

## CHALLENGES IN SETTING THE MUNICIPAL WASTE FEE TARIFF IN BULGARIAN MUNICIPALITIES<sup>3</sup>

*The present waste fee tariff in Bulgaria is calculated per mill on property value, which is the grounding reason why the business pays much more than the population for the generated waste amounts, thus cross-subsidizing the population costs. Legislative amendments enforced in 2017 require the waste fee to be determined based on waste amounts and a number of waste service users. Since then, the actual enforcement date for the introduction of the new waste tariff has been postponed several times due to a number of serious challenges that may undermine the future operation of the waste management systems in the municipalities. These challenges cover the need for an entire transformation of the current waste collection and transportation system, require significant additional costs in terms of capital investments, necessary massive awareness-raising campaigns, insufficient data, affordability and willingness to pay issues.*

*Keywords: municipal waste fee; waste tariffs; local budgets; municipal waste management; polluter pays principle*

*JEL: H71; H72; Q57*

### Introduction

Waste fee setting and waste fee tariff structures are not among the topics deemed attractive for scientific research. They seem to be mainly policy-driven issues, but have strong implications on household budgets and affordability, business costs, municipal budgets, cost effectiveness, environmental and health risks, etc. They also may create incentives and disincentives for behaviour changes for all players in the waste sector – local governments, contracted waste service providers, waste generators, etc.

Waste management is a public service of general economic interest dedicated to the provision of a cleaner, healthier and risk-free environment for the population and business. The presence of market failure is a structural feature of the waste sector as it frequently works under structural or legal monopolies. That is why regulation to ensure adequate service standards at affordable prices is usually in place (Marques, Simões, Pinto, 2018).

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Meanwhile, besides the political and regulatory context, waste tariff setting should pursue efficiency, equity and sustainability of the waste service. The following principles are usually observed in waste tariff structuring: efficient allocation of resources; efficient supply of waste services; cost recovery; financial viability; horizontal equity; vertical equity and poverty alleviation, administrative and technical feasibility; polluter pays and avoiding illegal dumping (Solid Waste Tariff Setting Guidelines for Local Authorities, p. 3). In the last ten years, Bulgarian municipalities face serious challenges to structure their waste fee tariffs and meanwhile, observe these principles.

The provision of household waste management services in Bulgaria is decentralized to the lowest local government tier – 265 municipalities. This is in line with the decentralization theorem (Oates, 1972, p. 256) and the “subsidiarity” principle, drawn from the European Charter of Local Self-Government. They postulate that each activity for the provision of public goods should be assigned to the lowest government tier that covers most of the benefits generated by a public good if this tier can effectively manage the service provision.

The local governments in Bulgaria hold the following waste management responsibilities:

- Organizing and managing mixed household waste collection and transportation to landfills and/or other waste recovery and treatment facilities.
- Constructing and operating all waste management facilities – waste separation and composting installations, waste treatment plants and landfills.
- Closing, recultivation and post-closure monitoring of waste landfills and other waste disposal facilities.
- Setting up sites where the local population and business may deliver free of charge separately collected waste fractions as well as bulk waste.
- Organizing the cleaning of streets, squares, alleys, parks and gardens and all public outdoor spaces.

The collection and treatment of waste fractions like packaging, end-of-life vehicles, waste electric and electronic equipment, waste tires, batteries and processed automobile oils and lubricants is under the extended responsibility of the producers and importers of these products and is performed and funded by licensed recycling organizations. These organizations are established by the producers and importers of goods generating such waste. Nevertheless, the municipalities are also responsible for organizing the separate collection for at least the following household waste fractions: bio-waste, paper and cardboard, metals, glass and plastics.

Regarding household waste management services, the Bulgarian local governments have complete powers in the three dimensions of the public services provision (CEU, 2002, Module 3, p. 5):

- *Defining* – the power to make decisions about the quantity and the quality of the provided service. This includes for example deciding on the locations of containers and waste delivery sites in the different municipal settlements and constituent residential areas; the

routes and the frequency of waste collection and cleaning of public outdoor spaces; the location and capacity of the waste management facilities, etc.

- *Financing* – the power to set fees, collect revenues and finance the provision of the service. The municipalities in Bulgaria charge the households and the businesses, living and operating respectfully on their territory with a waste fee that is part of the municipal budget revenues and finances the provided waste management activities.
- *Physical provision* – the power of the local authorities to organize the provision of the service. The Bulgarian municipalities can decide whether to provide the waste collection, transportation and treatment services by themselves (via municipal enterprises) or to contract them out to private companies. Referring to the waste fractions that fall under the extended producer responsibility schemes, the municipalities have the power to select licensed organizations to operate on their territory.

The costs for provision of the municipal waste management services are included in the annual waste costs/revenues estimate, on which basis the municipalities set the annual amount of the waste fee.

## **1. Municipal Waste Fee in Bulgaria – Current Status**

The revenues from the municipal waste fee are earmarked and cannot be used to finance costs other than those included in the annual waste costs/revenues estimate. If municipalities generate economies in waste management costs, the surplus from the waste fee revenue is transferred to the next-year municipal budget and can be used for waste management activities only.

The annual fee amount is determined by a decision of the municipal council on the basis of the approved annual waste costs/revenues estimate, including the necessary costs for each activity separately – waste collection and transportation, waste treatment (recycling, recovery, disposal, landfilling, etc.) and cleaning of public areas. The waste fees may be paid as a lump sum or in four equal instalments.

