



Lost calories

How to successfully
combat food waste



AUTHOR

Dominik Sipiński

consultant of Polityka Insight

COOPERATION

Joanna Popielawska

EDITOR

Marcin Bąba

GRAPHIC DESIGN

Max Belina Brzozowski

Joanna Pamuła

TRANSLATION

Annabelle Chapman



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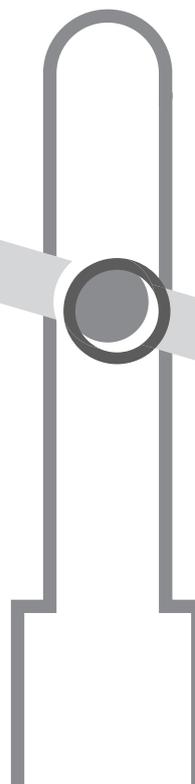
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Key figures

247 kg
of food per person is wasted in Poland each year

34-63 %
of Poles admit to regularly throwing out food

62 %
of Poles believe that households bear the primary responsibility for limiting food waste

88 mln tonnes
of food is wasted in the EU each year

170 mln tonnes
of CO₂ are emitted each year in the EU in connection with supply chain of food that is ultimately wasted

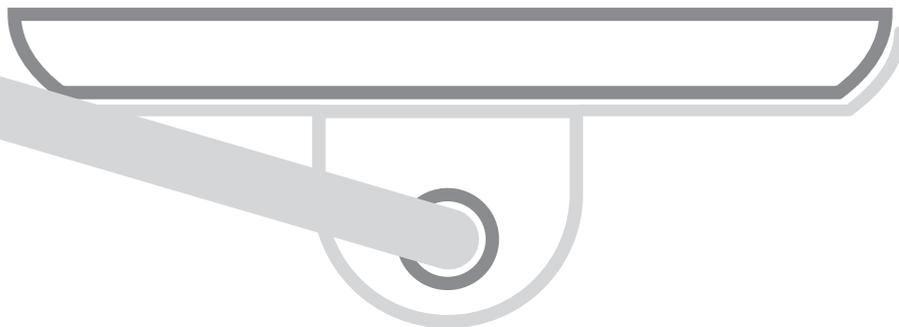
65,500 tonnes
of food a year are distributed by Polish food banks

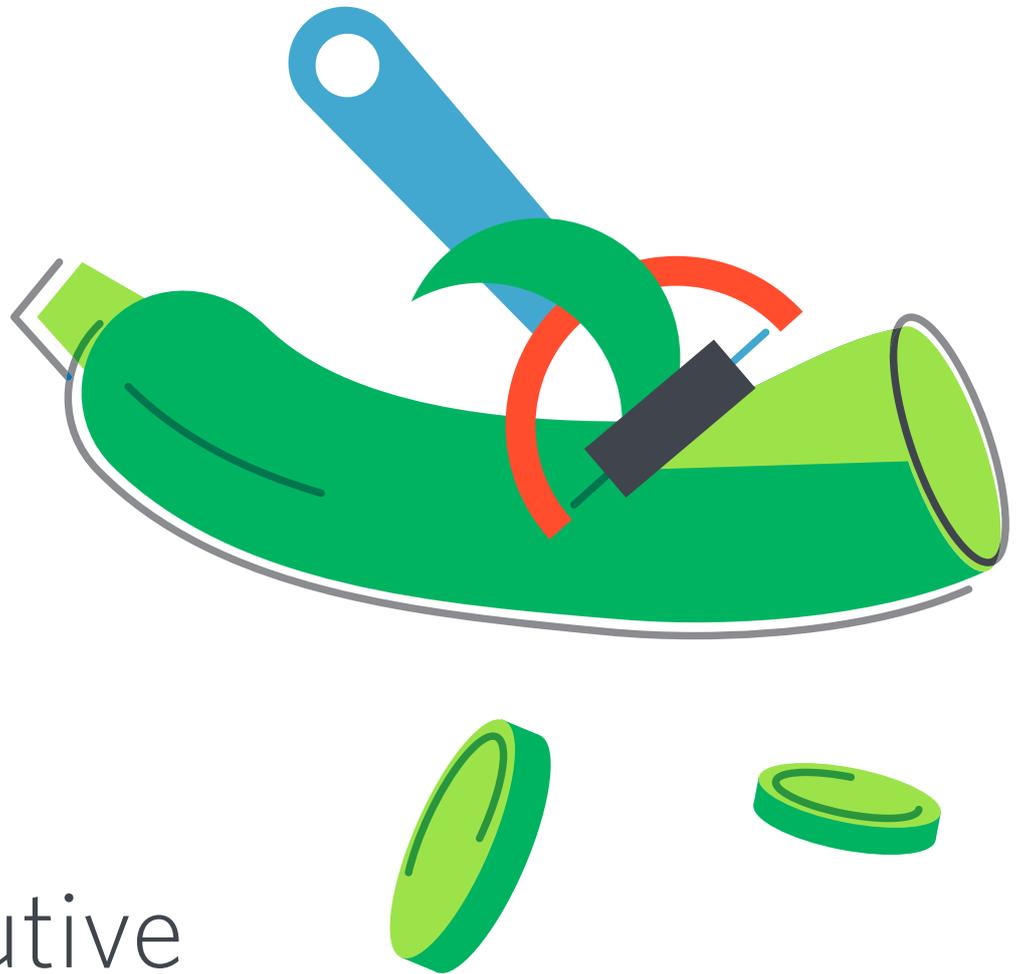
Wasted food in the EU costs

EUR **143** bn a year

Food wasted in Poland alone costs

EUR **14** bn a year





Executive summary

Food waste is a universal problem that is difficult to quantify but has negative consequences in many dimensions, including financial, environmental and social. The data on its scale is rudimentary; in Poland, there are **practically no central, systemic initiatives that could reduce it**. A limited number of bottom-up actions are undertaken by certain retail chains and NGOs.

Food is wasted at every stage of the supply chain, from production and processing (by farmers, breeders or at processing plants) to distribution (retail and wholesale), via consumption by households and restaurants.

In the EU alone, 88 million tonnes of food a year are wasted¹; the figure is 1.3 billion tonnes globally. However, the available data is only an estimate, given the lack of a common definition of the problem, single methodology for measuring, as well as difficulties measuring its scale at every stage. It is therefore **almost impossible to fight against a phenomenon which causes and size are rough estimates.**

The negative environmental consequences are mainly associated with the energy used to produce and distribute the wasted food, as well as costs and emissions when disposing of the food. **Wasted food accounted for around 170 million tonnes of CO₂ emissions in the EU in 2006².** According to European Environment Agency data³, agriculture accounts for 10 per cent of greenhouse gas emissions. Industry and processing, along with waste processing, generate a total of 13 per cent. By eliminating food waste in the EU, greenhouse gas emissions can be reduced by at least 2-3 per cent. Food waste also increases farmers' and breeders' water consumption.

date on food means, which may prompt them to throw out products that are still safe to eat. Moreover, Poles are less inclined than others to fight food waste and less often feel a need to make changes themselves.

Polish law primarily exerts an influence on retail and wholesale distributors. These are directly responsible for just a small percentage of food waste (less than 10 per cent), but they also have a significant impact on it at the production (for example, through requirements for producers) and consumption stage. A law on combating food waste proposed by the Senate would require sellers to pass on food withdrawn from sale to charitable organisations.

The European Commission's approach to the problem so far has been ineffective. Combating food waste is currently one of the goals of the EU's Circular Economy Package. **For now, though, the reduction targets will not be binding**, but a common definition and methodology for measuring food waste will be introduced, resulting in better estimates of its scale and more effective prevention.

The best way to reduce food waste is education, especially of consumers. People need to be made more aware of the problem and its negative consequences, while promoting solutions reducing food waste. The new solutions should encourage the use of food withdrawn from sale due to its appearance, discourage people from stocking up on food and make it easier to use food close to or past its best before date. Financial and organisational support of charitable institutions is needed too, in order to improve the distribution of food withdrawn from sale.

As most of these solutions include education, creating the methodology for measuring and promoting good practices, they are relatively cost-efficient measures. Legislating for combating food waste should be the weapon of last resort. Moreover, successful eradication of food waste needs co-operation of all stakeholders involved as they will all benefit.

The social and moral dimension is significant too. 815 million people – over 10 per cent of the world's population – are hungry⁴. Even in Europe and North America, the region least susceptible to hunger, over 13 million people suffer from serious malnutrition, according to data from the UN's specialised agencies. Research by KANTAR Millward Brown for the Federation of Polish Food Banks indicates that in 2013 **162,000 Polish children aged 7-12 were undernourished⁵.**

In Poland, few studies on the scale of food waste have been conducted. Their results are divergent and probably understated. Nevertheless, estimates indicate that producers' share in food waste is significantly higher in Poland than in other countries.

Most Poles throw out food at least once a month, with a significant group admitting to doing so more often. As a result, **9 million tonnes of food, worth a total of 14 billion euros, are wasted in Poland each year**, according to a study from 2006. Compared to other nations, Poles know relatively little about what the best before

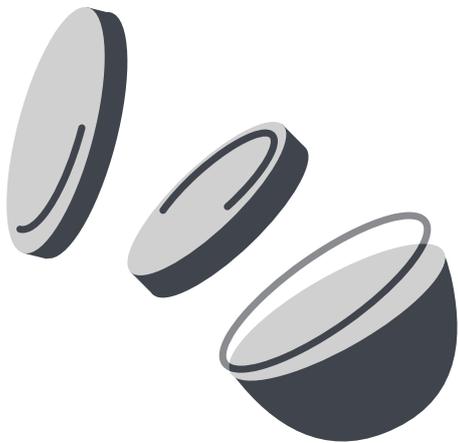
1 FUSIONS (2016)

2 European Commission (2010)

3 Eurostat (2017)

4 FAO (2017)

5 KANTAR Millward Brown (2017)



Food waste and how it can be prevented

DEFINITIONS

Food waste – the withdrawal of food that is or was edible by humans from the supply chain. Depending on definition food that is turned into feed or disposed of (alternative or non-food use of food) is considered wasted⁶ or not⁷. Food waste also encompasses crops that are not harvested or that are composted, as well as inedible parts of plants. Products passed on to charitable organisations are not wasted, according to this definition. Different institutions use different definitions, making comparisons difficult.

