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Conceptualization of Business Models of Agricultural Production on the Basis of Green Economy

Abstract. Introduction. *The course of the economic and ecological crisis of recent years, and, especially, in the phase of martial law in Ukraine, shows the urgency of the transition to another business model of agricultural production, since at the moment the "green economy" model is the only one that allows a comprehensive approach to the solution problems of ensuring sustainable development of the agricultural sector in the post-conflict period.*

Purpose. *The purpose of the article is to substantiate the conceptual provisions for the transformation of business models of agricultural production on the basis of the green economy, which determine the scalability of the use of resources in rural areas, oriented to the universal methods and tools of the bioeconomic strategy of the country, determined by the factors of the effectiveness of the subject-agricultural business and the sustainable system of the rational development of agricultural lands appointment.*

Results. *The conceptual provisions of the transformation of business models of agricultural production are substantiated and the value of nature, which generates land resources for the fundamental advantages of the livelihood of rural areas, is emphasized, and warns of the risk of ecosystem destruction. Determinants of the effectiveness of the ecological and economic activity of agrarian business subjects, provided that the efficiency of agricultural land use is determined, provided by the factors of a sustainable system, which depend on the stability and profitability of the development of agricultural production. The practical application of the developed provisions makes it possible to adjust certain elements of the ecological and economic system of agrarian business entities, to improve the efficiency of the production infrastructure, to ensure changes in the structure of ownership, in legal and organizational forms of management, taking into account the peculiarities of rural areas in different regions of Ukraine.*

Conclusions. *The transition of the standard model of agricultural production to new flights of the green economy in Ukraine will mean a change in the economic growth of agrarian business entities in a new direction, which will simultaneously guarantee the stability of the regional ecosystem on the basis of the efficiency of the use of agricultural land, greening of production, the increase in the well-being of human resources in rural areas and social responsibility for restoring energy, for strengthening the role of the state in stimulating green investments and innovations, for creating conditions for increasing the competitiveness of national producers of green products and forming a new attitude of the rural population to the biological environment. The further direction of the development of the model of agricultural production based on the principles of the green economy involves the creation of an agro-ecological symbiosis as a new type of bio-economy, which uses an interdisciplinary analysis of various business sectors in rural areas with numerous supply and demand flows. The introduction of new business models of agricultural production based on bio-economic principles will allow using new sources of energy for own consumption, converting biomass into added value of processing products, and, as a result, inventing new viable ways of earning for rural enterprises.*

Keywords: *transformation; business model; agricultural production; green economy; agricultural land; rural areas.*

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Концептуалізація бізнес-моделей сільськогосподарського виробництва на засадах зеленої економіки

Анотація*. Перебіг економіко-екологічної кризи останніх років, і, особливо, у фазі воєнного стану України, свідчить про невідкладність переходу до іншої бізнес-моделі аграрного виробництва, оскільки на теперішній час модель «зеленої економіки» є єдиною, яка дозволяє комплексно підійти до розв'язання проблеми забезпечення сталого розвитку аграрного сектора в постконфліктному періоді. Обґрунтовано концептуальні положення трансформації бізнес-моделей аграрного виробництва та підкреслено цінність природи, яка генерує земельні ресурси для фундаментальних переваг життєзабезпечення сільських територій, попереджує про виникнення ризику руйнування екосистеми. Детермінанти результативності еколого-економічної діяльності суб'єктів аграрного бізнесу за умови визначення ефективності використання земель сільськогосподарського призначення, забезпечені факторами сталого устрою, від яких залежить стійкість та беззбитковість розвитку аграрного виробництва. Практичне застосування*

