IRSTI 10.53.30
UDC 349.6
JEL K32

https://doi.org/10.46914/2959-4197-2023-1-1-13-19

N. SULEIMENOVA,*[1]
m.l.s., senior lecturer.
*e-mail: n.suleimenova@turan-edu.kz
ORCID ID: 0009-0004-7336-6393
[1]«Turan» University,
Almaty, Kazakhstan

DIGITAL ENVIRONMENTAL SECURITY IN THE REPUBLIC OF KAZAKHSTAN

Abstract

This article considers the issue of legal regulation of the digitalization of the environment in the Republic of Kazakhstan. The author analyses the current state of the environmental problem, digital environmental security and digital ecosystem in the development and implementation of new technologies. An analysis of international practice and the experience of the Russian Federation in the implementation of programmes for the digitalization of environmental security at the regional level is also given. Current environmental problems and the environmental crisis in various regions of our country and around the world cause the need to find new solutions using digital ecology and legality. Following the adoption of the new Environmental Code of the Republic of Kazakhstan in 2021, the country has embarked on a course of environmental reform, and this requires the adoption of smart solutions, including the use of digital ecology and legitimacy. Digital transformation affects data protection and security, information technology, technical design, liability and regulatory issues. Therefore, a comprehensive study of the legal regulation of digitalisation of the environment and its accessibility, the study of the conceptual framework, the legal mechanisms for establishing digital platforms for storing stocks of environmental information, the digitalisation and cybersecurity issues of environmental protection are much needed.

Key words: environmental law, environmental protection, environmental security, environmental information, digitalization, ecosystem.

Introduction

The stability of the development of any state depends to a large extent on the extent to which that state is able to effectively counter new challenges and threats in the modern world. Despite the importance of the impact of digital technologies on changes in the system of ecological security of public administration and its most important components – technological and natural security, many issues are not yet fully understood.

Currently, the country is in the process of creating such an organizational structure, which will enable a timely response to threats to environmental security, and the legal basis for its functioning is also being created. However, in spite of the positive effects of the accelerated introduction of digital technologies on the economy and public administration, there are a number of uncertainties in the field of environmental security.

The development of technological capabilities, combined with the social application of digital technology, is creating a new digital environment, which in turn requires training in environmental law relations. This environment plays an important and decisive role in the relationship between technology and the natural environment. Digitalization affects the security of the natural and human environment.

The relevance of the article of the legal regulation of digitalization in the field of environmental protection in the Republic of Kazakhstan is due to the fact that it has not been studied in a full legal context.

The aim of the article is a comprehensive study of the legal regulation of digitalization of the environment and ensuring its accessibility, the study of the foundations, legal mechanisms for creating

digital platforms for storing stocks of environmental information, the problems of digitalization and cybersecurity of environmental protection.

Regarding the theoretical significance of the article, it is due to the fact that its results complement the theoretical concepts of environmental law with new scientific evidence and results.

Materials and methods

The serious environmental problems and environmental crises currently occurring in our country and in some regions of the world require smart solutions, including the use of digital ecology and law. However, there are still many questions that need to be answered regarding the legal implementation of digitalization strategies. Digital transformation has implications for data protection, security, contracting, liability and regulatory issues.

As scientists note: "Sustainable development depends to a large extent on the preservation of the biosphere and natural capital, together with the technosphere and sociosphere. However, in real life, ecological aspects are often neglected. In recent years there have been changes in the formation of economies, especially in the strengthening of the environmental component" [1, p. 85].

The head of state signed a new Environmental Code in 2021. The Minister of Ecology, Geology and Natural Resources Magzum Mirzagaliyev noted that "the document is primarily aimed at reforming the state of the environment in Kazakhstan. With the adoption of the new code, the air over Kazakhstan should be cleaner, especially in industrial areas," writes M. Mirzagaliyev [2].

The Code provides for a transition to integrated environmental permits for facilities in the first category related to the implementation of the best available technologies [3]. However, there is a proposal that such permits should be obtained for newly commissioned facilities.

