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Thermal Waste Conversion as Energy Source – the Polish Legal Context. Selected Issues

Termiczne przekształcanie odpadów jako źródło energii – polski kontekst prawny. Wybrane zagadnienia

ABSTRACT

The article presents Polish and related EU legal basis for thermal waste conversion (in particular municipal waste and waste of municipal origin) as an energy source. It was hypothesized that at the current stage of systemic development of municipal waste management in Polish legal conditions, thermal waste conversion is an extremely important element which not only allows for achieving quantifiable environmental benefits, but also constitutes a source of energy. However, waste incineration cannot be treated as a fundamental element of closed-loop waste management. Waste incineration plants are and should be treated as an element of complementing the waste system, taking into account energy recovery in the cogeneration system, but also the limitations arising from taxonomy. The unquestionable advantage of this type of installation is the possibility of producing thermal energy and a more beneficial impact on the environment than the combustion of fossil fuels.

Keywords: municipal waste; energy source; cogeneration; taxonomy

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INTRODUCTION

According to Article 3 (1) (29) (a) and (b) of the Waste Act,[1] thermal waste conversion is understood as waste incineration through oxidation, and thermal waste treatment processes, including pyrolysis, gasification and plasma processing, as long as the substances produced during these processes are subsequently incinerated. The same law in Article 3 (1) (15) assumes that energy recovery is the thermal treatment of waste to recover energy.

The Waste Act sets out measures to protect the environment, human life and health by preventing and reducing the negative environmental and human health impacts associated with the generation and management of waste, and introduces a waste hierarchy in the Polish legal system,[2] defining priorities for all waste generating and managing entities, i.e. prevention of waste generation, preparation for reuse, recycling, other recovery processes, disposal.

Contrary to popular belief, selective waste collection does not solve the problem of waste recycling, and energy recovery from waste is becoming an indispensable element in closing a circular economy. Thermal treatment of waste will be classified as other recovery (R1 process[3]). This process is one of the important elements of the municipal waste management system. Waste used to produce electricity and heat is a substitute for conventional fuels. Therefore, municipal waste thermal treatment plants are a significant link in the Polish energy policy, contributing to an increase in the share of renewable energy sources as well as to the environmental policy due to a reduction of landfilling of biodegradable waste.[4]

At the same time, it is worth emphasising that only waste which is not suitable for recycling or preparation for re-use should be subjected to the process of thermal processing. This is the so-called combustible fraction.[5]

The literature points out that the process of energy recovery from municipal waste is an important element of waste management in countries with a complex system of utilizing energy and materials from waste. Examples of such countries include Germany, the Netherlands and Sweden. The facilities operating there prove that technologies for recovering energy from waste can be regarded as a natural and necessary step towards a significant reduction of waste management based

[1] Act of 14 December 2012 on waste (consolidated text, Journal of Laws 2023, item 1587).

[2] J. Jerzmański, *Komentarz do art. 1 ustawy o odpadach*, [w:] M. Bar, M. Bojarski, M. Duczmal, M. Górski, J. Jerzmański, *Ustawa o odpadach. Komentarz*, Wrocław 2002.

[3] See Annex No. 1 "Non-exhaustive list of recovery processes" to the Waste Act.

[4] A. Poniatowska, D.A. Andrzejewska-Górecka, *Zagospodarowanie pozostałości z termicznego przetwarzania odpadów komunalnych w Polsce*, "Quaterly of Environmental Engineering and Design" 2018, vol. 170(50), p. 27.

[5] A. Modrzejewski, *„Frakcja energetyczna" pochodząca z odpadów komunalnych*, "Przegląd Prawa Ochrony Środowiska" 2016, no. 1, pp. 10–27.

on landfilling. However, it should be borne in mind that in accordance with the principles of sustainable development,[6] energy recovery from waste should only be carried out after ensuring the maximum possible use of material recycling in the management of municipal waste.[7]

The thermal treatment of waste in Poland is currently at a crossroads. On the one hand, it emphasises the need for waste incineration plants as a potential energy provider, encapsulating the waste management system. On the other hand, it is noted that too many incinerators do not encourage selective waste collection.

