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DEVELOPMENT OF FEES FOR PLACING WASTE ON LANDFILL AND THEIR INFLUENCE ON THE MANAGEMENT OF MUNICIPAL WASTE

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ABSTRACT: The dynamic development of fees for using the environment in Poland took place after 1989, that is from the moment of implementation of systemic transformation. Then, among others, waste disposal fees equivalent to the current charges for placing waste in a landfill were introduced. Rates of these fees related to some types of waste, including municipal waste, increased in selected years not proportionally to the inflation rate – in contrast to other fees for the use of the environment. This was the case, for example, between 2008 and 2009, when the rate for unsorted municipal waste increased from PLN 15.71 to PLN 75 per Mg. In 2018 this rate was raised by about PLN 20 in relation to the previous year. The aim of the article is to answer the question whether and how much a radical increase in rates for placing waste in a landfill had an impact on the management of municipal waste in the context of limiting their mass deposited in landfills. The article will conduct a comparative analysis between the development of fees and the volume of municipal waste sent to landfills within a representative period. The conducted analysis denied, in principle, the thesis that very high fees for waste in the years immediately after their introduction will cause a significant reduction of their flow to the landfill.

KEY WORDS: ecological fees, municipal waste, waste storage

Introduction

According to the Waste Act, municipal waste is considered to be the waste generated in households, with the exception of end-of-life vehicles, as well as wastes that do not contain hazardous waste from other waste producers, which, by their nature or composition, are similar to wastes generated on farms petitions (Act of 14 December 2012, Art. 3.1). According to the applicable classification of waste, as waste it is considered waste (Regulation of 14 June 2007):

- segregated and separately collected (excluding packaging waste),
- from gardens and parks (including: from cemeteries),
- other (including unsegregated).

The latter consists of unsorted (mixed) municipal waste.

Ecological fees, apart from the income function, should also serve as incentives, and thus stimulate pro-ecological attitudes of consumers and producers. With regard to fees for landfilling of municipal waste, it is primarily aimed at limiting their volume to landfills of this type.

The article will be subject to verification – it would seem – quite an obvious thesis, that the increase in rates of waste fees will result in limiting their stream to the landfill within a certain time.

Some foreign research analysis indicate the connection – not always unequivocal – between the increase in fee rates and the volume of municipal waste storage. “It has been possible to establish a strong apparent correlation between increasing landfill tax rates and decreasing rates of landfill for MS in at least three MS (Austria, Sweden and the UK)” (Use..., 2012, p. 71). “Neither in France nor the UK has there been much impact seen in respect of reducing municipal waste sent to landfills. In Austria, there has been a significant shift in fates of municipal waste over time, but it is difficult to know the extent to which this is attributable to the tax itself or other instruments operating to move waste management up the hierarchy” (Study..., 2001, p. 190). “Waste collection and treatment fees collected by Austrian municipalities increased from €72 per household in 1995 to €155 per household in 2006, due to a 23% increase in waste generation per household” (Use..., 2012, p. 91). The UK Landfill Tax was effective in reducing landfilling rates; however, it was less efficient in promoting priorities from higher up the waste hierarchy, primarily the reduction of waste production in the first instance (Martin, Scott, 2003, p. 688). The landfill tax in Finland has helped divert heavier waste streams such as construction and demolition waste but has had less effect on BMW and municipal waste (Diverting..., 2009, p. 32).

The aim of the article is therefore to conduct a comparative analysis between the development of fees and related volumes expressing waste

management in Poland, in particular – the mass of municipal waste sent to landfills¹ in certain years, and thus – the answer to the question whether and how much a radical increase in rates for placing waste in a landfill does it affect the limits of their stream?

The article reflects a simple comparative analysis carried out on the basis of literature sources and collect statistical data of the evolution of two variables, i.e. rates of fees for waste storage and the amount of waste deposited in landfills.