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розроблених положень уможливлює корегування окремих елементів еколого-економічної системи суб'єктів аграрного бізнесу, для покращення ефективності виробничої інфраструктури, забезпечення зрушень в структурі власності, в правових та організаційних формах господарювання, із врахуванням особливостей сільських територій в різних регіонах України. Перехід стандартної моделі аграрного виробництва на нові рейки зеленої економіки в Україні означатиме зміну економічного зростання суб'єктів аграрного бізнесу в новому напрямі, що одночасно гарантуватиме стабільність екосистеми регіонів на засадах ефективності використання земель сільськогосподарського призначення, екологізації виробництва, зростання добробуту людських ресурсів в сільській місцевості та соціальну відповідальність за відновлювання енергії, за посилення ролі держави у стимулюванні зелених інвестицій та інновацій, за створення умов до підвищення конкурентоспроможності національних товаровиробників зеленої продукції та формування нового ставлення сільського населення до біосередовища. Подальший напрямок розвитку моделі аграрного виробництва на засадах зеленої еконо¬міки передбачає створення агроекологічного симбіозу як новий вид біоекономіки, в якій використовується міжгалузевий аналіз різних секторів підприємництва на сільських територіях з численними потоками попиту і пропозиції. Впровадження нових бізнес-моделей аграрного виробництва заснованих на біоекономічних засадах дозволить використовувати нові джерела енергії для власного споживання, перетворювати біомасу на додаткову вартість про¬дуктів переробки, і, як результат, винаходити нові життєздатні напрями заробітку для сільських підприємств.

***Ключові слова**: трансформація; бізнес-моделі; аграрне виробництво; зелена економіка; землі сільськогосподарського призначення; сільські території.*

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Formulation of the problem. The course of the economic and ecological crisis of recent years, and especially in the phase of martial law in Ukraine, indicates the urgency of the transition to another business model of agricultural production, since at the moment the "green economy" model is the only one that allows a comprehensive approach to the solution problems of ensuring the sustainable development of the country's agricultural sector in the post-conflict period.

The main goal of the transformation of business models of agricultural production in the conditions of the transition to a green economy is the preservation of the land resource potential of economic entities as a biotope of the natural landscape as a result of the action of ecological functions and the reduction of environmental degradation. However, the transition of agricultural production to the green economy model during the state of martial law requires a long period of modernization of rural areas and the formation of a new ecological system with a change in the institutional mechanism.

Currently, the development of agricultural production in rural areas is considered one of the most important factors of the bio-economy due to the growing demand for biomass produced mainly in rural areas and associated with the effective use of land resources. The main directions of the green economy are agriculture and fisheries, water and forestry, agro-processing industry, tourism, disposal of household and industrial waste.

Analysis of recent research and publications. The analysis of in-depth research by foreign scientists demonstrates the need for changes in the principles of management of subjects based on environmental requirements and norms, as a priority for the harmonization of the development of the Euro-Atlantic civilization, focused on ensuring the sustainable development of the green economy, which is characterized by its inclusive nature and the ability to promote economic growth, employment and the eradication of poverty, with the simultaneous formation of a map of the functioning of the ecosystem, both on a national and global scale.

The theoretical aspects of the formation of the "green economy" on the platform of rural areas are highlighted in the works of such scientists as: R. Amit, T. Zot [10], L. Baas [11], K. Ekerberg, E. Miner [14], S. Halstedt, H. Broman, K.-H. Robert [16], M. Litido, G. Rignini [19], A. Mascareñas, P. Coelho, E. Subtil, T. Ramos [21]. Scientific and practical aspects of the green transformation of the economy of rural areas and the factors of green economic growth regions of the country that suffered as a result of military operations in Ukraine are devoted to the works of such scientists as: E. Blanco and J. Razzak [12], J. Harris [17].

Formulation of research goals. The purpose of the article is to substantiate the conceptual provisions for the transformation of business models of agricultural production on the basis of the green economy, which determine the scalability of the use of resources in rural areas, oriented to the universal methods and tools of the bioeconomic strategy of the country, determined by the factors of the effectiveness of the subject-agricultural business and the sustainable system of the rational development of agricultural lands appointment.

Summary of the main research material. A decentralized, sustainable and competitive approach to the development of a green economy in agricultural production forms network thinking, subject to the sustainable use of natural capital. It allows you to substantiate the conceptual provisions of the transformation of business models of agricultural production on the basis of the green economy and to emphasize the value of nature, which generates land resources for the fundamental advantages of the livelihood of rural areas and warns of the risk of ecosystem destruction. At the same time, the determinants of the effectiveness of agrarian business subjects, subject to the development of resources, allow to determine the efficiency of the use of agricultural land, as well as the factors of sustainability, which

depend on the stability and profitability of the development of agricultural production.