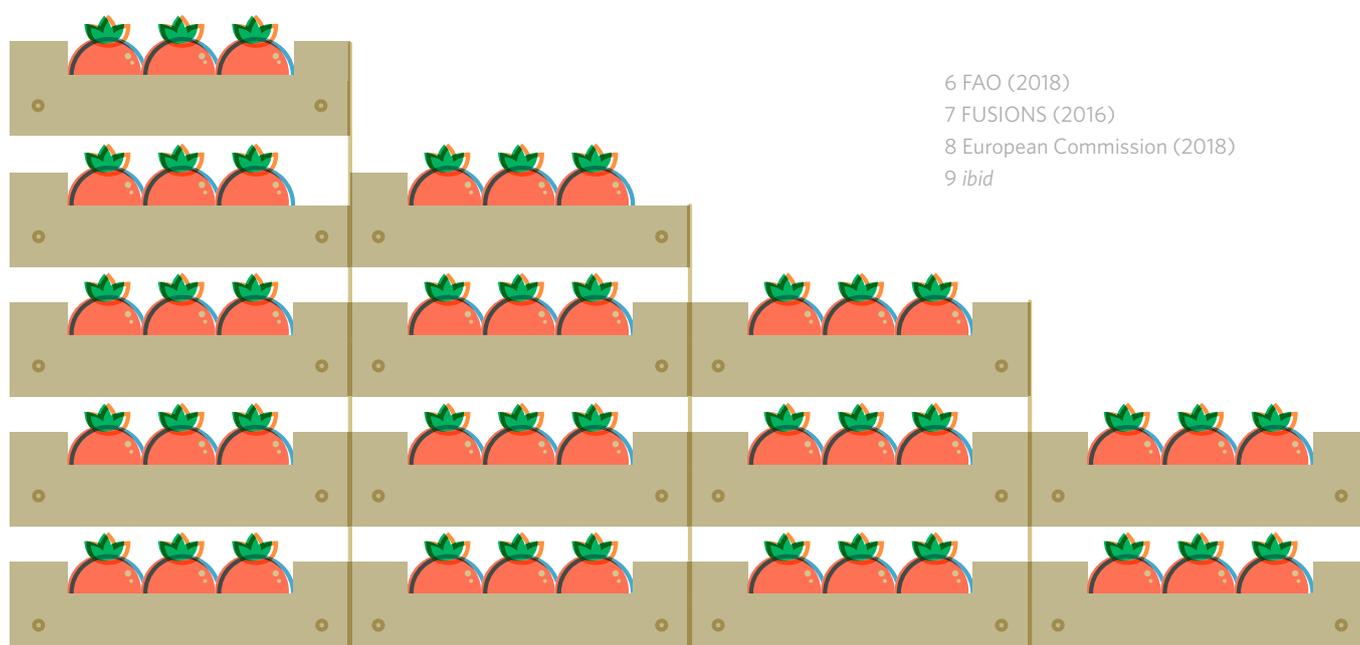
Avoidable waste – food and drink thrown away that was, at some point prior to disposal, edible and wasn't consumed

Unavoidable waste – waste arising from food or drink preparation that is not, and has not been, edible under normal circumstances or due to *force majeure* (e.g. draught, random events in transport or storage)

Use by date – the date after which food stored correctly can become harmful⁸. It refers to whether the food is safe.

Best before date – the date after which food stored correctly can lose some of its properties but is not harmful and can still be consumed⁹ („najlepiej spożyć przed”). It refers to the food quality.

Farm to fork – the food supply chain, spanning all stages from production to consumption, via processing, transport, storage and distribution.



FOOD RECOVERY HIERARCHY



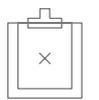
Source: www.epa.gov/sustainable-management-food/food-recovery-hierarchy

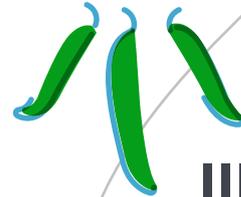
 INFOGRAPHIC 2: **Where the food waste is generated**

Source: Federation of Polish Food Banks (2012)



I
PRODUCTION

-  waste on-farm
-  wrong processing
-  unsold and damaged products
-  inedible products (animal bones, inedible roots or leaves, etc.)
-  products below quality standards, order changes



III
STORAGE

-  pest
-  contamination
-  loss in mass



II
TRANSPORT

-  bruising, squashing, lost in transport



IV PROCESSING



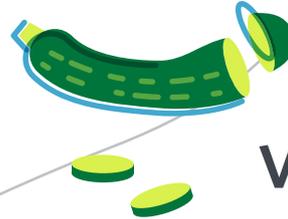
loss in mass



contamination



products below quality standards



V DISTRIBUTION



spoilage



thrown i.a. due to bad appearance



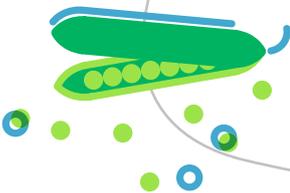
unsold



expired



lost by chance (e.g. flooded, squashed in transit)



VI RESTAURANTS



surplus portions



unmet taste expectations



spoilage



lack of options to manage surplus

VII INDIVIDUAL CUSTOMERS



scraps



spoilage



bad taste



lack of knowledge on difference between expiry date and best before date



expired

The current situation

LEGISLATION

At time of writing (May 2018), **there is no – and has never been – systemic legislation in Poland addressing food waste** at any stage of the supply chain. The only law related to this problem are tax provisions introduced on January 1, 2009, freeing food donations (except alcohol) for public benefit organisations' charitable activities from VAT. Since 2013, this exemption applies to all taxpayers. The donation's value can also be added to one's costs when calculating tax due, which lowers the tax basis. However, this is also possible for food that is disposed of, which means that these provisions do

waste.¹⁰ **Its main provision requires food distributors (shops and warehouses) to cooperate with public benefit organisations that pass it on to people in need¹¹.** Every distributor would have to sign an agreement with an organisation, to which it would pass on food that would otherwise be disposed of (for example, because of its approaching best before date) for free. The requirement would initially apply to shops and warehouses with an area of over 400 m²; after two years, it would be extended to those with an area of over 250 m² (the law only applies to entities where revenue from food sales accounts

The law does not foresee penalties for food waste



not provide a significant incentive to donate food, which is often more complicated logistically than simply disposing of it.

The law does not foresee penalties for food waste or provide systemic solutions that would make it easier to donate food to organisations; to some extent, it even limits this possibility. For example, food past its best before date cannot be donated, though the law states that food stored correctly does not become dangerous after that date; it can merely lose some of its properties. Still, sellers usually withdraw it from distribution, which results in it being wasted. This could be best tackled however by introducing incentives to education campaigns or agreeing the methodology to measure food waste.

On March 15, 2018, the Polish Senate embarked on a first attempt to introduce regulation in this field by submitting a draft law on combating food

for more than 50 per cent). This means that the law would not apply to most small neighbourhood shops and convenience store chains. In terms of penalties, distributors that do not pass on the food would have to **pay the organisation PLN 0.10 per kilogramme of wasted food**. If the distributor did not sign an agreement with an organisation, the payment would go to the voivodeship's environmental protection fund.

In practice the proposed solutions would not be effective because shops and warehouses are responsible for just 5 per cent of food waste (according to Eurostat data). Even if all food waste by distributors were eliminated, the solutions could increase the amount of food wasted by public benefit organisations, which have a limited ability to store and distribute donated food items.

The definition of food waste used in the draft law is very narrow: it refers to food withdrawn from

¹⁰ Senate's draft of the Act on combating food waste. Sejm's docket number 2431.

¹¹ Polityka Insight (2018)

distribution due to its approaching best before date, use by date, or the appearance of the food or its packaging, that is destined for disposal. This definition only refers to **food that is still edible**.¹² **The law would not support the use of food that has passed its best before.**

As part of the proposed law, sellers would also have to conduct an information campaign about the problem of food waste. Money spent on the campaign could be deducted from the charge for wasted food (up to 20 per cent of the total fee). Compliance with the law would be monitored by the retail inspectorate – 25 per cent of sellers would be checked each year, though the proposed budget might only cover one-fifth of this target.

At the end of April 2018, the draft law had not yet been considered by the Sejm's Economy and Development Committee.

As for now, public benefit organisations can count on the Ministry of the Environment's support and subsidies from the National Fund for Environmental Protection and Water Management (NFOŚiGW) for new storage space, equipment and other investments making it easier to receive, store and distribute food donated by shops.

In the absence of a legal framework, some retail chains have launched their own initiatives to reduce food waste. The leading examples are Tesco, Carrefour, Lidl and Biedronka, which cooperate with the Federation of Polish Food Banks, sending it surplus products. Tesco leads the pack as it is the only company calculating its food waste by applying a Food Loss and Waste Accounting and Reporting Standard (FLW Standard¹³). The results are published in Tesco's annual reports measuring food waste by product categories.

The above-mentioned chains also have campaigns informing customers about the scale of

the problem and ways to reduce it. Carrefour has launched „STOP Marnotrawstwu” (eng. “Stop Food Waste”). Tesco has a campaign selling visually imperfect fruit and vegetables and no longer has promotions such as “two for the price of one” on fruit and vegetables, as they encourage people to buy too much. As part of corporate social responsibility practices, retail chains also buy cold stores for food banks, though most do not conduct actions to reduce food waste or raise awareness among consumers.

