

## A FAIR TAX BASE FOR THE MUNICIPAL WASTE CHARGE – KEY TO AN EFFECTIVE WASTE MANAGEMENT POLICY IN THE REPUBLIC OF BULGARIA

Vania GEORGIEVA, Nadezhda BLAGOEVA

Agricultural University, “Mendeleev”12, Plovdiv, Bulgaria, E-mails:  
v.georgieva@au-plovdiv.bg, nblagoeva@au-plovdiv.bg

**Corresponding author:** nblagoeva@au-plovdiv.bg

### Abstract

*Municipal waste management is one of the most complex flows to manage. It is usually delegated to local authorities and funded by the revenue from the municipal waste charge. The critical introduction of the polluter pays principle raises the question of how to reasonably set the municipal waste charge. It should be structured so that it generates sufficient revenue to cover the costs of waste management. At the same time, it should influence human behaviour to reduce waste even at the source. Achieving both at the same time requires a strong link to the tax base of the charge. The fairest one is linked to the amount of household waste. Such a link is necessary to incentivise taxpayers to effectively reduce and manage the waste generated. Bulgaria is among the countries that have postponed such a reform for many years, but it is now becoming inevitable. The main objective of this study is to assess and analyse the current financial instruments and tax legislation related to municipal waste management in the Republic of Bulgaria. The critical point is to evaluate the link between the tax base and the taxpayers' behaviour by setting the municipal waste charge in the Republic of Bulgaria. The methods of retrospective analysis and synthesis, inductive and deductive methods and comparative analysis are used to achieve the aims and objectives of the study. In Bulgaria, an unfair tax base has always been applied in determining the municipal waste charge. It depends not on the amount of waste but on the property's tax assessment. The fiscal policy in Bulgaria related to the municipal waste management needs to be updated to achieve the targets set in the Bulgarian National Waste Management Plan 2021-2028. The change should affect both the methodology of calculating the waste charge to apply the "polluter pays" principle and the system of tax preferences and reliefs to encourage the rational treatment of household waste, such as recycling.*

**Key words:** municipal waste charge, tax base, waste management, Bulgaria

### INTRODUCTION

Municipal waste accounts for only 10% of the total waste generated in the EU. As European Parliament Directive 2018/851 points out, “*This waste stream is one of the most complex to manage, and the way it is managed is generally a good indicator of the quality of the entire waste management system in a country*” [7]. The complexity of its management stems from the fact that it is generated near citizens and is of a mixed nature. A definition of municipal waste is given in Article 3 of Directive 2008/98/EC. Waste from households and other sources is treated as municipal waste, including “*paper and cardboard, glass, metals, plastic, biological waste, wood, textiles, packaging, waste from electrical and electronic equipment, waste from batteries and*

*accumulators, as well as bulky waste, including mattresses and furniture*” [8].

The philosophy of the circular economy shifts the treatment approach of municipal waste from its environmentally sound management to a policy of reducing its generation and reintegrating it into the economic cycle. The ever-increasing demands and costs of municipal waste management require the combined efforts of the whole of society to achieve a reduction in the harmful impact of waste on the environment, protection of human health, and the maximum efficient use of the planet's scarce resources. Introducing the “polluter pays” principle raises the question of determining the fairness of the waste charge payable by each member of society generating waste.

Urbanisation, population growth and industrialisation are the key factors

influencing the breakneck increase in waste generated. This forces the governments of many developed countries to take care specifically of municipal household waste [2]. The municipal waste levy is the primary revenue source financing municipal waste management policy in Bulgaria. It's proper structuring greatly impacts the value of the revenue raised. This requires a precise definition of the elements of the levy. The most important of these is the tax base. A correctly defined tax base is not only a prerequisite for raising sufficient tax revenue. It is an incentive which, in this case, influences and can change human behaviour concerning the amount of waste generated and its subsequent proper treatment. It thus makes it possible to introduce the "polluter pays" principle.

These arguments call for creating a similar strong link between the tax base and the amount of municipal waste. A link that the Bulgarian tax legislation has never developed. For decades, the municipal waste tax in Bulgaria has been determined based on the tax valuation of the taxed property. The chosen unfair tax base not only leads to insufficient revenues being raised. It creates a sense of injustice and does not change human behaviour. Only a link between payment and the amount of waste can change the Bulgarian's attitude to waste and his concern about how he could reduce it.

The main objective of this study is to assess and analyse the current financial instruments and tax legislation related to municipal waste management in the Republic of Bulgaria. The critical point is to evaluate the link between the tax base and the taxpayers' behaviour by setting the municipal waste charge in the Republic of Bulgaria.

