

PREVENTING FOOD WASTE IN THE FOOD RETAIL SECTOR IN THE LIGHT OF THE CURRENT LEGISLATION IN POLAND

Konrad Żukiewicz^a, Tomasz Słowik^{a*}, Agnieszka Dudziak^a

^a Department of Power Engineering and Transportation, Faculty of Production Engineering, University of Life Sciences in Lublin, Poland, e-mail: konradzukiewicz@gmail.com, ORCID 0000-0003-1996-8233; e-mail: tomasz.slowik@up.lublin.pl, ORCID 0000-0001-9449-2234; e-mail: agnieszka.dudziak@up.lublin.pl, ORCID 0000-0002-4884-5403.

* Corresponding author: e-mail: tomasz.slowik@up.lublin.pl

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ABSTRACT

Food loss and waste are one of the main problems of global civilization that stir great emotions, especially among the inhabitants of affluent countries of the northern-hemisphere. All actors at the various stages of the food chain, from producers and processors to retailers and final consumers, influence this phenomenon. To combat this problem, many hours and energies are spent both by those involved in grassroots social initiatives and by national and international institutions. Any entity aware of the magnitude of the food waste problem (entrepreneur, citizen, NGO, etc.) entitled to take advantage of concessions, incentives and exemptions from public tributes is a more effective ally in the fight against this scourge of the 21st century than an economic participant constantly punished and sanctioned, and consequently expending most of its energy on tax optimization.

Introduction

The socioeconomic development of the modern world is determined by a period of less than eighty years without global military conflicts and rapid scientific and technological progress. It has led to a broadly understood social well-being, especially in Europe and North America. Prosperity is associated with almost unlimited consumerism, defined as an attitude consisting of the acquisition of material goods and services unjustified by real needs and ecological, social, or individual costs (Golka, 2004). Exponential growth of the human population coupled with rapid industrialization and urbanization has triggered enormous waste production (Das et al., 2019). Food waste is the consequence of excess harvesting of agri-food products, which is unjustified by consumer needs (Wu et al., 2019). It is regarded as a global problem, not only economic, but also ethical and environmental. High commercial consumption, expressed in increased consumer demand for food products, results in an increase in their supply. Therefore, the phenomenon of food waste affects every stage of the food chain, from the producer, to the retailer, to the end consumer (Perrot and Subiantoro, 2018).

There are many attempts to define the phenomenon of food waste in the subject literature. One of the most popular is the interpretation by the Food and Agriculture Organization of the

United Nations (FAO), which defines it as a reduction in the total weight of edible parts of food whose original purpose was related to human consumption of this food. Losses also include products that were originally produced for consumption but have been subject to natural losses in mass (e.g. drying out), spoilage, or have been used for other purposes, e.g., for the production of biofuels, compost, fodder, etc.). The definition does not cover non-edible parts (e.g. bones, husks, etc.) and raw materials and products originally produced for non-consumer purposes (Gustavsson et al., 2011). In turn, the Working Group for the Rational Use of Food at the Federation of Polish Food Banks divided the phenomenon into two categories:

- 1) losses – reduction in the edible weight of food resulting from mismanagement, errors and irregularities in the course of agricultural production, harvesting, processing, transport, and trade,
- 2) food waste – unreasonable management processes occurring in gastronomy and households (Wrzosek et. al., 2014).

The consequence of not using the produced food for its intended purpose are both ecological problems such as increased greenhouse gas emissions or excessive exploitation of natural resources and economic ones, i.e. lost benefits resulting from the lack of revenue from the sale of the produced food and costs related to the disposal process. The ethical dimension of the pertaining problem of hunger and malnutrition in third world countries and beyond, should also be emphasised. As a result, the combat against food loss and waste has become one of the main subjects of debates of national and supranational organizations, such as the Food and Agriculture Organization of the United Nations, the European Union, or legislative institutions of individual countries.

According to the FAO estimates, approximately 1.3 billion tons of food each year is lost or wasted, which represents approximately 1/3 of the worldwide food production for human consumption. Food loss and waste generate enormous economic and environmental costs, which are estimated by the FAO at USD 1.7 trillion per year worldwide. Preventing and reducing food waste brings economic benefits to both households and society as a whole, while, at the same time, reduces environmental damage. According to the studies carried out, an average of 4.5 kg of CO₂ is emitted into the atmosphere per kilogram of food produced. In Europe, approximately 89 million tons of wasted food are the source of 170 million tons of CO₂ per year, with the following constituents in this amount:

- household consumption - 78 million tons of CO₂ per year,
- food industry - 59 million tons of CO₂ per year,
- other - 33 million tons of CO₂ per year.

