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Environmental and Legal Regulation of Digitalization of Environmental Protection

Dauren BEKEZHANOV
Zhetysu University named after I. Zhansugurov, Republic of Kazakhstan
bek_dauren@mail.ru

Gulnura KOPBASSAROVA
Zhetysu University named after I. Zhansugurov, Republic of Kazakhstan
gulnura.kopbasarova@mail.ru

Aktoty RZABAY
Taraz Regional University named after M.Kh.Dulati, Republic of Kazakhstan
toty_r@mail.ru

Zhaukhar KOZHANTAYEVA
Kazakh National Academy of Choreography, Republic of Kazakhstan
Zhauhar_27@mail.ru

Indira NESSIPBAYEVA
Taraz Regional University named after M.Kh.Dulati, Republic of Kazakhstan
Nesipbaeva83@bk.ru

Kanat AKTYMBAYEV
Zhetysu University named after I. Zhansugurov, Republic of Kazakhstan
k.aktymbaev@mail.ru

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Abstract

The article is devoted to certain issues of environmental and legal aspects of the digital environment in the information system of environmental safety, issues of legal implementation of the digitalization program. This article has researched the importance and necessity of environmental digitalization. At the same time, the main idea of digital ecology is considered as the implementation of the National Strategy for Sustainable Development and prevention of Environmental Disasters, control of public opinion on environmental issues, improvement of health and increase in life expectancy of the population, adaptation of the state system of digitalization management in the field of environmental culture, environmental education, environmental safety to the digital environment, use of the possibilities of modern "breakthrough" digital technologies. Environmental digitalization in management comprehensive studies of the system approach to the use of digital environmental resources were conducted, the basics of improving the regulatory legal regulation in the management in the field of environmental safety in the framework of the implementation of the digital program were considered.

Keywords: environmental safety; digitalization of environmental protection; environmental information; national strategy; legal regulation

JEL Classification: Q56; Q57; Q55; K24.

Introduction

The use of digital technologies in modern society, as well as the development of technical capabilities, form a new digital environment, including in environmental legal relations. Such an environment plays a certain and

increasingly significant role in the relationship between the technosphere and the natural environment. It seems that the impact of digitalization on man-made and natural environmental safety is obvious. The problematic state of the environment today, the environmental crises of individual regions of our country and the planet as a whole require a logical search for solutions, including using the digital economy and digital law. Nevertheless, many questions remain about the legally justified implementation of digitization strategies. Digital transformation affects data protection, information technology security, contract development, liability, and regulatory challenges. Scientists note: "Sustainable development is largely associated with the preservation of the biosphere and natural capital together with the technosphere and the sociosphere. However, in real life, environmental aspects are often overlooked. In recent years, there have been changes in the formation of the country's economy, especially in strengthening the environmental component" (Perelet 2018, 39).

There are quite logical questions: how and in what way does the digital environment have an impact on environmental safety and, conversely, how can we improve the state of the environment through digitalization? The digital sector may well be invisible, but it has very real implications for our environment. So what impact does our digital application of innovation have on the environment? A study conducted in France in 2019 and announced at the International Forum on Weather and Climate (Talapina 2019, 164) found that only 40 % of survey participants are aware of the close link between digital and climate change. It turned out that these are mostly small items that currently consume the most energy: smartphones, tablets, connected objects, computers. Scientific research has confirmed that the digital sector creates several different types of pollution: pollution from the production of IT equipment; pollution from electronic waste, i.e. used electrical and electronic equipment; pollution from our daily digital use. Such studies are interesting both on an industrial scale and at the household level. Nevertheless, the first question is: how can we help ourselves, our planet, and protect our natural environment not from digital innovations, but with the help of modern technologies. In traditional industrial definitions, digital technology and environmental safety seem to be mutually exclusive. Indeed, technological change is directly linked to the use of artificial intelligence and robotics, which in general will transform global production, industrial processes and ultimately change the workforce. It is likely that the environmental impact of digitization will primarily be achieved through the digital environment, which will be manifested in ensuring the efficient use of resources. It is worth paying attention to the message of the President of the Republic of Kazakhstan dated December 14, 2012 "Kazakhstan-2050". His main idea is to implement the national program of the State Program "Digital Kazakhstan", providing legal regulation of the digitalization of the economy and solving its main problems. For example, the Concept for the transition of the Republic of Kazakhstan to a "green economy" for 2021-2030 is aimed at achieving specific goals:

- Reducing water scarcity at the national level;
- Water supply for agriculture;
- Energy efficiency;
- Air pollution;
- Collection, removal, disposal, recycling and disposal of waste;
- Conservation and effective management of ecosystems;
- Formation of ecological culture.

