

## THE PHENOMENON OF FOOD WASTAGE AMONG CONSUMERS OF GENERATIONS X, Y AND Z

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**Abstract:** At a time of sustainable development, food wastage constitutes an important problem for the global food economy. A group that is to a large degree co-responsible for wasting food are its buyers, who submit to numerous market trends, including consumptionism. The approach of the consumer to the issue of food wastage may stem from a number of factors, including the idea of belonging to a specific generation. The consumers' age and the related experiences from the food market may differentiate the rationality of their purchasing behaviour and the scale of food wastage. The aim of this study was to determine the effects of belonging to a particular generation X (aged 60+), Y (aged 31-59) or Z (aged 18-30) on the participants' attitudes and behaviours concerning unconsumed food. The study was conducted in 2021 using a survey method among 165 people from the Pomorskie Voivodeship. The study results demonstrated that belonging to a particular generation did differentiate the attitudes and behaviours of the surveyed in most of the areas subject to the study. In terms of self-assessment of their own knowledge concerning food wastage, respondents from generation X declared having the most knowledge, while generation Z declared only fragmentary knowledge. The importance of the food wastage issue from an ethical, social and economic standpoint was noticed by higher percentages of participants from generations Y (85.5%) and Z (76.4%) than generation X (70.9%). The food groups where, according to the surveyed, food wastage occurred the most in all generations were: bread, meat, fruits, vegetables, and dairy products. The primary causes of wasting food declared by generation Z respondents were spoilage and poor meal planning, while for generations Y and X it was expiry. Attempts to use (process) unconsumed food were made primarily by representatives of the oldest generation (X).

**Keywords:** food, wastage, consumer generations X, Y, Z.

### 1. INTRODUCTION

Consumer behaviour has been the subject of studies in multiple fields of science, in particular economics, sociology, psychology, anthropology and management, which deal with different aspects of the purchasing process and the consumption of goods and services [Sobczyk 2018].

Purchasing food and nutritional behaviour are among the most important factors of human life activities and are necessary conditions for proper functioning, as well as physical and mental development [Zabrocki 2018]. Food and how nutritional needs are satisfied are not connected solely to sating hunger and thirst. They are much more, as they satisfy a broad range of other needs while at the same time they contribute to shaping human consumption behaviour. Purchasing behaviour on the food market concerns mental and physical actions, including their motivations and causes, performed by people and groups throughout the consumption cycle for the purpose of accomplishing their goals and values as a result of achieving satisfaction and prosperity, and considers the individual and social consequences of this behaviour [Antonides and van Raaij 2003]. The way food consumers behave and how they rationalise their actions is based on factors connected to the purchased products, characteristics of the consumers themselves and environmental factors [Babicz-Zielińska 2001]. The factors in question also have a major impact on the shaping of new consumption trends and phenomena on the food market.

Rogala [2015] observes that consumption styles in most modern societies are characterised by significant internal differentiation. This situation reflects the paradox of the post-modernist world, where two different trends struggle for their place in the hearts, minds and wallets of the purchasers – consumptionism and sustainable consumption.

Proponents of consumptionism describe it as a form of “consumer paradise”, where the consumer can have a sense of being the “king of the market system”. Consumers are encouraged to feel attractive and to indulge themselves, as this guarantees success and acceptance by others. By buying for pleasure, and without reflection an entire range of products, the consumer believes that they show who they are: as Fromm put it – “I am what I own” [Baudrillard 2006]. However, according to Bauman [2007], consumptionism is in fact an “economy of deception, excess and waste”. The principle of “buy, enjoy and throw away” dominates here [Bauman 2009]. Szul [2015] is of a similar opinion, comparing consumptionism to a hunt, where products are treated like game to be hunted for hunting’s sake. Partially they are consumed, and the rest is discarded without concern for the consequences. In this case the world of hyperconsumption has assigned to the individual the role of a passive consumer, to purchase, damage, discard and purchase again.

The trend opposite to consumptionism is sustainable consumption. The concept behind this trend assumes that consumers, when choosing how they satisfy their needs, consider a number of factors, which ensures that the negative consequences of their purchasing decisions for the natural environment and society are minimised [Siedlecka and Kuszneruk 2018].