Moreover, €1 spent on food waste prevention allows avoiding the creation of 265 kg of food waste worth €535, enables municipal authorities to save €9 in waste management costs and €50 in environmental costs related to atmospheric pollution caused by greenhouse gas emissions (The Supreme Audit Office, 2021).

The social and economic risks arising from the growing problem of food waste determine the urgent need to regulate the rights and obligations of entities at every stage of the food chain from production, through processing and sales, to consumption by the final consumer.

Bearing in mind the great importance of the issue of food waste in economic, environmental and ethical terms, it is necessary to establish a comprehensive and effective system of monitoring and preventing food waste at all stages of the food chain by taking appropriate legislative action, in cooperation with all stakeholders. On the other hand, to build public

awareness about the need to combat food waste, a nationwide information campaign should be conducted regularly regarding the scale of this phenomenon and the negative social, environmental and economic effects thereof.

This study aims to analyse the existing legal acts regulating the rights and obligations of entities in the agricultural and food retail sector and to assess their effectiveness in combating this negative phenomenon. In addition, the impact of statutory regulations on the functioning of large-format grocery chain stores was examined as they are the fastest-growing modern distribution channel for agri-food products.

Material and methods

The information contained in the paper is based primarily on the analysis of legal documents that relate to the studied area, i.e. food waste. The EU and Polish legislation in the area of the research topic was analyzed. The literature in this area was also reviewed. The literature review included scientific articles, reports and data archives at the public level. The keywords used in the search are: food waste, commercial networks and non-governmental organizations (NGOs). We examined 15 articles and source items that covered this area of research in more detail.

Results and discussion

Food waste in the European Union in light of legal acts of international institutions

Food loss and waste (FLW) occurs at each stage of the food supply chain. The current linear model of FLW management (incineration and landfill) creates a linear path of nutrients utilization, which threatens food security and environmental sustainability in the long run (Wang et al., 2021).

The importance of the problem of food waste was taken into account in the European Parliament resolution of 19 January 2012 entitled: "How to avoid food wastage: strategies for a more efficient food chain in the EU" (2011/2175(INI), 2011). In this resolution, the European Community legislative body called on the Council of the European Union, the European Commission, and the member states to take concrete measures to reduce food waste by 50% by 2025. In this resolution, members of the European Parliament pointed out that according to the European Commission's 2012 data, the annual production of food waste in the 27 member states was estimated at approximately 89 million tonnes, i.e., 179 kg per person (Gustavsson et al., 2011). These figures do not include food wasted in agricultural production and catches of fish returned to the sea. According to Eurostat data from 2010, the waste of food originally intended for consumption by European Union citizens is as follows (shown in Fig. 1):

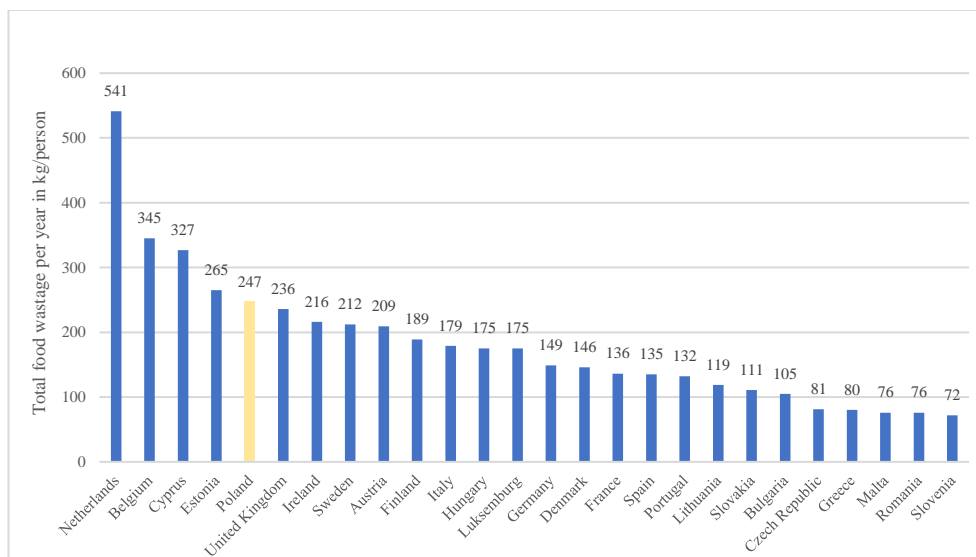


Figure 1. Food waste in the member states of the European Union in 2010

Source: <https://ec.europa.eu/eurostat> (date of access: 02.03.2022).

