

## Household Food Waste

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## Household Food Waste

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<b>Introduction: Food Waste in Household Contexts</b>	1
<b>Procedural Perspectives on Household Food Waste: From Provisioning, Overstoring, and Preparing to Eating</b>	2
<b>Structural Perspectives on Food Waste: Regulatory Frameworks, Policies, and Food Cultures</b>	3
<b>References</b>	4

### Introduction: Food Waste in Household Contexts

Food waste is increasingly considered an environmental problem. In debates on sustainable consumption and production, food is included in the UN goals toward more sustainable development in terms of reducing hunger (goal 2), good health and well-being (goal 3), responsible production and consumption (goal 12) as well as life on land (goal 15), among others (UN, 2016). According to the Food and Agriculture Organization of the United Nations (FAO), around one-third of edible food is wasted across the globe and along the food chain every year, resulting in an estimated 1.3 billion tons of food waste (FAO, 2011). Food is wasted at various instances of the food chain, from primary production in agriculture over processing industries and trade to, last but not least, in private households. The FAO distinguishes between food losses and food waste with both playing an important role for food security and influencing the use of natural resources hence impacting climate change. Food waste is a particular case of food loss, where edible food, hence suitable for human consumption, is discarded or used for other purposes than human consumption (FAO, 2011). Sustainability is an issue in terms of food consumption, and food waste is an important aspect herein as the majority of food thrown away might still be eaten (Reisch et al., 2013). Nevertheless, food waste in a household context is rather intricate considering the dynamics of everyday life and the organization of day-to-day practices (Evans, 2011, 2012; Quested et al., 2013).

To make food waste visible and interventions useful, a variety of ways of measuring food waste have been developed. Food waste is measured among others in surveys, kitchen diaries, waste statistics, or waste stream analysis, all associated with its own peculiarities and challenges to over or under account for food waste (Edjabou et al., 2016; Evans et al., 2013; Iacovidou et al., 2012; Tucker and Farrelly, 2016). Yet, it is not only the food as such, the material being thrown away or not eaten. Evans et al. (2013) content that waste scholarship in the past has been based on specific assumptions, understanding waste as uncomplicated, fixed and self-evident, ordered by waste management, and to be found at the end of the chain. However, beyond the material aspect of food being wasted, food risk, anxiety, materiality of food, conventions, taste, time, material contexts, and infrastructures and systems of provision influence why and how food is wasted are important as well (Evans, 2011, 2012; Gille, 2012). Moreover, with an increasing advancement of measuring food waste, the topic is becoming a prominent item on the political agenda, being an issue in food and consumer policy debates (Evans et al., 2013).

Research on food waste should focus on contexts, specific foods, or segments (Aschemann-Witzel et al., 2015). The focus of this article is on food waste in household contexts. Aschemann-Witzel et al. (2015) summarize causes and consequences of consumer-generated food waste and quest to consider contexts and interactions. A particularly important context in terms of food consumption is that of the private household. Contextualizing food waste and sustainable consumption in household contexts comes across with particular advantages rather than focusing on individual consumers and market exchange. On the first hand, the socioeconomic context of consumer food waste is mostly the household. In a broad, statistically inspired understanding, the household is a spatial unit where (a group of) individuals live(s) together and share(s) resources toward reproductive or domestic activities such as provision, production, allocation, and consumption of food (cf. Niehof, 2011; Niehof and Wahlen, 2017). Such an economically inspired understanding of the household as a resource allocating unit does not represent the whole picture. In addition, considering the household as social context acknowledges social arrangements, often a group of people living together, usually the family existing in various forms. Hence, kinship relations are formed and maintained throughout everyday practices such as eating in the household (Niehof, 2011; Warde, 2016) moving toward or preventing food waste. Even though the concept of the household is contentious, it assists in contextualizing food waste. The notion of the household highlights not only how food waste is produced in day-to-day routine activity in consumption processes (cf. Wahlen, 2011), but also in broader food cultures and its norms and moralities. These collective aspects, without assuming the household possessing characteristics of a person such as attitudes or motives, assist in reflecting the diverse aspects of household food waste that might be relevant to prevent food waste and its broader consequences.

