DOI: https://doi.org/10.30525/2256-0742/2025-11-3-203-211

LEGAL FOUNDATIONS FOR THE DEVELOPMENT OF A CIRCULAR BIOECONOMY: UKRAINIAN AND EUROPEAN DIMENSIONS

Olena Hafurova[1], Volodymyr Yermolenko[2], Tamara Novak[3]

Abstract. The relevance of researching the legal foundations of the circular bioeconomy is determined by a number of factors. Firstly, there is an objective need today to find an effective alternative to the linear economic model, which is based on intensive extraction and use of resources, followed by waste disposal, and which has a negative impact on the environment and depletes natural resources. The authors consider such an alternative to be a circular economy based on the principles of closed-loop technologies and rational resource and energy consumption. Secondly, given the potential of Ukraine's agricultural sector and the current realities of its functioning, the formation of a circular bioeconomy model, in which agricultural production should play a key role, is promising for Ukraine. Thirdly, it is time to develop a legal framework for regulating relations in the field of circular economy and circular bioeconomy. This process for Ukraine should be based on international, primarily European, experience, which in turn requires research into the relevant provisions of European Union legislation. It is also necessary to develop a unified conceptual and categorical framework. Conducting scientific research on these issues is the purpose of this article. Its achievement was facilitated by the use of such methods of scientific cognition as: philosophical (dialectical) method, general scientific (formal logical and analytical methods) and special scientific (formal legal and comparative legal) methods. As a result, the authors formulated their definition of the concept of "circular bioeconomy" as "an economic model aimed at creating conditions for ensuring food security in the country through the functioning of waste-free (including) agricultural production based on the use of mainly bioenergy resources, which reduces the negative impact on the environment". The paper argues for the circular bioeconomy principles to be used in rebuilding rural areas that got hit by the war. It shows that the circular bioeconomy isn't really covered by Ukrainian laws at the moment. The present study aims to characterise the principles of state policy and existing measures of state support for bioenergy as a direction of the circular bioeconomy. The necessity of the implementation of a state target programme for bioenergy in Ukraine has been demonstrated. Particular emphasis is placed on the analysis of European Union legislation regulating circular bioeconomy relations, and its positive features that could be taken into account by Ukrainian lawmakers are identified. The generalisations obtained can serve as a basis for formulating the content of regulatory and legal acts in the field of circular bioeconomy and bioenergy, as well as material for promising scientific research on this issue.

Keywords: circular economy, circular bioeconomy, alternative energy sources, bioenergy, food security, natural resources, agricultural production, state support, waste, tax policy.

JEL Classification: K32, O13, Q01, Q16, Q42, Q57

1. Introduction

In today's world, more and more attention is being paid to preserving an environmentally safe environment and ensuring opportunities for the existence and development of current and future generations. The formation and functioning of the so-called **circular economy** can contribute to the achievement of these goals. According to experts,

[1] National University of Life and Environmental Sciences of Ukraine, Ukraine *(corresponding author)*
E-mail: gafurova.olena@gmail.com
ORCID: https://orcid.org/0000-0002-1986-826X
[2] National University of Life and Environmental Sciences of Ukraine, Ukraine
E-mail: ermolenko@nubip.edu.ua
ORCID: https://orcid.org/0000-0002-4295-4158
[3] National University of Life and Environmental Sciences of Ukraine, Ukraine
E-mail: tomanovak1980@gmail.com
ORCID: https://orcid.org/0000-0003-2371-3014