It is worth noting that all areas of digitalization of ecology are in their infancy, so environmental safety, taking into account the program proposed above, is at the initial stage (Resolution of the Government of the Republic of Kazakhstan No. 479 2020).

The following statement is true: "The implementation of digital technology in the world economy without addressing the issues of protection from the growing virtual danger in the name of preserving the ecological balance in the biosphere from new weapons of mass sabotage becomes no less dangerous, but a more real threat than the use of nuclear weapons" (Kal'ner 2018, 62).

One of the solutions can be the modern concept of a "green" economy, supported today by many states, replacing the old "resource-intensive economy model". The concept of a "green" economy is a model that leads to better health and social justice of the population, as well as to a significant reduction in dangerous environmental impacts and to a reduction in environmental deficits. Thus, the "green" economy, in its simplest form, can be considered as a low-carbon, resource-saving and socially inclusive model of the economy. The concept of "green" economy does not replace the concept of sustainable development, but recognizes the achievement of sustainability and is almost entirely based on the satisfaction of the possibilities of economic and environmental law. The two components – digital technologies and environmental sustainability - should complement and reinforce each other as mutually reinforcing components. The integration of digitalization and industrial production should strategically coexist in the interests of society, in the interests of the safety of the ecological environment

and the sustainability of the ecosystem. Currently, Kazakhstan is actively investing in the digital sector of the economy. Nevertheless, the digital innovations that are being introduced create new unsolved problems. The most serious challenges facing digitalization today in the field of ecology are the training of specialized personnel and significant financial costs for the maintenance of digital technologies. Therefore, there is a need for effective state support for the development of infrastructure that promotes man-made environmental safety and guarantees a single information space for the effective use of various services and services.

1. Methodology

The work used general scientific methods and methods (analysis, synthesis, system-structural and functional approaches), as well as special methods used in legal research: historical, comparative legal, sociological and other methods of scientific knowledge. The comparative legal method allowed us to compare various individual elements of legal systems - normative legal acts, legal acts, etc. - in order to identify their general and specific properties. Comparing foreign countries and Kazakhstan, it was noted that there are features in the field of environmental digitalization.

2. Results

2.1. Digital Economy as a Mechanism for Effective Environmental and Legal Policy

In today's information-dependent society, any issues are solved only through information systems, and progress requires the transition to the latest technologies. No one is arguing about the need to carry out economic activities using digital technologies, but the question of how to implement this and what the digital economy should be remains open. Having a close relationship with information systems, the simple economy has already transformed into a "digital economy", but this has only partially happened, since digitalization has affected only the implementation of services, but not the coordination of production processes. No sphere of public life can remain without involvement in global automation. This process affects not only the scientific and technical sectors, but also the socio-economic ones. In the context of the discussion of innovation and the introduction of digital technologies, the important issue of the development and implementation of environmental policies often falls out of sight (Bekezhanov *et al.* 2020, 186). Since the CIS socio-economic doctrine includes the global environmental problem of our time and, consequently, environmental and economic security, it is also necessary to consider the "digital ecology "in the context of the implementation of the"digital economy" project. Digital economy is an automated management of the economy based on advanced information technologies; a way of life based on effective information management of the production system. The digital economy allows us to specify the principles of state intervention, including in the development of environmental policy. The automated mechanism will allow not only to implement scientific and technological progress, but also to control investments, including in scientific and technological progress and the creation of an eco-friendly product, and the financing of environmental monitoring. The main problem is that so far the state sees the digital economy only as a virtual environment for storing and exchanging data, while with the help of information technologies it is possible to manage real economic processes. The digital economy in the technical sense is a matrix that allows you to coordinate the interests of all economic entities, to balance production relations and correctly distribute investments by industry. Automated management of the economy can significantly increase labor productivity by allocating investments in the right direction, coordinate production relations and maintain a balance between industries, as a healthy economy will create an adequate basis for the formation and implementation of environmental policy. Nature protection requires the production of the final product, without centralized production management and coordination of actions on the part of the state and enterprises, the issue of environmental safety cannot be solved (this is due to the chaotic functioning of the market and the opposition of the owners). Planning of economic activities based on an automated system will help to reduce transport, transaction and transaction costs, the redistribution of labor resources, which will ultimately affect the reduction of environmental pollution. When planning, the state and enterprises will be able to influence all the processes of pollution and its prevention in real time. The state can manage the processes aimed at improving the environment in the country, control the activities of the main actors and develop an effective economic and environmental policy. The priority for the transition to digital management of environmental processes is to create a system for monitoring the environmental situation and a general automated system for managing economic processes (Evtyanova and Tiranova 2017, 71).

