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ENVIRONMENTAL COMPONENT OF SUSTAINABLE DEVELOPMENT OF TERRITORIAL COMMUNITIES

ABSTRACT

The article discusses the development of a target system for stimulating public governance in the context of sustainable development. It emphasizes that current mechanisms of environmental governance are imperfect and do not fully utilize the latest management technologies. The need for the development of measures to enhance the activity of government bodies and the public in the process of making environmental decisions is noted. The sustainable development of society is discussed, highlighting the importance of communication links that influence environmental development. The role of local self-government bodies and state administration in ensuring continuity is emphasized. An emphasis is made on strategic partnership. The impact of human activity on the environment is explored with a focus on environmental risks. The state of Ukraine's ecological system is analyzed before and after the start of full-scale military operations. It is noted that local communities are often better equipped for effective management of the environmental sphere compared to the public and private sectors. Positive practices promoting the sustainable development of territorial communities are reflected. The importance of environmental awareness of the population is recognized, and problems related to low awareness, motivation, and environmental education are identified. The formation of goal-oriented Information-Active Units (IAUs) is proposed to stimulate eco-activities at the level of territorial communities. The proposed system is intended to perform functions such as provision, coordination, and forecasting. The structure of Information-Active Units in the environmental sphere at the level of territorial communities and key elements are presented. A model for coordinating cooperation in the public environmental management system is proposed. The implementation of the proposed measures involves assessing collaboration needs, defining goals, and improving coordination methods. Overall, the importance of collaboration, coordination, and effective communication in the public governance system in the environmental sphere is emphasized to achieve sustainable development goals at the local level.

Keywords: communication, cooperation, collaboration, balance, sustainable development, territorial community, public administration, environmental public management, effectiveness

JEL Classification: Q28, O20

INTRODUCTION

In the process of achieving the goals of sustainable development, it is necessary to consider not only global guidelines, principles of sustainable development, and national characteristics, but also the effectiveness of the system of public environmental management. World experience confirms the dependence of environmental development of the state as a whole and individual territories in particular on the effectiveness of public administration. The basic precondition for achieving the goals of sustainable development is a quality system of public administration. At the same time, the complexity of public environmental management in local is caused by the need to combine national and local interests with the priorities of sustainable development. The modern mechanisms of public environmental management are not perfect, because they do not consider all aspects of such management, do not allow quality implementation of the man-

agement process and do not use the latest management techniques. Therefore, effective public environmental management should be supported by the active participation of the population in environmental decision-making and include public oversight and shared responsibility for their implementation. This highlights the issue of developing a model of collaboration in all subjects of public environmental management, which is a major factor in the ecological balance of territorial communities.

LITERATURE REVIEW

A significant number of scientific works are devoted to addressing environmental issues at national and local levels. Balanced development receives attention in the works of many researchers. In particular, Jeffrey C. Bridger and A.E. Luloff [11] describe sustainable community development in detail and, based on an interactive approach, emphasizes the importance of communication links that can influence environmental development; O. Bezugly [2] emphasizes that the main initiatives to ensure sustainability in development belong to local governments, he highlights the importance of public administration approach; O. Hordeev [8] strengthens the importance of strategic partnership in the process of state regulation of sustainable development of territorial communities; M. Pittsyk [20] connects the environmental aspects of sustainable development with the concentration of power at the basic level; V. Mamonova and Y. Kuts [14] outline the theoretical and methodological principles of sustainable territorial development. Touching upon the issue of social ecology, it is worth pointing to a study [5] in which the authors reveal the impact of mankind on the environment through the prism of regulation, governance and sustainability transitions.

G. Ohanuezhova [18] describes the ecological factor in the formation of a health-oriented economy and details the components of these processes. K. Serdiuk analyzes the damages from environmental crimes in Ukraine. M. Savis'ko [26] focuses on the state budget allocated for improving the environmental situation in Ukraine. S. Balyuk, N. Clauning, L. Chetvertukhina, M. Koval-Honchar [1] pay attention to environmental trends in Ukraine in their works. This information is important for the presented research as it allows examining environmental management from the perspective of citizens. I. Sukhenko [29] provides a detailed description of ecological communication and presents the evolution of rethinking experience. The research published in the scientific journal "Environmental Science & Policy" allows for a comprehensive understanding of environmental issues. For example, an international team of authors emphasizes the importance of the information component in solving environmental problems, which is also relevant within the scope of the presented research. The attention is given to the relationship between civil society and sustainable changes in the work, which demonstrates the impact of citizen activity on sustainable transitions (Journal of Environmental Planning and Management). Today, there is also a wide range of relevant statistical information available in open access on key issues addressed in the research, which should be taken into account. Thus, the work utilized worldwide rankings data to form an understanding of the state of the environment in Ukraine, as well as national reports and sociological studies.

AIMS AND OBJECTIVES

Thus, the main goal of the article is to describe a universal goal-oriented system (coordination direction) capable of stimulating interaction in the public administration system in the environmental sphere. Such stimulation will contribute to the activation of processes in solving environmental problems at the national and local levels, as well as support the movement of territorial communities towards balanced development. Accordingly, the following tasks are addressed in the article:

- the essence and importance of public-environmental cooperation are revealed;
- the positions of Ukraine in global rankings regarding environmental issues are investigated;
- the pre-war environmental condition in the country is characterized, and the main environmental risks after the onset of large-scale military actions are highlighted;
- the experience of developed countries in the impact of political and financial instruments on sustainable development is examined;
- the factors hindering governments from realizing their ambitions in the field of sustainable development are identified;
- the importance of environmental protection for Ukrainians and the level of public awareness regarding the state of the environment are analyzed;
- the necessity of forming goal-oriented information-active units at the local level is demonstrated;
- the structure of information-active units and their functions are proposed and detailed.

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METHODS

There are no universal solutions to environmental problems at the level of territorial communities in achieving balanced development at present, the study of improvement directions for these processes in today's conditions should be carried out considering the systemic, comprehensive, and scalable nature of interaction within the public administration system in the environmental sphere, which is only possible by taking into account multiple criteria. The theoretical foundation for studying this issue consists of philosophical theories of interaction between society and nature, principles of socio-economic relations in the context of interaction with the environmental component, principles of public administration in the environmental sphere, and integrative approaches. A systemic approach was used to study the issues of public environmental management and the development of information-active units at the local level. The basic principles of social and environmental development and the fundamental principles of contemporary public administration theory were also employed. The theoretical and methodological foundations include an institutional approach that allows for analyzing the activities of institutions of power and civil society in the environmental sphere, as well as their interaction within the proposed system. The systemic and communication approaches facilitated the study of the phenomenon of society's influence on the environmental system. The goal-oriented approach allowed for the formulation of key goals and functions of information-active units, the construction of their structure, and the identification of collaboration directions within such units. The concept of environmental communication, according to which society is an open system, made it possible to identify key paths for activating the authorities and institutions of civil society in solving environmental problems. The research methodology also includes data collection through specific methods, namely literature review, analysis of surveys and questionnaires, and analysis of documents and reports related to the research topic.

RESULTS

Since the territorial community is part of the system of public environmental management, which still remains in search of the best ways of sustainable development, it is advisable to consider in more detail the possible directions of development of strategic elements of environmental protection in modern Ukraine. There are some common actions to consider, namely "Science communication with policymakers and with the public should be made a priority" [19]. In any case, we have a task to control the connected complex systems to detect their nonlinear dynamics. "Either way, we have a sensing challenge - to monitor coupled complex systems to detect their nonlinear dynamics" [16].

