *et al.*, 2020; Wang *et al.*, 2017).

The findings of these studies are undoubtedly significant. However, they failed to respond to the questions about the drivers and barriers to food waste reduction and prevention. There is still a lack of understanding about the nature of tourists' behavior to minimize plate waste. For effective interventions to reduce plate waste, it is crucial to learn more about the perceived opportunities, capabilities and barriers to minimizing plate waste for tourists.

To address the gaps in the literature, this study was conducted to explore the strategies, recommendations that tourists apply to mitigate plate waste and the barriers to this. This paper advances the research agenda on plate waste in the tourism sector by exploring it in a sample of all-inclusive hotels in Turkey. The research questions the study has set out to answer are as follows: 1) What strategies are implemented for plate waste reduction in all-inclusive hotels by tourists? 2) What are the measures proposed for plate waste reduction by tourists? 3) What are the barriers to plate waste reduction? The study sheds light on the phenomenon of tourism food waste in the context of a large global economy characterized by rapidly developing patterns of out-of-home food consumption and a promptly evolving tourism sector, thus providing insights into prospective policy and management interventions required for effective mitigation. The findings are expected to contribute to the limited literature about plate waste. The study also provides valuable information and recommendations for the authorities, non-governmental organizations and managers interested in reducing plate waste.

2. Literature review

Food waste is viewed as a barrier to global sustainability due to its negative environmental, social and economic impacts (Schanes *et al.*, 2018; WRAP, 2015). Environmentally, food waste produces methane - a potent greenhouse gas (GHG) associated more with greenhouse gas emissions and climate change (Porter & Reay, 2016). Socially, it jeopardizes the sustainability of the food supply chain (business and environmental), contributes to food insecurity and accelerates social inequality (Filimonau & de Coteau, 2019). Economically, the FAO estimates that global food waste causes economic losses of US\$ 940 billion per year (Hanson *et al.*, 2016, p. 11). For such

reasons, the United Nations recognizes food waste as a social problem of global importance (Parfitt *et al.*, 2010). In September 2015, the United Nations adopted a series of sustainable development goals. One of these goals, Goal 12.3, calls on members to halve food waste per capita by 2030 (Welivita *et al.*, 2015).

Tourism and hospitality contribute significantly to the problem of food waste. Because of the importance of food in the tourism context, food waste contributes considerably to the environmental damage caused by the tourism industry (Gössling *et al.*, 2012). The tourism industry generates a significant amount of waste, almost half of which is food waste (Curry, 2012). A sub-category of food waste produced in tourism and hospitality is plate waste.

Plate waste refers to edible food left on plates by tourists. Tourists leave 8% more uneaten food on their plates than they do at home (Wang *et al.*, 2021). Given that the hospitality sector is a growing industry, plate waste is considered to gradually increase and turn into a major issue. It was noted that the socio-demographics of tourists influenced the amount and composition of plate waste. The amount of plate waste by particularly female tourists was found to be higher than that of males (Wang *et al.*, 2021). Since about 12 percent of the food served is not consumed (Engström & Carlsson-Kanyama, 2004), plate waste accounts for about one-third of food waste in tourism and hospitality (EPA Region, 2016). It was further revealed that families with children caused more plate waste (Juvan *et al.*, 2018; Koivupuro *et al.*, 2012). It was also discovered that the amount of plate waste varied according to countries, businesses, and different food service concepts. For instance, a study found that hotels in Germany (40 g per person) (Beretta & Hellweg, 2019) generated more plate waste than hotels in Austria (20 g; 32% of total avoidable waste). It was also demonstrated that hotel guests in Slovenia produced 15 g of plate waste per person at breakfast buffets (Juvan *et al.*, 2018) and 45 g of plate waste per person at dinner (Dolnicar *et al.*, 2020). Another study found Malaysian hotel guests responsible for 300 g of plate waste at breakfast buffets and 400 g at dinner (Papargyropoulou *et al.*, 2016). In yet another study comparing the plate waste of casual-dining and fine-dining restaurant customers in Canada, fine-dining restaurant customers were found to produce considerably lower plate waste per capita (46 g against 25 g) (McAdams *et al.*, 2019). These findings justify the need for further research on plate waste, particularly in the context of the hospitality industry.

Plate waste is caused by large portion sizes, food dissatisfaction, food familiarity, loss of appetite, over-service, disappointing food taste, and lack of preferred meal options (Çetin, 2023; Çetin & Süren, 2022; Dolnicar *et al.* 2020; Juvan *et al.*, 2021; Vermote *et al.*, 2018; von Massow & McAdams, 2015; WRAP, 2013). Various strategies for plate waste mitigation have been developed based on the leading causes of plate waste generation.

Takeaway bags, adjusting portion sizes or allowing additional portions on demand, adjusting regular serving of side dishes, and creating food waste campaigns were among these strategies (Alcorn *et al.*, 2020; Filimonau *et al.*, 2020; Principato *et al.*, 2018; von Massow & McAdams, 2015).

In the field studies carried out to reduce plate waste, it was concluded that moral messages alone do not work. Dolnicar *et al.* (2020) conducted a field experiment comparing moral persuasion with the zero-waste gift given at the end of the stay. At the end of the study, it was stated that while the reward system significantly reduced the volume of dish waste, the effect of environmental messaging was not much. In a study by Chang (2022), it was concluded that moral persuasion works especially well with discount incentives. Finally, Cozzio *et al.* (2021) concluded that persuasive interventions are a valuable tool to encourage hotel guests to minimize plate waste compared to no intervention.

Vacations are by nature an activity that tourists pursue for pleasure and relaxation. Tourists therefore may end up with more food waste at all-inclusive hotels than at home or usual times. It would not be possible to assume that previously proven interventions to prevent food waste would work in the all-inclusive hotel system because it is impossible to impose a fine on a hotel guest for plate waste. Rewarding them for reducing plate waste does not encourage them either. Therefore, different interventions are needed in all-inclusive hotels. In this regard, changing service delivery methods to encourage full consumption without waste and creating individual strategies to change tourist behavior might minimize food waste.

