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Municipally owned companies as executors of tasks pertaining to municipal waste management¹

Abstract

Objectives: Services provided in the general economic interest constitute a fairly significant research field with regard to public management, involving different local governing tasks, including municipal waste management. Full management of municipal waste services is carried out by individual municipalities (from July 2013 onwards), therefore the purpose of the article is pinpointing the municipal waste management providers (Municipally Owned Companies) in Polish provincial cities, including those using the in-house model.

Research Design & Methods: The process of identifying the entities engaged in waste management as municipally owned companies (referred hereafter as “MOCs”) is preceded by a theoretical analysis of the peculiarities of municipal waste and municipal waste management, both of which are regarded as crucial and having imminent economic and social consequences. During that theoretical analysis the authors applied the European Union hierarchy on waste management in establishing the following waste management criteria: achieving of a specified rate of recovery and recycling; standardisation of the magnitude and structure of waste flows directed to incineration plants and landfill; and comprehensiveness of the waste management system.

Findings: It has been established that MOCs (including those operating via in-house orders) are the principal type of entities which provide municipal waste management services in the cities included in the analysis.

Implications / Recommendations: The article shows a clear need for further research on the efficiency of MOCs regarding the provision and performance of public utility services and tasks.

Contribution / Value Added: The conducted research provides evidence supporting the statement that municipal waste management is performed mostly by MOCs, which are entrusted with public utility tasks through tender procedures or, more frequently, via in-house orders. Such entities co-operate with the private sector, with private sector firms often owning specialised installations.

Article Classification: Research article

Keywords: Municipal waste, municipally owned company, MOC, municipal waste installations, waste management, in-house orders

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Introduction

Services executed and provided in the general economic interest constitute one of the major challenges for public management disciplines. These services are provided within various constitutional frameworks of state tasks. These undertakings include the municipal economy, which cover the subject of tasks performed within a given municipality.

The purpose of this article is the identification of individual economic entities operating as municipally owned companies in municipal waste management within Poland's provincial cities and the subsequent recognition of those operating an in-house orders system. Prior to the recognition, theoretical analysis related to details and specifics of municipal waste and waste management has been conducted, from the economic and social point of view. In theoretical analysis, procedural hierarchy pertaining to waste management within the EU has been applied, resulting in the selection of municipal waste assessment criteria.

Those benchmarks include the achieving of a specified rate of waste recovery and recycling, standardiation of the magnitude and structure of waste flows directed to landfill and incineration plants, and the comprehensiveness of the waste management system (determined by the quality and capacity of available installations for waste processing). It has been established that municipally owned companies (MOCs) are the basic form of economic entities managing municipal waste in the cities included in the analysis. It should be noted that some municipalities entrust the management of integrated systems of municipal waste to their affiliated companies by applying an in-house orders procedure. Further assessment of MOCs regarding the provision of public utility tasks requires in-depth efficiency studies, which have been already undertaken by the authors and their team.

Municipal waste management – a social and macroeconomic problem

Municipal waste is a macroeconomic problem as it represents an integral component of production and consumption processes, as well as investment, and hence creation and division of GNP. This component occurs within the entire economic and social lifecycle, from the acquiring to the utilizing of renewable and non-renewable resources, as well as the utilising of other ingredients from natural processes. On the one hand it is the source of wastefulness and on the other it can be regarded as an efficient environment protection tool for the current and future generations. Municipal waste can be treated as an economic resource as well as a genuine business. Its creation is inevitable but we are able to restrict its size by changing both our consciousness and lifestyle as well as our consumption structure (prevention activities). This approach constitutes a paradox pertaining to the fact that business and the economy exerts pressure to generate a bigger supply of waste as it is essential for generating income from the construction of installation and processing plants. Such behaviour is described in economics as:

- the herd effect, i.e. the majority of people acts in the same way as other people, and so do what they do;
- the tragedy of the commons, i.e. the maximum exploitation of the common good, e.g. forests and public spaces where people deliberately leave waste disregarding the knowledge and education of the emitting parties;
- NIMBY syndrome (Folmer *et al.*, 1996, p. 471), objections to certain developments in one's neighbourhood, while acknowledging the fact that such developments are indeed beneficial.

