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DETERMINATION OF ENVIRONMENTAL SUSTAINABILITY AND ANTROPOGENIC LOADING IN THE TERRITORY OF THE AMALGAMATED COMMUNITY

Aleksandra KOSTYSHIN

Lviv National Agrarian University, Lviv, Ukraine, Phone: +38 032242964, E-mail: kostushn@ukr.net

Corresponding author: o_nauka@ukr.net

Abstract

The main objective of the research paper is to determine environmental sustainability and anthropogenic load in the territories of the united territorial community. Methodological basis of the research are general theoretical methods of scientific cognition, in particular dialectic method, system analysis, fundamental provisions of general economic theory. Methods of comparative and structural analysis, statistic groups were also used to analyze the level of ecologically sustainable development of regions; tabular method - for a visual representation of the dynamics of indicators. The methodology is aprobated on the territory of the Chernivtsi region. It is substantiated that the basis of sustainable development is the combination of economic, social and environmental sustainability. It has been established that the environmental factor is of the greatest concern at the moment. The reform of decentralization, which has been initiated, is partly directed at addressing environmental issues; at the same time, this process is long-term and requires significant resources. Determination of environmental sustainability and anthropogenic load on the territory of united territorial communities is important for ensuring sustainable development of rural territories. The research paper contains the calculations of the summarized values of regional environmental indicators of sustainable development and evaluates the natural and anthropogenic unsustainability of the environment. Ecologically safe, balanced and systematic development of territories is an integral part of spatial development of the region. It is the basis for solving the problem of harmonizing the goals of socio-economic development of certain territories with the principles of ecological safety of the country as a whole. Ensuring environmental sustainability and reducing anthropogenic load on the territory of the united territorial community may be due to the development of alternative energy and bioenergy. In the context of the study of this article, the development of environmental safety in a separate region is proposed as a systemic category that combines social, economic and environmental components, whose interaction involves the transition to environmentally sustainable production and consumer structures, increasing the efficiency of nature management, development of ecological infrastructure. The ecological dimension of sustainable development of rural areas is proposed to be determined using the following indicators: air quality, biodiversity, land resources, green zones, provision of the population with water, renewable energy sources, energy resources, atmospheric emissions, load on land resources, load on water resources, state of the system of drainage, radiation and ecological danger, generation of waste, waste management, participation of business entities in the formation of revenues from ecological dues, public participation in environmental protection, greenhouse gas emissions, satisfaction of the population with the state of the environment.

Key words**:** *ecology, decentralization, united territorial communities, rural territories, anthropogenic load, efficiency, land resources*

INTRODUCTION

In the conditions of decentralization and implementation of administrative-territorial reform to improve the efficiency of management of business entities and to ensure an adequate level of quality of life of the population, it is important to solve the problems of environmentally safe development in rural areas. To ensure the environmental safety of the region, it is necessary to determine the level of anthropogenic load on the territory and optimize it, this is especially relevant for rural areas. Environmental pollution, improper use of natural resource potential, insufficient level of implementation of environmental innovations are reduced to an ecological crisis, which is accompanied by a crisis of the socio-economic system of the whole regions. Therefore, special attention should be paid today to diagnosing environmentally safe

development. It is also necessary to develop and adopt managerial decisions regarding environmental production in the regions, to increase the economic efficiency and competitiveness of producers, taking into account the envoronmental factor.

In examining the issue of ecologization of production, it should be noted that energy consumption is currently an objective condition for the existence of mankind. The population is steadily increasing. Naturally, the volume of consumed resources is constantly growing. This relates to the energy resources used in all sectors of the economy and in all spheres of public life. Growth in consumption of different types of energy and resources dramatically increases on the path of industrialization and accelerated economic development. At the same time, it has environmental impacts.

Taking into account the decentralization reform initiated in Ukraine, attention is paid not only to the socio-economic development of rural areas, but also to the efficiency of the use of available resources. Therefore, determination of environmental sustainability and anthropogenic load on the territory of a united territorial community and the search for alternative energy sources for the sustainable development of rural areas are important.

