

FOOD WASTE IN SLOVENIA AND HOW THE HOSPITALITY INDUSTRY PERCEIVES IT

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***Abstract:** The article discusses food waste in Slovenia, its reasons, and the attitude of hospitality workers towards food waste. A survey was conducted among hospitality workers, showing that the amount of food waste varies. With 65 percent of respondents, the daily amount of food thrown away is up to five kilograms, a good quarter throws away between five and ten kilograms a day, and ten percent discard more than ten kilograms of food per day. Most hospitality workers say they discard very little or no food themselves and that most of the discarded food comes from plates of guests who order too much food and are unable to eat it. The article further discusses the handling of food after the end of the day and which methods of reusing food are used. Most participants in the study are trying to reduce the amount of food waste and agree that it would be necessary to act on the amount of food that is discarded.*

***Keywords:** food, food waste, handling of food, hospitality, reusing food*

INTRODUCTION

Food means any substance, processed, partially processed or raw, which is intended for human consumption. This includes beverages, chewing gum and any substance used in the production, preparation, or processing of food. It, however, does not include cosmetic or tobacco substances and products or substances used in the manufacturing of medicinal products (HLPE 2014, 21).

Food loss refers to a drop in the mass of edible food throughout the entire chain, leading to edible food for human consumption. Food loss is present throughout all processes in production, after harvest, and in processing of the food. The loss of food that occurs at the end of the food chain (sale of food and its final consumption) is called food waste, which refers to the behaviour of traders and consumers (Gustavsson and others, 2011, 2).

The measurement of food waste or residues covers only products intended for human consumption but does not consider feed and other parts of products not intended for human consumption. Only food that has been produced and intended for human consumption but has fallen out of the food chain and is therefore considered a loss or waste (even if it is later used for other purposes, such as bioenergy or feed). This approach distinguishes between "planned" and "unplanned" uses of food for other purposes (unplanned are considered waste or loss) (Gustavsson and others, 2011, 2).

FACTORS AND CAUSES OF DISCARDED FOOD (FOOD WASTE)

Factors that play a role in generating food waste are:

1. Agricultural production
2. Food production
3. Generating food waste during distribution (wholesale and retail stores)
4. Generating food waste in the hospitality industry
5. Household food waste

Food waste during agricultural production occurs due to:

- the classification of products by weight, size, shape and appearance, due to the strict quality standards set by large distributors
- overproduction (agreement with retail chains)
- damaged crops during harvesting, etc.

Food waste during food production occurs due to:

- not properly sized products, which must be trimmed or discarded
- inconsistencies in production which lead to incorrectly trimmed or damaged products
- contamination in the production process leading to the deterioration of quality
- food spoilage due to damaged packaging
- excess production of store brands that are not sold anywhere else
- excess stock due to the cancellation of orders and return of products, etc.

Food waste during distribution processes (in wholesale and retail) occurs due to:

- lack of refrigeration space/cold stores

- damaged products (due to damaged packaging)
- overstocking (excessive and incorrect ordering)
- obligations of the traders (ordering larger quantities of products and brands of the same manufacturer for benefits)
- failure to comply with minimum standards of food safety (microbial contamination, pesticide residue)
- marketing strategies ("Buy one, get two"), etc.

Food waste in the hospitality industry occurs due to:

- excessively large meals
- meal offers in self-service/buffet style restaurants that encourage you take more food than you can eat
- customer visits that are more difficult to predict
- European rules on hygiene

Food waste in households occurs due to:

- Not planning meals and the lack of knowledge regarding what food to buy and how to store it
- impulsive food purchases we do not need
- purchasing new products that we are not sure if we like
- inadequate product sizes
- poor food storage
- uncertainties regarding warnings such as "best before" and "use by"
- lack of knowledge regarding food preparation
- preparing excessively large meals
- lack of knowledge regarding the preparation of new dishes from leftovers, etc.. (Priefer and others, 2013, 7)

