

BIOLOGICAL SCIENCES

UDC 338.502

EXPERIENCE OF MUNICIPAL WASTE PROCESSING IN EU

Hulevata Iryna

student

Salavor Oksana

Nychik Oksana

Bublienko Natalia

PhD, Associate Professors

of Department Environmental Safety,

National University of Food Technologies,

Kyiv, Ukraine

Summary: The article analyzes different methods municipal waste processing in the EU countries. In recent years Western European countries gained experience in the disposal of municipal waste. This experience can be useful for the countries of Eastern Europe.

Key words: municipal waste, recycling, secondary materials, waste management, household waste.

Introduction. Established as waste from households, and waste produced in trade, provision of services or elsewhere which because of its composition or properties is similar to waste from households, municipal solid waste (MSW) generates only 10 % of the total waste in Europe, it is still considered a high-level topic in European Union. Municipal authorities are put in charge of collecting and managing MSW. It is considered a susceptible financial issue, as it requires large expenses. Another field of complex matter in this field is of dispersed generation of litter (60 % to 80 % of total municipal solid waste comes from households, and the rest from enterprises), to its various composition. Municipal waste disposal is also

considered a high-level discussion topic due to its negative effect on humans and environment.

Material and methods. To determine the different ways of municipal waste processing an in-depth literature analysis was conducted.

Results. Over the past three decades, EU has embraced set of legislation, levelling to reduce or prevent waste production with it re-use or recycle. The foundation of EU waste management is the five-step “waste hierarchy”, which was established in the Waste Framework Directive (Directive 2018/851 of the European Parliament and the Council on amending Directive 2008/98/EC on waste) in the following manner: prevention; preparing for re-use; recycling; other recovery, e.g. energy recovery; and disposal. Within this set of legislation, four directives define certain goals for MSW management [1].

The Landfill Directive (LD), dated 1999, that aims to prevent or reduce the adverse effects of the landfill of waste on the environment. Waste Framework Directive (WFD), that sets the basic concepts and definitions related to waste management, such as definitions of waste or recycling and re-use. Single-Use Plastics Directive (SUP), which intends to reduce marine litter, set separate number of targets for plastic. Packaging and Packaging Waste Directive (PPWD) aims to prevent the generation of packaging waste, develops further re-use and recycling of shipment wastes in Member States [2].

In 2015, the European Commission proposed new targets for municipal waste of 60 % recycling and preparing for reuse by 2025, rising up to 65 % by 2030. Out of all the municipal waste generated in the EU, 42 % is landfilled, 38 % is recovered and 20 % is incinerated. Less economically developed countries still use most landfill, richer countries are the biggest users of conflagration. The highest amount of waste landfilled is in Bulgaria, Romania, Lithuania, Malta and Poland (90% or more); Germany, Belgium, the Netherlands and Austria recycle or compost the most (59 % or more); while Denmark, Luxembourg, and Sweden incinerate the largest proportion of MSW (all 47 % or more). Shutdown of landfills itself is not enough, alternatives have to be evolved, otherwise litter will be thrown in public [3]. Countries such as

Switzerland, Sweden and Germany have practically abandoned landfills for solid household waste. These countries invest their funds for such methods of waste management as sorting, incineration. One of the leading countries in the field of waste processing is Germany. No European country recycles or re-uses the same amount of waste. It now recovers or recycles over 80 % of municipal solid waste, generating over 55 million tons of secondary materials. In Austria, recycling covers not only product packaging, but also used cars, batteries and electrical equipment. As a result, 90 % of packaging is collected and recycled, the network of recycling centers has 1,200 units throughout the country [3].

For the municipal waste European countries uses different techniques of recycling, such as:

- Mechanical biological treatment- is a waste processing facility that combines a sorting facility with a form of biological treatment such as composting or anaerobic digestion [4].

- Biological treatment- is a bioreactor composting process that allows the production cycle of organic compost in a period of only two months. Composting material goes under fully controlled technological conditions, without negative impact on the environment and pollution of water, soil and air. The ecological compound enriched with minerals and phosphates are used for agricultural purposes.

- Heat treatment- waste, which cannot be recycled due to the size of the material and the structure, dries, crushes and then is automatically baled without human interference. This is one of the alternative energy sources nowadays not only in EU, but all over the world in developed countries. It provides so called «green» energy, which is more sustainable and is limiting climate change by reusing already given resources. However according to European experts and activists, waste incineration plants are rather dangerous, first of all, through significant content of heavy metals, dioxins etc. To provide proper incineration and controlled concentrations of pollutant emissions, the content of waste needs to be monitored as much as possible, to ensure the absence of hazardous substances.

Public position of the population in EU is closer to «zero waste» plan over the

others [4]. A big problem among the European countries is the economic issue. Environmental projects already account for a high proportion of EU cohesion funds (Romania and Bulgaria are investing 45 % and 42 % of their cohesion funding on such projects). Building up a new waste recycling unit takes up a lot of capital. The accompanying costs include buying different kinds of utility vehicles, upgrading the recycling unit, waste, and chemical disposal [2].

Conclusions. In recent years Western European countries gained experience in the disposal of municipal waste and over time improved the methods of waste management, they adjusted their ways of handling the features of the territory. However, the outlook for reaching the 60 % recycling target for municipal waste by 2025 is dubious. The member states of the Europe Union show significant differences suitably to solid waste management standards and practices. Countries without minimum standards for municipal solid waste management collide negative impact on their economic development (with tourism industry as first indicator). A number of minimum standards for MSW handling should be applied for better development of waste processing among the countries. Phased suppression of landfills and further growth of recycling facilities will provide faster and better waste management.

REFERENCES

1. «Directive (EU) 2018/851» of the European Parliament and of the Council.
URL: <https://www.assent.com/resources/knowledge-article/what-is-the-waste-framework-directive/>
2. Summary of the current EU waste legislation. – URL: <https://www.municipalwasteurope.eu/summary-current-eu-waste-legislation>.
3. Кращі європейські практики управління відходами/ А. Войціховська, О. Кравченко, О. Мелень-Забрамна, М. Панькевич. [Електронний ресурс]. – Видавництво «Компанія «Манускрипт» – Львів, 2019. – 64 с. – URL: http://epl.org.ua/wp-content/uploads/2019/07/Krashchi_ES_praktuku_NET.pdf
4. Eurostat «Municipal waste generation and treatment, by type of treatment method» – URL: www.cewep.eu