The municipal waste fee is determined as a per mill rate (‰) on the property tax value. Individual per mill rate is set for each of the three services – waste collection and transportation, waste treatment (recycling, recovery, disposal, landfilling, etc.) and cleaning of public areas. The fee is paid by the property owner and in the case of established property right of use – by the user. In the case of concession, the concessionaire pays the fee. In compliance with the Waste Management Act, no municipal waste fee is collected for churches, temples and monasteries, in which religious activity is performed by the legally registered religions in the country. However, municipalities may conduct their own fee exemption policy in order to favour different consumer groups. The waste fee rates for the different waste services are differentiated by various user categories, property types and options, as well as the exemptions for the waste fee tariff.

The municipalities set and implement their own waste management policy through the waste tariff mechanism. The application of these policy tools is illustrated with an example of four

Bulgarian municipalities. In order to present a more inclusive notion of the process, the sample covers diverse municipalities in terms of population number, administrative status, geographical location and financial capacity. The share of own source revenues in the municipal budget revenues is used as an indicator of financial capacity – the higher this share is, the greater the revenue-generating capacity of the relevant municipality. Along with this, the authors have long experience in working with these municipalities thus having data and being familiar with the local policy. The municipalities are as follows:

- *Sofia municipality* – the capital city of Bulgaria and the largest municipality in the country with a population of 1 307 438 (2021 data). It occupies 9<sup>th</sup> position among the 265 municipalities in Bulgaria in terms of share of own-source revenues in the municipal budget revenues – 46.04% (2019 data) and is thus considered a financially viable municipality.
- *Montana municipality* – a centre of Montana district in the Northwestern region of Bulgaria with a population of 45 229 (2021 data). It takes the 65<sup>th</sup> position among the 265 municipalities in Bulgaria in terms of share of own-source revenues in the municipal budget revenues – 26.36% (2019 data), which is slightly below the country average of 29.9% and thus considered as a municipality in an average financial capacity.
- *Pomorie municipality* – a Black Sea resort municipality with a population of 27 839 (2021 data), occupying 7<sup>th</sup> position among the 265 municipalities in Bulgaria in terms of share of own-source revenues in the municipal budget revenues – 49.6% (2019 data) and thus considered a financially viable municipality.
- *Rudozem municipality* – a small municipality located on Rhodope Mountain with a population of 8 614 (2021 data). It occupies 243<sup>rd</sup> position among the 265 municipalities in Bulgaria in terms of share of own-source revenues in the municipal budget revenues – 9.21% (2019 data), which is far below the country average of 29.9% and thus considered a municipality of poor financial capacity.

The structures of the waste fee tariff of the four municipalities are presented in Tables 1-4.

**Table 1. Waste fee tariff in 2022 for Sofia Municipality**

	Population (residential property)	Business (residential property)	Business (non-residential property) Option 1	Business (non-residential property) Option 2
Waste collection and transportation	0.49‰ on the property tax value	0.49‰ on the property tax value	3.10‰ on the property tax value	For 1100 litre container – BGN 1340 /1 container; For 3,5-4 m3 container – BGN 8030/1 container per year at once-a-week collection
Waste treatment	0.42‰ on the property tax value	0.42‰ on the property tax value	2.60‰ on the property tax value	
Cleaning of public areas	0.69‰ on the property tax value	0.69‰ on the property tax value	4.30‰ on the property tax value	4.30‰ on the property tax value

Source: Decision № 809, Protocol №.44 of 16 December 2021 of the Sofia Municipal Council.

**Table 2. Waste fee tariff in 2022 for Rudozem Municipality**

	Population – areas with organized waste collection	Population – areas with no organized waste collection	Business – areas with organized waste collection Option 1	Business – areas with organized waste collection Option 2	Business – areas with no organized waste collection
Waste collection and transportation	3.15‰ on the property tax value		5.10‰ on the property tax value	BGN 500 per container; BGN 100 per bin	
Waste treatment	3.6‰ on the property tax value		3.46‰ on the property tax value		
Cleaning of public areas	4.41‰ on the property tax value	8.01‰ on the property tax value	3.8‰ on the property tax value	7.26‰ on the property tax value	7.26‰ on the property tax value

Source: Decision № 296, Protocol № 32 of 30 December 2021 of the Rudozem Municipal Council.

**Table 3. Waste fee tariff in 2022 for Pomorie Municipality**

	Population – residential property	Population – non-residential property	Business – residential property	Business – non-residential property	Population and business – per container
Waste collection and transportation	1.6-22.5‰ on the property tax value depending on the settlement	2.7-35‰ on the property tax value depending on the settlement	1.6-22.5‰ on the property tax value depending on the settlement	2.7-35‰ on the property tax value depending on the settlement	BGN 134-222 for 240-litre bin BGN 613-1016 for 1100 litre container
Waste treatment	1.35-15‰ on the property tax value depending on the settlement	2.1-20‰ on the property tax value depending on the settlement	1.35-15‰ on the property tax value depending on the settlement	2.1-20‰ on the property tax value depending on the settlement	BGN 3816-6317 for 4m3 container depending on the settlement
Cleaning of public areas	0.2-5‰ on the property tax value depending on the settlement	1.9-10‰ on the property tax value depending on the settlement	0.2-5‰ on the property tax value depending on the settlement	1.9-10‰ on the property tax value depending on the settlement	1-10‰ on the property tax value depending on the settlement

Source: Decision of 21 December 2021 of the Pomorie Municipal Council.