The definition of waste management includes any ventures, activities or procedures that are associated with avoidance and restriction of waste generation, the neutralisation and utilisation thereof, and the recycling of secondary resources and subsequent utilisation. This definition includes

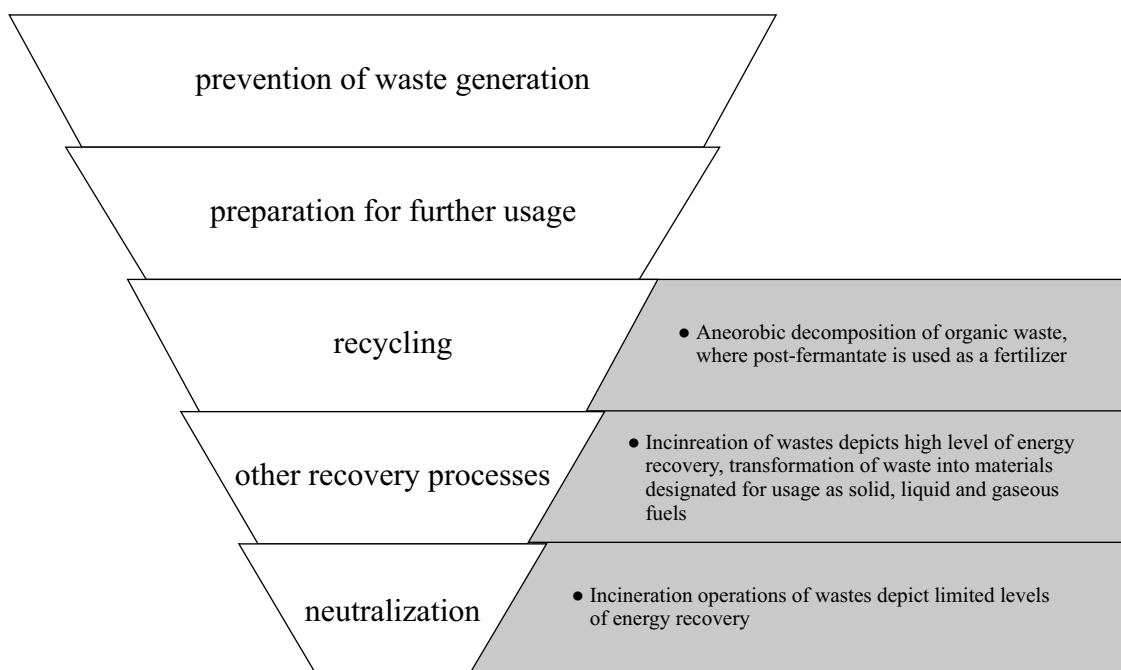


Figure 1. Waste process structure within the European Union hierarchy of waste management

Source: Own work based on the Bulletin of European Parliament Committee, 2017.

both activities in terms of planning as well as the realisation of undertakings and the control thereof. The definition of waste management (as per the Journal of Laws of 2013, item 21, as amended) specifies and lists activities, such as collection, transport, neutralisation and the recovery of waste, including supervision of the above-mentioned activities.

The revised concept of waste management developed over the last decade is submitted to the closed economic cycle within the European Union and is based on new paradigms. This list includes the following:

- waste not only constitutes pollution and hazards to the environment, but it is also a source of resources and materials, as well area of nature responsibility;
- storage becomes obsolete as there is more use of recycling and energy recovery, as well as standardisation of waste disposal and processing;
- integrated and sustainable waste management.

The European Union hierarchy in terms of waste management procedures in general (including municipal waste) constitutes the basis for implementing these paradigms (Figure 1). This hierarchy is an essential condition for shaping waste management within a closed cycle, achieved through energy recovery from waste process management, which consequently improves energy efficiency of the conversion of generative factors into useful energy.

Municipal waste management processes belong to a set of public utility tasks which are executed and provided in the common economic interest (Famielec, 2017, pp. 117–150). In this article municipal waste management is viewed through an entity approach, meaning that it refers to the performers and recipients of regulatory tasks. These entities represent individual municipalities and municipally owned companies which are the main stakeholders in terms of integrated systems of waste management.