## MATERIALS AND METHODS

In the course of the study, data from Eurostat, Organization for Economic Cooperation and Development (OECD), OECD Policy Instrument for the Environment Database (PINE Database) [17] and Bulgarian National Statistical Institute (NSI) are used [15]. The study period covers the years 1995 to 2020.

A thorough retrospective analysis of Bulgarian legislation and practice in municipal waste tax and the primary law regulating it has been carried out. This is the Local Taxes and Fees Act (LTFA) [13]. The legislation attempts and the impossibility in practice to impose a fair tax base in Bulgaria in the more than 24 years since 1998 are analysed in detail. A thorough comparative analysis of the course of other European countries supports these arguments.

The authors set themselves the following more important tasks with this research:

- To evaluate the current system for setting the municipal waste charge and define the associated with it problems

- To analyse the importance of the problem based on the quantities of municipal waste generated in Bulgaria and the way it is treated

- To propose recommendations for improving the fiscal policy in its part of the municipal waste tax in the selection of an adequate tax base to achieve the targets Bulgaria has set in the National Waste Management Plan 2021-2028 (NWMP) [14].

The methods of analysis and synthesis, inductive and deductive methods and comparative analysis are used to achieve the aims and objectives of the study.

## RESULTS AND DISCUSSIONS

Compared to the EU-27, Bulgaria generated less municipal waste per capita in 2020 - 493kg/capita for the EU-27 and 442kg/capita for Bulgaria.

Figure 1 shows that this has not always been the case – municipal waste generated in Bulgaria until 2010 exceeded the EU-27 average. Since 2011, this trend has reversed positively for the country.

Figure 2 shows the municipal waste treatment in Bulgaria in kilograms per capita. The largest relative share, although gradually decreasing, is the landfilling of municipal waste (62% in 2020).

The NWMP 2021-2028 plans to reduce the amount of municipal waste landfilled by at least 10% of the total amount of municipal waste generated by 2040 [14].

Although it is a fact that the amount of recycled municipal waste is steadily increasing (27% in 2020), Bulgaria has a low level of recycled municipal waste. In the

NWMP 2021-2028, Bulgaria has set a target to recycle at least 65% of the total municipal waste by 1 January 2035.

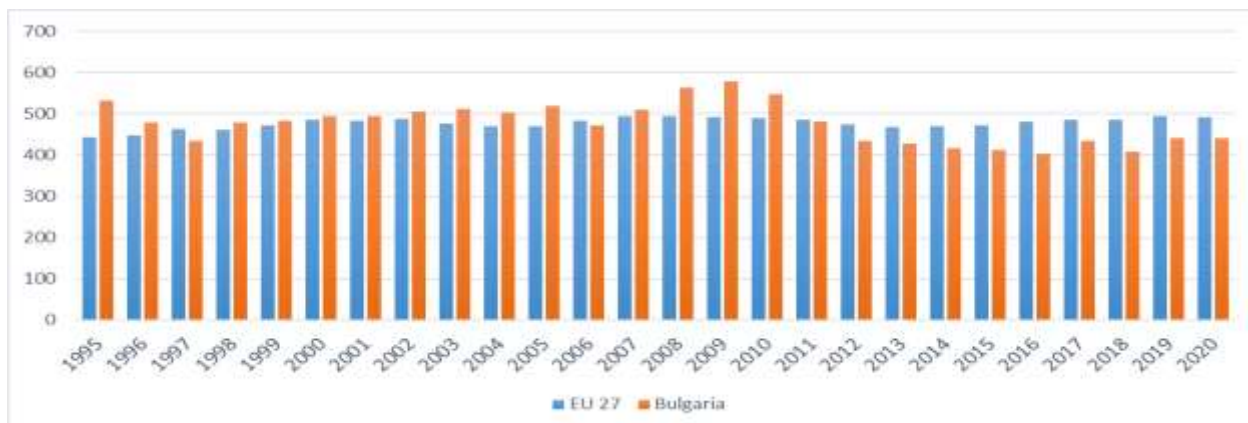


Fig. 1. Municipal waste generated in Bulgaria and the EU-27 1995-2020 (kg/capita)  
 Source: Eurostat [9].

Composting as a treatment method for municipal waste accounts for a negligible share (8% in 2020). This is also true for using

municipal waste for electricity generation in Bulgaria (3% in 2020).