All-inclusive hotels are by nature very different from the context of other hotels and restaurants. In all-inclusive hotels, meals are served in buffets, pricing is done and paid in advance. Unlike traditional restaurants and hotels, all-inclusive hotels offer plenty of food - with no specific portion size and extra charge for large portions. Tourists can therefore take more than they can eat and waste edible food in the all-inclusive system (Wansink & van Ittersum, 2013).

3. Research methodology

This study aimed to explore the strategies and measures tourists adopted to reduce plate waste and the barriers to this in all-inclusive hotels, where food waste is considered a major problem. For this purpose, a qualitative research design was adopted for primary data collection and analysis. Qualitative research was deemed an appropriate method to examine this previously understudied topic, given its potential to illuminate under-researched phenomena (Hennink *et al.*, 2020). This method is also suitable for exploring human attitudes and behavior under complex and difficult-to-predict conditions, such as the hospitality and tourism industries (Tzschentke *et al.*, 2008). It is also considered a good way of discovering the

strategies and measures adopted by tourists to reduce plate waste and the unknown features of the barriers and key factors that have not yet been identified. There are several reasons for adopting an exploratory qualitative design. There are very few studies examining the plate waste behavior of domestic tourists in Turkey in an all-inclusive context (Çetin & Süren, 2022). For this reason, it was decided that in-depth interviews with tourists would provide richer and more comprehensive data. In addition, it is thought that the findings obtained in the qualitative research design will form the basis for future quantitative studies and will contribute to the basic and preventive measures taken to reduce plate waste in all-inclusive hotels.

Data collection

As part of the qualitative research, in-depth semi-structured interviews were held to enrich the data and obtain more detailed information. Semi-structured interviews were administered to determine in detail the honest opinions and attitudes of tourists on such sensitive issues as plate waste and mitigation strategies (Creswell & Creswell, 2017; Silverman, 2013). An interview form was created following the literature review. A set of questions were prepared regarding the strategies and measures tourists adopted and the barriers they might have encountered while implementing these measures in reducing plate waste in all-inclusive hotels. The interview form was reviewed by two experts. A pilot study was conducted with three tourists before the interviews. Upon feedback from the participants, some revisions were made for the understandability and comprehensiveness of the questions.

The target audience of this study was tourists staying in all-inclusive hotels in Antalya. Criterion and maximum variation sampling methods were used to determine the sample. As part of criterion sampling, the criterion of vacationing regularly and annually at all-inclusive hotels was sought in participants. With maximum variation sampling, it was intended to determine whether there were any commonalities among the situations that vary in this phenomenon and reveal the different dimensions of the problem (Yıldırım & Şimşek, 2016). Accordingly, the researcher tried to maximize variation in variables such as age, gender, and educational level when identifying participants. Before initiating the data collection process, ethical approval was obtained from Burdur Mehmet Akif Ersoy University (06.04.2022 and 2022/617).

Participants were selected from domestic tourists staying at all-inclusive hotels in Antalya. To ensure the diversity of the potential pool of participants, domestic tourists vacationing in two different hotels were invited to collaborate. Within the scope of this research, assistance was received from the food and beverage manager and service personnel to reach the participants. The interviews were conducted with the participants at the specified times after they ate their meals. The recruitment criteria were as follows: 1) regular and annual vacations at all-inclusive

hotels; 2) be over 18 years old. Those who satisfied the criteria for inclusion and volunteered for participation were asked by the researcher to participate in the study. The recruited participants were informed in detail about the purpose, benefits and risks of the study and signed a consent form. The interviews were conducted while on vacation to avoid such biases as retrospective recall. Full confidentiality and anonymity of data were guaranteed prior to the interviews to reduce the negative effects of social desirability. The interviews were completed by the researcher at the first hotel in the first week of June. Afterwards, negotiations started in the second hotel. The interviews were generally held at the times specified by the participants. A semi-structured questionnaire was used during the interview. In the interview, the participants were asked questions in four different categories (their feelings about plate waste, what they do to reduce plate waste, suggestions for reducing plate waste, and obstacles to reducing plate waste). The prepared questions were pre-checked by the participants. The answers to the questions posed to the participants are presented in the form of direct quotations. Interviews were conducted in Turkish, and no incentives were offered to the participants. Participants answered all questions.

To determine the sample size, data saturation which “is reached when there is enough information to replicate the study when the ability to obtain additional new information has been attained, and when further coding is no longer feasible”, was used (Fusch & Ness, 2015, p. 1408). According to Bowen (2008), saturation is reached when participants start to give similar answers and do not add any new information to the study. Lastly, Thomson (2010, as cited in Marshall *et al.*, 2013) claims 10-30 interviews are necessary to reach saturation, while Guest *et al.* (2020) claim it to be 11-16. In this study, 23 interviews were deemed acceptable to reach saturation (Table 1). Initially, ten interviews were conducted at each hotel, and repetitive responses were found. The data collection process was completed since data saturation was evident in the other interviews held afterwards.

The participants’ consent was obtained for voice recordings before the interviews. The participants were then informed briefly about plate waste. The interviews were held in June, 2022 and lasted averagely for 35-50 minutes. The field notes and voice recordings were transcribed thereafter. The field notes and voice recordings were transcribed thereafter. Transcription was used to analyze the interviews. When the information was still new, it was given importance to put it in writing on the same day after the interviews, and the interviews, which were audio-recorded with the transcription process, were put into written form in the computer environment. After the transcription process, the analysis process of the collected data was started.