Municipal tasks pertaining to waste management and the handing over thereof to MOCs

Generated waste requires appropriate management, which since 1 July 2013 has been the responsibility of municipalities in Poland (Journal of Laws 1996, No. 132, item 622, as amended). Each municipality is the fundamental statutory organ which has the power to execute municipal waste management tasks.

The goal of the municipal council here is to produce its own statute pertaining to cleanness and order within the municipality's administrative borders (after consulting the district sanitary inspector). That statute determines specific rules and regulations which include collection and receipt of municipal waste generated in households, hazardous waste, repair and construction waste, and bulky waste.

The performance of tasks by the municipality related to waste management can be carried out in two ways:

- system management and bidding tenders, the purpose of which is to select entities that provide services directly by the municipality;
- entrusting system management tasks to other legal entities via a bidding tender or non-bidding offer (i.e. an in-house order system).

The in-house model constitutes a specific procedure that entrusts management or other system service(s) regarding waste management to a MOC, which must satisfy certain conditions:

- it must be a municipal property during the entire period of accomplishment of public utility tasks;
- it must be controlled by the municipality to the same extent as its organisational departments, by maintaining control over the statutory organs thereof;
- the company's activity must be performed on behalf of the municipality (as its owner).

The in-house orders model has been applied in waste management in large Polish cities since at least 2010. In cities such as Kraków, Białystok, Bydgoszcz and Szczecin the in-house orders

approach has been used by MOCs for tasks normally performed by the municipality itself. This specifically pertains to the construction, financed by EU subsidies, of installations for the thermal processing of municipal waste (Podgórski, 2016, p. 31; Famielec J. & Famielec S., 2017, pp. 151–172).

Directive 2014/24/EU obliged Member States to incorporate the settlements concerning in-house orders into the public order system. In Poland the introduction of those settlements has been carried out in 2016 based on the amended act governing public orders (Journal of Laws of 2016, item 1020), which entirely replaced previous municipal obligations in terms of performing construction work, providing maintenance or utilisation of regional installations for processing municipal waste by applying competitive modes. This act also overruled the regulation pursuant to which MOCs can collect municipal waste from property owners only in cases where they have been chosen by way of tender.

The new regulations assume the following procedure: in the event that the municipal council passes a resolution regarding the collection of municipal waste from property owners (other than those inhabited by the residents thereof), either the mayor or the head of the municipality is required to organize a tender for waste collection from those property owners or to collect and subsequently manage the waste. Therefore this resolution excludes the option to entrust these tasks via the in-house mode (Ziemski *et al.*, 2016, p. 34). Subsequently the municipality is responsible for organising the collection of municipal waste from property owners (those inhabited by the residents thereof) by granting them public orders pertaining to the collection and management of waste (Journal of Laws 2016, item 1020). In addition, the principle regarding the collection of waste from mixed neighbourhoods (both inhabited and uninhabited properties) by a single subject has been regulated. In this case the municipal council is to consider whether the subject will be selected via the in-house mode or through a tender procedure.

The role of MOCs in municipal waste management in provincial Polish cities

The selection of a market entity for the performing of a municipality's own tasks needs to comply with the principle of organisational independence of administrative autonomy units, which has been constitutionally guaranteed. This is manifested by the possibility of selecting such an organisational and legal arrangement through which tasks will be performed, with an emphasis on the fact that government intervention will be kept to a minimum (Ziemski *et al.*, 2016, p. 36). If the municipality is interested in doing so, it can use the in-house model, based on pre-determined principles; however, it is not required to do so. Exemptions from this rule have been outlined in two cases mentioned below, where it is necessary to hold a tender procedure in terms of the act regarding public orders:

- the absence of an own MOC which meets specified conditions pertaining to the provision of services in terms of collection of municipal waste, or lack of willingness to perform such tasks via in the in-house order model;
- for uninhabited properties – in-house orders are not allowed in terms of collection and management of waste generated at these properties.

An important condition that has to be satisfied by a MOC which is authorised to receive in-house orders is that more than 80% of activity of the legal entity (pursuant to Directive 2014/24 of the European Parliament and of the Council) and more than 90% (based on the amended law in Poland governing public orders) must be performed within the boundaries of the municipality which is placing the order and which has the control over it, or by other legal entities which are controlled by the institution placing the order. It must be emphasised that control in this case is defined as holding 100% of the shares in a company by the controller thereof. The relevant percentage of the executor's activity can be measured by total turnover (i.e. sales income from goods and services)

or by costs (i.e. income cost) within the three years immediately prior to the placing of the order (Gumniak & Mądry, 2016, p. 84).