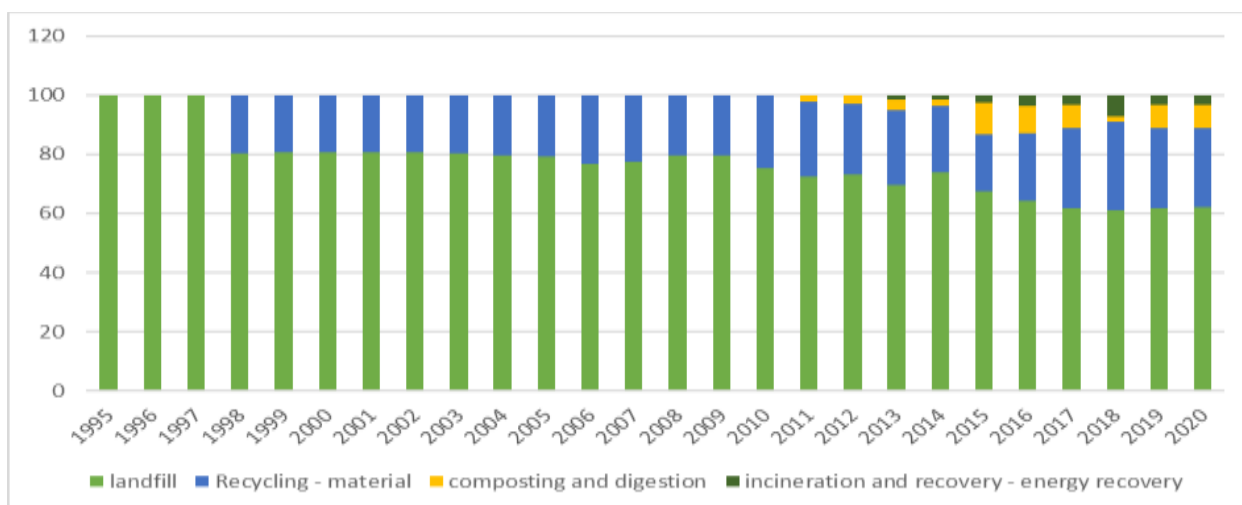


Fig. 2. Municipal waste treatment in Bulgaria in kilograms per capita 1995-2020 (%)  
 Source: Eurostat [9].

Although Bulgaria is in a more favourable situation than the EU average in terms of the amount of municipal waste generated in total and per capita, there is still much work to be done to prevent the generation of municipal waste, reduce the amount of landfilled waste, and increase the amount of recycled and composted municipal waste. The role of financial instruments is crucial to achieving these objectives and addressing the problems of effective waste management.

### The problems with the Bulgarian legislation

In Bulgaria, the municipal waste charge is the primary revenue source to cover waste management costs. In Figure 3, we can see the revenues from the municipal waste charge and the expenses related to municipal waste in 2014-2020. It can be seen that by 2017 the revenues exceeded the expenditures. Still, in the following years, there is an opposite trend - the revenues are insufficient to cover the

costs related to municipal waste management. Studies have shown that waste management is almost always a local responsibility [10]. It is the largest expenditure item in local budgets, especially in developing countries. Sometimes the insufficient revenue raised by the local government through the levy is supplemented by funds from the state budget [6].

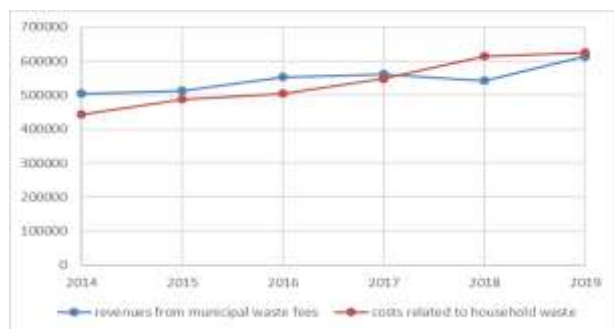


Fig. 3. Garbage revenues and municipal waste management costs in Bulgaria

Source: Authors' interpretation of data from the National Statistical Institute [15].

The municipal waste charge is a particular focus of attention due to the urgent need to reform it. For decades, its infinitely incorrect basis and the lack of transparency have created a sense of unfairness. The legal framework regulating municipal waste on the country's territory is the Law on Local Taxes and Fees Act. Based on the act, each city council introduces an Ordinance on the Determination and Administration of Local Taxes and Fees. According to Art. 67 of the Act, the quantity of municipal waste is the guiding basis for determining the amount of municipal waste charge [13].