The combat against food waste has also become the subject of deliberations of the General Assembly of the United Nations, which on 25 September 2015 adopted a resolution entitled: “Transforming our World: The 2030 Agenda for Sustainable Development”. According to Objective 12.3 of the resolution, the target is to halve per capita food waste at the retail and consumer level by 2030, and reduce food losses along the food production and supply chains.

After the call of the European Parliament, the problem of counteracting food waste was addressed by the Council of the European Union, which adopted conclusions on food waste and food losses at its 3479th meeting on 28 June 2016. These acts recommend the reuse of unsaleable food, for example, transferring it to public benefit organisations, as the second, after prevention of losses and waste, level of the hierarchy of waste management and food use. The other levels are: use for the production of animal fodder, use for recycling, and other forms of recovery, anaerobic fermentation, as well as energy recovery. The document indicates that, according to the FUSIONS (Food Use for Social Innovation by Optimising Waste Prevention Strategies) project, 88 million tons of food are wasted in the European Union worth an estimated EUR 143 billion a year, with 70% of food coming from households, the mass catering sector and the retail sector, and 30% from the manufacturing and processing sector (Fig. 2).

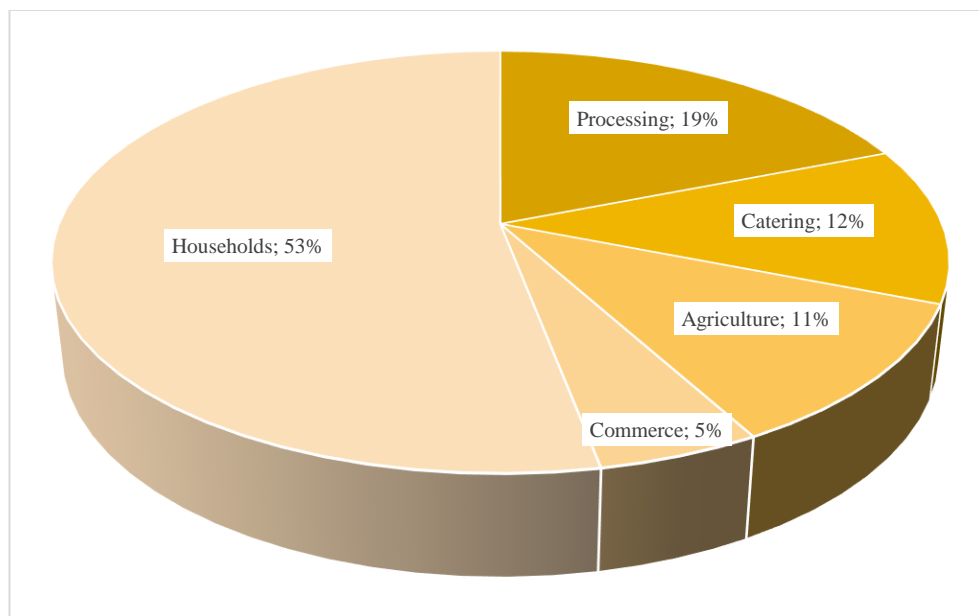


Figure 2. Structure of food waste in the European Union

Source: <http://www.eu-fusions.org> (date of access: 04.03.2022).

According to research commissioned by the European Commission under the FUSIONS project, it was estimated that in 2014 in the member states 411 000 tons of food were transferred solely through food banks (Tab. 1). In the member states that have estimated the quantity of food supplied, the figures are as follows:

Table 1.

Estimates of the amount of food transferred for selected Member States

Country/Region	Quantity of food transferred (in tonnes)	Year
European Union	411,000	2014
Austria	11,100	2014
Nordic countries	900,00	2013
United Kingdom	20,000	2014
Netherlands	20,000	2013

Source: "Estimates of European food waste levels" FUSIONS 2016.