In the context of today's global challenges, changes in production, consumption and logistics technologies are typical. These changes have a significant impact on all spheres of life, both in the rural and urban territories. At the same time, the environmental component takes a key place in the modern development of rural areas of the leading countries. Changes in rural areas are treated in terms of automation of production capacity within the historical development process. Regarding ecologization of production, ecological consciousness and the formation of a corresponding culture was emerging in several stages. Accordingly, a significant number of scholars were engaged in research of ecologization of production and the balanced development of rural territories and communities taking into account the environmental factor.

Blavatska D.A. investigated the specifics of the re-formation of the environmental legislation of Ukraine as the leading direction of the state environmental policy [1]. Borodina O.M., Heiets V.M. and Hutorov A.O. developed the Ukrainian model of agrarian development, its socioeconomic and environmental reorientation [2]. Veklych O.O. studied the principles of unification of the structure of domestic environmental taxation in accordance with Eurostat's classification standards [16]. The public assessment of the national environmental policy was carried out in the works of V. Melnychuk, M. Ruda and T. Malkova [10].

Significant theoretical and practical achievements on the definition of environmental sustainability and anthropogenic load on the territory of the united territorial communities are in the context of the implementation of the administrative territorial reform [3]. Economic aspects of monitoring and management of natural resources in conditions of changing market conditions and ensuring sustainable development in the context of decentralization of power in Ukraine are studied in the works of M.A. Khvesyk and S.O. Lyzun [15]. Zharova L.V. studied the prospects of stimulating "green" production under conditions of decentralization [17]. Kolmakova V.M. dealt with the specifics of financial support for the implementation of the policy of environmental safety in the newly formed united territorial communities [4]. Matsievych T.O. studied the features of environmental taxation: the practice of the EU countries [6]. The potential of Ukraine's sustainable development towards the implementation of an integration choice of the state is outlined in the writings of O.M. Alimov, I.M. Litsur and V.V. Mykytenko [14]. Pristaiko O.P. described the indicators of the effectiveness of the regional environmental policy and researched the environmental indicators of sustainable regional development in the context of radical socio-economic transformations [8, 9]. The socio-economic

potential of sustainable development of Ukraine and its regions is defined in a number of strategic development programs of the state [11]. Stroiko T.V. in his articles described the methods of monitoring the sustainable development of rural areas and explored the options for sustainable use of nature as an element of sustainable development of rural areas [12, 13]. Kostyshyn A., Tybolova L. proposed coefficients of ecological stability, corrected for the relief, which is appropriate to apply in the adoption of management and design decisions [5].

At the same time, significant changes take place in the conditions of decentralization, therefore, the issue of determining environamental sustainability and anthropogenic load on the territory of the united community requires further research. Therefore, it is necessary to further elaborate the existing legal and regulatory framework.

Formulation of the objectives of the research paper:

• Identification of indicators to be the basis for estimation of the level of environmental sustainability and anthropogenic load in the territory of the united territorial community.

MATERIALS AND METHODS

The methodology of the research is based on the following economic methods: monographic (study of best practices in the definition of ecological stability of regions), system analysis (comparison of different categories of land), statistical (analysis of the structure of land resources), graphical (schematic and table representation of research results).

RESULTS AND DISCUSSIONS

The main directions of systematic, balanced ecological development of regions, taking into account the available resource potential, in accordance with the National Paradigm of Sustainable Development of Ukraine, are increasing the well-being of the population due to provision of high-quality food products in sufficient quantities. Another component is the creation of a favourable ecologically safe environment for living and reproduction of natural resource potential. Satisfaction of these needs is possible through the formation of an ecosystem which ensures the implementation of all production functions, while not damaging the natural environment. On the part of the state, material and infrastructural stimulation of structural changes in the economy, the transition to new, innovative, environmentally safe production technologies are important for the implementation of this paradigm of sustainable development. At the same time, in the long run, the environmental factor has a leading role, since it has a significant impact on all other factors.

