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ORGANIZATIONAL, FINANCIAL AND STRATEGICAL ASPECTS OF WASTE MANAGEMENT AT THE MUNICIPAL LEVEL

1. Individual *versus* joint solving of the problem of waste

Individual communities can, depending on the local situation, solve the problem of access to infrastructure which satisfies legal requirements by making use of, at least, three scenarios as follows:

- their own independent construction or modernization facilities to manage waste,
- constructing or modernizing facilities to manage waste jointly with other communities,
- constructing or modernizing facilities to manage waste with the participation of private capital,
- transporting waste to facilities which are owned by other communities on the basis of communal or other agreements,
- constructing a trans-shipping station and shipping waste to facilities located away from the community.

In larger communities, apart from companies relying on a central budget and communal cooperatives, there are more and more numerous private enterprises. Some of the communities are deciding to close down their own organizational units which deal with, among others, collecting waste. Such a system was successfully implemented, for example, in Starachowice, where, in the services market, solely private firms are

operating at the moment. There is also a phenomenon of selling off communal cooperatives to private investors (most often foreign ones), so we have come to deal, to a greater and greater extent in Poland, with the occurrence of bringing the services of collecting and transporting waste onto the open market.

A particular form of the services entering the market are so-called manager's contracts, agreements on the management of the company which are drawn between the community and private subjects. Such a contract is justified in the case of a communal subject by the aim of improving the effectiveness of the company's functioning. Agreements concerning the management of the company are drawn for a period of three to five years. The performing subject obtains a fixed payment, with the provision that part of the latter is subject to modification depending on the effectiveness of the company's functioning. The manager's contract ought to determine the range of autonomy granted to the performer while undertaking decisions related to management of the company.

Communal waste management within the organizational structure of a community is currently the most frequently used solution in Poland. As a rule it comprises of two elements: collection and depositing waste in storage grounds.

The basic element of a self-reliant waste management system is solving the problem of financing investments in infrastructure, as well as covering the current costs of the functioning of the system. While in large urban communities, especially in agglomerations over 100,000 inhabitants, it is viable to implement complex technological investments and to finance them at the same time, in smaller communities, which comprise below ten or between ten and twenty thousand residents, this becomes practically impossible or is connected with prices for the services running at levels that are hardly acceptable to the residents. Small communities do not have the adequate financial means to introduce modern methods of financing waste management; neither are they able to provide proper exploitation of waste storage grounds, from the point of view of requirements of environmental protection. Modern communal waste management demands that waste processing facilities should function with a perspective of several years. However, there are no means in such communities' budgets to satisfy this specific requirement. Moreover, the lack of well-trained technical personnel or specialists employed by the community authorities is an additional negative element in the whole issue.

The possibility of financing the whole or part of the facilities in the technical infrastructure by private capital offers a theoretical alternative. As the goals represented by communities differ from the ones held

by private companies, it is difficult to avoid, at some point, a discussion on protecting the public interest in such a case. It is also impossible to expect that the private sector will accept, for instance, the artificial restriction of the market to cover the area of one community only.

The advantages and disadvantages of management based on this **individual** approach may be presented in the form of the following table:

Table 1. Advantages and disadvantages of waste management based on an individual approach

Advantages	Disadvantages
<ul style="list-style-type: none"> - The community decides individually about the waste management system to be accepted – there is a free choice of the system being adjustable to the specific character of the area. 	<ul style="list-style-type: none"> - This solution requires the accumulation of considerable financial means designed to cover investments in the infrastructure. - There exists a high risk of a lack of acceptance from residents living near the infrastructural facilities. - In communities with a small number of residents, hence with a small amount of waste, covering the high fixed costs of the exploitation of the facilities causes the necessity of introducing high charges or considerable subsidies from the community budget, especially when using credit and investment loans (an additional burden comes from the financial costs borne by the payment of capital instalments and interests). - Limited possibilities of employing specialists. - A lack of a financial basis for the modern technologies of utilization and neutralization of wastes.

Regionalization of communal waste management consists in undertaking cooperation between several units of territorial self-government with the aim of realizing and successfully exploiting a system of waste elimination. Joint undertakings can concern all the elements of the system or merely one of its segments, e.g. storage grounds. Cooperation between communities can be carried out in the following two forms based on:

Contract – a long-term agreement between communities with the owner of the waste neutralization plants. The communities use these facilities and are charged according to the amount of waste delivered. In such a case a separate organizational unit is not established. The contract ought to be a long-term one in order to create stability for the

communities using the services. Formally, this structure of cooperation corresponds to a communal agreement.

