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CHAPTER 2. LEGAL REGULATION OF BIOENERGY IN UKRAINE

2.1. Legislative support of bioenergy in Ukraine

In general, bioenergy is an electric power industry based on the use of biofuel produced from biomass. This is a non-fossil biologically renewable substance of organic origin, capable of biological decomposition, in the form of products, waste, and residues of forestry and agriculture (crop and animal husbandry), fisheries, and technologically related industries, as well as a component of industrial or household waste, capable of biological decomposition[1].

Bioenergy, as well as other areas of alternative energy, was in the phase of active development and modernization until 2022. At the same time, even in the context of the ongoing war, this sector was able to continue moving forward, realizing the need for energy independence of the country and sharing European values in the field of green energy. At the same time, it should be noted that on the one hand, the use of biomass is an affordable and convenient way to reduce greenhouse gas emissions, on the other hand, bioenergy has serious downsides: expanding agricultural land use, increasing agricultural burden on the environment, exacerbating food security problems, etc. Balancing these important issues is a difficult task for all countries that have favorable bioenergy prerequisites, particularly, for states with a developed agricultural sector.

That is why the issue of whether the legislation is ready for this fast and rapid development of social relations is urgent[2]. Undoubtedly, Ukraine needs strong conceptual foundations for the development of such a legal and regulatory framework. Consequently, the domestic legislative ensuring of bioenergy as a component of alternative energy is heterogeneous,

[1] Про альтернативні види палива : Закон України від 14 січня 2000 року: *Відомості Верховної Ради України*. 2000. № 12. Ст. 94.

[2] Харитонова Т. Є., Григор'єва Х. А. Доктрина правового регулювання альтернативної енергетики в Україні : сучасні тенденції розвитку. *KELM (Knowledge, Education, Law, Management).* 2020. № 3 (31). С. 295–296. (С. 295).

characterized primarily by numerous by-laws, general declarative legislative norms, as well as some inconsistency in legal regulation.

Due to the constant development of bioenergy, there is no universal model for building bioenergy legislation in Ukraine. There is also no rigidly defined periodization of its development. In particular, agreeing in whole with the general periodization of the formation of the legislation of Ukraine in the field of alternative energy[3], it should be noted that bioenergy legislation has certain features in its development that cause sometimes a different partition into periods depending on the content of the stage.

The first is the implementation stage (1993–2002), at which amendments to the current and adoption of new regulatory acts in the use of renewable energy sources begin. The purpose of this stage was to legislate the basic concepts, ideas, and principles of alternative energy. The main laws of this stage were the Law of Ukraine "On Energy-Saving" of July 1, 1994[4], which has now lost its effect, and the Law of Ukraine "On Alternative Types of Fuel" of January 14, 2000[5]. It contains mainly definitions of the concepts of "alternative fuels", "biomass", "biogas", "biofuels", etc.

The second stage of formation and development (2003–2010) is characterized by the development and reform of the energy complex and the expansion of the network of alternative energy facilities and renewable sources. The basic legislative act in the studied sphere is the Law of Ukraine "On Alternative Energy Sources" of February 20, 2003, which defines the legal, economic, ecological, and organizational basis for the use of alternative energy sources and helps to expand their use in the fuel and energy complex. The main regulatory act regulating the use of biomass and biogas at this stage is the Law of Ukraine "On Amendments to Certain Laws of Ukraine on Promoting the Production and Use of Biological Fuels" of May 21, 2009[6]. This act is aimed at stimulating the production and use of biological fuels, the development of the national fuel market in Ukraine based on biomass attraction, as renewable raw materials for the manufacture of biological fuels.

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[3] Платонова Є. О. Етапи розвитку законодавства у сфері використання альтернативних джерел енергії в Україні. *Юридичний науковий електронний* журнал. 2020. № 8. С. 251–255.

[4] Про енергозбереження : Закон України від 01 липня 1994 року. *Відомості Верховної Ради України*. 1994. № 30. Ст. 283 *(втратив чинність 13.11.2021 року).*

[5] Про альтернативні види палива : Закон України від 14 січня 2000 року: *Відомості Верховної Ради України*. 2000. № 12. Ст. 94.

[6] Про внесення змін до деяких законів України щодо сприяння виробництву та використанню біологічних видів палива : Закон України від 21 травня 2009 року. *Відомості Верховної Ради України*. 2009. № 40. Ст. 577.

In addition, at the stage of formation and development, several by-laws were adopted detailing the provisions of the laws and regulating the functioning of bioenergy in more detail. Such by-laws are: The program for the development of the production of diesel biofuels, approved by The Resolution of the Cabinet of Ministers of Ukraine of December 22, 2006[7]; The concept of the state specific scientific and technical program for the development of the production and use of biological fuels, approved by the order of the Cabinet of Ministers of Ukraine of February 12, 2009 [8].

A feature of this period is that the legislation gradually turns from declarative to more detailed and specific, including provisions for the use of various biological fuels, rules for the production of biological energy, as well as requirements for activities and subjects involved in bioenergy.

Unlike the first and second stages, the third *stage of cooperation and partnership (2010–2017)* is aimed at creating a favorable investment climate in the energy sector, as well as Ukraine's accession to the European Energy Community and adopting international experience in bioenergy. In this regard, the Law of Ukraine "On Electricity Market" of April 13, 2017[9] introduced a number of significant innovations.

One of the priority directions for the development of legislation in the field of alternative energy at the third stage is international cooperation. Thus, the Law of Ukraine "On Ratification of the Protocol on the Accession of Ukraine to the Agreement on the Establishment of the Energy Community" of December 15, 2010 imposed an obligation on Ukraine to implement a number of EU directives, including the Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market[10]. In addition, Ukraine, as a party to the United Nations Framework Convention on Climate Change[11] and the Kyoto Protocol, ensures the fulfillment of obligations under these international agreements. The development of the Ukrainian economy, taking into

[7] Про затвердження Програми розвитку виробництва дизельного біопалива : постанова Кабінету Міністрів України від 22 грудня 2006 року. *Офіційний вісник України*. 2006 р. № 52. Ст. 3497.

[8] Про затвердження Концепції Державної цільової науково-технічної програми розвитку виробництва та використання біологічних видів палива : розпорядження Кабінету Міністрів України від 12 лютого 2009 року. *Офіційний вісник України*. 2009 р. № 21. Ст. 682.

[9] Про ринок електричної енергії : Закон України від 13 квітня 2017 року. *Відомості Верховної Ради України*. 2017. № 27-28. Ст. 312.

[10] Про ратифікацію Протоколу про приєднання України до Договору про заснування Енергетичного Співтовариства : Закон України від 15 грудня 2010 року. *Відомості Верховної Ради України*. 2011. № 24. Ст. 170.

[11] Про ратифікацію Рамкової конвенції ООН про зміну клімату : Закон України від 29 жовтня 1996 року. *Відомості Верховної Ради України.* 1996. № 50. Ст. 277.

account the reduction of greenhouse gas emissions, also provides for the Paris Agreement, ratified by the Law of Ukraine of July 14, 2016[12].

Among the by-laws of this stage, it is worth paying attention to the resolution of the Cabinet of Ministers of Ukraine "On approval of the Regulation on the State Agency for Energy Efficiency and Energy Saving of Ukraine" of November 26, 2014[13], which announced the creation of a new state authority with special competence in the field of energy.

The fourth stage of modernization (2017 – February 24, 2022) provided for reforming the legislative support of the industry, as well as improving the electricity generation sector itself from renewable sources of energy, including biomass. On August 18, 2017, the Cabinet of Ministers of Ukraine issued an order to approve the integrated Energy Strategy of Ukraine for the period up to 2035 "Safety, energy efficiency, competitiveness", which determined that "the main measures for the implementation of strategic goals in the renewable energy sector are an increase in the use of biomass in the generation of electric and thermal energy by: promoting the use of biomass as a fuel in enterprises where biomass is a residual product; informing about the possibility of using biomass as a fuel in individual heat supply; promoting the creation of competitive biomass markets"[14].

The Energy Strategy was to contribute to the growth of the share of the energy sector, which uses solid biomass and biogas as an energy resource. At the same time, not all planned tasks were completed in full before the start of the full-scale war in Ukraine, and in the future the effective implementation of this act became impossible. On April 21, 2023, the Cabinet of Ministers of Ukraine determined the need to approve the Energy Strategy of Ukraine for the period up to 2050 and entrusted the Ministry of Energy of Ukraine, together with other central executive bodies, to ensure the development of an action plan for the implementation of this Strategy within three months. The new document should contain a set of legal norms that will overcome existing problems in the field of alternative energy in general and bioenergy in particular, as well as bring the industry to a qualitatively new stage of development.

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[12] Про ратифікацію Паризької угоди : Закон України від 14 липня 2016 року. *Відомості Верховної Ради України.* 2016. № 35. Ст. 595.

[13] Про затвердження Положення про Державне агентство з енергоефективності та енергозбереження України : постанова Кабінету Міністрів України від 26 листопада 2014 року. *Офіційний вісник України.* 2014. № 97. Ст. 2801.

[14] Про схвалення Енергетичної стратегії України на період до 2035 року "Безпека, енергоефективність, конкурентоспроможність" : розпорядження Кабінету Міністрів України від 18 серпня 2017 року № 605-р. *Урядовий кур'єр* від 08 вересня 2017 року № 167 *(втратила чинність 21.04.2023 року).*

The stage of bioenergy development under martial law and post-war reconstruction (February 24, 2022 – post-war time) is the fifth, ongoing stage. The development of legislation during the war and after its end cannot be divided, since the post-war reconstruction of the industry is directly connected with the war and the devastating consequences that it has already brought and, unfortunately, can lead to in the future. The second factor in the continuity of the stage is the fact that despite martial law, the bioenergy industry, although slowly but developing, accelerates the achievement of the main goal of using renewable energy sources – decarbonization of the country's economy and the "green" transition.

