E-administracja
Wyzwania dla cyfrowych usług publicznych w Unii Europejskiej

E-Government
Challenges for Digital Public Services in the EU

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Sławomir Dudzik · Inga Kawka · Renata Śliwa

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Yuliia Volkova[1]
Yuliia Leheza[2]

Digitalization of the Environmental Protection

Abstract: This article is devoted to the problems of digitalization and regulatory and legal security of public information services in the field of environmental protection. The article focuses on establishing the essence and content of the security of public information services in the field of environmental protection, carries out a retrospective analysis of such a concept and establishes the current state of normative regulation of their use. The authors put forward the thesis that the regulatory framework ensuring the security of public information services in the field of environmental protection is an extensive set of legislative and subordinate legal acts, the current state of which requires systematization in order to achieve an adequate level of efficiency in exercising the right to information.

The article emphasizes that the digital transformation of society in modern conditions is an objective process but is not always carried out in accordance with certain rules determined by national legislation, considering international legal principles and approaches to the consolidation and implementation of human rights and freedoms. Today, the issues of transformation of the social policy in

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the context of the development of the digital economy are relevant. High-quality and effective social protection in the conditions of informatization should be one of the main priorities of the state.

Keywords: digitalization, administrative services, administrative proceedings, administrative process, environment, information security, national security, public administration, public interest

Cyfryzacja ochrony środowiska

Abstrakt: Artykuł poświęcony jest problematyce cyfryzacji oraz bezpieczeństwa regulacyjnego i prawnego usług informacji publicznej w zakresie ochrony środowiska. Skupiono się w nim na ustaleniu istoty i treści bezpieczeństwa tych usług. Dokonano również retrospektywnej analizy normatywnych rozwiązań w tym obszarze, a także przedstawiono aktualne akty prawne oraz to, jak są stosowane. Autorki stawiają tezę, że ramy regulacyjne zapewniające bezpieczeństwo usług informacji publicznej w zakresie ochrony środowiska to rozbudowany zbiór ustawowych i wykonawczych aktów prawnych, których obecny stan wymaga usystematyzowania w celu osiągnięcia odpowiedniego poziomu efektywności w korzystaniu z prawa do informacji.

W artykule podkreślono, że cyfrowa transformacja społeczeństwa we współczesnych warunkach jest procesem obiektywnym, jednak nie zawsze przebiega zgodnie z pewnymi zasadami określonymi przez ustawodawstwo krajowe, z uwzględnieniem międzynarodowych zasad prawnych oraz podejścia do konsolidacji i realizacji praw i wolności człowieka. Zagadnienia transformacji polityki społecznej w kontekście rozwoju gospodarki cyfrowej są aktualne, a wysokiej jakości i skuteczna ochrona socjalna w warunkach informatyzacji powinna być jednym z głównych priorytetów państwa.

Słowa kluczowe: cyfryzacja, usługi administracyjne, postępowanie administracyjne, proces administracyjny, środowisko, bezpieczeństwo informacji, bezpieczeństwo narodowe, administracja publiczna, interes publiczny

1. Introduction

The digitalization of society in modern conditions is an objective process that should be carried out in accordance with certain rules determined by national legislation, considering international legal principles and approaches to the consolidation and implementation of human rights and freedoms. Digitalization has enormous poten-

tial for improving the environmental situation, reducing greenhouse gas emissions, reducing industrial waste, etc.

The key projects of the digitalization of the environmental sphere of Ukraine are as follows:

- Creation of a national system of independent environmental monitoring and evaluation of aquatic ecosystems and water supply, atmospheric air and land ecosystems;
- Creation of electronic registers of natural resources (in an e-governance system) in order to provide information to public institutions and other users to support decision-making in the field of natural resource management, early warning and response and recovery in case of an emergency;
- Creation of an analytical system integrated into the European online system Shared Ecology Infrastructure System (SEIS) for analysing short-term and long-term trends in biodiversity, pollution, weather conditions and ecosystem evolution, as well as for planning measures to prevent harmful changes;
- Stimulating development by the public and business of mobile applications of "environmental patrols" (air, land and water resources) with the possibility of alerting law enforcement agencies of illegal activities (pollution, poaching, cutting down trees, illegal landfills, etc.).

2. Digitization as an important component to bring Ukrainian legislation in the field of environmental protection closer to EU requirements

At the present stage, humanity is facing serious problems that require the active participation of all parties involved, including citizens and the state. Climate change and the scarcity of natural resources require a new paradigm of growth in which economic and social progress guarantees sustainable development. The World Commission on Environment and Development has defined sustainable development as the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs.[3]

The UN General Assembly resolution, "Transforming Our World: The 2030 Agenda for Sustainable Development," adopted at the UN Summit on Sustainable Development in 2015, proclaimed 17 Sustainable Development Goals and 169 targets

[3] S. Al-Omoush, V. Simón-Moya, J. Sendra-García, *The Impact of Social Capital and Collaborative Knowledge Creation on e-Business Proactiveness and Organizational Agility in Responding to the COVID-19 Crisis*, "Journal of Innovation & Knowledge" 2020, vol. 5, no. 4, pp. 279-288.

that would stimulate activities in areas of public life that are strategically important for humanity and the planet in the long term. Sustainable development focuses on nature protection and has become the basis for the adoption of the 2030 Agenda, which sets the global goal of ensuring the well-being of people while protecting the planet.[4]

In the context of the digital transformation of the state and society, and Ukraine's integration into the European and Euro-Atlantic security space, the priority areas of protection of national interests in the field of security are the restoration of peace, territorial integrity, state sovereignty, ensuring environmental safety, creating safe conditions for human life, etc. In the current conditions, the global challenge for Ukraine has become Russia's aggression and the beginning of a full-scale war, resulting in the depletion of natural resources and adverse consequences for environmental degradation.

