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PROTECTION OF ATMOSPHERIC AIR AND AIRSPACE OF UKRAINE: LEGAL, REGULATORY, ENVIRONMENTAL AND ECONOMIC ASPECTS

Tetiana Kolomoiets[1], Artur Gordienko[2], Daria Yevtushenko[3]

Abstract. The study uses general scientific and special methods, the main of which are: abstract-logical, deductive, inductive, historical, modelling and forecasting, methods of system-structural, system-functional analysis, economic and statistical (grouping, comparison, etc.). The use of system analysis methods made it possible to structure the constituent elements of the regulatory and legal support of public administration in the field of protection of atmospheric air and airspace of Ukraine. The purpose of the article is to characterise the protection of atmospheric air and airspace of Ukraine in the regulatory, legal, environmental and economic aspects. It is determined that the regulatory framework for regulating the principles of atmospheric air safety is a component of the mechanism for ensuring environmental safety. The article emphasises that for the first time the principles of environmental safety were enshrined in the Declaration of State Sovereignty of Ukraine, where the principles of environmental safety were established at the level of a separate section. It is emphasised that the functional content of the administrative and legal protection of atmospheric air includes: ensuring air pollution within the limits of the maximum permissible emission standards in order to ensure the right of a person to a safe and quality environment; greening of production; introduction of ecological fuel quality standards; greening of the energy cluster of the economy, including through the introduction of the principles of decentralisation of the country's energy system; establishment of information interaction between the participants of legal relations in order to ensure the transparency of economic activities related to environmental pollution; formation of a high level of environmental legal awareness, etc. The article draws a conclusion that ensuring proper quality of atmospheric air is a component of the mechanism for ensuring environmental safety. The authors underline that the understanding of the system of regulatory and legal regulation of atmospheric air and airspace protection should be functionally aimed at ensuring compliance with environmental standards for the operation of such facilities in accordance with economic feasibility and social justification. The paper concludes that atmospheric air safety and airspace safety are part of the national security system, where the former is a component of environmental safety and the latter is a component of state security, and should be understood as the state of atmospheric air and the integrity of the air environment, for which physical, chemical and biological properties are established which create favourable and sufficient conditions for the vital activity of people and settlements.

Keywords: administrative and legal regulation, sustainable development, management, enterprise, natural resource, atmospheric air, air space.

JEL Classification: Q01, M11, L30

1. Introduction

Ensuring the implementation of the idea of sustainable development and the economy of a closed cycle requires the implementation of effective mechanisms for the realization of the individual's right to a safe environment in general, and in particular, the safety of atmospheric air and the efficiency of the use of air space. Safety of atmospheric air and

[1] Zaporizhzhia National University, Ukraine *(corresponding author)*
E-mail: T_deputy@ukr.net
ORCID: https://orcid.org/0000-0003-1101-8073
[2] Zaporizhzhia National University, Ukraine
E-mail: Degtiareva@gmail.com
ORCID: https://orcid.org/0000-0003-1276-334X
[3] Zaporizhzhia National University, Ukraine
E-mail: darya_ezh@ukr.net
ORCID: https://orcid.org/0000-0001-5334-8498

airspace is one of the components of national security (The Law of Ukraine "On National Security of Ukraine", 2018).

Real sustainable development of the state requires an integrated approach that takes into account environmental, social and economic aspects. The role of the state in ensuring ecologically favorable conditions for citizens and preservation of natural resources is extremely important. Effective management of natural resources requires the development and implementation of strategic plans for the conservation of natural resources, forests, water systems and other natural ecosystems. Implementation of effective mechanisms of control and supervision over the use of natural resources, including the implementation of modern technologies and standards. Environmental protection and the fight against pollution should be reflected through the development and implementation of strategies to reduce emissions and other pollution, including the regulation of emissions from industrial enterprises. Implementation of environmental safety standards for various sectors of the economy and social spheres. Stimulating sustainable consumption and production requires the introduction of economic mechanisms that promote sustainable production and consumption.

2. Brief Literature Review

The determination of problems of air and airspace as an object of administrative and legal protection within the framework of complex studies of nature management issues was carried out in scientific works of such scientists as V. I. Andreytsev, A. O. Borysenko, O. S. Zarzhytskyi, Yu. A. Leheza, O. O. Surilova, Yu. S. Shemshuchenko, etc. At the same time, the question of protection of air and airspace was studied in a rather fragmentary manner. Separate issues of determination of the content of the system of protection of atmospheric air and airspace were studied in: the thesis of S.V. Vorushilo on the topic "Administrative and legal protection of atmospheric air" (Vorushilo, 2010); the thesis of Yu. S. Boldyreva on "Administrative and legal principles of responsibility for violation of the order of use of airspace by unmanned aircraft" (Boldyreva, 2021), where certain issues of regulatory and legal regulation of the use of such objects were examined.