The waste tariff data of the four municipalities, presented in Tables 1-4, outline the following:

- The municipalities set different per-mill rates for the different payer groups. The municipalities usually distinguish between two major user groups – population and business when setting the per-mile rate. Besides, for domestic and business properties another approach is also applied – differentiation of non-residential and residential properties. Depending on this, different ways of determining the fee amount are possible. Some municipalities, like Sofia, differentiate between residential and non-residential property only for business entities, while others, like Montana, provide this opportunity also for the population. Small municipalities, like Rudozem, do not apply criteria to either residential or non-residential property at all.

**Table 4. Waste fee tariff in 2022 for Montana Municipality**

Population					
	Residential property – areas with organized waste collection Option 1	Residential property – areas with organized waste collection Option 2	Non-residential property – areas with organized waste collection Option 1	Non-residential property – areas with organized waste collection Option 2	Non-residential property – areas with no organized waste collection
Waste collection and transportation	0.59‰ on the property tax value		1.60‰ on the property tax value	BGN 50 per cubic meter of waste	
Waste treatment	1.97‰ on the property tax value		2.20‰ on the property tax value	2.20‰ on the property tax value	
Waste collection and transportation	1.30‰ on the property tax value	2.50‰ on the property tax value	3.70‰ on the property tax value	3.70‰ on the property tax value	3.7‰ on the property tax value
Business					
	Non-residential property – areas with organized waste collection	Non-residential property – areas with organized waste collection	Non-residential property – areas with no organized waste collection		
Waste collection and transportation	1.60‰ on the property tax value	BGN 50 per cubic meter of waste			
Waste treatment	2.20‰ on the property tax value	2.20‰ on the property tax value			
Waste collection and transportation	3.70‰ on the property tax value	3.70‰ on the property tax value	3.7‰ on the property tax value		

Source: Decision of 18 November 2021 № of the Montana Municipal Council.

- Waste collection and transportation in municipalities with a large number of small villages on their territories (Montana) or mountainous typology (Rudozem) is not cost-effective and especially for remote villages and such with fewer inhabitants. Thus, people in these settlements are charged only with the “cleaning of public areas” component of the waste fee, as an organized waste collection is not provided.
- The municipalities may provide options to pay based on the actual amount of generated waste or to contract directly the waste collection, transportation and treatment to licensed companies, and pay to the municipality only the public areas cleaning component of the waste fee. Some municipalities, such as Sofia, Rudozem and Montana, provide this option only to business entities, while others like Pomorie provide this option to the population as well.
- The common practice in the municipalities is to set fee rates for more aggregated user groups like population/business, residential/non-residential property and areas with organized waste collection/ areas with no organized waste collection. However, there are municipalities, like Pomorie, which develop a very detailed waste fee tariff in which

besides the differentiation in the pointed aggregate groups, there is a further differentiation by settlements, each of which having own precise waste fee rate for each waste service and user category (17 settlements, of which 1 town and 16 villages).

- Besides setting waste fee rates, the municipalities may conduct their own waste management policy by exempting certain groups from the payment of waste fees – e.g. religious institutions are exempt by law from payment of waste fees, but some municipalities decide to exempt public municipal property (schools, kindergartens, hospitals, cultural centres, etc.), which is specified in their ordinances for the administration of local fees and local service prices.

The performance of waste fee revenues average for Bulgaria and for the four municipalities and their role in the municipal budgets are presented in Table 5 and Figure 1.

**Table 5. Share of municipal waste fee revenues in the context of municipal budget revenues in the period 2017-2021 (%)**

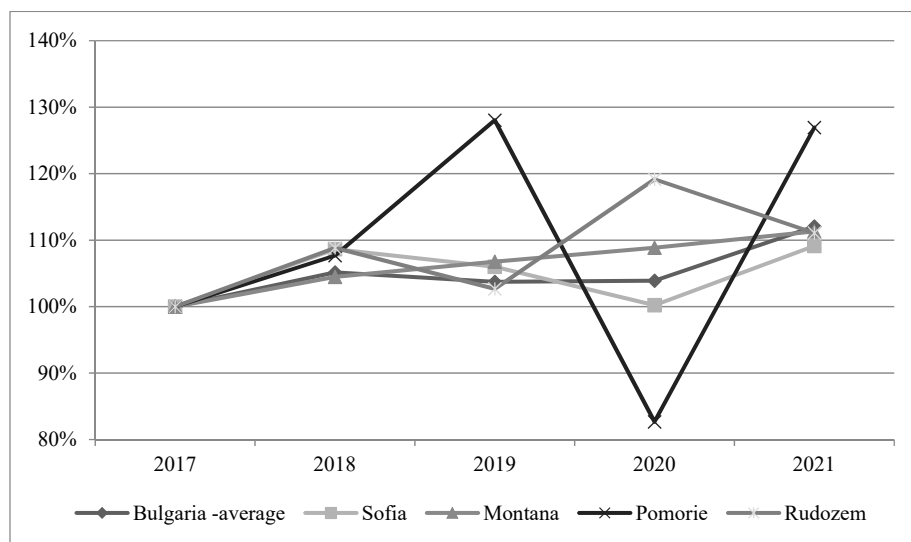
	2017	2018	2019	2020	2021
Bulgaria-average					
Waste fee/Local fee revenues	71.9	71.9	73.0	77.6	76.6
Waste fee/Local own source revenues	25.3	25.4	25.6	26.6	25.0
Sofia municipality					
Waste fee/Local fee revenues	78.8	76.9	79.2	84.5	82.0
Waste fee/Local own source revenues	30.4	29.9	32.0	32.5	30.0
Montana municipality					
Waste fee/Local fee revenues	75.8	75.8	77.1	79.7	79.0
Waste fee/Local own source revenues	32.1	30.9	32.6	36.8	39.5
Pomorie municipality					
Waste fee/Local fee revenues	71.0	73.1	76.3	77.0	77.5
Waste fee/Local own source revenues	21.9	23.9	25.5	25.6	22.1
Rudozem municipality					
Waste fee/Local fee revenues	70.1	72.9	70.7	79.2	78.9
Waste fee/Local own source revenues	29.8	21.3	23.8	26.6	25.7

Source: Ministry of Finance, National Association of Municipalities in the Republic of Bulgaria.