The paper presents Polish and related EU legal basis for thermal waste conversion (in particular municipal waste and waste of municipal origin) as an energy source. It was hypothesized that at the current stage of systemic development of municipal waste management in Polish legal conditions, thermal waste conversion is an extremely important element which not only allows for achieving quantifiable environmental benefits, but also constitutes a source of energy. However, waste incineration cannot be treated as a fundamental element of closed-loop waste management. Waste incineration plants are and should be treated as an element of complementing the waste system, taking into account energy recovery in the cogeneration system, but also the limitations arising from taxonomy. The unquestionable advantage of this type of installation is the possibility of producing thermal energy and a more beneficial impact on the environment than the combustion of fossil fuels.

ENERGY RECOVERY FROM WASTE IN A COGENERATION SYSTEM

Approximately 50% of the energy produced in European incineration plants comes in part from waste which is similar to biomass, which means a more favourable CO_2 balance compared to fossil fuels.[8] That is a clear pro-environmental argument for this type of process. Most incineration plants in Europe recover energy from waste in cogeneration mode – 59% of incineration plants. Incinerators producing only electricity account for 26%, and only heat – 15%.

[6] J. Biegańska, J. Ciuła, *Zintegrowana gospodarka odpadami komunalnymi w Polsce jako element zrównoważonego rozwoju*, "Gospodarka Odpadami i Ochrona Środowiska" 2011, vol. 13(1), pp. 51–60.

[7] M. Cyranka, M. Jurczyk, *Uwarunkowania energetyczne, ekonomiczne i prawne odzysku energii z odpadów komunalnych w ramach układów kogeneracji*, "Polityka Energetyczna" 2016, vol. 19(1), p. 99.

[8] See more A. Kowalczyk-Juśko et al., *Estimation of Potential of Agriculture Biogas Production in the Biała Podlaska County (Poland)*, "Journal of Ecological Engineering" 2020, vol. 21(8), pp. 156–162.

The legal definition of cogeneration is found in the Energy Law Act.[9] It is the simultaneous generation of heat and electricity or mechanical energy in the same technological process. The simultaneous generation of electricity and heat allows for better use of the primary energy of the fuel and generates savings in its consumption.[10]

Under the Energy Efficiency Directive,[11] all Member States are required to take measures to ensure that the potential for cogeneration is better exploited within the framework of internal energy market instruments, also within the infrastructure of municipal thermal waste treatment plants.[12]

In waste incineration plants operating in cogeneration about 2 MWhth (megawatt hours of heat) and 2/3 MWhe of electricity can be produced from one tonne of waste with a calorific value of 10 MJ/kg.[13] Cogeneration should be considered as a pathway towards lower emissions, higher efficiency, lower costs and higher reliability of future energy generation, including waste incineration.[14] A study by the International Energy Agency presents the elemental results of research into the use of cogeneration. It proves that cogeneration can reduce CO_2 emissions, thereby making a significant contribution to the fight against climate change. The increased use of cogeneration will reduce investment in the energy market due to the reduced need for new generation units, transmission and distribution networks. Furthermore, this may translate into lower energy prices for end consumers. The potential for cogeneration development is strongly dependent on the conditions and opportunities in the countries concerned.[15]

Moreover, in countries which base their power generation on coal, such as Poland, this potential is greater than in countries which derive their energy from other processes, such as Norway, whose power generation is largely based on hydropower.[16]

[9] Article 3 (33) of the Act of 10 April 1997 – Energy Law (consolidated text, Journal of Laws 2021, item 716, as amended).

[10] P. Kosiński, *Systemy CHP w kontekście biogazowni rolniczych*, "Paliwa i Energetyka" 2014, no. 1, p. 20.

[11] Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJ L 315/1, 14.11.2012).

[12] See J. Kazimierowicz, *Legal Regulations and Methods Neutralising Expired Food Products*, "Journal of Ecological Engineering" 2018, vol. 19(6), p. 217.