Table 1. Participant Overview

Participant no	Gender	Age	Education level	Vacation experience in an all-inclusive resort
P1	Male	44	Doctor of philosophy	++
P2	Male	22	Secondary/High School	+
P3	Female	61	Secondary/High School	+++
P4	Female	23	Bachelor's degree	++
P5	Female	59	Bachelor's degree	++
P6	Male	30	Master's degree	+
P7	Male	49	Secondary/High School	++
P8	Male	36	Doctor of philosophy	++
P9	Female	29	Master's degree	+
P10	Male	51	Bachelor's degree	+++
P11	Female	34	Secondary/High School	+++
P12	Male	59	Doctor of philosophy	++
P13	Female	54	Doctor of philosophy	+++
P14	Female	32	Bachelor's degree	++
P15	Male	34	Master's degree	++
P16	Female	47	Secondary/High School	+
P17	Male	25	Bachelor's degree	+
P18	Female	26	Bachelor's degree	+++
P19	Female	35	Doctor of philosophy	+++
P20	Female	40	Secondary/High School	++
P21	Male	55	Doctor of philosophy	++
P22	Male	48	Secondary/High School	+++
P23	Female	42	Master's degree	+

Note: + Limited (1-5 times); ++ Medium (6-10 times); +++ Comprehensive (10 times and above)

Source: Elaborated by Author

Data analysis

Thematic analysis, which provides an opportunity for an in-depth analysis of specific themes and sub-themes and a flexible but systematic approach to qualitative data discovery, was utilized in analyzing the data (Braun & Clarke, 2006; Saunders *et al.*, 2016). A multi-stage approach was adopted for thematic analysis, in congruence with Berg-Schlösser *et al.* (2009), Burnard (1991) and Schutz (1962). In this sense, the voice recordings were transcribed first. Then, the transcripts were carefully read by two researchers to ensure data familiarity and identify the patterns and meanings (Berg-Schlösser *et al.*, 2009). The field notes and transcriptions were then scrutinized, and open coding was performed next (Corbin & Strauss, 2007). Interview transcripts were independently coded and labeled by the researchers to distinguish the main codes and determine their importance (Braun & Clarke, 2006). Finally, the coding made by the researchers was compared

with the in-house gastronomy specialist. At this stage, discussions took place on how to categorize codes more effectively until mutual agreement was reached (Schutz, 1962). Following the agreement on codes, the discussions ended. Draft themes were created based on the performed coding. Four themes emerged as a result of the analysis: (1) feelings about plate waste, (2) strategies implemented for plate waste reduction, (3) measures proposed for plate waste reduction, and (4) barriers to plate waste reduction (Table 2).

Table 2. The coding structure for interviews

Themes	Codes	Number	%
Feelings about plate waste	Sadness	10	%43.47
	Frustration	5	%21.73
	Remorse	12	%52.17
	Guilt	7	%30.43
	Comfort	3	%13.04
	Strategies implemented for plate waste reduction	Portion control	21
Using common plates		17	%73.91
Food choice		8	%34.78
Measures proposed for plate waste reduction		Changing or redefining service concept	19
	Reducing portion and plate size	13	%56.52
	Preparing foods suitable for tourist profiles	8	%34.78
	Awareness and consciousness-raising activities	21	%91.30
	Legal regulation and policy	9	%39.13
	Sharing foods	16	%69.56
	Barriers to plate waste reduction	Open buffet service	18
Concern of businesses		5	%21.73
Inadequate regulation and policy		17	%73.91
Lack of awareness and consciousness		20	%86.95

Source: Elaborated by Author

Manifold strategies exist for researchers to ensure and demonstrate reliability in qualitative research (Elo & Kyngäs, 2008; Graneheim & Lundman, 2004). The first strategy is to provide detailed information on all research processes. To achieve this, participant selection and characteristics and procedures for data collection and analysis were expounded (Creswell & Miller, 2000). As a second strategy, researchers specialized in qualitative research were sought for advice during the transcription of voice recordings and data analysis (Yıldırım & Şimşek, 2016). In this regard, the relevance of interview records and texts was examined. Additionally, the relevance of direct quotes associated with the themes and subthemes

created at the data analysis stage was evaluated. As a third strategy, the findings were compared with those of the studies conducted on similar topics (Yıldırım & Şimşek, 2016).

4. Result

The analysis of interview data revealed the following themes: (1) feelings about plate waste, (2) strategies implemented for plate waste reduction, (3) measures proposed for plate waste reduction, and (4) barriers to plate waste reduction.

Feelings about plate waste

The participants had varied emotions about plate waste. While expressing their feelings about plate waste, the participants used expressions of sadness, frustration, remorse, guilt, and comfort. The majority expressed negative feelings towards plate waste. Interpretive codes such as “starving people” and “labor waste” were used by participants to describe these emotions.

Some of the answers obtained in the study were given as examples.

I feel guilty and remorseful because there are loads of starving people... (P22, Male, 48).

I do not know whether it is remorse or frustration. Maybe it is labor. I mean, the food goes through a lot of stages until it is served to us, and that requires labor (P12, Female, 47).

I think taking too much food is greed. I get angry and sad, and I also think it is sinful. After all, waste is considered bad in our religion (P6, Male, 30).

Surprisingly, however, some participants noted that they did not care about plate waste, especially on vacation. They expressed that they were in a relaxed mood and ignored this issue, stating that they wanted to enjoy their holiday, try new things, and get away from daily routines on vacation.

I do not mind wasting food as I get away from my daily routine when I am on vacation. I am comfortable about leaving my food on the plate. Maybe I do not care. I think it is not something I always do (P2, Male, 22).

Strategies implemented for plate waste reduction: Portion control

The majority of the participants stated that they primarily paid attention to the portions they received to avoid plate waste and that they prevented plate waste by controlling their portions. They noted that this was the most effective and primary strategy for plate waste reduction.

Some of the answers obtained in the study were given as examples.

I take food on my plate in portions that I can eat (P9, Female, 29).

I tried to consume more carefully in terms of both quantity and portion (P23, Female, 42).

Using common plate

Most participants stated that they prevented plate waste by sharing with others (for example, family and friends) the meals they received from the buffet. Some even stated that they took some products on a single plate and consumed them together with those at the table, especially to benefit from the food variety offered at buffets and avoid plate waste.

Some of the answers obtained in the study were given as examples.

If I were with another person or vacationed with my partner, I would not take dessert on my plate but make a common plate to avoid waste (P3, Female, 61).

My partner and I take a variety of side dishes especially in one plate. Then we put it on the table and eat it together. Often, we eat it all. Also, we do this with bakery products (e.g. bun, bagel, etc.) and fruit (P8, Male, 36).