the circular economy is the basis, the platform for implementing environmental innovations and increasing environmental responsibility. It is based on rational resource and energy consumption, reducing harmful impacts on the environment, and developing a socially integrated society (Vovk, 2022). In the 1980s and 1990s, when life sciences first came to the attention of foreign economists (Peterson, Kaaret, 2019), the concept of a **circular bioeconomy** was developed, based on the sustainable and efficient use of waste in general and biomass in particular. This gave impetus to the development of EU legislation in this area. Thus, in 2012, the European Commission adopted the communication "Innovating for Sustainable Growth: A Bioeconomy for Europe" (2012) (hereinafter referred to as the ***bioeconomy strategy***), and in 2018, an updated communication entitled "A sustainable Bioeconomy for Europe: Strengthening the connection between economy, society and the environment" (2018) (hereinafter referred to as the ***updated bioeconomy strategy***). While the first document only mentioned the need to develop a bioeconomy strategy (para. 1), the second one highlighted the need to maximise the contribution of the bioeconomy to the main priorities of European policy (para. 2) and to take action towards a **sustainable circular bioeconomy** (para. 4). Unfortunately, Ukrainian legislation does not pay sufficient attention to this issue. The first regulatory act that mentions the need to develop a circular bioeconomy is the Strategy for the Development of Agriculture and Rural Areas in Ukraine for the Period until 2030 (The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Strategy for the Development of Agriculture and Rural Areas in Ukraine for the Period until 2030 and Approval of the Operational Plan of Measures for its Implementation in 2025-2027") (hereinafter referred to as the ***agricultural development strategy***), which defines it as a direction for the implementation of the task 'Promoting climate change mitigation and adaptation' of strategic objective 5. Thus, it becomes **relevant** to conduct research on the legal aspects of the formation of a circular bioeconomy and its main directions (in particular, bioenergy) in Ukraine, taking into account international experience and European integration processes, which is the **purpose** of this scientific article. The primary **objectives** of the present study are threefold. Firstly, the relationship between the concepts of "circular economy" and "circular bioeconomy" as legal categories is to be defined, with the development of a definition for the latter. Secondly, the state of legal support for the development of bioenergy as the most promising direction of the circular bioeconomy for agricultural production and rural development is to be determined. Thirdly, key aspects of state policy and state support for bioenergy as a direction of the circular bioeconomy are to be analysed.

2. Analysis of Recent Researches and Publications

The problem of rethinking the existing linear economic model, expressed through the triad of actions "extract", "consume" and "dispose", and the need to find alternatives that would balance the economic and environmental needs of humanity, is not new to science in general or to legal science in particular. It is not the intention of this study to conduct a comprehensive historiography of scientific research in this field; rather, the focus will be on the findings of scientists in recent years regarding the legal aspects of the formation of a circular economy and circular bioeconomy.

First of all, it should be noted that opinions in scientific circles regarding the prospects of circular economic models vary greatly. For example, Mario Giampietro believes that the concept of a circular bioeconomy is a symptom of a deep crisis in the science of sustainable development. The author highlights the following issues: the lack of a clear definition of the term "circular bioeconomy" in scientific, political and regulatory spheres; the difficulty of society in rethinking consumption patterns to ensure the "circularity" of production and business. Finally, Mario Giampietro (2023) claims that the fundamental concept of the circular economy – namely, "closing" the processes of modern economies by utilising their products as new raw materials – is contrary to the laws of thermodynamics. The authors of this study, while concurring with the thesis that it is impossible to ensure absolute cyclicality of economic processes, nevertheless align with the perspectives of scholars who discern significant prospects in the circular economy. This standpoint is echoed by researchers specialising in issues (including legal ones) pertaining to the establishment of a circular economy at the European Union level. In this instance, the foundations for a suitable legal framework are already in place, particularly within the domain of waste management. With regard to fundamental problems, scientists point to the lack of a universal approach to the concept of a circular economy and the lack of a systematic approach to the development and implementation of relevant regulations (Steenmans, Lesniewska, 2023). Additionally, a dearth of a clear and unambiguous definition of the circular economy concept is evident at the level of European Union directives on waste management (Stankevičius, Novikovas, Bakaveckas, Petryshyn, 2020). Scientists also justify the need to introduce, at the legislative level, collective responsibility of manufacturers, consumers and governments for the impact of products on the environment throughout their entire life cycle, including waste management after expiry. This is positioned as one of the legislative instruments for adapting society's behaviour to more

environmentally friendly production and consumption (Kyriakopoulos, 2021). A similar view (already at the level of Ukraine) is expressed by R. Naboka (2021), who justifies the need to strengthen the responsibility of manufacturers for their products at the end of their use in Ukrainian legislation and to provide incentives for these entities to transition to the principles of circular production.