Environmental safety is one of the most important guiding lines for the sustainable development of both separate territorial entities and region as a whole. It ensures sustainability of the spatial system, determines the optimal level of load on the environmental component of the united territorial communities. In accordance with the concept of sustainable development, socio-economic development of the region should ensure environmental safety for the population. The conducted researches allow to state that in countries that develop any influence of economic development on the state of the environment and the state of use of natural resources is negative. The above due to the fact that is constantly increasing anthropogenic impact. At the same time, the opportunities for introducing resource-saving and environmentally friendly technologies are growing, and the level of ecological culture of the population is increasing. These changes and transformations are typical for all developed countries, and changes should be made in Ukraine as well. Implementation of the administrative territorial reform according to the model of the EU member states envisages assimilation of environmental standards of economic management and monitoring of the state of anthropogenic load on the natural environment of the united territorial communities.

In the conditions of administrative territorial reform and decentralization, it is also important to address the existing environmental problems. The initiated reform provides for the transfer of part of powers and budgets from state authoritie to the united territorial communities. It is they who will receive funds from the use of the resource potential that is located in their territories. At the same time, they also entrusted with the function of monitoring compliance with environmental protection measures, monitoring of anthropogenic load on the environment of rural territories. The main task of the reform is the transfer of powers, opportunities and resources to those bodies which are closer to the people, so that these powers can be exercized more efficiently. At present, a significant part of these powers is also associated with monitoring compliance with environmental standards.

Every inhabitant of a village or city has the right to modern medicine and education, affordable and high-quality administrative, social services, utilities, good roads, lighted streets, green environment. The existing experience of rural development suggests that people can influence the quality of these services only when the ones who are responsible for providing them are close enough.

In the conditions of administrative-territorial reform and decentralization, local self-government bodies are closest to rural residents. Representatives of the combined territorial councils should have broad powers and sufficient resources to be able to resolve all local issues and bear responsibility for them. This is one of the key conditions for effective administrative and territorial reform. To this end, decentralization is carried out in Ukraine - the transfer of powers and funds from state authorities to local self-government [15]. Accordingly, significant funds are allocated from the state budget for the implementation of the policy related to the change of administrative territorial system.

The state increases the volumes of funding of regional development every year. Since 2014, the volume of support for regional development has increased 40 times. The main sources of funds for the administrative territorial reform and implementation of socio-economic and environmental projects in rural areas are: international technical assistance of the European Union, State Fund for Regional Development, state subventions for socio-economic development of certain communities. Currently, these funds are sent directly to the united territorial communities and are used for the implementation of specific socio-economic and environmental projects.

The amounts of these funds are sufficient for the systemic solution of specific problems at the community level. For example, in 2018, UAH 167.6 million was provided for infrastructure projects of the Chernivtsi region from the state budget. The State Fund for Regional Development has funded 38 projects in the spheres of education, health care, social protection, culture, sports, ecology, etc. According to the program of administrative territorial reform, the subventions in the amount of UAH 68.3 mln for the infrastructure development were received by the united communities of Chernivtsi region. With these funds, the community will implement 90 projects, a significant number of which are associated with ecologization of production, namely the establishment of a system for collecting and recycling solid waste.

Today, the ecology of rural areas greatly worsens due to the misuse of solid household waste, the formation of unregulated garbage disposal sites, pollution of water and air. With the successful implementation of environmental projects, partial resolution of thes eproblems of rural areas and newly formed united territorial communities is expected.

Chernivtsi region is also one of the customers of the Carpathian Network for Regional Development Project, which, along with the socio-economic development of the region, involves the implementation of a number of environmental initiatives [15]. According to the Carpathian Network for Regional Development Project, the main principle of

environmentally sustainable development of the region in the context of decentralization is the transition to environmentally balanced models of production, consumption and elimination of the relationship between economic development in the region and environmental degradation. In the conditions of decentralization and implementation of administrative-territorial reform, the main role in monitoring the environmental state of the environment of rural areas is given to united communities. They have the appropriate resource and authority to do this.