An element fundamentally differentiating the two trends is how the issue of wastage, including food wastage, is approached. Consumptionism is the root and driver of the growing food wastage, while one priority of sustainable consumption is to minimise this phenomenon. As Gerwin [2011] notes, the phenomenon of wasting large quantities of food can be seen and is noted in numerous countries, even though we keep hearing that the world is afflicted with hunger and food continues to

become more expensive. It therefore continues to be one of the most negative and controversial phenomena of modern-day consumption, and it threatens nutritional safety. Food wastage occurs at all stages of the “from the field to the table” food chain, beginning with primary production, to processing, commerce, gastronomy, distribution, and households themselves.

According to the “Food wastage in Poland and in Europe” report [PFBF 2012] published by the Polish Food Bank Federation, food wastage is a conscious failure to consume food in accordance with its original purpose at any stage of the food chain. In the opinion of Wrzosek, Kołożyn-Krajewska and Krajewski [2014], the term “food wastage” applies to irrational management processes that occur mainly in the areas of gastronomy and households.

Every year, 1.3 billion tons of food fit for consumption is wasted around the world, which constitutes a third of the total food produced [FAO 2013]. In European Union countries, 88 million tons of food are wasted yearly, at 173 kg per capita on average. The resulting losses are as high as EUR 143 billion per year [Łaba et al. 2020]. Although food wastage occurs at all stages of the food chain, it must be noted that households in developed countries have the greatest share in generating food waste. According to the FUSIONS report “Food waste data set for EU-28”, 28 EU countries generated approx. 87.6 million tons of wasted food, of which households are responsible for almost 47 million tons, which is 53% of all food thrown away [FUSIONS 2015; Kennard 2019].

In light of the above facts, one of the key areas in managing food in the context of reducing wastage is its proper use by households. As studies show, the number of people admitting to throwing food away continues to systematically grow. It is to be expected that this trend will continue, and that the amount of food waste may grow dynamically. It is therefore imperative to undertake various actions to make the consumers aware of the fact and scale of food wastage, and of the options to minimise it [Bilska et al. 2015]. In this respect, identifying and understanding the factors that determine food wastage in households appears to be crucial. This could enable designing and implementing effective education programmes aimed at consumers [Tomaszewska et al. 2020].

In the available literature, the issue of food wastage among consumers is usually analysed from the economic, social or environmental standpoint, or from the perspective of the personal characteristics of the consumers, including their age. To date, the issue has rarely been addressed from the point of view of entire generational populations. A generation is something more than the age factor. It is a certain commonality of viewpoints and hierarchies of values, which have been shaped by common events and experiences. Researchers of intergenerational differences have termed referring to generational identity to explain consumer behaviours as “generationalism” [Rauvola, Rudolph and Zacher 2019].

The generational approach is mainly used in management sciences to study the labour market, professional activities and motivational processes in relation to three generational groups: X, Y, and Z.

Generation X refers to people born in the 1960s and 1970s, who are now retired or close to retirement. They participated in many political and economic changes. Representatives of this population are called the “children of the communist era” and have experienced an economic crisis. They value safety, stability and general quality of life. They are independent in their decision making and are socially active.

Representatives of generation Y are those born in the 1980s and 1990s. They are referred to as the “Millennium generation” or “next generation”, as well as the “digital generation”. They are considered to be a daring generation, open to new challenges. They show greater flexibility and openness to change than their predecessors. They are focused on themselves, their needs and benefits.

Unlike generations X and Y, generation Z are something of a mystery to market and marketing researchers. These are the consumers born after the year 2000, who are only now entering the market and have not been well researched. Their methods and development bear the mark of the processes of globalisation and virtualisation of everyday life. They feel like citizens of the world, where the Internet makes everything possible. They have considerable knowledge in a great many fields, but unfortunately do not always use it in life.

Nevertheless, they are decisive and brave in their market behaviour. That which the older generations view as a danger, generation Z find fascinating and something to be experimented with [Hysa 2016].

From the perspective of individual populations’ experiences with the food market and food security, the following generations can be defined in terms of access to food and the phenomenon of food wastage: X – “scarcity generation”, Y – “moderate abundance generation” and Z – “prosperity generation”.

Knowing the characteristics and attitudes of different generations may in effect differentiate their behaviours in the area of food consumption, including food wastage, while at the same time providing an answer to the causes for behaving in a specific way.

