COMBATING AND PREVENTING CRIMINAL OFFENSES AGAINST THE ENVIRONMENT IN UKRAINE

LUCHA Y PREVENCIÓN DE DELITOS PENALES CONTRA EL MEDIOAMBIENTE EN UCRANIA

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Abstract: The article analyzes the current state and main directions of combating criminal offenses against the environment in Ukraine with an emphasis on legal mechanisms for information and analytical support. Therefore, the need to harmonize national practice with international standards of environmental safety and law enforcement is substantiated. It is determined that effective counteraction to such offenses requires a developed regulatory and legal framework for collecting, processing, systematizing and analyzing environmentally significant information. Likewise, the role of analytical intelligence and search as tools for predicting criminal activity and developing

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preventive measures is revealed. The relevance of legal regulation of the creation and functioning of specialized data banks, legal procedures for interaction between subjects of counteracion and the use of analytical activity results within criminal proceedings is emphasized. Moreover, the need for regulatory support for assessing the reliability of information used to identify and document environmental offenses is outlined. In that sense, special attention is paid to the implementation of innovative information technologies (IT) solutions and Geographic Information System (GIS) technologies as a legitimate means of environmental monitoring and recording criminal activity. Emphasis is placed on the importance of legal consolidation of algorithms for the use of unmanned aerial vehicles, thermal imaging control, and video recording of offenses. According to this, it is determined that the use of such technologies has not only evidentiary, but also preventive significance in the field of environmental protection. The conclusion is made about the need for a comprehensive approach, which includes regulatory, technical, and personnel support for analytical activities. The article contains proposals for improving the legal mechanism to prevent, detect, and investigate environmental crimes in Ukraine.

Keywords: Criminal offenses, Counteraction, Prevention, Law enforcement agencies, Information and analytical activities.

Resumen: *El artículo analiza la situación actual y las principales orientaciones de la lucha contra los delitos contra el medioambiente en Ucrania, con especial énfasis en los mecanismos legales de información y apoyo analítico. Este se fundamenta la necesidad de armonizar la práctica nacional con los estándares internacionales de seguridad ambiental y aplicación de la ley. Así, se determina que una lucha eficaz contra estos delitos requiere un marco regulatorio y legal desarrollado para la recopilación, el procesamiento, la sistematización y el análisis de información ambientalmente significativa. Además, se revela el papel de la inteligencia analítica y la búsqueda como herramientas para predecir la actividad delictiva y desarrollar medidas preventivas. Con esto, se enfatiza la relevancia de la regulación legal para la creación y el funcionamiento de bancos de datos especializados, los procedimientos legales para la interacción entre los sujetos de la lucha, y el uso de los resultados de la actividad analítica en los procesos penales. De esta*

forma, se destaca la necesidad de apoyo regulatorio para evaluar la fiabilidad de la información utilizada para identificar y documentar los delitos ambientales; así, se presta especial atención a la implementación de soluciones informáticas innovadoras y tecnologías de Sistemas de Información Geográfica (SIG) como medio legítimo para la vigilancia ambiental y el registro de la actividad delictiva. Aunado a esto, se hace hincapié en la importancia de la consolidación legal de algoritmos para el uso de vehículos aéreos no tripulados, el control de imágenes térmicas y la grabación de vídeo de los delitos. En consecuencia, se determina que el uso de estas tecnologías tiene importancia no solo probatoria, sino también preventiva en el ámbito de la protección ambiental. Igualmente, se concluye que es necesario un enfoque integral que incluya apoyo regulatorio, técnico y de personal para las actividades analíticas. En suma, el artículo contiene propuestas para mejorar el mecanismo legal de prevención, detección e investigación de delitos ambientales en Ucrania.