Encouraging the use of renewable energy sources and technologies that have less impact on the environment. The implementation of the policy on ensuring the safety of the atmosphere and airspace includes the introduction of mechanisms for public participation in decision-making on environmental issues by providing access to information on the state of the environment and environmental projects (Vorushilo, 2010; Beredikhina, 2008).

The effectiveness of the implementation of the policy of administrative and legal provision of air and space safety is linked to the introduction of the latest environmentally friendly technologies and innovations in various fields, which requires the provision of financial support and stimulation of research in the field of energy efficiency and environmental technologies.

Thus, a balanced and systematic environmental policy, supported by effective administrative management, can contribute to sustainable development, improve the quality of life of citizens and ensure national security in general, and in particular in the area of air safety and airspace security.

Therefore, it is important to substantiate the role of the state in determining the content and constituent elements of the administrative-legal mechanism for ensuring air and airspace safety. Ensuring environmental safety requirements is a component of Ukraine's national security and one of the most pressing problems, the solution of which is urgent and relevant, taking into account the scale of anthropogenic and technogenic burden on the environment in modern conditions.

3. Materials and Methods

The study uses general scientific and special methods, the main of which are: abstract-logical, deductive, inductive, historical, modelling and forecasting, methods of system-structural, system-functional analysis, economic and statistical (grouping, comparison, etc.). The use of system analysis methods made it possible to structure the constituent elements of the regulatory and legal support of public administration in the field of protection of atmospheric air and airspace of Ukraine.

The article aims at describing the protection of atmospheric air and airspace of Ukraine in the regulatory, legal, environmental and economic aspects.

4. Results and Discussions

4.1. The Protection of Atmospheric Air and Airspace Safety in Ukraine: Ecological and Economic Aspects

The environmental policy of each country can influence the environmental situation not only within its own borders, but also at the international and global levels.

Climate change, loss of biodiversity, pollution of oceans and air – these problems do not stop at national borders. They require joint international efforts to be effectively addressed. Pollution in one country can have transboundary effects on the natural resources and health of citizens in other countries.

Effective cooperation on environmental issues is therefore essential. Participation in international agreements and conventions (e.g., the Paris Agreement, the Kyoto Protocol) shows a country's willingness to accept common obligations and to cooperate with other nations in order to reduce its impact on the environment. Cooperation in science and technology makes it possible to exchange advanced methods and innovations for solving environmental problems. Therefore, solving environmental problems requires cooperation and coordination of actions at the international level. Countries should work together, taking into account the common interests of conserving nature and ensuring the sustainable development of the planet. This issue is particularly important when it comes to ensuring the safety of atmospheric air and airspace.

The effectiveness of the implementation of environmental policy at the national level in general, and in particular, in terms of air protection and airspace security as part of the national security system (Article 3 of the Law of Ukraine "On National Security of Ukraine"), affects the state of environmental management in general.

The protection of atmospheric air and airspace is one of the most important issues of today. Air pollution is defined as a component of sustainable development policy. Atmospheric air suffers from pollution from industrial facilities, energy systems, and vehicles that emit emissions, especially in cities of industrial importance.

The protection of atmospheric air and airspace safety is particularly relevant in the conditions of martial law. The development of technologies, which intensified in the second half of the 20th century, is associated with the creation of new types of products, which may affect the growth of man-made load on atmospheric air, its toxicity, which are harmful to the environment.

Air pollution affects not only the state of environmental protection, safety of airspace, efficiency and safety of vehicle operation. Pollution can occur as a result of thermal emissions, the influence of electromagnetic fields, noise, vibrations, ultraviolet, infrared and ionising radiation (Andreytsev, 2002: 16-17).

The negative impact of air pollution on human health, the state of the environment, the level of soil pollution and its fertility, causes not only environmental damage, but also damage to the economy, affecting the level of working capacity of the population. Through polluted atmospheric air, harmful substances enter the human lungs, adversely affecting the respiratory system of the body and causing damage to other internal human organs. Atmospheric air pollution leads to pollution of other environmental ecosystems, including the hydrosphere, lithosphere and biosphere (Buchavyy, 2017: 8-9).