Land resources, as is known, are not the products of human labor, but are created under the influence of objective natural factors. They are a national good, not an immanent norm of private property. This should be the imperative for the transformation of business models of agricultural production under the conditions of the transition to a green economy and ecological land use, which is embedded in the structure of transformations of modern land policy [1]. At the same time, the regional aspect of the transformation of agricultural production business models on the basis of the green economy is strengthened by the connection with the ecological and economic component of the development of rural areas, which is an important concept of the European model, which Ukraine is aiming for with the prospect of joining the European Union.

The transformation of business models of agricultural production under the condition of transition to a green economy is based on three paradigms [12]: efficiency of resource use; sustainability of ecosystems; social justice. Since the green economy models are formed by the concept of sustainability, all the mentioned paradigms have ecological, economic and social effects in the transformation of business models of agricultural production. That is, the effectiveness of the use of land resources in agricultural production depends on the increase in natural capital and the reduction of costs, which in turn increases the total economic value of agricultural lands, taking into account their entire life cycle and their resistance to risks in the ecosystem.

It should be noted that the members of the European Commission believe that the efficiency of the use of land resources is positioned with a limited cycle of their use, social responsibility of their exploitation and minimal impact on the biological environment [11]. In our opinion, social responsibility for the use of land resources in agricultural production concerns all environmental, economic and social aspects.

At the same time, from the point of view of the influence of the bio-environment on the change in the structure of business models of agricultural production, the transformation process activates the replacement of the features of one economic order with similar features of another order, as a result of which the quantitative criteria of the ecosystem are transformed into qualitative transformations.

These transformations take place in the format of continuous movement of land resources, which are used by agribusiness subjects under the influence of endogenous and exogenous factors of the bio-environment. That is, the transformation process is an objective tool of the green economy that corrects individual elements of the ecosystem, and, in our case, it is an ecological and economic system of agrarian business entities that should improve the efficiency of the production infrastructure, ensure changes in the ownership structure, in legal and organizational forms management, taking into account the peculiarities of rural areas in different regions of Ukraine. This is necessary for the optimal distribution of land use in agricultural production according to certain types of products, directions and forms of specialization of agricultural industries and enterprises, their sizes and organizational structure.

Since the main qualitative property of natural capital is land, then its characteristic specificity and practical use in combination with land ownership significantly affect the formation of new land relations between subjects of agrarian business in rural areas [2]. Earth, as an organo-mineral body, becomes a means of production if living and past labor joins it. In this regard, land acts as a means of production in all branches and spheres of activity of agrarian business subjects, because it is also a general means of labor. However, its role in certain branches of agricultural production is not the same.

Thus, engaged in the production of plant products, creating the necessary prerequisites for the growth and development of plants, the subject of agrarian business cultivates the soil, preserving its fertile properties. An important aspect of this activity is the process of land socialization, which forms new conditions for regulating economic activity and transforms land relations between objects of agrarian business.

Land socialization is a holistic system that combines natural and social initial elements for understanding the biological environment of agrarian production and its place in ensuring the product base of natural capital in the state, as well as solving a complex of issues of agrarian business subjects [3]. On the other hand, the social essence of land is manifested in various forms of activity of economic entities, since human resources that cultivate agricultural land (a special natural formation with a universal property) are characterized by such qualitative characteristics as consciousness and freedom in matters of the use and protection of land resources [7].

The versatility of agricultural land in agricultural production is manifested in the purposeful provision of the needs of agrarian business entities with resource reserves for the activation of processes related to the protection of the biological environment. In this sense, agricultural lands become an equal natural entity in the transformation process of business models of agricultural production and their socialization, performing the function of partial reproduction of agricultural lands by various innovative technologies and mechanisms, taking into account their sustainable influence on soil properties.

At the same time, the naturalness of the impact of human resources on agricultural land is manifested through a variety of conscious social responsibility for bioenvironmental changes. That is, they consciously and constantly change the natural landscape to increase production and energy capacities, using agricultural land

as a symbiosis of labor intensity and output of final products from 1 ha of usable land resources.