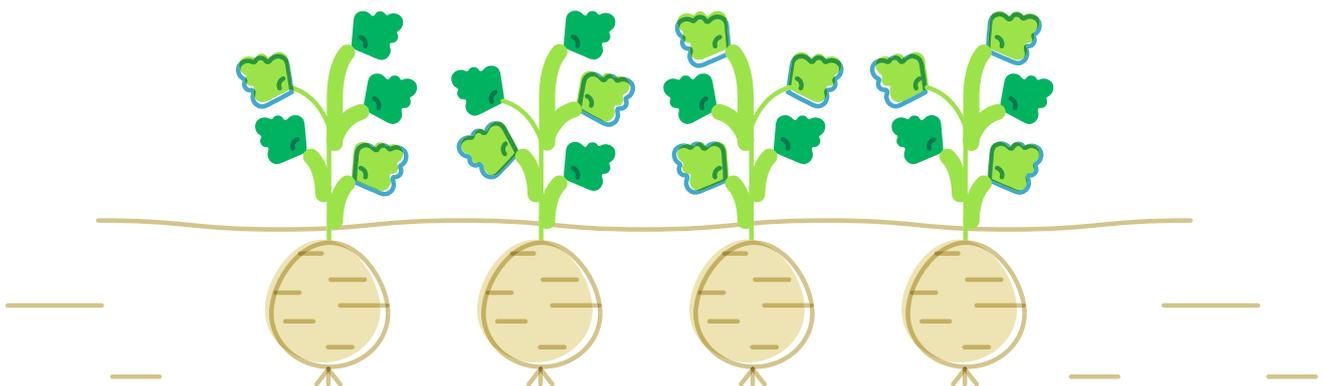
DATA - HOW MUCH FOOD IS WASTED IN POLAND

The amount or value of food wasted can only be estimated. Food waste occurs at all stages of the supply chain, from production to consumers, via wholesale and retail distribution. The only data comes from surveys or estimates. Of the major retail chains, only Tesco has attempted to measure the scale of food waste in Poland. Other chains, such as Carrefour, and food outlets measure it in a more limited way. Yet at the production and processing stage, in households and among the vast majority of distributors, food waste is not even closely monitored on an ongoing basis. This problem is not limited to Poland, though the Polish data is very poor compared to other European countries. And without reliable data and measurable indicators the issue of food waste is very hard to tackle.

Nevertheless, the available data, which needs to be treated with caution, clearly indicates that food waste is a universal problem, primarily occurring at home (which makes it especially difficult to measure due to dispersion). According to the FUSIONS report prepared under the leadership of

¹² Art. 2 para. 1 of the draft Act on combating food waste

¹³ World Resources Institute (2016)



the IVL Swedish Environmental Research Institute on behalf of the European Commission, 53 per cent of food is wasted in people's homes. Research from Denmark¹⁴ indicates that consumers' bad habits when planning and shopping for food and using it afterwards are mostly to blame. This is an estimate for Europe; there is no current data focused on Poland.

Households' dominant share in food waste is typical of developed countries, where food is relatively cheap (for consumers, throwing a certain

amount away is not a noticeable waste of money) and expectations about appearance and taste are high. As the European Commission argues, there is also a lack of awareness about the problem of food waste, lack of knowledge about how to use up food efficiently (including leftovers), mistakes in storage, packaging and portion size, along with poor shopping planning and not understanding what food labels mean¹⁵.

In terms of value, households' share is even higher – as much as two-thirds of the total¹⁶. This is

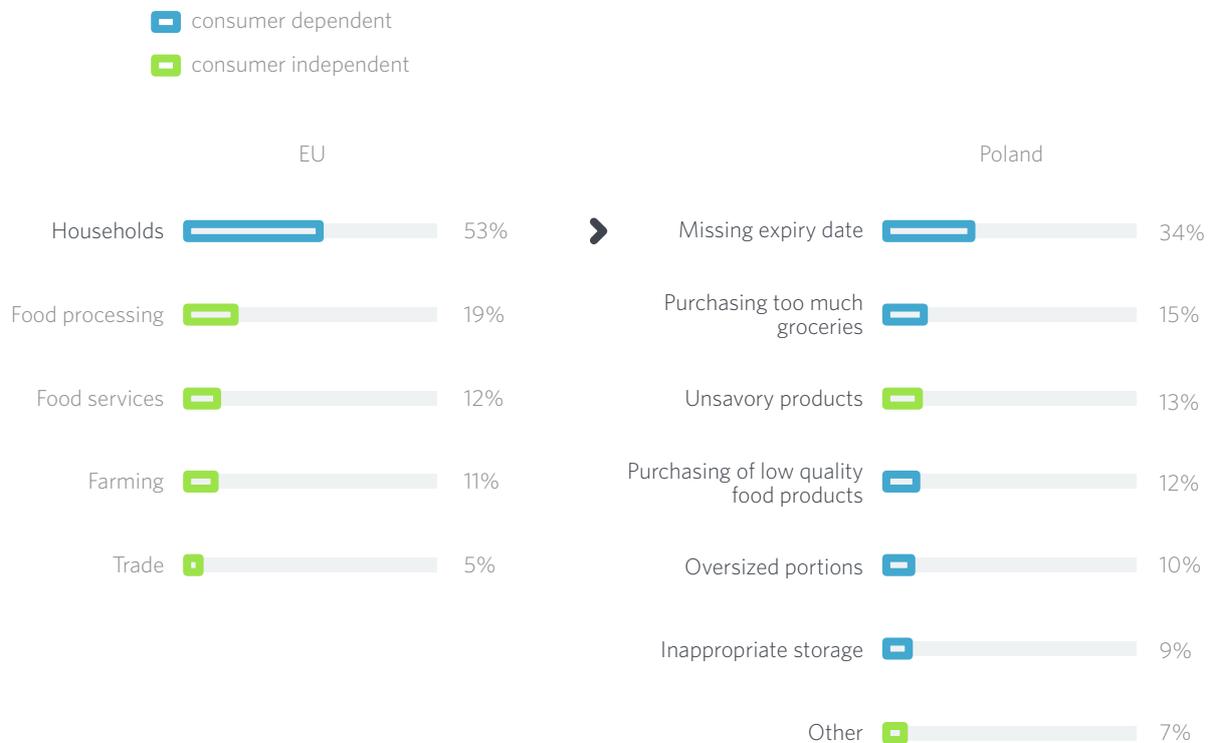
14 Stancu, Haugaard and Lähteenmäki (2016)

15 European Commission (2010)

16 FUSIONS (2016)

GRAPH 1: Sources and reasons of food waste

Source: FUSIONS, KANTAR Millward Brown



because products wasted at home are often worth more than those wasted during production. Furthermore, when a product is wasted at the stage of consumption, all the work that went into preparing it – harvesting, processing, transport, distribution and storage – is wasted, too¹⁷. Even if the food is used for compost or fodder, it is still an example of suboptimal management of resources as the production of food requires much more effort than the production of fodder.

According to Eurostat estimates from 2006, around 9 million tonnes of food a year are wasted in Poland – around 237 kilogrammes per person. The total value of food wasted is 14 billion euros a year¹⁸.

In the whole supply chain, production and processing accounted for 6.6 million tonnes of

to throwing out food. This percentage has remained at a similar level for many years; according to the same poll conducted in previous years, it fluctuated from 30 to 39 per cent between 2009 and 2017. However, the poll is conducted on a limited sample of respondents (503 in 2017) and based on their own declarations. For this reason, it is highly likely that the percentage is significantly underestimated.

This is confirmed by a poll conducted by SW Research for Tesco Polska on a sample of 1004 respondents²¹. It indicates that 62.7 per cent of Poles throw out food at least once a month. 32.1 per cent admit to wasting food at least once a week and 10.4 per cent every day. These percentages may be understated too, but they

Around 9 million tonnes of food a year are wasted in Poland



food wasted in Poland in 2006, with just 2 million generated by households¹⁹. This data from over a decade ago indicates that individual consumers in Poland were responsible for just 22 per cent of food waste, less than half the EU average. This large discrepancy can partly be explained by the fact that, as a food exporter, Poland naturally wastes more at the production stage than other countries. Nevertheless, the data needs to be treated with caution – not only because of the changes over the past ten years, but also because the statistics are incomplete.

According to a poll conducted by KANTAR Millward Brown for the Federation of Polish Food Banks in 2017²⁰, 34 per cent of Poles admit

show that **most Poles throw out food regularly**. Only 26.4 per cent of Poles said that they never throw out food, though this percentage should be considered inflated. Many people do not even perceive throwing away an unfinished meal as food waste.

The responses are not fully credible because regardless of the country, wasting food is considered bad, which means people are unwilling to admit to it – though the correlation among respondents between disapproval and actual steps taken to reduce food waste is low.²² Undoubtedly, these negative connotations influence opinions of Poles – **90.4 per cent would like to reduce food waste in their homes**.

17 Williams and Wikström (2011)

18 Olipra (2017)

19 Eurostat (2006)

20 KANTAR Millward Brown (2017)

21 Tesco (2018a)

Research for Tesco also shows that food waste is a bigger problem among young people. Among 19 to 24 age bracket, 77 per cent admitted to throwing out food – significantly above the average for all the respondents. This might reflect more of an awareness of the problem – young Poles do not necessarily waste more food but are simply more aware of this phenomenon. At the same time, young Poles born after 1989, who did not experience communist-era rationing, may be less inclined to prevent waste. Nevertheless, 88.5 per cent of them wish to change their habits, 1.9 percentage points less than the overall population.

Food waste largely results from low awareness and poor education, as confirmed by Eurobarometer statistics from 2015, which show that the level of responsibility for wasting food felt by respondents is directly proportional to their level of education. Data collected in Polish schools are not optimistic. **Schools teach pupils about**

food waste, but also contribute significantly to its spread themselves and, in practice, do not get children into the habit of preventing it.

Research conducted by the Faculty of Human Nutrition and Consumer Sciences at the Warsaw University of Life Sciences in 2016²³ indicates that the average pupil leaves around 25 grams of food at the school canteen every day. This adds up to over 8 kg per pupil per year. The food items most commonly wasted at school canteens are potatoes, bread, fruit and vegetables.

In a poll conducted on behalf of the Federation of Polish Food Banks²⁴, 35 per cent of parents admitted that their children do not finish their meals at the school canteen (although this should also be treated as an underestimate). The same percentage of respondents think that school breaks are simply too short, leaving children with too little time to finish their meals.