Sources of air pollution may include both stationary facilities (e.g., agro-industrial complex, mining company, processing company, power plant, gas production company, water management company, utility company) and mobile facilities (which primarily include vehicles, any type of transport, including rail, air, water transport, and industrial mobile equipment). According to the results of global research, the largest negative impact on the state of the atmosphere under normal conditions is caused by vehicle emissions (Dabek-Zlotorzynska, Celo, Ding, et al., 2019; Park, Heo, Kim, Yi, 2020). Thus, under normal conditions, about 28% of atmospheric emissions are from vehicles (Heydari, Tainio, Woodcock, de Nazelle, 2020). Such a situation of air pollution is not unique to Ukraine. In most countries of the world, the problem of atmospheric air pollution is particularly acute, the problem of reducing emissions to the environment that occur as a result of burning fossil fuels in utilities, industry and for the production of electricity (Weagle, Snider, Li et al., 2018). Fuel combustion also has an anthropogenic impact on the environment (McDuffie, Martin, Spadaro, et al., 2021). It undoubtedly has a negative impact on the environment and natural forcing factors, in particular a factor such as a change in natural emission sources due to extreme weather events, including wildfires and windblown dust (Chen, Guo, Yue, et al., 2021).

According to WHO research, particulate matter with a diameter of 2.5 microns or less (PM 2.5) is an environmental pollutant that has a negative impact on human health. The harmful effect on the human body is the ability of such microparticles to enter the human lungs and then be transferred to the bloodstream, which leads to public health problems, including cancer (World Health Organization, 2021).

4.2. Legal and Regulator Aspects of the Protection of Atmospheric Air and Airspace Security in Ukraine and the EU

Therefore, Ukraine, as well as other EU countries and the world, is facing an acute issue of protecting the airspace from pollution from both mobile and stationary sources.

Hence, the implementation of monitoring procedures for the protection of atmospheric air at the national and interstate levels is of great importance and is required as a component of achieving the goals of sustainable development, approved by the Decree of the President of Ukraine of 30 September 2019 No. 722/2019 (The Law of Ukraine "On the Sustainable Development Goals of Ukraine for the period until 2030", 2019), which correlates with the provisions of European directives on environmental protection standards in general and atmospheric air in particular

(Environment policy: general principles and basic framework, 2023).

Directive 2004/35/CE of the European Parliament and of the Council of April 21, 2004 on environmental responsibility for the prevention and elimination of damage caused to the environment (Directive 2004/35/ CE of the European Parliament and of the Council, 2024) establishes the "polluter pays" principle as one of the main principles for the success of air pollution control. The "polluter pays" principle is implemented by the Environmental Liability Directive, which aims to prevent or otherwise compensate for environmental damage to protected species or natural habitats, water and soil (Directive 2004/35/CE of the European Parliament and of the Council, 2024). Operators of certain professional activities, such as the transport of dangerous substances or activities involving discharges into water, must take preventive measures in the event of an imminent threat to the environment. If damage has already occurred, they must take appropriate measures to remedy the situation and bear the costs. The scope of the Directive has been extended three times to cover the management of mining waste, the operation of geological storage sites and the safety of offshore oil and gas operations (Directive 2004/35/CE of the European Parliament and of the Council, 2024).

Moreover, since the Cardiff European Council in 1998, the integration of environmental concerns into other EU policies has become an important concept in European politics. In recent years, the integration of environmental policies has made significant progress, for example in the area of energy policy, as reflected in the parallel development of the EU Climate and Energy Package or the Roadmap for the transition to a competitive low-carbon economy by 2050 (Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021, 2021).

The Sustainable Development Goals are set according to the content of the "2030 Agenda for Sustainable Development" (17 Goals to Transform Our World 2019), which was adopted in 2019. The history of the development and adoption of the Sustainable Development Strategy began in 2001 with the adoption of the first Sustainable Development Strategy (SDS), adding an environmental dimension to the Lisbon Strategy. In response to the 2030 Agenda for Sustainable Development, adopted by the UN in 2015, the Commission published a communication in 2016 entitled "Next steps for a sustainable European future – European action for sustainable development", which outlines how to integrate the Sustainable Development Goals (SDGs) into EU policy priorities (Environment policy: general principles and basic framework, 2023). In January 2019, the European Commission presented a policy paper on the Sustainable Development Goals entitled "Towards a sustainable Europe by 2030", in which it proposed three scenarios for achieving them. The Parliament has expressed its support for the furthest-reaching scenario, which proposes to guide all EU and Member State actions by setting specific goals for implementing sustainable development, proposing concrete deliverables by 2030, and establishing a mechanism for reporting and monitoring progress towards them.