The limited length of this article enables only listing of synthetic results presented in extensive studies previously undertaken by the authors in form of a table which identifies all of subjects that perform tasks pertaining to waste management in major Polish cities, including their proprietors (table 1). In response to the questions presented in this article's title regarding the role of MOCs, it should be mentioned here that in major Polish cities most often municipalities entrust waste management systems to MOCs, and only in rare cases is this function performed by designated municipal departments. In the same fashion, the collection of waste, including the transport thereof to regional installations, is frequently contracted out to MOCs. Some companies subcontract these services (i.e. tender procedure) to private entities. This usually takes place when the municipality entrusts public utility tasks related to integrated waste management systems in cities.

The organisational structure of municipal waste management is dominated by commercial entities (limited liability and, to a much lesser extent, joint stock companies). It should be noted that the above-mentioned municipalities hold either all or most shares of the individual economic entities referred as municipally owned companies MOCs in cities. In most cases these companies are also investors in or main users of new installations, including thermal waste processing. This creates an integrated system of waste management. Other legal forms of entities within the waste management system include inter-municipal associations and privately-owned companies (the main component in public-private partnership).

It is interesting to know how MOCs are established. In one approach they are established from basics: companies are created by the municipality in order to perform specific tasks (i.e. construction of incineration plant). The other approach consists of the establishing of such companies through the transformation of budget

Table 1. Entitles operating in the municipal waste management sector (including their proprietors) in Polish provincial cities

Voivodship	City	Subject responsible for municipal waste management operation	Tasks realised in waste management sector
Dolnośląskie	Wrocław	Ekosystem PLC. – a municipally owned company (in which the city holds the vast majority of shares)	<ul style="list-style-type: none"> – organisation of tenders – supervision of municipal waste collection – cleanness maintenance in the city of Wrocław – analysis of waste management status
Kujawsko-pomorskie	Bydgoszcz	Inter-community Complex for Waste Neutralisation ProNatura PLC – a municipally owned company (100% of the shares held by Bydgoszcz Municipality)	<ul style="list-style-type: none"> – collection of waste for neutralisation, processing, segregation, collection of waste from direct producers – city cleaning RIPOK: <ul style="list-style-type: none"> – landfill – thermal processing – composting of green waste
Kujawsko-pomorskie	Toruń	Municipal Waste Treatment Company PLC municipally owned company (100% of the shares held by Torun Municipality)	<ul style="list-style-type: none"> – waste disposal RIPOK: <ul style="list-style-type: none"> – landfill – sorting plant – composting plant
Lubelskie	Lublin	Lubelskie Municipal Mangement PLC – a municipally owned company (100% of the shares owned by Lublin Municipality)	<ul style="list-style-type: none"> – PSZOK management
Lubuskie	Gorzów Wielkopolski	Joint Municipality Association MG-6 – a municipally owned company (includes shares of five adjoining rural municipalities along with the city of Gorzow Wlkp) INNEKO PLC (100% of the shares held by Gorzów Wlkp. Municipality)	<ul style="list-style-type: none"> – Waste management system – organising tenders – furnishing individual properties with waste bins – limited waste transport – road maintenance (INNEKO subsidiary) RIPOK: <ul style="list-style-type: none"> – mechanical and biological processing – sorting plant – composting plant – animal burial site
Lubuskie	Zielona Góra	MunicipalityManagement Department (budgeted)	<ul style="list-style-type: none"> – collection and waste management in the area of Zielona Góra City – RIPOK management
Łódzkie	Łódź	Municipal Cleaning Company – Łódź PLC – a municipally owned company (100% of the shares held by Łódź Municipality)	<ul style="list-style-type: none"> – Waste disposal (services two out of five zones in Łódź) – Specialised vehicles for street cleaning and snow removal – Leases sorting plant from Łódź Municipality – Manages the landfill near the sorting plant
Małopolskie	Kraków	Municipal Cleaning Company – PLC in Kraków – a municipally owned company (100% of the shares held by Kraków Municipality) Małopolskie Municipality Waste Management PLC – a subsidiary of Municipal Cleaning Company	MCC as the entity which manages ZSGOK in Kraków Municipality: <ul style="list-style-type: none"> – prepares and transfers to the municipality project resolutions and resolution amendments in terms of municipal waste management;