22 Falasconi et al. (2016)

23 Kowalewska (2016)

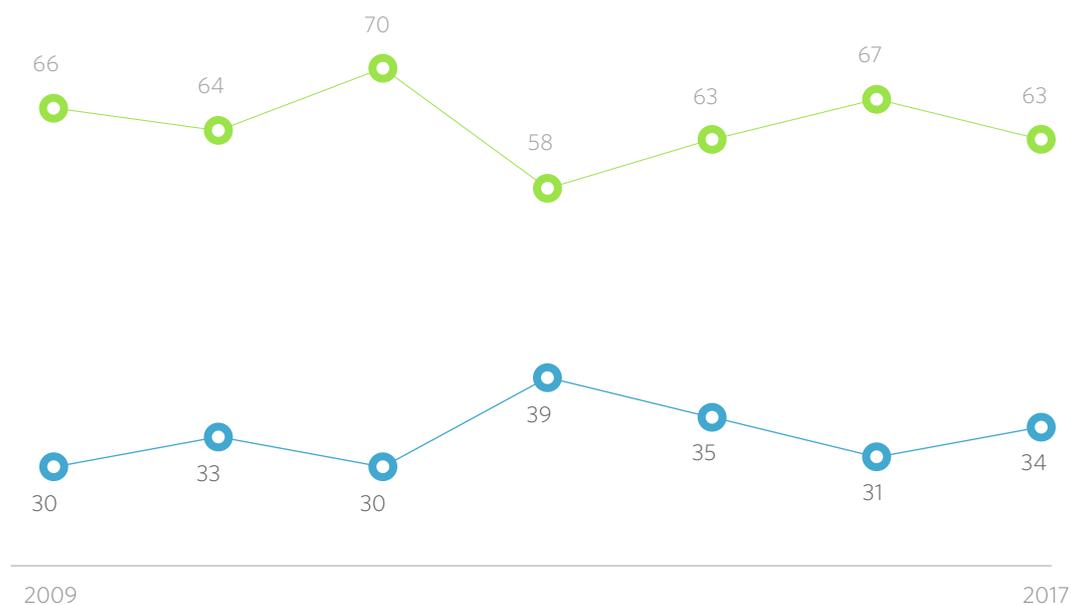
24 CEM (2018)

GRAPH 2: How many Poles waste food

Source: KANTAR Millward Brown

Note: numbers do not add up to 100 as an answer "I don't know" was also possible.

- don't waste (%)
- waste (%)





REASONS FOR AND TYPES OF FOOD WASTE

The Food and Agriculture Organization of the United Nations (FAO) points out that in **poor countries the most food is wasted at the production stage**²⁵, which results from the low yield of agriculture and livestock farming, limited storage facilities and lack of effective transport infrastructure. **The richer the country, the higher the percentage of food wasted further on in the supply chain**, reflecting society's rising expectations about how a product should look, higher purchasing power, enabling too much food to be bought, and stricter rules on using and respecting short use by and best before dates.

Assessing the causes of food waste is even more difficult than estimating its scale, and there is practically no research on it, especially at the level of individual households (where most food is wasted)²⁶.

According to research by the Federation of Polish Food Banks, **the main reason for food waste is missing the use by date or best before date** – this is why one in three respondents throws out food. Other reasons include buying too much, a bad-tasting product, poor quality, too big portions and inappropriate storage. All these other factors (apart from bad taste) depend

on individual consumers' decisions and actions and, by raising their awareness, wasting of food could be significantly reduced.

The study shows that the reasons why food is wasted have changed markedly in recent years. In 2012, missing the use by or best before date was cited as the main reason by over half of respondents. The percentage of people citing inappropriate storage or buying too much has fallen sharply too, indicating that Polish consumers have become significantly more conscious. At the same time, the percentage of people who throw out food that they think tastes bad is rising rapidly, indicating that **Poles are becoming increasingly selective. Although they buy more consciously, they are less reluctant to throw out what they do not like.**

Just **24 per cent of Poles know the term "best before date"** and understand that food can still be eaten past that date²⁷. So it cannot be ruled out that declaring missing the best before date leads to throwing away still edible food.

Bread and cold cuts are thrown out most often; half of people surveyed admitted that, according to the latest research. One-third waste fruit and vegetables. Fewer people throw out potatoes,

25 FAO (2011)

26 Russell, Young, Unsworth, and Robinson (2017)

27 Eurobarometer (2015)

yoghurt, ready meals, meat and cheese. Although there are major fluctuations in the annual studies, long-term trends show that the same products are most likely to be thrown out.

The structure of food wasted by shops is somewhat different, despite the very limited data in this segment; only Tesco discloses the details of its losses.²⁸ At that chain, fruit and vegetables account for 36 per cent of wasted products, products from the bakery for 17 per cent, and the “meat, fish, poultry” category, which includes the cold cuts often thrown out by consumers, for just 5 per cent. These results are not fully comparable, as individual consumers can choose a few categories of wasted products, whereas Tesco’s data refers to the percentage of waste from each category by weight. This means that heavier fruit and vegetables account for a larger share, while light sweets and snacks account for just 1 per cent of wasted food.

Only a small amount of food thrown out at various stages of the supply chain reaches people in need. European data indicates that just 411,000 tonnes of products is redistributed by food banks²⁹, less than 0.5 per cent of all food wasted in the EU. These figures from 2014 are probably an underestimate because they do not include food redistributed through other channels and, even in the case of data on food banks, they do not consider all the data. In 2017, **the Federation of Polish Food Banks passed on over 65,500 tonnes of food to people in need³⁰, almost 1 per cent of food wasted in the country.** Meanwhile, around 5 million tonnes, or almost 6 per cent of wasted food, is turned into animal feed in the EU each year³¹. The data indicates that the majority of food taken out of the supply chain is simply reprocessed and is not used in any other way.

28 Tesco (2018b)

29 FUSIONS (2016)

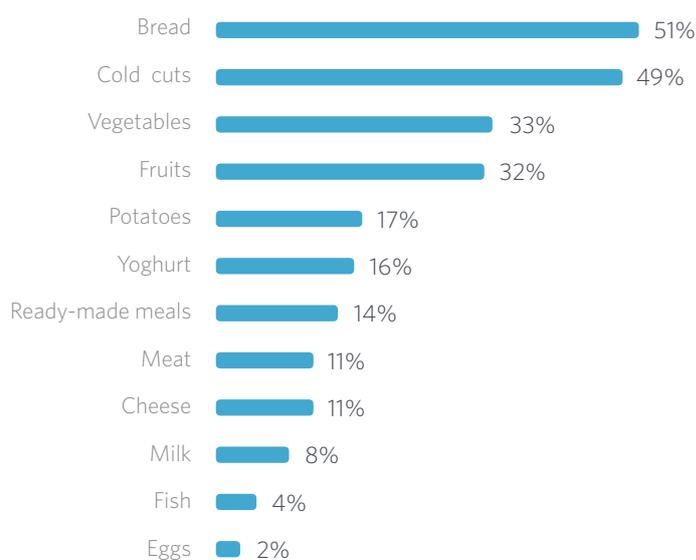
30 Federation of Polish Food Banks (2018)

31 EFFPA (2018)

GRAPH 3: Most wasted products in Poland

Source: KANTAR Millward Brown

Note: Numbers do not add up to 100 per cent as multiple answers were possible.





POLAND COMPARED TO OTHER COUNTRIES

Comparing statistics on food waste at the international level is even more difficult than collecting reliable data from individual countries given the different methodologies and definitions. According to the EU's FUSIONS programme, Germany is the only member state with high quality data. The statistics in Britain, France, Sweden and Denmark are almost as good; in the rest, they are significantly worse³². **The lack of harmonised, up to date and reliable data makes it more difficult to assess the success of individual initiatives and prepare new solutions based on the data.**

Experts agree that food waste is a much bigger problem in highly developed countries than in low-income ones. According to the FAO's estimates, 95-115 kg of food per person is wasted in Europe and the US each year, compared to just 6-11 kg per person in Sub-Saharan Africa, South Asia and South-East Asia. Based on this data, it can be assumed that **EU countries are among the biggest wasters of food, while existing data shows that Poland is one of the worst countries in the EU in this respect.**

Around 87.6 million tonnes of food were wasted in the EU in 2011 (173 kg per person) – approx. 20 per cent of all food produced³³. This is better than the global average – which the FAO puts at one-third, while other research says one-half – but it is still significantly high. An estimated 143 billion euro worth of food products were wasted. Of all the food wasted, 51 million tonnes were edible products (the rest included, among others, inedible roots, leaves and livestock bones).

Nevertheless, the data from the FUSIONS report does not allow reliable comparison between countries. Eurostat collects data on waste every two years (most recently in 2014), but the most recent set of complete and reliable statistics is from 2006³⁴. **That data shows that Poland was first in the EU in terms of the mass of food wasted at the production and processing stage, and sixth in terms of the mass wasted by households.**

In line with newer estimates from 2010³⁵, **Poles wasted 247 kg of food per person each year. Poland ranked fifth in the EU**, behind the Netherlands, Belgium, Cyprus and Estonia. Britain wasted slightly less food per person than Poland, while the inhabitants of Slovenia, Romania, Malta, Greece and Czechia came out best.

For the EU, the data from 2010 points to a positive correlation between the total level of food wasted per person and a country's wealth, which is coherent with global trends. Furthermore, the statistics from 2006 also display a very strong positive correlation between GDP per capita and the amount of food per citizen wasted at the production stage. Poland is clearly above the trend lines in both of these categories.