Palabras clave: *Delitos penales, Oposición, Prevención, Agencias encargadas de hacer cumplir la ley, Actividades informativas y analíticas.*

Summary. *I. Introduction. II. Special entities that carry out activities to combat and prevent environmental crime. III. The essence and content of information and analytical support for the activities of law enforcement agencies in combating and preventing criminal offenses against the environment. IV. Prospects for the use of the latest innovative means and technologies in combating and preventing criminal offenses against the environment in Ukraine. V. Conclusions. References.*

I. INTRODUCTION

Today, the world is on the brink of an environmental catastrophe, and wars are accelerating this threat. In particular, during military operations in Ukraine, large-scale forest fires occur as a result of constant shelling, protected areas are destroyed, flora and fauna are lost, and ecosystems are polluted with dangerous chemicals from ammunition and military equipment.

On January 5, 2023, the Parliamentary Assembly of the Council of Europe adopted the Resolution "The Impact of Armed Conflicts on the Environment". This document establishes that member states are obliged to take all necessary measures to prohibit the use of banned weapons during armed conflicts, as these disproportionately harm the environment, causing significant damage and making it impossible for people to live in war zones. The Resolution also introduced changes allowing environmental crimes to be compensated as ecological damages, the investigation of ecocide as a war crime under the Rome Statute, the involvement of international criminologists, the raising of investigative standards, and the collection of adequate evidence for the prosecution of cases before the International Criminal Court (ICC).

The main task of law enforcement agencies is to strengthen the effectiveness of their fundamental purpose: ensuring reliable protection of the legitimate rights and interests of individuals, society, and the state. To implement measures aimed at combating and preventing environmental crime, it is necessary to adopt organizational and managerial decisions supported by appropriate information and analytical measures. Information activities are closely and continuously linked to analytical activities, since any important data received becomes the subject of analytical and scientific processes, through which it is supplemented, transformed, and objectified.

Issues related to the detection of criminal and illegal activities of individuals and groups, as well as the establishment of criminal, business, and other connections of persons involved in proceedings concerning environmental offenses, highlight the need for in-depth study of the problematic aspects of this area of law enforcement.

In that sense, scholars define information and analytical support as a specific type of intellectual activity that provides access to relevant information, thereby creating optimal conditions for meeting information needs and exercising rights and obligations based on the development and use of information and analytical resources (Demenko, 2013). This activity combines a set of methods and techniques aimed at an in-depth study of issues related to combating crime, identifying shortcomings, errors, and miscalculations in work, and determining measures to eliminate and prevent them. Such processes are essential when making strategic and tactical decisions by bodies responsible for crime prevention and enforcement (Evropina, 2013).

In legal doctrine, information and analytical activity is usually associated with counteraction and the disclosure of resonant, serious, and especially serious criminal offenses. However, the preventive function of specially authorized law enforcement units in this area has often remained unjustly overlooked by researchers. As the practice of combating environmental crime demonstrates, the priority in many cases lies in the system of organizational and analytical support within law enforcement agencies and their units, as this link largely determines the effectiveness of their work. Knowledge of the potential of information and analytical activity for preventing criminal offenses against the environment, along with its skillful application in the practical activities of specialized law enforcement entities, can therefore serve as a significant tool in addressing these unlawful acts.

Recently, scholars have increasingly advanced well-reasoned proposals for the development and adoption of a crime prevention strategy using internet technologies, accompanied by an action plan for its implementation. These

proposals include solutions to problems related to the technological re-equipment of law enforcement agencies, the enhancement of professional qualifications of their employees, the creation of criminological information databases, and the assurance of their proper functioning (Bugera, 2022). Such ideas are meaningful; however, within the scope of this study, the focus is primarily on the organizational and legal problems of applying them to the prevention and suppression of criminal offenses against the environment.

Various aspects of preventing and combating environmental crime have been the subject of numerous studies by specialists in criminal law, criminal procedure, criminology, operational and investigative activities, and related sciences. These works have repeatedly examined the prospects of introducing new means of addressing this type of crime. Nonetheless, despite some scholarly attention to the prevention and suppression of environmental offenses, modern technologies for combating crime in this field remain insufficiently explored.