[13] B. Kamuk, *Waste to Energy in Low and Middle Income Countries*, Vienna 2013.

[14] M. Cyranka, M. Jurczyk, *op. cit.*, p. 104.

[15] International Energy Agency, *Combined Heat and Power: Evaluating the Benefits of Greater Global Investment*, 2008, https://iea.blob.core.windows.net/assets/d459f7d5-1ba7-49d9-ad56-915fba22f267/chp_report.pdf (access: 8.12.2023).

[16] M. Cyranka, M. Jurczyk, *op. cit.*, p. 105.

In the case of a waste incineration plant, cogeneration operation is based on the selection of appropriate buildings and the configuration of the steam and water cycle. Steam-water cycles are the technical basis for energy recovery from municipal waste and are currently the dominant type of process for converting the chemical energy of waste into electricity and heat.[17]

The observed migration of people living in cities to suburban and rural areas, the widespread use and decreasing cost of ecological heating sources, as well as the increasing energy efficiency of passive buildings are radically changing the shape of the Polish heating market. The heating market is starting to have a local character, so its shrinkage significantly affects the development of a closed-cycle economy. In this context, the legislative and regulatory initiatives which determine the change of this state and which may stimulate development and construction of renewable sources and those which use primary fuels – fossil fuels more efficiently – become important.

The strategic, long-term trend and direction in this area is outlined in the draft of Polish Energy Policy until 2040.[18] It indicates the necessity of pursuing the expansion and modernisation of the heating sector so as to transform it into energy efficient heating systems. The goal is that at least 85% of heating or cooling systems with a capacity of more than 5 MW meet the criteria of systems where the production of heat or cooling is based on at least 50% renewable energy sources (RES), or 50% waste heat, or 75% heat from cogeneration, or 50% on a combination of the above energy and heat. It is emphasised that system heating is the least environmentally harmful and most economically efficient, therefore in the areas where technical conditions for heat supply from energy efficient heating systems exist, consumers are obliged to use it first, unless they apply a more environmentally friendly solution.[19]

Increase in heating efficiency is, among other things, a direction for promotion of cogeneration. In the legislative sense, the past years can be described as groundbreaking due to the change in the perception of support for the development of high-efficiency cogeneration. The Act of 14 December 2018 on the promotion of electricity from high-efficiency cogeneration[20] was aimed at reducing adverse environmental phenomena, ensuring the security of heat and electricity supply, and improving the efficiency of the use of energy carriers.

Changes to the support mechanism were necessary and indispensable. The certification of energy did not bring the expected investment results – in the course of several years, i.e. from 2008 to 2011, the installed capacity in utility coal-fired CHP

[17] *Ibidem*.

[18] See Announcement of the Minister of Climate and Environment of 3 March 2021 on the state energy policy until 2040 (Polish Monitor 2021, item 264).

[19] *Ibidem*, p. 73.

[20] Consolidated text, Journal of Laws 2020, item 250, as amended.

plants decreased from 5,070 MW to 5,054 MW38. The substitution fee system, which was supposed to stimulate the market value of property rights resulting from certificates of origin, was poorly parameterised. The substitution fee for the so-called red certificates was set below the profitability thresholds for new investments already at the start of the support system. The mechanisms of pricing and redemption of property rights resulted in the creation of surplus registers and the collapse of the certificate market. This problem affected coal-fired cogeneration certificates (red), gas-fired cogeneration certificates (yellow) and renewable energy source certificates (green).[21]

In the context of the local and regional nature of the closed-loop economy, it is also worth highlighting the solutions favouring industrial, energy-intensive consumers, which is linked to the reduction of the basis for calculating additional fees charged to electricity consumers. Industrial consumers who meet the requirements set forth in the Renewable Energy Sources Act[22] have the right to settle the price components of electricity related to the obligation to obtain and submit for redemption certificates of origin with respect not to all, but to a portion of the electricity purchased for their own use. They can also benefit from a reduction in the volume of electricity that is subject to the RES fee and the co-generation fee.[23]