Based on the fact that the set of public management decisions on the environmental component of sustainable development of territorial communities is diverse. It is advisable to adopt a mechanism of targeted environmental management [6] (by which the authors understand the focus of public management cooperation between all actors' spheres) as strategically promising, as this requires ensuring targeted and coordinated activities of all actors at all management levels.

The Global Sustainable Development Goals set their own development indicators [33]. They are adhered to by all countries of the world. But the implementation of social, economic and environmental aspects of such development for improving the quality of life is not possible without effective communication links. Different types of collective action and political relations are necessary for the development of more environmentally sustainable territorial communities. This is a broader process than described by most proponents of sustainable development. Recent scientific developments on the sustainable development of local communities also relate to improving approaches to the implementation of support mechanisms, defining principles, indicators and indicators for evaluating the effectiveness of the strategic partnership.

According to the World Health Organization, human impact on the environment grows, leading to disease, quality of life, reduced productivity etc. At the same time, each year avoidable environmental health risks cause at least 12.6 million deaths worldwide. Regarding Ukraine, according to the Health Effects Institute [7], in 2019, 42,900 deaths were caused by air pollution with small solid particles (PM2.5). It increases the attention to this issue.

If we turn to global rankings when studying environmental issues, we can see an objective reflection of the situation in different countries:

The ranking of the most environmentally friendly countries in the world (The Environmental Performance Index). The study of environmental efficiency measures a country's achievements in terms of the state of the environment and natural resource management based on 22 indicators in 10 categories. In 2016, Ukraine ranked 44th in the ranking; in 2018, it ranked 109th among 180 countries worldwide. According to the results of 2020, Ukraine improved its positions compared to 2018 and ranked 60th. In 2022, Ukraine occupied 52nd place (index 49.6) [30]. Ukraine also achieved a special result in the category of sanitation and drinking water, ranking 31st in the world, which may be attributed to the country's efforts to improve access to clean drinking water and sanitary conditions, especially in rural areas. Ukraine received lower scores

in categories such as air quality (130th place), biodiversity and habitat (95th place), largely explained by environmental issues such as air pollution from industrial and agricultural activities, deforestation, and loss of biodiversity.

Ranking of countries by mortality rate from environmental issues. Although the environment is not yet the main cause of human life expectancy reduction, scientists' attention to this problem is increasing. The World Health Organization calculates the number of deaths related to environmental pollution. However, statistical data is collected slowly due to objective reasons, so reports are published with a delay of several years. The most recent data for this indicator is for 2016 when Ukraine ranked 89th out of 179 countries [23].

Ranking of countries in terms of climate change efforts (Climate Change Performance Index). The report reflects how effectively each country participates in addressing the issue of global warming. The latest ranking data was published at the end of 2020, according to which none of the countries in the world ranked in the top three, indicating that none of them did enough to prevent climate change. Among 61 countries, Ukraine ranked 17th in 2019 [24].

Ranking of countries by air quality. Regarding Ukraine, according to the Health Effects Institute, in 2019, 42,900 deaths were attributed to air pollution from fine particulate matter (PM2.5 - an air pollutant that poses a significant threat to the body). Yale University's Center for Environmental Law and Policy annually presents a ranking of the cleanest and most environmentally friendly countries in the world. One of the key indicators in this ranking is air quality (Air Quality Index in The Environmental Performance Index) [22]. Air freshness is assessed based on three indicators: the impact of PM2.5 particles, the level of carbon monoxide, and the ozone level. The top positions in the ranking are held by countries that pay the most attention to environmental issues and are associated with economic development and democracy. According to the latest data (2020), the level of air pollution in Ukraine has significantly increased, pushing Ukraine to 43rd place in the world in terms of air pollution and 8th place in Europe (in 2019, Ukraine ranked 60th in the world and 13th in Europe), and the city of Kyiv has entered the top 49 most polluted cities in the world [35]. Air pollution was mainly caused by forest fires and dust associated with rising global temperatures and agricultural activities. Although researchers note that the coronavirus pandemic has led to a reduction in air pollution, it is necessary to wait for the next report, as the ongoing hostilities in Ukraine will undoubtedly have a negative impact on future positions.

Rating of countries based on environmental pollution level. (Pollution Index for Country). When determining the index, experts assess how much each country harms itself and how much its ecology damages the environment of the entire planet. The first indicator was calculated based on WHO data, using feedback from people who visited the country, while the second index was calculated using a complex scheme that includes data not only from WHO but also from environmental organizations. The concept of "environmental pollution" includes air, water, and soil pollution. In 2018, Ukraine ranked 42nd (index 67.24) out of 102 countries in this rating. In 2019, Ukraine ranked 46th (index 66.6), and the index continued to change. As of 2023, Ukraine occupies the 33rd position (index 62.1).

In general, it is challenging to characterize the environmental situation in Ukraine today because it is rapidly changing in a negative direction due to ongoing military actions. However, certain measures can already be directed towards elements such as air pollution (13th place in Europe), water pollution (in 2020, non-compliance of tested drinking water samples from decentralized water supply sources accounted for 32.6% according to sanitary-chemical indicators and 22.6% according to microbiological indicators), waste management (annually an average of 10 tons of waste is generated per capita, which is twice the indicators of EU countries; about 36 billion tons of waste have accumulated, which is more than 50,000 tons per square kilometre), soil pollution (Ukraine is the most mined country in the world), environmental radiation contamination (in addition to the environmental consequences of the Chornobyl disaster, additional risks have emerged due to a full-scale invasion) and others [18].

Unfortunately, the pre-war positive changes that improved the environmental situation in Ukraine are losing their relevance. According to a study by PricewaterhouseCoopers (PwC) conducted since 2013 and published at the end of 2021, Ukraine has established over 3,000 "green" startups in the field of climate technologies, attracting over $222 billion in investments.

At the end of 2021, the total damages from environmental crimes for the state amounted to over UAH 404 million (with only UAH 49 million compensated). Most often, eco-crimes were committed for personal gain or due to official negligence. The State Bureau of Investigations reported suspicions of committing environmental criminal offences to 334 individuals (only 147 indictments were sent to court). The national publication "Focus" compiled an ecological rating of regions in Ukraine [3].

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Table 1. Ecological Rating of Ukrainian Regions. Note: * from +5 to -5 based on the average for the country = 0 points; ** from +2.5 to -2.5 based on the country average = 0 points; *** on average for the country. *(Source: based on the data in [3])*