II. SPECIAL ENTITIES THAT CARRY OUT ACTIVITIES TO COMBAT AND PREVENT ENVIRONMENTAL CRIME

Among the entities that combat and prevent environmental crime, special attention needs to be paid to determining the specifics of information and analytical work by the bodies of the National Police of Ukraine and the Specialized Environmental Prosecutor's Office (SEPO), their services and units, which are the main entities that, within the limits of their powers, combat crime in the area under study. Thus, parts 1 and 2 of article 25 of the Law of Ukraine "On the National Police of Ukraine" stipulate that the police carry out

information and analytical activities exclusively for the implementation of its powers defined by law. Within the framework of information and analytical activities, it forms registers and databases (banks); uses registers and databases of state authorities; and carries out information-search and information-analytical work, as well as information interaction with other state authorities of Ukraine, law enforcement agencies of foreign states and international organizations (On the National Police, 2015).

Information and analytical powers within the jurisdiction established by law in criminal proceedings are also assigned to other law enforcement units that may be involved in preventing environmental crime, particularly when such offenses are committed in conjunction with other crimes falling under their competence. For example, according to clause 2, part 1 of article 6 of the Law of Ukraine "On the State Bureau of Investigation", the State Bureau of Investigation (SBI), within its mandate, conducts information and analytical measures to identify systemic causes and conditions of organized and other crimes under its jurisdiction and takes steps to eliminate them (On the State Bureau of Investigation: Law of Ukraine, 2015).

The National Anti-Corruption Bureau of Ukraine performs information and analytical work to identify and eliminate causes and conditions that contribute to the commission of offenses within its jurisdiction (On the National Anti-Corruption Bureau of Ukraine: Law of Ukraine, 2014, part 1, article 16). Likewise, the Security Service of Ukraine, in accordance with its main tasks, is required to conduct information and analytical activities in the interests of effective governance, defense, socio-economic development, scientific and technological progress, ecology, and other issues related to national security

(On the Security Service of Ukraine: Law of Ukraine, 1992, article 24, clause 1). Similarly, clauses 1 and 2 of part 1 of article 8 of the Law of Ukraine "On the Bureau of Economic Security" stipulate that, in addition to operational, investigative, and pre-trial activities, the Bureau of Economic Security of Ukraine is also authorized to conduct information, search, and analytical work.

It is also important to analyze organizational aspects, particularly the role of the prosecutor's office. Its specialized bodies hold coordinating powers in the fight against environmental crime and exercise supervision and management in the field of environmental protection. Based on theoretical approaches to analytical activity, and according to the tasks set out in the Procedure for Coordination of Law Enforcement Activities in the Field of Combating Crime, approved by Order of the Prosecutor General's Office (PGO) No. 28 dated 08.02.2021, information and analytical measures aimed at preventing and combating environmental crime include: analyzing crime in this area in general and specific offenses in particular, examining its structure and dynamics, forecasting trends, and developing proposals to address organizational, tactical, technical, managerial, and other issues; designing, coordinating, identifying executors, and implementing preventive measures; clarifying the causes and conditions of crimes; and initiating proposals to improve legislation in this field.

Therefore, the relevant orders of the PGO should include clear recommendations on the correct application of analytical methods in activities aimed at preventing and combating environmental crime. In particular, they should define the concept of information and analytical activity, its forms and stages, objects, and purpose, taking into account the provisions of current

legislation as well as the scientific principles of legal statistics and criminology. The ultimate goal of applying statistical data analysis in the analytical activities of law enforcement agencies should be to clarify trends in the state, structure, and dynamics of crime; to identify circumstances that contributed to the commission of criminal offenses; to forecast developments; and to make proposals to eliminate shortcomings in order to prevent such offenses in the future.