Research into circular economy issues at the level of individual EU countries also reveals a number of problems. These include an analysis of legislative initiatives, national strategies and legal mechanisms to stimulate Slovakia's transition to a circular economy, carried out by Matus Michalovic (2024). The author identifies gaps in national legislation and the absence of a roadmap for the circular economy. He justifies the need for Slovakia to develop a long-term concept and a strict implementation schedule for the introduction of a circular economy that embodies the principles of sustainable development. Ukrainian scientists highlight similar problems when researching the possibilities of adapting European experience in implementing a circular economy. Thus, M. Ruda, T. Yaremchuk, & M. Bortnikova (2021) argue for the need to develop and implement Ukraine's circular economy policy in a comprehensive manner in the context of global trends. They point to the low level of development of domestic "closed-cycle" economic sectors. The main shortcomings of strategic policy documents are identified (the National Waste Management Strategy of Ukraine until 2030) (The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the National Waste Management Strategy in Ukraine until 2030"), the Basic Principles (Strategy) of Ukraine's State Environmental Policy for the period until 2030 (The Law of Ukraine "On the Key Principles (Strategy) of the State Environmental Policy of Ukraine for the Period until 2030"), National Waste Management Plan until 2033 (The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the National Waste Management Plan until 2033 and Recognition of Certain Acts as No Longer Valid"), and anticipation of minimal interaction and co-operation between relevant agencies. Klievtsievych Nataliia (2022) takes an identical position, further emphasising the need for the state to introduce incentives for both businesses and consumers to change the ways goods are produced and consumed, and positioning the transition to circular economy principles as one of Ukraine's strategic objectives. The conclusions of Maryna Yaremova and Liudmyla Tarasovych (2025) regarding the challenges of implementing a European circular bioeconomy in Ukraine are also important in the context of this work. The authors emphasise the need for coordination between state institutions in developing a unified bioeconomic policy and taking into account the experience of EU countries in terms of economic incentives for businesses to transition to circular business models.

Thus, experts are virtually unanimous in their view that the prerequisite for the proper functioning of the circular economy and circular bioeconomy is the formation of appropriate policies, primarily at the state level, the definition of a unified concept of the circular economy and bioeconomy, and the unification of the categorical apparatus.

3. Methodology

The employment of methodological tools proved instrumental in accomplishing the objectives of the study and addressing the tasks delineated by the study's authors. The work employed a combination of philosophical (dialectical) methods and general scientific (formal logical and analytical) methods, as well as special scientific (formal legal and comparative legal) methods. The dialectical method formed the basis of the entire study, as it allowed to identify general domestic and European trends in the development of legal regulation of the circular economy, bioeconomy and bioenergy in its interconnection with environmental and social factors. The application of the formal-logical method made it possible to formulate the conclusions of the work and reveal the content of state policy in the field of circular bioeconomy in Ukraine. The analysis method was used in the process of reviewing scientific sources on the problems of forming and legislating the circular economy and circular bioeconomy. The formal-legal method made it possible to clarify the content of legal norms of regulatory legal acts in the field of circular economy, circular bioeconomy and bioenergy as a branch of the latter. Comparison of domestic and European legislation in the field under study became possible through the application of the comparative legal method of scientific knowledge.

4. Results and Discussions

4.1 The Relationship Between the Concepts of "Circular Economy" and "Circular Bioeconomy"

At present, there are divergent positions in scientific discourse. One such position is that of the **former** as an intersection of the bioeconomy and the circular economy. In contrast, another position is that of the **latter** as something greater than these two models separately. The latter thesis is confirmed by the objectives of the circular bioeconomy defined at the European level: ensuring food security; managing limited and depleted natural resources; reducing dependence on non-renewable resources; mitigating and adapting to climate change; creating jobs and supporting European competitiveness (Vovk, 2022).