Particularly with desserts. I take them on the table, and we consume them together (P20, Female, 40).

Food choice

Participants stated that while choosing their food from the buffet, they chose according to their food-related personality traits. In particular, some participants stated that they were not open to new tastes and therefore they did not take foods with unfamiliar tastes on their plates hence prevented food waste.

Some of the answers obtained in the study were given as examples.

I do not prefer the foods I am not familiar with or sure of, so I take the foods I think I can eat (P8, Male, 36).

I do not take unfamiliar foods from the buffet because I know I will leave them on plate (P11, Female, 34).

However, some participants stated that they were willing to try new foods. They therefore choose foods that they have not tasted before when choosing food from the buffet. Thus, they stated that they caused less waste by reducing the variety of food they took on their plates. However, they stated that they produced plate waste beyond their control as they tried new foods in this process.

I do not take the products with familiar tastes, so I take different foods with different tastes. This way, I leave less food on the plate and avoid waste by taking less food (P3, Female, 61).

It is a great pleasure for me to taste new foods from the buffet when I am on vacation. Although I am careful about creating plate waste, it is sometimes inevitable to create plate waste when trying new foods (P14, Female, 32).

Measures proposed for plate waste reduction: Changing or redefining service concept

The majority of the participants suggested various changes in the service concept of businesses to avoid plate waste. Participants also noted that the buffet service offered by

hotels increased plate waste, and this service concept should be abandoned or food variety at open buffets should be reduced. Tougher recommendations included limiting patrons to a single plate, using a voucher system, adopting a pricing strategy, or serving food by staff (instead of self-service).

Some of the answers from the participants that is related how to reduce plate waste were given as examples:

I think the buffet system should be abandoned first (P12, Male, 59).

I believe that serving food by staff in hotels offering buffet services might reduce plate waste. In addition, this prevents getting too much food on the plate (P20, Female, 40).

First, an additional fee can be demanded for the extra food taken from open buffets in businesses. An extra fee can be charged for extra weight in grams and portions by weighing the plates (P23, Female, 42).

Reducing portion and plate size

Participants stated that reducing portion and plate sizes would be effective in plate waste prevention. They also said that portion sizes varied from business to business. It was further asserted that showing portion sizes to customers via technological means (e.g. virtual reality-VR) before ordering especially in à la carte restaurants of hotels would be effective in avoiding plate waste.

Some of the answers from the participants that is related how to reduce plate waste were given as examples:

I think the plates in hotels should be reduced in size. Tourists take too much when the plates are big. Naturally, they cannot maintain portion control (P10, Male, 51).

Portion sizes differ among businesses... for example, awareness can be raised for tourists about the portion sizes on the menu via virtual reality (VR) technology because the visuals used on menus can be misleading. I think plate waste can largely be avoided this way (P4, Female, 23).

Preparing foods suitable for tourist profiles

Many participants stated that the foods at buffets should be prepared in accordance with tourist profiles. They expressed that businesses should consider the demographic characteristics, nationality and cultural background of tourists when preparing the foods to be served at buffets.

Some of the answers from the participants that is related how to reduce plate waste were given as examples:

Tourists' profiles, especially their nationality, are an important factor in food preferences because the country-of-origin shapes eating habits. I believe that unappealing foods at buffets or those they tried out of curiosity and disliked increase plate waste (P19, Female, 35).

Foods appealing to tourists' taste buds should be prepared in preferred restaurants or hotels. We went to a thermal hotel because of my partner's sickness. The buffet contained fatty and heavy foods, although almost all hotel customers were elderly. The customers left food on plates, even though they

took them. For this reason, I think businesses should consider tourist characteristics (P5, Female, 59).

Awareness and consciousness-raising activities

Participants stated that awareness- and consciousness-raising activities should be performed regarding food waste and its consequences to accelerate behavioral change towards plate waste reduction. They also remarked that through cooperation, businesses and governments could make informative posters and publications containing visuals, graphics, photographs, and statistics, particularly on plate waste and its consequences. It was further uttered that both businesses and governments should conduct awareness- and consciousness-raising activities to create public awareness and consciousness towards food waste and promote behavioral change.

Some of the answers from the participants that is related how to reduce plate waste were given as examples:

Governments should make public service announcements to raise awareness among consumers to reduce food waste. People should be made more aware of these issues (P7, Male, 49).

Maybe hotel managements can avoid plate waste through small posters and informative papers to raise customers' awareness on this issue (P18, Female, 26).

Legal regulation and policy

Participants maintained that governments should introduce legal regulations and policies on this issue to reduce plate waste. They also expressed that governments should give incentives to businesses through legal regulations and implement various social responsibility projects aimed at reducing food waste, especially in the tourism industry. It was further asserted that adopting a management policy for food waste, implementing sustainable strategies and allocating resources to this issue might reduce plate waste and contribute to food sustainability.

Some of the answers from the participants that is related how to reduce plate waste were given as examples:

Regulations without strong gaps can be prepared in this issue. Extensive work can be initiated to promote the separation of food waste and the logistics of collecting food waste (P1, Male, 44).

At least, this issue should be tackled by introducing regulations or legislations. Projects can be done about this issue. I also think that a system should be established to evaluate the food waste of these businesses (P13, Female, 54).

Governments should issue incentives and make tax breaks for businesses that produce less waste (P16, Female, 47).

Recycling activities can be applied in food waste, or businesses can be granted incentives to evaluate food waste as fertilizers. Food promotion or financial support can be provided. Food waste can be underlined as a social

responsibility issue. Incentives can be provided to animal shelters or businesses that carry out social responsibility projects (P15, Male, 34).

Sharing foods

The majority of respondents suggested sharing leftover foods in businesses with organizations or animal shelters in need to avoid waste.

Some of the answers from the participants that is related how to reduce plate waste were given as examples:

Work can be done to provide leftover foods to animal shelters and such organizations (P17, Male, 25).

There are animal shelters in every province and district in Turkey. Animal care, especially feeding costs a lot. Plate waste is harmful to the environment and economy. In my opinion, the cost of feeding animals and the damage of plate waste to the environment and economy can be transformed into something positive through the protocols to be made between local governments and hotels (P14, Female, 32).