№	Region	Emissions of polluting substances into the atmosphere in 2020, t/sq.km. *State Statistics Service data*	Score out of 10*	Growth/decrease of atmospheric emissions from mobile sources per person compared to 2019, %. *State Statistics Service data*	Score out of 5**	Generation of waste of I-III hazard classes in 2020, tons/sq.km. *State Statistics Service data*	Score out of 10*	Waste generation (I-IV hazard classes) in 2020 t/sq.km. *State Statistics Service data*	Score out of 5**	Volume of sewage pollution in 2020 cubic meters/sq. km. *Data from the State Water Agency*	Score out of 10*	The number of cases of malignant neoplasms in 2020 per 1,000 population. *Data from the National Cancer Institute*	Score out of 10*	Total
1	Zhytomyr	1.8	4.77	-29.9	2.50	33.5	4.81	13.3	2.47	63.8	4.66	2.6	1.36	20.57
2	Chernivtsi	2.6	3.86	-11.3	-0.18	-	5.00	25.8	2.43	208.7	2.80	1.9	4.55	19.46
3	Zakarpattia	2.9	3.52	-12.4	0.02	101.9	4.42	11.4	2.48	276.4	3.41	1.8	5.00	18.84
4	Volynsk	1.8	4.77	1.4	-2.47	34.7	4.80	31.3	2.41	21.0	4.91	2.5	1.82	16.25
5	Rivne	2.0	4.55	-16.1	0.54	34.9	4.80	44.2	2.37	747.4	0.65	2.2	3.18	16.09
6	Khmelnytska	2.8	3.64	-23	1.52	33.9	4.81	24.3	2.43	52.3	4.72	3.2	-1.36	15.76
7	Chernihivska	1.6	5.00	-25	1.81	15.7	4.91	15.6	2.46	338.2	3.05	3.5	-2.73	14.50
8	Odesa	3.7	2.61	-13.1	0.12	75.0	4.57	15.7	2.47	730.4	0.75	2.2	3.18	13.69
9	Ternopilsk	2.7	3.75	-15	0.39	600.4	1.59	20.2	2.45	149.7	4.15	2.7	0.91	13.23
10	Vinnytsia	4.9	1.25	-10.5	-0.33	45.3	4.74	58.8	2.32	5.0	5.00	2.9	-	12.99
11	Cherkassy	5.0	1.14	-15.2	0.41	33.5	4.81	53.7	2.34	153.3	4.13	3.3	-1.82	11.01
12	Kirovohradsk	2.0	4.55	-10.5	-0.33	24.4	4.86	20.3	2.45	147.5	4.17	4	5.00	10.70
13	Luhansk	2.0	4.55	-10.6	-0.31	194.8	3.89	9.7	2.48	1266.6	-0.43	3.1	-0.91	9.28
14	Ivano-Frankivsk	17.0	-2.26	-10.2	-0.38	359.0	2.96	124.2	2.11	96.4	4.46	2.6	1.36	8.25
15	Khersonsk	2.0	4.55	-8.9	-0.61	804.6	0.44	3.2	2.5	88.7	4.51	3.6	-3.18	8.21
16	Kyivska	7.8	-0.37	1.6	-2.50	209.8	3.81	76.6	2.27	75.1	4.59	2.9	-	7.80
17	Poltava	4.1	2.16	-21.9	1.37	998.3	-0.11	3410.5	-0.74	70.3	4.62	3.5	-2.73	4.57
18	Mykolayivska	2.2	4.32	-10.8	-0.27	1366.7	0.45	101.8	2.18	841.1	0.10	3.2	-1.36	4.52
19	Zaporizhzhia	8.3	-0.47	-10.6	-0.31	584.9	1.68	198.7	1.87	426.6	2.53	3.1	-0.91	4.40
20	Kharkivska	5.8	0.23	-11.5	-0.15	1021.1	-0.12	47.3	2.36	399.5	2.69	3.2	-1.36	3.65
21	Lviv	6.8	-0.16	-14.6	0.33	55.0	4.69	143.0	2.05	5640.7	-5.00	2.8	0.45	2.36
22	Sumy	2.5	3.98	-19.3	1.00	6218.5	-5.00	30.6	2.41	834.5	0.14	3.6	-2.73	-0.21
23	Donetsk	30.3	-5.00	-8.8	-0.63	5479.5	-4.31	1017.5	-0.07	2881.3	-2.11	2.3	2.73	-9.39
24	Dnipropetrovsk	20.7	-3.02	-3.1	-1.66	811.0	0.40	9692.0	-2.50	4002.4	-3.29	3.1	-0.91	-10.98
	Ukraine	6.0		-12.3		881.4		776.0		858.5		2.9		

So, prior to the start of the full-scale invasion, the cleanest region of Ukraine was considered to be Zhytomyr Region while the most polluted was Kyiv. In 2019, the Ministry of Energy and Environmental Protection of Ukraine compiled and published a list of air polluters in Ukraine. The majority of air-polluting enterprises are metallurgical and thermal power plants. The Ministry of Environmental Protection named the top 20 air polluters in Ukraine [9]. Out of the 20 facilities that emit the most pollutants into the atmosphere, 7 are located in Dnipropetrovsk Oblast, 5 in Donetsk Oblast, 2 in Zaporizhzhia Oblast, and 1 each in Ivano-Frankivsk, Lviv, Luhansk, Cherkasy, Vinnytsia, and Kyiv Oblasts.

In Ukraine, the Ministry of Energy and Environmental Protection of Ukraine is responsible for environmental expenditures from the state budget in 2020. The annual budget of the ministry amounted to 16.1 billion UAH, which is 1.4% of the total

budget expenditures and 0.4% of GDP. However, these funds were not only allocated for environmental protection. The budget also included expenses of the former Ministry of Energy and Coal Industry. Among the largest expenditures of the combined ministry were water resource management, restructuring of the coal industry, and addressing the consequences of the Chornobyl disaster, which together accounted for 71% of the budget. Approximately 1.3 billion UAH or 8% of the expenditures of the Ministry of Energy and Environmental Protection were allocated to nature conservation programs, preservation of natural reserves, forest protection, and reduction of greenhouse gas emissions [26].

In 2020, certain priority environmental issues were identified in Ukraine that can negatively impact the well-being of Ukrainians and the country's economy as a whole [12]. Ukraine continues to lose natural ecosystems, experiences a deficit and deterioration of the quality of fresh water, faces poaching and destruction of habitats, and deals with the chemicalization of agriculture, among other challenges. According to the report of the National Environmental Center of Ukraine [25], the Ukrainian environmental community is concerned about the restoration of a separate Ministry for Environmental Protection (which was liquidated in 2019). The National Environmental Center of Ukraine continues to work on priority areas, including biodiversity conservation, the implementation of an ecosystem approach, waste management, air quality control, and the formulation of environmental policies. The donors and partners in these efforts include FZS (an international nature conservation organization based in Germany); CEE Bankwatch Network (an alliance of non-governmental organizations from various countries in Central and Eastern Europe); European Commission (the main supranational executive body of the European Union), and others. However, all the initiatives presented are unable to improve the overall environmental situation considering the military actions on the territory of Ukraine and all the related consequences and risks.

Before the full-scale invasion, Ukraine played an active role in the European space in environmental matters and signed the majority of important nature conservation agreements. As known, the European Union called for holding russia criminally responsible for the crime of ecocide during the invasion of Ukraine [10], as the situation in the ecological sphere became extremely dangerous after the start of russia's full-scale invasion of Ukraine. According to experts, the estimated damage amount of 1.5 trillion UAH does not reflect the real situation regarding the inflicted harm. For example, the damage caused by the emissions from a single tank in a day amounts to over 1,066 UAH. Moreover, tanks, while remaining in place, destroy and compact nearly 2 hectares of land, leading to a 40-60% decrease in the productivity (crop yield) of plants. As of today, over 84,000 tons of scrap metal from destroyed tanks remain, and this is not a complete list of negative consequences for the environment [27]. Mine explosions result in the contamination of soils with heavy metals (lead, strontium, titanium, cadmium, nickel), rendering the soil unsuitable for further agricultural use.

As of May 2022, 254 cases of ecocide have been confirmed, and 1,500 instances of environmental destruction due to military aggression have been documented. Fires have occurred in the Exclusion Zone, covering an area of nearly 14,000 hectares, causing damage to over a quarter of all ecosystems, with the total damage amount reaching 2 billion UAH. The environmental damage inflicted on Ukraine by russian aggression has already exceeded 200 billion UAH. Some ecosystems will never recover or will require hundreds of years for restoration [27]. The environmental damage in Kyiv and the Kyiv region from the burning of oil products exceeds 49 billion UAH. The most affected regions in terms of this type of environmental damage are Chernihiv, Dnipropetrovsk, and Kirovohrad regions. The total damage caused to the Ukrainian atmosphere from the impact on oil depots has already exceeded 49.3 billion UAH [27].