In 2011, the EU adopted the 2020 Biodiversity Strategy, which reflects the commitments made under the United Nations Convention on Biological Diversity (Convention on the Protection of Biological Diversity of 1992, 1992) (CBD), the main international biodiversity treaty to which the EU is party. As a contribution to the discussions on the global biodiversity conservation framework beyond 2020 (UN Conference on Biodiversity 2022 (COP15)), in May 2020, the Commission presented its Biodiversity Strategy 2030 as a comprehensive, ambitious and long-term plan to protect nature and halt ecosystem degradation. In June 2021, the Parliament endorsed the strategy and made additional proposals to strengthen it.

As part of the European Green Deal, in May 2020, the European Commission presented the Farm to Fork strategy, which aims to make food systems fair, healthy and sustainable. In October 2021, the European Parliament largely endorsed the strategy's vision and objectives.

Ensuring the implementation of the Sustainable Development Goals requires the establishment of intergovernmental cooperation, and the EU therefore plays a key role in international environmental negotiations. The EU is a party to a large number of global, regional or sub-regional Multilateral Environmental Agreements (MEAs) covering a wide range of issues, such as nature and biodiversity protection, climate change and transboundary air and water pollution. The EU helped shape several key international agreements adopted at UN level in 2015, such as the 2030 Agenda for Sustainable Development (which includes 17 global SDGs and 169 related targets), the Paris Agreement on Climate Change and the Sendai Framework on Natural Disaster Risk Reduction. It also became a party to the Convention on International Trade in Endangered Species (CITES), underlining its commitment to biodiversity conservation and curbing illegal wildlife trade (Environment policy: general principles and basic framework, 2023).

One of the important areas of ensuring the protection of the atmospheric air is the indexing of its pollution. At the same time, monitoring of the content of solid microparticles (PM2.5), which is carried out in EU countries, is not carried out in Ukraine (Hrynchyshyn, 2023). In particular, the Decree of the Ministry of Health of Ukraine of

14 January 2020 No. 52 "On approval of the hygienic regulations for permissible contents of chemical and biological agents in the air of populated areas" does not contain any indicators of the maximum permissible content of solid microparticles (PM2.5) in the atmospheric air.

It is recognised in the world to implement such an administrative control and monitoring space as the Atmospheric Air Quality Index (AQI), which reflects, among other things, the content of solid microparticles (PM 2.5), which is available for public monitoring in populated areas. Generalisation of information on daily average values of atmospheric air quality indices to ensure the implementation of the public monitoring function is published on a separate Internet resource – SaveEcoBot "Ukraine's only ecological system" (SaveEcoBot, 2023). The indicated public information resource contains data on pollution, pollutants and displays analytical summaries of environmental pollution over the past three years.

The AQI is one of the tools of public administration in the field of environmental protection, recognised by the world community and used as a criterion of success and effectiveness of air protection in the activities of governmental agencies of various countries, in particular in the activities of the US Environmental Protection Agency, which allows the institution to publish information on air quality for the population. It should be emphasised that the AQI is calculated for each individual pollutant according to the NowCast formula (NowCast Calculator, 2023).

The AQI reflects six categories that characterise the level of air pollution. An increase in the AQI indicates an increase in the level of air pollution and is an index of environmental hazards for the population of the respective region. The AQI indicators are shown in Table 1.

Air quality in Ukraine is assessed by another indicator – the Air Pollution Index (API), according to which the most polluted cities in Ukraine include Kamianske (API – 14.8), Dnipro (API – 14.1), and Kryvyi Rih (API – 13.8) (Particulate Matter (PM) Pollution, 2023).

It is necessary to consider the state of the atmospheric air and the influence of the state of war on it within the framework of this study. The state of war has a significant impact on the state of atmospheric pollution – in certain periods of 2022, a decrease in pollution was observed, which is associated with the economic decline and foreign immigration of the population, and therefore in some places there is a decrease in the anthropogenic load on the atmospheric air (Air pollution in the city, 2023). However, research by ecologists has shown an increase in man-made pollution of atmospheric air as a result of artillery fire, enemy attacks from "Grad", "Smerch", and so forth (Hrynchyshyn, 2023: 10).

Thus, the state of war and constant bombardment by enemy aircraft and enemy artillery have a negative impact on the quality of the air and its safety for public health.

This is why the problem of environmental protection in general, and in particular, ensuring air quality and airspace safety in Ukraine, is urgent and is becoming more so under martial law and in the context of Ukraine's reconstruction.

4.3. Atmospheric Air Safety is a Part of National Environmental and Economic Security

It should be emphasized that atmospheric air safety is a component of national environmental security.