Table 1 – continued

Voivodship	City	Subject responsible for municipal waste management operation	Tasks realised in waste management sector
		Kraków Municipal Holding Inc. (Kraków Municipality holds shares in four separate municipally owned companies) Thermal Waste Processing Department – part of Kraków Municipal Holding	<ul style="list-style-type: none"> – operates a system responsible for submitting declarations pertaining to fee amounts for waste management; – ensures municipal waste management in the appropriate installations (including its own Barycz landfill, composting plant, segregation plant); – prepares and organises tenders pertaining to municipal waste collection from property owners as well as waste management; – supervises performance of tasks entrusted to subjects responsible for municipal waste collection from property owners and subjects that are responsible for waste management, as well as fulfilling obligations by property owners in terms of adequate waste management; – is responsible for governing PSZOK; – operates and coordinates informational and educational activities with emphasis on selective collection of waste; – performs annual analysis of the status of municipal waste management, in order to verify technical and organisational feasibility in terms of waste management (Kraków Municipal Holding); – delivers waste to the incineration plant based on the contract and amounts that have been ordered by Kraków Municipal Holding.
Mazowieckie	Warszawa	Municipal Cleaning Company in the city of Warsaw PLC – a municipally owned company (100% of the shares held by the Capital City of Warsaw)	<ul style="list-style-type: none"> – waste collection from major parts of the city – operation of both landfill and mechanical and biological processing installation – management of the Department for Neutralization of Solid Municipal Waste, including the development thereof – Municipal Waste Management Bureau operates waste management in the city of Warsaw
Opolskie	Opole	Municipal Department PLC – a municipally owned company (100% of the shares held by Opole Municipality)	<ul style="list-style-type: none"> – manages the Waste Processing Centre (RIPOK) – supervision pertaining to performing of the contract between the enterprise which is responsible for collection of waste and Opole Municipality, which is responsible for municipal waste management system
Podkarpackie	Rzeszów	Urban Public Utilities Company – Rzeszów PLC – a municipally owned company (100% of the shares held by Rzeszów Municipality)	<ul style="list-style-type: none"> – collection of waste – RIPOK: sorting plant, composting plant
Podlaskie	Białystok	Trade Service and Production Company “LECH” PLC – a municipally owned company (100% of the shares held by Białystok Municipality)	<ul style="list-style-type: none"> – comprehensive municipal waste management system including the municipal marketplace – operation of Municipal Waste Management Bureau

Table 1 – continued

Voivodship	City	Subject responsible for municipal waste management operation	Tasks realised in waste management sector
Pomorskie	Gdańsk	Utilization Department PLC – a municipally owned company (100% 100% of the shares held by Gdansk Municipality) Gdansk Roads and Greenery Department (an organisational and budgetary unit of the City of Gdansk)	<ul style="list-style-type: none"> – organisation and supervision of the proper functioning of collection and transport of waste – control pertaining to regularities regarding the performing of waste collection services from property owners – selective waste collection – education and information activities – operation of Department for Municipal Waste Neutralisation in Białystok – operation of Municipal Waste Utilisation Department in Hryniewice (sorting plant, PSZOK, composting plant, landfill site) <p>UD:</p> <ul style="list-style-type: none"> – municipal waste management operation – recovery of resources – transfer of waste for neutralisation – safe storage of waste in a situation where there is a lack of options to manage it in a different way – landfill and RIPOK management <p>GRGD:</p> <ul style="list-style-type: none"> – organisation and supervision of collection, transport and transfer of municipal waste – collecting charges in terms of municipal waste management based on the principles determined by the Gdansk City Council <p>Waste collection is carried out by SUEZ PÓLNOC PLC</p>
Śląskie	Katowice	Urban Public Utilities Company PLC in Katowice – a municipally owned company (100% of the shares held by Katowice Municipality)	<ul style="list-style-type: none"> – waste collection – road cleanness maintenance – waste processing in the following installations: Department of Recycling and Waste Neutralisation, mechanical and biological processing, landfill – PSZOK operation <p>The system is managed by Katowice Municipal Office, Department for Environment Development, Municipal Waste Management Office.</p>
Świętokrzyskie	Kielce	Waste Management Office PLC in Kielce – municipally owned company (100% of the shares held by Kielce Municipality) – this company was established by way of the transformation of Municipal Waste Management Department into a commercial law company	<ul style="list-style-type: none"> – management and operation of Promnik and Barycz landfills – neutralization of waste through landfilling (Promnik) – selective collection and sorting of package waste – production of electric energy and thermal energy from renewable energy sources – unit responsible for operation and management of declarations and tenders is Kielce City Hall, Department for Communal Services and Environment Management <p>Collection of waste is carried out by a private company, Eneris Surowce Inc.</p>