Citizens of the EU are aware that food waste should above all be combated at the household level. In 2015, 76 per cent of respondents thought that consumers can have an impact on reducing the amount of food wasted. In certain countries (Britain, Finland, Austria), the percentage was above 90 per cent, pointing to a strong sense of individual responsibility for food waste. In Poland, the answers were different; below the average. Just

32 The FUSIONS (2016) report counts Poland, together with Latvia, Slovakia, Hungary, Romania, Bulgaria, Spain, and Portugal among the countries providing the lowest quality data concerning food waste

33 FUSION (2016) 34 FUSION (2016) 30 Federacja Polskich Banków Żywności (2018) 31 EFFPA (2018)

36 Eurobarometer (2015) 37 USDA (2018)

MAP 1: Food waste by European Union member states (2006)

Source: Eurostat, European Parliament

Note: data collected before Croatia joined the EU

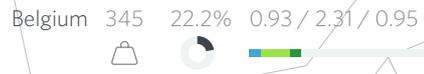
Food wasted by mass (mn tonnes)

- █ households
- █ production and processing
- █ other

Share of households in food wasted (%)

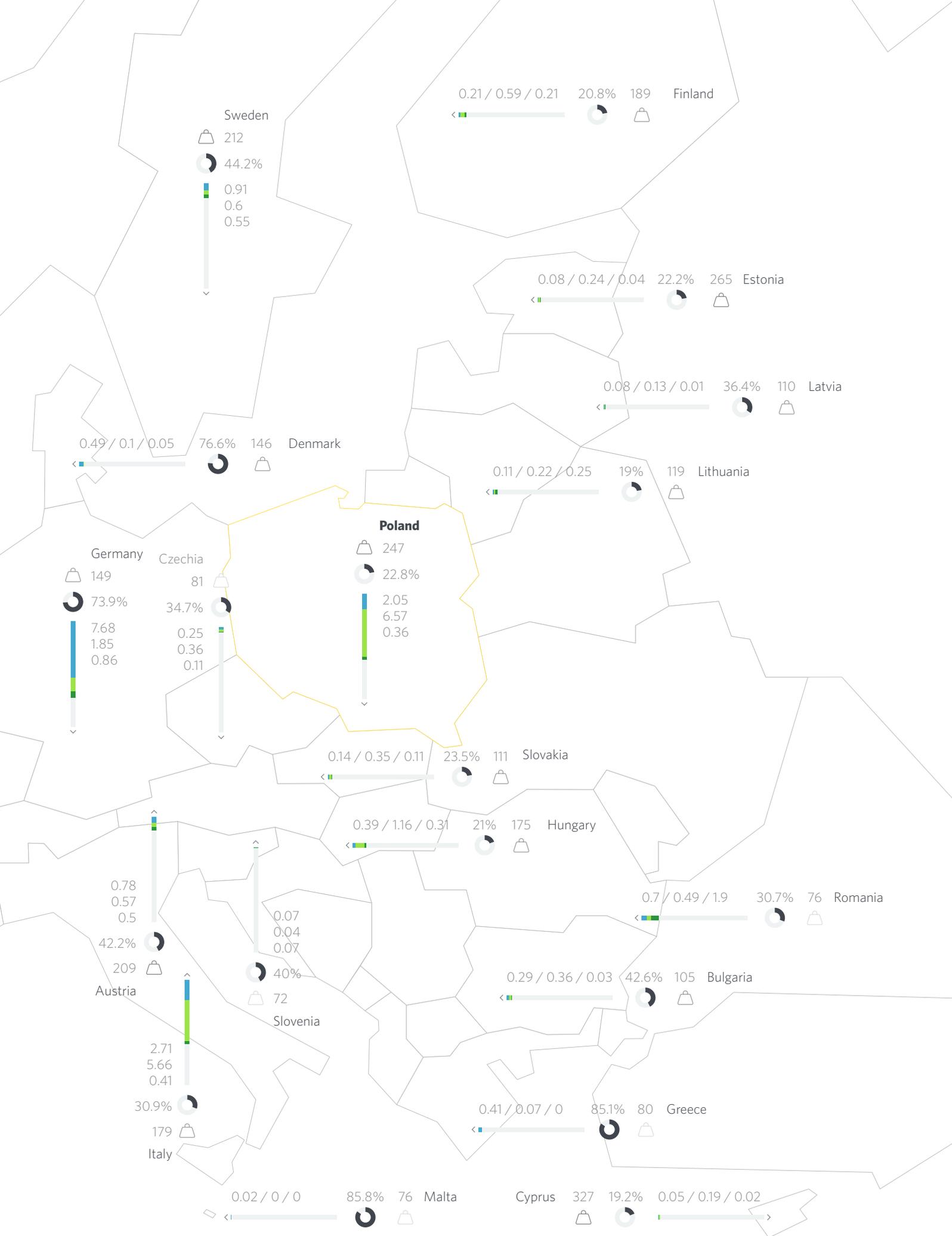
Per person (kg, 2010)

- >200 kg
- >100 kg
- <100 kg



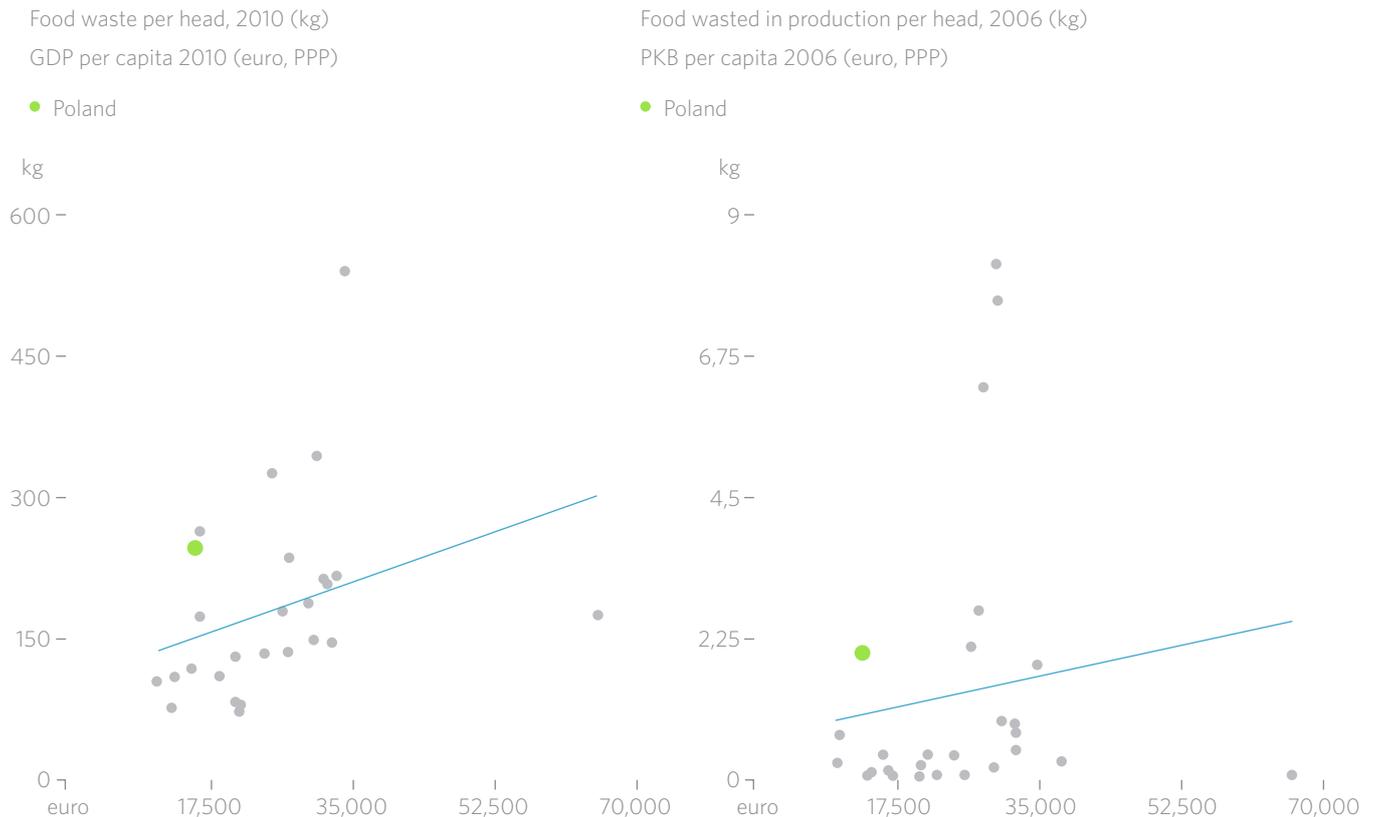
Luxembourg





GRAPH 4: Correlation of wealth and food waste per head in the EU

Source: Eurostat, European Parliament, European Commission



62 per cent of Polish respondents thought that consumers should combat food waste. This may suggest that Poles see less of a need to counter food waste than the average EU citizen.

Poles are clearly less well educated when it comes to an understanding of products' best before and use by dates. Just 24 per cent know what “best before date” means – that is half the EU average (47 per cent) and one of the worst results among member states. Only Lithuanians, Greeks, Bulgarians and Romanians are less well educated in this respect. Swedes and Estonians are in the lead, with over 60 per cent of them understanding the term. Meanwhile, 48 per cent of Poles (falsely) believe that products past their “best before date” are no longer edible, twice the EU average³⁶.

Poles fare significantly better when it comes to knowing what “use by date” means; 57 per cent define it as the date after which a product is not suitable for consumption. However, this strong result can be interpreted as ignorance; seeing a date printed on a label, Poles tend to assume that after that date the food should be thrown out, as unsuitable for consumption. Most consumers do not probe whether it refers to the use by or the best before date. It is worth noting that in Sweden, Austria and Germany fewer than one-fifth of respondents know that a product past its use by date should be thrown out.

As far as food wasting is concerned, European countries are better than America. According to US Department of Agriculture data³⁷, the US inhabitants wasted 60.3 million tonnes of food worth a total of 161 billion dollars in 2010. According to the Canadian government's Commission for Environmental Cooperation, Americans waste an average of 415 kg of food per person each year and Canadians 396 kg.

³⁶ Eurobarometer (2015)

³⁷ USDA (2018)

GRAPH 5: Who should work to limit food waste?

Source: Eurobarometer

Note: Numbers do not add up to 100 per cent as multiple answers were possible.

