EUROPEAN UNION
European Structural and Investment Funds
Operational Programme Research,
Development and Education

MINISTRY OF EDUCATION,
YOUTH AND SPORTS

Environmental friendly technologies

KEE/ENT

ESFII project of the University of West Bohemia in Pilsen
reg. č. CZ.02.2.69/0.0/0.0/18_056/0013239

Study material IV.

Theory of Waste Management

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1. Introduction to waste management

The issue of waste management has recently been extensively discussed, it is a topic that concerns each of us, because we all produce a considerable amount of waste during our lives. The way we dispose of the waste we produce affects our environment and future generations very closely, and therefore we cannot be indifferent to this issue.

Currently, the trend is to focus on waste prevention and material recovery. The provision of waste collection by municipalities is a local public good, i.e. a good whose consumption is limited to the local population (whether permanently living or holidaymakers). These are mixed collective goods, for which it is usually possible to determine the extent of consumption of an individual (e.g. by the size of the collection container and the frequency of waste collection). In the case of waste collection and other services with the recovery and disposal of associated waste destined for waste producers (see below), it is a private good whose consumption is clearly governed by the market mechanism and is usually provided by the private sector, or municipal facilities are used, but at the market price. Ensuring the collection and recovery or disposal of waste, of which the municipality is the producer, forms a considerable part of the municipality's budget. By high-quality sorting of usable components, municipalities can significantly reduce their waste management costs. A number of tools are used to motivate the public to behave ecologically.

2. Basic concepty

The State Environmental Policy (hereinafter also referred to as the Environmental Protection Policy) is a conceptual document of environmental protection for the period 2004 – 2010. The State Environmental Policy implies the basic principles and instruments of environmental protection: raising public awareness in environmental issues, environmental education, education and awareness, legal instruments, economic instruments, voluntary, institutional and information tools, tools of strategic planning and public involvement, research and development and international cooperation.

According to Act No. 185/2001 Coll., on Waste and on the Amendment of Some Other Acts, as amended (hereinafter referred to as the Waste Act), **waste** is a movable thing that a person disposes of or has the intention or obligation to dispose of and belongs to one of the groups of waste listed in Annex 1 to the Waste Act (see Annex No. 1 to this work).

Municipal waste is all waste generated in the territory of the municipality during the activities of natural persons, which is listed as municipal waste in the implementing legal regulation (i.e. it is

included in group No. 20 of Decree No. 381/2001 Coll., the waste catalogue – see Annex No. 2 of the thesis). Municipal waste is not waste generated by legal entities or natural persons authorized to conduct business. These entities are referred to by law as **waste producers** and can only produce commercial waste similar to municipal waste from the activities of legal entities and natural persons authorized to conduct business. In the draft of the new Waste Act[1], this waste is referred to as municipal waste. I think that this designation is somewhat contradictory.

The definition of waste management is given in the provisions of §4 point. (c) the Waste Act. **Waste management** is an activity aimed at preventing the generation of waste, managing waste and subsequently caring for the place where the waste is permanently stored and controlling these activities. Waste management consists of its collection, concentration, collection, purchase, sorting, transport and transport, storage, treatment, recovery and disposal.

The mission of waste management is to establish rules for the prevention and management of waste while respecting environmental protection, human health protection and sustainable development, to regulate the rights and obligations of persons in waste management and the competences of public authorities.

Waste management is aimed **at minimizing the generation of waste**, already at the stage of production. If the generation of waste is necessary, it is the duty of each of us to minimize its quantity and hazardous properties. As far as the management of the generated waste is concerned, the first place is the material recovery (recycling) of the waste, followed by energy recovery, and only as a last resort should be the disposal of waste in landfill or incineration without energy recovery.

3. History of waste management

Waste became a problem for a person at the moment when he stopped his nomadic life and settled. In prehistoric times, the produced waste was of a natural nature, after rotting it returned to nature. In order to reduce odor and protect against wildlife, waste was deposited in earth pits.

Municipal waste collection can be talked about in the time of ancient Rome. The cleaning crews, which consisted mainly of prisoners of war and slaves, took the waste to pits located outside the city. At the time of Emperor Augustus, the situation became unbearable and an office for the disposal of waste was established.

In the Middle Ages, sanitary conditions were at a very low level, as evidenced by the overpopulation of rodents and various epidemics. People threw municipal waste right on the street.

Collection containers for municipal waste, from which waste was transported to piles located outside the city limits, began to be used only in the 19th century. At the end of the 19th century, the first incinerators and landfill management were put into operation in Great Britain. The first mixed municipal waste incinerator in the Czech Republic was built in 1905 in Brno.

4. Waste management in the Czech Republic

Public administration in the field of waste management

Public administration in waste management in the Czech Republic is carried out by:

a) Ministry of the Environment of the Czech Republic
b) Ministry of Health of the Czech Republic
c) Ministry of Agriculture of the Czech Republic
d) Czech Environmental Inspectorate
e) Central Institute for Supervising and Testing in Agriculture
f) customs offices
g) Police of the Czech Republic
h) public health authorities
i) regional authorities
j) municipal authorities of municipalities with extended competence
(k) municipal and district offices.