To date, there is no common methodology for assessing the environmental sustainability and anthropogenic load on the territory of a united territorial community. To calculate this assessment, it is necessary to use data on specific resources available on a particular territory and to calculate the relationship between these resources and the changes that occur with their structure. Given that we are dealing with rural areas, the main resource is the land. To assess the environmental situation at the level of a particular region or community, we propose to calculate the coefficient of environmental sustainability of land use. Table 1 shows the coefficients of environmental sustainability for particular lands.

The general coefficient of environmental sustainability of a particular territory is calculated using the formula:

To environmental sustainability of the territory

$$= (Ki * Pi) / Pi * Kp$$

$$C_{\text{of environmental sustainability of the territory}} = (C_i * A_i) / A_i * C_r$$

where:

C_i – coefficient of environmental sustainability of i-type lands;

A_i – area of i-type lands;

C_r – coefficient of morphological stability of the relief [7].

Using this formula, we calculated the coefficient of environmental sustainability of the territory of Chernivtsi region. According to the State Land Cadastre, available land of the Chernivtsi region is 809.6 thousand hectares. A significant part of the territory is occupied by agricultural lands (59.5%), one third (31.9%) - by forests and woodlands, 5% is built-over lands, 2.3% is underwater and 1.4% belongs to others types of lands. Table 2 presents the structure of the available land of the Chernivtsi region and Ukraine.

Table 1. Coefficients for the calculation of environmental sustainability for particular lands

Name of lands	**C of environmental sustainability of the territory**	**C of environmental impact of the land on surrounding lands**
Built-over land and roads	0.00	1.27
Arable lands	0.14	0.83
Vineyards	0.29	1.47
Woodland belts	0.38	2.29
Orchards, shrubs	0.43	1.47
Vegetable gardens	0.50	1.59
Hayfields	0.62	1.71
Pasture lands	0.68	1.71
Ponds and marshes	0.79	2.93
Forests of natural origin	1.00	2.29

Source: [7].

Table 2. Structure of the available land of Chernivtsi region

Region	**Agricultural lands**	
	thousand hectares	**%**
Chernivtsi region	482	59.5
Ukraine	42724	70.8
Lands under forest resources		
Chernivtsi region	258	31.9
Ukraine	10632	17.6
Built-over lands		
Chernivtsi region	40	5.0
Ukraine	2558	4.2
Lands under water resources		
Chernivtsi region	19	2.3
Ukraine	2426	4.0
Other		
Chernivtsi region	11	1.4
Ukraine	2016	3.3

Source: [14].

Grouping the territory of Chernivtsi region in terms of environmental sustainabilty allowed distinguishing 4 groups of territories:

unsustainable, unstably sustainable, medium-sustainable, sustainable (Table 3).

The calculations allowed to notice that 42.3% of the territory of Chernivtsi region is environmentally unsustainable, the situation in 52.7% of the region is unstably sustainable, in 4.5% is medium-sustainable, and there are almost no environmentally sustainable territories. The proposed methodology can be used to calculate environmental sustainability and anthropogenic load of both separate region and territory of a united territorial community.

Table 3. Grouping the territory of Chernivtsi region in terms of environmental sustainability

Group No.	Environmental sustainability	Value of $C_{\text{of env. sust.}}$	%
1	Unsustainable	≤ 0.30	42.3
2	Unstably sustainable	0.31-0.50	52.7
3	Medium-sustainable	0.51-0.67	4.5
4	Sustainable	≥ 0.67	0.5

Source: own studies.

At present, the difficulty in ensuring environmentally sustainable development of regions and the country as a whole in the context of transformational processes is due to the fact that the current ecological and economic situation in Ukraine is characterized by the predominance of industries that have a significant anthropogenic impact on the natural environment. During the last decade, the industrial structure of the country has increased the importance of environmentally aggressive industries (metallurgy, fuel and energy) and reduced the share of more environmentally friendly industries (mechanical engineering, light industry). At present, a significant number of domestic enterprises do not comply with current environmental legislation, pollute the environment with waste and debris.