The recommendations of the European Parliament are reflected in the European Commission to establishing directives in the following areas:

- developing a common EU methodology to measure food waste and identifying relevant indicators;

- establishing an EU platform on food loss and food waste, involving member states and all actors in the food supply chain, to help identify the measures needed to achieve the sustainable development goals (SDGs) on food waste and to enable the exchange of best practices and results;
- taking action to clarify EU legislation on waste, food and fodder, and to support food donations, as well as the use of former foodstuffs and by-products as fodder without posing a risk to food and fodder safety;
- exploring ways to improve the date-labelling system by food chain operators, as well as its understanding by consumers, in particular the wording “best before” (European Commission, 2016).

The European Parliament, in its Resolution of 16 May 2017 on initiative on resource efficiency: reducing food waste, improving food safety (2016/2223(INI)), raised the profile of the problem under examination and reiterated its call on the European Commission, the Council of the European Union and the member states to implement legal instruments to effectively help combat food waste. The need to reduce the amount of food wasted and to improve the efficiency of the use of European Community resources at all stages of the food chain (production, processing, transport, storage, retail, marketing, and consumption) was identified as a matter of particular urgency. The content of this resolution also draws attention to the fact that in highly industrialised countries the largest amount of food is wasted at the sale and consumption stage, and in developing countries, it is wasted already at the food production and processing stage (2016/2223(INI), 2017).

Legal solutions of selected member states of the European Union

The call of the Council of the European Union, as the main decision-making body of the community, obliged the member states to undertake legislative work to regulate the issue of food waste. The legislative bodies of the EU member states have started work on the systematisation of legal solutions, but to date, not all of them have established relevant legal acts. Among those who implemented the recommendations are (Senate of the Republic of Poland, 2018):

1. France – the first country in the world to put the combat against food waste into the legal framework in 2016. A statutory obligation was imposed on commercial facilities with a sales area of more than 400 m² to conclude contracts with charities for the transfer of unsold food products. It was forbidden to make unsold food unfit for consumption (e.g., by pouring chemical substances on discarded products). Nutrition-related topics and food waste prevention were introduced to school curricula. The adopted rules resulted in a significant decrease in food waste within the retail sector and, at the same time, in an increase in the amount of food products handed over to the needy. Violations to the provisions of this Act are penalised in France.
1. Italy –in 2016, a law was implemented that regulates the principles of food waste prevention. Unlike the French, who apply penalties and coercion, the Italians focus on encouraging citizens to develop good habits. The general rule is that “whoever prevents food and medicine waste will be rewarded”. Tax incentives were introduced for food retailers donating food to food banks or charities. After the minimum shelf-life, poorly labelled food (except for incorrect allergen labelling), or with damaged packaging, can be donated, provided that it is not spoiled. Sanctions or criminal charges were waived in the absence

of cooperation between commercial establishments and non-governmental organisations. When the “Good Samaritan Law” came into force, it was defined as an exemption from criminal and civil liability of the final consumer or an entity that donates food to charity. The educational aspect of Italy’s approach to combating the food waste problem is reflected in designating 5 February as the National Food Waste Prevention Day.

2. Belgium – under Belgian law, the entrepreneur can donate food to charity after the minimum shelf-life date (“best before”) as safe for consumption. In addition, a list of foods with an additional shelf-life date after the minimum shelf-life date was prepared, together with methods of storing such foods and their disqualifying properties.
3. The Czech Republic – the main actor in combat against food waste in the Czech Republic is the retail sector represented by retail outlets with a sales area of over 400 m². The legislator obliged them to donate unsold food intended for disposal to non-profit institutions free of charge. Non-governmental organizations distribute food products to charity organizations, provided the health of the final consumer is not jeopardized. Failure to comply with this obligation is subject to a penalty of up to 10 million CZK (approximately 407,000 EUR).

Legal regulations to prevent food waste in Poland

In the ranking of the European Union member states that waste the most food, Poland occupies the infamous 5th place with 9 million tons of food per year, which corresponds to 247 kg per person per year. Furthermore, according to the data of the Polish Federation of Food Banks, in 2015, 65,000 tons of food were transferred through them to those in need, including only 1,400 tons (less than 2.2%), being donations from retail chains. However, a year later, food banks received 7,700 tons of food from the retail sector, which accounts for almost 350% increase year-on-year, with approx. 70% increase in the total amount received from partner organizations, producers, retailers, and farmers cooperating with them (92,700 tons) (Senate of the Republic of Poland, 2018).