The need to guarantee the energy independence of the country, the numerous destructions of critical infrastructure, and the ruining of renewable energy facilities or their placement in temporarily uncontrolled territories are all factors that determine the need for the further development of the alternative energy industry and the development of the latest legislation that should ensure legal regulation of issues in this area taking into account the realities of today. An example of such regulatory acts should be the above-mentioned Energy Strategy of Ukraine for the period up to 2050, as well as the Plan for the Restoration of Ukraine until 2032, presented by the Cabinet of Ministers of Ukraine in July 2022 at an international donor conference in Lugano, Switzerland. The last of these documents will become a road map according to which the post-war development of Ukraine will take place.

As noted on the official website of the Cabinet of Ministers of Ukraine, the Recovery Plan of Ukraine is based on five basic principles, namely: immediate beginning and gradual development; building fair welfare; integration into the EU; rebuilding better than it was on a national and regional scale; stimulating private investment. One of the programs under which the revival of the state should take place is energy independence and the Green Deal. Important is the fact that according to the rulemaker, the development of the production of biofuels (bioethanol, biodiesel, biomethane, biomass) from agricultural products, residues and waste – acts as a priority direction for the implementation of this course.

In addition, on June 30, 2023, the Verkhovna Rada of Ukraine adopted the Law "On Amendments to Certain Laws of Ukraine on the Restoration and "Green" Transformation of Ukraine's Energy System"[15], which is aimed at strengthening Ukraine's energy independence due to the development of decentralized generation of electricity from renewable

[15] Про внесення змін до деяких законів України щодо відновлення та "зеленої" трансформації енергетичної системи України : Закон України від 30 червня 2023 року. *Голос України* від 26.07.2023. № 18.

sources. The adoption of this law will contribute to the development of renewable electricity on a competitive basis and create prerequisites for deeper integration of green generation into the power system and the electricity market.

2.2. Environmental and legal protection of lands and soils during biomass production

Despite all the advantages of bioenergy, it is impossible to ignore the problem of soil deterioration due to an excessive increase in sown areas for energy crops, which negatively affects the quality of land. That is why increasing demand for biomass as an energy source can generate a risk of depletion of land resources.

The need for special legal regulation of the use and protection of land and soils is justified in regulatory acts of a program nature. The Law of Ukraine "On the Key Principles (Strategy) of the State Environmental Policy of Ukraine for the Period till 2030" of February 28, 2019[16] provides that the modern use of land resources of Ukraine does not comply with the requirements of rational environmental management. The state of land resources of Ukraine is close to critical, the reasons for which are violation of the ecologically balanced ratio between categories of land, reduction of the territory of unique steppe areas, excessive ploughness of the territory, and disruption of the natural process of soil formation, the use of inappropriate technologies in agriculture, industry, energy, transport and other branches of economy, focus on achieving short– and medium-term economic benefits, ignoring the environmental component and negative consequences in the long term. One of the main strategic goals, according to this Act, is to ensure the sustainable use and protection of land, improve the condition of affected ecosystems and promote the achievement of a neutral level of land degradation, increase the level of awareness of the population, landowners and land users regarding the problems of land degradation. However, an example of ignoring the principle of rational use and protection of land is the Program for the Development of the production of diesel biofuels, approved by the Resolution of the Cabinet of Ministers of Ukraine of December 22, 2006 No. 1774[17], noting the need to increase crops for biofuel production, in particular, the expansion of rapeseed

[16] Про Основні засади (стратегію) державної екологічної політики України на період до 2030 року : Закон України від 28 лютого 2019 року. *Відомості Верховної Ради України*. 2019. № 16. ст. 70.

[17] Програма розвитку виробництва дизельного біопалива : затверджена постановою Кабінету Міністрів України від 22 грудня 2006 року № 1774. *Офіційний вісник України*. 2006. № 52. ст. 3497.

growing areas, increasing its yield, but measures are not provided for the rational use and protection of land in the process of such activities.

In this regard, there is a problem of legal protection of lands that are used for the production of biomass. General legal requirements for land protection are provided for by the Land Code of Ukraine[18] and a number of laws of Ukraine: "On Land Protection" of June 19, 2003[19], "On State Control Over the Use and Protection of Land" of June 19, 2003[20], "On Land Reclamation" of January 14, 2000[21], "On Pesticides and Agrochemicals" of March 2, 1995[22], etc. However, there is no regulatory act that provides for special measures for the protection of land and soils in the production of biomass[23].

In general, biomass production is associated with the use of agricultural land. Thus, Article 36 of the Law of Ukraine "On Land Protection" of June 19, 2003 provides that the protection of land during economic activities on agricultural lands is provided on the basis of the implementation of a set of measures to preserve the productivity of agricultural lands, increase their environmental sustainability and fertility of soils, as well as limit their withdrawal (redemption) for non-agricultural needs. Land protection in the carrying out of economic activities, which refers to the bioenergy sector of the economy to a certain extent, is devoted to Section VI of the Law of Ukraine "On Land Protection". However, these norms are generalizing in nature and do not reflect the specifics of biomass production and the peculiarities of its impact on land resources.

To prevent environmental damage, ensure environmental safety, environmental protection, rational use and reproduction of natural resources, in the process of making decisions on economic activity, which can have a significant impact on the environment, taking into account state, public and private interests, the Law of Ukraine "On Environmental Impact

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[18] Земельний кодекс України : прийнятий 25 жовтня 2001 року. *Відомості Верховної Ради України*. 2002. № 3-4. ст. 27.

[19] Про охорону земель : Закон України від 19 червня 2003 року. *Відомості Верховної Ради України*. 2003. № 39. ст. 349.

[20] Про державний контроль за використанням та охороною земель : Закон України від 19 червня 2003 року. *Відомості Верховної Ради України*. 2003. № 39. ст. 349.

[21] Про меліорацію земель: Закон України від 14 січня 2000 року. *Відомості Верховної Ради України*. 2000. № 11. ст. 90.

[22] Про пестициди і агрохімікати : Закон України від 02 березня 1995 року. *Відомості Верховної Ради України*. 1995. № 14. ст. 91.

[23] Чумаченко І. Є. Еколого-правові вимоги та запобіжники, що забезпечують охорону земель та ґрунтів під час виробництва біомаси. *Юридичний науковий електронний журнал.* 2021. № 5. С. 122–125.

Assessment" of May 23, 2017[24] was adopted. The impact on the environment is recognized as any consequences of the planned activity on the environment, including consequences for the safety and health of people, flora, fauna, biodiversity, soil, air, water, climate, landscape, natural areas and objects, historical monuments and other material objects or for the totality of these factors, as well as the consequences for objects of cultural heritage or socio-economic conditions, which are the result of changes in these factors. Article 3 of this Law defines the scope of environmental impact assessment, in which bioenergy, biomass production in agriculture are not included. Taking into account all the environmental risks of biomass production activities, it is necessary to eliminate such a legislative gap[25]. However, this view remains controversial, because it can become a factor of arbitrary inhibition of industry development.

Some environmental standards that apply to subjects of electric and thermal energy production from biomass are also included in the Law of Ukraine "On Electricity Market" of April 13, 2017[26]. Thus, according to Part 1 of Article 14 of this Law, electric power enterprises must comply with the requirements of the legislation on environmental protection, carry out technical and organizational measures aimed at reducing the harmful impact of electric power facilities on the environment, and are also responsible for violating the requirements of the legislation on environmental protection. However, such a norm is distinct and has no independent regulatory value. The criteria for assessing the environmental safety of the activities of individuals and legal entities are environmental standards. The system of standards in the field of environmental protection is defined by Article 33 of the Law of Ukraine "On Environmental Protection" of June 25, 1991[27]. However, several special standards in the field of land protection and soil fertility reproduction are defined in Article 165 of the Land Code of Ukraine. Failure to comply with the established environmental standards and norms for the protection of land and soils leads to the loss of soil fertile properties, so there is a need for more intensive use of fertilizers.

[24] Про оцінку впливу на довкілля : Закон України від 23 травня 2017 року. *Відомості Верховної Ради України.* 2017. № 29. ст. 315.

[25] Чумаченко І. Є. Еколого-правові вимоги та запобіжники, що забезпечують охорону земель та ґрунтів під час виробництва біомаси. *Юридичний науковий електронний журнал.* 2021. № 5. С. 122–125.

[26] Про ринок електричної енергії : Закон України від 13 квітня 2017 року. *Відомості Верховної Ради України.* 2017. № 27-28. ст. 312.

[27] Про охорону навколишнього природного середовища : Закон України від 25 червня 1991 року. *Відомості Верховної Ради України*. 1991. № 41. ст. 546.

The question of the possibility of growing energy crops on lands with low fertility remains controversial in the doctrine. In particular, such lands include degraded and low-productive land plots. The use of unproductive land for the cultivation of bioenergy crops can become one of the priorities of the state agricultural policy of Ukraine. Planting plantations of perennial bioenergy plants on unproductive and erosion-prone lands will help restore their fertility and ensure a steady supply of high-quality raw materials for the production of various types of biofuels[28]. Considering this, experts recommend choosing land for these crops, useless (or not very useful) for agriculture[29]. That is, those that usually have to be mothballed. According to the State Agency on Energy Efficiency and Energy Saving of Ukraine, when using, for example, 4 million hectares of such poor lands for growing energy willow, poplar, miscanthus, etc., their further processing for combustion in boilers, about 20 billion m^3 of gas can be replaced annually. The Agency supports their full-scale use for appropriate purposes to increase the volume of biomass substitution of natural gas[30]. In addition, it is proposed to recognize the cultivation of energy crops on degraded and unproductive lands, the economic use of which is environmentally dangerous and economically inefficient, as a measure to preserve them[31]. However, it is worth noting that the goals of plant biomass production may not coincide with the goals of land conservation, which, under certain conditions, are a priority for sustainable development, so when using low-productivity or degraded land plots, you should, first of all, ensure that their use does not cause even more damage to the lands, and their conservation time has not become even longer.