However, the law allows the municipal council to adopt a different basis or base, provided objective circumstances prevent its application. No such justification has been provided for the local authority's inability to consider the amount of municipal waste. The most common basis chosen remains in force in our legislation, namely the property tax assessment. This automatically equates the charge to property tax, effectively doubling it. The "polluter pays" principle is not respected but disturbs the levy. It is not linked to the costs of providing the necessary material, technical and administrative costs of

providing the service - a condition laid down in Article 7 of the law. This results in insufficient revenues, necessitating individual municipalities to supplement the expenses with other revenues.

However, the most crucial problem remains the inability of the levy to fulfil its natural economic functions, namely to influence:

1. the quantity of municipal waste
2. the ways of its subsequent treatment.

The need for reform in Bulgarian legislation has long been recognized but not realized. With the very adoption of the text of the new Municipal Tax Act in force since the beginning of 1998, the previously used basis was replaced with a new one - the quantity of municipal waste. Thus, the State effectively transferred to the municipalities the responsibility for devising the mechanism for accounting for the quantity of waste. It is a question that requires not regional but state intervention and a concept whose solution lies outside the administrative capacity of local authorities in the Republic of Bulgaria. Where the quantity cannot be ascertained, the law retains the application of the tax assessment. At the end of 2002, with a delayed start for enactment in early 2004, the legislature formally repealed such an inequitable basis. When the amount of waste cannot be ascertained, the fee is assessed in leva per user or proportionally on a base set by the municipal council. A new paragraph 16 is added to the additional provisions of the law. It attempts to define the meaning of the concept of the base, namely "an objective indicator in value terms, based on the percentage or *per rata of the proportional charge is determined or natural indicator on the basis of which the charge is determined per unit/e.g. BGN/1 person, BGN/ cubic meter of used water, etc.*". Thus, for the first time, the possibility of linking the tax base to criteria such as the number of inhabitants in a household or its utility costs is implicitly mentioned. In both cases, the common point is that there are all indicators that at least have a bearing on the amount of garbage potentially generated, as opposed to the value of the property. However, there has been no real change, and the municipalities continue

calculating the fee based on the tax value of the real property.

Nine years later, in 2013, with a delayed start for taking into effect at the beginning of 2015, the law added a requirement that the basis determined by the municipalities could not be the tax valuation of real property, its book value or its market price. It also sets a deadline of June 30, 2014, for the Council of Ministers, together with the National Association of Municipalities in the Republic of Bulgaria, to develop a methodology for the preparation of the plan account with the necessary costs for the activities and the types of bases that serve to determine the amount of the fee. These legislative changes do not lead to a new way of determining the levy and its tax base. For the next three consecutive years, the only changes in the law are in each of them a postponement of the deadlines by one year.

The year with a more specific change was the end of 2017 when amendments with a particular environmental focus were introduced. This is the introduction of:

- the ecological component in the determination of the vehicle tax
- the principle of bearing the costs by the user.

The Waste Management Act defines the nature of the "waste producer" concept [25]. Waste management services are divided into components; the law mentions the tax base for each. The common one that applies to all three types of services is the number of users in the property. In addition to that, for the services of collection, transportation and disposal, "*the basis may be an individually determined quantity of household waste for the property, including using bags of a certain capacity and carrying capacity, or a quantity of household waste for the property determined according to the number and capacity of containers required for the collection of household waste and the frequency of their transportation*". In the case of services for maintaining the cleanliness of the areas for public use, the alternative basis is the expanded built-up or unbuilt-up area. Once again, a further year's delay is granted for developing the new methodology. The

definition of the "base for determining municipal waste charge" is also changed, namely "*the indicator, based on the costs on account of the municipal waste charge from the approved plan-account are allocated to the obliged persons. To set the municipal waste charge, the unit of measurement for the basis quantity of municipal waste shall be the kilogram or litre*".

In practice, the municipalities in Bulgaria are not consistent and logical in determining the tax base of the municipal waste tax. A study of the tax bases used to determine the municipal waste charge in 12 municipalities in Bulgaria found that in none of the municipalities studied, the criterion "number of users of the service in the property" is not taken into account when determining the tax base. Only half of the studied municipalities offer the possibility for the enterprises to choose the tax base between the tax value and the book value of the properties; the tax base applied does not stimulate waste reduction. [1].