Establishment of a common structure – communities set up an individual subject which has its own legal status, organizational structure and statute in order to realize and exploit a waste processing and storage plant or to implement a complex waste management system. In practice it may lead to establishing a communal union or trading company.

Similarly, as in the case of management based on the individual approach, the following table presents the advantages and disadvantages of the **regional** approach to waste management (Table 2).

Table 2. Advantages and disadvantages of waste management based on a regional approach

Advantages	Disadvantages
<ul style="list-style-type: none"> – Limitation of investment outlay in the community. – Lowering unit exploitation costs. – Financial basis for the introduction of complex technologies of utilization and neutralization of waste. – Possibilities of employment of specialists in the field. – More favourable conditions for satisfying environmental requirements. – Possibility of transferring part of the community's obligations onto the supra-communal structure. 	<ul style="list-style-type: none"> – There is a risk of a lack of acceptance of the localization of a common dumping ground by the local community. – Restriction of an individual community's independence in taking decisions. – A threat of smaller communities being subjected to the interests of large urban ones.

Nowadays there are three basic forms of the joint organization of communities:

1. Foundation,
2. Union of communities,
3. Commercial company.

The first one, a foundation of communities, means that several communities may establish a foundation by transferring assets to it. The foundation becomes financially isolated from the communities' budgets. The communities are not responsible for the liabilities of the foundation in the case it declares insolvency.

The legislator leaves a lot of freedom to the founder as regards determining the organizational structure of the foundation. The only condition here is the existence of a board of directors that controls the activity

of the foundation and represents it outside. Other organs may, but do not have to be appointed.

It is worth mentioning here that there exists a possibility of using a foundation in the process of supporting an investment process such as the construction of waste storage grounds. A self-imposed tax may take the form of a free donation, which gives tax exemptions.

The act on territorial self-government (local government) permits forming two basic inter-communal structures. They are unions of communities and communal compacts. The former is a stronger form. It has a legal status and its fundamental task is to carry out public undertakings, still it may also perform tasks of economic character. The competence to form unions of communities has been granted to councils of communities. Communities are also obliged to provide unions with sufficient means to successfully carry out their duties.

The same act does not, within either the maximal or minimal scope, limit the number of communities which can form a union of communities. Those interested in establishing such a union enjoy full freedom in doing so, therefore it can take as few as two communities willing to conduct joint waste management activity to create such an organizational structure.

Both a community's tasks and jobs ordered by external units may be carried out within the range of activity of unions of communities. From the legal point of view it is essential to note that unions of communities can constitute elements of local law, as well as pass individual decisions. This right, however, is limited to a considerable degree. The rights transferred by a community council to the union's assembly may only apply to its organizational units. The assembly can only entrust with power those units in the community which were directed under its authority or formed by the union. The assembly is not in power, however, to invest auxiliary units (like village administrator's offices or city districts) with the right to make administrative decisions, since such units are not and cannot be units of the union.

As in the case of foundations, the statute also plays the key role here. The fundamental organ of the union of communities is its assembly, which possesses competencies to both proclaim and control.

A compact of communities is yet another organizational form. It determines the capacity and duties of the parties of the legal relation. A compact is drawn in order for the community to accomplish a common goal. This new organizational structure is not formed on the strength of the compact, which is drawn in order to invest one community with the power of carrying out particular tasks designed to be realized by other

communities. The community which takes over the duties realizes them through its organizational units.

Another possible form of the organization of communities which conduct joint waste management activity are commercial companies. The basic solutions proposed in this respect are limited liability companies. Partner companies, whose activity is regulated by the code of commerce, play a lesser role.

Limited liability companies can be formed by one or more persons. There is no need to possess a permit from administrative organs to establish such a company, which has its own legal status. Creditors may be satisfied only by taking over the company's property, while partners can not be called to account for the company's liabilities.

The Board is the executive organ of the company. It can consist of one or more members, also recruiting from outside the partners. Legal subjects, e.g. organizational units of the community cannot be instituted as management of the company, whereas the agreement can decree that each partner is a member of the Board and, in the case of resigning from their post they can appoint their successor.

The Board represents the company in court and outside. The right of a member of the Board to represent the company extends over all activities in court and outside, connected with managing any commercial company, not excluding disposing of or encumbering real estate.

The most important of the above-presented solutions are juxtaposed in Table 3.

2. Financing a system of communal waste management

We can differentiate three basic systems of collecting charges for collection of waste:

- a) direct – charges are collected by company personnel;
- b) indirect – charges for removing waste are one of the elements of local taxes;
- c) mixed – a combination of the above-mentioned systems.