The presented data indicate that the waste fee revenues grow on an average of 5-7% per year in the period 2017-2019. In 2020, the waste fee revenues display a different development pattern due to the COVID-19 pandemic. In 2021, they again start to increase because some of the planned revenues for the year 2020 have actually been accounted for and collected in 2021. Nevertheless, the waste fee revenues are of key importance for the local own source revenues – the revenues which the local governments have full powers to determine.

The direct link of the waste fee rates to the two large groups of payers – population and business, makes the municipalities create and organize their databases in a way that provides detailed information about the parameters of each payer's property in terms of location, size, tax value, etc. These databases are also used for the calculation of the property tax, and the tax on transfer of real estate property, which are major local taxes and in 2021 they accounted for 68% of local tax revenues average for Bulgaria.

**Figure 1. Dynamics of municipal waste fee revenues in the period 2017-2021 (% , previous year=100)**



Source: Ministry of Finance, National Association of Municipalities in the Republic of Bulgaria.

The municipalities do not maintain databases about the amount of waste generated by the population and the business separately because the waste fee tariff presently is not linked to the amount of waste generated by a certain user (i.e. waste disposal in special waste bags or containers tagged to the specific entity). The common practice in Bulgaria is the collection of mixed waste in containers, which are then transported to waste separation facilities at the regional landfills. There, the recyclable and bio-waste is separated and recovered, while the residual waste is landfilled. Only a few municipalities, such as Sofia, have started to introduce their own separate waste collection systems beyond the ones set by licensed organizations under the extended producer responsibility schemes and have fairly precise data about the waste amounts generated by the population and the business.

**Table 6. Breakdown of municipal waste fee and waste amounts in Sofia Municipality**

	2017	2018	2019
Waste fee revenues – population (BGN)	64 779 790	65 018 886	70 921 501
Waste fee revenues – business (BGN)	129 870 426	146 263 089	153 046 464
Waste amounts – population (tons)	303 298	314 639	325 108
Waste amounts – business (tons)	67 188	69 586	71 817
Waste fees/1 ton waste – population (BGN/ton)	213.58	206.65	218.15
Waste fees/1 ton waste – business (BGN/ton)	1932.94	2101.91	2131.06

Source: Sofia Municipality.

It is evident from the data that business entities in the Sofia municipality pay about 10 times higher fees per 1 ton of generated waste than the population. This is a result of the methodology for calculating the waste fee based on the tax valuation, as the value of the



business property is higher, as well as the approach to charging business entities with higher rates (as seen from Tables 1-4 above). Although business entities make use of the options to pay per waste containers introduced by many municipalities, the “cross-subsidisation” phenomenon when the business pays for the waste generated by the population turned out to be the main problem underlying the present waste fee tariff.

## **2. Municipal Waste Fee in Bulgaria – the 2017 Legislative Changes and the Challenges They Pose**

The disadvantageous position of business entities in terms of waste fee payments for years made their representative organizations advocate for national-wide amendments in the Local Taxes and Fees Act (LTFA) regarding the method for determining the waste fee tariff.

Moreover, in 2013, the Bulgarian Parliament introduced a legal text in the LTFA that required waste collection fees to be calculated based on the generated waste (the “pay-as-you-throw” principle), instead of being based on the property value. It was due to enter into force on 1 January 2015 but was postponed a number of times. In October 2017, an amendment to the LTFA clarified the methods for calculating municipal waste costs and waste fees, but further postponed the implementation of the “polluter pays” principle for the beginning of 2020. As the municipalities in Bulgaria were not prepared for the practical implementation of these changes, the entry into force of the changes was again postponed for 01.01.2022.

According to Art. 67 of the LTFA, the amount of the municipal waste fee for each liable entity (physical person or business entity) will be determined for a calendar year in compliance with the “polluter pays” principle. The amount of the fee will be determined on a unit basis for each calendar year by a decision of the Municipal Council together with the approval of the annual waste costs/revenues estimate. The leading basis for determining the waste fee is the amount of household waste (Article 67, paragraph 4 of the LTFA). The Municipal Council may adopt a basis or bases, different from the one indicated in paragraph 4, if there are objective circumstances preventing its application.

The base for determining the amount of the municipal waste fee that the municipal council may accept is systematized as follows:

(1) for the service of collection and transportation of household waste to facilities and installations for their treatment:

- individually determined amount of household waste for the property, including through bags with a certain capacity and load
- quantity of household waste for the property, determined according to the number and capacity of the necessary containers for collection of household waste and the frequency for their transportation
- number of users of the service in the property.

(2) for the service of the treatment of household waste in facilities and installations:

- individually determined amount of household waste for the property, including through bags with a certain capacity and load
  - quantity of household waste for the property, determined according to the number and capacity of the necessary containers for collection of household waste and the frequency of their transportation
  - number of users of the service in the property.
- (3) for the service of maintaining the cleanliness on the territories for public use in the settlements and the settlement formations in the municipality:
- number of users of the service in the property
  - built-up and/or undeveloped area of the real estate.