Modern environmental and legal provision of land protection in biomass production is a symbiosis of environmental, land, agrarian and energy legislation. The study of these legal norms indicates that they do not fully reflect modern trends and environmental requirements for the protection of land resources in the context of active search and application of innovative methods in the energy sector of the economy, namely in the production of

[28] Роїк М. В., Ганженко О. М. Агроекологічні аспекти сталого розвитку біоенергетики. *Біоенергетика.* 2020. № 1. С. 4–7.

[29] Гелетуха Г., Драгнєв С., Кучерук П., Матвєєв Ю. Практичний посібник з використання біомаси в якості палива у муніципальному секторі України (для представників агропромислового комплексу). Київ : Програма розвитку ООН, 2017. С. 49.

[30] Вирощування енергетичних культур в Україні є важливою складовою у напрямку заміщення газу. URL: https://www.saee.gov.ua/uk/news/1209 (дата звернення: 10.06.2023 року).

[31] Пастух А.В. Правове регулювання вирощування та перероблення сільськогосподарської сировини для виробництва біопалива : автореф. дис. … канд. юрид. наук : 12.00.06. Київ, 2017. 18 с.

biomass. The current state of environmental and legal requirements for the protection of land and soils for the needs of bioenergy is provided by general standards, without taking into account the peculiarities of such activities. In Ukraine, there is no special legal regulation aimed at preserving the quality, and fertility and preventing depletion of land and soils during biomass production. Therefore, it should be timely to introduce special focused relevant norms into the current legislation. In addition, it is necessary to take into account the obligations of Ukraine as a member of the Energy Community and the party to the Association Agreement with the EU and introduce into national legislation the imperative of biomass sustainability, which means the introduction of restrictions for the cultivation of biomass on lands that are of increased importance for the preservation of biological diversity, as well as the application of environmental requirements for the cultivation of agricultural raw materials for the production of biofuels. In addition, at the legislative level, it is necessary to solve the issue of the possibility of growing energy crops on degraded and unproductive land plots and make appropriate changes to the regulatory acts, where it is necessary to determine which land plots can be used and which energy crops will contribute to the restoration of their fertility and ensure the steady supply of high-quality raw materials for the production of various types of biomass.

2.3. Legal regulation of biomass processing for energy production

Despite the extensive and multidimensionality of the national legal regulation in the studied sphere, one can see the separate non-system of the relevant norms, the low level of their mutual coherence, and the general declarative nature. This approach, given the importance of further progressive development of alternative energy and bioenergy, is not effective in modern realities, so it is important to find new and update existing views on the issue of legislative support of bioenergy, in order to overcome the problematic aspects existing in this area.

Today, Ukraine, even under the conditions of the ongoing martial law, is one of the largest exporters of a number of energy-containing crops, in particular rapeseed, which, among other things, is used for the production of biodiesel and rapeseed oil. Thus, according to preliminary estimates, the production and export of rapeseed in 2022/2023 became record, which leads to the possibility of shipping about 3.4 million tons of this oil to foreign markets. This is 26% higher than last year's season[32].

[32] Україна експортує рекордний обсяг ріпаку. *АПК-Інформ*. URL: https://www.apk-inform.com/uk/news/1534439 (дата звернення: 10.06.2023 року).

Without minimizing the importance of Ukraine's export activities abroad, it is reasonable to draw attention to the fact that such actions lead to a situation where the added value of products exported from Ukraine is formed on the territory of other states, which, among other things, in the future can import electricity and other final product at significantly higher prices than biomass was sold for their production.

The conclusion about some indifference of the legislator to the settlement of the issue of establishing biomass processing on the territory of our state can be traced to the establishment of minimum or zero rates of export duties for the sale of biomass abroad. For some types of oilseeds (flax, sunflower, and redhead seeds), this rate is set at 10% of the customs value[33], and the export of the already mentioned rapeseed seeds is now taxed at a zero rate.

Such conditions do not stimulate, but may even demotivate the Ukrainian energy sector to process biomass and produce finished products, do not increase the level of energy independence of the state and only create foundations for further increase in the level of exported biomass abroad. In this regard, the legislator should pay attention to the establishment of a biomass processing mechanism, and not only on its production, introducing a number of protection and stimulating mechanisms.

The dual-track legal mechanism of state support provided by the Law of Ukraine "On Alternative Energy Sources", aimed not only at stimulating electricity producers from biomass but also at supporting modern domestic engineering, deserves unconditional positive recognition in this aspect[34]. It is about the mechanism of increase to the "green" tariff for compliance with the level of use of Ukrainian-made equipment at electric power facilities producing electric energy from biomass or biogas put into operation from 01.07.2015 by 31.12.2024[35].

The continuation of the functioning of the existing and introduction of new similar mechanisms will allow exporting for the needs of other states not only biomass itself but a more valuable product, while creating added value in the form of a higher price for the products themselves, jobs, taxes paid, etc. In addition, this would allow to meet Ukraine's own needs in biofuels and other biomass processing products.

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[33] Про ставки вивізного (експортного) мита на насіння деяких видів олійних культур : Закон України від 10 вересня 1999 року. *Відомості Верховної Ради України*. 1999. № 44. Ст. 389.

[34] Платонова Є. О. Правові особливості державного стимулювання біоенергетики в Україні : ретроспектива, сучасність і перспектива. *Юридичний науковий електронний журнал*. 2021. № 5. С. 118.

[35] Про альтернативні джерела енергії : Закон України від 20 лютого 2003 року. *Офіційний вісник України*. 2003. № 12. Ст. 522.

This is especially relevant in the context of the ban (which, nevertheless, is temporary) of the European Commission on the import of Ukrainian agricultural products to individual states of the European Union, given the significantly lower purchase price along with the national market price of the relevant crops[36]. In this context, the creation, development and scaling of a network of capacities that would ensure the processing of biomass on the territory of Ukraine, as an alternative option for the use of products that cannot be widely exported, would make it possible to create both a specified added value and minimize the risk of loss of consumer properties due to the impossibility of any use for needs other than export.

Ignoring the need to establish the process of processing biomass, and not only its production, can in the future lead to deterioration of agricultural potential, in particular, depletion of agricultural land, and the ability of Ukraine to grow any products for its own national needs or export, creating an imbalance of technical crops as opposed to food. After all, although the growing international demand for bioenergy is of particular interest to developing countries and looking for opportunities for economic growth and trade[37], the investment interest of other states in the purchase of Ukrainian products multiplied by state support for growing agricultural products for biomass may have a negative consequence in the form of freezing of Ukrainian bioenergy potential at the raw material level[38].

The issue of preventing deterioration of the land used to obtain biomass, and in general, non-degradation of the ecology level, is a separate problem, which also requires constant attention. This is because the advantages of using and developing bioenergy and biomass processing are in unbroken unity not only with the possibility of reducing greenhouse gas emissions but also with many potentially possible consequences, not less dangerous than from traditional (fossil) energy sources.

Especially critical is the state of land resources of Ukraine, which are widely used in bioenergy. The reasons for this are the violation of the environmentally balanced ratio between the categories of land, the reduction of the territory of unique steppe plots, excessive ploughness of territory and

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[36] Commission adopts exceptional and temporary preventive measures on limited imports from Ukraine. *European Commission.* Brussels, 02 May 2023. URL: https://ec.europa.eu/commission/presscorner/detail/en/ip_23_2562 (дата звернення: 10.06.2023 року).

[37] Павлига А. В. Переробка біомаси для виробництва енергії : законодавче забезпечення та проблемні аспекти. *International scientific journal : "Internauka".* Series : "Juridical sciences". 2021. № 6 (40). С. 13.

[38] Григор'єва Х. А. Державна підтримка сільського господарства України : проблеми правового забезпечення : монографія. Херсон : Видавничий дім "Гельветика", 2019. С. 330.

disturbance of the natural process of soil formation, the use of imperfect technologies in agriculture, industry, energy, transport and other sectors of the economy, the focus on achieving short– and medium-term economic benefits, ignoring the environmental component and negative consequences in the long term[39]. In addition, often the cultivation of energy plants is carried out based on monocultural agriculture, where plants are concentrated in one place, almost without crop rotation[40].

In addition, it should be noted that along with the positive impact on the environment due to the CO_2-neutrality of biofuels, the energy use of biomass can also harm atmospheric air, soils and water bodies. In particular, this is due to excessive consumption of energy resources in the process of biomass production or excessive emissions of pollutants and waste from its burning[41].

The analysis of the scope of legislation regulating the environmental aspects of environmental management gives some hope for the importance of environmental protection and resources. This list includes, among others, the United Nations Framework Convention on Climate Change of 11.06.1992 ratified by Ukraine[42] and the Paris Climate Agreement of 12.12.2015[43], Land Code of Ukraine of 25.10.2001[44], laws of Ukraine "On Environmental Protection" of 25.06.1991[45], "On Land Protection" of 19.06.2003[46], "On State Control over Land Use and Protection" of 19.06.2003[47], "On Environmental Network of Ukraine" of 24.06.2004[48],

[39] Чумаченко І. Є. Еколого-правові вимоги та запобіжники, що забезпечують охорону земель і ґрунтів під час виробництва біомаси. *Юридичний науковий електронний журнал*. 2021. № 5. С. 123.