Table 1 – continued

Voivodship	City	Subject responsible for municipal waste management operation	Tasks realised in waste management sector
Warmińsko-mazurskie	Olsztyn	Municipal Waste Management Department PLC in Olsztyn – a municipally owned company (the shareholders are 37 municipalities) Olsztyn Communal Department PLC – a municipally owned company (100% of the shares held by Olsztyn Municipality)	MWMD: – carries out an EU financed project titled “Municipal Waste Management System in Olsztyn. Construction of Waste Neutralization Department” – operates mechanical and biological waste processing with materials’ recovery – serves RIPOK function OCD: – establishment and operation of PSZOK, – maintains installation for neutralisation of medical and veterinary waste – collection of waste is carried out by private company (currently Remondis AG & Co KG – branch located in Olsztyn)
Wielkopolskie	Poznań	Waste Management Department in Poznan, PLC – a municipally owned company (in which Poznan Municipality holds shares) The company has been established as a result of transformation of self-governmental budget department under the name: Waste Management Department in Poznan which was subsequently liquidated in order to establish a commercial law company, which performs own tasks that pertain to public utility issues and are performed within the City of Poznan (municipal waste management). An inter-municipal association named “Waste Management in Poznan Agglomeration” Thermal processing of waste installation via the PPP model: the city of Poznan and a private partner (SUEZ Zielona Energia)	WMD: – waste landfill – bio-composting plant – PSZOK units “Waste Management in Poznan Agglomeration”: – introduced new system for municipal waste management – settled bidding tenders for waste collection and management – elaborated the statute regarding maintenance of cleanness and order in individual municipalities – charge amounts have been set for collection of municipal waste including method of their calculation. Waste collection has been contracted out to private companies (i.e. Remondis AG & Co KG – Poznań Branch, Sanitech Poznań PLC, Alkom – a limited partnership company, Poznań Branch). PPP tasks: – project, construction, financing and exploitation of incineration plant Poznan has handed over to a private partner the building site for installation construction, meanwhile the private partner, using its own capital has realized the investment and will have the right for exclusive management over a 25-year period. City authorities in signed the PPP contract and are required to provide a certain waste mass. The city of Poznan and its partner settle investment costs and current operation expenses of the incineration plant. In return for providing waste SUEZ Zielona Energia has been required to transfer income from electric and thermal energy sales to the city budget.

Table 1 – continued

Voivodship	City	Subject responsible for municipal waste management operation	Tasks realised in waste management sector
Zachodnio-pomorskie	Szczecin	Waste Neutralisation Department PLC in Szczecin – a municipally owned company (100% of the shares held by Szczecin Municipality) Municipal Cleaning Company PLC – a municipally owned company (51% of the shares held by Szczecin Municipality and 49% of the shares held by Suez Polska PLC	WND has been appointed by the City of Szczecin to prepare and carry out the construction of the Thermal Neutralisation of Waste Department. MCC is responsible for disposal of waste. RIPOK units in Szczecin are managed by privately owned companies (SUEZ Jantra PLC. and Remondis AG & Co KG REMONDIS – Szczecin Branch).

Abbreviations used in the table which are explained in detail here:

PSZOK – selective municipal waste collection points

RIPOK – regional installations for municipal waste processing

ZSGOK – integrated municipal waste management system

Source: own work based on available websites of municipalities and own research (updated as of 2017).

departments or by way of the privatisation of state companies. Detailed discussion of these issues is beyond the scope of this article.