The municipal council may adopt different bases for different settlements, for different zones in them, for settlement formations, for different categories of obligated persons and for separate services, explicitly stating the reasons for those different bases.

When accepting the base of:

- (1) "number of users of the service in the property" or "built-up and/or unbuilt-up area of the real estate" the municipal council in determining the amount of the fee for household waste may accept additional differentiation according to the settlements in the municipality and individual zones in them, the kind of property, its purpose and the type of economic activity performed in the property.
- (2) "individually determined amount of household waste for the property, including through bags with a certain capacity and load" or "amount of household waste for the property, determined according to the number and capacity of the necessary containers for collecting household waste and the frequency for their transportation" the Municipal Council may accept additional differentiation to determine the municipal waste fee according to the type of household waste.

These changes in the mechanism for determining the amount of the fee represent a serious challenge for the municipalities in the country. A working group has been set up at the National Association of Municipalities in the Republic of Bulgaria (NAMRB), which is elaborating proposals for a methodology for determining the fee base. The studies done so far do not provide an answer to the question of what should be the methodology for the determination of the municipal waste fee so as to ensure the same burden on the population or its gradual increase within reasonable limits. To date, no municipality in Bulgaria has proposed or applied a methodology for determining the amount of municipal waste fee in accordance with the changes in the LTFA. Due to this reason, new amendments to the LTFA were again promulgated in February 2021 saying that the new waste tariff bases will enter into force at the beginning of the second year after the publishing of the complete results from the Population and Housing Census in the Republic of Bulgaria held in 2021. By the beginning of February 2023, these results are not published yet, so it might be expected that the enforcement of the new waste tariff bases could be expected in 2025 at the earliest.

Therefore, for over 6 years the Bulgarian state and municipal institutions keep on pushing the date for the actual enforcement of the new waste fee tariff for the coming years. This policy decision would resolve a number of serious challenges, presented and analysed below.

### *2.1. Overall transformation of the current waste management systems*

The enforcement of the new waste tariff implies that the fee will no longer be determined based on property value but separately for each service within the tariff according to the new base. This means that the amount of waste associated with every property should be clearly distinguished (with distinctly tagged or marked bag/container or by knowing the exact number of persons using the service from the relevant property). **This means that the municipalities will have to introduce entirely new waste collection systems based on bags/individual containers, including their own systems for separate waste collection differing from the system for separate waste collection by the recovery organizations. These systems will have to entirely replace the mixed-waste container system that is presently in place in all municipalities.**

This transformation of the current waste management systems requires the allocation of significant efforts in the following directions:

**Additional costs for the introduction of the new waste collection systems include:** waste bags and individual containers as well as an increase of the annual operation costs for the collection of the individual bags and containers; new waste collection trucks that are appropriate for the collection of individual waste bags and containers instead of the present mixed-waste containers; new waste information systems – hardware, software and integration in the current municipal waste information systems as well as annual operation costs for the maintenance of the system; large-scale mass information and awareness raising campaigns to address the population and the business; a significant increase in the costs of the municipal inspectorates to monitor and control the enforcement of the new waste systems. All these costs will have to be calculated and paid by the population and the business in the form of waste fees.

**Allocation of special places for disposal of individual users' waste.** The collection of waste by bags will require the designation of special places where the users can leave these bags according to a predetermined collection schedule. While in the high-building and the not densely populated areas suitable sites may become available, this will become a serious issue in the central part of the city. The practice in countries where waste is collected in bags is to set up special rooms in the buildings where these bags are collected, or to build underground containers under the sidewalks. Special studies need to be conducted to determine what will be the most suitable option for the different residential and business areas.

**Contracts with contractors for waste collection and cleaning of public territories.** The transition to the new system will lead to tangible changes in waste collection and transportation. Currently, many municipalities have signed multi-year contracts with various contractors for the collection and transportation of mixed household waste. These contracts do not provide for the collection of waste through bags or individual containers, which are

the basis of the new charging mechanism. The core data for the financial parameters set in these contracts between the municipalities and the service providers contain estimates for routes and waste amounts that significantly differ from the proposal to collect bags and individual containers. Special legal studies should be carried out to assess the potential forfeits that the termination of these contracts would bring to the municipalities.

**Interaction of the separate waste collection systems of the municipalities with the already existing extended producer responsibility schemes.** The introduction of waste fees based on waste quantity (bags/individual containers) goes “hand in hand” with the launching of its own separate waste collection scheme by the municipalities. As described above, different extended producer responsibility schemes operate in Bulgarian municipalities. The entities licensed to implement these schemes sign contracts with the municipalities, the municipalities provide spaces for the placement of the containers and do not pay anything for the collection, transportation and treatment of this waste. If the municipality organizes a separate waste collection system parallel to the existing schemes for extended producer responsibility for packaging waste, this will inevitably lead to the reduction of the quantities disposed in the containers of the contractors implementing these schemes. In the proposed calculations of the waste fee per quantity (bag/individual container), the costs for collection, transportation and treatment of the recyclable waste are included in the fee per bag/individual container of mixed household waste. Thus the entities will have the incentive to separate the waste and pay less for their disposed mixed household waste. The calculated fee does not include any other financial incentives for the population for disposing their waste in the municipal containers for separate waste collection as, for example, discounts for their waste fee. If done so, this will have an additional negative effect on the amounts collected by the contractors for implementing these schemes.