"Over the next few years we will conduct an audit, we have already started with the main polluters. After that, a list of technologies will be prepared to reduce emissions of these enterprises. Reference books on best available technologies will be prepared.

After that, the first 50 largest enterprises in Kazakhstan, which account for 80 per cent of emissions, will have a transition period from 2025 to 2035. Why 10 years? It is a financially and technologically complicated process. Everything has to be designed, ordered, brought in and installed. It's not easy, somewhere there will be a need to change the technology," explained Magzum Mirzagaliyev [2].

Methods of research - modern knowledge of the law, the doctrine of the interaction of nature and society, the dialectical method, the main method of objective and comprehensive knowledge of reality, as well as historical and formal-logical methods, including methods of deduction and induction, analysis and synthesis. Of the special research methods, we use the logical-legal, systemic, functional, comparative-legal methodology, as well as methods of legal sociology.

Literary review

The definition below includes the term 'ecology', which takes into account the technical information aspect and notes that the structure and functioning of the modern social information domain is similar to natural ecosystems. Conrad Becker, for example, comments on the term as follows: "digital ecology deals with information systems that are shaped by information flows disseminated through various media. Information is widely digitized and becomes a resource that can be used, produced and transformed in the same way as material resources. The basic ecological idea is broadly concerned with preserving and enhancing the exploitable value of information and the non-commercial properties as opposed to the value of exchange" [4]. Becker believes that "digital ecology as a new tool for social relations should be concerned with finding ways to preserve and enhance cultural diversity and quality of life in the information ecosystem" [4].

In this approach, information is seen as a fundamental and decisive resource in the technological environment of modern society and becomes one of the fundamental and decisive factors in human life. The works of Manuel Castell constantly emphasize the similarity of the following processes, the social environment saturated with information and communication is comparable with the natural ecosystem [5].

The digital ecosystem defines its position in the information world as the interaction and compatibility of software agents, which is based on a computer network infrastructure. There is continuous intra- and inter-species communication and competition between species, which ensures the selection of the most preferable adapted agent. This selection drives the evolution of computer programs.

In the digital ecosystem economy, competition disappears and organizations try to form associations to achieve this goal. This means that the digital ecosystem can be seen as a complex environment in which organizations operate without rigid ties. Digital ecosystems are different in many ways from traditional systems. The business organization of the latter is based on people making management decisions [6].

In her dissertation the Kazakhstani scientist R. Yerezhepkyzy conducted a set of works on the legal analysis of access of citizens and public organizations to environmental information in Kazakhstan, carried out work on ensuring, implementation of the rights of the population to access environmental information and analyzed the legal framework for protection. The history of formation and development of legislative regulation of access of public organizations and citizens to sources of environmental information based on the norms of foreign and domestic law was studied. Of particular interest were public hearings on environmental issues and public participation in decision-making in the Republic of Kazakhstan, legal problems of resolving environmental disputes and forms of judicial protection of the legitimate rights and interests of society and citizens [7].

Г.Т. Aigarinova, D. Nurmukhanovna, and A.T. Ozenbaeva reviewed scientific developments in the field of legal regulation of digitalization of environmental information. In this regard, the issues of digitalization and implementation of automated environmental management are of great strategic importance, since in the future the results of environmental protection and rational use of natural resources will depend on the accuracy and efficiency of environmental information presentation [8].

The works of L.K. Erkinbaeva and B. Kalymbek investigate the legal basis for the digitalization of environmental information in Kazakhstan in the context of the state program "Digital Kazakhstan", identify outstanding issues and propose ways to improve the current legislation of the country [9].

Studying scientific developments in the field of legal regulation of digitalization of environmental information, it is worth paying attention to the study by A.A. Popov "Legal Regulation of Environmental Information", which is devoted to the theoretical issues of legal regulation of environmental information. The work analyzes the legal and organizational mechanism of access to environmental information and the order of effective presentation of environmental information, examines the content elements of the concept of the right to reliable information about environmental protection, its state and compensation for damage caused by violations of environmental legislation, developed and proposed recommendations for the improvement of legislation [10].