Charges for storing municipal waste – current status

Waste disposal fees, and more precisely – for placing them in a landfill, are collected for a single operation consisting in depositing waste in a landfill². They are one of the types (until recently four³) Polish fees for the use of the environment in addition to fees for gas and dust emissions, water abstraction and sewage disposal. The rates of these fees are imputed in PLN per Mg of waste deposited. The obligation to pay them results from the act – environmental protection law (Act of 27 April 2001), and the rates of rates are set periodically (generally once a year) by an appropriate ordinance of the Council of Ministers or announcement by the minister for the environment⁴.

These fees are to be borne by all entities using the environment in the field of waste storage. At the same time, a uniform rule applies as to their collection (calculation and transmission). It consists of the fact that full responsibility in this regard is borne by the entity using the environment. It is obliged to pay the due fee on its own and transfer it to the bank account of the Marshal Office – territorially competent due to the use of the environment. Marshal Offices transfer some of the collected funds to environmental protection and water management funds, budgets of poviats and communes, whereas – in the case of fees for landfilling – a significant part of these funds remain in the municipality.

The operation of the fee for landfilling as an economic instrument is intended, firstly, to reduce the waste stream directed to landfills, and secondly, to create special-purpose funds for waste management. This fee is part

¹ The content of this article assumes convention of unambiguity of statements: waste sent to landfills, waste deposited in a landfill, waste destined for storage.

² In the past, the waste disposal fee was two-part – for one-time depositing, i.e. placing in a landfill and – for each year of storage.

³ In connection with the adoption in 2017 of a new water law (Act of 2 July 2017), the existing fees for water abstraction and sewage disposal ceased to apply as fees for the use of the environment in accordance with environmental law (Act of 27 April 2001).

⁴ At the time of preparation of this article (Regulation of 22 December 2017)

of the rate of the fee for municipal waste management⁵. This fee is, therefore, the implementation of the “polluter pays” principle in municipal waste management (Famielec, 2018, pp. 80, 81).

The rates of the majority of fees for using the environment from the beginning of their validity in their current form, i.e. from the beginning of the nineties of the twentieth century, increased each year to an extent similar to the inflation rate. Only in the case of fees for placing waste in a landfill periodically, the rates of some of them grew very significantly. This also applies to the rates of fees for storing unsorted municipal waste. Figure 1 shows the rates of fees for storing unsorted (mixed) municipal waste in force in 2005-2018 and planned for 2019 and 2020.

Table 1. Characteristics of municipal waste volumes in 2005-2018 and fees for their storage in 2005-2018

Year	Mass of waste collected in thousand Mg	Mass of waste to be stored in relation to – collected in %
2005	9 760	94,2
2006	9 350	92,2
2007	9 880	91,0
2008	10 080	90,3
2009	10 040	86,6
2010	10 050	78,2
2011	10 040	73,4
2012	9 830	70,9
2013	9 580	74,7
2014	9 470	63,1
2015	10 300	52,8
2016	10 860	44,3
2017	11 969	41,8
2018	12 485	41,6

Source: author’s work based on Małecki, 2009; Ochrona, 2016; Ochrona, 2017; Ochrona, 2018; Ochrona, 2019.

As can be seen, on the basis of the data in figure 1, a very radical “non-inflationary” increase in rates of these fees occurred between 2007 and 2008,

⁵ The fee for municipal waste management is a fee paid to the municipality by the owners of the property for waste disposal.

when the rate in question increased from PLN 17.71 to PLN 75 per Mg, i.e. almost five times. The next increase, also “non-inflationary” although clearly milder, took place the following year. The fee rate increased between 2008 and 2009 from 75 to 100 PLN for Mg.

The rationale for such an increase in the rates of fees was, above all, obligations arising from the legal regulations of the European Union. The provisions contained in the Waste Directive (Directive, 2006) provide that storing them is the final and the least desirable way of proceeding. However, from the Directive on Landfill (Directive, 1999), it is necessary to take decisive action in the area of gradual but significant reduction of municipal waste sent to landfills. According to the provisions of the Polish Waste Act (Act of 27 April 2001), the storage of biodegradable municipal waste is to be increasingly limited – in such a way that the share of biodegradable municipal waste in relation to the volume of waste generated in 1995, could not be higher than 50% in 2013, and in 2020 – less than 35%. An important reason for the significant increase in fees for the storage of some types of municipal waste is also the insufficient level of their separate collection. At the same time, legal regulations (Regulation of 14 June 2007) oblige to a significant increase, over the next few years, the levels of recovery and recycling of specific types of waste (Małecki, 2012, p. 124).