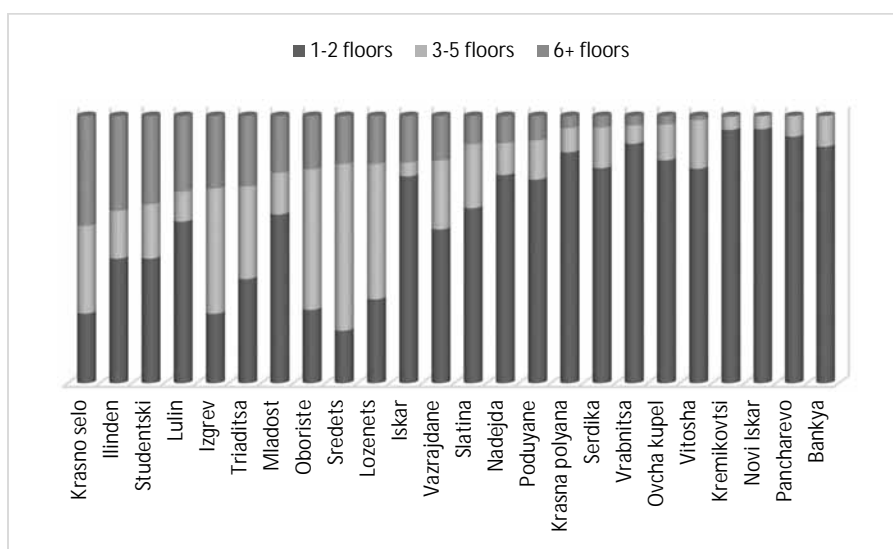
**Establishment of the necessary administrative framework** in the municipalities to manage the “transformed” waste management systems including:

- Development of municipal databases that will provide the necessary data to set the waste fee according to the new base. As pointed out above, the municipalities do not have precise information on the amount of waste generated at a given address no matter whether households live or business entities operate there. Only municipalities that have presently provided the option for certain clients to directly contract the waste collection instead of per mill payment on the property value, may have limited data about the waste amounts generated by these entities. The number of people living at a certain address is one of the potential bases for the new waste fee tariff. Two options for population registration are presently available in Bulgaria – permanent residence and current residence. The permanent residence is the official address, which Bulgarian citizens use in their communication with the state administration. The current residence is the address, at which the person presently resides – it may coincide with the permanent address, and it may differ. However, there is no governmental mechanism that obliges people to register immediately at their new current residences when moving from one address to another. Therefore, the data about the number of people by permanent or current address collected by the Civil Registration Service under the Ministry of Regional Development and Public Works is not reliable. The new amendments in the LTFA presume that each building of properties should have a person who is responsible to collect and provide this

data to the municipal administration; however, a completely new system for collection, verification and processing of this data should be established.

- Development of concepts and methodologies for calculating the fee and determining for each service the most appropriate base taking into account the specific features of each district and settlement in the relevant municipalities. For example, municipalities like Sofia and the six largest municipalities in Bulgaria have districts with different types of construction – densely populated areas with high blocks of apartments, village-like areas with houses and city centres with concentration of administrative buildings, shops and residential properties. The diversity of the buildings in the different areas of Sofia municipality is illustrated in Figure 2.

**Figure 2. Structure of residential housing by districts of Sofia Municipality**



Source: Population census, NSI, 2011.

The figure shows a vast diversity of residential structures in the different areas of the capital city Sofia varying from areas with almost 90% of 1-2 floor buildings to areas with large concentration of high buildings. This will affect seriously the local decision-making as far as the local governments have the power to choose the waste fee bases according to the specifics of the given area.

- Making the necessary structural and administrative changes in the municipal administrations in order to determine and administer the fee as well as training the employees of the municipality, who will determine and administer the fee in the new mode.
- Expanding the activity of the municipal inspectorates, including hiring and training additional staff given the fact that higher fees will possibly lead to illegal waste dumping

in unregulated places, and thus additional monitoring, control and imposing of sanctions will become necessary. No official statistics of illegal dumping sites is presently maintained in Bulgaria. However, the media periodically publish data after inspections made by the Regional Environmental and Water Inspectorates and the Prosecutor's Offices acting after signals on illegal dumping. The latest media publications say that 1426 illegal dumping sites have been determined in Bulgaria. In case of higher waste fees, this tendency will intensify inevitably<sup>4</sup>.

## 2.2. *Affordability of waste fees for the population*

Unlike the water services (water supply, sewerage and wastewater treatment) where the Bulgarian legislation sets a precise criterion of social affordability of water services costs for the population (par.1, p.4 of the Act on Regulation of Water Supply and Sewerage Services), the affordability of waste costs for the population has not been legally regulated.

In practice, this affordability of the waste fee has been evaluated in Bulgaria in relation to the overall assessment of the EU waste infrastructure projects funded under the operational programs during the 2007-2013 and 2014-2020 programming periods. The affordability assessment for the population has been done based on the so-called "Jaspers" criterion, reviewed in the publication "Application of the polluter pays principle in waste management projects" (Jaspers, 2011). According to this document, *"There is a standard policy on affordability limits defined by the national authorities. As a reference, the following table shows affordability limits currently applied for waste projects in selected Member States as well as those generally recommended by the World Bank. In general, for EU-funded projects, the common practice seems to be the use of an affordability threshold of around 1.5% of the average household income of the lowest income deciles"*.