As a result of the full-scale war the environmental problems that existed in Ukraine before it began have become much more complicated. The lack of access to territories and objects of environmental management, loss and destruction of infrastructure, loss of personnel and limited ability to work, as well as suspension of control measures and abolition of the obligation to pay environmental tax during martial law have negatively affected the ability to fully implement public administration in the field of environmental protection.[5]

During the war there has been a need to assess environmental damage from the war and the costs of its restoration. The scale of environmental crimes committed by the Russian occupiers is already striking. Some ecosystems and unique natural objects can no longer be restored. If environmental damage is evident its assessment requires new approaches, as the full extent of damage and environmental damage remains unknown, as monitoring systems have been disrupted or destroyed, and access to forests and other natural areas is limited or absent. The facts of environmental damage from the Russian invasion are recorded within the framework of the functioning of the information panel EcoThreat and the work of the operational headquarters at the State Environmental Inspectorate. Currently, more than 330 events that pose a threat to the environment on the territory of Ukraine have been recorded.

According to the National Council for the Recovery of Ukraine from the consequences of the war, about 20% of the area of all protected areas of Ukraine are in danger, 17 Ramsar sites with a total area of 627.3 thousand hectares remain under

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4 United Nations, *The Future We Want: Final Document of the Rio+20 Conference*, http://www.uncsd2012.org/content/documents/779 futurewewant_ukrainian.pdf (11.10.2023).

5 Project of the National Council for the Recovery of Ukraine from the Consequences of the War. Recovery Plan for Ukraine, https://uploads-ssl.webflow.com/625d81ec8313622a52e2f031/62c457d4c39945055f748815_Environmental%20safety.pdf (11.10.2023).

threat of destruction, along with approximately 160 territories of the Emerald Network with an area of 2.5 million hectares and 4 biosphere reserves. This threatens strategic biodiversity conservation goals, leads to a decrease in the potential for absorption of greenhouse gases and enhances the process of desertification. Endemic species of plants and animals are critically threatened, and their extinction will have catastrophic consequences for biodiversity on a planetary scale. Almost three million hectares of forest in Ukraine have been affected by hostilities. Because of the war more than 4.6 million people in Ukraine have problems accessing drinking water.

Environmental and safety risks are growing, hazardous waste from destruction and military waste are generated, 160 thousand square kilometres of Ukrainian territories are contaminated with explosive objects. As a result of the destruction of buildings, a large amount of waste is generated, containing ozone-depleting substances, in particular, insulation materials, insulation foam, etc. Pollution occurs due to the destruction of transport and industrial infrastructure, which leads to large-scale spills of petroleum products and other hazardous substances. Because of the war more than 227 enterprises, plants and factories, including chemical enterprises, have been damaged or destroyed. The activity of several mining enterprises stopped, which led to a shortage of salt, coal and other minerals; the state of the deposits and the possibility of their further development remain in question.[6]

In this regard, the strategic goals of postwar recovery are, first of all, a healthy environment. In order to achieve this it is necessary to integrate climate goals into all sectors of the economy and public life, minimize risks to environmental safety (chemical and radiation), reduce and prevent industrial pollution and introduce the principle of "polluter pays," effective waste management, balanced use of natural resources and ensuring their proper quality, conservation of biodiversity, restoration and development of protected areas and achievement of European standards of public administration in the field of environmental protection.

In addition, in order to achieve these goals, key reforms need to be implemented: integrated climate policy, regulation of environmental safety (chemical and radiation), industrial pollution regulation, effective waste management, balanced use of natural resources, management of protected areas for the conservation of landscape and biological diversity, effective public administration in the field of environmental protection, ecological control, legal responsibility, complex environmental monitoring, etc.

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[6] Project of the National Council for the Recovery of Ukraine from the Consequences of the War. Ukraine Recovery Plan, https://uploads-ssl.webflow.com/625d81ec8313622a52e2f031/62c457d4c39945055f748815_Environmental%20safety.pdf (11.10.2023).

At each stage of the Recovery Plan of Ukraine, developed by the National Council for the Recovery of Ukraine from the Consequences of War, it aims to achieve the following operational goals in the direction of environmental safety: development and adoption of the necessary legal framework in the field of environmental protection; nuclear and chemical safety; climate and sustainable use of nature in accordance with the requirements of EU legislation; conducting an audit of losses and assessment of environmental damage; renewal of registers in the field of environmental protection; and integration of the environmental and climatic component into the postwar recovery process.

By 2025 it is planned to determine compensation mechanisms for environmental damage and compensation for: the cost of restoring environmental protection facilities affected by hostilities; strengthening the institutional capacity of public administration in the field of environmental protection and sustainable use of nature, in particular, environmental monitoring and control; digitalization of the industry; the implementation of a new permitting system for the prevention, reduction and control of industrial pollution; the implementation of systems of extended producer responsibility for packaging waste, batteries and accumulators, electrical and electronic equipment removed from operating vehicles; stimulation of the prevention of generation; increase in the volume of recycled and reused waste from the extractive industry in the restoration and development of a network of protected areas that meet the best European practices.