The aim of this study was to determine the effects of belonging to a particular generation X (aged 60+), Y (aged 31–59) or Z (aged 18–30) on the participants’ attitudes and behaviours concerning unconsumed food. As a result of defining the aim in this specific way, the paper presents results that concern the studied generational groups only.

## **2. STUDY MATERIAL AND METHODS**

The study was a pilot undertaking and constituted a fragment of a larger complex of research into the factors shaping consumer behaviour on the food and nutrition services market. The study was conducted using the survey method among 165 respondents from the territory of the Pomorskie Voivodeship. The population selection was random and intentional. The surveyed were varied in terms of sex, education and the generation populations to which they belonged. The sociodemographic profile of the study group is shown in Table 1.

The study used an original survey form containing closed and semi-open questions, single or multiple choice. The survey questions concerned such issues as: level and source of knowledge the surveyed had on food waste, assessment of the importance of the food waste issue, handling unconsumed food, main causes of food wastage, etc.

**Table 1.** Sociodemographic profile of the study participants

Attribute	Profile	Abbreviation	n	%
Sex	Female	F	83	50.3
	Male	M	82	49.7
Age (years)	60+	Population X	57	34.6
	31-59	Population Y	54	32.7
	18-30	Population Z	54	32.7
Education	Basic	B	38	23.0
	Secondary	V	66	40.0
	Higher	H	61	37.0

Source: original study.

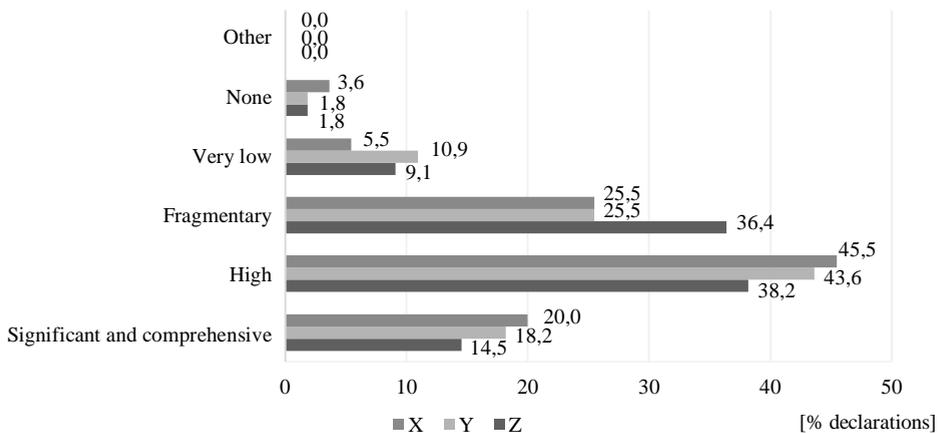
### 3. DISCUSSION

#### 3.1. Participant self-assessment of their knowledge concerning food waste and their sources of knowledge

In a knowledge-based economy, the knowledge resources and ability to use them constitute one of the most important factors conditioning consumer behaviour on the market. Knowledge shapes the perception, attitudes and final decisions of consumers concerning products, services and phenomena [Beberka 2018].

As Goryńska-Goldmann and Ratajczak [2010] put it, “only an aware consumer, equipped with the right knowledge, is able to take rational and informed market decision”. In the study, the participants were asked to make a self-assessment of their own knowledge concerning food wastage. It was found that the level of knowledge concerning food wastage increased with the age of the participants. 45.5% of the generation X respondents (aged above 60) assessed it as high. On the other hand, the youngest population (Z) assessed their knowledge on food wastage as fragmentary much more frequently (36.4%) than populations X and Y (25.5%) (Fig. 1). It appears that interest in the issue of food wastage among older people stems from their life and market experience. These are the respondents who had faced the issues of hunger and lack of food on the market.

As a result, these people are also characterised by high respect for food, having experienced its shortages more than once. The younger generations were born in times of omnipresent abundance and food availability on the market, so issues such as hunger or wastage may go unnoticed or even be ignored at times.



**Fig. 1.** Level of own knowledge concerning food waste as self-assessed by participants of populations X, Y, and Z

Source: original study.