Considering the situation and the high level of danger in Ukraine, changes have been made to the Regulations on the State Environmental Inspection of Ukraine. These changes expand the authority of the agency regarding the calculation of environmental damage. State inspectors are now granted the right to independently and unimpededly inspect territories and objects affected by accidents, emergencies, military aggression, and military and terrorist actions, for the purpose of assessing the extent of damage, losses, and harm inflicted on the environment and natural resources [4].

The consequences of negative impact are long-term and have not only local but also global significance. In general: the total damage to the environment exceeds UAH 1.5 trillion (as of the end of 2022); 2) over 680.6 thousand tons of petroleum products were burned, leading to air pollution with hazardous substances; approximately 183 thousand square meters of land were contaminated with hazardous substances; over 38 thousand tons of emissions entered the air from burning equipment; over 325 thousand tons of waste were generated; 20% of nature conservation areas are affected by the war; 8 reserves and 10 national parks, as well as 2.2 thousand deposits of energy resources, metals, and minerals, remain occupied [21], and so on.

Thus, there are numerous problems in the environmental sphere in Ukraine, and new ones are constantly emerging. However, we don't have the possibility to list them all. Therefore, let's focus on the issues that can be addressed at the level of local communities. First and foremost, it is necessary to engage a wide range of civil society in active participation in solving environmental problems.

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When examining the existing experience of developed countries regarding the influence of political and financial instruments on sustainable development, it has been established that the following are often used in practice: taxes on activities that harm the environment; new environmental standards and energy efficiency certification for emissions and pollutants; tax incentives for compliance with standards, and so on. In addition, credits and grants are provided for "green" investments (energy-efficient buildings, bicycle lanes, electric vehicle infrastructure, etc.); subsidies and grants are provided to research institutions, academic establishments, and private research firms. Subsidies and tax incentives serve as additional instruments to increase demand for environmentally friendly products and services [32]. A survey of sustainability leaders conducted by GlobeScan in 2020 revealed that national governments lack leadership in the field of sustainable development. This further confirms the need for certain interventions to establish effective cooperation at the local level between local government bodies and civil society institutions to address growing global environmental problems (Figure 1) [31].

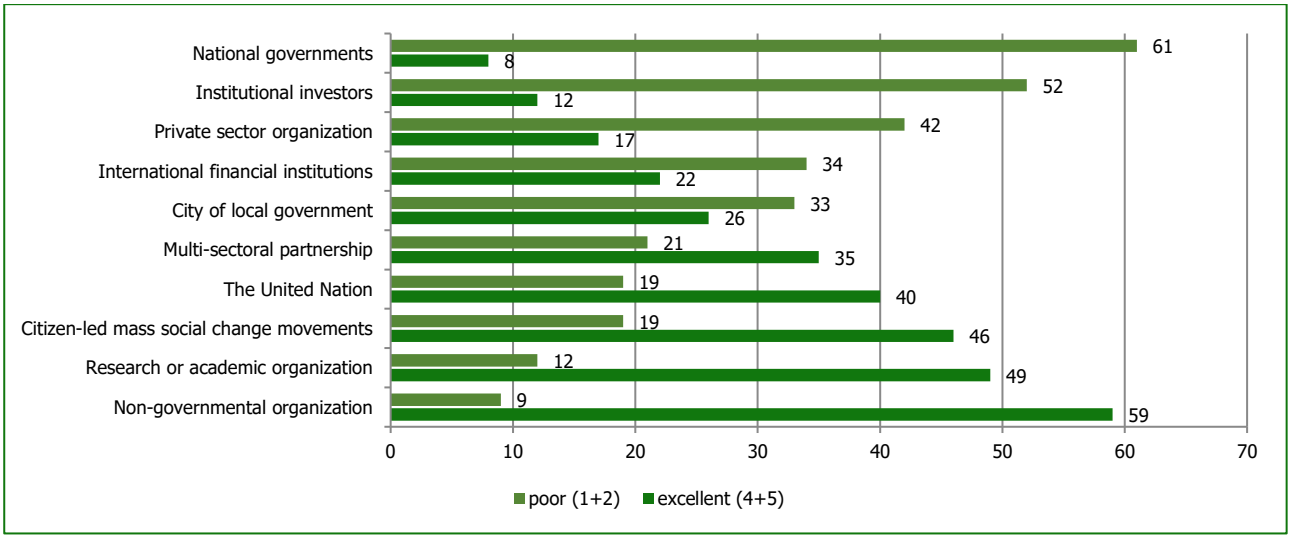

Figure 1. Contribution to the progress of sustainable development. *(Source: based on the data in [31])*

Thus, it is possible to identify a number of factors that hinder governments in implementing their ambitions in the field of sustainable development: political short-term approach (governments can be influenced by public opinion, media, and short-term political cycles); budget constraints (competing priorities in terms of policy/financing); lack of coordinated cooperation between government agencies; economic pressure and industry lobbying; low quality of planning and implementation of strategies; lack of transparency from governmental structures; inconsistency of reporting on environmental, social, and managerial issues with real indicators; insufficient public participation (lack of understanding contributes to inertia in behaviour change); lack of global leadership and cooperation between countries.

Environmental protection is an important topic for Ukrainians. According to the analytical report [13], Ukrainians believe that the state of the environment affects their lives and health and declare the existence of a number of environmental problems. However, citizens do not show enough activity in preventing harm and preserving the environment, and even engage in actions that can cause harm to the environment. In other words, the values regarding the environment that Ukrainians declare are mostly superficial and do not correlate with their actual actions and readiness to take steps to conserve the environment.

Also, among the causes of environmental problems mentioned by respondents, the majority are those that can be addressed at the state or local self-government level (Figure 2).

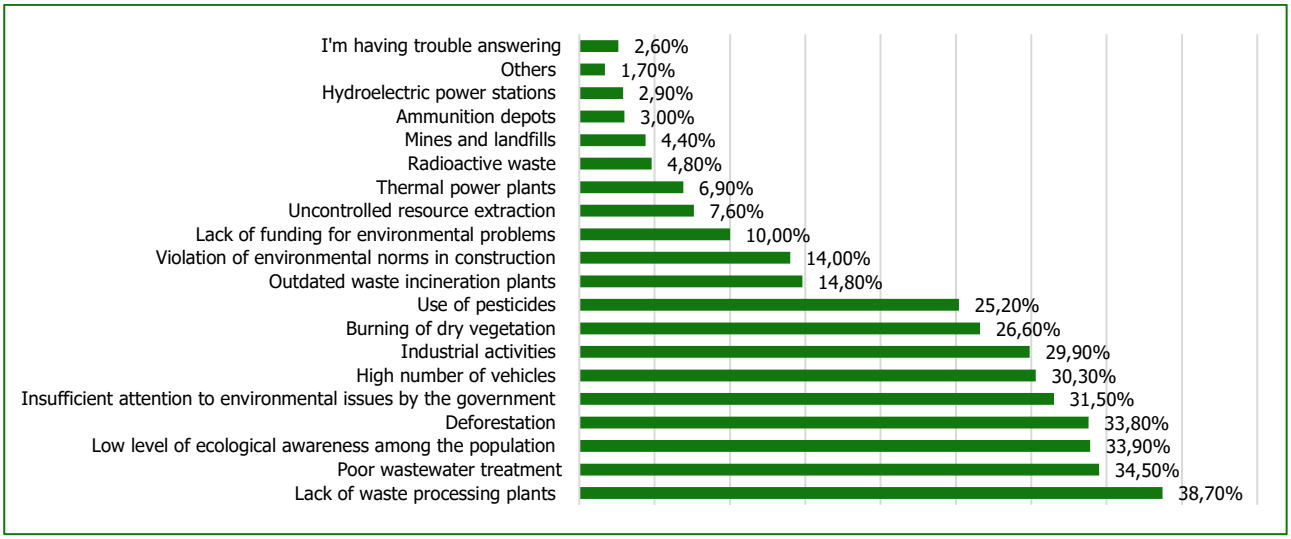

Figure 2. Distribution of respondents' answers to the question "Name the main causes of environmental problems in your locality" (respondents could choose up to five answer options). *(Source: based on the data in [1])*