By 2032 it is envisaged to develop environmental monitoring systems to launch the National System for Greenhouse Gas Emission Quotas Trading, develop waste management infrastructure, draw conclusions on the best available technologies and management methods (BATM) in accordance with European regulations of industrial pollution from an achieved "good" ecological state of water for nine districts of river basins; and restore ecosystems on the territory of all nature reserves violated as a result of Russian aggression.

The postwar recovery plan provides for the achievement of various results, in particular, through the process of digitalization, some of which have already been implemented: environmental and climate goals are integrated into sectoral policies (synchronized with the European Green Deal); the level of chemical, radiation and nuclear safety has been increased; the waste management system has been improved; 142 waste management facilities have been created; reduced industrial pollution (a quantitative assessment will be made after the end of hostilities); a state system for monitoring the state of the environment was created in accordance with European standards; 10 protected areas have been created that meet the best European practices; public administration has been reformed in accordance with the principles of SIGMA/

OECD; the digitalization of the industry has reached a level of more than 60% trust in environmental control, etc.

Moreover, it should be noted that Ukrainian environmental legislation is gradually approximating EU requirements. The Verkhovna Rada of Ukraine has amended the Law of Ukraine in the field of nuclear energy use and radiation safety. New definitions have been introduced and procedures for issuing permits have been improved, changes in the Forest, Land, and Water Codes of Ukraine have been envisaged. State authorities were also invited to pay attention to the expediency of amending the Law of Ukraine "On the Zone of Ecological Emergency Situation." In particular, the Law of Ukraine dated 3 November 2022, No. 2717-IX, amended the laws of Ukraine "on environmental protection" and "on strategic environmental evaluation." This is an important European legal integration act adopted to fulfil Ukraine's obligations under the Association Agreement with the European Union.

The law will come into force on 19 May 2023 and provides that from this moment the Unified Register of Strategic Environmental Assessment (SEA) will start functioning, which is public and open access to all that is provided via the Internet. The maximal openness of environmental data enables the eco-community and all stakeholders to participate in environmental decision-making, makes the procedure more transparent, brings environmental legislation closer to the European and ensures compliance with the Aarhus Convention. The Unified Register of SEA should: publish information on applications and determination of the scope of the SEA; draft the state planning document; report, in the SEA, notification of the comments and suggestions of the public publication of these documents; certify public discussion, comments and suggestions of executive authorities, certify consultations; approve documents in state planning and decisions on their approval; result in monitoring the consequences of the implementation of the state planning document for the environment and public health; measures taken to eliminate negative consequences, etc.

At the same time, the law provides for: empowering customers of state planning documents to enter SEA reports into the Unified Register; empowering the Ministry of Environment to maintain the Unified Register of SEAs; determining the procedure for maintaining the register by the Cabinet of Ministers of Ukraine. The law also attributes, to the competence of the Ministry of Ecology and Natural Resources, the organisation and implementation of state supervision (control) over compliance with SEA legislation, types of offenses in the field of SEA and responsibility for their commission.

By the Law of Ukraine dated 16 November 2022 No. 2762-IX, the Verkhovna Rada of Ukraine decided to amend the Law of Ukraine "On the Use of Nuclear

Energy and Radiation Safety" in order to bring it in line with the requirements of Council Directive 2014/87/Euratom of 8 July 2014 and Council Directive 2013/59/Euratom of 5 December 2013.

The law of Ukraine dated 16 November 2022 No. 2755-IX amended the Law of Ukraine "on permitting activities in the field of nuclear energy use" in order to bring it in line with the provisions of Council Directive 2013/59/Euratom of 5 December 2013. This concerns the optimization of permitting activities in the field of nuclear energy use. In addition, the law is aimed at improving the procedure for issuing permits for activities in the field of nuclear energy use.

The Law of Ukraine dated 16 November 2022, No. 2758-IX, amended the Law of Ukraine "On Nuclear Energy Use and Radiation Safety" regarding radiation protection expert. The purpose of its adoption is to enable entities operating in the field of nuclear energy use, other legal entities and individuals, authorities to use the recommendations (consultations) of qualified radiation protection experts, whose competence is recognized in established procedure, when planning and implementing measures for radiation protection of personnel and the public.

According to Resolution No. 2768-IX, dated 16 November 2022, the Verkhovna Rada of Ukraine, adopted as a basis the draft Law of Ukraine on Amendments to Certain Legislative Acts of Ukraine on the state systems of Environmental Monitoring, Information on the State of the Environment (Environmental Information) and Information Support of Environmental Management. Draft Law No. 7327 of 28 April 2022 provides for amendments to the Forest, Water, Land Codes of Ukraine, the laws of Ukraine "On Environmental Protection," "On the Nature Reserve Fund of Ukraine," "On Ensuring Sanitary and the Epidemic Welfare of the Population," "On Atmospheric Air Protection," "On Access to Public Information," etc.

According to the amendments envisaged by the draft law, the following are defined: basic principles for the creation and function of the state environmental monitoring system and its subsystems; the procedure for the creation and function of the network of the national environmental automated information and analytical system for ensuring management decision-making and access to environmental information.

The Resolution of the Cabinet of Ministers of Ukraine No. 1249, dated 4 November 2022, approved the procedure for the implementation of an experimental project to obtain a certificate on determining the values of background concentrations of pollutants in atmospheric air by a calculation method in electronic form. The procedure determines that obtaining this certificate is carried out when hydrometeorological organisations of the SES do not monitor the state of air quality at stationary points. To obtain a certificate, individuals, individual entrepreneurs and legal entities

must submit a request through the unified environmental platform, EcoSystem. The applicant is notified of the readiness of the document and, if necessary, the certificate can be printed from the EcoSystem.