The system of national environmental safety in general and, in particular, the safety and quality of atmospheric air, the safety of airspace is the subject of research both by representatives of ecological and legal sciences and by representatives of administrative and legal sciences. Thus, V. I. Andreytsev understands the provision of environmental safety as the taking of measures functionally aimed at the rational use of natural resources, environmental protection, their preservation and the creation of conditions for their benefit for the population, individuals and legal entities (Andreytsev, 2002: 106-119).

Table 1
Levels of atmospheric air pollution (categories of the AQI) (Particulate Matter (PM) Pollution, 2023)

Air Quality Index (AQI)	Assessment of air pollution level	Threats to public health
51-100	Satisfactory	The state of air pollution in which people with allergic reactions are advised to limit their time outdoors
101-150	Unfavourable for people with allergic sensitivities	Elderly people, children, and people with allergic sensitivities are advised to reduce their time outdoors
151-200	Unhealthy	Elderly people, children, people with lung diseases are not recommended to be outside. Others recommended limiting the time spent outside.
201-300	More unhealthy	Has an increased level of danger. Physical movement on the street is not recommended for people who are sensitive to atmospheric air conditions.
More than 300	Dangerous (threatening)	All persons are advised not to be outside

The law of environmental safety is considered as a separate branch of knowledge or an independent legal institution, which is a certain system of normative provisions regulating the circle of social relations, which is characterised by the principle of unity, complexity, a combination of functional direction to ensure the safety of the environment and the safety of exploitation of natural resources and objects (Khimich, 2005: 300-302).

According to O. M. Khimich, environmental safety means taking measures to eliminate threats to people's lives and health, which make it possible for people to exist and carry out vital activities. At the same time, the task should be entrusted not only to specialised subjects, but also to law enforcement and judicial bodies (Khimich, 2005: 48).

There is an approach in which environmental safety is seen as a certain form of environmental activity, in the implementation of which the harmonious development of human, society and nature is possible (Koshlya, 2022: 268–272).

M. A. Shepel notes that the implementation of the tasks and goals of ensuring environmental safety is considered a component of the right to environmental protection and must be separated to some extent from the implementation of the tasks of environmental restoration (Shepel, 2019: 158-163). A similar approach is based on scientific conclusions substantiated in the publications of V. I. Andreytsev, who noted that the law of environmental security has a multifaceted understanding – as a certain system of norms regulating the application of influence measures aimed at ensuring vital human interests; and as a system of norms regulating activities related to harmful effects on the environment, the threat of environmental damage (for example, activities related to the transportation of hazardous waste) (Leheza, 2012: 95-100; Leheza, Surilova 2019: 99-103). Environmental safety, according to Yu. O. Leheza, should be considered as one of the functions of the state, as a guarantee of ensuring the proper level of improvement of settlements, ensuring compliance with the requirements of public order and law and order, legality, and therefore is a component of public, national and state security (Leheza, 2012: 95-101). It should be emphasised that Yu. O. Leheza states that environmental safety is a component of national security and determines the state of protection of the population from harmful effects of both economic entities and external negative obstacles, including military aggression (Leheza, 2016: 141-143).

It is important to note that such an approach correlates with the normative and legal regulation of the principles of ensuring environmental safety, which were essentially defined for the first time in the Declaration on State Sovereignty of Ukraine, where the principles of environmental safety were established at the level of a separate section. Thus, the Declaration on State Sovereignty of Ukraine states that "Ukraine cares about the environmental safety of its citizens, the gene pool of its people, its young generation, and also has the right to prohibit the construction and cease the operation of any enterprises, institutions, organisations and other objects that pose a threat to environmental safety" (The Declaration of State Sovereignty of Ukraine, 1990).

The Law of Ukraine "On Environmental Protection" of June 25, 1991 stipulates that the state of environmental safety should be understood as such a state of the natural environment that ensures the prevention of deterioration of the ecological situation and the occurrence of hazards to human health (The Law of Ukraine "On Environmental Protection", 1991).

Hence, atmospheric air safety and airspace safety are part of the national security system, where the former is a component of environmental safety and the latter is a component of state security, and should be understood as the state of atmospheric air and the integrity of the air environment, for which physical, chemical and biological properties are established that create favourable and sufficient conditions for the life of people and settlements.

Ensuring the effectiveness of atmospheric air and airspace protection requires optimisation of the system of current Ukrainian legislation in the area under study, and in general, in the area of ensuring environmental safety requirements.