In the light of these conditions, it is becoming important to develop co-generation which generates heat from waste. Increasing the use of municipal waste, including sewage sludge and industrial waste, which is often defined as hazardous, could be important. Some of this waste could be thermally processed into alternative fuels. This would fit in with the development of distributed energy, which is cheaper because it does not increase transmission costs. In addition, this waste could be used closer to where it is produced. The importance of managing calorific waste should be emphasised (waste with an energy value of more than 6 MJ/kg – codes 19 08 05, 19 08 12, 19 08 14, and 19 12 12), which currently cannot be legally processed into alternative fuels and stored. A solution to this problem could be their local use within energy clusters, which would also be in line with the idea of a closed-cycle economy.

The provisions implemented by the amendments to the Renewable Energy Sources Act focused on making the existing mechanism more flexible. The key element of the changes was the introduction of new forms of RES support, dedicated to energy generators in small and micro RES installations, in particular those based on biomass, biogas and water. The mechanisms introduced included a feed-in tariff (FIT) system and a feed-in premium (FIP) system. These systems included support

[21] J. Wróbel, M. Sołtysik, *Gospodarka obiegu zamkniętego – szanse i wyzwania*, https://www.fortum.pl/raport-goz-2020/download (access: 8.12.2023), p. 30.

[22] Act of 20 February 2015 on renewable energy sources (consolidated text, Journal of Laws 2021, item 610, as amended).

[23] *Ibidem*.

for both new and existing sources with installed capacity not exceeding 1 MW, which may be of significant importance for biomass and biogas sources (landfills, sewage treatment plants, agriculture) potentially having the widest application in a closed-loop economy. According to the regulations, the support system also covered energy generation using biocarbon or torrefaction. The regulations have been amended to set the minimum required weight share of biomass of agricultural origin, which for sources with an installed capacity in excess of 5 MW is 85%.[24]

As emphasised in the National Energy Policy 2040, the benefits of actions comprising the improvement of energy efficiency should be considered in the medium and long term, often exceeding the period of return on pro-efficiency investments alone. Increasing energy efficiency stimulates innovation and also fits into the concept of a closed cycle economy, which in the energy sector means greater activity towards the energy use of waste and economic use of waste and by-products of combustion from the energy sector (e.g. ashes, limestone, sulphur) and the use of waste energy from technological processes.[25]

The development of gasification technologies for municipal waste fuels was undoubtedly influenced by the changes in legal regulations at the EU level as well as the mechanism and method of their implementation. Directive 2010/75/EU of the European Parliament of 24 November 2010[26] introduced separate treatment of gasification and pyrolysis technologies in thermal waste conversion processes. These provisions were implemented into national law in the Waste Act.

The provisions of the Industrial Emissions Directive introduced a conditional exemption from the technical requirements for thermal treatment of waste for gasification or pyrolysis technologies, which are mandatory for waste incineration processes. Article 42 of this Directive indicates that the specific provisions for the thermal treatment of waste do not apply to gasification or pyrolysis installations, if the gases resulting from this thermal treatment of waste are treated to such an extent that they do not constitute waste before incineration and they cannot cause emissions higher than those resulting from the burning of natural gas. This provision has also been directly introduced in the executive acts of the Waste Act and the Environmental Protection Law.[27]

The above-mentioned legislative changes have significantly increased the possibilities of gasification technologies application and their use for energy generation in more energy-efficient systems of high-efficiency cogeneration.

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[24] J. Wróbel, M. Sołtysik, *op. cit.*, p. 30.

[25] Announcement of the Minister of Climate and Environment of 2 March 2021, p. 78.

[26] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (OJ L 334/17, 17.12.2010).

[27] Act of 27 April 2001 – Environmental Protection Law (consolidated text, Journal of Laws 2021, item 1973, as amended).