N.G. Zhavoronkova and Y.G. Shpakovsky's work "Digitalization in the field of environmental security: administrative and legal aspects" discusses regulatory issues, issues of introduction of modern technologies in the process of automated management of activities in the field of environmental security. The authors believe that the implementation of comprehensive measures for the digitalization of the economy is at the initial stage, and it is premature to state a significant increase in the effectiveness of public administration in the field of environmental security in electronic automation of the main processes of environmental management [11].

Main provisions

Let us consider the normative legal acts adopted for the legal regulation of digitalization in the field of environmental protection in the Republic of Kazakhstan.

On December 12, 2017, the Resolution of the Government of the Republic of Kazakhstan No. 827 "On Approval of the State Programme "Digital Kazakhstan" was adopted. The objectives of the State Programme "Digital Kazakhstan" are "accelerating the pace of development of the economy of the Republic of Kazakhstan in the medium term and improving the quality of life of the population through digital technologies, as well as creating conditions for transition of the Kazakhstan economy to a fundamentally new development trajectory, which ensures creation of a future digital economy in the long term. [12].

In this programme, the main global trend in the energy sector is the introduction of a variety of Smart technologies related to the issue of digitalization in the field of environmental protection, in order to ensure effective information exchange between all elements and participants in the network, protection against major disruptions, natural disasters, external threats and self-renewal. The field of environmental protection requires urgent, reliable and complete information: in the future, its results will depend not only on the state of the facilities and professionalism of the personnel, but also on the accuracy and urgency of all environmental information, so the issue of automation in this matter is of strategic importance.

Creation of "unified state system of monitoring of environment and natural resources" in political and legal aspect is designed to: promote implementation of the National Strategy of Sustainable Development and prevention of environmental disaster; promote implementation of publicity and democratization of society in the field of environmental protection and natural resources; create necessary conditions for access to environmental information resources for the general population; allow monitoring of public opinion on environmental and natural resources protection; and improve the quality of environmental protection. In the economic aspect - improving efficiency of natural resource use, public production; improving socio-economic conditions of the population. In the social aspect - improving health and increase life expectancy; creating conditions for the improvement of environmental culture and environmental education of the population" [12].

Digitalization took place within the framework of the state programme "Digital Kazakhstan" with an implementation period of 2018–2022. The state programme provided for the implementation of 125 activities to achieve 12 target indicators and 26 output indicators in five areas.

However, in general, during the entire period of development of the ICT industry in the Republic of Kazakhstan, it was not possible to create a progressive infrastructure of information technology, quality institutions, affecting to a certain extent the performance of created startups of technological nature and the development of human resources potential. The conditions for the favorable development of the business environment, improvement of the quality of education and introduction of innovations in the sphere of information and communication technologies are insufficiently elaborated.

The conceptual link to the term "digital ecology" is based on the idea that ecology through modern media (based on digital devices and mobile technologies) is changing the nature of science and education [13]. According to this concept, the digital ecosystem is linked to mobile technologies and services. This somewhat pragmatic approach reflects the new reality that emerges in the information age, which is the result of the rapid development of humanity's technological sector.

Results and discussion

The international practice of digital transformation of public administration is to harness the potential of the latest "innovative" digital technologies (such as "big databases", the Internet and artificial intelligence) as tools for public policy, legislation, monitoring and control. Digital technologies will also be used for planning, monitoring and evaluation of government activities. Digitalization is a systematic approach to the use of digital resources in government.

The Sendai Framework sets global targets to 2030, including reducing disaster mortality, reducing disaster losses and minimizing disaster impacts from 2005 to 2015, improving disaster risk analysis, assessment, management, institutional and legal arrangements at global, national and regional levels, prioritizing actions and timely responses to emergencies at global, national and regional levels, including prioritizing [14].