The Cabinet of Ministers of Ukraine, through Order No. 992-p, dated 4 November 2022, approved the Concept of the National Targeted Environmental Program for Radioactive Waste Management. The draft of this program should be developed and submitted within 20 months by the State Agency for Exclusion Zone Management. The purpose of the document is to implement the measures defined by the Strategy for Radioactive Waste Management in Ukraine, which was approved by order of the Cabinet of Ministers, no. 990, on 19 August 2009.

In pursuit, the program will contribute to the improvement of the regulatory framework for radioactive waste management, considering European legislation as well as environmentally safe and cost-effective radioactive waste management in Ukraine.

By its Order No. 1004, dated 8 November 2022, the government approved a draft agreement between the Cabinet of Ministers of Ukraine and the government of Romania on the implementation of the Convention on Environmental Impact Assessment in a Transboundary Context. On November 17, 2022, representatives of the Government of Romania and the Cabinet of Ministers of Ukraine signed this agreement. The document covers the Carpathian region and common transboundary river basins, including the Danube delta. It is planned that, thanks to this agreement, Romania and Ukraine will be able to agree on the fulfilment of the requirements of the Espoo Convention during the construction of the Danube–Black Sea canal along the Bystre estuary and in other joint cross-border projects. The implementation of the agreement will help to solve urgent problems in the field of environmental protection, in particular the process of restoring the state of the environment of Ukraine after the end of the war.

Orders no. 457, dated 1 November 2022, no. 482, dated 9 November 2022, and no. 48, dated 11 November 2022 have approved amendments to the Action Plan of the Ministry of Ecology and Natural Resources for the preparation of draft regulatory acts for 2022. In particular, the list includes draft acts: "Some Issues of the Functioning of EcoThreat" in the area of fixing environmental damage caused as a result of Russia's military aggression; the draft law of Ukraine "On Amendments to the Law of Ukraine on Environmental Impact Assessment;" and the draft resolution of the Cabinet of Ministers of Ukraine "On Amendments to the Procedure for Transfer of Documentation for Providing an EIA Conclusion and Financing of EIA."

In addition, digitalization of environmental protection contributes to the implementation of the state anticorruption programs for 2023-25, which include 40 out of 1,700 measures in the field of environmental protection. Among anticorruption

tools, the government proposes strengthening digitalization and publishing up-to-date information on natural resources, in particular, the following: Anti-corruption measures will also include: publication of open data during martial law; updating environmental registries; creation of new and the development of existing IT systems and their integration into EcoSystem for the online transfer of all services in the field of environmental protection; continuation of the national forest inventory; annual monitoring of the effectiveness of the unified state system of electronic timber, accounting for all permanent forest users; the monitoring and systematization of data on the sale of 100% unprocessed timber at auctions, etc.

It should be noted that the Ministry of Ecology and Natural Resources has been purposefully implementing anticorruption measures in recent years, particularly those related to digitalization and deregulation. Thus, in 2021, the ministry launched the unified state environmental platform EcoSystem and continues to transfer services online. EcoSystem is already used by almost 13,000 Ukrainians. During this time they received almost 5,000 services online, some of which were without the participation of a civil servant. In 2023, the government began work on creating a "free regulatory environment." Ukraine has set a goal to make a leap from a transition economy to an emerging economy in 10 years, and deregulation is one of the steps towards this goal. According to the conclusions of the Interagency Working Group, 40.7% of available environmental services in the field of environmental protection should be provided in digital format. Of these, 22% have already actually been implemented or are at the stage of completing digitalization. Another 45% need to be cancelled due to obsolescence and inefficiency.[7]

The digitalization of environmental protection continues in Ukraine. In particular, on January 3, an updated version of the law "On Amendments to the Tax Code of Ukraine and Other Laws of Ukraine to Promote the Restoration of Ukraine's Energy Infrastructure" entered into force. The Cabinet of Ministers also amended Resolution No. 302, "On approval of the procedure for carrying out and paying for work related to the issuance of permits for emissions of pollutants into the air from stationary sources, accounting of enterprises, institutions, organisations and citizens – entrepreneurs who have received such permits". From now on, the procedure spells out a transparent mechanism for obtaining a permit, clearly regulates the terms of work and provides for electronic interaction with the State Consumer Service to draw up a conclusion on obtaining a permit and provides for digitalization of this procedure.

[7] Ecopolitic, https://ecopolitic.com.ua/ua/news/kabmin-zatverdiv-antikorupcijnu-programu-dlya-sferi-dovkillya/ (11.10.2023).