Barriers to plate waste reduction: Open buffet service

Open buffets were considered the biggest barrier to plate waste reduction by the majority of the participants. It was uttered that open buffets increased plate waste, thus constituted the biggest barrier to the measures taken for plate waste reduction.

Some of the answers obtained in the study were given as examples.

I see the buffet service as the biggest barrier to reducing food waste. First, buffet service in businesses should be made manageable. I think it causes a lot of food waste (P9, Female, 29).

Now, when we eat out, we eat what our money is worth. And we do not waste that much the foods we pay for. However, I think open buffets are the biggest barrier to reducing waste. Customers do not pay for the foods at buffets, so they cause too much waste (P21, Male, 55).

Concern of businesses

Participants perceived the concerns of businesses about competition, customer satisfaction and loyalty as a barrier to reducing plate waste. In addition, the majority stated that businesses would deny the possibility of designing consumer behavior to reduce plate waste for fear of customer dissatisfaction and subsequent loss of loyalty. It was asserted that businesses prioritized other operational procedures such as customer satisfaction.

Some of the answers obtained in the study were given as examples.

In my opinion, hotels do not show interest and relevance to such strategies and may be reluctant to implement them due to customer satisfaction and competition (P10, Male, 51).

Fear of customer loss and satisfaction is an important obstacle for businesses (P20, Female, 40).

I think that businesses and managers are becoming insensitive to this issue for fear that the hotels are profit-oriented and that the customers would look negatively on the measures to be taken against waste (P23, Female, 42).

Inadequate regulation and policy

The majority of the participants asserted that the lack of regulation and policy on food waste was a significant barrier. The absence of legal regulations and policies addressing food waste was viewed as an important barrier to controlling and preventing food waste. The participants voiced that regulations on this issue should be made soonest.

Some of the answers obtained in the study were given as examples.

I think the biggest barrier is governments' inability to control this issue and the negligence and lack of awareness (P11, Female, 34).

Local governments or governments do not consider regulatory and supervisory policies as necessary in this regard. I think there is a problem of insufficient control and policy (P21, Male, 55).

Lack of awareness and consciousness

Most of the participants said that tourists' lack of awareness and consciousness about food waste was a barrier. It was also claimed that the absence of awareness and consciousness is especially important for tourists to change their behavior.

Some of the answers obtained in the study were given as examples.

I think people's lack of consciousness is the most important barrier. People need to change their wasteful behavior. Governments alone cannot prevent or restrict it. The industry is too big, so it is entirely up to the tourists (P7, Male, 49).

Initially, I think people's lack of consciousness and awareness is the biggest barrier to this (P13, Female, 54).

Lack of a very long-term, ancient awareness ... For example, most people easily throw away food even at home. This may be due to the lack of awareness on this issue (P19, Female, 35).

5. Discussion

The findings of this study concur with those in the related literature. The participants expressed such various emotions as guilt, frustration and remorse when expressing their feelings about plate waste. These emotions are common to people's feelings about food waste and align with the findings of other studies (Li & Wang, 2020; Nunkoo *et al.*, 2021; Pearson & Perera, 2018; Russell *et al.*, 2017). The strategies applied by the participants to reduce waste were portion control, using common plates, and food choice. Portion control indicated to reduce plate

waste is consistent with the findings of previous studies (Kallbekken and Sælen, 2013; Papargyropoulou *et al.*, 2016; Heikkilä *et al.*, 2016; Principato *et al.*, 2018). Using common plates and food choice is, however, a fairly new finding.

Within the scope of the recommendations endorsed for reducing plate waste, legal regulations and policies, creating awareness and consciousness campaigns, and proposals for sharing food concur with the findings of previous studies (Filimonau & de Coteau, 2019; Filimonau *et al.*, 2020; Hamerman *et al.*, 2018). However, suggestions on the removal or alteration in the buffet concept are very important, and make a very modest contribution to the literature. In fact, participants emphasized that the buffet service constituted a barrier to plate waste mitigation. This finding aligns partially with those of previous studies as it was indicated that the buffet service played an important role in plate waste generation (Chang, 2022; Li & Wang, 2020). It was further reported that inadequate regulations and policies were a barrier to plate waste reduction. This is consistent with the findings of earlier studies that viewed regulations and incentives as a key element in raising public awareness and including consumers and hospitality businesses in plate waste reduction (Gössling *et al.*, 2016; Kasim & Ismail, 2012; Priefer *et al.*, 2016; Revell & Blackburn, 2007).

Theoretical implications

This study contributes to the literature by examining the reduction and prevention of plate waste and barriers to it as a sustainable practice in all-inclusive hotels from the viewpoints of tourists. Previous research on plate waste in the hospitality industry focused on its causes and experimental studies on plate waste reduction (Chang, 2022; Dolnicar *et al.*, 2020; Kallbekken & Sælen, 2013). By illuminating tourists' approach to plate waste reduction, the present study provides a different scope for understanding their motives and barriers to plate waste reduction. It also contributes to the literature by focusing on individual strategies to reduce plate waste. It further reveals the adoptable measures to reduce plate waste and the main barriers to it. Despite a consensus on tourism sustainability, very few studies have thus far concentrated on the measures that can be taken to achieve this and the barriers to it. For this reason, this study also establishes a basis for the implementable measures for plate waste reduction and ensure tourism sustainability along with the barriers to it.

Practical Suggestion

Governments and businesses should create an environment where the common norm is not food waste and raise awareness on plate waste. It is very important to raise tourists' awareness and consciousness about food waste. In particular, businesses can inform tourists through management and employees about the applicable strategies for plate waste reduction. They can prepare informative

publications as a guide to plate waste reduction. Additionally, informative posters concerning this issue can be hung in restaurants and different parts of hotels. Business management can also reduce food variety served at open buffets and plate size. Businesses can further introduce several changes and restrictions in food variety at open buffets. For instance, serving a certain number of each food type might help reduce food variety and abundance. In addition, an extra fee may be charged for buffet meals exceeding a certain weight of grams. Adopting such measures and interventions might also show businesses as corporate citizens tackling global challenges in the eyes of tourists and increase their potential to improve their corporate image and reputation (Pirani & Arafat, 2016; Thyberg & Tonjes, 2016).