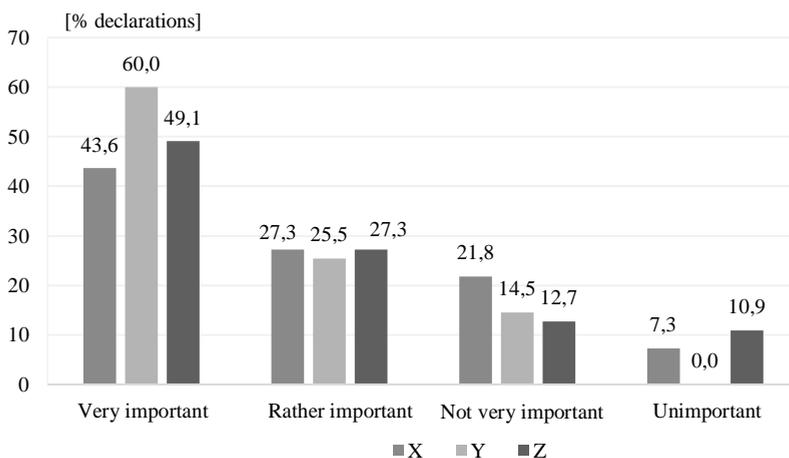
The main source of knowledge on food waste for populations Z (45.5%) and Y (32.7%) was the Internet, while for population X respondents it was the television (23.6%) and, to a similar degree (20%), other family members and the Internet. A relatively low percentage of the surveyed from all generations (X, Y – 14.5%; Z – 9.1%) indicated school or university as a source of knowledge. The high share of the Internet in acquiring knowledge on food waste by generation Z comes as no surprise, because for generation Z, modern technologies are their “bread and butter”, something that has been there forever. They grew up surrounded by everything that is “i” – the Internet, iTunes, iPhones, iPods and iPads [Hysa 2016]. The low share of school as the source of knowledge on food waste among the studied generations is concerning. It may mean that this phenomenon is still inadequately featured in the curriculum. According to Bilaska et al. [2015], adequate education for consumers is one of the main methods of preventing food waste, and the role of schools in this regard appears to be crucial.

### 3.2. Perception of the importance of the food waste issue from the economic, social and ethical perspective in the participants' assessment

The growing scale of food waste is beginning to take on the qualities of a global problem that brings about multi-dimensional, negative consequences of an economic, social, environmental and ethical nature [Marszałek 2018].

The perception of the phenomenon itself is extremely important in assessing the gravity of the food waste issue. Perception depends on psychological factors, which affect the attitudes and behaviours of consumers towards different

phenomena, but does not pre-determine their ultimate actions [Rudnicki 2012]. It was found in the study that population affiliation did not significantly differentiate the perception of the importance of the food wastage issue from the economic, social and ethical perspective. A total of 78.2% of all the surveyed viewed it as very important or important, including 85.5% people of population Y (aged 31-59), 76.4% of population Z (aged 18-30) and 70.9% of population X (aged 60+). A total of 29.1% of the surveyed from population X, 23.6% of population Z and 14.5% of population Y considered the issue of food wastage to be of low importance or unimportant (Fig. 2).



**Fig. 2.** Perception by respondents from populations X, Y, and Z of the importance of the issue of food wastage from the economic, social and ethical perspective

Source: original study.

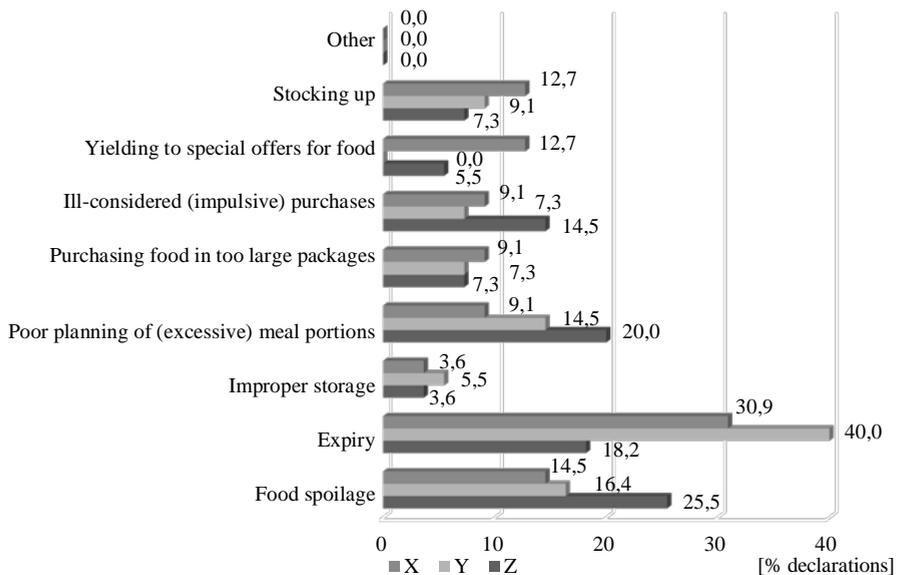
### 3.3. Causes of the food wastage phenomenon