The impact of the increase in fees on the amount of municipal waste storage

The relationship between the increase in fees for placing unsorted municipal waste in the landfill and related quantities expressing waste management can be traced by analysing the data in table 1, figures 1, 2 and 3. They show how the amounts of unsorted municipal waste collected and intended for storage were shaped in 2005-2018. Table 1 also presents the relation between the amount of waste destined for storage and – collected. It can be seen that the amount of collected waste is at a fairly constant level throughout the period considered and fluctuates around 10-12 thousand Mg per year, with a slight upward trend in the last two years. A slight gradual decrease in this volume has been observed for three years, starting from 2012. This may be interpreted as the effect of an increase in rates of fees for landfilling. On the other hand, in the entire analysed period, the share of the mass of waste destined for landfilling of the entire collected waste is relatively stable and clear, with the exception of 2013, when this indicator slightly increased.

The relationship between the increase in fees for storing unsorted municipal waste and the amount of waste deposited on landfills in particular years can be seen by analysing figures 1 and 2. The radical increase in fee rates

between 2007 and 2008 and 2008 and 2009 should theoretically result in a reduction in the weight of waste landfilled mainly in 2009 and 2010. Meanwhile, the tendency of a decrease in the amount of waste to be stored is basically constant, starting from 2009. Only in 2013 and in 2017 and 2018, it can be noticed that it is difficult to explain the increase in the volume of municipal waste sent to landfills (see figure 2).

The relationship between the rates of fees for placing unsigned municipal waste in the landfill and the amount of waste deposited in individual years of the analysed period is therefore only marginally visible. This is clearly shown in figure 3 shows the trend of both phenomena. In the first case – the amount of fees – it is growing, as evenly starting from 2009. However, in the second case – the mass of deposited wastes – the trend is evenly decreasing. There was no clear decline in the mass of waste deposited in the landfill in the years immediately following the radical increase in fees in 2008 and 2009, which may indicate lack of a clear impact of the increase in fee rates. For a constantly declining trend, with the exception of the aforementioned year 2013, the volume of waste deposited in individual years is probably also influenced by other various factors, such as activities recorded in the “National Waste Management Plan 2022” (Resolution of 1 July 2016)⁶.

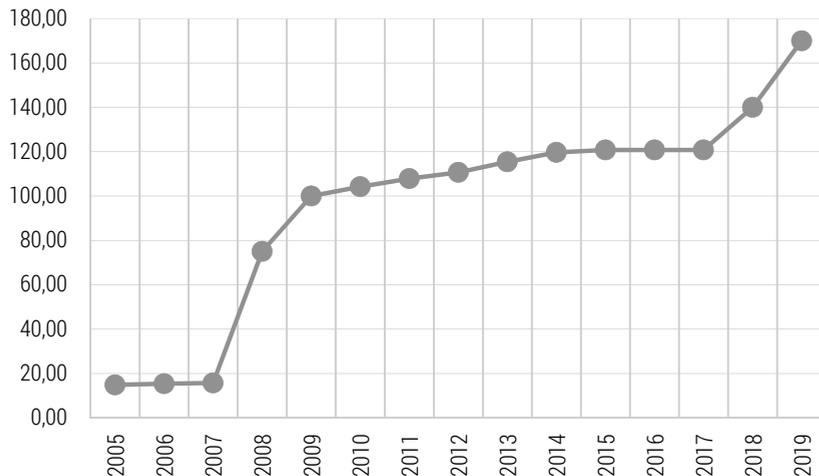


Figure 1. The increase in fees for municipal waste storage in the period 2005-2019 in PLN for Mg

Source: author's work based on Małeck, 2009; Regulation of 22 December 2017; Notice of 4 October 2010; Notice of 26 September 2011; Notice of 10 September 2012; Notice of 13 August 2013; Notice of 11 August 2014.