[40] Трегуб О. А. Модернізація правового регулювання виробництва і використання біомаси на засадах сталого розвитку. *Економіка та право*. 2019. № 3. С. 51.

[41] Виробництво енергії з біомаси в Україні : технології, розвиток, перспективи / за ред. Г. Гелетухи. Київ : Академперіодика, 2022. С. 270.

[42] Рамкова конвенція ООН про зміну клімату (Ріо-де-Жанейро, 11 червня 1992 року), ратифікована Законом України від 29 жовтня 1996 року. *Відомості Верховної Ради України*. 1996. №50. Ст. 277.

[43] Про ратифікацію Паризької угоди : Закон України від 14 липня 2016 року. *Відомості Верховної Ради України*. 2016. № 35. Ст. 595.

[44] Земельний кодекс України від 25 жовтня 2001 року. *Відомості Верховної Ради України*. 2002. № 3-4. Ст. 27.

[45] Про охорону навколишнього природного середовища : Закон України від 25 червня 1991 року. *Відомості Верховної Ради України*. 1991. № 41. Ст. 546.

[46] Про охорону земель : Закон України від 19 червня 2003 року. *Відомості Верховної Ради України*. 2003. № 39. Ст. 350.

[47] Про державний контроль за використанням та охороною земель : Закон України від 19 червня 2003 року. *Відомості Верховної Ради України*. 2003. № 39. Ст. 350.

"On Environmental Impact Assessment" of 23.05.2017[49], "On the Key Principles (Strategy) of the State Environmental Policy of Ukraine for the Period till 2030" of 28.02.2019[50], "On the Principles of Monitoring, Reporting, and Verification of Greenhouse Gas Emissions" of 12.12.2019[51], The Concept of State Climate Change Policy for the Period till 2030, approved by the order of the Cabinet of Ministers of Ukraine of 07.12.2016[52] and other acts. Despite a significant number of norms and scope of legislation, now none of the above or other laws or by-laws does not address this issue.

Special attention should be paid to the laws of Ukraine adopted in recent years "On the Key Principles (Strategy) of the State Environmental Policy of Ukraine for the Period till 2030", which stated the presence of serious environmental problems, in particular the non-compliance of the use of land resources of Ukraine with the requirements of rational nature management[53], and proposed separate, but in some cases still declarative, ways to solve them, and "On Environmental Impact Assessment", which establishes the legal and organizational basis for environmental impact assessment, in particular, it defines the most important and most invasive areas of activity for which such an assessment is carried out[54]. At the same time, although such attention to environmental legislation is generally positive, the latest legislative act does not provide for the dissemination of the need to carry out an appropriate assessment when using natural resources for bioenergy needs, which is rather illogical.

In terms of the conservation of land resources, it is worth paying attention to the 2009/28/ЄС Directive's prohibition on the production of biofuels from raw materials grown on lands of increased importance for the conservation of

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[48] Про екологічну мережу : Закон України від 24 червня 2004 року. *Відомості Верховної Ради України*. 2004. № 45. Ст. 502.

[49] Про оцінку впливу на довкілля : Закон України від 23 травня 2017 року. *Відомості Верховної Ради України.* 2017. № 29. Ст. 315.

[50] Про Основні засади (стратегію) державної екологічної політики України на період до 2030 року : Закон України від 28 лютого 2019 року. *Відомості Верховної Ради України*. 2019. № 16. Ст.70.

[51] Про засади моніторингу, звітності та верифікації викидів парникових газів : Закон України від 12 грудня 2019 року. *Відомості Верховної Ради України.* 2020. № 22. Ст. 150.

[52] Про схвалення Концепції реалізації державної політики у сфері зміни клімату на період до 2030 року : розпорядження Кабінету Міністрів України від 07 грудня 2016 року № 932-р. *Офіційний вісник України*. 2016. № 99. Стор. 269. Ст. 3236.

[53] Про Основні засади (стратегію) державної екологічної політики України на період до 2030 року : Закон України від 28 лютого 2019 року. *Відомості Верховної Ради України*. 2019. № 16. Ст. 70.

[54] Про оцінку впливу на довкілля : Закон України від 23 травня 2017 року. *Відомості Верховної Ради України.* 2017. № 29. Ст. 315.

biological diversity[55], the provisions of which also correspond to the Convention on the Protection of Biological Diversity of 05.06.1992[56]. Although national legislation does not provide for such a ban, however, the adoption of such provisions is quite promising in terms of the rational use of natural resources and the need to preserve land of increased value.

These examples are only one of many possible negative consequences of inconsistent construction of bioenergy relations, which is not provided by proper legal mechanisms and restrictions. Because of this, for Ukraine, it is updated the necessity of building a stable and effective model of bioenergy legislation, which would become a strong support for the further possibility of obtaining energy and other final products by biomass processing, without creating a threat of depletion of natural resources or the onset of other environmentally threatening conditions.

It should be noted that the international obligations of Ukraine, especially on the adaptation of the current legislation to EU standards and rules, have become a very powerful driver of the development of legislation in Ukraine, particularly in the area of alternative and bioenergy. Most of the legislative amendments and rules adopted before 2000 were quite declarative and ineffective. It was a confident course for the EU that led to a more consistent and systematic policy on the development of bioenergy legislation, taking into account the world practice and dynamics of alternative energy.

Nevertheless, Ukraine now needs to find its own theoretically and practically proved way of developing and constructing bioenergy legislation, since neither simple mimicry of European legislation nor blind copying of foreign experience can form such a legislative framework that would take into account all the peculiarities of the development of our state and could ideally integrate into the national legal system. Using other approaches can lead to the transformation of bioenergy from a "green" activity to another heavy burden on the environment and society[57].

It is worth paying attention to the need for constant legislative improvement of relations in the area of alternative energy and bioenergy

[55] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 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". *Official Journal of the European Communities*. 2009. L 140/16. URL: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:en:PDF (дата звернення: 10.06.2023 року).

[56] Конвенція про охорону біологічного різноманіття (Ріо-де-Жанейро, 05 червня 1992 року), ратифікована Законом України від 29 листопада 1994 року. *Відомості Верховної Ради України*. 1994. № 49. Ст. 433.

[57] Харитонова Т. Є., Григор'єва Х. А. Біоенергетичне законодавство в Україні – перспектива бути. *П'яте зібрання фахівців споріднених кафедр з проблем аграрного, земельного, екологічного, природоресурсного права та альтернативної енергетики* : матеріали Всеукраїнської наукової конференції (м. Одеса, 10–13 червня 2021 року) / відп. ред. Т. Є. Харитонова, Х. А. Григор'єва. Одеса : Видавничий дім "Гельветика", 2021. С. 103.

since the economic, social, environmental, and energy challenges facing modern society are constantly transformed by demanding new ideas, ambitious goals, and constant attention. That is why it is critical to develop new approaches that can become a strong support for the development of bioenergy legislation and create prospects for the energy independence of Ukraine and the civilized world. Modern legislation preserves the raw material type of bioenergy development in Ukraine. That is why the priority is the further development of effective legal mechanisms aimed at effectively stimulating the processing of biomass in Ukraine into biofuels.

2.4. Legal peculiarities of state support for bioenergy in Ukraine

Ukraine has little use of its agricultural potential for the development of bioenergy – in the structure of renewable generation bioenergy is much inferior to solar and even wind. There are several reasons for this.

First, bioenergy is not as attractive for investment: a) due to a significant dependence on unstable raw materials supply; b) often requires the involvement of many partners and counterparties (biomass manufacturers and suppliers, etc.); c) has a multi-stage internal structure (biomass production, its processing, fuel or energy production). In Ukraine, all these stages are unevenly developed: the raw material component dominates significantly. Therefore, biomass is produced in Ukraine, but its further bioenergy processing is carried out abroad. This practice, when scaled, is negative, since Ukraine loses added value.

Secondly, the general turbulence of the legislative field is very negatively reflected in such conservative relations as agrarian. This statement applies to both unstable legislation in the area of alternative energy in general and special protection mechanisms in particular[58].

Social relations in the area of bioenergy, which arose as a result of the objective need to find ways to replace traditional energy sources with more environmentally acceptable ones, needed proper program legal regulation and implementation of measures to ensure state support for their development.

In Ukraine, attention to bioenergy began to be paid in the middle of the 1990s. At the same time, the first steps were taken to develop it and the first legislative legal acts appeared, and some conceptual and programmatic documents were adopted, the implementation of which was supposed to contribute to the spread of the use and stimulation of biological fuels. Thus,

[58] Звіт про науково-дослідну роботу за договором від 28 квітня 2021 року № 30/02/0360 “Альтернативна енергетика в Україні : шляхи системного законодавчого стимулювання”. Одеса, 2021. 185 с.

the Comprehensive State Energy Saving Program of Ukraine No. 148, which the Cabinet Ministers of Ukraine approved on February 5, 1997[59], contains separate instructions regarding the use of biomass and other types of non-conventional fuels, which can provide a significant part of the needs for thermal and electric energy. However, taking into account the programmatic nature of this document, most of its provisions were general and did not contain clear mechanisms for their implementation.

An important segment of bioenergy in Ukraine is the production and consumption of liquid biofuels for the needs of agriculture, industry, and transport. Despite this, over the past 20 years, only a few relevant programs have been developed and approved by the Cabinet of Ministers of Ukraine, including the Ethanol Program of July 4, 2000, No. 1044 (has expired on January 13, 2011) and the Diesel Biofuels Development Program of December 22, 2006, № 1774. However, their implementation was not successful in terms of achieving their goals[60].