There are various forms of calculating charges, independent of the very system of collecting them:

- a) A charge dependent on real estate – depends on the area of the property, applied in the case of households, shops, small businesses; its calculation is dependent on the value of the property.
- b) A charge dependent on the density of population – based on the number of residents living in the individual property.

Table 3. Three basic forms of the joint organization of communities

Foundation	Union of communities	Commercial company
Possesses legal status.	Possesses legal status.	Possesses legal status.
Duties of individual communities within the waste management system can be transferred to the foundation at any time.	Duties within waste management are transferred from individual communities to the unions.	The duties determined by negotiation accepted as the scope of activity of the company.
Structure: Foundation Council (mayors, village officers and others); Board (presidents + deputies); Enterprise (contract director).	Structure: Foundation Council (mayors, village officers and others); Board (presidents + deputies); Enterprise (contract director)	Structure: Assembly of partners; Board of directors (not obligatory); Board (contract president).
The distribution of votes in the Board of foundation is stipulated, determined by the statute.	The distribution of votes is stipulated, determined by the statute.	The distribution of votes follows from the structure of shares contributed unless the company's compact says otherwise.
The mode of passing resolutions is determined by the statute.	Resolutions are passed by an absolute majority of votes.	The compact determines the mode and kind of decisions to be taken.
The competencies of the President of the foundation council are determined in the statute.	The President acts according to the regulations which are binding for mayors.	
Contributions from founders of the foundation are entered by name.	Contributions to the union (in kind or financial) are entered by name.	Financial contributions and initial shares become company property.
Restoration of property to the community which leaves the foundation is regulated by the statute.	A community leaving the union entails restoration of the property entered in the form of a contribution along with an appropriate percentage of the property worked out within the union (proportionally to the contributed means).	Amortization of the partner's share can be obtained exclusively from the income. There is the possibility of lowering the initial capital through procedures of Registering Court.

Table 3 cont.

Foundation	Union of communities	Commercial company
A community which pays additional means decides about their designation, unless the statute says otherwise.	The community which enters additional means decides about their designation.	The Board of management and Board of directors are in charge of the disposal of shares and company property.
Financial activity is regulated by the act on foundations and principles of financial and tax law.	Financial activity is carried out on the basis of principles binding for territorial self-governments.	Financial activity is based on principles of financial and tax law.
Supervision of the foundation's activity remains in the hands of the Voivode (governor of the province) and Minister of Justice.	Supervision identical to that of an individual community.	Supervision is realized by partners and Board of directors.
There is a possibility of obtaining tax exemption.	There is a possibility of obtaining preferential credits.	Bank credit is available; subsidizing from expedient funds or amortization possible to a limited extent.

c) A charge dependent on the number of rubbish bins – depends on the number of bins determining the load of the waste collected from a given property, does not have to be proportional; for instance, exceeding a certain threshold value may result in price increase.

d) A charge dependent on the amount of waste – based on the real weight of collected waste; difficult to apply due to the necessity of constantly weighing the containers.

e) Fixed charge – fixed in an obligatory manner for each household, independently of any changeable parameters.

f) Stipulated charge – based on the calculation of costs of transport, removing and hiring the bins or containers.

Apart from the sources and forms of financing communal waste management in a community, which follow from the general system of financing ecological undertakings, this kind of management can be financed from such specific sources for the community as:

- Charges collected from residents on the basis of contracts drawn with Communal Waste Enterprises (including transport and storage); due to their character, this is a particular combination of charges for polluting the environment and charges for usage.

- Charges collected by companies from organizational units (e.g. housing cooperatives), which are settled then in the rent.

- Voluntary tax paid by residents for the benefit of the community with the aim of wholly or partially covering the investment costs connected with the construction of technical facilities within an integrated system of waste management.

- Means of Village Councils.

- Budget of the community, including expedient subsidizing of environmental protection from the central budget.

On the basis of empirical research concerning communal waste management in the communities of the Opole Province, it can be seen that there are significant differences as regards the costs of the exploitation of existing systems and investments which serve the purpose of their expansion and modernization. Accordingly, in four of the examined communities it is residents who wholly cover the costs of transport and storage of communal waste. In nineteen communities, waste management is partially based on the basis of funds from the community budget, while in the remaining four the whole of the waste management is financed by the community's budget.

The amount charged may vary considerably. Comparing the costs which are covered by the residents of small communities that conduct their own waste management activity and the ones in cities, it is possible to conclude that they are similar. Nevertheless, due to the fact that

the statistical inhabitant of the rural community produces (and at least stores) two to three times less waste, the unit cost of disposing 1 m³ of waste in rural areas is proportionally higher than the corresponding costs in towns.