⁶ More details about this in the next part of this article.

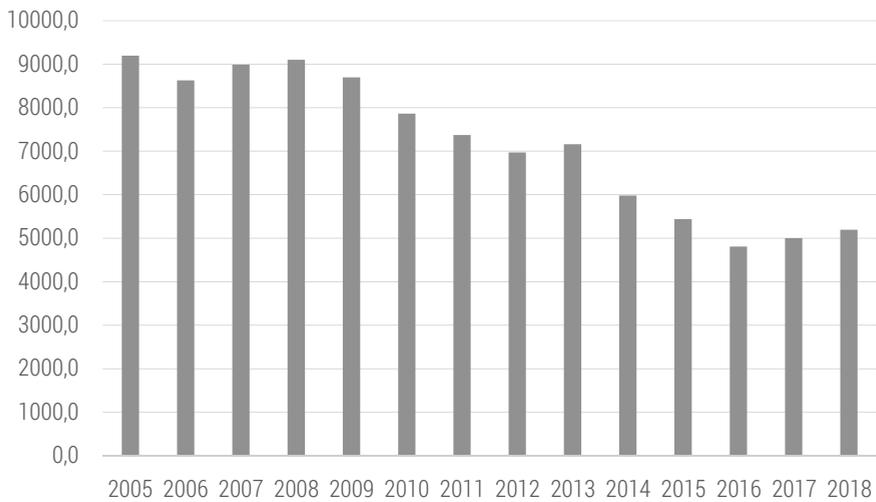
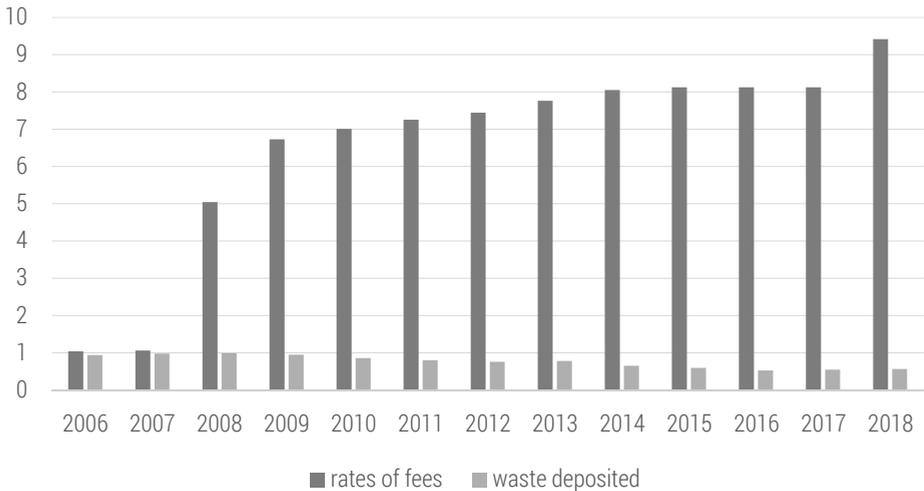


Figure 2. The amount of municipal waste to be stored in 2005-2017 in thousand Mg
Source: author's work based on Małecky, 2009; GUS, 2016; GUS, 2017; GUS, 2018; GUS, 2019.

Figure 3. Increase in rates of charges and the mass of waste deposited in the landfill in



2006-2018 (2005=1)

Source: author's work based on data from figure 1 and 2.

The amount of waste placed in a landfill can also be affected by several other issues, such as the number of population or the volume of consumption (in particular in households). However, the number of Polish residents in the analysed period remained at a similar level, slightly above 38 million. Therefore, it was considered unnecessary to determine and use in the analysis of

the amount of waste per capita. However, the level of consumption in households does not indicate a clear trend. Only in 2011, 2014 and 2017, there was a certain increase compared to the previous year (see table 2). Therefore, this factor should rather affect the increase in the mass of municipal waste deposited, and this is not the case (see figure 2).