Food waste constitutes a wide research area in Poland, so far not measurable due to the lack of access to reliable data. The first research initiative in this field was the Program to Rationalize and Reduce Food Waste (Program Racjonalizacji i Ograniczenia Marnotrawstwa Żywności, PROM). It is a part of a strategic research and development programme GOS-POSTRATEG, funded by the National Centre for Research and Development and executed by a consortium composed of: the Federation of Polish Food Banks, Institute of Environmental Protection – National Research Institute, Warsaw University of Life Sciences, National Centre for Agricultural Support and Polish Society of Food Technologists. The aim of the first phase of the research was to estimate the amount of food wasted in Poland in the entire food chain, to investigate the causes for this and the way of loss management.

In reply to the call of the European Union and to provide a legal framework to prevent food waste, in 2016 a bill was proposed. It was further consulted by major stakeholders: the Catholic Church charity organization Caritas Poland, the Foundation for Helping the Unemployed and the Homeless, the Federation of Polish Food Banks, the Chief Inspector for Environmental Protection, the Minister of Finance, the Minister of Family, Labour and Social Policy, the Minister of Agriculture and Rural Development, the Minister of Environment, the Minister of Health, the Polish Trade and Distribution Organization, the Polish Red Cross, the

General Prosecutor's Office of the State Treasury, the Klon/Jawor Association, the Association of Urban Cooperation, and the Office for Competition and Consumer Protection (Żukiewicz, 2019). After two years, in March 2018, a draft was submitted to the Polish Senate for the first reading and was adopted after the third reading on 19 July 2019 as the Act on counteracting food waste (Act of July 19, 2019 on counteracting food waste), (Journal of Laws of 2019, item 1680).

The act defines the rules of handling food products and the obligations of food retailers to counteract food waste and its negative social, environmental and economic consequences. The regulations apply to retailers, defined as food business operators referred to in Article 3 (3) of Regulation (EC) No. 178/2002. The retail or wholesale sales of food referred to in the Act pertains to a sales area of more than 250 m², and the revenue from the sale of food must constitute at least 50% of the revenue from the sale of all goods. In the first two years of its validity, the Act included retail outlets with a sales area of over 400 m².

The beneficiary of the donation is to be a non-governmental organization (NGO), whose statutory goal is e.g., welfare, supporting families and foster care, and charity food distribution to the needy (Żukiewicz, 2019). The food retailer is obliged to contract a non-governmental organization regarding free donation of food products that meet the requirements of the Act. The products must be still fit for consumption, in particular, food not exceeding the shelf-life, or the date of minimum durability, but not intended for sale due to visual defects of the product or its packaging, with the exception of alcoholic beverages. The content of the contract should specify, among others:

- the time and method of food transfer,
- the allocation of the costs of collection and distribution of food,
- cases of resignation or refusal to receive food,
- the duration of the contract and the liability of the parties for non-compliance with the terms of the contract, including the terms of termination.

The Act requires food retailers to pay an annual fee of 0,1 PLN for each kilogram of wasted food to the contracted NGO, unless it does not exceed 300 PLN. Initially, the fee will be charged for 80% of the weight of wasted food, and after two years, for 90%. The fee can be reduced by 20% in exchange for launching a customer information campaign. In the absence of a contract, the food seller is obliged to pay the fee to the account of the Regional Environmental Protection and Water Management Fund appropriate for the place of conducting the economic activities.

At the same time, the Act obliges food retailers to carry out paid educational and information campaigns on rational food management and the prevention of food waste. The campaigns are to be organized at least once a year, for at least two consecutive weeks.

As stated in the Act, food retailers are required to report on the execution of the food waste prevention law as follows:

1. The non-governmental organisation submits a written annual report by 31 March:
 - to the food seller – on the use of the fee, including the amount allocated to cover administrative costs (which cannot exceed 20%),
 - to the Chief Environmental Officer – on the amount of the food received (including weight), along with a list of donating food retailers, as well as the amount of the food donated to the needy.