Using the experience of the Russian Federation we would like to mention the Digital Economy programme, which is primarily aimed at shaping the information space in the country, taking into account all the needs of the individual, society and the state.

Digitalization of environmental security at the regional level is possible within the framework of the programs "Smart City" and "Safe City". The concept of creating and developing the "Safe City" hardware and software complex, approved by Russian Federation Government Decree No. 2446-r of December 3, 2014, envisages the need to form a complex multilevel system [15].

The concept is mainly aimed at improving the city's administrative systems using the latest digital technology. Global experience shows that cities that implement this concept start with specific sectors

and eventually move on to the comprehensive implementation of digital services in all aspects of city life.

The purpose of this concept is not to collect large amounts of data and apply digital technologies one by one – the main task is to improve the quality of life of city residents through the application of digital technologies. To that end, big data technologies and artificial intelligence methods are usually used. However, the concept is not limited to these methods; they are simply widely used tools for creating machine-based decision-making systems.

Today, a Safe City complex is a set of functional and technical requirements for hardware and software, legal mechanisms and organizational measures to counter various threats. The development of such complexes requires the use of digitalization elements, such as formation of a communication platform at the regional level, unification of hardware and software requirements, use of a single information space for management activities and creation of a situational center to predict the development of crisis situations.

On January 2, 2021, the new Environmental Code of the Republic of Kazakhstan was adopted. Certain norms were referred to the issue of digitalization of the environment.

The Code stipulates conditions for carrying out Environmental Impact Assessments (EIAs) for large enterprises of the "first category", the list of which is drawn up in such a way that attention is focused on truly environmentally hazardous facilities. The society is involved in all stages of the EIA (4 stages: intensification, scope of the EIA, EIA report, EIA conclusion) [3].

The purpose of the new Environmental Code of the Republic of Kazakhstan is the permanent and systematic collection, accumulation, storage, analysis and dissemination of environmental information, including the use of modern digital technologies, as well as ensuring the rights of every person. Access to environmental information, definition of basic conditions, procedures are features of use of this right [3].

In the new Environmental Code of the Republic of Kazakhstan, the principle of access to environmental information is that the state, based on the international treaties of the Republic of Kazakhstan, ensures the right of the public to access environmental information in the manner and conditions established [3].

Particular attention was paid to payments for emissions into the environment and targeted use of budgetary funds for environmental protection measures. The current legislation does not contain an obligation to use payments for environmental emissions for environmental protection measures. Only about 45% of the funds received are allocated by the local executive authorities for environmental protection.

The Code states that local executive authorities are obliged to finance 100% of environmental protection measures from the environmental fees received.

The new Code foresees a waste hierarchy aiming at staggered waste management. This is primarily due to the fact that, in order to minimize waste generation, generated waste must be recycled, reused and disposed of in landfills. The population will also be provided with information on the rational system for collecting, recycling and treatment of solid household waste and separate waste collection. Waste classification is identified with the European Waste Catalogue and includes a list of non-hazardous and hazardous waste. The new Environmental Code stipulates the mandatory installation of GPS sensors on waste trucks to systematically address the issue of illegal dumping.

Certain shortcomings of the current economic ideology lead to the conclusion that resuming the current market course is incompatible with the concept of sustainable development. An appropriate green economy policy is therefore needed to protect the social, environmental, legal and economic pillars of the Commonwealth. Digital platforms are a phenomenon that challenges traditional operators by changing the way digital products and services are consumed and delivered. While traditional businesses create value in the enterprise or supply chain, digital platforms use ecosystems of autonomous agents to co-create value.