An interesting fact with the introduction of a new Art. 71 b is the attempt to ensure transparency in determining the tax base. According to the new law, data on the adopted plan, the tax bases chosen, the reported expenditure from the previous year, and the quantities of waste generated will be published on each municipality's website by February 15. The deadline for enacting the requirement that the basis cannot be the tax valuation is extended by one more year until the end of 2019. Therefore, it is still the applicable base for calculating tax liability. At the end of 2018, this deadline is extended by two years until 31.12.2021. In 2021, the deadline was extended again to 31.12 of the year following the publication of the results of the 2021 population and housing census [20, 21]. Then the requirement for developing a specific methodology by the Council of Ministers and the National Association of Municipalities in the Republic of Bulgaria is also cancelled. Thus, a supposedly categorical will to change the tax base in Bulgaria has been postponed for ten years.

Despite the apparent will of the law, the "polluter pays" principle remains

unenforceable in Bulgaria. This contradicts the Waste Management Act, which aims to create natural market mechanisms to reduce waste and optimize its treatment. This objective cannot be achieved without a fundamental change in determining the tax base. In October 2022, NSI in Bulgaria published its final data from the 2021 census [21]. In this way, 31.12.2023 is the next deadline for reforming the municipal waste charge.

Bulgaria is one of the few countries that use a base in no way related to the amount of waste. Even when the charge is paid as a surcharge on utility bills, it is still testimony to the amount of waste that may have been generated. Most countries' tax base is measured in kg or litres. Rarely the base is in an absolute amount per person. Bulgaria is the latest possible laggard with its municipal waste reform, and its base is as unfair and imperfect as possible. All of this raises the question of a new methodology that has to consider waste quantity. Developing such a particular methodology is undoubtedly outside the power of individual municipalities. Active state intervention is needed, even though the charge is local. Given the national psychology of Bulgarians and the lack of culture in waste management, this change would be challenging. It is no coincidence that the law itself, although requiring it, has delayed it for over 20 years.

#### **The practice in other EU countries when charging municipal waste**

The practice in different countries regarding charging household waste is interesting [5]. In Belgium, some Flemish municipalities use bags for residual waste sold by the municipality, while others use an electronic recording of the weight of the waste submitted for collection. Household waste management costs are financed as follows: 1/3 through a flat fee from households, 1/3 through PAYT fees and 1/3 from the municipal budget.

In the Brussels region, fees are collected from households that pay a regional tax per household to the municipal budget. There is a door-to-door separate waste collection system. Citizens buy special waste bags in shops at cost price. The containers are free of charge.

In Wallonia, the municipalities have a fixed fee to cover minimum waste management services and charges for additional services by purchasing bags and collecting green and bulky waste.

In France, municipalities can choose between three options when setting the municipal waste collection charge. The first two are fiscal - the value of the property and the volume of waste collected. The third option is for the municipal budget to cover waste services. The latter is financed by local direct taxes - residential tax, built-up property tax, unbuilt property tax, and territorial-economic contribution.

In Austria, in most communities, the waste charges have two components – a basic charge and an additional service charge based on the amount of municipal waste. In parts of Austria, fees are calculated based on the amount of household waste.

In Spain, municipalities are allowed to set three general and an unlimited number of special rates based on economic and environmental factors. Differentiated rates for households and businesses apply. In some municipalities, the rates are fixed; in others, rates are based on criteria not directly related to the waste generated. The charges are not collected by the municipalities but by the electricity suppliers, together with the recurrent electricity bills.

In Finland, the fee is set on a combined basis, considering the size of the bin and the frequency of collection, and the fraction of waste. Waste collection in Ireland is the entire private sector. Companies collect fees respecting the "polluter pays principle" and encourage customers to separate waste collection. The charge includes a service charge which is a fixed amount and a variable part based on weight, bin lift, frequency of service, etc.

The practice in Korea is also interesting because, to some extent, it is similar to the Bulgarian one [12]. Until 1995, the municipal waste fee was also set in an absolute amount without regard to the amount of waste generated. To reduce the amount of waste at source and encourage recycling, the Korean government introduced the Volume-Based

Waste Fee in 1995. For this purpose, garbage is disposed of in special bags. This creates incentives to reduce the amount of waste, as payments are now linked to the quantity. Separately, a free collection of recyclables is provided. In this way, taxpayers are motivated

to set aside as much of their garbage for recycling as possible instead of throwing it away in bags for which they have to pay [19]. It is no coincidence that South Korea is among the top OECD countries in the recycling rate.