Thus, the Ethanol Program provided for the expansion of the use of ethyl alcohol as an energy carrier and raw materials for industry. For its implementation, the production of bioethanol was organized at the state alcohol plants of the Ukrspyrt concern, and several regulatory and technical documents for mixed motor fuels with a certain content of bioethanol were developed. However, due to the absence of a legislative settlement of the mandatory use of bioethanol for the production of mixed motor fuels, a significant rise in the price of raw materials (molasses) and because of the discovery of a significant number of fakes on the fuel market, the production of bioethanol was stopped on January 1, 2005. Unfortunately, the production of bioethanol and biodiesel has not yet become widespread in Ukraine.

In turn, the main emphasis of the Program for the Development of the Production of Diesel Biofuels was placed on the creation of a raw material base for the production of biodiesel from rape, namely: expanding the area of rapeseed cultivation, increasing its yield, creating areas of concentrated rapeseed cultivation to bring raw materials closer to the places of production of diesel biofuels. At the time of the adoption of this program, the Cabinet of Ministers of Ukraine was not concerned with the need to achieve a balance of environmental, economic, and social interests in the targeted production of biomass for biofuels. In addition, the vector was not

[59]Про Комплексну державну програму енергозбереження України : постанова Кабінету Міністрів України від 05 лютого 1997 р. № 148. *Офіційний вісник України*. 1997. № 6. Ст. 945.

[60]Гелетуха Г. Г. Основні тенденції та перспективи розвитку ринку моторних біопалив в ЄС та в Україні. *Теплофізика та теплоенергетика*. 2020. Т. 42, № 1. С. 69–75.

taken into account for the need to work out the tasks of creating mechanisms to stimulate not only the cultivation of energy crops to increase the production of biofuels but also the subsequent processing of biomass[61].

The significant program documents for the further development of the relations of production and use of biofuels, as well as attempts to take measures of state support for bioenergy were the following: The Concept of the State target scientific and technical program for the development of the production and use of biological fuels, approved by the Order of the Cabinet of Ministers of Ukraine of February 12, 2009 No. 276-p (however, the Program itself was not adopted) and the State Targeted Economic Program for Energy Efficiency and the Development of Energy Production from Renewable Energy Sources and Alternative Fuels for 2010–2021, approved by Resolution of the Cabinet of Ministers of Ukraine of March 1, 2010 No. 243.

The main tasks of this State target economic program include measures to implement plant construction projects: for the production of biodiesel and fuel bioethanol, as well as solid biofuels and biogas; implementation of pilot projects for the construction of power generation plants using biomass energy; development of feasibility study and construction project of a typical modern mini-CHP, powered by biomass and other alternative fuels[62].

Ukraine's accession to the Agreement on the Establishment of the Energy Community and subsequent ratification of the Association Agreement between our state and the EU required slightly different approaches to energy regulation, founded on the basic principles adopted by the EU countries, to develop documents of strategic planning and practical activities on the implementation of state policy in the energy sector, in particular, the introduction of conceptual approaches to stimulate the development of bioenergy.

The most striking program documents aimed at the further development of bioenergy include: the State Program for the Development of Domestic Production, approved by the Resolution of the Cabinet of Ministers of Ukraine of September 12, 2011 No. 1130; The National Renewable Energy Action Plan for the period up to 2020, approved by the Order of the Cabinet of Ministers of Ukraine of October 1, 2014 No. 902-p and the Energy Strategy of Ukraine for the period up to 2035 "Security, energy efficiency,

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[61] Григор'єва Х. А. Державна підтримка сільського господарства України : проблеми правового забезпечення : монографія. Херсон : Видавничий дім "Гельветика", 2019. 596 с.

[62] Про затвердження Державної цільової економічної програми енергоефективності і розвитку сфери виробництва енергоносіїв з відновлюваних джерел енергії та альтернативних видів палива на 2010-2021 роки : постанова Кабінету Міністрів України від 01 березня 2010 року № 243. *Офіційний вісник України*. 2010. № 16. Ст. 762.

competitiveness", approved by the Order of Cabinet of Ministers of Ukraine of August 18, 2017 No. 605-p. The peculiarities of these documents were that despite the recognition of bioenergy by the industry, which has one of the largest development potentials, due to the peculiarities of the climate, the potential of the agricultural sector, and the availability of the necessary labor force, they did not provide for specific mechanisms for implementing the strategic measures that are provided for in them, did not contain an integrated approach to solving the issue of providing state support for the development of bioenergy.

The above analysis of conceptual, program, and strategic documents, which act as a legal form of implementation of the energy policy of the state in the area of development of production and use of biological fuels, makes it possible to conclude that they are declarative and, as a result, have rather low efficiency. It is due to the high degree of generalization of their provisions, sometimes fragmentary and inconsistent nature of measures aimed at stimulating the development of bioenergy relations, lack of clear mechanisms, and timing of their implementation. A significant miscalculation is ignoring the problems of the ratio of environmental, energy, and social interests during the production of biofuels, which significantly complicates the introduction of European regulations and standards of sustainable development to the domestic bioenergy industry. To ensure state support for the development of the bioenergy industry and to determine the sources of its financing, it is possible to adopt the State target program for the development of the production and use of biological fuels, as well as to develop a mechanism for the implementation of the measures that will be provided for in it. The condition for the successful development of bioenergy is the formation of a holistic strategic vision for the use of the bioenergy potential available in the country, taking into account possible financial, economic, environmental, and other risks and threats, the introduction of a systematic and consistent state policy to stimulate the development of bioenergy relations[63].

The specifics of legal mechanisms to stimulate the use of biofuels among other types of alternative fuels will be influenced to some extent by the fact that the regulation of its production is carried out mainly by agricultural legislation as an agricultural activity. The production of other types of alternative fuels is successfully regulated by economic, natural

[63] Платонова Є. О. Особливості програмного забезпечення державної підтримки біоенергетики в Україні. *Наука та суспільне життя України в епоху глобальних викликів людства у цифрову еру* (з нагоди 30-річчя проголошення незалежності України та 25-річчя прийняття Конституції України) : у 2 т. : матеріали Міжнар. наук.-практ. конф. (м. Одеса, 21 травня 2021 року) / за загальною редакцією С. В. Ківалова. Одеса : Видавничий дім "Гельветика", 2021. Т. 1. С. 553–556.

resource, environmental legislation. That is why there are common protection mechanisms that apply to all types of alternative energy, as well as special ones that reflect the peculiarities of bioenergy production.

Today, the main stimulating tool of public policy aimed at generating electricity from biomass is the application of the *"green" tariff*. Undoubtedly, a significant drawback of the "green" tariff is the establishment of a coefficient for energy from biogas and biomass without its differentiation by species. More expedient is the need to differentiate the value of the "green" tariff coefficient and establish a higher amount of electricity obtained from those types of biomass in which the state is more interested. For example, to establish the highest coefficient of the "green" tariff for electricity obtained from biomass of agricultural origin (crop waste, animal husbandry, recycling waste, energy crops). Set lower coefficients for electricity obtained from municipal and industrial waste, as well as waste from the wood industry[64].

In addition, the current mechanism for stimulating the production of electric energy from biomass on the basis of the "green" tariff is still almost insensitive to the features of the sustainable development of this area. For example, the size of the "green" tariff for economic entities that produce electric energy from biomass or biogas differs in terms of the time of commissioning of objects or their queues and the level of use of Ukrainian-made equipment, but does not depend on the place of origin of energy raw materials, its generation, etc.

Currently, European legislation uses a legal mechanism aimed at solving the problems of the ratio of environmental, energy, and social interests during the production of biofuels. Thus, under Directive 2009/28/ЄС, the following criteria were established that were to be met: indicators of greenhouse gas emissions reduction, indicators of biomass sustainability, and social sustainability of biofuels.

The adoption of Directive 2018/2001 in December 2018[65], which was key to the field of alternative energy sources, marked the emergence of a new generation of sustainability criteria that meet the challenges of time. Some novelties of this Directive in ensuring the sustainability of biofuels are in demand today and correspond to the peculiarities of the situation in

[64] Рудь Ю. М. Правове регулювання енергозбереження у сільському господарстві України : автореф. дис. на здобуття наук. ступеня канд. юрид. наук : 12.00.06. Київ, 2015. 18 с.

[65] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast). *Official Journal of the European Union*. 2018. L 328. P. 82-209. URL: https://eurlex.europa.eu/legalcontent/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG (дата звернення: 10.06.2023 року).

Ukraine. These are progressive solutions such as extending sustainability criteria to solid biofuels and introducing special criteria for biofuels derived from forest biomass. It seems that the introduction of sustainability criteria in our country will create prerequisites for improving the mechanism for stimulating the production of electric energy from biomass based on the "green" tariff[66].

The inconsistent state policy and the unapproved position of the legislator are also evidenced by certain provisions of the current legislation that restrict the rights to receive a "green" tariff of new electricity producers from biomass and biogas, which will begin work from January 01, 2023. After all, for manufacturers of electric energy from biomass and/or biogas, the main incentive so far remains the "green" tariff, and not the right to participate in the auction on the distribution of support.

We should perceive positively the dual-track legal mechanism of state support, aimed not only at stimulating producers of electricity from biomass but also at supporting modern domestic engineering provided by the Law of Ukraine "On Alternative Energy Sources". We are talking about the *mechanism of an increase in the "green" tariff*, the auction price for compliance with the level of use of Ukrainian-made equipment at electric power facilities producing electric energy from biomass or biogas, put into operation from July 1, 2015 to December 31, 2024. The surcharge is fixed as a percentage of the surcharge to the "green" tariff, the auction price is proportional to the level of use of Ukrainian-made equipment at the relevant power industry facility (in the amount of 5 – 20%)[67].