An examination of EU legislation in this domain reveals that the bioeconomy is delineated as a **renewable component** of the circular economy (para. 2of the updated bioeconomy strategy). In the authors' view, this emphasises the circular bioeconomy's defining feature: the use of renewable resources in the production process. In light of this, the opinion of foreign experts that the circular bioeconomy is an economy nourished by nature is reasonable. This new economic model focuses on using renewable natural capital and minimising waste, replacing a wide range of non-renewable, fossil-fuel-based products that are currently in use (The circular bioeconomy Knowledge Guide). Accordingly, the transition to such an economic model is one way to promote the development of a low-carbon society, which creates opportunities to address the climate crisis and biodiversity loss while increasing productivity and competitive success (Marshall, O'Dochartaigh, Prothero, Reynolds, Secchi, 2023). However, in addition to the positive environmental and energy effects, the practical implementation of the circular bioeconomy as a labour-intensive initiative can contribute to improving the employment rate of the local rural population and raising their standard of living. It is also advisable to implement the principles of the circular bioeconomy in the restoration of rural areas affected by the war and the reformatting of entrepreneurship through the launch of new closed-cycle production facilities.

It should also be noted that today, EU legislators are significantly broadening the understanding of the bioeconomy, indicating that it covers all sectors and systems that **depend on biological resources** (animals, plants, microorganisms and derived biomass, including organic waste). In addition, it includes and interconnects: terrestrial and marine ecosystems and the services they provide; all primary production sectors that use and produce biological resources (agriculture, forestry, fisheries and aquaculture); and all economic and industrial sectors that use biological resources and processes to produce food, feed, bio-based products, energy and services (para. 1 of the updated bioeconomy strategy). As for national legislation, the agricultural development strategy stipulates that Ukraine will make every effort to ensure the functioning of a circular bioeconomy, particularly in the areas of resource restoration, recycling and the transition to renewable energy sources (hereinafter referred to as *RES*).

4.2 Legal Foundations of Bioenergy as a Branch of the Circular Bioeconomy

In this article, the latter area will be examined in greater detail, as the issue of developing alternative energy sources is becoming increasingly pertinent in the context of current global trends in energy independence. Thus, the UN General Assembly Resolution "Transforming our world: the 2030 Agenda for Sustainable Development" (2015), adopted on September 25, 2015, identifies among the global sustainable development goals the need to strengthen international co-operation to facilitate access to research and technologies for clean energy, including *RES*, energy efficiency and advanced and clean fossil fuel technologies, and to promote investment in energy infrastructure and clean energy technologies. The development of this sector is particularly important for rural areas. For example, Regulation (EU) No 1305/2013 of the European Parliament and of the Council of December 17, 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Directive No 1698/2005 (2013) stipulates that rural regeneration involves investment in the creation, improvement or expansion of all types of small-scale infrastructure, including investment in renewable energy sources and energy saving (Article 20(1)).

The Association Agreement between Ukraine, on the one hand, and the European Union, the European Atomic Energy Community and their Member States, on the other hand, ratified by the Law of Ukraine of September 16, 2014, provides for co-operation between Ukraine and the EU in the field of development and support of renewable energy, taking into account the principles of economic feasibility and environmental protection, as well as alternative fuels, in particular sustainable biofuel production (Article 338).

Today, agricultural production is increasingly being viewed as a source of renewable energy that is used in other sectors of the economy. For almost ten years, Ukrainian legislation has considered the agro-industrial complex to be a priority sector of the economy in terms of biofuel production, with a focus on import substitution (para. 1 of the List of Priority Sectors of the Economy, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 843 of 14 August 2013) (The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the List of Priority Economic Sectors"). According to the agricultural development strategy, bioenergy is directly linked to the circular bioeconomy (they are included in Task 1, "Promoting climate change mitigation and adaptation"). The bioenergy sector has perhaps the greatest potential for development in Ukraine. As stated in the National Renewable Energy Action Plan for the period up to 2030, approved by the Cabinet of Ministers of Ukraine on August 13, 2024, No. 761, this state of affairs is due to the peculiarities of the climate, the potential of the agricultural sector, and the availability of the necessary workforce. Such types of biomass as agricultural residues (primary,

formed in the field during harvesting; and secondary, formed at enterprises during crop processing and in the form of animal manure) and energy crops (used for producing solid biofuel and biogas) possess the greatest energy potential (The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the National Renewable Energy Action Plan for the Period until 2030 and the Plan of Measures for its Implementation").