The absence of government policies and national legislation was regarded as a significant barrier to plate waste mitigation. Governments should reinforce the legal and corporate framework for food waste in hospitality businesses. Hospitality businesses must establish 'Food Waste Control' and allocate sufficient resources to this issue. This should be made mandatory by governments. Governments might also subsidize hospitality businesses for the proper handling of food waste. In addition, governments should launch active food waste campaigns in cooperation with educational institutions and other stakeholders in the tourism industry to raise public awareness and consciousness. Targeting tourists, these campaigns should enhance their knowledge about tourism sustainability, the harms of food waste, and socio-economic issues such as famine and hunger. Last but not least, anti-food waste awareness might be developed in children at an early age through education at schools.

Limitations and future research directions

Certain limitations exist for this study. First, interviews were held with domestic tourists staying at all-inclusive hotels in Antalya, Turkey. Another limitation is the small size of the research sample and the limited generalizability of the findings due to the research method adopted. The last limitation is the examination of plate waste only from tourists' perspectives. Despite these limitations, the findings of this study might be used as a stepping stone for future studies. Prospective studies might first examine tourists' strategies empirically towards plate waste reduction. Second, the findings of the study should be tested on a stronger sample targeting tourists from different nationalities and cultural backgrounds. This way, strategies that tourists use to reduce plate waste can be developed in line with the feedback from their consumer behavior. Third, a pilot implementation of the measures to be taken by businesses should be conducted. This way, the effectiveness of the measures should be tested. In addition, measures and alternative buffet systems should be developed considering the feedback from businesses and tourists. Fourth, future research should explore the views

of governments on how to implement the measures to be taken by national governments for plate waste reduction.

6. Conclusion

This study explored the strategies tourists employed for plate waste reduction, related recommendations, and barriers to it. Four main conclusions were reached within the scope of the study. First, plate waste was found to be unavoidable, especially on vacation, despite tourists' concern and awareness of the phenomenon of plate waste. Their level of knowledge and awareness on this issue are not sufficient to reduce plate waste. Such emotions as guilt, frustration, and remorse towards plate waste were considered to be linked to plate waste reduction. These emotions can therefore be used effectively towards this goal.

Second, a number of methods were adopted by tourists for plate waste reduction. These methods prioritized portion control, using common plates and food choice. Third, abandoning or altering the buffet service, reducing portions, performing awareness- and consciousness-raising activities were suggested for plate waste mitigation. Fourth, the presence of buffet service, lack of legal regulations and policies, lack of awareness and consciousness, and concerns of businesses were cited as barriers to reducing plate waste.

References

- Alcorn, M. R., Vega, D., Irvin, R., & Paez, P. (2020). Reducing food waste: an exploration of a campus restaurant. *British Food Journal*, 123(4), 1546-1559.
- Aschemann-Witzel, J., De Hooge, I., Amani, P., Bech-Larsen, T., & Oostindjer, M. (2015). Consumer-related food waste: Causes and potential for action. *Sustainability*, 7(6), 6457-6477.
- Beretta, C., & Hellweg, S. (2019). Potential environmental benefits from food waste prevention in the food service sector. *Resources, Conservation and Recycling*, 147, 169-178.
- Berg-Schlosser, D., De Meur, G., Ragin, C., & Rihoux, B. (2009). Qualitative comparative analysis (QCA) as an approach..
- Betz, A., Buchli, J., Göbel, C., & Müller, C. (2015). Food waste in the Swiss food service industry—Magnitude and potential for reduction. *Waste management*, 35, 218-226.
- Bowen, G. A. (2008). Naturalistic inquiry and the saturation concept: a research note. *Qualitative research*, 8(1), 137-152.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Burnard, P. (1991). A method of analysing interview transcripts in qualitative research. *Nurse education today*, 11(6), 461-466.
- Chang, Y. Y. C. (2022). All you can eat or all you can waste? Effects of alternate serving styles and inducements on