In that sense, the main objects of information and analytical work in the field of combating environmental crime should be the determination of the state, dynamics, and structure of crime in this area overall and of individual criminal offenses in particular.

The procedure for coordinating the activities of law enforcement agencies in combating crime, established by PGO No. 28 of 08.02.2021, stipulates that the exchange of analytical information is carried out by prosecutors' offices and law enforcement agencies either on their own initiative or in accordance with jointly agreed decisions. These decisions, adopted mainly at coordination or joint meetings, serve to establish positive and negative trends in combating criminal offenses, analyze law enforcement practices, assess the effectiveness of implemented measures, determine ways to improve cooperation, and identify problems requiring prompt or comprehensive solutions, along with possible forms of their resolution (PGO No. 28, 2021). To conclude, joint analytical documents are generally considered at coordination or joint meetings, where relevant agreed measures are determined.

The regulation on the PGO No. 185 of 05.07.2023 also contains provisions concerning the information and analytical activities of specialized

units (PGO No. 185, 2023). However, this regulatory act does not provide for the mutual exchange of information and analytical data between the Environmental Protection Agency and other law enforcement bodies. This gap may lead to incomplete use of the regulation's provisions in combating environmental crime. In this regard, point 5.1 of the regulation should, in our view, be supplemented with the following text: "the head of the Specialized Environmental Prosecutor's Office, in order to promptly or comprehensively resolve issues of combating and preventing criminal offenses against the environment, as well as ensuring the ecological security of the state, organizes methodological, information-search, and information-analytical work, and also ensures coordination of information exchange with other law enforcement agencies, state authorities of Ukraine, law enforcement agencies of foreign states, and international organizations".

It should also be noted that the problems in this area are not limited to regulatory provisions governing the activities of SEPO bodies. Studies of the role of crime analysts in law enforcement agencies indicate a lack of communication between analysts and the end users of analytical products. Moreover, some agencies lack sufficient analytical capacity to support tactical and strategic decision-making in addressing crimes related to forestry, mineral resource management, waste management, and other areas where these illegal activities pose threats to society.

Although the components of the analytical process vary, its general stages include the collection and analysis of information, the dissemination and exchange of analytical products, and the evaluation of the usefulness of analytical conclusions for producing information suitable for practical actions

(Cope, 2004). Therefore, information and analytical units should therefore share data both within their own agencies and with other crime prevention actors, which would undoubtedly have a positive impact on environmental protection.

III. THE ESSENCE AND CONTENT OF INFORMATION AND ANALYTICAL SUPPORT FOR THE ACTIVITIES OF LAW ENFORCEMENT AGENCIES IN COMBATING AND PREVENTING CRIMINAL OFFENSES AGAINST THE ENVIRONMENT

There is no unified approach to the concept, meaning and content of information and analytical support for the activities of law enforcement agencies in the scientific literature. Some call it a set of measures that allow reducing the degree of suddenness of committing criminal offenses, as well as creating favorable conditions and significantly increasing the effectiveness of their disclosure and subsequent investigation (Komisarchuk, 2017); others call it a systematic and purposeful activity to obtain, systematize, analyze, and further use information obtained from public and non-public sources in order to solve current and strategic tasks of combating crime (Tsekhan, 2021).

Analysis of the interpretations of the phenomenon under study available in the doctrine allows us to formulate the information and analytical support for the prevention and counteraction to criminal offenses against the environment as a set of measures carried out by relevant entities and aimed at searching, collecting, analyzing, systematizing and using information in order to make decisions on the prevention and counteraction to criminal offenses against the environment. The content of such activities is systemic knowledge about the state of environmental crime in general or a certain type, its development

dynamics, operational situation, investigative and operational search situation, etc., which are formed by investigators, employees of operational units, or specially created units of information and analytical support on the basis of criminal-legal, criminal-procedural, forensic, criminological and operational-search information.