According to available estimates, the development of bioenergy could satisfy about 11% of the country's natural gas needs and 19% of its electricity needs. The benefits of reducing greenhouse gas emissions are estimated at approximately 8.2 million tonnes of CO_2 equivalent. (The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Strategy for the Development of Agriculture and Rural Areas in Ukraine for the Period until 2030 and Approval of the Operational Plan of Measures for its Implementation in 2025-2027"). Given Ukraine's potential as an agricultural country, the prospects for producing alternative fuels such as biobutanol, biohydrogen, biogas, bioethanol and others from agricultural crops and agricultural waste are quite significant. This is clearly illustrated at the level of policy documents. According to Annex 4 of the National Renewable Energy Action Plan for the period up to 2020, the expected contribution of renewable energy to achieving the indicative target for renewable energy sources in the transport sector was to increase from 130,000 tonnes of oil equivalent in 2009 to 1,068,000 tonnes of oil equivalent in 2020 (The Resolution of the Cabinet of Ministers of Ukraine "On National Action Plan for Renewable Energy for the Period until 2020"). The National Renewable Energy Action Plan for the period up to 2030 envisages an increase in this figure to 1,138 thousand tonnes of oil equivalent in 2030 (The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the National Renewable Energy Action Plan for the Period until 2030 and the Plan of Measures for its Implementation"). This gives grounds to assert that the production of biofuels by agricultural producers creates conditions for the greening of agricultural production, because, as T. V. Kurman (2017) rightly points out, such activity ensures a further transition to so-called "bioenergy" relations, i.e., practically to waste-free production.

4.3 State Policy in the Field of Bioenergy as a Direction of Circular Bioeconomy

Despite its significant potential, the bioenergy sector is developing rather slowly. At the same time, as experts rightly point out, the implementation of appropriate state policy and state support is a prerequisite for achieving the above-mentioned indicators (Pryshliak, 2021). The need to take measures to provide state support for this sector is mentioned in a number of regulatory and legal acts. Thus, among the main tasks of the State Targeted Economic Programme for Energy Efficiency and Development of Energy Production from Renewable Energy Sources and Alternative Fuels for 2010-2021, approved by Resolution of the Cabinet of Ministers of Ukraine No. 243 of 1 March 2010 (2010), the following were envisaged: implementation of projects for the construction of facilities for the production of biodiesel and fuel bioethanol; implementation of projects for the construction of plants operating on solid biofuel and biogas; implementation of pilot projects for the construction of biomass-fired power generation plants; development of a feasibility study and design for the construction of a model modern mini-HPP plant fuelled by biomass and other alternative fuels. The Law of Ukraine "On Alternative Types of Fuel" (2000) stipulates that in order to stimulate the development and implementation of new technologies, equipment and materials in the process of production (extraction) of alternative types of fuel, legal entities and individuals shall be granted subsidies, grants, tax, credit and other benefits established by the relevant laws of Ukraine (Article 9). Decree No. 1094/2003 of the President of Ukraine dated September 26, 2003 stipulates the introduction of economic mechanisms to stimulate the production of machines, devices, power plants, and other technical means that run on fuel from biological raw materials, and their use in industry, energy, and transport (para. 2 of the Decree of the President of Ukraine "On Measures to Develop Fuel Production from Biological Raw Materials").