- food waste in buffet restaurants. *Current Issues in Tourism*, 25(5), 727-744.
- Corbin, J., & Strauss, A. (2007). *Basics of Qualitative Research Techniques and Procedures for Developing Grounded Theory*, 4th Editio., SAGE Publishing, Oaks.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into practice*, 39(3), 124-130.
- Curry, R. (2012). The composition of waste disposed of by the UK hospitality industry (No. RES093-001). *Waste and Resources Action Programme (WRAP), United Kingdom*.
- Dolnicar, S. & Juvan, E. (2019), Drivers of plate waste: A mini theory of action based on staff observations, *Annals of Tourism Research*, Elsevier Ltd, 78, 102731.
- Dolnicar, S., Juvan, E., & Grün, B. (2020). Reducing the plate waste of families at hotel buffets—A quasi-experimental field study. *Tourism Management*, 80, 104103.
- Cozzio, C., Tokarchuk, O., & Maurer, O. (2021). Minimising plate waste at hotel breakfast buffets: an experimental approach through persuasive messages. *British Food Journal*, 123(9), 3208-3227.
- Çetin, K., & Süren, T. (2022). An Investigation into the Causes of Food Waste by Tourists in All-inclusive Resorts in Turkey. *Journal of Quality Assurance in Hospitality & Tourism*, 1-23.
- Çetin, M. (2023). “Konaklama ve yiyecek içecek sektöründe tabak atığına ilişkin alanyazın taraması”, Gıda bilimi ve Gastronomi II, in (137-165), İksad Publishing House, Ankara.
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of advanced nursing*, 62(1), 107-115.
- Engström, R., & Carlsson-Kanyama, A. (2004). Food losses in food service institutions Examples from Sweden. *Food policy*, 29(3), 203-213.
- EPA. (2016). Food: Too Good To Waste—An Evaluation Report for the Consumption Workgroup of the West Coast Climate and Materials Management Forum.
- Falascioni, L., Vittuari, M., Politano, A., & Segrè, A. (2015). Food waste in school catering: An Italian case study. *Sustainability*, 7(11), 14745-14760.
- Filimonau, V. & de Coteau, D.A. (2019), Food waste management in hospitality operations: A critical review, *Tourism Management*, Elsevier Ltd, 71, 234–245.
- Filimonau, V., Zhang, H., & Wang, L. E. (2020). Food waste management in Shanghai full-service restaurants: A senior managers’ perspective. *Journal of Cleaner Production*, 258, 120975.
- Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research.
- Gössling, S., & Peeters, P. (2015). Assessing tourism's global environmental impact 1900–2050. *Journal of Sustainable Tourism*, 23(5), 639-659.
- Gössling, S., Cohen, S. A., & Hares, A. (2016). Inside the black box: EU policy officers' perspectives on transport and climate change mitigation. *Journal of Transport Geography*, 57, 83-93.
- Gössling, S., Peeters, P., Hall, C. M., Ceron, J. P., Dubois, G., & Scott, D. (2012). Tourism and water use: Supply, demand, and security. An international review. *Tourism management*, 33(1), 1-15.
- Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse education today*, 24(2), 105-112.
- Guest, G., Namey, E., & Chen, M. (2020). A simple method to assess and report thematic saturation in qualitative research. *PLoS one*, 15(5), e0232076.
- Hamerman, E. J., Rudell, F., & Martins, C. M. (2018). Factors that predict taking restaurant leftovers: Strategies for reducing food waste. *Journal of Consumer Behaviour*, 17(1), 94-104.
- Hanson, C., Lipinski, B., Robertson, K., Dias, D., Gavilan, I., Gréverath, P., ... & Quested, T. (2016). Food loss and waste accounting and reporting standard.
- Heikkilä, L., Reinikainen, A., Katajajuuri, J. M., Silvennoinen, K., & Hartikainen, H. (2016). Elements affecting food waste in the food service sector. *Waste Management*, 56, 446-453.
- Hennink, M., Hutter, I., & Bailey, A. (2020). *Qualitative research methods*. Sage.
- Huang, Y., Ma, E., & Wang, D. (2021). Message framing strategies, food waste prevention, and diners’ repatronage intentions: The mediating role of corporate social responsibility. *Journal of Sustainable Tourism*, 29(10), 1694-1715.
- Juvan, E., Grün, B., & Dolnicar, S. (2018). Biting off more than they can chew: Food waste at hotel breakfast buffets. *Journal of Travel Research*, 57(2), 232-242.
- Juvan, E., Grün, B., Baruca, P. Z., & Dolnicar, S. (2021). Drivers of plate waste at buffets: A comprehensive conceptual model based on observational data and staff insights. *Annals of Tourism Research Empirical Insights*, 2(1), 100010.
- Kallbekken, S., & Sælen, H. (2013). ‘Nudging’ hotel guests to reduce food waste as a win-win environmental measure. *Economics Letters*, 119(3), 325-327.
- Kasim, A., & Ismail, A. (2012). Environmentally friendly practices among restaurants: Drivers and barriers to change. *Journal of Sustainable Tourism*, 20(4), 551-570.
- Knezevic, B., Kurnoga, N., & Anic, I. D. (2019). Typology of university students regarding attitudes towards food waste. *British Food Journal*, 121(11), 2578-2591.
- Koivupuro, H. K., Hartikainen, H., Silvennoinen, K., Katajajuuri, J. M., Heikintalo, N., Reinikainen, A., & Jalkanen, L. (2012). Influence of socio-demographical, behavioural and attitudinal factors on the amount of avoidable food waste generated in Finnish households. *International journal of consumer studies*, 36(2), 183-191.