The regulatory socio-economic tools of the bio-environment, which are able to influence and coordinate the efficiency of the use of agricultural land by agrarian business entities, include "creating and maintaining a stable monetary balance" and "indirect state intervention in those areas that cannot receive proper development on the basis of only private initiative" [5]. This emphasizes the objectivity of considering, as macroeconomic levers, the regulation of land relations in agricultural production and the level of well-being of human resources when using agricultural land in rural areas.

Thus, when regulating land relations in agricultural production based on the level of well-being of human resources in rural areas, it is necessary to balance the interests of all subjects of the ecological and economic system - the state, regions, landowners and land users, as well as individual entrepreneurs in rural areas. At the same time, the coordination of actions of agrarian business entities to ensure the appropriate level of welfare of human resources involves taking into account the ratio between such indicators as "costs-incomes", "costs-profits" [5].

The UN Committee on World Food Security [8] stated that sustainable land use largely depends on how people get access to land and other resources. That is, the key factor in economic growth and the well-being of human resources in the socio-economic system of agrarian business entities is access to land resources and control over them [15].

In Ukraine, in modern realities, the social direction of the bio-economic strategy is oriented towards the transformation of business models of agricultural production and the achievement of European and global standards of life of the population in rural areas, which is ensured only through the efficiency of the use of agricultural land for a certain period of time, taking into account their territorial location in rural areas [6].

Therefore, in our opinion, when learning the composition of the regulatory ecological and economic instruments of agricultural production under the conditions of transition to a green economy, the following factors become particularly important: multifunctionality, which involves accounting for a wide range of services provided to landowners and land users in general by the state; multisectorality, which represents an integrated process of diversification of land management and land use, creation of new sources of income, increase of employment and preservation of rural areas; the flexibility of the system of supporting the economic activity of landowners and land users, agrarian business, based on subsidiary financing and partnership relations; transparency, which involves the transparency of the process of restoration of agricultural land, based on simple and understandable legislation.

Taking into account the above factors, we present three directions of transformation of business models of agrarian production under the condition of transition to a green economy based on the efficiency of the use of agricultural land and the level of well-being of human resources (Fig. 1).