FOOD WASTE IN SLOVENIA

In 2018, every inhabitant of Slovenia threw away an average of 68 kg of food, or 4 kg more than in 2017. There was a total of almost 139,900 tonnes of food waste in Slovenia in 2018. It is estimated that 38% of the food waste was edible, while 62% of the food waste consisted of inedible parts, such as bones, shells, eggshells, etc., which are mostly unavoidable. Just like in previous years, in 2018 more than half of the food waste was generated in households (52% or almost 73,200 tonnes). **One third of food waste (almost 42,100 tonnes) was generated in the hospitality industry and other food-serving activities, e.g. in schools, kindergartens, hospitals, and nursing homes.** One tenth of the food waste (about 13,800 tonnes) was generated during distribution and in food stores due to damage

during transportation, improper storage, and expired expiration dates. Slightly less than a tenth (about 10,800 tonnes) of food waste was generated in food production (including primary food production). Residues of organic origin that originate from food production and diverted to the production of animal feed are not considered food waste.

In 2018, more food waste was generated in all of these activities than in 2017: households generated 8% more food waste, **the hospitality industry and other food service activities generated almost 4% more food waste**, food distribution and trade activities generated almost 5% more food waste and food production (including primary production) increased its generated food waste by 3%. It should be noted that the amount of food waste in 2018 was higher than in 2017, mainly because the amount of biodegradable waste collected in 2018 in the context of public disposal was higher than in 2017. The food discarded by households in 2018 accounted for 11% of all waste generated by households.

Table 1: The amount of discarded food in Slovenia

	2017	2018	$\frac{2018}{2017}$
		index	
TOTAL (in kg per capita)	64	68	106
TOTAL (in tonnes)	131.761	139.856	106
... generated in food production (including primary) (in tonnes)	10.485	10.839	103
... generated in food distribution and sales of food products (in tonnes)	13.115	13.763	105
... generated in catering and food service (in tonnes)	40.568	42.071	104
... generated in households (in tonnes)	67.594	73.182	108

Source: SURS, 2021

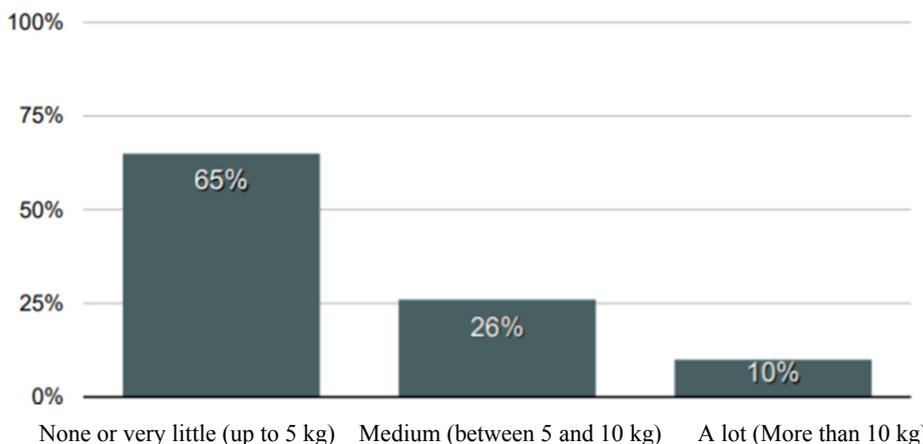
RESEARCH ABOUT FOOD WASTE IN THE HOSPITALITY INDUSTRY

We conducted a survey among 30 Slovenian hospitality workers (chefs, restaurant managers) and asked them about the **daily quantities of food waste** (discarded food) in restaurants (Graph 1).

With 65 percent of participants, the daily amount of food waste is up to five kilograms, a good quarter throw away between five and ten kilograms a day, and ten percent discard more than ten kilograms a day.

Most hospitality workers say they themselves discard very little or no food and that most food waste comes from plates of guests who order too much food and are unable to eat it.