Serious objections may arise when it comes to the calculation of costs by the board of the community or communal companies. In nearly 1/3 of the communities examined it was impossible to exactly assess the incomes and costs within the sector of communal waste management. A particularly serious error results from not including the amortization costs of the storage grounds into the payments made by residents. It is a common practice. Equally often the equipment used in collecting and transporting waste is not included in these amortization costs. This practice leads to a situation in which the incomes obtained are barely adequate to cover the current costs of the functioning of the system. It means that funding for investment and development must come from different external sources as mentioned above.

3. Research into possibilities of financing integrated systems

Creating integrated systems of communal waste management in communities implies very high exploitation costs, as well as a rise in the current costs. Independently of financing the very investments themselves, which are related to this undertaking, it must unavoidably lead to a rise in fees charged from households and other subjects using such systems. Consequently, each potential investor or prospective operator of installations consisting of an integrated system of communal waste management must possess enough knowledge as to whether and to what extent such increased exploitation charges will be accepted by the local community. Thus, within the scope of activity connected with creating the 'master plan' or investment feasibility study, 'willingness to pay' (WTP) or/and 'ability to pay' (ATP) must be examined. That can be accomplished through some popularly applied procedures of questionnaire surveys, whose results are then processed statistically.

WTP or ATP studies have also been carried out in Poland with reference to projects dealing with integrated systems of communal waste management in such agglomerations as: Wrocław, Tri-city [Gdańsk, Gdynia, Sopot] (including neighbouring communities) and Bydgoszcz. The results of the studies indicate a considerable concurrence. Let us refer here, by way of illustrating the problem, to the results obtained

within the WTP study for Wrocław, which was designed to answer the following questions:

– What is the residents' willingness to pay more for the removal of waste?

– What is the residents' ecological consciousness measured by their readiness to engage their town additional resources (financial means, time, own work)?

– What is their evaluation of the system of communal waste management functioning to date?

– What are the respondents' motives concerning ecologically-friendly patterns of behavior, or why do they resign from undertaking activities that may prove to be beneficial to the condition of their environment?

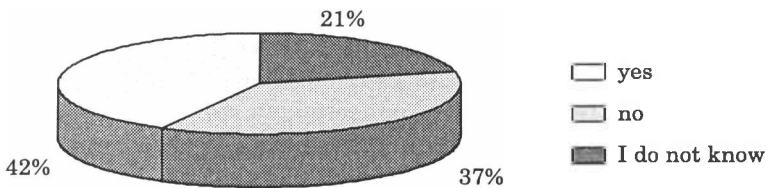


Fig. 1. Residents of Wrocław – willingness to pay higher fees for removal of waste [%]

1. Two thirds of the residents of Wrocław declare a minor or greater willingness to pay more for waste removal. This fraction of the population represent those households which directly declare their readiness to pay higher charges (42%) and also such households that assume a stand-by position (21%), due to their lack of knowledge as to the levels of a prospective increase in charges. The majority of households display tendencies towards bearing higher charges, even though it could mean the necessity of changing their consumption structure. This concerns, in particular, families in employment.

2. An overwhelming majority of the households willing to bear higher charges declare their readiness to accept moderate changes (up to 50%).

3. There are considerable differences among households of employed people and pensioners within the range of the declared willingness to bear higher charges for waste disposal and processing.

4. The view is generally accepted that currently borne charges are not high and they do not play a significant role in the structure of household expenses (below 1%).

The interest shown by community residents in the pre-selection of recycled materials depends on the system of reckoning costs for waste collection. Individuals who directly bear charges for the waste collected

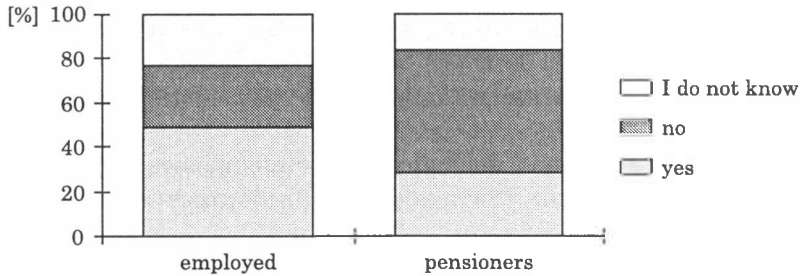


Fig. 2. Willingness of working families' and pensioners' households to bear higher charges for the removal of waste [%]

from their premises are more interested in the project than those who pay fixed rates included in their monthly rent. At the same time economic incentives may have a real application in the places where the ones that generate waste have to bear costs of its removal and charges are dependent on the amount of collected waste.