In this case, the formation of effective ways to overcome environmental problems is impossible without environmental communication [29], which is regarded as communication about environmental issues. The importance of this is explained by the fact that civil society is dissatisfied with the level of awareness about the state of the environment [1].

Without establishing an effective communication process between the subjects of public administration, it is impossible to effectively implement an environmental policy, which emphasizes the importance of improving cooperation between government bodies, local self-government, civil society institutions, and so on. At the same time, environmental policy cannot be the result of actions solely by central or local authorities. In a general sense, it should reflect the effectiveness of interaction within the public administration system. Thus, according to the data presented in Figure 3, the main responsibility for improving the environmental situation lies with local authorities.

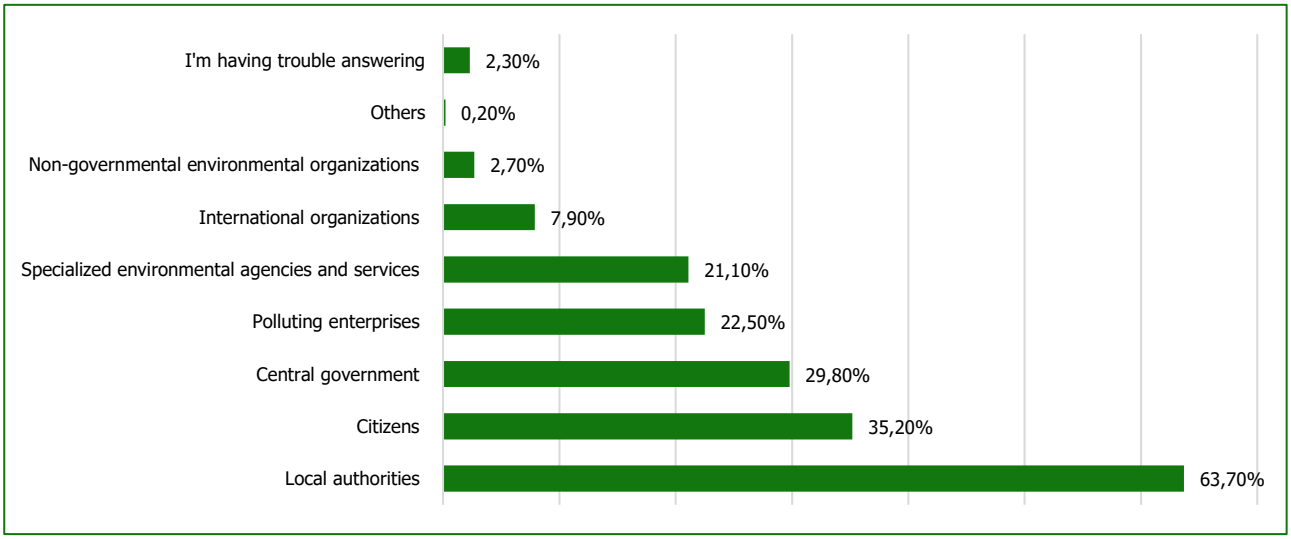

Figure 3. Distribution of respondents' answers to the question "Who do you think is responsible for improving the environmental situation in your locality?" (respondents could choose up to two answer options). *(Source: based on the data in [1])*

As for local self-government and government officials, respondents indicate a lack of attention to environmental problems on their part (71.3% and 85.7% respectively). Moreover, 46.3% of respondents consider environmental preservation more important than economic growth, while only 35.4% prioritize economic growth (18.3% were unable to answer the question). Hence, it can be noted that there is a discrepancy between the understanding of environmental issues and the presence of environmental action [1].

Today, sustainable development is recognized not only as a key model of social development but also as an important principle of good governance at the local level. Public decentralization has brought to the surface problematic aspects of

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the sustainable development of territorial communities in Ukraine [15]. Usually, at this level of public administration, considerable attention is paid to social and economic issues and the environmental component of sustainable development is hardly promoted among the population. Note that local communities are able to manage natural resources more efficiently than the state and the private sector.

In Ukraine, there are positive practices to promote the sustainable development of territorial communities. Thus, the Center for Sustainable Development was established (which maintains a database of best practices for the implementation of the principles of sustainable development) in the village of Vugraiv due to which proper conditions were created for eco-oriented activities of the local community (for 200 people). More than 15 territorial communities expressed interest in establishing similar Sustainable Development Centers in their territories. The developed and approved Strategy for Environmental Management of Territorial Communities of the Association of Ukrainian Cities for the period up to 2023 [14] includes the following guidelines: environmentally balanced planning in the community; the polluter pays principle; pollution prevention; public participation; partnership; informing. However, we emphasize in this list the component as goal-oriented collaboration.

According to opinion polls (2018 and 2020), although more than 88% of Ukrainian citizens consider it important to protect the environment [36], but this does not affect the level of environmental activity. In this focus, scientists have formed a list of problems related to the environmental awareness of the population [15]: a fairly low level of public awareness; low motivation of the population to be eco-active; insufficient level of environmental education; support of invaluable attitude to the environment, etc.

Revealing the content of the relationship actors in the system of public environmental management, we emphasize the current strategic guidelines for ensuring the effectiveness of collaboration, which contribute to the implementation of sustainable development priorities. Among the main barriers to the balanced development of territorial communities, a significant place is occupied by the unsatisfactory state of information provision to the public, both regarding the availability of modern participation directions in public environmental governance and the responsibility for such governance. This includes not only the government and local self-government but also non-governmental organizations involved in the environmental sphere. In our opinion, to eliminate the entire range of obstacles at the territorial level, it is necessary to establish corresponding goal-oriented information-active units (IAUs), which should include representatives of government bodies, local self-government, and civil society institutions. Such units will allow for the coordination of actions of interested subjects of public environmental governance and facilitate communication processes within territorial communities.

The main tasks of the proposed entities at the level of territorial communities are reflected in Table 2. Therefore, the primary goal is to create a unified and actively functioning communication system as an integral part of public environmental governance, conducting comprehensive monitoring of the environmental development of territorial communities, providing information, and supplying necessary resources to enhance environmental potential, among other things.

Table 2. Functions of goal-oriented information-active units at the local level.