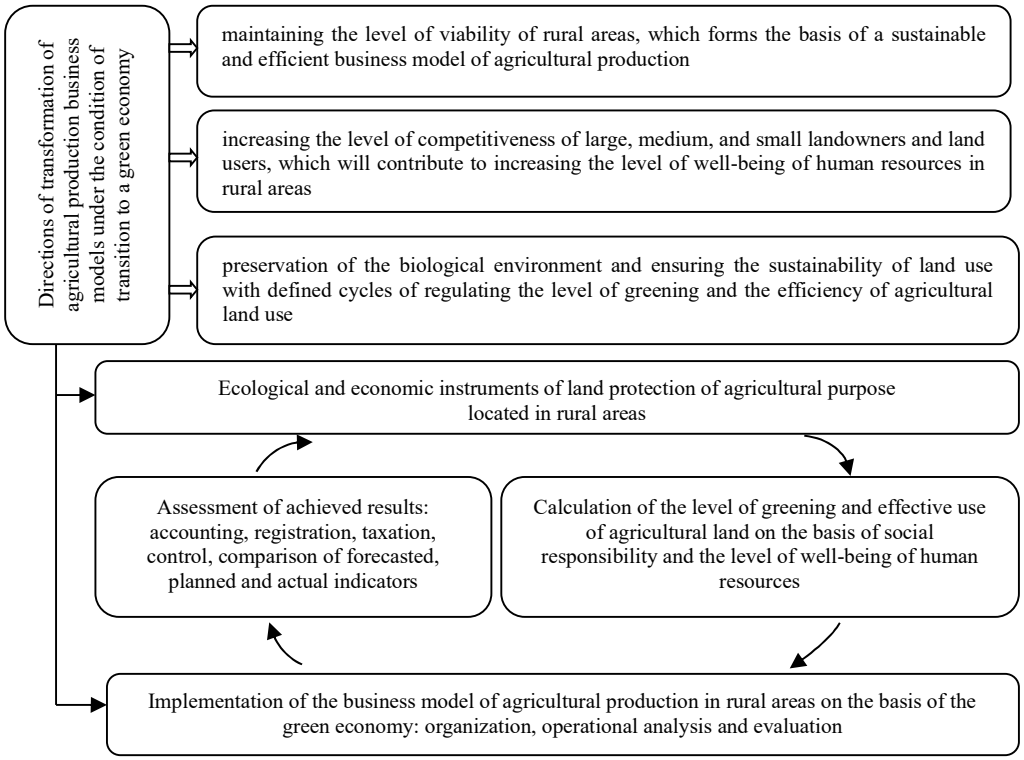

Figure 1 – **The cycle of regulation of greening and the efficiency of agricultural land use during the transformation of business models of agricultural production and the transition to a green economy**

Source: constructed by the authors

At the same time, the features of the green economy in business models of agricultural production are important, namely: effective use of land resources; preservation and increase of natural capital; reduction of pollution; low carbon emissions; protection against loss of biodiversity; in general, a decline in the anthropogenic load on the biological environment. These properties differ from the current model of economic development of agricultural production, and even more so during the period of martial law in Ukraine, when the losses of the agricultural sector in 2022 amounted to more than 137.8 billion USA. The total financial needs of our state for the reconstruction and restoration of the economy and, in particular, of agricultural production exceed 349 billion USA [4; 9].

Plans for the post-war reconstruction of Ukraine for the period until 2032 provide for the allocation of 750 billion USD by international donors the United States of general funding (of which 20 billion USD – for the restoration of the biological environment and the sustainable development of the green economy in agricultural production) for the implementation of fifteen national programs [4; 9].

Such restoration in no way means the return of the structural parameters of domestic agricultural production to the pre-war state, but aims at its systematic structural transformation. They should be implemented on the basis of Ukraine's deep integration into the European economic space in accordance with the requirements of the European Green Course, which is a guarantee of our country's fulfillment of the Copenhagen criteria for EU membership.

Therefore, in the post-conflict (post-war) period, Ukraine will finally be able to get rid of many objects of physically and morally outdated equipment, not only by rebuilding the infrastructure of the agrarian sector of the economy with the participation of international partners, but also by forming fundamentally new economic institutions and structural segments of the green agrarian economy.

The specified determinants will make it possible to carry out scenario forecasting of the post-war development of a new business model of agricultural production in Ukraine, based on the initial parameters of the socio-economic state of rural areas and the description of key variables related to the structural change in the dynamics of indicators of greening and effective use of agricultural land.

The confirmation of this thesis is, in particular, the wide variety of models and scenarios offered by the International Institute of Applied System Analysis regarding the dynamics of global cycles and the circulation of air, soil and atmosphere [23]. The interpretation of their influence on the resource possibilities of agricultural production in the state in relation to the realization of national economic interests is an important task and requires a systematic approach in the formation of trans-connections between representatives of the branches of the agrarian sector of the economy of different countries.

Conclusions. Thus, the business model of agricultural production in rural areas during the martial law is undergoing a strong and multi-level technological transition. The potential of rural areas can be revealed, in particular, due to automation, robotics, digitalization, visualization of virtual reality regarding new ways of working at the level of rural territorial communities.

The transition of the standard model of agricultural production to the new rails of the green economy in Ukraine will mean a change in the economic growth of agrarian business entities in a new direction, which will simultaneously guarantee the stability of the regional ecosystem on the basis of the efficiency of agricultural land use, greening of production, the increase in the well-being of human resources in rural areas, and social responsibility for energy recovery, for strengthening the role of the state in stimulating green investments and innovations, for creating conditions for increasing the competitiveness of national producers of green products and forming a new attitude of the rural population to the biological environment.

The further direction of the development of the agricultural production model based on the principles of the green economy involves the creation of an agro-ecological symbiosis as a new type of bio-economy, which uses an interdisciplinary analysis of various business sectors in rural areas with numerous supply and demand flows. The introduction of new business models of agricultural production based on bio-economic principles will allow us to use new sources of energy for our own consumption, convert biomass into added value of processing products, and, as a result, invent new viable ways of earning for rural enterprises.

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