Development challenges for MOCs within the waste management system in Poland

In Poland the total generation of municipal waste was 9.8 million tons in 2004 and had risen to 11.8 million tons in 2016. Forecasts for waste mass generation predict a distinct increase (by both 2020 and 2030) despite the anticipated fall in population, especially in Poland’s large cities.

The main challenges with regard to management of municipal waste flows involve the achieving of technical, ecological and organisational requirements. The National Waste Management Plan requires the following conditions to be met by 2022 (Official Gazette of the Republic of Poland 2016, item 784):

- achieving of a recycling rate and preparation for further use of such materials as paper, metals, artificial materials and glass from municipal waste in a minimum amount equal to 50% of the mass thereof by 2020;

- ensuring the share in terms of the mass derived from thermal processing of municipal waste and waste derived from municipal waste processing in relation to waste generation is not greater than 30% by 2020;
- recycling of 60% of waste by 2025 and 65% of waste by 2030;
- reduction of municipal waste storage to a maximum of 10% by 2030;
- introduction of a selective collection system for green waste and other bio-waste by the end of 2021 in all municipalities around the country.

The recent dynamics pertaining to the introduction of these standards is shown in Figure 2. There are obviously positive changes in terms of the structure of municipal waste management, namely a clear decline in the dynamics of waste storage and the share thereof of waste collection in relation to population and collection of waste mass. One of the drawbacks, however, is the higher emission of waste per person in relation to general population dynamics.

Achievable standards in municipal waste management have been presented in the above-mentioned authorised documents. In 2017 two crucially important pieces of legislation regarding

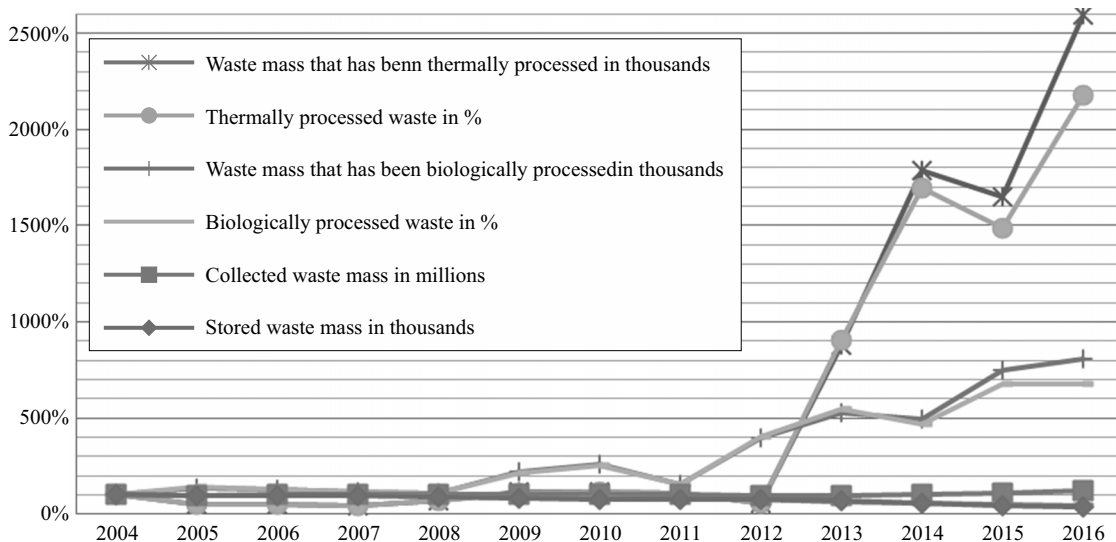


Figure 2. Dynamics pertaining to waste mass that has been thermally and biologically processed and undergone storage in the years 2004 to 2016 (base year 2004 = 100)

Source: own work based on collected data.

municipal waste management were published, which enforce an increase in both investments and utilisation costs, including costs for storage of municipal waste. The first piece of legislation pertains to the ordinance of the Minister of the Environment dated 29 December 2016, which refers to selective collection of waste (Journal of Laws of 2017, item 19). As a result it is necessary to provide the investment costs for the organisation of five points of waste collection (including rubbish bins). The second piece of legislation pertains to the Council of Ministers Ordinance dated 6 March 2017, which amends an ordinance related to environmental utilisation fees (Journal of Laws of 2017, item 723). As a result, there is a charge increase with regard to waste storage and a need to reduce waste designated for landfill (a mandatory requirement based on the EU hierarchy of waste management).