Functions	Detalisation
Providing	▪ collection and analysis of information on the ecological condition of communities; ▪ monitoring the results of public environmental management, development of a system of "supply and demand" for environmental requests; ▪ centralization of necessary information resources; ▪ information support for civil society institutions using modern electronic means; ▪ encouraging the activity of attracting scientific/innovative achievements in the environmental sphere.
Coordination	▪ coordination of cooperation in the direction of achieving a balanced development of territorial communities; ▪ creation of a unified system of expertise (forecasts, progress and results of implementation of strategies, programs and projects in the environmental sphere); ▪ promoting the development of business and social ties of the subjects of public environmental management, partnerships with foreign entities, prompt provision of the necessary information; ▪ providing public administration and local self-government bodies with the necessary analytical information related to environmental issues; ▪ based on the analysis and forecasting of adjustment of needs and long-term goals; ▪ elimination of duplication of communication channels for information dissemination.
Forecasting	▪ collection and analysis of information on the needs of public environmental management entities; ▪ construction of an objective forecast for the balanced development of territorial communities; ▪ identification of possible issues regarding public information support; ▪ selection of the best methods and means of using the potential in a particular area and stimulating the processes of self-organization to obtain a synergistic effect; ▪ development of schemes for the development of territorial cooperation and justification of its feasibility in the environmental sphere.

A special place should be given to coordination as a function of public environmental management, which means streamlining and coordinating actions of public environmental entities that do not have hierarchical links. A significant number of subjects of public environmental management necessitates the strengthening of coordination influences on the process of their cooperation. This function provides for the creation of conditions under which the subjects would act in concert to achieve their goals. Therefore, this process should begin with the coordination of actions and information flows.

The implementation of further steps in the functioning of the Integrated Environmental Management System (IEMS) proposed by us should be carried out through the combination of the following elements: B1 - block of coordination of eco-active activities; B2 - block of coordination of information flows; B3 - block of goal alignment in the ecological sphere; B4 - block of evaluating the effectiveness of the public ecological management system; S1 - information support system; S2 - organizational support system; S3 - a mechanism for monitoring the environmental state of territorial communities (Figure 4).

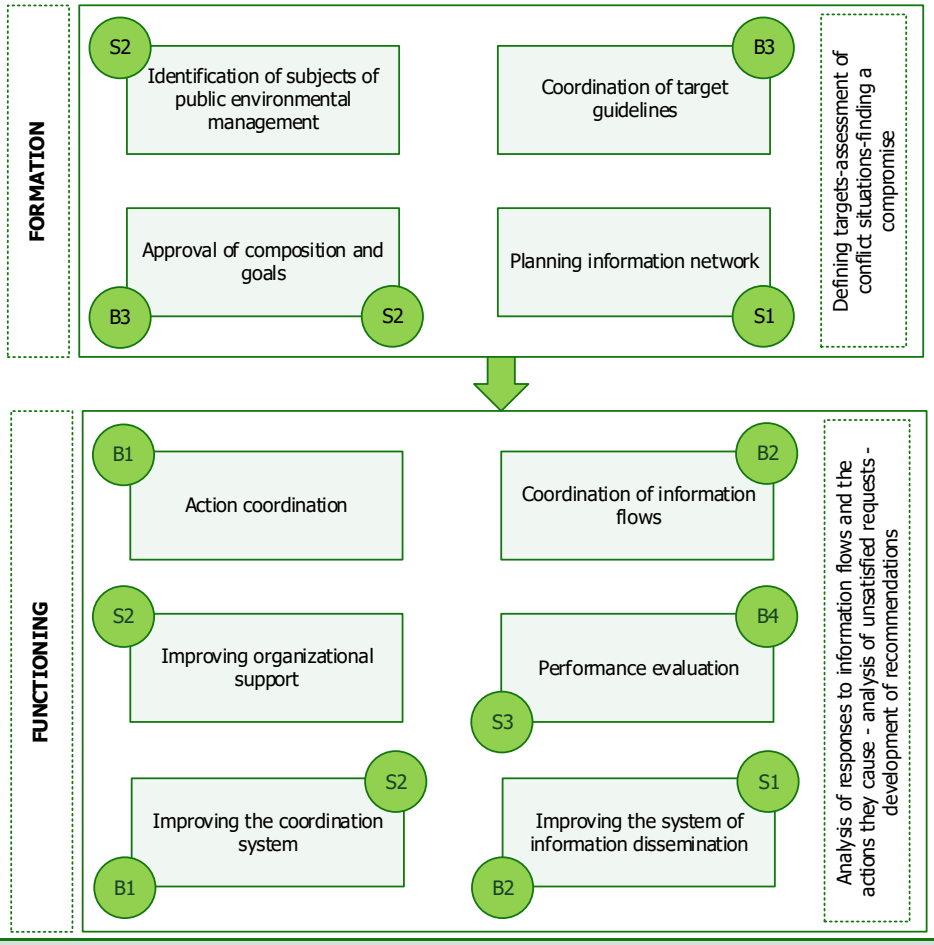

Figure 4. Schematic representation of the structure of information-active units of the ecological system at the level of territorial communities.

The process of IAO function should include two stages:

- assessment of the need for collaboration in the system of public environmental management, the formation of proposals and conditions of participation; defining the goals of the participants;
- implementation of measures to improve methods and tools for coordination of collaboration.

The obligatory condition is the further expansion of the list of participants in public environmental management. It will contribute to the effectiveness of the system and the balanced development of local communities [11]. At the same time, the interest of public environmental actors in collaboration should be based on achieving the desired goals or finding compromises.

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In order to form the necessary structure in the future, the presented construct must be integrated into the system of public administration. It should be noted that in the process of information flows the system is able to assess which of them lead to the achievement of balanced development of the territorial community.

The consequence of such flows is eco-oriented activities that lead to the realization of planned goals. In case of unfulfilled goals - recommendations are developed for further improvement of activities. Unsatisfied requests from public environmental authorities will indicate a conflict between environmental policy and the needs of society, and their accumulation will reveal what obstacles exist in the way of the balanced development of local communities and what recommendations should be given to public environmental authorities. That is, in general, the presented system is designed to act as a link between the government and the public, and its task is also to ensure the passage of minimum amounts of information (excluding questionable participants and information flows). The system of evaluation of results of achievement of the ecological balance of development of territorial communities can be visualized in the form of Figure 5.

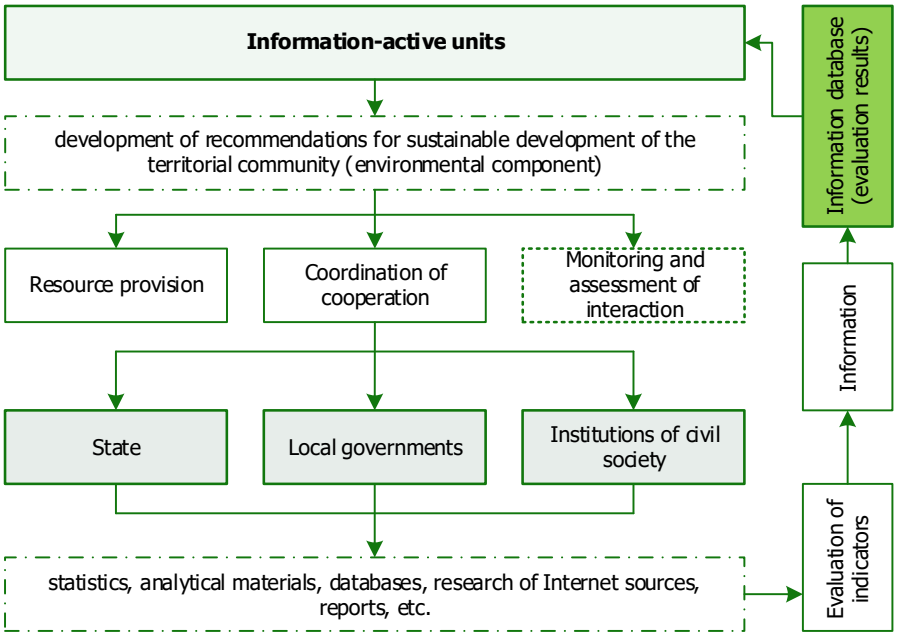

Figure 5. Model of coordination of cooperation in the system of public environmental management.