Code and Customs Code of Ukraine), which allows us to approve the development of the current legal mechanism for state support for bioenergy, the elements of which are the provision of tax and customs benefits. Thus, according to paragraph 197.16 of Article 197 of Section V of the Tax Code of Ukraine[68], is an *exemption from value-added tax for transactions on import* into the customs territory of Ukraine, as well as paragraphs 14 and

[66] Платонова Є. О. Тенденції стимулювання розвитку біоенергетики в Україні на засадах сталого розвитку. *Актуальні питання стратегії державної екологічної політики України на період до 2030 року* : матеріали "круглого столу" (Харків, 21 трав. 2021 р.) / за заг. ред. А. П . Гетьмана та М. В . Шульги ; М-во освіти і науки; Нац. акад. прав. наук України; Нац. юрид. ун-т ім. Ярослава Мудрого, Каф. екол. права, Каф. земел. та аграр. права. Харків : Право, 2021. С. 258–262

[67] Про альтернативні джерела енергії : Закон України від 20 лютого 2003 року. *Офіційний вісник України*. 2003. № 12. Ст. 522.

[68] Податковий кодекс України від 02 грудня 2010 року. *Відомості Верховної Ради України*. 2011. № 13-14, № 15-16, № 17. Ст. 112.

16 of Part 1 of Article 282 of the Tax Code of Ukraine[69] *exemption when importing* into the customs territory of Ukraine or exporting outside its borders:

a) energy-saving equipment and materials, means of measuring, monitoring and managing the consumption of fuel and energy resources, equipment and materials for the production of alternative fuels or for the production of energy from renewable energy sources; b) materials, equipment, components used for the production of materials, raw materials, equipment and components that will be used in the production of alternative fuels or energy production from renewable energy sources. The condition of exemption from taxation of these goods is that they are used by the taxpayer for their own production and if identical goods with similar quality indicators are not produced in Ukraine.

The list of goods under consideration contains the resolution of the Cabinet of Ministers of Ukraine "Issues of import into the customs territory of Ukraine of energy-saving materials, equipment, facilities, and components according to projects of demonstration of Japanese technologies" of March 30, 2016 No. 293[70]. However, this List does not indicate energy-saving equipment and materials, equipment, and materials for the production of alternative fuels or for the production of energy from renewable sources, which complicates its implementation.

However, along with the generally positive direction of fiscal policy in the bioenergy industry, it has certain disadvantages. This applies to the abolition or urgent restriction of many tax and customs benefits in the area of bioenergy. Thus, in retrospect, some legal support mechanisms that were provided for by the previously existing legislation have the potential. Thus, in paragraph 158.1 of Article 158 of the Tax Code of Ukraine it was established that 80% of the profits of enterprises obtained from the sale of goods of their own production on the customs territory of Ukraine were exempt from taxation according to the list established by the Cabinet of Ministers of Ukraine, in particular: equipment running on renewable energy sources; materials, raw materials, equipment and components that will be used in the production of energy from renewable energy sources; equipment for the production of alternative fuels. Undoubtedly, such an order had a significant stimulating effect on the development of the bioenergy industry. However, the Law of Ukraine "On Amendments to the Tax Code of Ukraine and Certain Legislative Acts of Ukraine on Tax Reform" of

[69] Митний кодекс України від 13 березня 2012 року. *Відомості Верховної Ради України*. 2012. № 44-45, № 46-47, № 48. Ст. 552.

[70] Питання ввезення на митну територію України енергозберігаючих матеріалів, обладнання, устаткування та комплектувальних виробів за проектами демонстрації японських технологій : постанова Кабінету Міністрів України від 30 березня 2016 року № 293. *Урядовий кур'єр*. 2016. № 72.

December 28, 2014, excluded the specified norm from the Tax Code of Ukraine.

A significant support was the exemption of biofuels producers from taxation of profits received from the sale of biofuels (this direction of support was provided for in paragraph 15 Section 4 p. XX Tax Code of Ukraine and was supposed to act until January 1, 2020, but these benefits were prematurely canceled by the Law of December 28, 2014)[71].

In addition, temporarily until January 1, 2019, import operations were exempted from VAT and import duty when imported into the customs territory of Ukraine and placed in the customs mode of import – machinery, equipment, and facilities used for reconstruction of existing and construction of new enterprises for the production of biofuels, which are classified according to the UCC FEA codes defined by Article 7 of the Law of Ukraine "On Alternative Fuels", if such goods are not produced and have no analogs in Ukraine. The specified term limit is generally assessed negatively, in connection with which it is proposed to consolidate the above-mentioned tax and customs benefits without limiting their validity[72].

Given the existing state of bioenergy development in the country, the abolition or urgent restriction of these benefits contradicts the general direction of the state policy to stimulate the transition to alternative energy sources, including biological fuels[73].

Considering the problems of stimulating the bioenergy complex, the issues of organizational and legal support for the production, processing and sale of biofuels also remain extremely important. Currently, it is extremely necessary to fully use the powerful potential of the cooperative organizational and legal form for the effective functioning of energy relations. Thus, the most successful and optimal organizational and legal form of biofuels production and supply is the introduction of active creation of energy cooperatives in the country[74]. The first attempt to start the

[71] Про внесення змін до Податкового кодексу України та деяких законодавчих актів України щодо податкової реформи : Закон України від 28 грудня 2014 року. *Відомості Верховної Ради*. 2015. № 7-8, № 9. Ст. 55.

[72] Оболєнська С. А. Про державну підтримку виробництва біопалива сільськогосподарськими товаровиробниками: організаційно-правові питання. *Юридичний науковий електронний журнал.* 2017. № 1. С. 69–72.

[73] Платонова Є. О. Правові особливості державного стимулювання біоенергетики в Україні : ретроспектива, сучасність та перспектива. *Юридичний науковий електронний журнал.* № 5. 2021. С. 116–121.

[74] Григор'єва Х. А. Енергетична кооперація як організаційно-правове втілення концепції енергетичного переходу. *Філософські, методологічні та психологічні проблеми права :* збірник матеріалів VIII Всеукр. наук.-теорет. конф. (м. Київ, 26 листопада 2020 року). Київ : Нац. акад. внутр. справ, 2020. С. 88–91.

development of legal foundations of energy cooperation in Ukraine was the introduction in 2019 of amendments and additions to the Law of Ukraine "On Alternative Energy Sources" on the definition of the concept of an energy cooperative and the inclusion of such cooperatives in the list of subjects of stimulating the production of electric energy from alternative sources based on the "green" tariff. It appears that the organizational and legal model of creating energy cooperatives is the most adequate and flexible for servicing bioenergy relations because it allows individual producers of biofuels to maintain economic autonomy and, at the same time, take advantage of those opportunities that are available only in large associations.

Promising directions of modernization of organizational state support of bioenergy in Ukraine are: formation and provision of activities of electronic markets of biofuels, and biomass; introduction of a competitive thermal energy market; providing state support to economic entities growing energy plants; exemption from tax for emissions CO_2 biofuel burning plants[75]. In addition, the proposal on the need to adopt the Law of Ukraine "On the Production and Sale of Biofuels", which should determine the basic principles of biomass production (formation), its processing into biofuels and electricity, and their implementation[76], deserves support. It appears that the central element of this Law should be the regulation of providing systemic state support to biofuel producers and summarizing the list of types of their stimulation. At the same time, the manifestations of the production and use of biomass as an energy source in terms of environmental, social, energy, and other interests of society should be taken into account in the area of introducing legal mechanisms for their stimulation.

2.5. Legal criteria for sustainability of biofuels

The non-linear development of bioenergy in the world and the ambiguous attitude toward it are due to several main factors. Firstly, this is facilitated by the significant differentiation of the industry depending on the specific energy source (vegetable biomass, waste vegetable oils, agricultural or forestry waste, etc.). Secondly, as a result of relentless scientific progress, new knowledge in this area is constantly generated. "Initial enthusiasm" for

[75] Пастух А. Правове регулювання державної підтримки вирощування енергетичних рослин в Україні. *Підприємництво, господарство і право.* 2020. № 6. С. 91–96.

[76] Григор'єва Х. А. Концептуальні засади правового регулювання державної підтримки сільського господарства в України : автореф. дис. на здобуття наук. ступеня докт. юрид. наук: 12.00.06. Одеса, 2020. 39 с.

biofuels quickly subsided in the context of its significant environmental and social costs[77]. In particular, due to many studies, it has been proved that the effectiveness of bioenergy in combating climate change is ambiguous and has very significant conditions. This situation is most clearly illustrated by the legal experience of the EU.

The adoption of the Directive 2009/28/ЄС of the European Parliament and the Council of April 23, 2009, on promoting the use of energy from renewable sources (Renewable Energy *Directive* – RED I)[78] provided a powerful impetus for the development of bioenergy not only in the EU itself but also in many other countries – exporters of biofuels or raw materials necessary for its manufacture. Established by the legislation renewable energy targets in the transport sector have made Europe a significant producer and consumer of biofuels[79]. This gave reason to talk about the extraterritoriality of the consequences of EU legislation[80]. In many parts of the planet, the EU's legal decisions to activate bioenergy have attracted a rapid increase in the production of the necessary raw materials – palm oil, soybeans, rape, etc. Very indicative of this is the example of Ukraine: if before the publication of RED I – by 2009, about 600 thousand tons of rapeseed were grown in our country annually, then already in the first season of the European resolution, the harvest of this crop in Ukraine grew five times and amounted to about 3 million tons.