The Verkhovna Rada Committee on Environmental Policy and Nature Management revealed a report for 2022. According to it the committee held 40 meetings, at which 197 issues were considered, including 62 on monitoring the implementation of laws, resolutions and its own decisions. Submitted to the Verkhovna Rada of Ukraine and considered at the committee meeting were 13 bills and 2 draft resolutionsm, for the preparation of which the committee was designated as the main one, and 78 opinions on the draft laws were sent to the primary committee.[8]

At the same time, in January 2023, the human rights organisation Ecology – Human Rights Law published an analysis of the legal component of environmental protection in the European Court of Human Rights. This article deals with the view of the European Court of Human Rights on the possibilities of protecting the environment based on the Convention for the Protection of Human Rights and Fundamental Freedoms. The current practice of the ECHR is investigated, which demonstrates the possibilities for using the ECHR mechanisms for the benefit of the environment and conservation of nature. In addition, the ways of possible use of such mechanisms for environmental protection have been demonstrated.[9]

Digitalization of the environmental sphere in Ukraine continues in conditions of military conflict. Thus, the Encyclopaedia of Eco-Solutions was presented, which contains more than 200 instructions for the implementation of ecological solutions: from sorting and planting trees to restoring lakes and reclamation of landfills. In general, the large-scale digitalization of the environmental protection sector started in 2021. Today, EcoSystem is actively developing and adding new features.

EcoSystem is a platform that provides access to all environmental information and services just in one click. Users can find out what kind of air they breathe, the quality of the water, what is happening with forests and protected areas, and whether enterprises are working honestly and safely in their locality. In addition, EcoSystem allows users to submit documents online to receive an administrative service, report violations of environmental legislation, easily join public discussions, strategic environmental assessment procedures and or environmental impact assessment. Users can also become an active participant in solving important environmental issues.

EcoSystem is the only online platform in the field of environmental protection which was created to ensure that everyone has up-to-date and reliable information

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8 *2022 Annual Report Committee of the Verkhovna Rada of Ukraine on Environmental Policy and Nature Management*, https://komekolog.rada.gov.ua/uploads/documents/37249.pdf (11.10.2023).

9 *Environmental Protection Through the Prism of ECHR Case Law*, http://epl.org.ua/wp-content/uploads/2023/01/Zahyst_dovkillya_cherez_pryzmu_praktyky_YESPL.pdf?fbclid=IwAR38XqpdhJeAogeCIxGQV-ccohE0TvYKhAy3I5FU-PYAYBoerLma1pTajJs (5.10.2023).

on the state of the environment and natural resources, as well as interact with users in a transparent and convenient way. The project will contain monitoring data on the state of air, water and soil in settlements; all registers maintained by the Ministry of Ecology and Natural Resources and central authorities that we coordinate; a full range of online services for citizens and businesses with updated information on topics, reporting calendars and mailings. This is all done to ensure that citizens, when searching for necessary information, do not have to visit multiple sites, submit requests and wait for an answer. It also aims to facilitate a transparent, constructive and convenient dialogue between citizens and the state without excessive bureaucracy. These efforts are aimed at making it easier for citizens to quickly access services and officials to do their jobs honestly.

In addition, several resources have been developed:

1. e-Environment is a resource that collects all information from institutions that monitor the environment in different areas – air, water, soil, etc.[10]

2. e-Air is an electronic service with convenient access to information on permitted emissions into the air with the function of obtaining such a permit, where one can check information on whether a company has a permit for emissions of pollutants, who is the environmental auditor and much more. With the help of the service one can apply for a permit, register a report on the inventory of sources of pollutant emissions, issue a certificate of environmental auditor and use other administrative services.[11]

3. e-Forest is an electronic system for state and public control over forestry where one can find forest monitoring data, information on fires and estimated forest cuttings, issue online logging and forest tickets, certificates of origin of timber, hunting certificates and annual control cards to account for harvested game and violations of hunting rules.[12]

4. e-Subsoil is an electronic system for recording special permits for subsoil use and electronic auctions where one can apply online for a special permit for subsoil use based on the results of auction sales.[13]

5. e-Water is an electronic system for recording water users and the pollution of water bodies where one can find information on the largest polluters of water bodies,

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[10] e-Environment, https://web.archive.org/web/20220105194720/https://eco.gov.ua/categories/e--dovkillya (15.10.2023).

[11] e-Air, https://web.archive.org/web/20220105200820/https://eco.gov.ua/categories/e-povitrya (11.10.2023).

[12] e-Forest, https://web.archive.org/web/20220105194717/https://eco.gov.ua/categories/e-lis (13.11.2023).

[13] e-Subsoil Use, https://web.archive.org/web/20220105194714/https://eco.gov.ua/categories/e--nadrokoristuvannya (11.11.2023).

issued permits for dredging, as well as work on water fund lands within coastal protective strips along seas, bays and estuaries, in inland sea waters, estuaries and territorial seas. In addition, one must obtain an online permit for special water use and submit annual reports.[14]

6. e-Waste is an electronic waste accounting and monitoring system where one can find registers of waste disposal sites, waste disposal reports and information on enterprises authorized to work with hazardous waste and enterprises that can produce particularly hazardous chemicals. In addition, administrative services such as waste declaration submission and paperwork for cross-border waste movement are available online along with licenses for conducting economic activities for hazardous waste management and licenses to produce highly hazardous chemicals.[15]

7. e-Pesticides is an electronic accounting system for pesticides and agrochemicals which contains information on pesticides and agrochemicals permitted for use, on state tests and registration of these substances. This system allows the online registration of pesticides and agrochemicals, and permission to import and use unregistered pesticides and agrochemicals for scientific and research purposes.[16]

8. e-Ecocontrol is an electronic environmental control system with the help of which one can notify relevant authorities about illegal activities and find information on scheduled and unscheduled inspections conducted by the State Environmental Inspectorate and their results.[17]

9. e-Strategic Environmental Assessment is an electronic system of strategic environmental assessment of draft state planning documents, which is an assessment of the likely environmental and socioeconomic consequences of the implementation of various long-term development scenarios. Here, customers can submit an application for determining the scope of an SEA, organize public discussions, receive comments and suggestions from relevant government agencies, report on the strategic environmental assessment and spread information on the approval of the state planning document. The public can send their comments and suggestions to the CEO customer,

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[14] e-Water, https://web.archive.org/web/20220105200822/https://eco.gov.ua/categories/e-voda (11.10.2023).