It is worth dwelling separately on the analysis of legislative changes that took place on May 1, 2025, due to the entry into force of the Law of Ukraine "On Amendments to Certain Laws of Ukraine Regarding the Mandatory Use of Liquid Biofuels (Biocomponents) in the Transport Sector" (The Law of Ukraine "On Amendments to Certain Laws of Ukraine Regarding the Mandatory Use of Liquid Biofuels (Biocomponents) in the Transport Sector") regarding the mandatory share of liquid biofuel (biocomponents) in motor gasoline volumes of at least 5% by volume (except for gasoline with an octane rating of 98 and above and gasoline supplied for the needs of the Ministry of Defence of Ukraine). As V.S. Grachuk rightly points out, in order to meet this requirement, it is important that such biofuels or biocomponents meet the sustainability criteria set out in the same Law. In other words, they must be environmentally friendly, rather than simply being formally produced from biomass (Grachuk, 2025).

These innovations are largely due to Ukraine's European integration policy, as the provisions of Directive 2009/28/EC of the European Parliament and of the Council of April 23, 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (2009) and Directive (EU) 2018/2001 of the European Parliament and of the Council of December 11, 2018 on the promotion of energy from renewable sources (2018).

It is expected that the introduction of mandatory use of liquid biofuels (bio-components) in the transport sector at the state level will contribute to the development of agricultural production. First and foremost, this concerns corn cultivation and alcohol production. According to V. Koval, the Ukrainian Minister of Agrarian Policy and Food, bioethanol production could become an important area for the agricultural sector. This is because it enables domestic farmers to remove significant volumes of raw materials, such as corn, from the export market. By processing these materials into bioethanol, they can obtain a high added value and, consequently, additional profit ("Bioethanol in Ukraine: opportunities for farmers and market prospects"). This step is also seen as a way to cut greenhouse gas emissions, boost Ukraine's energy independence by increasing domestic fuel production, and save money on imported oil products.

A telling example of how the state supports the industry is its tax policy. Currently, transactions involving the importation into the customs territory of Ukraine of equipment that runs on renewable energy sources, equipment and materials for the production of alternative fuels or for the production of energy from renewable energy sources, materials, equipment, and components used for the production of equipment that runs on renewable energy sources, etc., are exempt from value added tax (hereinafter referred to as *VAT*) (Article 197.16 of the Tax Code of Ukraine). Temporarily, until January 1, 2019, transactions involving the supply of machinery, equipment and devices used for the reconstruction of existing and construction of new biofuel production facilities and for the manufacture and reconstruction of technical and transport vehicles for the purpose of consuming biofuel were exempt from VAT, if such goods are not produced and have no analogues in Ukraine, as well as technical and transport vehicles, including self-propelled agricultural machinery running on biofuel, if such goods are not produced in Ukraine (para. 2, sub-section 2 of the Transitional Provisions of the Tax Code of Ukraine). As S.A. Obolenska (2017) correctly observes, this term is not adequately substantiated, given that the aforementioned tax incentives should apply to the specified transactions without any temporal restriction. In contrast, domestic manufacturers of biofuel production equipment, along with enterprises engaged in biofuel production, are not beneficiaries of any tax incentives.

Measures aimed at ensuring the development of bioenergy are also established in Ukraine's agricultural legislation. The Law of Ukraine "On State Support for Agriculture in Ukraine" of June 24, 2004 provides for financial support for entities operating in the agro-industrial complex through a mechanism for reducing the cost of loans (Article 13). It should be noted that this regulatory act includes agricultural products (goods) as waste obtained during the production of agricultural products (goods) specified in groups 1-24 of the Ukrainian Classification of Goods for Foreign Economic Activity in accordance with the Law of Ukraine "On Customs Tariff of Ukraine" (2022). According to A.V. Pastukh, classifying biofuels and energy obtained from the processing and utilisation of agricultural products (goods) and their waste as agricultural products is inappropriate, given the existence of special legislation. Accordingly, legal regulation of support for producers of such products should be carried out not by the Law of Ukraine "On State Support of Agriculture of Ukraine", but by special laws (Pastukh, 2017). It is the contention of the present study that, given the direct correlation between relations in the field of bioenergy and the process of agricultural production, regulation of such relations by agricultural legislation is imperative. Furthermore, T.V. Kurman asserts that, in contemporary conditions, within the ambit of agricultural law, agro-energy relations are being established, including relations involving biomass processing and biofuel production. As a complex agrarian-legal category, they cover: production relations involving the cultivation of energy crops and other types of agricultural activities that result in the production of biomass; relations involving the processing of biomass into biofuel and its sale; biotechnological relations for ensuring waste-free agricultural production; scientific and research relations in the field of alternative energy; agro-protection relations in the field of stimulating biofuel production; regulatory relations; agro-ecological relations, and so forth (Kurman, 2024).