In the context of decentralization, the urgent issue is the solution to the problem of household rubbish, which significantly affects the environmental condition. In many territorial communities, the development of programs for dealing with solid household waste has been introduced on the basis of the Law of Ukraine "On Waste", the Law of Ukraine "On Waste", the Law of Ukraine "On Improvement of Human Settlements" and the Law of Ukraine "On Environmental Protection" higher ". These programs focus on the problem of sorting and utilization of solid domestic waste in the territories of newly created communities in order to improve the environment and living standards of the community. The implementation of this is possible due to the establishment of a system for separate collection of solid domestic wastes, the creation of an infrastructure for their sorting. At the same time, the implementation of the mentioned may-liv if the relevant explanatory work is carried out among the population of the united territorial communities, the creation of appropriate conditions and material incentives for the population.

In many territorial communities, the development of programs for solid domestic waste is based on the Law of Ukraine “On Waste”, the Law of Ukraine “On the Improvement of Settlements” and the Law of Ukraine “On the Protection of Natural Environment”. These programs focus on the problem of the sorting and disposal of solid domestic waste in the territories of newly created communities in order to improve the environment and the standard of living of the community. This is possible due to the establishment of a system for separation of solid domestic waste collection, the creation of sorting infrastructure. At the same time, this is possible provided that appropriate explanatory work is conducted among the population of the united territorial communities, the creation of appropriate conditions and material incentives for the population.

The analysis of scientific literature has shown that environmentally safe development of territorial communities is an integral part of sustainable spatial development. In our opinion, the development of environmental safety of territorial communities should be considered as a systemic category that combines social, economic and environmental

components, whose interaction provides for the transition to environmentally balanced production and consumer systems, increase of the efficiency of nature management, development of ecological infrastructure.

In order to assess and increase the ecological safety of the combined territorial communities of Ukraine, it is necessary to determine its preconditions, namely the state of the eco-logical situation. In particular, it is necessary to analyze the indicators of air pollution, water treatment and utilization of solid and hazardous waste. In Ukraine, in recent years, there has been an increase in pollutant emissions from stationary and mobile sources of pollution.

In order to assess and improve the environmental safety of the united territorial communities of Ukraine, it is necessary to determine its preconditions, namely the environmental situation. In particular, it is necessary to analyze the indicators of air pollution, water treatment and solid and hazardous waste disposal. In Ukraine, in recent years, there has been an increase in pollutant emissions from stationary and mobile sources of pollution.

The transfer of production capacity to rural areas is currently typical. The above enhances the need to monitor environmental condition. The environmental dimension of sustainable development of rural territories can be determined by the following indicators: air quality, biodiversity, urban land resources, urban green zones, quality of drinking water in the city, provision of urban population with water, renewable energy sources, energy resources, atmospheric emissions, load on land resources, load on water resources, drainage system condition, water consumption, radiation and ecological danger, waste generation, waste management, noise pollution, energy dependence, financial participation in addressing environmental protection issues, implementation of energy management, participation of business entities in the formation of revenues from ecological dues, public participation in environmental protection, greenhouse gas emissions, satisfaction of the population with the state of the environment, and environmental management performance of the organizations.

Table 4 summarizes the values of regional environmental indicators of sustainable development, where smaller values correspond to inefficient environmental policy, and greater ones characterize its growth. Indicators of Sustainable Development (^{I}sum) and Ecological Development (^{I}ec) have been identified for different regions of Ukraine (Northwest, North (Polissia), North-East, Center, Donbas, Dnipro region, South, Podillia, Bukovyna, West, Zakarpattia).

Table 4. Summarized regional environmental protection indicators of sustainable development, 2017

Region	**^{I}ec**	**^{I}sum**
Northwest	1.70	1.52
North (Polissia)	1.43	1.40
North-East	2.22	2.14
Center	3.40	2.90
Donbas	3.73	3.36
Dnipro region	4.05	3.82
South	4.27	3.54
Podillia	2.34	2.56
Bukovyna	0.59	0.73
West	0.75	1.25
Zakarpattia	2.39	1.52

Source: [9].