At the present stage, it is impossible to limit ourselves to just stating the impact of the technological factor on public relations — digital technologies transform well-established state and public institutions. We will try to understand the possible directions of the transformation of law in the digital age, being attuned to the fact that so

far there will be more questions than ready and unambiguous answers to them. The main components of law under the influence of digital technologies. Oddly enough, even the classical theory of law is under "threat" from the impact of new technologies, and especially the Internet. If, even in the most general approximation, we understand the law as a set of rules governing the relations that develop between subjects about a certain object, then it becomes clear that in the digital age, literally every component of this definition needs to be clarified. Let's look at this in more detail. Let's start with the actors-the subjects of law. Traditionally, the subjects of law are individuals, legal entities (organizations), and the state. What, in fact, changes the Internet in this scenario? The fact is that the subject of law (we will limit ourselves in this case to an individual) builds virtual relationships through the Internet, which do not always copy the real ones. Virtual life may or may not have predictable and well-known legal consequences. And the first problem here is identification. In the virtual space, the subject often hides behind the so-called virtual personality, or digital image. Its alias (nickname, network name) can mask the subject (however, an identifiable IP address remains, which does not always mean binding to a specific subject). In fairness, we note that the increased opportunities for anonymity have little effect on the conclusion of transactions — commercial interests dictate that trade via the Internet is conducted with both subject X and subject Y. Another thing is relations that require formalization (electronic appeals to state bodies, for example). An individual has personal data-according to the law of May 21, 2013, N 94-V "About personal data and its protection" is any information related directly or indirectly to a specific or identifiable individual. Most often, personal data is recognized as last name, first name, patronymic, year, month, date and place of birth, address, family, social, property status, education, profession, income, etc. In general, this approach applies to the dissemination of data via the Internet. However, the Internet has increased the possibility of indirect identification of a person-by comparing certain data, you can identify a person without formally violating the rules of automatic data processing. In other words, the technical rule is "everything that is encrypted can be decrypted" (Law of the Republic of Kazakhstan No. 94-V 2013).

Another cross-section of the problem of personal data is their relationship with the official image. For example, in some cases, civil servants operate under special control, when their actions and words are subjected to audio and video recordings in order to exclude corruption, etc.

In the case of environmental information, it is not only its content that matters, but also the form in which it is provided. The Aarhus Convention provides for various forms in which public access to environmental information is provided. These can be printed documents, computer files, as well as photographs, illustrations, video and audio recordings, and other material forms of information. After all, in many cases, the form of the requested information is essential for the applicant, and he may require to provide it in some specific form. So in modern conditions, information work is increasingly conducted with electronic information, which replaces documents and materials on paper. Environmental information can be expressed in written, electronic, audio-visual or other forms.

According to the Aarhus Convention, the state of all elements of the environment, as well as factors, activities or measures that affect or may affect the elements of the environment, are considered environmental information. The Aarhus Convention imposes the following obligations on public authorities:

- to collect environmental information;
- provide free access to environmental information;
- actively disseminate certain types of environmental information.

Kazakhstan's main obligations under the Convention are:

- Ensuring access to information;
- involving the public in the decision-making process and including all stakeholders in the process; ensuring access to justice (legal aspects) in environmental matters (Law of the Republic of Kazakhstan No. 94-V 2000.)

In accordance with Article 3 in paragraph 3 of the Environmental Code Model Law "On Access to Environmental Information", the following definition is given: "Environmental information – any information on the state of waters, atmosphere, soil, living organisms and ecosystems and their changes, on activities, factors and measures that have or may have an impact on them, as well as on planned or ongoing activities for the use of natural resources and their consequences for the environment, including data necessary to assess these consequences for the environment and the population, and in addition – on measures aimed at the protection and rational use of the environment. Environmental information can be expressed in any objectified form" (Ecological code of the Republic of Kazakhstan 2021).