Conclusion

It should be noted that the adoption of digital economy technologies in the field of environmental security is an irreversible process. The scale of the changes taking place around the world is driven

by the widely recognized importance of breakthrough innovation. The development and diffusion of innovation in all sectors is taking place at an unprecedented pace. In the context of development of the digital economy, it is necessary to develop and implement a concept of priority actions to improve the regulatory environment. In the field of environmental security, it is important to identify the list of existing key legal barriers to digitalization and support proposals to remove them. The key legal concepts and institutions necessary for the digitalization of environmental security should also be identified. Based on the identified list, enact legislation aimed at removing key legal constraints in specific areas of regulation that impede the development of digitalization of environmental security in the context of the digital economy. As part of the implementation of the digital economy programme, the nature and structure of administrative procedures in environmental security will change, some routine procedures will disappear and be replaced by artificial intelligence and robotics, and the advent of large volumes of information will create many cyber risks. New challenges, such as legal regulation, also need to be addressed as quickly as possible.

Our analysis of research and legislation on environmental digitalization shows that the time has come to discuss the digitalization of certain areas of government regulation. One of these is the digitalization of environmental information. Digital platforms for storing stocks of environmental information and its legal regulation have been introduced to address it. Undoubtedly, ecology and environmental protection are gaining importance on a global scale, where digitalization and cybersecurity issues are being addressed.

REFERENCES

1 Oralova A.T., Auelbekova A.Zh. Ecology and Sustainable Development. Fundamentals of General Ecology: textbook. Karaganda: Publishing house of Karaganda State Technical University, 2018. 100 p.

2 Mirzagaliyev M. Environmental Code: what will now change in Kazakhstan. URL: https://tengrinews.kz/kazakhstan_news/ekologicheskiy-kodeks-chto-teper-izmenitsya-v-kazahstane-423945/

3 Environmental Code of the Republic of Kazakhstan 2 January 2021. URL: https://online.zakon.kz/

4 Becker K. Dictionary of Technical Reality: Cultural Intelligentsia and Social Control. Moscow: Kultura, 2004. 224 p.

5 Castells M. The Information Age: Economy, Society and Culture. Moscow: Gu Higher School of Economics, 2000. 608 p.

6 Perelet R.A. Environmental aspects of the digital economy. The World of the New Economy. URL: https://cyberleninka.ru/article/ekologicheskie-aspekty-tsifrovoy-ekonomiki

7 Yerezhepkyzy R. Legal regulation of accessibility of public information to environmental information (comparative analysis of national and foreign legislation): D. thesis for the degree of Doctor of Philosophy (PhD). Almaty, 2018. URL: www.kaznu.kz/content/files/pages

8 Aigarinova G.T., Nurmukhankyzy D., Ozenbaeva A.T. Scientific developments in the field of legal regulation of digitalisation of environmental information // KAU Transactions. 2020. No. 4(50). P. 6–13.

9 Erkinbaeva L.K., Kalymbek B. On the digitalisation of environmental information in the Republic of Kazakhstan // KAU Transactions. 2020. No. 4(50). P. 34–38.

10 Popov A.A. Legal Regulation of Environmental Information: PhD thesis. URL: https://www.dissercat.com/content/pravovoe-regulirovanie-ekologicheskoi-informatsii.

11 Zhavoronkova N.G., Shpakovsky Y.G. Digitalisation in Environmental Security: Administrative and Legal Aspects. URL: https://urfac.ru/?p=2371

12 On Approval of the State Program «Digital Kazakhstan» // Decree of the Government of the Republic of Kazakhstan. 17 May 2022. No. 311. URL: https://adilet.zan.kz/rus/

13 Digital Ecology: Ecological Social Networks and Information Ecosystems. URL: // https://cyberleninka.ru/article

14 Sendai Framework for Disaster Risk Reduction 2015–2030 // Adopted at the Third UN World Conference on Disaster Risk Reduction. URL: http://www.consultant.ru/

15 On the Concept of Building and Developing the Safe City Hardware and Software System // Decree of the Government of the Russian Federation. 3 December 2014. No 2446-r. URL: http://www.consultant.ru/document/cons_doc_LAW_172077/

Н.О. СҰЛЕЙМЕНОВА,*[1]
з.ғ.м., сениор-лектор.
*e-mail: n.suleimenova@turan-edu.kz
ORCID ID: 0009-0004-7336-6393
[1]Университет «Туран»,
г. Алматы, Қазақстан

ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДАҒЫ ЦИФРЛЫҚ ЭКОЛОГИЯЛЫҚ ҚАУІПСІЗДІК

Аңдатпа

Бұл мақалада Қазақстан Республикасында қоршаған ортаны цифрландыруды құқықтық реттеу туралы мәселе қаралды. Автор жаңа технологияларды дамыту және іске асыру жағдайындағы экологиялық проблеманың, цифрлық экологиялық қауіпсіздіктің және цифрлық экожүйенің қазіргі жай-күйін талдайды. Сондай-ақ, аймақтық деңгейде экологиялық қауіпсіздікті цифрландыру бағдарламаларын жүзеге асыруда Ресей Федерациясының халықаралық тәжірибесі мен тәжірибесі талданады. Қазіргі заманғы экологиялық проблемалар, еліміздің әртүрлі аймақтарындағы және бүкіл әлемдегі экологиялық дағдарыс цифрлық экология мен заңдылықты қолданатын жаңа шешімдер іздеуді қажет етеді. 2021 жылы Қазақстан Республикасының жаңа экологиялық кодексі қабылданғаннан кейін ел қоршаған ортаның жай-күйін реформалауға бағыт алды және мұнда цифрлық экология мен заңдылықты пайдалануды қоса алғанда, ақылға қонымды шешімдер қабылдау талап етіледі. Цифрлық трансформация деректерді қорғау мен қауіпсіздікке, ақпараттық технологияларға, техникалық дизайнға, жауапкершілік пен реттеу мәселелеріне әсер етеді. Сондықтан қоршаған ортаны цифрландыруды құқықтық реттеуді жан-жақты зерттеу және оның қолжетімділігін қамтамасыз ету, экологиялық ақпарат қорларын сақтаудың цифрлық платформаларын құрудың тұжырымдамалық негіздерін, құқықтық тетіктерін, цифрландыру проблемаларын және қоршаған ортаны қорғаудың киберқауіпсіздігін зерделеу өте қажет.

Тірек сөздер: экологиялық құқық, экологиялық қауіпсіздік, экологиялық ақпарат, цифрландыру, қоршаған ортаны қорғау, экожүйе.

Н.О. СУЛЕЙМЕНОВА,*[1]
м.ю.н., сениор-лектор.
*e-mail: n.suleimenova@turan-edu.kz
ORCID ID: 0009-0004-7336-6393
[1]Университет «Туран»,
г. Алматы, Казахстан

ЦИФРОВАЯ ЭКОЛОГИЧЕСКАЯ БЕЗОПАСНОСТЬ В РЕСПУБЛИКЕ КАЗАХСТАН

Аннотация

В данной статье рассмотрен вопрос о правовом регулировании цифровизации окружающей среды в Республике Казахстан. Автор анализирует современное состояние экологической проблемы, цифровой экологической безопасности и цифровой экосистемы в условиях развития и реализации новых технологий. Также дается анализ международной практики и опыт Российской Федерации в реализации программ по цифровизации экологической безопасности на региональном уровне. Современные экологические проблемы, экологический кризис в различных регионах нашей страны и по всему миру вызывают необходимость поиска новых решений с использованием цифровой экологии и соблюдением законности. После принятия в 2021 г. нового Экологического кодекса Республики Казахстан страна взяла курс на реформирование состояния окружающей среды, и здесь требуется принятие разумных решений, включая использование цифровой экологии и легитимности. Цифровая трансформация влияет на защиту и безопасность данных, на информационные технологии, техническое проектирование, ответственность и вопросы регулирования. Поэтому столь необходимо всестороннее исследование правового регулирования цифровизации окружающей среды и обеспечение ее доступности, изучение концептуальных основ, правовых механизмов создания цифровых платформ хранения запасов экологической информации, проблем цифровизации и кибербезопасности охраны окружающей среды.

Ключевые слова: экологическое право, охрана окружающей среды, экологическая безопасность, экологическая информация, цифровизация, экосистема.