In a broader understanding of household activities, the notion of the household expands to the outside of the home, with provisioning food in the supermarket being only one example where the activities of household members extend beyond the spatial dwelling unit. The notion of the household helps to extend domestic activities, such as providing for food as in grocery shopping or the vegetable garden as household activities, as these are possible reasons for the upcoming of waste in the household. Another

feature contextualizing food waste in the household acknowledges eating in a social group, e.g., the family. The togetherness of eating raises the question on how commensality, sharing food at the dinner table, might be contributing to food waste (Cappellini and Parsons, 2012; Southerton and Yates, 2015). Hence, the notion of the household emphasizes individual members in the light of their interactions in socioeconomic contexts.

Although numerous initiatives attempt to promote the reduction of food thrown away in households, it is still unclear where, when, and why food becomes waste. Household food waste is not only a very intricate issue, but also context-dependent issue. By contextualizing food waste in everyday contexts of households, where a group of people is eating together and sharing a meal, it is possible to distinguish food waste practices comprising different activities along appreciation and appropriation of food such as planning, shopping, storing, cooking, eating, and cleaning up. As such, these activities might all influence the way that food is treated in the household not only by individual members but also by broader social and economic contexts (Tucker and Farrelly, 2016). Moreover, it is also important to consider more structural perspectives on food waste as we can only fully understand the phenomenon when considering the embeddedness in social, economic, and political frameworks and structures. To consider household food waste, it is central to acknowledge not only individual consumers but also the broader associated food cultures that come across with it. Household food waste is a contested concept, where the discourses and public debates influence the way we aim to change the broader foodscape and move toward the reduction of food waste.

### Procedural Perspectives on Household Food Waste: From Provisioning, Overstoring, and Preparing to Eating

To acknowledge the complexity of food waste, it is possible to consider food waste as emerging from various instances not only along the food chain, but also along the procedures and processes to and from the household. As outlined above, food waste in household contexts can be generated at various instances in distinct procedures. Hereby it is vital to acknowledge the consumer possessing agency, but since the individual is often not the locus in promoting or avoiding food waste, it is valuable to consider the procedures at household level. Household routines play an important role in household food provisioning (Wahlen, 2011; Evans, 2012, 2014). Evans (2011) considers “waste as a consequence of how something is disposed as opposed to an innate characteristic of certain objects.” Hence, the object along the procedure is more relevant than the agent processing the object. It becomes apparent that this difference between object-oriented approaches and agent-centered approaches is important since it repositions food waste not as an end result, but as a process unfolding in the everyday food practices in the household. Quested et al. (2013) emphasize the complexity of food waste behaviors, where consequences are disconnected from activities producing food waste. Yet a set of practices can be considered from planning and shopping over storing and preparing to eating and disposing of food (Tucker and Farrelly, 2016; Quested et al., 2011; Southerton and Yates, 2015). Thus, the constituent factors of these procedures become essential in exploring the how and why of food waste, emphasizing that food waste behaviors should not be seen in isolation from each other or their contexts (Quested et al., 2011). This procedural aspect also extends to temporalities of food waste, reconfiguring household food waste as a transition. The idea of surplus food exemplifies this, as it is a temporary category for food without any immediate use, thereby at risk of being thrown out (Evans, 2014). Surplus food may later on be categorized as excess; food without any value (ibid.). Hence, such a procedural perspective (Tucker and Farrelly, 2016) on household activities disentangles various aspects of food being handled.

The household is a crucial category in the systems of provision (e.g., Fine, 2013), as the notion opens up buying behavior to activities of providers and demanders interacting, acknowledging socioeconomic organization of the interplay. Moreover, the aspect of food provision in households including activities such as planning and shopping may be considered the origin of household food waste. Considering the system of provision approach, the role of in-store marketing as a way of steering consumers toward particular product choices (Dulsrud and Jacobsen, 2009) puts particular sales strategies (Mondejar-Jimenez et al., 2016) into perspective that are eventually leading consumers to overprovisioning of food, resulting in food waste (Evans, 2014, 2012; Hawkins, 2013). Hence, the role of supermarkets and sales strategies such as bulk packages, special offers [Buy One, Get One for Free (BOGOF)], the size of products, packaging, and the social conventions surrounding freshness of supermarket products play a vital role in the production of household food waste beyond the actual dwelling unit.