In addressing the outlined issues, it is necessary to take as a "model" the approach proposed by Tomin & Lyshak (2023). In their study of information and analytical support for preventing, detecting, and investigating corruption offenses, they distinguished two interrelated elements: information activities (collection and processing of information) and analytical activities (determination of the state, structure, and dynamics of crime; identification of negative deviations within its structure; establishment of cause-and-effect relationships between determining factors; and forecasting crime trends in order to influence them). In other words, the most effective tools for information and analytical support in preventing and combating crime include methods of analytical intelligence and analytical search.

Analytical intelligence is a specific form of information and analytical work that involves collecting, systematizing, and analyzing obtained information and data on known facts in order to produce new knowledge about individuals and groups of operational interest (Movchan, 2012). When aimed at solving tactical tasks in the analyzed area, analytical intelligence entails examining environmental crime in a specific territory over a short period, as well as investigating the unlawful activities of an individual or group, in order to develop tactical measures to apprehend offenders, assess risks, and prevent specific environmental crimes. By contrast, when conducted for strategic

purposes, analytical intelligence focuses on identifying and assessing criminal threats to the environment, society, and the state. Its purpose is to determine vulnerabilities within the law enforcement system or certain areas of public relations and to develop management decisions aimed at preventing and counteracting environmental crime.

Given the specifics of most criminal offenses against the environment, as defined in Section VIII of the Special Part of the Criminal Code of Ukraine, the use of open-source information in analytical intelligence is particularly relevant. One of the most effective tools is the Open Source Intelligence (OSINT), which is based on the analysis of publicly available information. OSINT is a form of organizing and managing the collection of intelligence data, involving the search and selection of information from open sources, its extraction and analysis, and the preparation of intelligence documents to support decision-making (Electronic Encyclopedia, 2024). Its scope includes the analysis of official documents, draft statutes, monitoring of new scientific developments, databases, commercial and government websites, online journals, and more. This discipline complements existing approaches and remains equally important (Tomin & Lyshak, 2023).

By enabling analysts to process data on committed and planned criminal offenses, investigators and operational officers are able to use a ready-made operational-analytical product, rather than primary information, while receiving the following advantages: first, the product specifically outlines crime trends not only geographically, but also in time frames; second, due to the fact that the product allows for more information about the places where criminal offenses

are likely to be committed, more time and effort can be spent on preventing the commission of illegal acts in this area.

The concept of law enforcement activities based on operational data and information, known as "policing activities guided by analytics", or Intelligence Led Policing (ILP), is centered on the systematic collection and evaluation of operational information within a structured analytical process. Its purpose is to generate high-quality strategic and tactical analytical products and apply them to informed management decisions based on criminal analysis and risk assessment. Although ILP was initially developed as a strategy to combat complex, organized crime, information exchange and analytical methods can be applied to a wide range of issues faced by law enforcement agencies.

Ukrainian law enforcement bodies are gradually adopting individual elements of the ILP model. In particular, analytical work incorporates: operational analysis (telephone call data analysis, criminal group analysis, case analysis, comparative analysis); tactical analysis (criminal analysis, trend analysis, geospatial analysis, crime hotspot analysis, temporal analysis, criminal models, suspect/victim profiles); strategic analysis (SWOT analysis, PEST analysis, crime pattern and form analysis, profiling, trend analysis, geographic profiling); OSINT; and multi-source data analysis (Movchan, 2018). However, the implementation of ILP requires a systematic approach that takes into account best international practices.

In the environmental protection sphere, ILP can provide a structure for managing operational information on criminal activity in which operational data serve as the basis for identifying and assessing risks. These risks may relate to specific types of offenses –such as in forestry or subsoil use–, criminal

networks, and social consequences. Operational data also form the foundation for setting priorities and defining strategic and operational goals in crime prevention and other threats to environmental security. This model further supports decision-making regarding operational measures and the rational allocation of human, material, and technical resources.