[15] e-Waste, https://web.archive.org/web/20220105194713/https://eco.gov.ua/categories/e-vidhodi (11.10.2023).

[16] e-Pesticides, https://web.archive.org/web/20220105200741/https://eco.gov.ua/categories/e--pesticid (11.10.2023).

[17] e-Ecocontrol, https://web.archive.org/web/20220105194715/https://eco.gov.ua/categories/e--ekokontrol (11.10.2023).

monitor their consideration and analyse the relevant reports as well as operate with objective and reliable information.[18]

10. e-Nature Reserve Fund is an electronic system for accounting and monitoring the use of natural resources within the territories and objects of the nature reserve fund of Ukraine, where one can find complete information about the protected areas of Ukraine, flora and fauna, learn about the established limits on the use of natural resources, as well as use the relevant administrative services online.[19]

11. e-Environmental Impact Assessment is an electronic environmental impact assessment system. Information from the Register of Environmental Impact Assessment, information, and an analytical system for calculating environmental risks and relevant administrative services are available to users.[20]

3. Public information services in the field of environmental protection

In today's conditions of state-building, it is aimed at activating the processes of ensuring the information circulation security, introducing the concept of e-government based on transparency, accessibility, minimizing manifestations of subjectivity in making managerial decisions in general, and in particular in the field of environmental protection. The solution of such problems is associated with the creation and technical and organisational regulatory support of the functioning of public information resources and other types of electronic services. Security, accessibility and openness of public information services for the consumer of administrative services is the key to the introduction, at the proper level, of a system of guarantees for the implementation and protection of the subjective public and private rights of a person. Thus, public information services in general, and in particular in the field of environmental protection, are a guarantee of ensuring the proper level of exercise of human rights, which consists of the availability of administrative environmental services, public environmental information and procedures for obtaining licenses (permits) for the special use of natural resources.

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[18] e-Strategic Environmental Assessment, https://web.archive.org/web/20220105194718/https://eco.gov.ua/categories/e-seo (11.10.2023).

[19] e-Nature Reserve Fund, https://web.archive.org/web/20220105194717/https://eco.gov.ua/categories/e-pzf (11.10.2023).

[20] e-Environmental Impact Assessment, https://web.archive.org/web/20220105194722/https://eco.gov.ua/categories/e-ovd (11.10.2023).

The issue of organisational and legal support for the functioning of public information services in the field of environmental protection is an urgent issue and requires research attention. The establishment of the content of the system of public information services was carried out within the framework of scientific publications of several domestic scientists. In particular, it is necessary to single out the dissertation of I. O. Tishchenkova, "Electronic Services in the Activities of Public Administration" (2015)[21], where the scientist was one of the first to raise the question of the need for regulatory regulation of the online form for providing administrative services in general and, in particular, in the field of environmental protection. In the future, the generalization of the problems of providing public services in general and, in particular, public environmental services are reflected in the doctoral dissertation of E. O. Legeza (2017).[22] G. O. Blinova's dissertation on the topic "Administrative and Legal Principles of Information Support of Public Administration Bodies in Ukraine: Topical Issues of Theory and Practice" (2019)[23] examines the issues of separating criteria for classifying the existing information needs of an individual and the ability to satisfy them within the framework of exercising the competence of public administration bodies. The administration scientist distinguishes several criteria for classifying the system of information support for public needs. These include administrative and legal status, the information needs of central executive authorities and the information needs of local governments. In addition, the classification may depend on the territory of distribution of information, which may include local, national and international information needs.

Depending on the areas of activity, according to G. O. Blinova, organisational, personnel, security, financial, resource, control, and supervisory needs are highlighted. The establishment of the content and the structural and logical system of information support for the activities of public administration bodies was carried out in the dissertation of A. G. Chornous, on the topic "Administrative and Legal Regulation of the National Information Infrastructure of Ukraine" (2020).[24]

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21 I. O. Tishchenkova, "Electronic Services in Public Administration", Dnipropetrovsk 2015, [thesis for the degree of Doctor of Law].

22 E. O. Legeza, "The Concept of Public Services: Administrative and Legal Aspect", Zaporizhzhia 2017, [thesis for the degree of Doctor of Law].

23 H. O. Blinova, "Administrative and Legal Principles of Information Support of Public Administration Bodies in Ukraine: Topical Issues of Theory and Practice", Zaporizhzhia 2019, [thesis for the degree of Doctor of Law].

24 A. G. Chornous, "Administrative and Legal Regulation of the National Information Infrastructure of Ukraine", Kyiv 2020, [thesis for the degree of Doctor of Law].