THERMAL TREATMENT OF WASTE AND TAXONOMY

Contrary to what has been said above, it cannot be unequivocally concluded that thermal treatment of waste is favoured at the EU level. In recent years, climate change and the resulting numerous initiatives and actions on the international arena, such as the Paris Agreement, the 2030 Agenda or the European Green Deal, have accelerated the pace and raised the priority of climate-related issues and actions for sustainable development. According to the European Commission's calculations, the achievement of the intended objectives and commitments resulting from the implemented initiatives requires the mobilisation of numerous investments worth more than EUR 180 billion per year in the coming years.[28] This scale of expenditure is well beyond the capacity of the public sector and will require a redirection of private capital to more sustainable investments, which will require a profound change in the way the financial system functions.

To help develop a coherent European Union strategy on sustainable finance, a High-Level Expert Group on Sustainable Finance was set up by the European Commission.[29] Its work resulted, among others, in a report containing eight key recommendations and an action plan on financing sustainable growth, which were published in 2018.[30] The main objectives that emerged from the Sustainable Growth Finance Action Plan included, i.a., directing capital flows towards more sustainable investments, integrating sustainability into risk management, promoting transparency and a long-term approach in financial and business activities.

Among the most important and urgent tasks identified for implementation under the Sustainable Growth Financing Action Plan was the establishment of a system for a single classification of sustainable development actions, the so-called EU Taxonomy. Its general framework is outlined in the EU Taxonomy Regulation[31] adopted in June 2020 by the European Parliament and the Council, which is binding in its entirety and directly applicable in all Member States.

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[28] J. Kwiatkowska, *Czym jest taksonomia UE i jak wpłynie na przedsiębiorców?*, 16.11.2020, https://www.atmoterm.pl/czym-jest-taksonomia-ue-i-jak-wplynie-na-przedsiebiorcow (access: 8.12.2023).

[29] See Europejski Trybunał Obrachunkowy, *Zrównoważone finansowanie – potrzeba bardziej spójnych działań UE, aby przekierować finansowanie na zrównoważone inwestycje*, 2021, https://www.eca.europa.eu/Lists/ECADocuments/SR21_22/SR_sustainable-finance_PL.pdf (access: 8.12.2023), p. 8.

[30] EU High-Level Expert Group on Sustainable Finance, *Financing a Sustainable European Economy: Final Report*, 2018, https://finance.ec.europa.eu/system/files/2018-01/180131-sustainable-finance-final-report_en.pdf (access: 8.12.2023).

[31] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (OJ L 198/13, 22.6.2020).

The taxonomy is a type of matrix that defines the criteria derived from the Paris Agreement[32] for aligning a number of economic activities with the objectives set out, in particular, in Article 2 of the Agreement.

The Taxonomy Regulation outlines a general framework that will allow for the progressive development of an EU-wide classification system for environmentally sustainable economic activities. "Serious harm to environmental objectives", activities in a closed-loop economy, including waste prevention and recycling, if they lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, are considered to cause serious harm.

The currently drafted implementing provisions (delegated acts) to the Regulation (EU) 2020/852, which are to establish the so-called "green list" of economic activities and investments that pursue the objectives of the EU climate policy, will probably exclude the construction of new thermal waste conversion installations. This may mean that such projects are excluded from EU subsidies and preferential loans.

The EU Taxonomy is intended as a tool to support investors, including entrepreneurs, in moving towards more sustainable economic activities. It aims, among other things, to provide a common and uniform understanding of what activities can be considered "sustainable". The introduction of the EU Taxonomy, apart from standardising the concepts, is also supposed to combat the phenomenon of so-called greenwashing, or "green pseudo-marketing", in which investors and consumers are lured by false declarations of producers about the environmental credentials of their products or services. In addition, the establishment of clear qualification criteria is to be the key to directing the flow of public and private capital towards sustainable investments, so that Europe can achieve carbon neutrality by 2050, according to the European Green Deal.[33]

According to the EU Taxonomy Regulation, for an economic activity to qualify as sustainable it will have to meet the following requirements:

1) provide a significant contribution to one or more of the six environmental objectives: climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a closed loop economy, pollution prevention and control;
2) protect and restore biodiversity and ecosystems;
3) not cause significant damage to any of the above environmental objectives;
4) respect technical assessment criteria;

[32] United Nations, Paris Agreement, 2015, https://unfccc.int/sites/default/files/english_paris_agreement.pdf (access: 8.12.2023).