2. The food retailer:
 - publishes a report on the value of the food donated to non-governmental organizations, or the fee equivalent (including on their website, if applicable),
 - submits the report to the Regional Environmental Protection and Water Management Fund by 31 March each year. The report includes data on the total weight of wasted food in a given year and the amount of the fee equivalent, including the amount that is due to the fund.
3. By 30 June, the Regional Environmental Protection and Water Management Fund shall submit to the Chief Inspector for Environmental Protection a written annual summary report on food wasted, containing data on the total weight of food wasted by food distributors in a given year and the total amount of the equivalent due, together with the list of food retailers who submitted their reports as required.
4. After 18 months from the date of entry into force of the Act, the Chief Inspector for Environmental Protection will have presented to the Lower House of the Parliament and the Senate an assessment of the Act functioning in terms of the legitimacy and effectiveness of the solutions contained therein (GIOS, 2021).

Following the solution of the French legislation, the Polish Act on counteracting food waste provides appropriate sanctions for food retailers. They are as follows:

- failure to report to the Chief Inspector of Environmental Protection – an administrative fine determined by the Inspector based on the Administrative Procedure Code,
- failure to conclude a contract with a NGO – PLN 5,000 (the fine will not be charged if the retailer proves the inability to conclude a contract with a NGO),
- non-payment, payment in an incomplete amount, or failure to pay the fee for wasted food on time, – from PLN 500 to 10,000.

In principle, the provisions of this Act correspond to the intentions of the authors, i.e., they specify the rights and obligations of food sellers, non-governmental organizations and state institutions in order to counteract both food waste and the negative social, environmental and economic consequences resulting from it. However, it affects practically only the retail sector, which, according to the above-mentioned data, is responsible for approximately 5% of the food waste. According to the definition of the authors of the Act, “a food seller” is “an entity operating a food enterprise (...) in the field of sale of foodstuffs in a retail or wholesale unit or units with a sales area (...) of more than 250 m², in which food sales revenues constitute at least 50% of the revenues from the sale of all goods”. In addition, the Act raises the threshold of the sales area to 400m² for the first two years of its validity. A “food seller” defined in this way significantly narrows the circle of entities involved in the process of preventing food waste.

Due to the seriousness of the problem, the legislator obliged the Chief Inspector for Environmental Protection to carry out an assessment of the functioning of the Act in terms of the effectiveness and legitimacy of its regulations within 18 months of its entry into force. Despite the fact that the said deadline expired on 18 March 2021, this study was only presented in July 2021.

“Assessment of the functioning of the Act of 19 July 2019 on counteracting food waste” was prepared on the basis of data derived from:

- the control cycle conducted by the Chief Inspector for Environmental Protection in 2020 on compliance by food sellers and non-governmental organizations with the provisions of the Act,

- reports submitted by non-governmental organisations on the manner in which the received food was used,
- reports sent to the Chief Inspector for Environmental Protection by the provincial funds for environmental protection and water management,
- the opinions of provincial environmental inspectors, employees of inspectorates, food sellers and non-governmental organizations.

The main conclusion of the performed evaluation was that the law under examination reduced the amount of food waste and increased the level of assistance provided by NGOs to those in need.

According to data published by the Chief Inspector for Environmental Protection, the total weight of food received by charity organizations from food sellers on the day of the inspection was 18 507 536 kg, while the weight of food provided by non-governmental organizations to those in need was 18 488 209 kg. From the comparison of the weight of food provided by entrepreneurs to the total weight of food wasted, calculated based on data from the PROM project, i.e. 336 929.84 tons, it can be deduced that on a year-scale NGOs receive only 5.49% of food wasted in trade and 0.38% of all entire food wasted in Poland.

On the basis of the data contained in the annual reports on food wasted submitted by food sellers to the provincial funds for environmental protection and water management, the Chief Inspector determined that the amount actually paid to the provincial funds for environmental protection and water management bank accounts throughout Poland as the fee for food wasted was PLN 85 280.36, while the Federation of Food Banks obtained PLN 346 130.00 in this respect (RFPBZ, 2013). After calculating, in accordance with the provisions of the Act, the quantities of food disposed of by food enterprises, it appears that the statutory fee concerned less than 5 tons of food products, which changes little in the assessment of the effectiveness of the Act (The Supreme Audit Office, 2021).

These doubts are shared by the Supreme Audit Office, which in its information on the results of the “Food waste counteraction” inspection carried out in the years 2019-2021, concluded that the figures concerning the weight of the food transferred and the amount of wasted food fees paid to the accounts of the beneficiaries of the Act throughout Poland clearly indicate that the regulations adopted in the Act do not constitute an adequate response to the problem of food waste in the country.

Conclusions

The problem of combating food waste is a great challenge for both public and private institutions.