The problems of establishing the content for the implementation and protection of the human right to a safe environment were carried out in the scientific developments of V. P. Dikhtiyevsky and A. Y. Barlit. Despite the available scientific developments, the functioning of public information services in the field of environmental protection was studied fragmentarily, which determines the practical relevance and theoretical value of this publication.[25]

The substantiation of the strategically important importance of information and building an e-government system at the level of a declarative idea was proclaimed in the *Geneva Declaration of Principles. Building an Information Society: A Global Task in the New Millennium*. The Geneva declaration of 2003 proclaimed such principles for the functioning of the information society as transparency, publicity, publicity of access to information on the results of activities of executive authorities and local self-government.[26]

The functioning of the e-government system in the field of environmental protection requires not only the creation of conditions for accessibility and transparency of information content for the services of state executive authorities and local self-government, but also the creation of conditions for ensuring their safety in the context of compliance with national environmental safety requirements. The strategic documents that were one of the first to consolidate the issue of the effectiveness of the functioning of the information society in Ukraine at the national level was the Resolution of the Cabinet of Ministers of Ukraine, dated 16 January 2008, no. 14, which enshrines the urgency of implementing the concept of e-government and the feasibility of developing and protecting the national system of public information services.[27]

The normative basis for the functioning of public information services in the field of environmental protection in Ukraine is the provisions of the Law of Ukraine

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[25] V. P. Dikhtiyevskyi, *Administrative and Legal Principles of Realization of Access to Information on the State of Use of Natural Resources*, "Legal Bulletin" 2020, no. 13, pp. 111-117; A. Y. Barlit, *Subjective Public Rights as a Component of the Administrative and Legal Status of a Private Person*, "Bulletin of Zaporizhzhya National University. Series Juridical Sciences" 2020, no. 3, pp. 70-77.

[26] *Geneva Declaration of Principles. Building the Information Society: A Global Challenge in the New Millennium*, Geneva, 12 December 2003, Association of Information Technology Enterprises of Ukraine, http://apitu.org.ua/wsis/dp; *Geneva Plan of Action*, Geneva, 12 December 2003, Association of Information Technology Enterprises of Ukraine, http://apitu.org.ua/wsis/dp (16.12.2023).

[27] Action Program of the Cabinet of Ministers of Ukraine: "Ukrainian Breakthrough: For People, Not Politicians". Resolution of the Cabinet of Ministers of Ukraine of 16.01.2008, no. 14, http://zakon2.rada.gov.ua/ laws/show/n14-08/prin (11.10.2023).

of 13 January 2011, no. 2939-VI, "On Access to Public Information,"[28] the Law of Ukraine of June 1, 2010, no. 2297-VI, "On Personal Data Protection,"[29] as well as a number of strategic programs, in particular the program document that establishes the "Basic Principles for the Development of the Information Society in Ukraine for 2007-2015."[30]

In today's conditions in Ukraine there is a fairly extensive system of public information services, which, conditionally, according to the object of legal relations, can be classified into:

- public information services provided in the field of land use (state registration of a land plot;
- state registration of a land reclamation network;
- state registration of restrictions on land use;
- transfer into ownership (or use) of agricultural land;
- provision of information about land within the territorial community;
- issuance of an extract from the technical documentation on the normative monetary valuation of land plots;
- public information services in the field of water resources use (providing expert opinion on technical specifications for engineering works on water fund lands and objects of reclamation systems; access to the register of licenses for special water use, etc.).

There is a public information service in Ukraine. This is the unified ecological platform EcoSystem, the organisation of which is established in accordance with the requirements of the Resolution of the Cabinet of Ministers of Ukraine, dated October 11, 2021, no. 1065. EcoSystem is a nationwide, environmental automated information and analytical system that provides access to environmental information. Its network ensures the creation, collection, receipt, storage, use, dissemination, protection and protection of information, as well as electronic interaction between individuals and legal entities, individual entrepreneurs, subjects of administrative services, subjects providing public (electronic public) services and centres for the provision of administrative services in order to obtain administrative and other public (electronic public) services in the field of environmental protection.

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28 On Access to Public Information: Law of Ukraine of 13.01.2011, no. 2939-VI, https://zakon.rada.gov.ua/laws/show/2939-17#Text (1.10.2023).

29 On Personal Data Protection: Law of Ukraine of 1.06.2010, no. 2297-VI, https://zakon.rada.gov.ua/laws/show/2297-17#Text (11.10.2023).

30 On the Basic Principles of Information Society Development in Ukraine for 2007-2015: Law of Ukraine of 9.01.2007, no. 537-V, https://zakon.rada.gov.ua/laws/show/537-16#Text (11.10.2023).

Within the Ecosystem there is a special information resource, EcoThreat, an information and communication system that organisationally and functionally consists of a website and a mobile application for fixing environmental threats on the territory of Ukraine. EcoThreat contains electronic cabinets, registers, a geoinformation portal and an analytical platform, and provides the submission of electronic appeals regarding cases of violations of the requirements of environmental legislation on the territory of Ukraine. Access to Ecosystem is available through the user's electronic cabinet, which is understood as a component of EcoSystem that facilitates electronic interaction between individuals and legal entities, individual entrepreneurs, entities providing administrative services, entities providing public (electronic public) services and centres for the provision of administrative services. The tasks of EcoSystem[31] are to:

1. Provide citizens with the opportunity to exercise their rights in terms of free access to information on the state of the environment;

2. Increase transparency of decision-making by public authorities and local self-government bodies, and introduce an effective mechanism for preventing corruption and strengthening public control over the use of natural resources;

3. Ensure transparent, equal and quick access to environmental protection services;

4. Create, collect, receive, store, use, disseminate and protect information on the state of the environment for the possibility of rapid response, forecasting, management decision-making, reporting and planning;