Graph 1: The daily average of food waste in a hospitality establishment



The answers about the frequency of discarding different foods were as follows: 14% of participants think they discard a lot of eggshells, fruit and vegetable peels, etc., and 3% think they discard a lot of fruits and vegetables in general. About 5% of participants believe that they throw away a medium amount of dairy products, meat and meat products, fruit and vegetables and spices. According to 31% of participants, a medium amount of bread is thrown away. Many participants (62%) consider the amount of discarded eggshells, fruit and vegetable peels, etc. to be medium.

About 20-30% of participants think that they throw away a small amount of canned food, spices, eggshells, fruit and vegetable peels, and eggs. About 35-45% of participants think that they throw away a small amount of dairy and bread; 52% think they discard a small amount of meat and meat products, fish and fish products; and 72% think they discard a small amount of fruits and vegetables.

About 20% of participants think that they do not throw away any fruits, vegetables, or bread; about 45% say the same about meat and meat products, as well as about fish and fish products. About 59% say they do not discard any dairy products. About 75% of participants believe that they do not discard frozen products, canned foods, and spices.

We also researched the **factors that affect the amount of food waste** in a hospitality establishment (Table 2), as well as the ways of handling leftover food (Table 3).

Table 2: Factors affecting the amount of food waste in a hospitality establishment

	Frequency in %				
	Very often	Often	Rarely	Very rarely	Never
Food past its expiration date	4	4	21	50	21
Improper storage	0	4	7	39	50
Poorly kept stock records	0	4	14	25	57
Too much food is bought (guest visits are lower than expected)	0	11	18	43	29
Changing the menu before using up old stocks	0	4	14	14	68
Unprofessional staff	0	0	8	46	46

Table 3: Methods of handling leftover food

	Frequency in %				
	Very often	Often	Sometimes	Rarely	Never
We store it properly and use it the next day	18	14	32	29	7
We freeze and reuse it	0	4	18	25	54
We offer it to our employees	7	11	36	29	18
We discard it	11	0	11	46	32
We donate it to food collecting organizations	11	0	4	18	68
We use different techniques to extend its shelf life	0	4	14	29	54

Only 18% of participants adequately store and use leftover food the next day very often, 14% do it often, 32% do it sometimes, 29% do it percent rarely, and seven percent never do that. None of the participants said they freeze and reuse leftovers very often, 18 percent use this method sometimes, a quarter do so rarely, and more than half never freeze and reuse leftovers.

One way of dealing with leftovers is to be able to offer them to employees. Research has shown that most participants almost never do this. Less than half of the surveyed hospitality workers said they often, sometimes, and rarely use various techniques to extend the shelf life of the food. The rest of the participants answered that they never do this. When asked how often they throw away food, just under a third said they never do, with just under half throwing away food rarely.

CONCLUSION

In our survey, we found that most participants say that they think of food waste as a problem and try to reduce the amount they produce. Almost half of the participants completely agree, and 41% agree that action should be taken regarding the amount of food waste, as many people unfortunately cannot afford food. The fact that the amount of food waste is too large and consequently has a strong impact on environmental pollution is strongly agreed by many participants (one third of the answers); a similar number of participants are concerned about the material consequences of food waste. Most participants (63%) do not donate the leftover food but agree (40% of the answers) with the fact that they would like to donate it, but do not know how.

We found that most of the blame for food waste can be attributed to expiration dates, as well as excessive amounts of purchased food. It would, therefore, be wise to reduce the frequency of purchases and avoid overstocking foods that are most often discarded.

For example, the largest percentage of the most commonly discarded foods are fruits and vegetables, but almost the majority of the participants say they buy it several times a week. It would be advisable to quantitatively reduce purchases of these foods or limit the frequency of purchases. Most participants strive to reduce the amount of food waste and agree that further action on this issue is necessary. They are aware that many people cannot afford enough food, which is a problem that could be improved by improving the food waste situation. This is very encouraging and promising for our future.

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