The indicators studied are evenly distributed in almost all regions of Ukraine, with the exception of Kyiv, Donetsk and Dnipropetrovsk regions. Critical worsening of the environmental condition is radioactive, chemical and physical pollution of air basins, surface and underground water by industrial enterprises, destruction and pollution of land. Enterprises release metals, methane, carbon monoxide, sulphur oxide, nitrogen oxide, ammonia and other refinery products into the atmosphere. The best environmental situation is observed in Poltava, Khmelnytsky, Cherkassy, Chernivtsi and Volyn regions. It should be noted that in 2018, atmospheric emissions in Ukraine were two times lower than in 2014. This trend is due to a decline in the rate of economic development in 2015 [4].

In the implementation of administrative territorial reform, a characteristic tendency is the transfer of production capacities to rural areas, which will increase the anthropogenic load on the environment. This necessitates the monitoring of anthropogenic load on rural areas. Functions for this monitoring will be assigned to non-newly formed united territorial communities.

In 2016, out of the 47 cities in the regions of Ukraine, where regular monitoring was conducted, in 22 cities the atmospheric air in terms of the integral indicator was characterized by a high level of pollution. These are the regions where powerful metallurgical enterprises, chemical and petrochemical industries, those of fuel and energy complex are located. There is a high level of air pollution in these regions [10].

The main measures aimed at reducing the anthropogenic load on rural areas united within the communities are: improvement of technological processes (including the transition to other types of fuel and raw materials); construction and commissioning of new gas processing plants and facilities; increasing efficiency of existing treatment facilities; elimination of pollution sources, which will allow reducing emissions of pollutants into the atmosphere; the introduction of other measures that will reduce the emission of pollutants into the air.

In order to improve the condition of water bodies in the united territorial communities, it is necessary to implement a number of measures aimed at stimulating the rationalization and ecologization of water use: development of innovative water-saving technologies; intensification of investment activity in the construction of modern and reconstruction of existing water treatment facilities; promotion of the development of environmentally friendly, anhydrous, recycling and reusing technologies in order to reduce the volume of contaminated wastewater and protect water sources; financial and economic stimulation of the implementation of innovative water saving projects; creation of effective market levers of ecological and economic regulation of water resources relations, which will allow ensuring adequate financing of water saving and water protection measures; introduction of a system of ecological and economic instruments for stimulating water saving production and consumption; development and implementation of water saving policy, its periodic adjustment in accordance with the processes of state development, its control and evaluation of the results of implementation of this policy; implementation of water resources management strategy.

Regarding the types of contamination of surface and underground waters, they can be divided depending on pollutants. Physical, chemical, biological and radioactive pollution/contamination is distinguished. In case of physical pollution, a significant volume of insoluble impurities in water is characteristic, namely: silt, clay and sand. Chemical contamination of water bodies involves oil and petroleum products, metals, mineral fertilizers and pesticides. Biological contamination is characterized by bacteria and viruses. Taking into account that a significant territory of Ukraine suffered from the Chernobyl catastrophe, there are reservoirs that are contaminated with cesium-137 and strontium-90, there is an excess of potassium-40.

In the conditions of decentralization it is important for newly formed united territorial communities to control the condition of available resources, including water resources. Currently, communities are actively involving available data of the existing water quality assessment systems for monitoring purposes. The most common are: Information System Analysis of Surface Water Quality of the IAC of the Ministry of Environmental Protection, which is intended for the analysis of surface waters; EcoInspector Automated Management System, which, in addition to measuring the condition of pollution of the environment, assesses the condition of water resources; the results of research of the Research Institute of Problems of Mathematical Machines and Systems of NAS of Ukraine related to water resources; data of the analytical system

Chemical Composition and Quality of Surface Waters of Ukraine; data of the Hydrosphere system.

A promising direction is currently the development of a unified methodology for assessing the condition of water resources for united communities and the introduction of monitoring and control of water use. It is relevant to use the EU experience, taking into account the provisions of the EU Framework Directive on the ecologization of agricultural production.