The central body of the state administration in the field of waste management **is the Ministry of the Environment of the Czech Republic**, which carries out the supreme state supervision in waste management. An exception is the control of public health protection in waste management, for which the **Ministry of Health of the Czech Republic** is competent (together with the authorization of legal and natural persons to evaluate the hazardous properties of waste). The Ministry of the Environment also prepares a waste management plan of the Czech Republic, the binding part of which it submits to the government for approval. The implementation of this plan is evaluated annually. It has additional competence in connection with the transport of hazardous waste and the evaluation of hazardous properties of waste. If it is not possible to clearly classify waste according to the waste catalogue, the Ministry of the Environment will classify it (not in the form of a decision in administrative proceedings, only by communication). Notices on the classification of waste are published on the Ministry's website on a yearly basis.

The competence **of the Ministry of Agriculture of the Czech Republic** includes the coordination of compliance checks on compliance with obligations in the use of treated sludge on agricultural land. Own inspections are carried out by **the Central Institute for Supervising and Testing in Agriculture.**

Public health authorities are entrusted with the competence of the administrative authority concerned when deciding from the point of view of the protection of public health in matters relating to waste management. These bodies issue their expert opinion on proposals for waste management and cooperate with other administrative authorities in this area. It is also important to comment on the operating rules of the facility for the use, disposal, collection and purchase of waste, during which they can set requirements, for example, in terms of noise of the equipment or dustiness caused by its operation.

Customs authorities control national and cross-border shipments of waste and control imports of batteries or accumulators from non-European Union countries.

Inspection of compliance with the provisions of legal regulations and decisions in the field of waste management is carried out by **the Czech Environmental Inspectorate**. The inspection power of inspection applies both to legal entities and natural persons authorized to conduct business, and to municipalities and citizens. The Czech Environmental Inspectorate may submit a complaint to the regional authority to ban the operation of a waste disposal facility if the operator of this facility does not comply with the legal regulations in the field of waste management and the result could be serious environmental damage. In my opinion, it would be useful for an inspection to have a similar competence in relation to the operator of a waste recovery facility, since the operation of such facilities (for example, recycling facilities) often involves a risk to the environment and the health of citizens and the powers of the control authorities are not there. In practice, it is usual for municipal authorities to carry out inspections of smaller establishments, while the Czech Environmental Inspectorate carries out inspections in larger enterprises, often focusing also on other environmental components.

The Region, in its independent competence, prepares the Waste Management Plan of the Region for its territory and announces its binding part by a generally binding decree. Regions are also given the opportunity to provide comments on the draft waste management plan of the Czech Republic.

In the delegated competence, the **regional authority** grants consent to the operation of the facility and to the landfill modification plan, with the fact that it can condition the consents, as well as control powers in relation to legal entities, natural persons authorized to conduct business and municipalities. The Regional Authority grants consent to the management of hazardous waste in

quantities of more than 100 tons, to mix hazardous wastes with each other or with other wastes, to refrain from sorting or separate collection of waste, and more. The regional authority will also decide in case of doubt whether or not it is waste. The regional authority may also revoke the decision to grant consent, which falls within its competence, if the operator of the facility is unable to ensure the conditions of environmental protection set out in the legislation, or if it repeatedly violates the obligations arising from the Waste Act or the consent. However, I believe that due to the fear of compensation for damages, the regional authorities often take a very sluggish approach to the use of this graduation, often with the exception of public pressure exerted in the form of petitions, the involvement of representatives of the self-government or the media.

Municipal authorities of municipalities with extended powers have primarily control powers and obligations to process various types of records resulting from the Waste Act (for example, reports on the production and management of waste, records in the transport of hazardous waste, reports on facilities for tilting waste and others). The municipal authority of the municipality of the third degree also issues some consents if the amount of waste does not reach the limit for which the competence is entrusted to the regional authority. That authority may also prohibit a waste producer from an activity which causes the generation of waste if the producer has no provision for the recovery or disposal of the waste and if the waste resulting from the continuation of the activity could harm the environment. This body also issues statements from the point of view of waste management in zoning and construction proceedings, on waste disposal facilities and on upcoming changes in the production process or production that affect waste management. Thanks to these tools, they gain an overview of waste management and can motivate waste producers to the desired waste management through the conditions set.

Municipal and district authorities also have control powers, which are already limited to the use of the system established by the municipality for the management of municipal waste only on the basis of a written contract with the municipality. Municipal and district authorities may check whether natural persons who are not entrepreneurs dispose of waste only in accordance with the Waste Act. They also inspect waste producers to ensure the recovery or disposal of waste in accordance with the Waste Act. For non-compliance with the obligation, the originators may be fined up to CZK 300,000, or measures and deadlines for remedy.

Both the public and private sectors are involved in ensuring waste management. In order to ensure the management of municipal waste, municipalities may associate themselves into voluntary associations of municipalities. Some municipalities are operators of waste facilities or participate in the business of authorized persons.