1. It seems that the objectives for both sectors are consistent, however, the spirit of Polish legislation stirs a high distrust of retailers operating in the country. Food retailers are usually well-organized chains that have been cooperating with local and national NGOs for many years. Moreover, they effectively minimize the amount of wasted food using specialized IT systems to manage the sale of food products. This is done not only due to a well-understood corporate social responsibility but also to increase sales revenues and minimize the costs of disposal of unsold food. However, the Act restricts the responsibility for preventing food waste first to the retail sector (responsible for approximately 5% of total food waste), and then further to retailers operating in stores above 250 m² (within

- 2 years of the Act being in force, the trading area was raised to over 400 m²). Since the scope of the Act is significantly reduced, its purpose is therefore questionable.
2. The share of food received by charity organizations in comparison to the total amount of food wasted clearly suggests the imperfection of the system for counteracting food waste. As the only beneficiaries of the provisions of the Act, these organizations demonstrate a low level of participation in preventing food waste. Therefore, extending the set of business entities to include food retailers and recipients of food donations is recommended.
 3. The current waste management system cannot identify specific characteristics, types, and amounts of municipal waste collected at the final collection centre. Neither can it provide accurate and timely information for applying appropriate treatment technologies to manage the waste in economically, socially and environmentally beneficial ways. A comprehensive system intervention is needed to bring stakeholders together to solve these waste problems (Esmailian et al., 2018).
 4. The authors believe that the solution introduced in 2016 in Italy, i.e., tax exemptions for retailers donating food to food banks or charities is the optimal one. In Italy, the amount of the exemption depends on the amount of food donated to charity. In addition, food products with expired minimum shelf-life, poorly labelled (except for incorrect allergen labelling) or with damaged packaging, can also be donated, provided that they are safe to eat. Importantly, there are no sanctions or additional fees on retailers for not donating food to charity organisations (Żukiewicz, 2019).

In conclusion, the authors believe that any entity aware of the scale of food waste (entrepreneur, citizen, non-governmental organization, etc.) that is eligible for benefits, incentives and exemptions is a more effective ally in the fight against this plague of the 21st century than one who is constantly sanctioned and, consequently, uses most of their resources on fiscal optimization. The policy of penalization requires regular inspections at a significant cost for the public administration, i.e. the taxpayer. Therefore, any method of encouraging food retailers to reduce the amount of food waste is much more effective and cost-effective than penalization.

Moreover, since the consumer is responsible for more than 50% of food waste (Eurostat), the most important aspect, underestimated by the Polish legislator, is adequate consumer education. According to a study Consumer Empowerment in the EU (SEC(2011)0469), as many as 18% of EU citizens do not know how to precisely distinguish between the date of minimum durability of a product (“best before”) and the shelf life (“use by...”)(the first term indicates the date after which the product is fit for consumption, but is unlikely to meet 100% of the consumer's requirements). Educational projects should be carried out by professional organisations supervised by competent state authorities.

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ZAPOBIEGANIE MARNOTRAWSTWU ŻYWNOSCI W HANDLU SPOŻYWCZYM W ŚWIETLE POLSKIEGO PRAWODAWSTWA

Streszczenie. Straty i marnotrawstwo żywności to jeden z dominujących globalnych problemów cywilizacyjnych. Budzi on duże emocje, zwłaszcza wśród mieszkańców bogatych krajów półkuli północnej. Na zjawisko to mają wpływ wszystkie podmioty na poszczególnych etapach łańcucha żywnościowego, począwszy od producentów i przetwórców, poprzez dystrybutorów, aż po konsumentów. Zarówno instytucje krajowe i międzynarodowe, jak i osoby zaangażowane w oddolne inicjatywy społeczne poświęcają na walkę z tym wyzwaniem wiele czasu i energii. Każdy podmiot świadomy skali problemu marnotrawstwa żywności (przedsiębiorca, obywatel, organizacja pozarządowa itp.) uprawniony do korzystania z ulg, zachęt i zwolnień z danin publicznych jest skuteczniejszym sojusznikiem w walce z tą plagą XXI wieku niż podmiot gospodarczy, który jest nieustannie karany i sankcjonowany, a w konsekwencji poświęca większość zasobów na optymalizację podatkową.

Słowa kluczowe: straty i marnowanie żywności, prawo, sieci handlowe, organizacje pozarządowe