The targeted direction of all information flows should be a basic requirement for monitoring. We include the main objectives: timely detection and forecasting of the likelihood of adverse environmental events that may affect the level of balanced development of the local community; the quality of the information environment of the process of public environmental management and coordination of cooperation; creation of appropriate data banks; assessment of the effectiveness of the implementation of planned environmental measures. Objects of monitoring are the degree of implementation of strategies, projects and programs in the environmental sphere; activities of civil society institutions that take care of environmental issues; state environmental policy; activities of local authorities in the environmental sphere; the effectiveness of cooperation in the process of public environmental management at the local level, etc.

DISCUSSION

Taking into account the specific features of the research topic and the wide range of problematic issues in the environmental field, which combine complex systems (social and ecological), it is important to emphasize certain discussion points. Understanding the nature of modern risks to Ukrainian society and national ecological security, we note the importance of effective public environmental management in such complex conditions. Of course, it is currently very difficult to determine the quantitative or even qualitative impact of the public management system in the environmental sphere in Ukraine. Civil society faces a multitude of environmental problems associated not only with the functioning of such a society but also with military actions, the impact of which is difficult to overestimate. Therefore, characterizing the balance of territorial interests with the priorities of sustainable development is highly challenging, as the negative changes occurring in Ukraine are rapid. Today, there are also limitations to public environmental management in terms of considering all aspects and utilizing modern management methods. Another issue is the possibility of involving the population in making environmental

decisions through shared responsibility. It is also worth considering the evaluation of cooperation between various entities in developing the ecological balance of territorial communities. Special attention should also be given to assessing the impact of effective communication on achieving sustainable development goals at the community level. A detailed characterization of the modern challenges and barriers to the sustainable development of territorial communities in Ukraine will allow for the formulation of a list of problems that can be addressed at the local level. Additionally, further research should continue regarding the discrepancy between the high level of importance placed on environmental protection by Ukrainian citizens and the low level of ecological activity, as well as identifying the main factors contributing to this issue. The authors' future research will address all of the above-mentioned questions.

CONCLUSIONS

Therefore, achieving sustainable development goals requires careful consideration of global guidelines, principles of sustainable development, national peculiarities, and the effectiveness of the public governance system in the environmental sphere. The latter component plays a crucial role, especially in terms of the ecological development of individual territories. To achieve sustainable development goals, it is important to have a qualitative system of public environmental management that takes into account national and territorial specificities alongside sustainable development priorities. However, existing mechanisms in this direction are not perfect as they fail to consider ways to enhance public participation in making environmentally significant decisions. Therefore, the development of a communication system among all actors of the public governance system becomes a decisive factor in achieving ecological balance in territorial communities. Numerous scientific articles highlight the importance of community sustainable development, communication links, initiatives of local self-government, and strategic partnerships in promoting sustainable development. The link between human impact on the environment and health issues further underscores the need for effective management in this field, and the realization of social, economic, and environmental aspects of sustainable development requires strong communication links and collective actions in developing more environmentally resilient territorial communities.

In Ukraine, positive practices promoting sustainable development can be observed. However, these practices have almost lost their relevance after the start of full-scale military operations. Additionally, there is a need to address the problem of low environmental awareness and motivation of the population, as well as insufficient environmental education. Overcoming the barriers to sustainable development at the territorial level suggests the creation of purpose-oriented information-active units that aim to unite the actions of stakeholders, improve communication processes within local communities, and stimulate the rational use of natural resources. In this regard, coordination, as a management function, plays a crucial role in facilitating cooperation among stakeholders without hierarchical links. The authors emphasize that expanding the participants of public environmental management and integrating the proposed structure into the system of government administration are crucial for its effectiveness.

The implementation of the proposed idea involves assessing the need for cooperation, defining goals, and improving coordination methods. The proposed system should serve as a link between the authorities and the public, providing the necessary flow of information and evaluating the achievements of balanced development. Monitoring plays an important role in timely identifying and predicting adverse environmental phenomena, as well as assessing the effectiveness of nature conservation measures.

Thus, the development of a targeted and coordinated system of public environmental management with the active participation of all stakeholders (government bodies, local self-government, civil society institutions) is crucial for achieving sustainable development goals. Improving communication and coordination can contribute to ecological balance and the sustainable development of territorial communities.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

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Data curation: *Oleg Pishchenko*
Formal Analysis: *Olena Mykhailovska, Oleg Pishchenko*
Methodology: *Nataliia Tkalenko, Viktoriya Marhasova, Olga Garafonova*
Resources: *Olena Mykhailovska, Oleg Pishchenko*

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REFERENCES

1. Balyuk, S., Clauning, N., Chetvertukhina, L., & Koval-Honchar, M. (2021). Ekolohichni trendy v Ukraini: pohliad hromadian. http://library.fes.de/pdf-files/bueros/ukraine/17805.pdf
2. Bezuhlyi, O. V. (2008). Territorial community in Ukraine: directions and factors of sustainable development. Kharkiv: Kharkiv Regional Institute of Public Administration: National Academy public administration under the President of Ukraine.
3. Ekolohichnyi reitynh rehioniv Ukrainy 2022. (2022). Internet resource "Focus". https://focus.ua/ratings/504721-ekologicheskiy-reyting-oblastey-ukrainy-2021
4. Environmental damage from Russian aggression exceeds 200 billion UAH (2022). https://rubryka.com/2022/10/31/shkoda-dovkillyu-u-kyyevi-ta-na-kyyivshhyni-vid-zgoryannya-naftoproduktiv-perevyshhuye-49-mlrd-grn/
5. Fischer-Kowalski, M., & Weisz, H. (2016). The Archipelago of Social Ecology and the Island of the Vienna School. In: Haberl H., Fischer-Kowalski M., Krausmann, F., Winiwarter, V. (eds) Social Ecology. Human-Environment Interactions, vol 5. Springer, Cham. https://doi.org/10.1007/978-3-319-33326-7_1
6. Hans-Peter, Plag, & Shelley-Ann, Jules-Plag. (2020). A goal-based approach to the identification of essential transformation variables in support of the implementation of the 2030 agenda for sustainable development, *International Journal of Digital Earth, 13*(2), 166-187. https://doi.org/10.1080/17538947.2018.1561761
7. Health Effects Institute. https://www.healtheffects.org/
8. Hordeev, O. K. (2014). Mechanisms for ensuring sustainable development of the territorial community. Odesa: National Academy public administration under the President of Ukraine.
9. Information Agency "UNIAN". https://www.unian.net/ecology/10759353-ministerstvo-zashchity-okruzhayushchey-sredy-nazvalo-top-20-zagryazniteley-vozduha-ukrainy.html
10. Information portal RBC. https://www.rbc.ua
11. Jeffrey C. Bridger, and A.E. Luloff (2000). Sustainable Community Development: an Interactional Perspective. https://aese.psu.edu/nercrd/community/community-a-different-biography/legacy/sustainable-community-development-an-interactional-perspective
12. Kraina 2020. Ohliad stanu dovkillia ta ryzykiv dlia liudei i biznesu (2020). WWF-Ukraine. https://wwf.ua/our-work/overview/ukraine-2020/
13. Kuts, N. (2020). Environmental awareness of Ukrainians and the environment. Analytical document. https://epl.org.ua/wp-content/uploads/2020/12/ekosvidomist.pdf
14. Kuts, Yu. O., et al (2008). Sustainable development of the territorial community: management aspect. Kharkiv: HarRI NAPA: Master.
15. Lazarenko, Y., Garafonova, O., Marhasova, V., Tkalenko, N., & Grigashkina, S. (2020). Exploring Strategic Directions for the Local Innovation Ecosystem Development in the Mining Industry. E3S Web of Conferences, 174, 02001. https://www.e3s-conferences.org/articles/e3sconf/pdf/2020/34/e3sconf_iims2020_02001.pdf
16. Lenton, T. M. (2020). Tipping positive change. Philos. Trans. R. Soc. Lond. B Biol. Sci., 375. https://royalsocietypublishing.org/doi/pdf/10.1098/rstb.2019.0123
17. Mykhailovska, O. V., Gurkovskyi, V. I., & Rudenko, O. M. (2018). Analysis of practical aspects of the interaction between civil society and public governance. Scientific bulletin of Polissia, 2(4(12), 149–157. https://nvp.stu.cn.ua/article/view/126300
18. Ohaniezhova, H. (2022). The Environmental Factor in the Formation of a Health-Oriented Economy. Economy and Region, 4(87), 268-274.
19. Paul, Shrivastava, Mark Stafford, Smith, Karen, O'Brien, & Laszlo, Zsolnai. (2020). Transforming Sustainability Science to Generate Positive Social and Environmental Change Globally. One Earth, 2(4), 329-340. https://doi.org/10.1016/j.oneear.2020.04.010
20. Pittsyk, M. (2016). Detsentralizatsii mozhe zavadyty politychne seredovyshche, yake ne khoche zmin. http://decentralization.gov.ua/news/2357
21. Pryroda ta viina: yak rosiiska ahresiia vplynula na dovkillia (2022). Analytical portal "Word and deed". https://www.slovoidilo.ua/2022/11/08/infografika/suspilstvo/pryroda-ta-vijna-yak-rosijska-ahresiya-vplynula-dovkillya
22. Ranking of countries by air quality. The Environmental Performance Index. https://nonews.co/directory/lists/countries/air-quality
23. Ranking of countries by mortality rate from environmental issues. World Health Organization.