Table 1. Waste tax bases in EU countries

Country	Name of Instrument	Tax base or rate - Euro
Austria	Waste deposit levy	per tonne
Belgium	Tax on waste collection	50.00 - 60.00 € per m <sup>3</sup> of waste
Czech Republic	Charge on municipal waste collection	According to expected costs for a municipality (Waste Law) or up to 27.65€ per person per year (Local Charges Law). Municipalities can choose one type of charge or can also use a contractual relationship.
Denmark	Charge on municipal waste collection/treatment	63.79 € per tonne
Estonia	Waste disposal charge	per tonne
Finland	Charge on municipal waste collection/treatment	Ton or m <sup>3</sup> of waste collected
France	Charge on municipal waste collection/treatment	The volume of collected waste
Greece	Charge on municipal waste collection/treatment	payment with utilities
Hungary	Charge on waste disposal	per tonne
Ireland	Landfill levy	per tonne
Italy	Charge on municipal waste collection/treatment	The volume of waste, level of service, and operating costs of treatment
Latvia	Municipal waste user charge	Collection of waste, 240-litre containers 1.18 € per container
		Waste generated by enterprises, volumetric charge 5.79 - 7.51 € per m <sup>3</sup>
		Waste generated by households is a fixed charge of 0.3382 € per person per month.
		Waste generated by households, volumetric charge 5.27 - 5.37 € per m <sup>3</sup>
Lithuania	Municipal waste user charge	3.17 - 6.52 € per m <sup>3</sup>
Malta	Landfill charges	per tonne
Netherlands	Waste tax	17.00 € per 1000 kg
Norway	Charge on municipal waste collection/treatment	The volume of collected waste (per container, size of the bag, number of collections per week)
Poland	Charge on municipal waste landfilling	per tonne
Romania	Waste user charge	Households 1.35 - 18.9€ per person per year
		Industries 5.4 - 21.6€ per m <sup>3</sup>
Slovenia	Waste user charge	Quantity of waste
Spain	Tax on waste disposal in landfills	per tonne
Sweden	Tax on the deposition of waste in landfills	per tonne
Slovak Republic	The charge for deposition of waste to landfill and sludge-deposition sites	per tonne
	Waste disposal fee	

Source: OECD, PINE Database [17].

Thus, the already changed accrual tax base is yielding outstanding results. In the eight years since the new system's introduction, garbage

has decreased by 16.6%, and recycling has increased by 27.3%.

According to studies, this decrease is particularly significant in the first years of the

system's introduction, considering the relationship between payments and the amount of garbage generated [22].

The waste tax bases in some European countries can be traced in Table 1.

### **Possible changes in Bulgaria**

*First.* The main problem in applying the "polluter pays principle" is the lack of technical provision for towing the waste to the source. Here we can use the experience of other European countries where the two approaches are most common. In the first approach, the fee is set based on the capacity of the bins and the frequency of their removal.

A second approach is to provide for the purchase of special bags or stickers, the purchase price of which includes the fee itself.

*Second.* A good option might be a step change. The practice of other countries that have introduced a volume-based system as the basis of a municipal waste fee shows exactly a phased introduction through "creating the right social atmosphere, conditions for implementation, pilot projects, etc." [11].

In the first stage, waste reporting could start from smaller settlements. The predominantly single-family houses could easily be provided with separate containers of a specific capacity. Apart from that, these areas usually generate less garbage. In many cases, it is organic, and people use it either as animal feed or in the composts they often own. The experience and data accumulated over several years could serve as a basis for developing the methodology for larger cities. Where quantity accounting is considerably more difficult, a criterion of the number of household members could be introduced as a first phase. It is unnecessary to break down the number of family members too much to avoid creating too many administrative difficulties and speculations. Set the fee in an absolute amount on a cost-covering basis only for two categories - a household with one member and with more than one. This would resolve another inequity in our legislation. According to Art. 64 and Art. 11 of the law, the charge is payable by the owner of the property. The exceptions apply only to users under an established right of use and concessionaires. In all other cases of rental property, the fee is

charged to the owner and not the actual user of the services.

*Third.* The accurate reporting of the municipal waste charge is directly related to the software support of municipal waste management. The databases created will enable communication between the parties involved in the municipal waste management process and the possibility of analysis and control [3, 4].

*Fourth.* Since the guiding principle in European and, therefore, national legislation is the "prevention" of waste, the practical implementation of this principle requires changes in the regulatory framework. The introduction of various taxes and charges on businesses if they produce less waste, the incentivisation of the donation of products that would become waste, the introduction of tax preferences for citizens when reducing the amount of waste generated, etc.

*Fifth.* The deposit system applied in many European countries shows promising results [24, 23, 16, 18]. It consists of the payment of a deposit in the price of water and other beverages sold in plastic bottles, aluminium cans, boxes, and glass bottles, which is refunded to the consumer after their return to the points specially set up for this purpose. The practice in other countries has shown that recycling packaging from these products increases many times while reducing the costs of collecting and transporting municipal waste.