The main sources of revenues of environmental funds of certain European EU countries are: the National Environmental Fund, the Environmental Investment Fund, the Protection Fund Appropriation, the National Environmental Protection Fund, the Environmental Investment Center, the State Fund for the Environment, etc. (Table 5).

Table 5. The main sources of revenues of environmental funds of certain European countries during the period of accession into the EU

Fund	Country	Source of revenues
National Environmental Fund	Czech Republic	pollution charge, repayment of loans, financial transactions
Protection Fund Appropriation	Hungary	product tax, repayment of loans, privatization, transfers from the budget
National Environmental Protection Fund	Bulgaria	product tax, fines for violation of environmental protection legislation, repayment of loans
Environmental Investment Centre	Estonia	Until 1999: pollution charges, resource usage charge, privatization, lumbering charges. After 2000: transfers from the budget
Environmental Investment Fund)	Litva	pollution charges, external loans
State Fund for the Environment	Slovakia	pollution charges, transfers from the budget

Source: [16].

European experience is also relevant for Ukraine. It is important for the united territorial communities to use modern achievements on the use of domestic waste. Ways of solving the problem of waste disposal should include: formation of a modern waste management system taking into account European experience; improvement of the regulatory framework; construction of new waste incinerators and waste disposal plants; separate sorting and treatment of domestic waste; increase of fines for disposal of unsorted garbage in places which are not specially allocated for that purpose; recycling of packaging for different products; imposing restrictions on circulation of plastic products.

The implementation of alternative energy projects is urgent for Ukraine in the context of administrative and territorial reform and decentralization. These actions will improve the environmental condition and optimize the energy costs of the united territorial communities. The bioenergy model based on the processing of wood chips, which is the waste of the lumbering process, dominates in science and practice. Wood chips can become the main raw material for generating bioenergy in the united communities. In addition, one of the sources of wood chips may be low-quality wood, which is mostly lumbering waste and not used by enterprises. Implementation of the proposed solution allows to build an integrated approach to community development with the following effect: utilization of low-quality wood obtained during disafforestment, branching and accretion thinning in the forestry, especially after forest fires; solving of financial tasks for branching and accretion thinning in forestry by their inclusion in the integrated bioenergy production budget; ensuring forest protection contributing to the cultivation of highly resistant plants, which effectively perform the protective function of the forest; creation of new jobs at bioenergy facilities (supply of raw materials, operation and maintenance of energy production facilities), generation of cheap energy for the needs of the population of the united territorial communities.

CONCLUSIONS

The results of the study show that the level of environmental safety in Ukraine and its regions is insufficient, and measures for its improvement are not fully effective. Diagnostics of environmentally safe development of the regions of Ukraine was the basis for determining the asymmetry of its constituents and basic environmental problems, which are characteristic for certain regions of Ukraine. Implementation of measures to improve the condition of atmospheric air, water bodies and addressing the problem of waste disposal will promote not only the ecological and economic efficiency of enterprises, but will also ensure sustainable and balanced economic growth in the regions of Ukraine.

Proceeding from the main tendencies of negative changes in the state of the environment in Ukraine and its regions, we see the need for ecologization of production, that is, the introduction of resource-saving and environmentally friendly technologies and technological processes, methods of rational management of natural resource potential. These will ensure, along with the maximum possible quality of public product. The ecological development at the present stage should be the transition from the implementation of certain environmental measures to the development and implementation of the concept of comprehensive ecologization of public production and other fields of activity, creation of a system of state incentives for resource saving and ecological development, bringing them in line with the sustainable development strategy.

In order to calculate environmental sustainability and anthropogenic load on the territories of united territorial communities, it is suggested to use data on the resources available on a particular territory and to monitor the correlation of these resources and changes that occur with their structure. To fulfil this task, the coefficient of environmental sustainability of land use is calculated on the example of Chernivtsi region.

The calculations made allow stating that 42.3% of the territory of Chernivtsi region is environmentally unsustainable, 52.7% of the region's territory is unstably sustainable, 4.5% is medium-sustainable, there are almost no environmentally sustainable territories. The proposed method can be used to calculate environmental sustainability and anthropogenic load on the territories of the united communities.

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