The possibility of applying economic stimuli by communities lead in practice to the following two methods:

- The possibility of lowering, by the Community Council, charges for collecting waste in the case of inhabitants who undertake the pre-selection of waste.
- The possibility of introducing a progressive charge depending on the amount of waste with the simultaneous removal of materials for recycling free of charge.

The first case was referred to in the act on maintaining cleanliness and order in communities and it should be inferred from the document that this solution is obligatory if the Community Council have decreed maximal rates for charges for waste removal. There is, however, a danger here of so-called feigned collection, which consists in unsystematic pre-selection of waste only during the period of fixing charges. Such a solution does not stimulate the maximization of the recycling of raw materials.

The other solution seems more effective, as it leads to a situation in which the resident bears lower unit charges, the lower the amount of waste he produces. However, establishing the progression at too high a level may favor illegal disposal of waste.

4. Conditions for creating a strategy of waste management as exemplified by Community X

The subjects which traditionally render services to communities must face the challenge of competition. Knowledge of the area in which they

are active and its specific character, location of the activity, and also the equipment and infrastructure at their disposal, give them a certain advantage over their competitors. Still, without preparing a proper strategy they cannot be certain that their activity in the community will be continued.

In 2001, diagnostic research was conducted for one of the communities in Lower Silesia – referred to hereafter as Community X. The research aimed to determine the conditions and possibilities of altering the existing system of collecting waste, which is based on the collection and storage of waste. In particular, it was necessary to determine whether, due to aspects of an organizational and financial character, it would be possible to create a competitive system of waste management, based on an integrated approach and taking into account pre-selective collection of waste.

In Poland, an open market based type of services in the sector of waste collection and transport occurs more and more frequently. A condition which must be satisfied in order to promote the development of competition on the market for services of cleaning towns and communities is free access to the storage of waste. Competition in the services market of waste management contributes to raising the effectiveness of management.

Accordingly, securing access to waste storage ought to become a very significant element of a strategy. It should be remembered, however, that in the wake of introducing the legal norms of the European Union to activities related to environmental protection, substantial investment may be necessary in the near future to secure suitable ecological standards for dumping grounds.

It is an indispensable element of the strategy to implement a complex system of waste management. It will secure the narrowing of the stream of the waste brought to dumping grounds and is also expected to facilitate obtaining a steady income from the sales of reclaimed raw materials. Thanks to the new act on packaging and waste from packaging and the act on product and deposit charge, the stream of certain types of waste will become smaller. Nevertheless, organizing a pre-selection-based system of collecting waste and one of disposing of reclaimed waste will require considerable managerial and marketing skills.

Evaluating the existing market of collecting materials for recycling from the point of view of Community X, it is proposed to implement a project of reclaiming glass as a piloting scheme. This is connected with the fact that the glass-works 'Jarosław' has been, for several years now, a stable and reliable partner. In case of a successful pilot project the probability of achieving success is the highest, and can result in positive

encouragement to the residents of Community X so that they could extend the pre-selective collection of waste.

As regards metal, the situation seems to be more difficult. Steel-works display their internet addresses and advertisements and declare their interest in buying off scrap metal, yet at the first attempt at contacting them they propose individual negotiation of prices. However, having a suitable time perspective, as well as a well-delineated manoeuvring area in negotiations, it is possible to find a suitable receiver.

As far as waste paper is concerned, the situation is even worse. It seems that without reasonable regulations at the national level, in practice there are no chances of starting to purchase scrap paper in Community X.

A similar case presents itself as regards plastic. However, in this case a chance for improvement may arise. The condition to be satisfied in order to find a purchaser is the proper sorting out and cleaning of waste according to requirements. This means providing several jobs for the unskilled unemployed. Applying a manager's contract is recommended here, that is employing a person who receives a commission on the sales of either plastic materials or on the whole of the materials designed for recycling.

Effective organization of waste management in the community may also be carried out through cooperation with other communities. Joint undertakings may concern all the elements of the system or one of its segments in particular, for example storage grounds.

It seems the least attractive form of solving the problem to community is presented by selling off facilities of the waste management infrastructure to private investors. Because of the relatively small number of residents in Community X and its large area, the offer of selling the facilities may enjoy very little interest from potential purchasers. As a consequence, one can hardly expect a strong investor to be capable of financing the needs of the community as regards indispensable investment within an integrated system of waste management or suitable management of dumping grounds.