In addition, it is necessary to make another clarification to this affordability assessment method. Currently, the Bulgarian population pays a municipal waste fee, which covers the costs of these services: 1) waste collection and transportation; (2) treatment and disposal of household waste in landfills or other facilities; and (3) cleaning of public areas. The practice in the affordability assessment is that the costs for cleaning public areas are not considered as direct waste management costs and should be excluded from the affordability estimates. This practice has also been applied by Operational Program "Environment" in the evaluation of waste infrastructure projects in the 2007-2013 and 2014-2020 programming periods.

The income statistics in Bulgaria also pose methodological issues for the affordability assessment of services at the municipal level in several aspects:

- The income statistics are managed by the National Statistical Institute (NSI). It collects the income data based on a household income survey, which involves samples of households from different districts in Bulgaria. Data for the level of incomes at the municipal level is not published officially due to representativeness problems, because an insufficient number of households living in each municipality is included in the survey

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<sup>4</sup> <https://www.investor.bg/a/332-ikonomika-i-politika/305245-proverki-sa-ustanovili-1426-nezakonni-smetishta-i-440-lokalni-zamarsyavaniya>.

sample. The NSI publishes income data at the district level (28 districts in Bulgaria), however, due to the fluctuations in the number of surveyed households in recent years, the NSI already cannot ensure the survey representativeness even at the district level, thus it ceased to publish income data for some districts, such as Montana, Lovech, Gabrovo. For other districts, the NSI points explicitly that the published data is with high stochastic error, which though officially published should be carefully considered when making evaluations and decisions. The six NUTS II regions are the lowest administrative level for which representative data for household incomes is available in Bulgaria.

- The affordability is always assessed based on the incomes of the poorest population groups. The NSI publishes representative data for population incomes by decile groups only at a national level. This structure shows the average incomes for 10 population income groups as the households of the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> decile groups are considered to be the ones with the lowest incomes, and the households in the 10<sup>th</sup> decile group are considered to be the ones with the highest incomes. So this national representative structure is usually applied to determining the income level of the poorest households although, at the district level, there may be an observed concentration of households in the low-income or high-income groups. Only Sofia municipality – the capital city and largest municipality in Bulgaria had once commissioned a special income survey in 2008 to study the structure of incomes by income groups on its territory. The results from this survey proved the conclusion that the income structure at a municipal and district level may differ significantly from the national average.

The affordability assessment of the waste fees that the population in the four sample municipalities is paying, shown in Table 7, is based on:

- Data from the local administrations of the relevant municipalities for the amount of waste fee paid by the population.
- NSI household income data for Sofia, Smolian (in which Rudozem is located) and Burgas (in which Pomorie is located) districts. As no official data for the household incomes in the Montana district is published, the NSI data for the Northwestern NUTS II region will be used (where Montana is located).
- NSI population data by municipalities and average per district number of people in a household.
- The national representative structure of incomes applied to the incomes for Burgas and Smolian districts and the Northwestern region, and the specific income structure for Sofia municipality.
- Data for the years 2018 and 2019 is used for the assessment as these are the years for which a full dataset is available.

**Table 7. Affordability of waste fee for the population in Sofia, Montana, Pomorie and Rudozem**

	Sofia		Montana		Pomorie		Rudozem	
	2018	2019	2018	2019	2018	2019	2018	2019
Waste fee paid by the population for waste (public cleaning component excluded) (BGN/per capita)	29.07	31.69	25.69	28.08	33.91	43.38	11.33	13.05
Affordability limit of the annual costs for waste management (1.5%) (BGN per capita)	82.10	85.60	37.25	40.92	37.66	43.37	41.14	45.18

*Source: NSI, Sofia Municipality, Montana Municipality, Pomorie Municipality, Rudozem Municipality, own calculations.*

As seen from the table the 2018-2019 values of waste fees paid by the population in the four municipalities are affordable even for the lowest incomes groups – they are below the affordability limit. However, in high-income municipalities, such as the capital city of Sofia, the margin between the actual population payments and the affordability threshold is greater.

The calculations in the table also illustrate the distorted and unrepresentative local statistics making the assessment of the waste fee affordability very difficult. Unexpectedly, the affordability of waste fees in Pomorie, which is a rich Black Sea resort municipality is very close to the affordability limit. This is due to two reasons: (1) the use income level average for the district, which includes municipalities with different financial status; (2) many people living in other cities but having property in the resort municipality pay the waste fees for these properties; however, no data about the number of these people is available. On the other hand, the affordability of waste fees in Rudozem municipality, which is considered a low-income municipality, is far below the affordability limit. This is because the average income level for the Smolian district is not representative because higher income households have been included in the sample.

If no “cross-subsidisation” phenomenon existed, then in 2018-2019 the municipalities had to charge the population with the full waste collection, transportation and treatment costs for the generated waste. This case is studied for Sofia municipality as long as this is the municipality that maintains a complete dataset with a breakdown of waste amounts generated by the population and the business. The results from the Sofia case study are presented in Table 8.