However, such a rapid increase in demand and supply for biomass quickly caused negative environmental consequences, concentrated in the concept of indirect land use changes (Indirect Land Use Changes – ILUC). It took a decade to identify, analyze and understand this specific bioenergy problem.

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[77] Mignolli A. The European Union and Sustainable Development : A Study on Unilateral Trade Measures. Edizioni Nuova Cultura, 2018. P. 230.

[78] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 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. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0028&qid=1687423459680 (дата звернення: 10.06.2023 року).

[79] Tyson A., Meganingtyas E. The Status of Palm Oil under the European Union's Renewable Energy Directive : Sustainability or Protectionism? *Bulletin of Indonesian Economic Studies*. 2022. Vol. 58. Issue 1.

[80] Elisabeth V. Henn. Protecting forests or saving trees? The EU's regulatory approach to global deforestation. *Review of European, Comparative & International Environmental Law.* 2021. Vol. 30. Issue 3.; Emily Webster. Transnational legal processes, the EU and RED II: Strengthening the global governance of bioenergy. *Review of European, Comparative & International Environmental Law.* 2020. Vol. 29. Issue 1. Special Issue : Water Protection and Armed Conflicts in International Law. P. 86–94.

Based on the conclusions made, the legislation was adjusted. In particular, in 2018, a Directive (ЄС) 2018/2001 was adopted by the European Parliament and the Council on December 11, 2018, on promoting the use of energy from renewable sources (RED II)[81], which established criteria for the sustainability of biomass aimed at minimizing negative manifestations of bioenergy. The new Directive marked a fundamental revision of the basic principles of the further development of bioenergy – not only in the EU but also in the countries – donors of raw materials. Such countries include Ukraine (about 80 – 90% of the domestic rapeseed crop is exported to the EU countries annually). If the previous RED I set two main sustainability criteria for biofuels (reducing greenhouse gas emissions and *direct changes* in land use), then the current RED II added *indirect changes* in land use to the sustainability criteria. Direct land use changes occur when new agricultural land use is observed and "raw materials produced on this land are used for bioenergy", whereas indirect land use changes that RED II focuses on, occur when "the system must adapt to meet the increased demand for bioenergy raw materials", which also increases emissions[82]. It was the latter criterion that caused the most discussions because by 2030 the EU will gradually abandon raw biofuels, the production of which is associated with a high risk of ILUC.

The RED II found that *"biofuels, liquid biofuels and biofuels with a low indirect risk of land use change are biofuels, liquid biofuels and fuel from biomass, for which raw materials were produced as part of the schemes, avoiding the effect of displacement of biofuels based on food and feed crops, liquid biofuels and fuels from biomass through improvements in agricultural practices, as well as by growing crops in areas not previously used for growing crops, and which were produced according to the sustainability criteria for biofuels, biofuels and fuels from biomass set out in Article 29 of the Directive*"[83]. That is, three characteristics of biofuel with

[81] Directive (EU) 2018/2001 of the European Parliament and of the Councilof 11 December 2018on the promotion of the use of energy from renewable sources. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L2001&qid=1687294958920 (дата звернення: 10.06.2023 року).

[82] El Takriti, Sammy, Chris Malins and Stephanie Searle. Understanding Options for ILUC Mitigation. Working Paper 2016–23, International Council on Clean Transportation, November. URL: https://www.theicct.org/sites/default/files/ publications/ILUC-Mitigation-Options_ICCT_nov2016.pdf (дата звернення: 10.06.2023 року).

[83] Directive (EU) 2018/2001 of the European Parliament and of the Councilof 11 December 2018on the promotion of the use of energy from renewable sources. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L2001&qid=1687294958920 (дата звернення: 10.06.2023 року).

low-risk ILUC were identified: a) avoiding competition with food and feed crops, b) growing biomass on land not used in agricultural production, c) meeting many sustainability criteria provided for in the expanded Article 29 of the Directive.

European integration processes require Ukraine to adapt to the relevant norms on the sustainability of biofuels. However, this adaptation should not be reduced to mechanical dubbing. That is why there is an urgent need to investigate the modern criteria for the sustainability of biomass not only theoretically, but through the prism of the peculiarities of national land relations.

Avoiding competition with food and feed crops. The European Commission stated the ILUC arises *when "pastures or agricultural land formerly reserved for food and feed markets are diverted to biomass fuel production"*[84]. The creation of plantations for the cultivation of energy crops may involve the attraction of land previously allocated for the production of food and feed. Therefore, planting in high-carbon areas such as forests, peatlands, and wetlands may be required to meet food demand. This releases more carbon dioxide, which can negate the saving of greenhouse gas emissions from biofuels[85]. Compliance with this criterion is reflected in the dynamics of expansion of areas, changes in the structure and ratio of crops. However, the analysis of this criterion demonstrates several specific features inherent in Ukrainian realities.

First, if the European legislator is concerned primarily about avoiding or reducing territorial competition between energy and agricultural crops, then in Ukraine, within the framework of this criterion, it is appropriate to shift the emphasis towards preserving soil fertility during bioenergy production. This is due to the slow and still unresolved problem of observing rotations. Regular crop alternation in the fields is a necessary condition for sustainable farming. However, domestic legislation left this issue practically at the discretion of the owner or land user.

Thus, in 2009, the Law of Ukraine "On Amendments to Certain Legislative Acts of Ukraine on the Preservation of Soil Fertility" was adopted, which attempted to strengthen the ecological and economic foundations of agricultural land use. In particular, this Law introduced, firstly, the obligatory use of agricultural land plots for commercial agricultural production *"in accordance with land management projects*

[84] European Commission. 2019b. 'Sustainability Criteria for Biofuels Specified'. Memo. 13 March. URL: https://ec.europa.eu/commission/presscorner/detail/en/MEMO_19_1656 (дата звернення: 10.06.2023 року).

[85] Tyson A., Meganingtyas E. The Status of Palm Oil under the European Union's Renewable Energy Directive : Sustainability or Protectionism? *Bulletin of Indonesian Economic Studies*. 2022. Vol. 58. Issue 1.

developed and approved in accordance with the established procedure, providing for ecological and economic justification of crop rotation and landscaping of land and providing for land protection measures"[86]*;* secondly, the standards for the optimal ratio of crops in crop rotation were established, which determined the *"structure of sown areas for various natural and agricultural regions and the list of established crops for cultivation in these regions"*[87]. In order to implement these legislative provisions, Resolutions of the Cabinet of Ministers of Ukraine "On Approval of the Standards for the Optimal Ratio of Crops in Crop Rotation in Different Natural-Agricultural Regions" of February 11, 2010 No. 164[88] and "On Approval of the Procedure for the Development of Land Management Projects Providing Ecological and Economic Justification for Crop Rotation and Land Landscaping" of November 2, 2011 No. 1134[89].

The analysis of the judicial practice of those years (2009 – 2016) demonstrates the peculiarities of the application of the relevant provisions, namely, the ambiguity of legal consequences. In particular, the violation of the percentage of crops was recognized as a sufficient basis for the termination of rental relations. That is, the formal violation of certain numerical indicators had an automatic legal result.

However, on the other hand, Part 4 of Article 22 of the Law of Ukraine provided for the *obligation* to use land plots for commercial agricultural production based on land management projects that provide an ecological and economic justification for *crop rotation* and streamline land. However, violation of this obligation – the absence of such a project did not become the basis for termination of the lease agreement, because the court considered it necessary to prove *"what are the rights of the plaintiff violated by the lack of land management projects rotation"*[90].

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[86] Про внесення змін до деяких законодавчих актів України щодо збереження родючості ґрунтів : Закон України від 04.06.2009 року. *Відомості Верховної Ради України. 2009. № 47-48. Ст. 719.*

[87] Про внесення змін до деяких законодавчих актів України щодо збереження родючості ґрунтів : Закон України від 04.06.2009 року. *Відомості Верховної Ради України. 2009. № 47-48. Ст. 719.*

[88] Про затвердження нормативів оптимального співвідношення культур у сівозмінах в різних природно-сільськогосподарських регіонах : постанова Кабінету Міністрів України від 11 лютого 2010 року № 164. *Урядовий кур'єр*. 2010. № 44.

[89] Про затвердження Порядку розроблення проектів землеустрою, що забезпечують еколого-економічне обґрунтування сівозміни та впорядкування угідь : постанова Кабінету Міністрів України від 02 листопада 2011 року № 1134. *Урядовий кур'єр*. 2011. № 214 *(втратила чинність).*

[90] Рішення Білоцерківського міськрайонного суду Київської області від 12 квітня 2017 року у справі № 357/478/17. URL: https://zakononline.com.ua/court-decisions/show/65956525 (дата звернення: 10.06.2023 року).

Of course, this variability in understanding the environmental-oriented norms of land legislation did not contribute to the establishment of relevant farming practices. Moreover, such duties were perceived as negative "ways for agribusiness", and therefore the Law of Ukraine "On Amendments to Certain Legislative Acts on Facilitation of Business (Deregulation)" of February 12, 2015, abolished the obligation to comply with the standards of the optimal ratio of crops in crop rotation and develop land management projects that provide an ecological and economic justification for crop rotation and streamline land. This made the provisions of the Law of Ukraine "On Land Management" and the Resolution of the Cabinet of Ministers of Ukraine "harmless", that is, advisory.

Changes in legislation were immediately reflected in judicial practice. Analysis of court decisions for the period from 2016 to date indicates the dominance of other approaches, namely: the violation of crop rotation is not a self-sufficient basis for the identification of an offense – there should be a fact of damage to the owner or land user due to a decrease in the fertility of the land plot caused by the violation of crop rotation[91].