Table 2. Consumption dynamics in the households sector in 2008-2018 at constant prices

Year	Previous year = 100
2008	106,1
2009	103,3
2010	102,5
2011	103,3
2012	100,8
2013	100,3
2014	102,6
2015	103,0
2016	103,9
2017	104,5
2018	104,3

Source: author's work based on GUS, 2015; GUS 2019.

Further development of fees for landfilling of municipal waste

The development of fees for landfilling has been manifested mainly in the further increase of their unit rates. This is to stimulate, to an even greater extent, the reduction of waste generation, in particular those that will not be economically utilised. It is important, therefore, that the smallest part of the collected municipal waste be sent to landfills.

The latest regulation on environmental fees (Regulation of 22 December 2017) in 2018, 2019, 2020 and subsequent years provides for the next significant "non-inflationary" increase in fees for the storage of unsorted municipal waste. Particularly significant – almost twice – is the increase in the rate between 2019 and 2020 – by approx. 160%. Subsequently, these rates are supposed to amount to:

- PLN 140 for Mg in 2018,
- PLN 170 for Mg in 2019,

- PLN 270 for Mg in 2020 and in the next years.

At the same time, starting in 2021, the rate is to increase “inflationary” so far – in proportion to the price index and consumer services.

Such a radical increase in fee rates is aimed at stopping waste management from storing mixed municipal waste, and thus – “driving” waste collection with division into individual fractions (paper, glass, plastic). It is also intended to lead to the situation where waste management will be more profitable than storage, i.e. recovery, thermal transformation, production of alternative fuels and mechanical and biological waste treatment. Consequently, higher storage fees should potentially contribute to increasing the level of waste recycling. A signal to the discussed increase in fees for landfilling is also some of the objectives adopted in municipal waste management, formulated in the “National Waste Management Plan 2022” (Resolution of 1 July 2016, p. 98). They are as follows:

- reducing the amount of municipal waste generated by limiting food wastage and introducing a separate collection of bio-waste from collective feeding facilities,
- raising public awareness of proper management of municipal waste, including food waste and other biodegradable waste,
- bringing the functioning of waste management systems in line with the hierarchy of methods of waste management, including,
- reducing the share of mixed municipal waste in the whole stream of collected waste (increasing the share of waste collected selectively),
- cessation of storage of selectively collected biodegradable waste,
- cessation of storage of mixed municipal waste without treatment.

Conclusions

The conducted analysis denied, in principle, the thesis that very high fees for waste in the years immediately after their introduction will cause a significant reduction of their flow to the landfill. The volume of waste deposited on a yearly basis in the landfill gradually decreased, but evenly throughout the period 2009-2017 (except for the year 2013 and 2017 and 2018), and thus – not only directly after significant rate increases. This proves, therefore, the lack of a clear relationship between the radical increase in rates of fees for landfilling of municipal waste in a given year and the mass of waste deposited in landfills in the following years.

The volumes of unsegregated municipal waste collected are at a fairly constant level throughout the period considered, with a slight decrease in this volume observed for three years starting from 2012, a slight increase – in

2017 and 2018. On the other hand, in the whole of this period, the share of the mass of waste destined for storing the entire collected waste is relatively stable and noticeable (with the exception of 2013, when this indicator slightly increased). Both of these regularities may be interpreted as the effect of raising the fees for landfilling.

The results of the research carried out in this article largely do not coincide with the conclusions of foreign surveys described in the Introduction (Study..., 2001; Martin, Scott, 2003; Diverting..., 2009; Use..., 2012), which in most cases show a decrease in the volume of municipal waste deposited as a result of an earlier increase in the rates of fees. This may indicate that the rates in Poland are still too low or that there are no other factors such as adequate environmental awareness. Therefore it seems reasonable to further research in this regard, especially after the introduction of significant changes introduced from 2020 both in terms of the rates of fees themselves and the organisation of municipal waste management.

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