■ EU
■ Poland

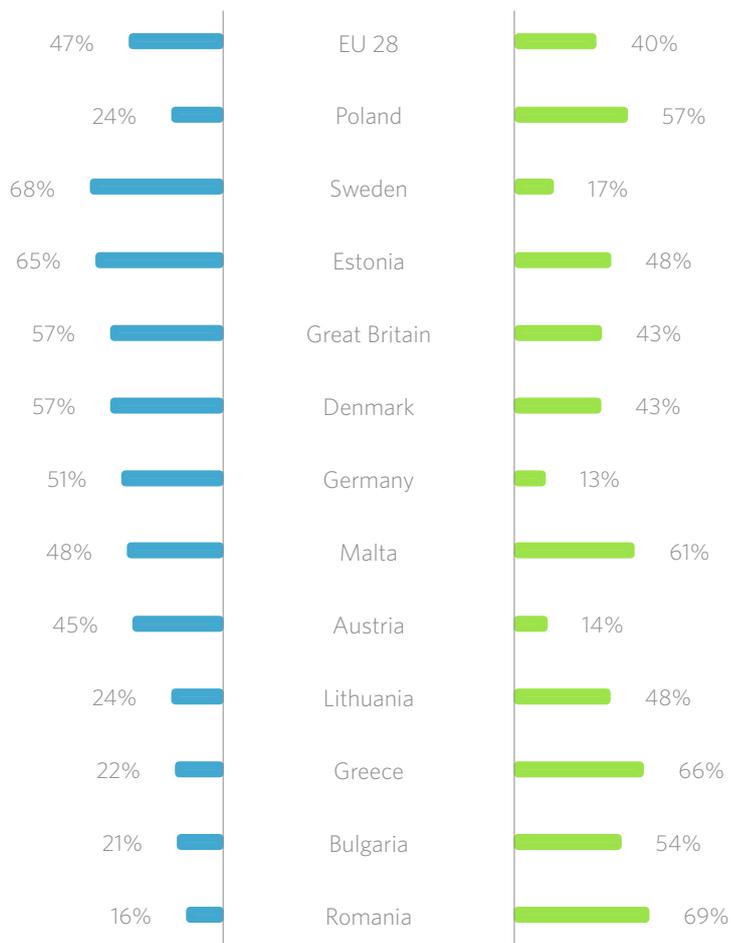


GRAPH 6: Knowledge of "expiry date" and "best before" definitions – selected countries

Source: Eurobarometer

Number of people knowing the definition:

■ best before date
■ expiry date



EU law – proposed changes

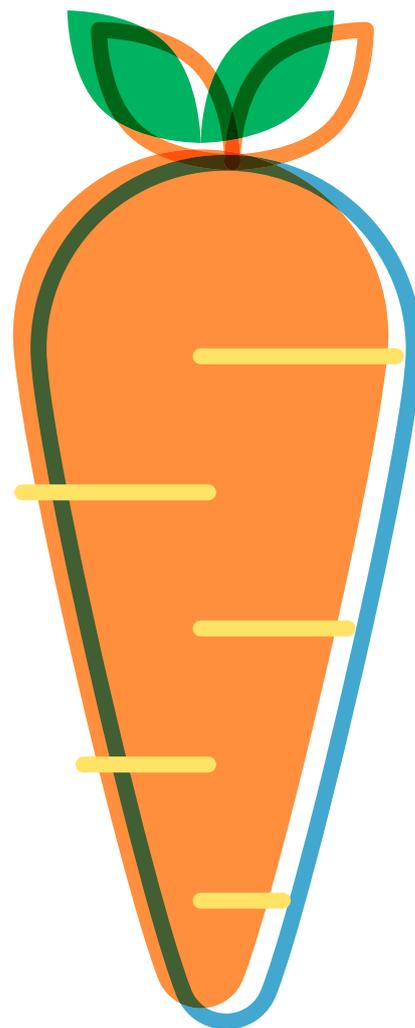
The EU is taking action to prevent food waste, though it does not have binding legislation that would require extensive action, yet. In 2016, the European Court of Auditors³⁸ stated that “despite the increasing importance of food waste on the political agenda, the Commission’s ambition has decreased over time. **The action taken to date has been fragmented and intermittent, and coordination at Commission level is lacking**”. The Court highlighted that there is not even a single definition of food waste or established point of reference for measuring reduction. It also criticised the lack of reliable assessment of actions taken.

In 2011, the European Parliament and Council of the EU adopted regulation 1169/2011, which entered force on December 13, 2014, with the main aim of introducing a way for marking food, but which also introduced a list of products that do not need to have a best before date printed on them. This group features products that lose their properties very slowly, as long as they are properly stored, and those for which it is impossible to set a date, such as fresh fruit and vegetables, wine, spirits, baked goods meant to be consumed within 24 hours, vinegar, salt and sugar³⁹.

In 2014, a working group was established at the European Commission and, in 2016, the EU Platform on Food Losses and Food Waste. Both play an expert and advisory roles, enabling cooperation between EU officials, representatives of member states and NGOs.

38 European Court of Auditors (2016)

39 Annex X to the Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers.





In May 2017, the European Parliament adopted an unbinding resolution⁴⁰ calling for **food waste to be reduced by 30 per cent by 2025 and by 50 per cent by 2030 in comparison to data for 2014**. At the same time, MEPs called on the European Commission to adopt, by 2020, legally binding guidelines on reducing food waste by 2025 and 2030 based on a harmonised methodology for the entire EU (which was supposed to be prepared by the end of 2017) based on a shared definition of food waste. The resolution also calls for a food donated to charity across the EU to be unequivocally exempt from VAT and for the list of foods that do not require a best before date printed on them to be updated. MEPs also want the Fund for European Aid to the Most Deprived to fund the collection, storage and distribution of food for people in need.

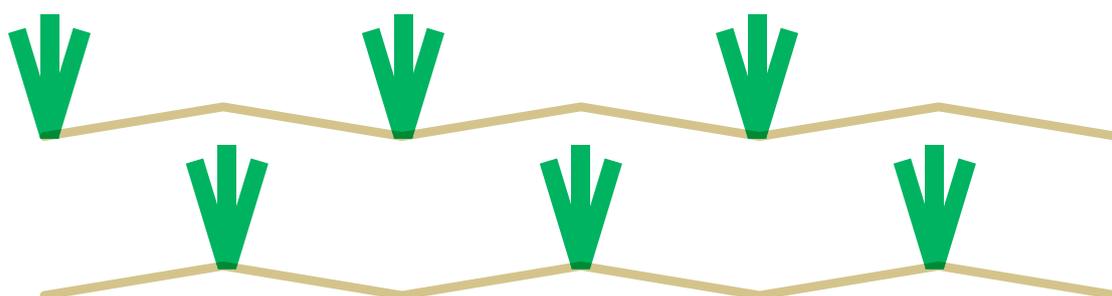
Current efforts to counter food waste are part of the Circular Economy Package, which the EU has been working on since 2015 with a view to amending legislation on waste management. Negotiations on its final shape were completed in January 2018⁴¹. The package should be soon published in the EU's official journal.

The key document in the package, in terms of countering food waste, is the directive amending directive 2008/98 on waste. According to the document, **food waste is to be reduced by 30 per cent by 2025 and by a half by 2030. However, the targets are non-binding**; the directive proposes that the Commission consider, by the end of 2023, introducing a binding target for the whole EU on reducing waste by 2030, based on data collected from member states.

The directive recommends that member states introduce incentives to transform unsold food at all stages of the supply chain to charitable organisations. They should create programmes raising awareness about the problem (including what use by date and best before date mean) and the ways to prevent it. They should also start regular monitoring using a common methodology for the whole EU, which the Commission is supposed to adopt by the end of March 2019 based on work by the European Platform on Food Losses and Food Waste. The directive requires the publication of annual reports, though it does not settle who would be supposed to prepare them.

40 European Parliament resolution 2016/2223(INI) of 16 May 2017. The Parliament also appealed to tackle food waste in its Resolution 2011/2175 (INI) adopted on January 19, 2012.

41 <http://data.consilium.europa.eu/doc/document/ST-8053-2018-INIT/en/pdf>



Best practices from abroad



DENMARK - BOTTOM-UP INITIATIVE

Denmark is seen as a leader in food waste reduction – this was mainly achieved due to the commitment of a non-profit organisation. Nevertheless, both the government administration and many distributors also support this area⁴². The actions are led by the Stop Spild Af Mad (Stop Wasting Food) organisation, formed in 2008 on Selina Juul’s initiative. Mainly through campaigns launched by the organisation, food waste by Danish households fell by 8 per cent per person between 2011 and 2017 (other data points to a 25-per cent decrease in waste at all stages).

Initially, Stop Spild Af Mad targeted supermarket chains, urging them to sell imperfect-looking products and ones close to their use-by date. In parallel, it organised activities aiming to educate consumers, including publishing cookbooks with recipes for using up leftovers and workshops at schools. Since 2008, all the major supermarket chains have started cooperating with the organisation. **In Denmark, selling products past their best before date is legal, as long as they are appropriately labelled.** The country has numerous shops run by non-profit organisations, only selling food past its best before date or in damaged packaging. Some of the shops have prices; at others, people pay a small entry fee (such as 20 krona – around PLN 12), enabling them to take products for free. Most supermarket chains no longer have special offers urging shoppers to buy more food (such as cheaper big packages or “two for the price of one”). Separate shelves with cheaper products approaching their best before date, or that fail to meet standards in other ways, are the norm.

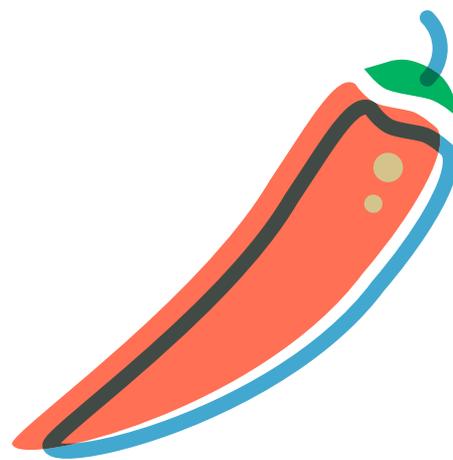
Another frequently cited example of an effective initiative limiting food waste was implemented by the largest discount supermarket chain, Rema 1000, which is popular among Denmark’s poorer inhabitants. The chain sells single bananas that have broken off from the bunch with the slogan “take me, I’m lonely”, which has reduced the waste of bananas by 90 per cent.

In 2016, Denmark’s Ministry of Environment and Food started subsidising initiatives aiming to reduce food waste, with a total budget of 5 million krona (around PLN 2.9 million). The ministry has also funded educational activities at schools and among individual consumers, seeking to explain the meaning of “best before date”, among other things.