https://nonews.co/directory/lists/countries/mortality-rate-pollution

24. Ranking of countries in terms of climate change efforts. Climate Change Performance Index. https://nonews.co/wp-content/uploads/2019/12/ccpi2020.pdf
25. Richnii zvit 2020. (2020). National Environmental Center of Ukraine. https://necu.org.ua/wp-content/uploads/2021/09/public_report_necu_2020.pdf
26. Savis'ko, M.(2020). How much was allocated in the 2020 budget to improve the environmental situation in Ukraine? https://voxukraine.org/skilki-ta-na-shho-zakladeno-u-byudzheti-2020-dlya-pokrashhennya-ekologichnoyi-situatsiyi-v-ukrayini/
27. Socio-political edition Rubrik. https://rubryka.com
28. Stratehiia z pytan ekolohichnoi zbalansovanosti terytorialnykh hromad Asotsiatsii mist Ukrainy na period do 2023 roku. (2017). https://2.auc.org.ua/sites/default/files/strategiya_ekologichnoyi_zbalansovanosti.pdf
29. Sukhenko, I. (2016). Ekolohichna komunikatsiia: dosvid pereosmyslennia. Communications and Communicative Technologies, 24 (12), 146-148.
30. The Environmental Performance Index. https://nonews.co/wp-content/uploads/2022/06/epi2022.pdf
31. The GlobeScan-SustainAbility Survey. https://www.sustainability.com/contentassets/b298c9248bd14c03951e8801a6880436/gss-leaders-report-2020.pdf
32. George, Atalla, Meghan, Mills, & Julie, McQueen. (2022, May 13). These six government priorities can help accelerate the evolution to a green, net-zero future. Building a better working world. https://www.ey.com/en_gl/government-public-sector/six-ways-that-governments-can-drive-the-green-transition
33. Tsili staloho rozvytku 2016-2030. Natsionalnyi zvit. (2017). https://www.kmu.gov.ua/diyalnist/cili-stalogo-rozvitku-ta-ukrayina
34. Vasylieva, O. I., & Vasylieva, N. V. (2018). Kontseptualni zasady staloho rozvytku terytorialnykh hromad. Investments: practice and experience, 8, 74-78. http://www.investplan.com.ua/?op=1&z=6049&i=14
35. World Air Quality Report – 2020. (2020). https://www.iqair.com/blog/press-releases/covid-19-reduces-air-pollution-in-most-countries
36. Zvit pro stratehichnu ekolohichnu otsinku stratehii rozvytku Baryshivskoi selyshchnoi obiednanoi terytorialnoi hromady na 2020–2027 roky. (2020). https://baryshivska-gromada.gov.ua/wp-content/uploads/2020/08/ZVIT-PRO-STRATEGICHNU-EKOLOGICHNU-OTSINKU-STRATEGIYI-ROZVYTKU-BARYSHIVSKOYI-SELYSHHNOYI-OBYEDNANOYI- TERYTORIALNOYI-GROMADY-NA-2020-2027-ROKY.pdf

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ЕКОЛОГІЧНА СКЛАДОВА СТАЛОГО РОЗВИТКУ ТЕРИТОРІАЛЬНИХ ГРОМАД

У статті розглядається розробка цільової системи стимулювання громадського публічного екологічного управління в контексті сталого розвитку. Підкреслюється, що сучасні механізми громадського управління навколишнім середовищем є недосконалими та не повною мірою використовують новітні технології управління. Наголошується на необхідності розробки заходів, що дозволять посилити активність органів влади та громадськості в процесі ухвалення екологічних рішень. Обговорюється сталий розвиток громади та наголошується на важливості комунікаційних зв'язків, що впливають на розвиток навколишнього середовища. Акцент робиться на ролі органів місцевого самоврядування державного управління в забезпеченні сталості. Пропонується зробити акцент на стратегічному партнерстві. Досліджено вплив людської діяльності на навколишнє середовище з акцентом на екологічні ризики. Проаналізовано стан екологічної системи України до початку повномасштабних воєнних дій та після. Зазначено, що місцеві громади часто краще оснащені для ефективного управління в екологічній сфері порівняно з державним і приватним секторами. Висвітлено позитивні практики сприяння сталому розвиткові територіальних громад. Визнається важливість екологічної свідомості населення та окреслюються проблеми, пов'язані з низькою інформованістю, мотивацією та екологічною освітою. Пропонується формування цілеорієнтованих інформаційно активних одиниць (ІАО) для вирішення завдань щодо стимулювання екоактивної діяльності на рівні територіальних громад. Запропонована система покликана виконувати такі функції як забезпечення, координація й прогнозування. Представлено структуру інформаційно активних одиниць екологічної царини на рівні територіальних громад та її ключові елементи. Запропоновано модель координації співпраці в системі публічного екологічного управління. Реалізація запропонованих заходів

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передбачає оцінку потреб у співпраці, визначення цілей та вдосконалення методів координації. Загалом підкреслюється важливість співпраці, координації та ефективної комунікації в системі публічного управління в екологічній царині для досягнення цілей сталого розвитку на місцевому рівні.

Ключові слова: комунікація, кооперація, співпраця, збалансованість, сталий розвиток, територіальна громада, державне управління, екологічне громадське управління, ефективність

JEL Класифікація: Q28, O20