Compliance with environmental safety requirements requires legal entities to take measures to prevent violations of its integrity, comprehensive protection and prevention of damage (Kobetska, 2016: 9).

It should be emphasised that the current state of environmental protection in general, and in particular, in the area of air protection, depends on both domestic measures and the effectiveness of international cooperation related to the settlement of damage caused by the danger posed by a full-scale Russia's invasion, as well as air pollution related to activities in the territories neighbouring Ukraine.

According to the Constitution of Ukraine, the objects of legal protection include "land, its subsoil, water, forests, atmospheric air, animal life, especially protected natural territories and objects" (Constitution of Ukraine, 1996). Therefore, the establishment of modes of use of the relevant natural resources and objects is also the basis for the implementation of the mechanism of environmental security (Korneev, 2021: 122-125).

Therefore, ensuring proper air quality is part of the mechanism for ensuring environmental safety.

Consequently, the understanding of the system of regulatory and legal regulation of atmospheric air and airspace protection should be functionally aimed at

ensuring compliance with environmental standards for the operation of such facilities, taking into account economic feasibility and social justification.

Atmospheric air is such an asset, and measures must be taken to ensure the preservation of such a natural asset, as well as to prevent the increase of anthropogenic influence on its quality.

Ensuring the implementation of measures for the implementation of administrative and legal protection of atmospheric air and airspace requires the adoption of measures at the appropriate level of legal effectiveness for the implementation of accounting and monitoring of environmental pollution, which requires the implementation of the function of state and public control through the determination of standards for the use of atmospheric air and the level of maximum permissible emissions, compliance with restrictions on anthropogenic impact on atmospheric air, as well as zoning of settlements, with the allocation of territories where the location of industrial zones is a priority (Borysenko, Volko, Pushkina, Potip, Leheza, 2022: 180-188).

The implementation of administrative and legal protection of atmospheric air and atmospheric safety at the appropriate level requires the application of preventive, redressal, human rights, control and supervisory, as well as administrative and delictual measures.

The main functional content of the administrative and legal protection of atmospheric air is to optimise the level of anthropogenic impact and the burden on it.

These are the main requirements for building a system of regulatory and legal regulation of administrative and legal protection of atmospheric air and airspace, which should be consistent with achieving a balance of economic feasibility and environmental rationality, as well as correlated with public interests and needs.

The general principles of administrative and legal protection of atmospheric air are the principles of the rule of law, legality, democracy, humanism, good faith, justice, equality, a combination of persuasion and coercion, liability for guilt, etc.

However, the content of administrative and legal protection of atmospheric air and airspace is determined primarily through the implementation of special regulatory principles.

S. V. Vorushilo refers to the special principles of administrative and legal protection of atmospheric air: 1) priority of protection of human life and health, present and future generations; 2) implementation of obligatory monitoring and control of compliance with the requirements of legislation in the field of air protection; 3) prevention of negative consequences of air pollution for human beings and the environment; 4) state regulation of emissions of harmful (polluting) substances into atmospheric air and harmful physical actions on it; 5) transparency, completeness and reliability of information on the state of atmospheric air, its pollution; 6) scientific validity, systematicity and complexity of the approach to atmospheric air protection; 7) inevitability of liability for violation of legal requirements for atmospheric air protection (Vorushilo, 2011: 8).

It should be noted that this approach reflects the essence of administrative and legal protection as taking measures to minimise anthropogenic impact on the atmosphere and to comply with economic security requirements.

T. Shevchuk proposes to supplement this list of special legal principles of administrative and legal protection of atmospheric air with the following principles: priority protection of the human right to life and health; prevention of irreversible consequences of air pollution for the environment; mandatory state regulation of emissions of harmful (polluting) substances into the air and harmful physical impact on it; mandatory compliance with the requirements of the legislation on air protection by all entities consuming it; the principle of presumption of potential environmental hazards of any planned economic and other activities; the principle of completeness of information presented in the environmental impact assessment; the principle of scientific validity, objectivity and legality of the conclusions of the environmental impact assessment; the principle of openness, as well as participation of the subjects of the right to environmental information; the principle of mandatory environmental impact assessment prior to making decisions on the implementation of the object of assessment; the principle of responsibility of the customer of administrative services in the field of atmospheric air protection for the consequences of the implementation of project decisions, and so forth (Shevchuk, 2021: 36-37).