*Sixth.* Implementing policies related to waste reduction should be supported by information and education campaigns at the national and local levels. Education as early as kindergarten and then at school is essential for self-awareness in the younger generation to care for and protect the environment. This is where non-governmental organisations have a role to play, and they should be supported by the state and municipalities in their activities.

### **CONCLUSIONS**

The fiscal policy in Bulgaria related to the municipal waste management needs to be updated to achieve the targets set in the Bulgarian NWMP 2021-2028. The change should affect both the methodology of



calculating the waste charge to apply the "polluter pays" principle and the tax preferences and reliefs for implementing activities related to municipal waste treatment. The analysed practices in several European countries show good results and can be borrowed and applied in Bulgaria. The role of information and education campaigns and changing people's self-awareness that these measures are for the health and well-being of the whole society. Sometimes we must compromise our comfort and convenience to achieve a nobler purpose.

## REFERENCES

- [1]Chaparov, B., Manolov, T., 2021, Local Fee for Disposal of Household Waste – is The Business in Bulgaria Punished?, Construction Entrepreneurship and Real Property, 2021, p.70-74, <https://www.ceeol.com/search/chapter-detail?id=996589>, Accessed on 10.12.2022.
- [2]Chu, Z., Wu, Y., Zhuang, J., 2016, Municipal household solid waste fee based on an increasing block pricing model in Beijing, China, Waste Management & Research, DOI: 10.1177/0734242X16681462, [https://www.eng.buffalo.edu/~jzhuang/Papers/CWZ\\_WM\\_R\\_2016.pdf](https://www.eng.buffalo.edu/~jzhuang/Papers/CWZ_WM_R_2016.pdf), Accessed on 3.02.2023.
- [3]Dimova, D., 2017, Modeling Data on Taxes and Average Annual Salary in Bulgaria, 17<sup>th</sup> International Multidisciplinary Scientific GeoConference SGEM 2017, Bulgaria, Vol. 17(21), 463-470.
- [4]Dimova, D., 2014, Statistical Assessment of Data on Total Expenditure of Household, International Conference Automatics and Informatics'2014, Bulgaria, pp. I-111 - I-114.
- [5]European Commission, Directorate-General for Environment, 2019, Study on investment needs in the waste sector and on the financing of municipal waste management in Member States, Publications Office, <https://data.europa.eu/doi/10.2779/769124>, Accessed on 10.12.2022.
- [6]European Environment Agency, 2021, Municipal waste management in Western Balkan Countries – country profile Albania, <https://www.eea.europa.eu/themes/waste/waste-management/municipal-waste-management-country>, Accessed on 9.02.2023.
- [7]European Union, 2018, Directive (EU) 2018/851 of the European Parliament and of The Council of 30 May 2018 amending Directive 2008/98/EC on waste, EUR-Lex - 32018L0851 - EN - EUR-Lex (europa.eu), Accessed on 9.02.2023.
- [8]European Union, 2008, Directive 2008/ 98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, EUR-Lex - 32008L0098 - EN - EUR-Lex (europa.eu), Accessed on 20.12.2022
- [9]Eurostat, 2023, [https://ec.europa.eu/eurostat/databrowser/view/env\\_wasmun/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/env_wasmun/default/table?lang=en), Accessed on 20.12.2022.
- [10]Hoorweg, D., Bhada-Tata, P., 2012, What a waste: A Global Review of Solid Waste Management, World Bank, Urban development series, <https://openknowledge.worldbank.org/handle/10986/17388>, Accessed on 10.12.2022.
- [11]Ki-Yeong, Y., 2017, Volume Based Waste Fee System for Municipal Solid Waste, Seoul Institute, <https://seoulsolution.kr/en/content/6326>, Accessed on 9.02.2023.
- [12]Kwang-yim, K., 2003, Volume-Based Waste Fee System, Korea Environmental Policy Bulletin, issue 1, volume I, [https://wedocs.unep.org/bitstream/handle/20.500.11822/9036/-Korea%20Environmental%20Policy%20Bulletin%20-%20Volume-Based%20Waste%20Fee%20System-2003Volume-based%20Waste%20Fee%20System%20in%20Korea\\_KEPB2003.pdf?sequence=3&amp%3BisAllowed=](https://wedocs.unep.org/bitstream/handle/20.500.11822/9036/-Korea%20Environmental%20Policy%20Bulletin%20-%20Volume-Based%20Waste%20Fee%20System-2003Volume-based%20Waste%20Fee%20System%20in%20Korea_KEPB2003.pdf?sequence=3&amp%3BisAllowed=), Accessed on 3.2.2023
- [13]Local Taxes and Fees Act, Publication - State Gazette No. 117/10.12.1997, in force as of 01.01.1998, <https://www.skmbg.com/bulgarian-tax-laws/local-taxes-fees-act/>, Accessed on 10.12.2022.
- [14]Ministry of Environment and Water, 2020, National Waste Management Plan 2021-2028, [https://www.moew.government.bg/static/media/ups/tiny/%D0%A3%D0%9E%D0%9E%D0%9F/%D0%9D%D0%9F%D0%A3%D0%9E-2021-2028/NPUO\\_2021-2028.pdf](https://www.moew.government.bg/static/media/ups/tiny/%D0%A3%D0%9E%D0%9E%D0%9F/%D0%9D%D0%9F%D0%A3%D0%9E-2021-2028/NPUO_2021-2028.pdf), Accessed on 23.01.2023.
- [15]National Statistical Institute of Bulgaria (2023). Total revenue from taxes and fees and expenditure for municipal waste – total for the country, <https://www.nsi.bg/en/content/2641/total-revenue-taxes-and-fees-and-expenditure-municipal-waste>, Accessed on 9.01.2023.
- [16]Numata, D., 2016, Policy mix in deposit-refund systems - from schemes in Finland and Norway, Waste Management, Vol. 52, pp. 1-2, DOI: 10.1016/j.wasman.2016.05.003
- [17]OECD, 2022, Policy Instruments for the Environment Database, <https://www.oecd.org/env/indicators-modelling-outlooks/policy-instrument-database/>, Accessed on 9.01.2023.
- [18]Oliveira, V., Sousa, V., Vaz, J.M., Dias-Ferreira, C., 2018, Model for the separate collection of packaging waste in Portuguese low-performing recycling regions, Journal of Environmental Management, Volume 216 (2018), p. 13-24, <https://doi.org/10.1016/j.jenvman.2017.04.065>
- [19]Park, S., Lahr, T., 2015, Analyzing the success of the volume-based waste fee system in South Korea, Waste Management, Volume 43, pp.533-538, <https://doi.org/10.1016/j.wasman.2015.06.011>