Although online grocery shopping is becoming increasingly popular (Elms et al., 2016), shopping is a routine activity mostly taking place in (super)markets. The in-store marketing practices of the retailer influences shopping, notably the quantity of food bought (Evans, 2014). Having limited control over the quantities of packaged food, consumers must necessarily buy what they need even if it means that only part of it is used. However, consumers can choose whether or not to make use of special offers such as BOGOFs, even though such offers are appealing to price-oriented shoppers. Buying quantities exceeding what is required can lead to surplus—and potentially excess—food in the household. Overprovisioning is thus partly a problem that can be ascribed to consumers. Of course, coresponsibilities must be acknowledged; however, these adhere to both supply and demand. Freshness of produce is an example of this, as cooking a meal made from fresh products meets the convention of “eating properly.” Shopping also pertains to the planning of food consumption. Studies have shown that consumers with increased planning, for instance, by means of a shopping list, tend to overprovision less than those not planning (Evans, 2011, 2012).

After provisioning food from (super)markets, food is not always eaten immediately, but often stored in the dwelling unit. Household food management is an aspect that might promote or reduce food waste (Aschemann-Witzel et al., 2015; Graham-Rowe et al., 2014). Here it is again questionable whether consumer decision-making and conscious knowledge are explicitly involved as often assumed or whether, as said above, in routines, the explicit knowledge might be less relevant than implicit or tacit

knowledge, not necessarily reflecting how food is stored and not being aware of food that is still edible (Wahlen, 2011; Evans, 2012; Quested et al., 2013). Often consumers are accused of mismanagement (Koivupuro et al., 2012); however, there is more than blaming the victim (Evans, 2011). Routines, tacit knowledge, and bodily performance are inextricably linked to appropriate storing units such as drawer cabinets increasing the visibility of food, or the household storage system in visible containers, making it easy to recognize food still edible. The temperature in refrigerators is also important, as inappropriate storage in the household reduces the fresh life of produce that might be wasted (Aschemann-Witzel et al., 2015). Hence, the freshness and perceived immaculacy and storing food in an appropriate way, for instance, in relation to hygiene and food safety ask for a common understanding (Evans, 2011). Evans (2014) also highlights the fact that the storing of surplus food is often associated with a process of saying good-bye. The moral understanding of not wasting food makes consumers to not throw food out immediately, but rather store the food before it is considered as waste. During preparation, food loss pertains to understandings of edibility, with the potato peel and broccoli trunk being prominent examples of foods that are perfectly fine for human consumption, yet in broad conventional setting not eaten by consumers.

Eating food in the household context, even in one-person households, often relates to its social organization, food cultures, and taste (see also below). Family relationships, familiarity, and eating properly are maintained through the joint meal (see Evans, 2011), including the conventions, taste, and the social organization of eating. Hence, the sort of food that is eaten and thrown away relates to the household constellation (Evans, 2012). Eating, and particularly in the setting of family meals, comprises negotiations of the appropriateness of foodstuffs and leftovers to accommodate the family member's individual tastes (Cappellini and Parsons, 2013). Concatenating food waste to commensality, performing and sharing a proper meal in the family, is organized according to conventions and routines in the household (Southerton and Yates, 2015; Warde, 2016). Stilling Blichfeldt et al. (2015) discuss how the household context defines edibility and ideas of why and how food is thrown away. In terms of generation and composition of food waste, Edjabou et al. (2016) distinguish between avoidable and unavoidable food waste, in which the number of members in a household becomes relevant. Again, the spatial and architectural aspect is relevant: separating food waste in the kitchen and using different bins (Bernstad, 2014; Iacovidou et al., 2012) might be supportive in wasting less food. Metcalfe et al. (2012) point to the importance of considering the material agency in terms of aesthetics, size, hygiene, and smell of food waste bins in implementing waste policies. Composting either in home or centrally anaerobic digestion is also creating increased awareness, as the food thrown out is visible, hence more adhering to the food waste practices. Separating waste into the municipal waste stream or in the sewer (liquid food waste) extends the notion of food waste outside the dwelling. To conclude the perspective on procedures and behaviors, it is noteworthy to underline the interconnectedness between different phases (Quested et al., 2013).