**Table 8. Waste fees that the population in Sofia would have to pay in case the “polluter pays” principle is enforced**

	2018	2019
Total municipal waste collection, transportation and treatment costs (BGN)	115 730 702.16	118 106 791.92
Total amount of municipal waste (tons)	384 225	396 925
Average costs per ton (BGN/ton)	301.21	297.55
Waste amounts from the population (tons)	314 639	325 108
Waste collection, transportation and treatment costs for the waste generated by the population (BGN)	94 771 012.81	96 737 325.45
Population (number)	1 328 120	1 328 790
Waste collection, transportation and treatment costs 1 person to be charged as waste fee (BGN)	71.36	72.80

*Source: NSI, Sofia Municipality, own calculations.*



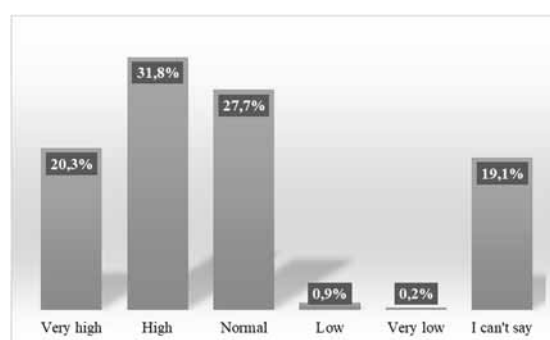
The calculations show that if Sofia municipality has implemented the “polluter pays” principle in 2018-2019 then it would have to raise the waste fee for the population by 2,5 times and almost reach the affordability limit. However, this would happen in conditions when no additional costs are made for launching a brand new waste collection and transportation system in Sofia that would raise the per capita burden far beyond the affordability limit. In the case of low-income municipalities, even a slight increase in waste fees would surpass the affordability limit.

### 2.3. Willingness of the population to pay for waste fees

The population's willingness to pay waste fees further amplifies the affordability issue. In our case, the present waste fee levels are considered as the maximum price when studying willingness to pay.

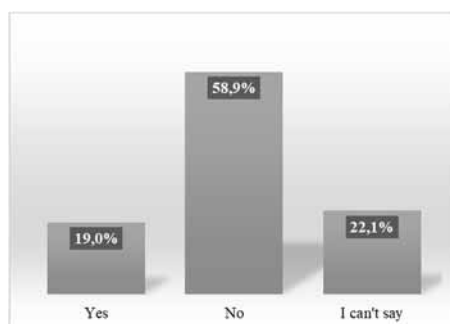
As far as the affordability of waste fees can be assessed based on statistical data and justified assumptions, there are no special studies performed to measure willingness to pay for the waste management service in Bulgaria. Value estimates for environmental goods can be obtained by using “stated” information concerning preferences for the good. In the environmental economics literature, the stated preference approach has come to be known as “contingent valuation” as the “valuation” estimated obtained from preference information given the respondent is said to be “contingent” on the details of the “constructed market” for the environmental good put forth in the survey (Carson, Hanemann, 2005). Therefore, we use the “stated” information from a representative sociological survey of the population of Sofia municipality carried out in 2018 under the project “Technical Assistance to Sofia Municipality and the Sofia Municipal Waste Treatment Enterprise to strengthen the capacity for operation and management of the waste treatment facilities”. The survey covered a various number of issues related to the quality of waste services provided to the population including questions related to the waste fee. Figures 2 and 3 are very illustrative of Sofia municipality’s population willingness to pay waste fees.

**Figure 3. How do you evaluate the waste fee you are paying compared to the waste services that you are getting?**



Source: Sofia Municipality, Project “Technical assistance to Sofia Municipality and the Sofia Municipal Waste Treatment Enterprise to strengthen the capacity for operation and management of the waste treatment facilities”, 2018.

**Figure 4. Would you pay a higher waste fee for more and better quality waste services?**



*Source: Sofia Municipality, Project "Technical assistance to Sofia Municipality and the Sofia Municipal Waste Treatment Enterprise to strengthen the capacity for operation and management of the waste treatment facilities", 2018.*

The survey results indicate that even in periods when the waste fees paid by the population were far below the estimated affordability threshold, 52.1% of the respondents considered these waste fees as high and very high. In addition to this 58.9% of the respondents were not willing to pay higher waste fees even if they are provided with more and better quality waste services. This unwillingness to pay in combination with the potential increase in the waste fees close to the affordability limit is a serious problem that may undermine the introduction of the new waste collection system in the municipalities.

It will take a long time and massive information and awareness campaigns to convince people to pay more and to dispose of their individual quantities of waste in their designated bags/containers.

## **Conclusion**

The recent developments regarding the setting of the municipal waste fee tariff unequivocally reveal that Bulgaria is at a crossroads. Obviously, there is no way back. Being a member of the EU family, Bulgaria must accept and line up with the polluter pays principle, which is widely acknowledged to be a very powerful concept to mitigate the negative impacts of pollution and particularly waste pollution.

Of course, Bulgarian authorities may make left and right turns, but finally, they have to move forward. Inarguably, the way is littered with many obstacles – among which are the vast costs, diminishing revenues at the onset, a total shift in the waste management organization, extremely poor data availability, affordability and willingness to pay concerns. It is clear that the municipalities alone have neither the knowledge, nor the skills to enforce the legal changes already postponed for almost ten years. Moreover, the unstable political situation in Bulgaria, the resonating impact of the COVID-19 pandemic and of the Russia-Ukraine war

on the household and municipal budgets further delay the linkage of the waste tariff with the polluter pays principle.

What is needed is a strong national-level political will to become the driver of the change, and to navigate the municipalities through the convoluted tariff-setting dichotomy between municipal waste management costs and revenues, between business and population, between affordability and polluter pays principle, between incentives and disincentives. Data availability tops up.

When national-level political vision and implementation tools are in place, only then the municipalities can translate them at the local level and adjust them according to their specifics: geographical territory, number of settlements, population number and density, business composition, waste amount and composition, provided waste services, etc.

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