[33] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal, Brussels, 11.12.2019, COM(2019) 640 final.

5) provide minimum guarantees regarding social security and management.

The classification system is aimed directly at EU Member States, financial market participants offering financial products (e.g. shares, bonds), and financial and non-financial companies subject to non-financial reporting obligations. They will have to comply with the new requirements and file their first reports or disclosures using the EU Taxonomy already from the beginning of 2022.

It will take time to fully complete the EU Taxonomy, due to the complexity of the issue and the technical nature of the development. Ultimately, the classification system will be a list of environmentally sustainable economic activities with specific eligibility criteria (thresholds and indicators, i.e. carbon footprint) to be implemented through delegated acts.

The European Commission has adopted a delegated act specifying which companies subject to non-financial reporting will have to disclose how and to what extent their activities comply with the activities considered environmentally sustainable in the EU Taxonomy.[34] Further work on the EU Taxonomy and delegated acts will take place through the Sustainable Finance Platform, which consists of 50 EC-selected experts from different fields and stakeholders. They will continue the work initiated by the Technical Expert Group.

Within the scope of the previous work of the Technical Expert Group of the European Commission, eligibility criteria have been identified for selected activities within individual industries that contribute to the first two environmental objectives (mitigation and adaptation to climate change), i.a. electricity, gas, steam and air conditioning supply, energy production from various forms of renewable sources, cogeneration, transmission, distribution and storage of various types of energy.

In light of the taxonomy, several key issues arise in the operation of waste incineration plants. Pollution is a major one, as is the systemic problem of having to provide a constant supply of a certain amount of waste, the burning of resources, high construction and operating costs, along with significant CO_2 emissions. For these reasons, by classifying them in the EU Taxonomy Regulation as causing serious damage to environmental objectives, the EU has stopped financing incinerators, whether with or without energy recovery. Incinerators therefore cannot be financed with public funds.

Article 13 (1) (j) and Article 17 (1) (d) (ii) of the Regulation (EU) 2020/852 state that waste incineration is an activity that causes significant damage to the environmental objectives. The analysis accompanying the *Taxonomy Technical Report* leads to the conclusion that the Commission interprets the taxonomy proposal in such a way that WtE (Waste-to-Energy; incineration with energy recovery) is outside its scope of climate change mitigation, as it harms the environmental

[34] *Ibidem*.

objectives of a circular economy: waste prevention and recycling.[35] Consequently, WtE is not included in the mitigation taxonomy.

As part of its taxonomy, the European Commission has withdrawn the status of green investments in waste-fuelled heating plants. This will make it more difficult to access funding for this type of project, not only from the EU but also on the private market.

Interestingly, in the course of public consultations of the Polish National Plan for Reconstruction and Increasing Resilience, support for investment projects in energy sources such as waste and refuse-derived fuel (RDF) cogeneration was excluded.[36]

CONCLUSIONS

In 2019, as much as 43% of Polish waste ended up in landfills, almost twice the EU average. Environmentalists point out that thermal waste processing installations remain one of the main sources of harmful pollutants, including dioxins. In terms of carbon dioxide emissions, they compare favourably to coal-fired installations, but do worse than gas-fired ones. The expansion of waste fuelled power plants will, in the long run, stimulate their generation and the incineration of materials that could be treated in other ways, which may be justified by the need to keep the incinerator running.