Since 2008 many other initiatives have emerged in Denmark including the app Too Good to Go, which Danes can use to buy baked goods discounted by bakeries at the end of the day or unused products from restaurants that would otherwise be thrown away. Working with the Danish branch of Unilever, Stop Spild Af Mad has started distributing free paper bags to restaurants to help diners take home leftovers.

In Denmark, combating food waste is made easier by **relatively high food prices, which encourages saving.** It is also a small country with an established tradition of buying local (which limits stocking up on food) and a high level of environmental awareness. Nevertheless, successive governments’ openness to bottom-up initiatives, regardless of where they stand politically, supermarket chains’ responsible behaviour, intensive educational campaigns and legal changes supporting these efforts make Denmark an example for most other countries to emulate.





BRITAIN - GOVERNMENT INITIATIVE

Britain was the first country in the world to approach food waste in a systemic and top-down way. In 2000, the government founded the Waste & Resources Action Programme (WRAP) charitable organisation, which now also works to stop other products, such as electronics or clothes, going to waste.

WRAP is funded from many sources, but its main source of revenue is grants from the central British government, which amounted to 25.8 million pounds in the 2013/2014 budget year, 19.6 million the following year and 14.8 million in 2015/2016. The authorities of Wales, Scotland and Northern Ireland provide smaller grants, too. The organisation also receives EU funds, but they are significantly lower than the government grants.

In 2007, WRAP launched the campaign Love Food Hate Waste, which is considered one of the most effective programmes educating the public about food waste and how to prevent it. **The campaign focused on reaching individual consumers, presenting simple everyday actions that reduce food waste.** Between 2007-2012, the campaign led to a 21-per-cent decline in households' "avoidable" food waste (this category does not include inedible parts of plants or livestock, or products that have gone bad before their use by date, despite being stored correctly).

Since 2005, WRAP has coordinated the Courtauld Commitment voluntary agreement, in which signatories tackling food waste work

together to develop practical and sustainable ways to reduce it. Its latest initiative, the Courtauld 2025 Commitment, launched in 2016, aims to reduce food waste by 20 per cent compared to 2007 by 2025. Retailers representing 93 per cent of the grocery shop market have joined the initiative, though interest is much lower among food producers. According to a report by the House of Commons, Tesco stands out – both in terms of collecting data on food waste and initiatives to reduce it.

Though launched and largely funded by the public authorities, WRAP's efforts concentrate on promoting good practices at supermarkets, raising awareness and campaigns teaching consumers how to reduce waste. These actions are not accompanied by wide-ranging legislative efforts. This proves that the law has a limited effectiveness: it can only affect food distributors – in a modest way. Long-term efforts promoting good practices can achieve more.

While WRAP brings together most British initiatives linked to food waste, there are others, too. Since 2009, private company Approved Food has been selling dry food close to or past its best before date at reduced prices. It operates on a commercial basis, without subsidies, buying food from shops and warehouses that would otherwise be thrown away. The products are sold online, with the range of goods changing frequently.



COMPULSORY FOOD DONATIONS

In 2016, **France** was the first country in the world to require large supermarkets (with an area above 400 m²) to sign agreements with charitable organisations or food banks. The fine for not signing on is at least 450 euro; for deliberately destroying products withdrawn from sale, it is at least 3,750 euro. However, the law simply requires that an agreement for food donations be signed, without specifying that all food withdrawn must be donated. This means that shops can avoid the fine by donating just a small amount of food.

Since the start of 2018, there has been a similar law in the **Czech Republic**. The requirement applies particularly to food that does not meet standards but is not harmful (for example, products with mistakes on their labels or in the list of ingredients). The maximum fine is 10 million krona (around PLN 1.7 million).



THE GOOD SAMARITAN

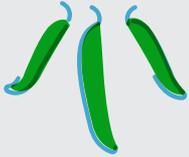
In Turin, **Italy**, since 2005 the Buon Samaritano initiative has been collecting uneaten meals from school canteens and food that has been withdrawn from sale but is still edible. This food is then passed on to charitable organisations for free. The initiative was launched by the city authorities and municipal company Amiat. In addition, a so-called “good Samaritan” law applies across Italy, relieving entities that donate good from responsibility for its state after it is passed on to a food bank, as long as it is properly labelled and in good condition when it is donated.



FLEXIBLE BEST BEFORE DATES

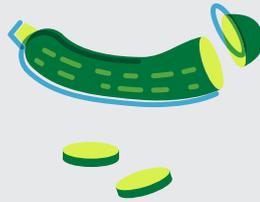
Belgium allows products past their best before dates to be donated to food banks. Products have been divided into groups based on how quickly they can become harmful. Food that spoils the most slowly, such as salt, sugar and pasta, can even be donated a year after the best before date. For other products, the period is shorter; up to two months (for butter, milk products, oil).





BETTER LOGISTICS

In the **Netherlands**, a research project led by Wageningen University aiming to improve logistics in the food industry to reduce waste at the production, transport and storage stages launched in 2006. Companies pledged to support the project with 20 million euros. This is one of few initiatives in Europe seeking to reduce food waste at the pre-distribution stage.



COOPERATION, RATHER THAN LAW

In 2017, the government of **Norway** embarked on voluntary cooperation with 12 supermarket chains, aiming to reduce food waste by 50 per cent by 2030. Earlier, the authorities considered a law banning distributors from throwing out food, but decided that it would be ineffective, resulting in higher waste at other stages of the supply chain.



SCHOOL CANTEENS

In the **United States**, the Department of Agriculture (USDA) conducts efforts to raise awareness at school canteens. Through the National School Lunch Program and the School Breakfast Program, the administration promotes countering food waste by emphasising the money that individual schools can save. At the same time, the USDA seeks to engage pupils through information campaigns.





Summary & Recommendation

There is currently a lack of systemic solutions aiming to reduce food waste, both in Poland and at the European level. The costs of food waste are borne by producers, distributors, consumers and charities that cover the cost of distributing it themselves. The dispersion of these costs and responsibility for waste, along with difficulty measuring its scale and monitoring solutions' impact, make it hard to address the problem effectively. Even the most basic formal framework is lacking – there is no common definition of food waste and no common methodology for measuring it. To genuinely reduce food waste, **simultaneous, coordinated action across a range of fields is needed, encompassing first and foremost the education, the cooperation of stakeholders, and, as a last resort, the legislation.**

The European Commission's plans and ambitious programmes in certain European countries, notably Britain and Denmark, offer hope that a more efficient system can be created. Poland continues to do poorly when it comes to food waste, both in terms of estimated scale and efforts to reduce it.

The biggest challenge in Poland is the relatively low awareness and lacking knowledge about food waste among the inhabitants. The legislative obstacle is the lack of concrete incentives to pass on food to charities and the lack of penalties for shops that let food go to waste. For this reason, **education, promoting good practices and support for organisations, start-ups and supermarket chains trying to reduce food waste is key,**

while legislative actions, however necessary, are relatively inefficient.

The European Commission's targets in the **circular economy package** will affect how various kinds of waste are managed. In terms of food waste, it will set the first concrete targets and improve monitoring of its scale. It will be a major challenge, as collecting data based on more than estimates is practically impossible. Nevertheless, Poland has considerable catching up to do, compared to countries that monitor the problem regularly and publish data that, while still based on estimates, enables comparison. In Poland, there is no aggregated quantitative data (even based on estimates). Research so far, based on consumers' declarations is not enough to design effective systemic solutions.

It is paramount to adopt a common and universal methodology for measurements. For this reason, Poland should promote the FLW Standard as the preferred methodology, since it is already backed by the UN, Fusions, WRAP and the World Resources Institute

Data on the funding of projects in Denmark and Britain shows that tangible effects can be achieved at a relatively low cost (at most tens of millions of złoty a year). With billions of euros worth of food wasted, this is an excellent investment. Moreover, these two examples prove that long-term, "soft" measures targeted at raising awareness and cooperation among all stakeholders are much more efficient than law enforcing donations or penalising wasting the food.

RECOMMENDATIONS

- **Reducing food waste among consumers is key.** Producers, shops and restaurants can – and should – influence their behaviour, too.
- **Education of all stakeholders is by far the most effective means of influence.** Schools, where food is wasted on a large scale and pupils do not pick up good habits, can play a special role.
- **Food waste should be viewed comprehensively,** taking into account all stages of the supply chain. Solutions should be supported by systems thinking, featuring private-public partnerships and ones based on cooperation between stakeholders, from producers and distributors to local government, the central administration and NGOs. Otherwise, instead of the reduction of food waste, the only result will be the relocation of the phenomenon to another stage of the supply chain.
- **The state should support places where consumers can “shop local”,** such as markets, limiting food waste at the transport and distribution stage.

ACTIONS IN THE AREA OF FOOD REDISTRIBUTION:

- **The state should provide public benefit organisations that distribute food with financial support,** purchasing equipment, subsidising the modernisation of cold stores and warehouses, or other projects improving logistics. The administration should also be open to initiatives launched by NGOs. Some tasks (such as collecting food from shops or storing it) should be transferred to local governments.
- **A financial support system for new efforts to reduce food waste should be considered.** This could include grants from Poland’s National Centre for Research and Development for start-ups offering new technological solutions, such as an app that helps restaurants and shops monitor food waste, or shows consumers how to use up leftovers.

ACTIONS IN THE AREA OF EDUCATION:

- **Local government units that manage schools should take steps to reduce food waste and educate pupils.** These should include both “hard” actions, such as organising the collection of food withdrawn from canteens and passing it on to food banks, and intensified educational campaigns.
- **The state should organise and fund awareness campaigns targeted at the consumers,** while other market players (particularly the retail chains) should take part in these actions.
- Education should focus on underlining the scale and the consequences of food waste, as well as on promoting better shopping behaviour and more efficient usage of food in households.
- **The state should encourage the use of food close to or past its best-before date.** Supermarkets should sell it at a discount, highlighting its lower price.