On the other hand, the information and analytical work of the prosecutor's office is regulated by the PGO "On the General Principles of Organizing Work in the Prosecutor's Office of Ukraine" No. 365 dated 07.08.2020. According to this, the PGO, taking into account the state of the law in the country, the prevalence of violations of citizens' rights and freedoms, and state interests, as well as identified priorities in work plans, provides for specific measures on important and urgent issues. These include measures aimed at comprehensive analytical studies of existing problems, verification of compliance with legislative requirements within its powers, organization of activities in specific areas in regional prosecutor's offices, and provision of practical assistance to their leadership.

It is worth mentioning that analytical work is directed at developing measures to address shortcomings in the work of the prosecutor's office, formulating specific proposals to improve efficiency and coordination in combating crime, and enhancing regulatory and departmental acts governing the organization of prosecutorial activities (Order of the Prosecutor General's Office of Ukraine No. 365, 2020, clause 14.1).

Crime analysis allows to study the following groups of tasks: description of the state, structure, prevalence, dynamics of offenses and the implementation of state measures of social control over them, maintenance of the legality

regime (descriptive function); identification of statistical connections, dependencies, correlations of the structure and dynamics of offenses with the factors that determine them, as well as with the activities of the state and society in this area (explanatory function); clarification of trends in changes in offenses, preparation of criminological forecasts (predictive function); and identification of "alarming" moments in the state of crime, positive aspects and shortcomings in the activities of law enforcement agencies in order to make adequate management decisions on this basis (organizational and management function).

Finally, it is worth emphasizing that the use of information and the application of analytical processes in units should be preceded by the development of clear, understandable and reliable mechanisms that allow ensuring the appropriate analytical potential and access to information and analytical products. The resolution of the above issues will undoubtedly contribute to the improvement of both information and analytical activities as a process and will expand the possibilities of using analytical products as a result of this process in activities to counteract and prevent criminal offenses against the environment.

IV. PROSPECTS FOR THE USE OF THE LATEST INNOVATIVE MEANS AND TECHNOLOGIES IN COMBATING AND PREVENTING CRIMINAL OFFENSES AGAINST THE ENVIRONMENT IN UKRAINE

In the conditions of a modern digital society and rapid technological progress, methods of achieving a criminal result are being improved. Under such circumstances, traditional methods of combating crime have ceased to meet the needs of modern theory and practice, which necessitates the search for

innovative means of combating criminal offenses at the international and national levels. The feasibility of using information search systems and internet technologies to prevent and combat crime is determined, in particular, by the general processes of digitalization of the economy and society, that is, the transition to the active use of innovative information and communication technologies (ICTs) (Bugera, 2022).

Given the high level of organization and technical equipment of "ecological" criminals, particularly in the fields of forestry and subsoil use, there is a pressing need to develop innovative means of combating crime. This requires the application of modern achievements in digital, technological, and scientific progress. Based on the analysis of environmental crime trends, it is necessary to explore the prospects of using advanced information and search systems and technologies –such as GIS technologies, unmanned aerial vehicles (UAVs), electronic systems, and mobile applications– in preventing and combating illegal acts against the environment.

The current state of environmental crime demands highly effective and innovative approaches to counteraction at all levels. Modern technologies provide opportunities to collect, analyze, and utilize vast amounts of data concerning the state of the environment and the detection of criminal acts. Likewise, advanced data analysis tools facilitate the detection, disclosure, and investigation of environmental offenses, helping determine the extent of illegal impacts on protected objects and identifying those involved in unlawful activities.

Moreover, the rapid development of Its forms the basis for conceptual changes in the use of information systems. Today, databases of various

institutions and organizations, including law enforcement agencies, contain vast amounts of information whose effective use can optimize processes of combating crime. Modern automated information and search systems –such as satellite imagery, GIS technologies, UAVs, electronic systems, and mobile applications– are playing an increasingly important role in the detection and investigation of criminal offenses (Sakovsky & Klymchuk, 2019).