The process of food wastage is largely dependent on the attitudes and behaviours of consumers, on how well representatives of households can handle planning and conducting shopping, meal preparation and consumption. The main causes of food waste in households include [Dąbrowska and Janoś-Kresło 2013; Quested et al. 2013; Porpino, Parente and Wansink 2015; Marszałek 2018]: throwing away food nearing expiry or expired, low quality of many products, inadequate education programmes, low consumer awareness of the scale of food wastage, irrational purchases, lack of knowledge on how to store food products, improper portioning of food when preparing meals (too large servings), irrational meal preparation, and relatively easy access to food products.

The study results point to diverse causes for wasting food, depending on the generation. The leading cause of food losses for generations Y and X was expiry

(Y – 40%, X – 30,9%), while for generation Z it was food spoilage (25.5%), poor planning in meal preparation (20%) and ill-considered purchases (14.5%). Ill-considered (impulsive) purchases were indicated as a cause of food wastage by the young members of generation Z twice as frequently than representatives of generation X. On the other hand, the members of generation X gave stocking up and yielding to special offers as causes of wastage much more frequently than representatives of generations Y and Z (Fig. 3). Unplanned and overestimated purchases are frequently the consequence of marketing and sales strategies as well as special offers run by food producers and retailers [Schanes, Dobrnig and Gözet 2018; Janssens et al. 2019].

The food stocking by population X respondents that the study found as a cause of food wastage during a time of “full shelves” appears to be an irrational behaviour. However, considering the life experiences that this older generation has had with access to food, there may be a certain “psychological rationality” to this case. Generation X, called the “scarcity generation, did experience an “empty shelves” situation during their youth. The latter have long been filled, but for many representatives of generation X, the habit of stocking up remains.

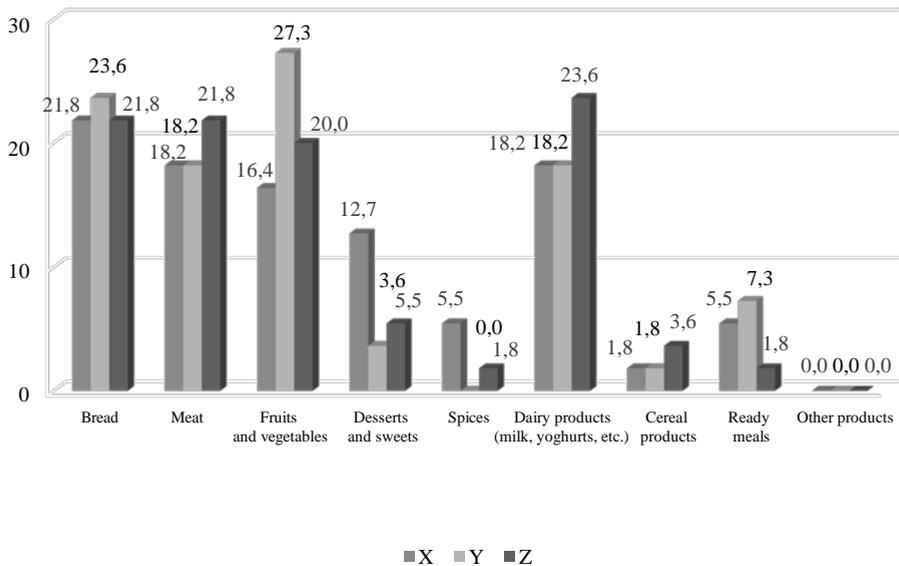


**Fig. 3.** Main causes of food wastage among the three generations

Source: original study.