In support of the above approaches to understanding the principles of administrative and legal protection of atmospheric air and airspace, it is advisable to supplement them with the principles of economic feasibility and environmental soundness. Based on the analysis, the special principles of administrative and legal protection of atmospheric air, which reflect the needs of society and legal regulation of environmental protection activities of the state, include the following principles: the principle of maintaining the proper state of atmospheric air to ensure the health and well-being of citizens; the principle of prevention, the implementation of which is aimed at preventing air pollution by setting standards, norms and restrictions for industrial enterprises, transport and other sources of pollution; the principle of minimising anthropogenic impact through the introduction of technologies and practices that reduce emissions of harmful

substances; the principle of public participation, which requires access to information on the state of the atmosphere, as well as guaranteeing the implementation of various forms of participation of social groups in decision-making on its protection; the principle of responsibility that should be applied for violations of the rules on atmospheric air protection, including fines and other sanctions for violators; the principle of economic balance; the principle of ecological validity. These principles are aimed at achieving a balance between society's needs for economic development and preservation of the natural environment for future generations.

However, the Law of Ukraine "On Atmospheric Air Protection" does not contain these special principles of its administrative and legal protection, which requires amendments to the current legislation and the establishment of special principles of legal regulation.

It should be emphasized that the current Law of Ukraine "On Atmospheric Air Protection" of October 16, 1992 No. 2707-XII (The Law of Ukraine "On Atmospheric Air Protection", 1992) contains quite a significant number of gaps, and one of them, in particular, is the lack of special legal bases for regulatory regulation. Undoubtedly, the shortcomings of the Law of Ukraine "On Atmospheric Air Protection" include its obsolescence and the inadequacy of the categorical apparatus of air protection legislation.

The categories "atmospheric air quality", "safe level of air quality", "public control in the field of atmospheric air protection" are not defined by regulations. The current legislation of Ukraine on air safety does not define the principles of special legislation.

4.4. International Legal Financial Regulation in the Field of Atmospheric Air Safety and Airspace

The administrative and legal mechanism for ensuring the safety of atmospheric air and the use of airspace includes economic, legal or financial instruments consisting of regulatory acts, a system of entities applying regulatory provisions, and entities whose activities are subject to the application of such instruments.

The system of financial and legal instruments consists of the following elements: economic incentives; taxation measures; environmental and economic insurance measures.

The creation of conditions for the effective use of the airspace of Ukraine in the post-war period requires the development of financial and legal legislation on the basis of ensuring the conditions for the formation of investment and technological potential of Ukraine, which should be recognised as the basis of sustainable development policy. The decline of the civil aviation industry is a clear indication of the financial and legal imbalance of such a cluster of the national economy, which is primarily due to its stagnation in the conditions of martial law.

The issue of airspace use is the subject of legal regulation not only at the national level, but primarily at the international level, at the level of interaction and mutual agreements concluded between Ukraine and the EU countries, as a result of which the "Common Aviation Area" project was concluded (Ukraine and the European Union concluded an agreement on the Common Aviation Area. Government portal, 2024).

The conclusion of the agreement took place on October 12 within the framework of the 23rd Ukraine Summit and was ratified in accordance with the Law of Ukraine "On Ratification of the Agreement between Ukraine, on the one hand, and the European Union and its Member States, on the other hand, on Common Aviation Area" (The Law of Ukraine "On Ratification of the Agreement between Ukraine, on the one hand, and the European Union and its Member States, on the other hand, on Common Aviation Area", 2022; Agreement between Ukraine, on the one hand, and the European Union and its member states, on the other hand, on common aviation space, 2022). Undoubtedly, this European integration agreement was progressive, but its proper implementation under martial law is impossible. According to the Agreement, the parties will create a common aviation area between Ukraine and the EU based on the same rules of aviation safety, air traffic control, social rights of employees, electronic booking systems, environmental protection and consumer rights.

The regulation of airspace use is based on a number of international treaties and acts, one of which is the Treaty establishing the European Economic Community (EEC), signed in Rome in 1957, which establishes certain provisions relating to the provision of transport services (Treaty establishing the European Community).

The intensification of international legal regulation in the field of airspace use dates back to the 1980s, when a number of regulatory acts were adopted at the level of agreements between European states, based on the content of which the following were identified as priority tasks for the safety of airspace use and air protection: a) provision of regular air services to regions to which transportation is clearly unprofitable due to the geographical or economic location of these regions; b) prevention of unjustified competition on certain airlines and temporary support for small, newly established airlines; c) protection of the environment from the harmful effects of civil aviation; d) elimination of the problem of congestion at airports and other aviation ground infrastructure; e) maintenance of the required level of flight safety. Such tasks were reflected in the European Common

Aviation Area (ECAA) with non-EU states (European Common Aviation Area).