Their criminological role should also be emphasized, as these technologies enhance monitoring, data collection and analysis, modeling of criminogenic processes, forecasting, and prevention of crime by environmental and law enforcement agencies based on criminologically significant information. In that sense, the criminological principles of using information search systems and internet technologies for crime prevention consist in employing modern ICTs at the national, special criminological, and individual levels. These are applied to collect, store, and analyze criminologically significant data, predict crime, counteract its determining processes, and support the resocialization of potential offenders (Bugera, 2022).

In other words, the issue of a "painless" transition to digital reality technologies, the introduction of appropriate tools to combat environmental crime, the establishment of clear information and analytical processes, and the effective management of environmental monitoring for a prompt response to anthropogenic impacts on the environment is highly relevant in Ukraine.

Modern innovative technologies and equipment have become an integral part of the activities of law enforcement agencies in combating environmental crimes in various countries (Marko & Semenyuk, 2023). In the United States of America (USA), Canada, Germany, France, and Great Britain,

the challenges of general and situational environmental monitoring –aimed at promptly identifying risks of anthropogenic impact and enabling environmental and law enforcement agencies to respond– are successfully addressed through the use of GIS technologies, whose core is satellite remote sensing systems of the Earth.

In the same line, law enforcement agencies abroad use GIS technologies (GPS in the USA, GALILEO in European countries) with significant success, particularly in combating deforestation, illegal mining, and other criminal offenses. Long-term experience with these tools demonstrates their practical effectiveness and vast potential to increase the efficiency of criminal justice agencies by enabling the prompt acquisition and active use of criminological and forensic information.

GIS technologies also make it possible to analyze digital maps and detect discrepancies between the current state of the environment and legal requirements. Violations such as illegal logging or unlawful waste dumping can be identified through these maps. Additionally, these systems can be used to plan patrol and monitor routes. Satellite systems allow authorities to effectively cover and control large territories, and remotely monitor and analyze landscapes, protected natural areas, forests, and water bodies to detect unauthorized logging, water pollution, and other illegal environmental impacts.

Law enforcement agencies also integrate multiple sources of information, including video surveillance, mobile data, automatic license plate recognition systems, and other sensors. This data can be mapped geographically to determine the location of offenders. According to this, the use of modern GIS and satellite technologies makes it possible to predict potential sites of damage

and respond quickly. Heat maps help identify areas with high offender activity or frequent offenses. Furthermore, GIS technologies can be employed for joint operations between different law enforcement agencies and environmental organizations, facilitating coordinated actions and the exchange of critical information.

The use of UAVs in environmental monitoring and protection offers significant advantages. With the support of GIS technologies, UAVs enable remote sensing of the Earth's surface, making it possible to apply widely available geographical tools in crime prevention (Babenko, 2015). These aircraft can rapidly cover large areas and inaccessible locations, ensuring effective monitoring of nature reserves and extensive forest zones. Equipped with video cameras and other sensors, UAVs allow the collection of high-quality data to identify potential damage and detect illegal environmental activities.

UAVs hold a special place among modern robotic systems and innovative technologies available to law enforcement agencies in combating crime. Their wide functionality makes them particularly effective, as they combine automatic piloting with the real-time collection and transmission of forensically relevant information. This is achieved through advanced navigation systems, aerial photography and video recording (multispectral, magnetic, large-scale photography, photogrammetry, etc.), video surveillance, mapping, 3D modeling, air quality analysis, as well as infrared and thermal imaging of landscapes, facilities, and buildings.

Given the aforementioned, effective prevention of environmental crime in the context of rapidly developing internet technologies requires

environmental protection and law enforcement agencies to maintain a constant technological advantage over those who exploit technological progress for criminal purposes. This high-tech approach to crime prevention represents a modern trend in criminological science, enhancing the effectiveness of preventive measures through the use of ICTs for the collection, exchange, analysis, storage, and mapping of criminological data, crime prediction, and the development of preventive strategies at the general social, special criminological, and individual levels.