### 3.4. Wastage of selected food groups in populations X, Y and Z

One of the aims of the study was to identify the food groups where most food wastage occurs among the individual generational members. Among the surveyed, this phenomenon occurs in their households primarily in relation to fruits and vegetables (25.5%), bread (20.6%), meat and meat products (19.4%), and dairy products (15.2%). The results were in agreement with the effects of studies by other authors [Dąbrowska and Janoś-Kresło 2013; Siedlecka and Kuszneruk 2018; Tomaszewska et al. 2020]. Fruit and vegetable wastage was the highest in population Y (27.3%), followed by population Z (20%), and the lowest in population X (16.4%). The percentage of respondents who declared bread wastage was similar in all populations, and was close to 22%. For meat and meat products (MC) and dairy products (DP) the wastage phenomenon was higher in the youngest generation (Z) (MC – 21.8%; DP – 23.6%) than in populations X and Y (MC – 18.2%; DP – 18.2%) (Fig. 4).



**Fig. 4.** Wastage of selected food groups in populations X, Y, and Z

Source: original study.

### **3.5. How the surveyed handled unconsumed food**

In European households, 20–30% of the purchased food is wasted, 2/3 of which could still be consumed. In the United Kingdom, this issue applies to 20% of the purchased food, while in the US, on average 25–40% of food is wasted. In 2015, Pope Francis wrote in his Encyclical “*Laudato Si*: “If we wish to build a future, we must create a contemporary world that radically rejects wastage, as food thrown away is as if it were stolen from the table of the poor and the hungry!” [Pope Francis 2015]. This view is accepted by a growing number of consumers, who notice that there are many ways for leftovers to find their way to the plates instead of the bin [Majcher 2018]. Bringing attention to the issue of food wastage while at the same time raising awareness of the options for creative use of food is an important step towards reducing this phenomenon.

In this study, which was intended to determine the respondents’ behaviour related to unconsumed food, it was found that 37.6% of the surveyed throw away unconsumed food, 20.6% try to process it, while 18.8% feed it to animals. Throwing unconsumed food away was declared by as many as 45.5% respondents of population Z (aged 18–30) and more than one-third of populations X (34.5%) and Y (32.7%). The prevalence of actions aimed at utilising (processing) unconsumed food was inversely proportional to the age of the surveyed. Representatives of population X displayed such behaviour the most (23.6%), while population Z the least (16.4%). A different relationship was found in the case of using unconsumed food to feed animals. This was done more frequently by people from generations Z (25.5%) and Y (20%) than generation X (12.7%).

On the other hand, the oldest surveyed, belonging to population X, unlike populations Y and Z, tried to utilise unconsumed food by handing it over to family (14.5%) or friends (9.1%). Such actions with regard to unconsumed food occurred three times more frequently for population X than for the young participants of population Z. The behaviour of population X participants that the study found fits the social trend of the sharing economy, whose one aim is to reduce the phenomenon of food wastage [Śmiechowska 2015; Michelini, Principato and Iasevold 2018; Drozłowska and Sobieraj 2019].

## **4. CONCLUSIONS**

Excess consumption and related food wastage may not be excused by human needs, as their consequences in the economic, social, environmental or ethical dimension may take on catastrophic proportions. When taking action intended to prevent food wastage, it is above all the causes and the scale of the phenomenon itself that need to be accurately diagnosed. Studies conducted for years have demonstrated that it is no easy task, especially in the case of consumers and their households, who are responsible for approximately 53% of the wasted food. This is a consequence of their attitudes and behaviours towards food wastage being determined by multiple

sociogeographic, social and economic factors. Studies based on market segmentation may be helpful when identifying and creating the profile of a “food waster” consumer. They help determine the impact of selected segmentation criteria (sex, age, education, income level, etc.) on the approach of specific consumer segments to the phenomenon of wastage. As a paradox, the same market segmentation that producers take advantage of in building their marketing strategies to stimulate consumers to purchase as much food as possible, and consequently to waste it, may be helpful in limiting such behaviours.

This study, conducted among the three fundamental generations X, Y, and Z, demonstrated that generational affiliation differentiates their approach to food wastage. It was also found that the declared fragmentary level of knowledge on food wasting, especially among the youngest generation, translates into their everyday behaviour. Almost half the respondents from this generation (45.5%) throw away unconsumed food.

The study results also provided much supplementary information that could explain why members of specific populations behave in particular ways. This knowledge can be extremely helpful in shaping information campaigns and education actions to promote responsible consumption patterns, sustainable use of available resources and shape mature life attitudes.

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