5. Systematize and digitalize information on the state of the environment;

6. Other tasks determined by law.

Access to Ecosystem occurs through authorization using an electronic digital signature or through the "Diia" system. In order to ensure the security of Ecosystem, a multilevel identification procedure is carried out. Access to Ecosystem is available to all citizens of Ukraine. Ecosystem provides access to such administrative services as:

- transboundary transportation of waste included in the Green List of waste;
- license for the right to conduct economic activities for hazardous waste management;
- waste declaration;
- approval and issuance of values of background concentrations;
- adjustment of types and volumes of emissions;
- removal from state registration;
- adding a trustee;
- installation registration;
- deletion of a trustee;

31 EcoSystem, https://eco.gov.ua (11.10.2023).

- making changes with an installation;
- deregistering an installation; making changes to operator data;
- permission for emissions into the atmospheric air; test-SEO;
- agreement on the provision of services for public discussions in the process of environmental impact assessment Test-Permit for emissions (stationary sources);
- Also, through the EcoSystem service, access to state natural resource registers is possible. Through EcoSystem registers and cadastres are available, such as:
- lists of pesticides and agrochemicals permitted for use;
- limits on special use of natural resources within territories and objects of the nature reserve fund of national importance;
- lists of permits for transit movement of genetically modified organisms not registered in Ukraine;
- lists of institutions of the nature reserve fund belonging to the management sphere of the Ministry of Ecology and Natural Resources of Ukraine;
- information on the organisational structure of the information administrator;
- access to the register of legal entities entitled to carry out environmental audits;
- access to approved emission figures;
- register of agreements on environmental impact assessment;
- register of waste declarations.

4. Conclusions

Among the main digital achievements of 2022 it is worth highlighting: five services in "peoples" format; launch of the web resource EcoThreat; launch of the online store Firewood; launch of the subsoil user's e-cabinet. In January 2023 alone businesses received about 900 administrative services through EcoSystem. In general, we have 717 submitted waste declarations, 108 certificates received on the value of background concentrations, 35 conclusions received on the transboundary transportation of Green List waste.

During the application of the Ministry of Ecology and Natural Resources, EcoThreat was visited by almost 280,000 users and the application was downloaded 7,638 times. With the help of this application every resident of Ukraine can receive reliable real-time information about the state of the air, water and radiation background, and report on environmental crimes committed by the Russian Federation. In addition, a new service is currently being tested – notification of the beginning of an air alarm in a user's region.

In 2023, EcoSystem plans to launch another 12 online services. Among them are an electronic cabinet of an entrepreneur, permits for special water use, emissions into the atmosphere and licenses for waste management under the new rules. However, despite positive developments in the creation of a system of public information services in the field of environmental protection in Ukraine, such as the creation of an EcoSystem, several problems remain unresolved, in particular:

1. Inadequate level of interaction between the subjects of the State Environmental Monitoring System, which leads to low efficiency in collecting environmental information;

2. Publication of environmental information on electronic registers and services in the form of a text file, which contradicts the requirement to place it in the form of open data;

3. Untimely updating of public environmental information posted on registers and services;

4. Incomplete disclosure of information on data on the collection of environmental taxes and other national payments in the use of natural resources, etc.

Overcoming these problems relates to the content of optimizing activities to create conditions for further digitalization of environmental protection. Digitalization can help us solve our most pressing global problems. Digital technology can provide one-fifth of the emission reductions needed to reach net zero by 2050. These are principles that should guide us as we accelerate the digital revolution. Businesses, policymakers and the public are already aware of the need (and cost) to green the economy, the importance of protecting biodiversity and the fact that the pace of environmental recovery, unfortunately, cannot match the rate of pollution. The question is – what we do about it? Although there are many ways to combat climate change, they often boil down to one thesis: to reduce our negative impact.

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Niniejsza monografia powstała jako trzecia w serii Krakow Jean Monnet Research Papers w ramach realizowanego przez Katedrę Prawa Europejskiego Uniwersytetu Jagiellońskiego projektu Jean Monnet Module pt. „E-administracja – europejskie wyzwania dla administracji publicznej w państwach członkowskich UE i krajach partnerskich/ eGovEU+".

Przedstawia ona analizę wdrożenia i funkcjonowania cyfrowych usług publicznych w Polsce i w Europie ze szczególnym uwzględnieniem związanych z tym wyzwań. Dotyczą one m.in. rozwoju infrastruktury teleinformatycznej, zapobiegania wykluczeniu cyfrowemu oraz zapewniania ochrony prywatności i bezpieczeństwa obywatelom.

Książka adresowana jest do badaczy zajmujących się administracją, prawem administracyjnym i europejskim oraz do praktyków w wymienionych dziedzinach. Mamy nadzieję, że publikacja poszerzy wiedzę czytelników na temat cyfryzacji usług publicznych oraz zachęci środowisko naukowe do dalszych badań w tym zakresie.

This monograph is the third in the Krakow series of Jean Monnet Research Papers and was written as part of the Jean Monnet Module project, carried out by the Chair of European Law at the Jagiellonian University, "E-government – European Challenges for Public Administration in EU Member States and Partner Countries/eGovEU+."

The book presents an analysis of the implementation and functioning of digital public services in Poland and Europe with a particular focus on the challenges involved. These include the development of ICT infrastructure, preventing digital exclusion and ensuring privacy and security of citizens.

The monograph is addressed to researchers in administration, administrative and European law as well as to practitioners in the mentioned fields. We hope the publication will broaden the readers' knowledge of the digitization of public services and encourage the scientific community to further research in this area.

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