For modern Ukraine, compliance with crop rotations is more of an actual, not a legal problem. That is, it is assumed that the owners and land users themselves are interested in carrying out crop rotation, because this keeps the fertility of their lands at the proper level. For modern Ukraine, compliance with crop rotations is more of an actual, not a legal problem. That is, it is assumed that the owners and land users themselves are interested in carrying out crop rotation, because this keeps the fertility of their lands at the proper level. However, in conditions of prevailing rental land use, such logical fuses do not always work. Therefore, in Ukraine, the violation of crop rotation and optimal ratios of crops is a common phenomenon. Given this objective background, it should be realized that the stimulation of bioenergy (through special programs, legal mechanisms, or due to market levers such as demand growth) will entail an additional burden on the environmental component of domestic land use. In this regard, for Ukraine, any protective legal initiatives on bioenergy should be carefully evaluated through the prism of national protective features of the agrarian-land system.

War has no less impact on this relationship. Such an effect is also manifested in relation to the cultivation of the main energy crop, which is rapeseed. Rapeseed is used annually in about 1 million hectares of arable land in Ukraine. At the same time, the optimal order of crop rotation for

[91] Постанова Верховного Суду від 12 серпня 2020 року у справі № 636/5001/18. URL: https://zakononline.com.ua/court-decisions/show/91063497 (дата звернення: 10.06.2023 року).

rapeseed is no more than once every four years. In the conditions of warfare on the territory of Ukraine, crop rotation violations are much more frequent, because the issues of profitability, cost of seeds, plant protection, cultivation, logistics, etc. come to the fore. Agribusiness is trying to survive under difficult conditions of military instability, but this pushes environmental requirements for soil conservation to the background. This problem is already escalating and requires an adequate response. In particular, during the 2022–2023 military season, the crops of rapeseed have already increased.

That is, in Ukraine, the first criterion for the sustainability of biofuels risks remaining a declarative norm due to the lack of necessary legal and institutional mechanisms for organizing crop rotation and the ratios of food, feed and energy crops.

Use of land that was not involved in agricultural production. Cultivation on degraded lands can reduce the ecological burden that bioenergy exerts, but there is no consensus on which lands are considered degraded, and this creates uncertainty about which lands can be cultivated[92]. First of all, we are talking about lands that have dropped out of agricultural use due to the loss of their fertile properties. For Ukraine, such phenomena, unfortunately, are very relevant. During the last decade in our country, there have been active processes of soil degradation, instead, the solution to this problem is weak and ineffective. Research and practical experience indicate that one of the effective and beneficial ways to restore degraded soils can be the use of such land in bioenergy production. At the same time, the resulting biomass satisfies the sustainability criteria, because it does not "take away" land from agriculture. In parallel, the most important thing is the restoration and recovery of degraded soils.

This idea looks very attractive, but questions arise with a more detailed study of domestic experience. First of all, according to the current legislation, land degradation refers to "natural or anthropogenic simplification of the landscape, deterioration of the state, composition, useful properties and functions of land and other organically related natural components", and under soil degradation – "deterioration of useful properties and soil fertility due to the influence of natural or anthropogenic factors"[93]. According to Article 171 of the Land Code of Ukraine *"degraded lands include: a) land plots, the surface of which is disturbed as a result of earthquakes, landslides, karstification, floods, mining, etc.; b) land plots with eroded, waterlogged,*

[92] Obidzinski Krystof, Rubeta Andriani, Heru Komarudin and Agus Andriant. Environmental and Social Impacts of Oil Palm Plantations and Their Implications for Biofuel Production in Indonesia. *Ecology and Society.* 2012. Vol. 17. Issue 1. P. 25.

[93] Про охорону земель: Закон України від 19.06.2003 року. *Відомості Верховної Ради України.* 2003. № 39. Ст. 349.

chemically contaminated soils with high acidity or salinity, etc"[94]. The restoration of degraded land is carried out in particular by their conservation – "the cessation of economic use for a certain period and the planting or afforestation of degraded and low-productive land, the economic use of which is environmentally and economically inefficient..."[95]. Conservation procedure is regulated at the by-law level[96].

However, despite the necessary regulatory framework, the real process of restoring degraded land by conservation demonstrates difficulties. For example, quite indicative is the situation that has become the basis for a number of such court cases. They have a fairly relief view of the domestic problem of critical inconsistency of law, legislation, and legal implementation. Thus, on the basis of the conclusions of the research institute, the orders of the Main Department of the State Service for Geodesy, Cartography and Cadastre approved working land management projects for the preservation of degraded and low-productive land of state property. However, the relevant orders did not entail the necessary legal consequences: information about the conservation of land was not entered into the State Land Cadastre, and no real measures were taken to restore these lands. Such ambiguity created prerequisites for further offenses, namely: "conservated on paper" lands were transferred to private individuals a few years later (for example, for personal peasant farming). Despite the fact that such land plots were not subject to any real restoration measures, the preliminary approval of their conservation projects became the basis for the recognition of subsequent agreements and acts of management bodies in relation to such land plots as invalid[97].

Such situations highlight two problems specific to domestic land relations: the declarativeness of land restoration measures and the low

[94] Земельний кодекс України : Закон України від 25.10.2001 р. № 2768-III. URL: https://zakon.rada.gov.ua/laws/show/2768-14#Text (дата звернення: 10.06.2023 року).

[95] Про охорону земель: Закон України від 19.06.2003 року. *Відомості Верховної Ради України.* 2003. № 39. Ст. 349.

[96] Про Порядок консервації земель : наказ Держкозему від 17 жовтня 2002 року № 175. URL: https://zakon.rada.gov.ua/laws/show/z0117-03#Text *(втратив чинність);* Про затвердження Порядку консервації земель : наказ Мінагрополітики від 26.04.2013 року № 283. *Офіційний вісник України*. 2013. № 42. Стор. 150. Ст. 1525 *(втратив чинність);* Про затвердження Порядку консервації земель : постанова Кабінету Міністрів України від 19 січня 2022 року № 35. *Урядовий кур'єр*. 2022. № 13.

[97] Постанова Верховного Суду від 20 березня 2023 року у справі № 822/1861/18. URL: https://zakononline.com.ua/court-decisions/show/109661237?linked=zo&did=224977___564120___171 (дата звернення: 10.06.2023 року); Постанова Верховного Суду від 09 липня 2020 року у справі № 681/820/17. URL: https://zakononline.com.ua/court-decisions/show/90329576?linked=zo&did=224977___564120___171 (дата звернення: 10.06.2023 року); Постанова Хмельницького апеляційного суду від 13 грудня 2018 року у справі № 686/4423/18. URL: https://zakononline.com.ua/court-decisions/show/78610012?linked=zo&did=224977___564120___171 (дата звернення: 10.06.2023 року).

efficiency of land rights guarantees. Of course, the question arises as to why such a complex of problems appeared. On the one hand, the process of land and soil degradation is rapidly progressing, and on the other hand, the restoration of these natural resources as part of conservation requires funds, and this burden falls on the owner. In particular, the afforestation, care of plantations, and carrying out other technical works on conservated lands are fairly financially costly. It is not surprising that owners are not interested in voluntarily imposing such duties on themselves. The possibility of planting conservated land with some energy plants can increase the attractiveness of such lands in terms of their restoration.

It should be noted that recently a step towards institutional improvement of these relations has been taken. So, since the conservation of land is inherently a restriction on the use of such land, information about such conservation (boundaries, area, conditions of restoration, foundation, term, etc.) should be entered into the State Land Cadastre. The corresponding norm appeared in the Law of Ukraine "On the State Land Cadastre" only in 2022. This should be a legal precaution for the occurrence of situations described above.

Nevertheless, it should be recognized that modern land legislation is not adapted to the "bioenergy" method of restoring degraded land. That is why it may be very real to recognize the carried out afforestation with energy plants as a violation of the "termination of economic use" of the conserved land plot.

Non-use of land with high carbon content (land of former forests, swamps, etc). In the world, the main bioenergy battles over the past few years have unfolded around those lands that are characterized by a high carbon content. The use of such areas in the cultivation of energy plants does not contribute to the fight against greenhouse gas emissions, but at the same time carries significant negative ecological potential (deforestation, draining of swamps, reducing biodiversity, etc.). This problem is very acute in Brazil, where the Amazon forests are cut down to expand soybean plantations, in Indonesia and Malaysia, where forest areas for palm plantations are released, etc. For Ukraine, this criterion of biomass persistence is not critical or priority, since the reduction of forest area and drainage of wetlands in our country are mostly not related to the needs of bioenergy.

The need to fulfill Ukraine's European integration obligations requires adapting domestic legislation to the provisions of RED II, and therefore to the criteria for the sustainability of biofuels. The analysis of the main criteria for sustainability through the prism of domestic legal features (regarding the violation of crop rotation and optimal crop ratios, the low efficiency of restoring degraded lands and soils by conservation, regarding

the use of lands with high carbon content) demonstrated a number of nuances that can significantly affect or even considerably distort the relevant provisions of European norms in the case of their mechanical transfer to Ukrainian legislation. Firstly, the legislation of Ukraine does not contain norms on mandatory standards for the ratio of food, feed and energy crops, does not provide for the obligations of landowners and land users to comply with crop rotation, does not consolidate institutional and functional mechanisms for tracking and official confirmation of relevant processes. Secondly, the use of degraded and unproductive land for the cultivation of energy crops can come across the problems of legal provision of conservation of land, the most significant of which are declarative (lack or insufficiency of real measures for the restoration of land and soils) and formalism (predominance of positivist approach over content).

Taking into account the national context during the formation of the bioenergy legislation of Ukraine is an extremely important prerequisite for effective legal regulation and transformation of the economy into carbon neutral.