In that sense, and considering the inadequate state of information and analytical support for preventing environmental crimes –particularly illegal activities in forestry and subsoil use carried out by organized criminal groups– the steady growth of information resources and their active use by criminal structures highlight the need for new solutions. The development of specialized software based on advanced ITs, aimed at improving the detection, documentation, and prevention of such offenses, will strengthen information and analytical efforts. These include the introduction of modern ICTs, the establishment of specialized information and analytical units within law enforcement agencies, the implementation of reliable information security systems in automated search platforms, and the enhancement of personnel training and retraining for specialized units.

Also, monitoring and generalization of environmental crime should be conducted through analytical search focused on identifying, collecting, analyzing, and evaluating both strategic and tactical information about events and phenomena of anthropogenic impact on the environment. The mechanism for monitoring and generalizing crime in this area, based on information that is

diverse in content and significance, is intended to address not only operational and tactical tasks in combating environmental crime but also criminological tasks of a strategic and situational nature. In this context, under the leading role of the prosecutor's office, a clear and systematic exchange of operational information should be established and ensured among the authorized units of the National Police of Ukraine and other entities directly or indirectly involved in combating crime in this area, with a systemic approach.

Finally, the effectiveness of preventive activities will be enhanced by introducing into the practice of territorial units of the National Police, the SBI, the Security Service of Ukraine, and other law enforcement agencies new technologies such as GPS monitoring, GPS navigation, and GPS tracking systems. In combating environmental crime, the technical capabilities of these systems make it possible to accurately position various objects (vehicles, individuals, criminal tools, etc.) on the ground, determine their exact location and movement routes, and identify optimal directions of movement for law enforcement officers.

V. CONCLUSIONS

Effective counteraction to environmental crime in Ukraine, especially its organized forms, is possible if there is proper legal regulation of information and analytical support for this activity, which should meet the best foreign standards. Such support includes two key components: information, which provides for the legal regulation of the collection, processing, accumulation and systematization of data on crimes against the environment and their subjects; and analytical, which includes the legal analysis of the state, structure and

dynamics of environmental crime, the identification of determinants of criminal behavior, as well as the legal assessment of projected changes.

The most effective mechanism for countering such offenses is the use of analytical intelligence and analytical search methods, which make it possible to obtain relevant information about potentially illegal activities in specific territories within the framework of criminal proceedings. Their lawful application enables the identification of patterns of environmental crime, offender typologies, and the development of targeted criminal law prevention measures; and the key legal challenge remains improving the information base: ensuring its qualitative content, structuring, and the legal regulation of access and data exchange between entities authorized to detect, investigate, and suppress violations in the field of environmental protection.

To ensure the effective functioning of authorized bodies in the field of environmental safety, it is necessary to focus on creating and legally consolidating modern environmental information banks. Such systems would enable criminological forecasting and the implementation of special criminological and individual preventive measures within the current legal framework.

Likewise, the successful implementation of information and analytical concepts in law enforcement activities requires comprehensive legal support, including the development of methodological principles, the regulation of procedures for collecting and analyzing information, and the establishment of an appropriate technical and personnel base. This includes regulatory provisions for the training of expert analysts, the creation of a legal mechanism

for evaluating information sources, and the legal unification of analytical IT programs in line with international standards.

In that sense, modern geoinformation technologies –such as UAVs, heat maps, and environmental monitoring systems– should be legally integrated into the practice of monitoring compliance with environmental legislation. Their lawful application allows not only the prompt detection, documentation, and transfer of violations to authorized bodies, but this also ensures a significant preventive effect, both in terms of general and individual crime prevention. In Ukraine, these technologies should be institutionalized as an integral tool of criminal law response to environmental offenses, including illegal logging, water pollution, and unlawful emissions.

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