5. Obligations and authorization of the municipality in waste management

The obligations and authorization of the municipality in the management of municipal waste are regulated in the provisions of Section 17 of the Waste Act. Municipalities are subject to the obligations of waste producers. The responsibility of the municipality as a producer of municipal waste arises from the moment when the natural person puts it in a place designated for this purpose. These places are required to be determined by the municipality, taking into account the Building Act. Natural persons are obliged to dispose of waste at these designated places. At the same time, the municipality must provide places where natural persons can dispose of hazardous components of municipal waste, such as paint residues or other chemicals. The distance of these places is no longer regulated by law. Places intended for the collection of hazardous waste can be replaced by the municipality by so-called mobile collection on specified dates, but at least twice a year. It is up to the municipality whether it issues in its independent competence a generally binding municipal decree establishing a system of collection, collection, transport, sorting, recovery and disposal of municipal waste generated in its cadastral territory, including the system of management of construction waste. By issuing a decree, the municipality will ensure the participation of citizens in the fulfillment of its obligations as a waste producer.

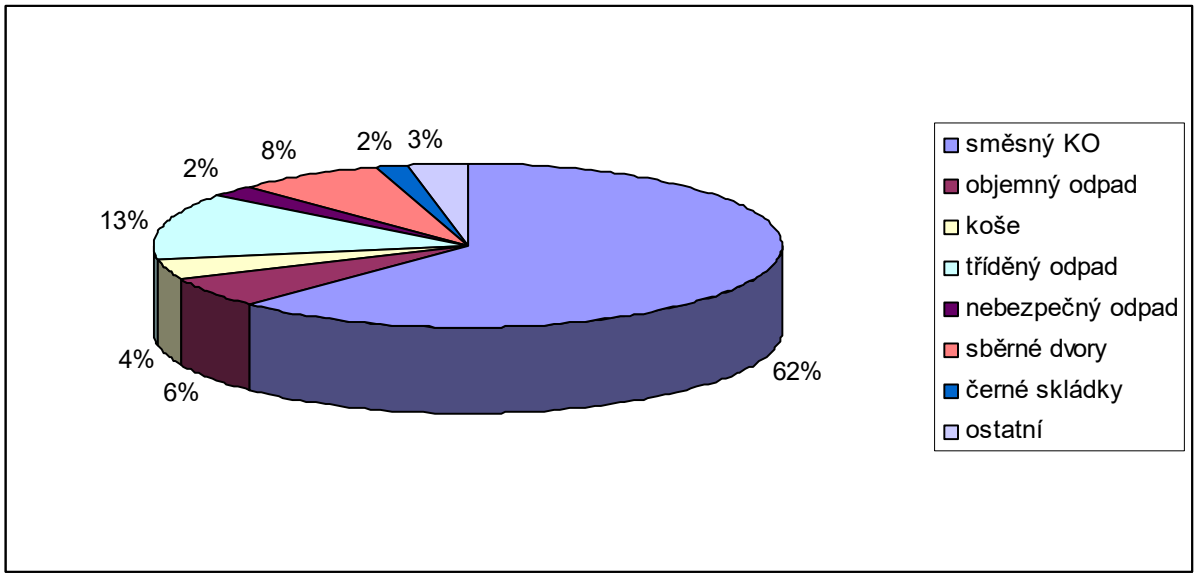
From the moment set by the generally binding municipal decree, natural persons are obliged to separately collect, sort and hand over municipal waste for recovery or disposal in accordance with the municipal system, they have not used it themselves in accordance with the Waste Act and special legislation. Otherwise, it is an offense under the Waste Act.

The published draft of the new Waste Act implies the obligation of the municipality to provide places where natural persons can dispose of usable components of municipal waste, at least the commodities paper, glass, plastic, metals and beverage cartons. At the same time, it is the responsibility of the municipality to introduce separate collection of biodegradable municipal waste from households. However, the obligation would not apply to parts of the municipality where a system of municipal composting with the involvement of citizens would be introduced. The details should be regulated by a decree issued by the Ministry of the Environment of the Czech Republic.

Table 1 Selected costs of waste management per inhabitant in municipalities (in CZK/inhabitant/year)

year	mixed KO	bulky waste	baskets	sorted waste	danger. waste	collection yards	black dumps	other	sum
2002	298,5	38,2	23,5	46,0	13,3	51,2	9,5	86,1	566,3
2003	371,8	37,1	25,0	64,5	17,4	46,8	9,3	49,4	621,3
2004	415,8	41,9	27,5	75,4	19,5	52,0	11,8	52,5	696,4
2005	429,4	42,2	27,5	79,9	20,1	54,1	11,6	42,4	707,2
2006	463,2	45,3	29,3	98,4	18,0	56,2	11,8	23,0	745,2

Graph No. 1 Share of selected waste management costs per capita in municipalities in 2006



The above table shows that the cost of waste management is increasing every year. The largest share of the total cost, at 62%, is mixed municipal waste.