- Kuo, C., & Shih, Y. (2016). Gender differences in the effects of education and coercion on reducing buffet plate waste. *Journal of foodservice business research*, 19(3), 223-235.
- Li, N., & Wang, J. (2020). Food waste of Chinese cruise passengers. *Journal of Sustainable Tourism*, 28(11), 1825-1840.
- Marshall, B., Cardon, P., Poddar, A., & Fontenot, R. (2013). Does sample size matter in qualitative research?: A review of qualitative interviews in IS research. *Journal of computer information systems*, 54(1), 11-22.
- McAdams, B., von Massow, M., Gallant, M., & Hayhoe, M. A. (2019). A cross industry evaluation of food waste in restaurants. *Journal of Foodservice Business Research*, 22(5), 449-466.
- Nunkoo, R., Bhadain, M., & Baboo, S. (2021). Household food waste: attitudes, barriers and motivations. *British Food Journal*, 123(6), 2016-2035.
- Okumus, B., Taheri, B., Giritlioglu, I., & Gannon, M. J. (2020). Tackling food waste in all-inclusive resort hotels. *International Journal of Hospitality Management*, 88, 102543.
- Papargyropoulou, E., Wright, N., Lozano, R., Steinberger, J., Padfield, R., & Ujang, Z. (2016). Conceptual framework for the study of food waste generation and prevention in the hospitality sector. *Waste management*, 49, 326-336.
- Parfitt, J., Barthel, M., & Macnaughton, S. (2010). Food waste within food supply chains: quantification and potential for change to 2050. *Philosophical transactions of the royal society B: biological sciences*, 365(1554), 3065-3081.
- Pearson, D., & Perera, A. (2018). Reducing food waste: A practitioner guide identifying requirements for an integrated social marketing communication campaign. *Social Marketing Quarterly*, 24(1), 45-57.
- Pellegrini, G., Sillani, S., Gregori, M., & Spada, A. (2019). Household food waste reduction: Italian consumers' analysis for improving food management. *British Food Journal*, 121(6), 1382-1397.
- Pirani, S. I., & Arafat, H. A. (2016). Reduction of food waste generation in the hospitality industry. *Journal of cleaner production*, 132, 129-145.
- Porter, S. D., & Reay, D. S. (2016). Addressing food supply chain and consumption inefficiencies: potential for climate change mitigation. *Regional Environmental Change*, 16, 2279-2290.
- Priefer, C., Jörissen, J., & Bräutigam, K. R. (2016). Food waste prevention in Europe—A cause-driven approach to identify the most relevant leverage points for action. *Resources, Conservation and Recycling*, 109, 155-165.
- Principato, L., Pratesi, C. A., & Secondi, L. (2018). Towards zero waste: An exploratory study on restaurant managers. *International Journal of Hospitality Management*, 74, 130-137.
- Revell, A., & Blackburn, R. (2007). The business case for sustainability? An examination of small firms in the UK's construction and restaurant sectors. *Business strategy and the environment*, 16(6), 404-420.
- Russell, S. V., Young, C. W., Unsworth, K. L., & Robinson, C. (2017). Bringing habits and emotions into food waste behaviour. *Resources, Conservation and Recycling*, 125, 107-114.
- Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods. Business Students 7th edition Pearson Education Limited, England*, 6(3), 1-268.
- Schanes, K., Dobernig, K., & Gözet, B. (2018). Food waste matters-A systematic review of household food waste practices and their policy implications. *Journal of cleaner production*, 182, 978-991.
- Schutz, A. (1962). *Collected papers I: The problem of social reality* (Natanson, M., Ed.). The Hague, Netherlands: Martinus Nijhoff.
- Sharma, T. (2020). What a waste: confronting consumer food waste behavior in hospitality Settings. In *Advances in Hospitality and Leisure*. Emerald Publishing Limited.
- Silverman, D. (2013). *Doing Qualitative Research*, SAGE Publications Inc, 5 th Edition., SAGE Publications.
- Stenmarck, Å., Jensen, C., Quedsted, T., Moates, G., Buksti, M., Cseh, B., ... & Östergren, K. (2016). *Estimates of European food waste levels*. IVL Swedish Environmental Research Institute.
- Thyberg, K. L., & Tonjes, D. J. (2016). Drivers of food waste and their implications for sustainable policy development. *Resources, Conservation and Recycling*, 106, 110-123.
- Tzschentke, N. A., Kirk, D., & Lynch, P. A. (2008). Going green: Decisional factors in small hospitality operations. *International Journal of Hospitality Management*, 27(1), 126-133.
- Vermote, M., Versele, V., Stok, M., Mullie, P., D'Hondt, E., Deforche, B., ... & Deliens, T. (2018). The effect of a portion size intervention on French fries consumption, plate waste, satiety and compensatory caloric intake: an on-campus restaurant experiment. *Nutrition journal*, 17(1), 1-12.
- von Massow, M., & McAdams, B. (2015). Table scraps: An evaluation of plate waste in restaurants. *Journal of foodservice business research*, 18(5), 437-453.
- Wang, L. E., Filimonau, V., & Li, Y. (2021). Exploring the patterns of food waste generation by tourists in a popular destination. *Journal of Cleaner Production*, 279, 123890.
- Wang, L. E., Liu, G., Liu, X., Liu, Y., Gao, J., Zhou, B., ... & Cheng, S. (2017). The weight of unfinished plate: A survey based characterization of restaurant food waste in Chinese cities. *Waste Management*, 66, 3-12.
- Wansink, B., & Van Ittersum, K. (2013). Portion size me: plate-size induced consumption norms and win-win solutions for reducing food intake and waste. *Journal of Experimental Psychology: Applied*, 19(4), 320.
- Welivita, I., Wattage, P., & Gunawardena, P. (2015). Review of household solid waste charges for developing countries—A focus on quantity-based charge methods. *Waste Management*, 46, 637-645.

- WRAP. (2013). Overview of Waste in the UK Hospitality and Food Service Sector An Overview of Waste in the UK Hospitality and Food Service Sector. Retrieved May, 2021 from <https://wrap.org.uk/sites/default/files/2020-10/WRAPOverview%20of%20Waste%20in%20the%20UK%20Hospitality%20and%20Food%20Service%20Sector%20FINAL.pdf>
- WRAP. (2015). Reducing Food Waste by Extending Product Life. Retrieved October 4, 2021 from www.wrap.org.uk
- Yıldırım, A., & Şimsek, H. (2016). Sosyal Bilimlerde Nitel Araştırma Yöntemleri .11 Baskı, Seçkin Yayınevi, Ankara.

INFO PAGE

Reducing plate waste in all-inclusive resorts: Strategy, precaution and barriers

Abstract

Plate waste constitutes approximately a third of the food waste generated in the hospitality industry. Almost all this plate waste might also be prevented. This study intended to explore the strategies and measures tourists adopted for plate waste reduction and the barriers they encountered while implementing these measures. A qualitative research design was adopted for this purpose. Data were acquired through semi-structured interviews conducted with 23 tourists holidaying in an all-inclusive resort. Four themes emerged following the performed analyses: feelings about plate waste, strategies implemented for plate waste reduction, measures proposed for plate waste reduction, and barriers to plate waste reduction. This study contributes to understanding tourists' behavior to mitigate and avoid plate waste in the hospitality industry. The findings suggest important implications for policy makers, decision makers, industry representatives, businesses tackling plate waste, and other stakeholders responsible for reducing their waste and protecting the environment. Besides, academics working on tourists' behavior towards plate waste might benefit from this study. This study further provides a basis for reducing plate waste, thus minimizing the environmental damage caused by the tourism industry and developing interventions. Plate waste is a relatively novel and under-researched phenomenon, particularly in the hospitality industry. For this reason, this study contributes significantly to the existing literature about plate waste.

Keywords: Plate waste , Tourist behavior , Sustainable tourism , .

Authors

Full Name	Author contribution roles	Contribution rate
Merve Güdek:	Conceptualism, Methodology, Software, Validation, Formal Analysis, Investigation, Resources, Data Curation, Writing - Original Draft, Writing - Review & Editing, Visualization, Supervision, Project administration, Funding acquisition	100%

Author statement: Author(s) declare(s) that All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. **Declaration of Conflicting Interests:** The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article

Ethics Committee Satatement: Ethics committee report is available for this research and it has been documented to the journal

Ethics committee: Burdur Mehmet Akif Ersoy University Non-Interventional Clinical Research Ethics Committee

Date of ethics committee decision: 2022/04

Ethics committee decision number: GO2022/617