On the one hand, the importance of waste heat in the cogeneration system is emphasised, but on the other hand, if we analyse the taxonomy, we come to the conclusion that minimising financial support for the implementation of incineration plant investments will definitely have a negative impact on their development. The situation of uncertainty is also maintained by the legislator, who initially abandons legal regulations limiting the possibility of building incineration plants, but subsequently, postulates introduction of fees for waste incineration in one of the draft amendments to the Waste Act, which is already taking place in some EU countries and is supposed to encourage waste recycling processes.[37]

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[35] EU Technical Expert Group on Sustainable Finance, *Financing a Sustainable European Economy: Taxonomy Technical Report*, June 2019, https://finance.ec.europa.eu/system/files/2019-06/190618-sustainable-finance-teg-report-taxonomy_en.pdf (access: 8.12.2023), p. 293.

[36] Ministerstwo Funduszy i Polityki Regionalnej, *Krajowy Plan Odbudowy i Zwiększania Odporności*, Warszawa, kwiecień 2021, https://arrtransformacja.org.pl/wp-content/uploads/2021/06/Krajowy-Plan-Odbudowy-projekt-04.2021r..pdf (access: 8.12.2023), p. 480.

[37] D. Bizjak, P. Barczak, *Wyjaśniamy: Załącznik IVa do Dyrektywy ramowej w sprawie odpadów. Przykłady instrumentów ekonomicznych i innych środków promujących hierarchię postępowania z odpadami*, http://www.otzo.most.org.pl/zwe/EEB_Zalacznik_IVa_do_dyrektywy_ramowej_w_sprawie_odpadow.pdf (access: 8.12.2023), p. 11.

One has to agree with the position of the Minister of the Environment on municipal waste incineration plants and their place in the waste management system that the standards of the national and EU law exclude energy recovery and production of waste fuels from the definition of recycling. For this reason, thermal waste conversion or production of fuels from waste will not contribute to achieving the required levels of preparing for re-use and recycling of municipal waste and cannot be considered recycling.[38]

One of the main factors hindering proper implementation of the waste hierarchy is subsidies for incinerators. Member States may not define the incineration of mixed waste as a renewable energy source[39] and pay green energy premiums to incineration plant operators. Member States cannot subsidise energy produced from waste incineration unless selective collection obligation is met.[40]

The thermal treatment of waste with energy recovery should therefore only complement the municipal waste management system and contribute to reducing the amount of waste sent to landfills. However, it should not adversely affect the levels of preparation for re-use and recycling. Therefore, the share of this method in the processing of municipal waste should not exceed 30% of the mass of municipal waste generated.

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[39] See more Ł. Jurczyk, J. Koc-Jurczyk, *Thermal Conversion of Municipal Waste into Energy: Prospects for the Sub-Carpathia*, "Journal of Ecological Engineering" 2017, vol. 18(2), p. 159.

[40] Zero Waste Europe, *Guidelines for the Implementation of Article 3 (3) of the REDII Regarding Support Schemes for Waste Incineration*, October 2019, https://zerowasteeurope.eu/wp-content/uploads/2019/10/zero_waste_europe_policy-briefing_REDII_en.pdf (access: 8.12.2023).

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ABSTRAKT

W artykule przedstawiono polskie oraz powiązane z nimi unijne uwarunkowania prawne w zakresie termicznego przekształcania odpadów (w szczególności odpadów komunalnych i odpadów pochodzenia komunalnego) jako źródła energii. Postawiono hipotezę, że na obecnym etapie systemowego rozwoju gospodarki odpadami komunalnymi w polskich uwarunkowaniach prawnych termiczne przekształcanie odpadów jest niezwykle istotnym elementem, który nie tylko pozwala osiągać wymierne korzyści środowiskowe, lecz także stanowi źródło energii elektrycznej. Nie można jednak spalania odpadów traktować jako podstawowego elementu gospodarki odpadami o obiegu zamkniętym. Spalarnie odpadów są i powinny być traktowane jako element domknięcia sytemu odpadowego z uwzględnieniem odzysku energii w systemie kogeneracji, ale też ograniczeń wynikających z taksonomii. Niewątpliwą zaletą tego typu instalacji jest możliwość produkcji energii cieplnej i wpływ na środowisko bardziej korzystny niż w przypadku spalania paliw kopalnych.

Słowa kluczowe: odpady komunalne; źródło energii; kogeneracja; taksonomia