LEGISLATIVE ACTIONS:

- **The law should allow supermarket chains to donate food past its best-before date to public benefit organisations.** Meanwhile, chains should take steps to pass on food that is edible but cannot be sold.
- **The ability to deduct the value of transferred products from the tax base should be limited to food donated to charity.** For food sent off for disposal, the deduction should be reduced or cut, creating a real incentive to use products withdrawn from shops.
- **Big supermarket chains should be required to collect and publish data on food waste** and on food passed on to charitable organisations. The state should support the adoption of the FLW Standard methodology by all market players. A precise definition and reduction targets need to be set and reliable data ought to be collected.
- **The law should impose the duty to donate food withdrawn from sales by the distributors for the food banks (preferred method), to reprocess it as animal fodder, to compost or to turn into fuel for bio power plants.** Subsequently, the duty can be expanded to include the producers to a certain degree (for example, in regard to produce that has been collected but not sold to the processing plants). However, education should take precedence over penalization. Financial penalties should be introduced but strictly as a last resort, only used when a chain or shop regularly fails to carry out its duty.

ACTIONS IN THE AREA OF PRODUCTION AND DISTRIBUTION:

- **Supermarket chains should be encouraged to use good practices** in retail, including offering discounts on food close to its best before date, selling imperfect-looking fruit and vegetables, and discontinuing deals that encourage people to buy large quantities of perishable goods (such as “two for the price of one”),
- **Producers should rationalise packaging size** so that consumers do not need to buy too much (especially perishable products and those most commonly wasted). New food labelling should be considered in order to make it more comprehensible for the consumers. Legislation and education should promote recyclable packaging.



OBLIGATION
to pass on unused food to the charities

ACKNOWLEDGING THE PROBLEM
of the food waste in The Common Agricultural Policy

PRODUCERS PROTECTION
against too restrictive agreements with distributors on food appearance



PRODUCTION

INCENTIVES
to sale locally (e.g. on markets) food unsold to distributors

RATIONALISATION OF THE PACKAGE SIZE
especially in the case of products with short sell by date



LOGISTICS

CO-FINANCING
construction of storage facilities and other infrastructure helpful in reducing food waste during transportation



DISTRIBUTION

LIQUIDATION OF SPECIAL OFFERS
such as "two in one" and other encouragements to stock up

➔ **ENABLING**
the sale of and passing on food products after best before date

➔ **TAX INCENTIVES**
to pass on food products to charities instead of its utilization

OBLIGATION
to report the amount, types and reasons for the food waste

PENALTIES
for not passing on food

➔ **OBLIGATION**
to pass on food products withdrawn from sale to charities

➔ **MONITORING SYSTEM FOR THE AMOUNT OF FOOD WASTED**

➔ **EDUCATIONAL AND SOCIAL CAMPAIGNS**

INFOGRAPHIC 3: Food waste reduction map for Poland

Actions:

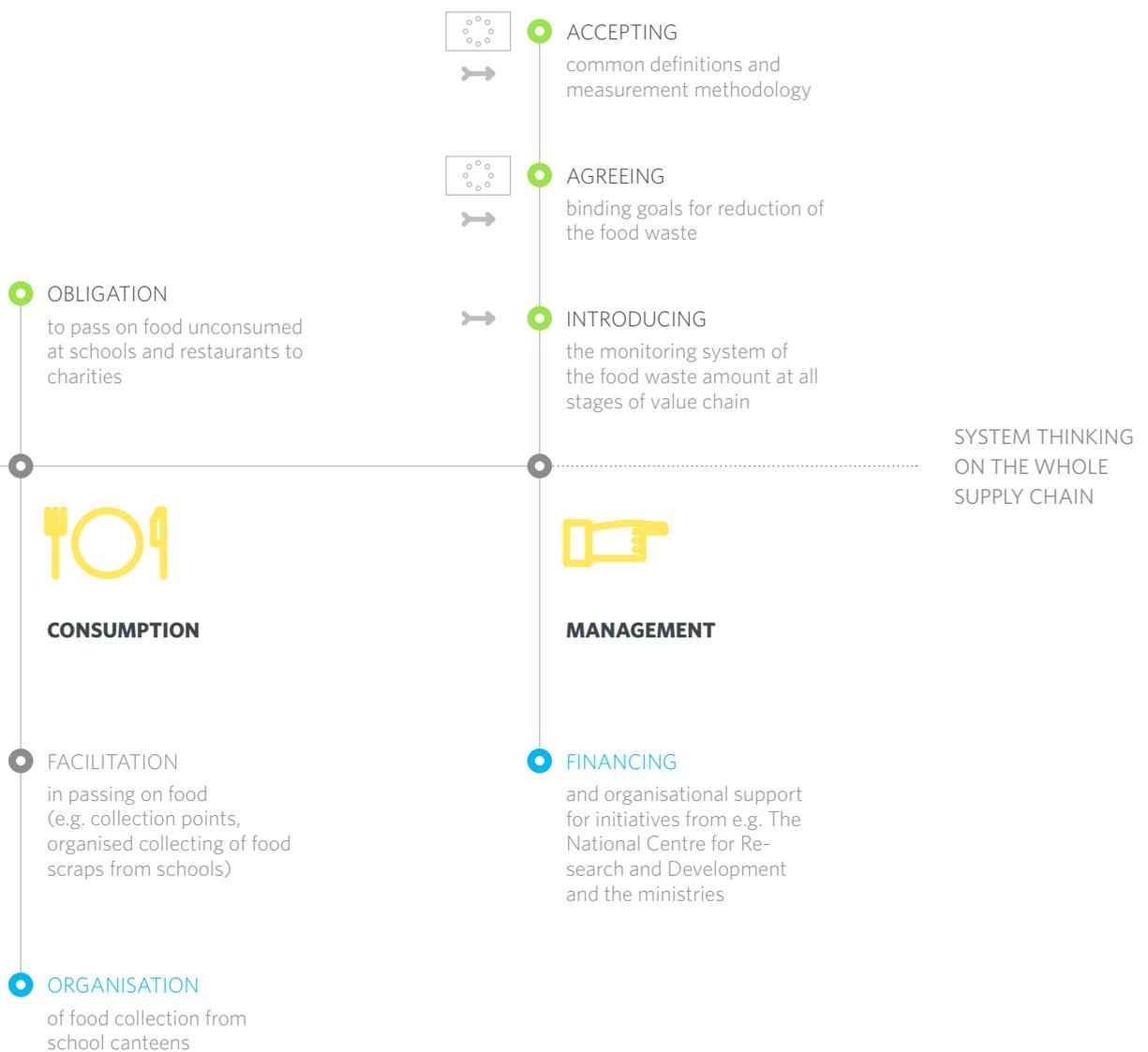
 legislative

 social

 business

 at the EU level

 urgent



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SWEDEN

Privacy concerns aside, Swedes in all age groups seem ready for eHealth

The Swedish legal system has been traditionally preoccupied with protecting personal and confidential information. At the same time technology-savvy Swedes are among the most advanced in the world when it comes to the use of digital literacy among citizens in all age groups in the population. The combination of these two factors has led to a high level of digital literacy among citizens in all age groups in the population. The combination of these two factors has led to a high level of digital literacy among citizens in all age groups in the population.

Population
9.8 million

Demographic profile:
25-54 years: **39.4%**,
65 years and over: **20.1%**

Life expectancy at birth
male: **80.2** years
female: **84.1** years

Health expenditure
11.9% of GDP
(EU28 average: 9.9%)

Health expenditure (government + private) per capita in EUR
5,000
(EU28 average: 2,781)

Physicians density
3.93 physicians/
1,000 population

Hospital beds density
2.7 beds/
1,000 population

Obesity among adults
22% (104. country
in the world)

Number of doctor consultations per person
2.92
(EU28 average: 7.1)

Average length of stay in hospital, in days, per year
5.7
(EU28 average: 8.0)

Mobile internet access
76%
(EU28 average: 56%)

eHealth at a glance

Sweden introduced a national eHealth strategy in 2010 and subsequently revised it in 2016 to lay out a clear vision for the development of digital health services. According to the most recent Starting Points for eHealth 2022, the country has good prospects for digital health in 2025. The potential of digital health is high, thanks to the prevalence of private and public sectors, and robust ICT sector.

The current strategy underlines the potential of digital health for increasing individual and societal well-being, participation and inclusion, generation of new economic opportunities and innovation, as well as health upon principles of privacy and security. The starting point is the regulatory framework for eHealth, cooperation and multi-stakeholder participation, and the need for a digital framework for national, regional and municipal level and ensuring that older citizens are not left behind.

Recent studies suggest that older citizens are ready for eHealth. Wilhelmsson & Malmqvist (2019) found that 71% of respondents in the survey (two thirds of the sample) were willing to use eHealth services. At the same time, less than 10% of doctors would advise their patients to use eHealth services. The authors suggest that the main reason for this is the lack of digital literacy among older citizens.

Possible eHealth savings: **0.2%** of GDP
Possible eHealth increases in efficiency: **7%**

SUMMARY

- Sweden is best at transparent electronic health records, boosting app ecosystem
- Sweden should improve support among healthcare professionals for opening up electronic health records to patients

Sweden has a long history of digital health services. In 2010, the country introduced a national eHealth strategy, which was revised in 2016. The strategy outlines the vision for the development of digital health services, with a focus on increasing individual and societal well-being, participation and inclusion, generation of new economic opportunities and innovation, as well as health upon principles of privacy and security. The starting point is the regulatory framework for eHealth, cooperation and multi-stakeholder participation, and the need for a digital framework for national, regional and municipal level and ensuring that older citizens are not left behind.

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STARTUP NATION

- HälsöförMig** - an official eHealth service provided by Swedish eHealth authority. HealthförMig platform allows secure storage and access to electronic health records. Authorised records can be retrieved by the application through the API. The platform allows users to develop their own iOS and Java application which will run on collected data.
- Mina Vårdkontakter (MVC)** - Health Innovation Platform helps third parties to develop healthcare solutions. The platform is run by Vimprova, a government agency between universities, research centers, and industry. The platform is targeted at freelance app developers, designers, and software companies.
- Lifesum** - an app for healthier living and better eating; a personalised diet guide creating a diet plan based on health and fitness data. Recognised as 'Best Health and Fitness App 2014/2015 in App Store'.

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