[20]Population Census and Housing Census in the Republic of Bulgaria Act 2021, 8.03.2019, [https://www.nsi.bg/sites/default/files/files/pages/Census\\_2021\\_EN.pdf](https://www.nsi.bg/sites/default/files/files/pages/Census_2021_EN.pdf), Accessed on 10.12.2022

[21]Population and Housing Census, 2021, [https://infostat.nsi.bg/infostat/pages/module.jsf?x\\_2=338](https://infostat.nsi.bg/infostat/pages/module.jsf?x_2=338), Accessed on 10.12.2022.

[22]Sasao, T., Jaeger, S., Weerdt, L., 2021, Does weight-based pricing for municipal waste collection contribute to waste reduction? A dynamic panel analysis in Flanders, Waste Management, Volume 128, pp.132-141,  
<https://doi.org/10.1016/j.wasman.2021.04.056>

[23]Tallentire, C., Steubing, B., 2020, The environmental benefits of improving packaging waste collection in Europe, Waste Management, Volume 103, p. 426-436,  
<https://doi.org/10.1016/j.wasman.2019.12.045>

[24]Teodor, C., Trica, C.L., Ignat, R., Dracea, R.M., 2020, Good Practices of Efficient Packaging, Waste Management, Amfiteatru Economic, Vol.22(5), 937-953.

[25]Waste Management Act, State Gazette No. 53/13.7.2012 in force as of 13.7.2012, [https://www.moew.government.bg/static/media/ups/tiny/%D0%A3%D0%9E%D0%9E%D0%9F/%D0%97%D0%B0%D0%BA%D0%BE%D0%BD%D0%BE%D0%B4%D0%B0%D1%82%D0%B5%D0%BB%D1%81%D1%82%D0%B2%D0%BE/WASTE%20MANAGEMENT%20ACT\\_13.pdf](https://www.moew.government.bg/static/media/ups/tiny/%D0%A3%D0%9E%D0%9E%D0%9F/%D0%97%D0%B0%D0%BA%D0%BE%D0%BD%D0%BE%D0%B4%D0%B0%D1%82%D0%B5%D0%BB%D1%81%D1%82%D0%B2%D0%BE/WASTE%20MANAGEMENT%20ACT_13.pdf), Accessed on 10.12.2022.