## Structural Perspectives on Food Waste: Regulatory Frameworks, Policies, and Food Cultures

Household food waste can not only be considered on a procedural and behavioral level from what individuals in households can achieve in terms of activities associated with their role as consumers. Additionally, there are more structural perspectives concerning household food waste. There are different estimations on how much food is wasted in different local and global contexts. The economic impact is also discussed in various publications, but should not be of focus not only as the numbers differ according to region but also as relating to the ways of how (household) food waste is measured. Nevertheless, from a more structural perspective it is possible to distinguish regulatory frameworks, food policies as well as discourses and moralities pertaining to food cultures relating to household food waste.

Consumer-oriented food policies are at first instance aimed at safeguarding the consumer as market participants; however, the policies can also be extended beyond individual activity. Food safety matters relate to the best before and use before dates or the size and shape of fresh produce to guarantee high quality. Moreover, information is a key role in policies aiming to safeguard rights of consumers in households. Food safety standards follow a different logic than initiatives aiming at reducing the level of food waste and need to be reconsidered. Reisch et al. (2013) propose beyond an assessment of existing food safety standards also an examination and elimination of legal barriers to food being wasted and also increase the monitoring to see whether food has been wasted. Hereby it appears vital not to blame the consumer (Evans, 2011), but building the structures that allow for food waste reduction, including policies and interventions to allow for on the one hand social and on the other the material conditions to reduce food waste. Information campaigns might be a starting point, although they do not account for the complex and contradictory concerns outlined above in the household context. Instead, profligacy of current consumption activities is represented in regulatory frameworks, for instance, the best before date and other labeling activities or market forces relating to in-store marketing activities or standards pertaining to size and shape of food in the end promoting food being wasted (Southerton and Yates, 2014). A possible pathway might be an extension to a circular economy in household contexts where sharing of food with household members or the community reduces food waste and promotes food security (Niehof and Wahlen, 2017). In a similar vein, Iacovidou et al. (2012) investigated the need for policy interventions against waste for landfill and proposed new management of disposal units at household level. Structurally introducing this possibility to separate waste and creating routines to do so might further assist households in producing less waste.

From a "systems of provision" perspective (Fine, 2013) it becomes important to acknowledge norms and cultural aspects of (domestic) food consumption by revisiting the food cultures and discourses associated with household food waste. Food waste is a societally debated topic that influences household food provisioning and food practices by presenting conflicting considerations to consumers such as moralization on one side and food safety concerns on the other (Watson and Meah, 2012). The discourses



impact the process of food becoming wasted through negotiation within the household. [Watson and Meah \(2012\)](#) recommend that interventions aimed at reducing household food waste should be based on an understanding of the aforementioned processes of food being handled in the household, from provision to preparation, ingesting, and finally being wasted.

Discourses on food waste are propelled by an increasing amount of research, policy discourses as well as campaigns raising awareness at the citizen level. Still, many initiatives aimed at reducing food waste adhere to the idea of promoting more information to reduce food waste. Food being thrown away pertains to local food cultures and ideologies of edibility. [Stilling Blichfeldt et al. \(2015\)](#) investigate the understanding of what sort of food is edible and why other foodstuffs are not. They distinguish between altruist and hedonist ideologies preventing or promoting food waste. The former promoting feelings of duty and respect not throwing food away and the latter being associated with disgust and a disconnection. [Graham-Rowe et al. \(2014\)](#) explore the barriers and what the right thing to do is with the moral aspects of wasting food as a central concern characterizing household food consumption. In a similar vein, other studies find emotions to play a key role in food waste practices, including anxiety and thrift ([Evans, 2014](#)) care and sacrifice ([Cappellini, 2009](#); [Cappellini and Parsons, 2013](#)), extravagance and indulgence ([Southerton and Yates, 2015](#)), as well as belonging ([Munro, 1995](#)).

To conclude, household food waste is complex and contains a variety of influencing factors that still need investigation, on procedural as well as structural level. Contextualizing food waste in the household context might be a first step and cornerstone to understand why consumers waste food in their everyday life. Indeed, the procedural perspective highlights that approaches considering consumption as market exchange do not reach very far and the whole set of activities, from provisioning to storing, preparation, and eating, all contribute to varying degrees to food being wasted. Additionally, the structural perspective asks for further investigation not only on measuring food waste, but also on (consumer) policy and governance approaches as well as moralities and discourses, needs relating to food waste.

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