The validity of entrusting the aforementioned tasks to MOCs is based on previous experiences concerning the market operations thereof. It is assumed that in-house orders support the exclusion

of unethical entities (which dispose municipal waste via channels not meeting the accepted standards) and ensure effective control of the entire process pertaining to the collection, processing and storing of waste. Here it is worth mentioning the key components, which include guaranteeing proper hierarchy of waste management, caring for natural environment and social communities, standardisation of municipal waste management, and restriction of unnecessary costs (Uciński, 2016, p. 104).

Certain assessments refute the threat of market monopolisation and loss of the effects regarding market competition. Some economists believe that the market bidding system does not ensure durable competition. Market mechanisms cease to exist, and subsequently market segmentation occurs and then monopolies and oligopolies are created, with no control over quality of service and prices (Uciński, 2016, p. 104). Examples from Sweden, Germany and Denmark indicate that transformation of market mechanisms into municipal control has in the case of municipal waste management had

crucial significance for environment protection and proper waste management. It is estimated that currently private subjects are still in demand with regard to this market segment, because MOCs are still not present in a large number of municipalities in Poland. Waste processing installations (e.g. incineration plants) operate, due to their high capital intensity, in most cases as private entities. Municipal waste is disposed by MOCs, mostly after biological and mechanical processing.

In-house orders are also used in other sectors of municipal management, such as public transport, collective water supply and sewage collection, construction and sport facility management (Podgórski, 2016, p. 31).

Concluding Remarks

This article has shown that MOCs are a common legal and organisational form in terms of meeting technical, ecological and economical standards for municipal waste management in all Polish provincial cities that have been included here. It should be noted that individual municipalities use such entities as private subjects, inner-community associations and own organisational departments in order to achieve waste management goals. Municipalities more frequently entrust tasks to MOCs in terms of cleanliness maintenance and order. This is carried out by operating within the in-house order model. The scope of this article does not consider both an environmental and economic assessment of in-house order procedures, but, instead, it focuses on identifying entities which perform the tasks and duties pertaining to municipal waste management in major Polish cities.

The authors of this article (along with other team members) have performed research on the efficiency of MOCs, including those which operate via the in-house order model. The main goal thereof is verifying previous research statements which suggest that companies dealing with waste management are among the most profitable. This particular case, alongside possible acquirement of public funds, results subsequently in healthy

competition in terms of finding beneficial legislative solutions that regulate this particular industry.

It is assumed that MOCs perform municipal waste management tasks much cheaper and more efficiently. Consequently, they achieve better environmental results (e.g. recovery rate and recycling) in the waste management sector (Uciński, 2016, p. 90). The strength of private subjects is, nevertheless, significant; at present total municipal waste collection is estimated to be within the range of 50% to 60%. Utilisation of in-house orders by municipalities should be carefully considered and should consider the interests of all participating entities and stakeholders, as self-government entities are often critical to in-house orders. The municipality which commissions the tasks expects a lower price level, which often leads to decrease in service quality and standards of waste collection. According to researchers, in the waste management sector many administrative authority companies are poorly invested and cannot compete with privately owned companies in terms of equipment service standards. On the other hand, MOCs that provide waste management services have been furnished with municipal property. That property is expanded by public financing and its utilisation is essential in terms of economic and social factors.

The above-mentioned arguments and reflections require in-depth studies. It is necessary to study this problem, as waste management issues in individual municipalities are becoming increasingly sophisticated. There is a falling population (community residents which pay waste management charges) and a simultaneously a substantial increase in total waste mass per person. At the same time both technological and environmental standards of municipal waste management require more capital-intensive installations and waste management processes. This includes waste utilisation – modern landfills that use energy recovery systems – and subsequently that triggers new challenges for municipalities. The authors' own research suggests that MOCs (including those operating in the in-house order model) can be more effective than market-owned

companies. This research argument remains open for further debate and this article justifies only the need to pose these questions.

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