In order to implement the European Common Aviation Area (ECAA), on March 10, 2004, the European Parliament and the Council of the EU adopted a number of legal acts, among which the following acts should be highlighted: Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky (Regulation (EC) No 549/2004); Regulation (EC) No 550/2004 of the European Parliament and of the Council of 10 March 2004 on the provision of air navigation services in the single European sky (Regulation (EC) No 550/2004); Regulation (EC) No 551/2004 of the European Parliament and of the Council of 10 March 2004 on the organisation and use of the airspace in the single European sky (Regulation (EC) No 551/2004); Regulation (EC) No 552/2004 of the European Parliament and of the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (Regulation (EC) No 552/2004); Regulation 2006/2005, which established common requirements for the provision of air navigation services (Commission Regulation (EC) No 2005/2006); Regulation 2150/2004 (Regulation (EC) No 2150/2002).

The development of airspace use and atmospheric air safety in Ukraine must be in accordance with the internationally recognised principles of sustainable development and greening of production (Action plan "Ukraine – European Union", 2024). The construction of the administrative and legal mechanism for the use of airspace should be based on the interests of people, society and the state as a whole in order to ensure the requirements of national security and the greening of production.

Among the important tasks of using airspace is the dissemination of information on the safety of transportation, the safety of servicing economic activities, and the promotion of the consumer value of such an object, which determines the content of the administrative and legal regulatory influence of the state.

The effectiveness of this task of administrative and legal regulation depends on the correctness of the establishment of regulatory procedures for the activities of business entities, the expediency of informing the public about the safety of transportation, the use of airspace, and compliance with air pollution requirements.

5. Conclusions

Ensuring the effectiveness of administrative and legal protection of atmospheric air requires a set of organisational, legal, economic, environmental and other measures.

Such measures of influence should be recognised as tools for the implementation of public administration activities that help protect the needs of the population to create quality living conditions in settlements.

Administrative and legal protection of atmospheric air is based on various instruments used to ensure the purity and preservation of atmospheric air quality. The instruments of administrative and legal protection of atmospheric air include the following: regulatory acts (laws, regulations, government decrees, decisions of local governments, etc.) that establish rules and requirements for permissible levels of air pollution, use of environmentally friendly technologies, emission limits, and so forth; licensing and issuance of special permits for enterprises that may affect air quality (e.g., industrial enterprises) should have special permits to emit pollutants into the air; control and monitoring of air pollution, which may include mandatory measurements of pollution levels, emissions accounting, inspections and compliance checks; liability for violations, including the application of administrative and economic sanctions, administrative and tort fines, and so on; incentive measures aimed at boosting the greening of enterprises through the introduction of green technologies and processes, in the form of tax cuts for environmentally friendly enterprises, subsidies for the introduction of clean technologies, and more; public control. These tools work together to create a system that helps to preserve and improve air quality, which is an important task for preserving human health and the environment as a whole.

Thus, the functional content of the administrative and legal protection of atmospheric air is: ensuring air pollution within the limits of the maximum permissible emission standards in order to ensure the right of a person to a safe and quality environment; greening of production; introduction of environmental fuel quality standards; greening of the energy cluster of the economy, including through the introduction of the principles of decentralisation of the country's energy system; establishment of information interaction between the participants of legal relations in order to ensure the transparency of economic activities related to environmental pollution; formation of a high level of environmental legal awareness, etc.

However, despite the existence of a significant number of strategic plans, development programmes and the implementation of state and regional environmental policies, it is impossible to draw a conclusion on the success of their implementation both at the level of greening production and at the level of regulatory and legal regulation of the principles of environmental protection, including by means of administrative legal protection.

Based on the analysis, the special principles of administrative and legal protection of atmospheric air, which reflect the needs of society and legal regulation of environmental protection activities of the state, include the following principles: the principle of maintaining the proper state of atmospheric air to ensure the health and well-being of citizens; the principle of prevention, the implementation of which is aimed at preventing air pollution by setting standards, norms and restrictions for industrial enterprises, transport and other sources of pollution; the principle of minimising anthropogenic impact by introducing technologies and practices that reduce emissions of harmful substances; the principle of public participation, which requires ensuring access to information on the state of the air, as well as guaranteeing the implementation of various forms of participation of social groups in decision-making on its protection; the principle of responsibility, which should be applied for violations of the rules of air protection, including fines and other sanctions against violators; the principle of economic balance; the principle of environmental feasibility and environmental impact assessment.

These principles are aimed at achieving a balance between the needs of society for economic development and the preservation of the natural environment for future generations.

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