In addition, a number of strategic documents aimed at addressing problems in the agricultural sector refer to the need to take measures to support the development of bioenergy. Thus, the Strategy for the Development of the Agricultural Sector of the Economy for the Period until 2020, approved by the Order of the Cabinet of Ministers of Ukraine No. 806 of October 17, 2013 (The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Strategy for the Development of the Agricultural Sector of the Economy for the Period until 2020"), provided for priority support for the food and

processing industries by stimulating the production of new types of products (bioethanol, rapeseed and soybean oil), the production of alternative types of energy, primarily the production of biofuels from crops whose products are not used for food or animal feed. The agricultural development strategy establishes investments in biogas production based on biomass, waste and residues from agricultural production and the processing industry (strategic objective 3). Unfortunately, such regulatory acts only establish strategic objectives and do not provide for a mechanism for their implementation. In order to ensure state support for the development of this industry and measures to achieve this with the identification of sources of funding, the authors believe it is necessary to adopt a relevant state target programme, especially since the Concept of the State Target Scientific and Technical Programme for the Development of the Production and Use of Biological Fuels was approved by a resolution of the Cabinet of Ministers of Ukraine on February 12, 2009 (The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Concept of the State Target Scientific and Technical Programme for the Development of Production and Use of Biological Fuels").

Based on the above and the content of agro-energy relations, it can be concluded that they directly correlate with the basic principles of the circular bioeconomy and are one of its directions/components. In addition, the agricultural production sector is capable of making a significant contribution to the implementation of this new economic model. Accordingly, relations in the field of the circular bioeconomy should also be included in the subject of agricultural law. In addition, it is argued that the concept of a "circular bioeconomy" should be considered as a new category of agrarian law science. This is proposed to be understood as an economic model aimed at ensuring food security in the country through the functioning of a waste-free system (including agricultural production), based on the use of bioenergy resources, which reduces the negative impact on the environment. Taking into account global trends in the development of legislation in this area, it seems appropriate to enshrine this legal category in national agricultural legislation.

5. Conclusions

Thus, it should be noted that circular bioeconomy has not yet been enshrined in legislation in general and agricultural legislation in particular. Accordingly, further efforts should be focused on ensuring proper legal regulation of relations in the field of circular bioeconomy, including through agricultural legislation that must comply with Ukraine's international and European integration obligations, as well as modern challenges and realities.

Given that relations in the field of circular bioeconomy are closely linked to agricultural production processes, ensuring food security in the country and the development of rural areas, in particular their restoration in the post-war period, they should be included in the subject of agricultural law.

Given the enormous potential of the agricultural sector in the field of biological waste utilisation in agricultural production and biomass energy production, it is reasonable to consider the circular bioeconomy as a new category of agricultural law. This concept refers to an economic model aimed at creating conditions for ensuring food security in the country through waste-free (including) agricultural production based on the use of mainly bioenergy resources, which reduces the negative impact on the environment.

It is imperative to acknowledge the significance of the bioenergy component within the context of the circular bioeconomy. A thorough examination of national legislation pertaining to bioenergy relations indicates that the level of state support for these relations is deemed to be inadequate. The proposed solution to this problem is the adoption of an appropriate state target programme.

Appreciation is extended to the Ministry of Education and Science of Ukraine for the opportunity to disseminate the findings of this scientific research.

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Received on: 25th of May, 2025
Accepted on: 23th of July, 2025
Published on: 13th of August, 2025