This problem can be solved in different ways. One of the suggested options — accept the fact that the subject of law on the Internet may not be identified at all: technical means of identification may allow you to create

a legal fiction or a presumption of a certain person, but can not allow you to definitively identify the subject of legal relations, which leads to "a fundamentally new situation for theoretical understanding, in which the life cycle of a legal relationship can occur without a legally significant identification of its subjects, which, moreover, may in principle be almost impossible (for example, in the case of decentralized networks, built on the principle of anonymity using encryption algorithms)". Another option is to recognize personal data as an object of civil law that can be commercialized, and therefore is alienable (Bekezhanov *et al.* 2021, 392).

By the way, the Digital Kazakhstan program provides for the creation of a "Unified state system for monitoring the environment and Natural Resources", which will allow in the political and legal aspects: to promote the implementation of the national strategy for sustainable development and the prevention of environmental disasters; to promote the implementation of the processes of transparency and democratization of society in the field of environmental protection and natural resources; to create the necessary conditions for the access of the general population to environmental information resources; implement monitoring of public opinion on environmental issues. In the economic aspect - to increase the efficiency of the use of natural resources, social production, improving the socio-economic living conditions of the population. In the social aspect-to improve the health and increase the life expectancy of the population; to create conditions for improving the ecological culture and environmental education of the population.

2.2. Foreign Legal Experience in Providing Access to Environmental Information

In general, the analysis of the development of environmental legislation in Belarus has shown that the main trends in the development of the system of domestic environmental legislation depend on the political and socio - economic modernization taking place in Kazakhstan's society, as well as the processes taking place in the international arena to solve global environmental problems. To date, Belarus has formed a certain regulatory and legal framework in the environmental sphere and the Environmental Code has become the main comprehensive legislative act regulating public relations in the environmental sphere. But, for its further development, it is necessary to develop a number of mechanisms (Law of the Republic of Belarus No. 257-Z 2007).

The Constitution of the Republic of Belarus proclaims the right to receive, store and disseminate complete, reliable and timely information about the activities of State bodies, public associations, political, economic and international life, and the state of the environment (Law of the Republic of Belarus No. 2-Z 2008).

E. V. Laevskaya (2011, 343) notes that in the domestic legislation for a long-time different terms are used in relation to the general concept of "environmental information". So, if the Constitution refers to the right to information about the state of the environment, then Article 9 of the Law" On Sanitary and Epidemic Well-being of the Population in the Republic of Belarus " declares the right of citizens to receive information about the state of the environment and health of the population, the epidemic and radiation situation, the current sanitary rules, measures taken to ensure sanitary and epidemic well-being and their results, the quality of consumer goods, including food, as well as drinking water (Law of the Republic of Belarus No. 122-Z 1998).

In this connection, E. V. Laevskaya (2003) draws attention to the fact that the content embedded in this concept "has rather an applied meaning, revealing not the essence of the phenomenon, but the mechanism for collecting such information, which generally corresponds to the subject of regulation of the Law "On Hydrometeorological Activities", but does not clarify the concept of "environmental information".

Thus, the legislation of the Republic of Belarus does not contain a single concept of environmental information, which gives rise to different interpretations of the law.

In Article 1 of the Law, environmental information is defined as documented information containing information about the state of the environment, its impacts and measures to protect it, as well as about the effects of the environment on humans. The list of information related to environmental information was approved by the Resolution of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus No. 22 of 29.05.2003. Article 74 of the Law" On Environmental Protection" divides environmental information into two groups:

1) Environmental information provided or disseminated in accordance with the Law "On Environmental Protection";

2) Environmental information provided and disseminated in accordance with other legislative acts.

But in our opinion, it is the position of the legislator that draws attention to the law of the Law "On Environmental Protection", which defines the composition, sources, types, as well as the procedure for providing and distributing (including restrictions on access) such information.

Environmental information is divided into general-purpose and specialized information.

General-purpose environmental information is intended for general use. As a rule, this information is provided free of charge.

The composition and types of environmental information, as well as the forms of its dissemination and provision, are stipulated in Article 74 of the Law.

The environmental information includes the following information:

- about the state of the environment, including atmospheric air, water, land (including soil), flora and fauna in its biological diversity, natural landscapes, biotopes, and other natural objects, and about the interaction between these objects, as well as about genetically engineered organisms and microorganisms;
- about the impact on the environment of substances, as well as energy, noise, radiation and other physical factors;
- on the decisions of state bodies, on the activities of legal entities and individual entrepreneurs related to the harmful impact on the environment or its protection, as well as the justification for the need for their implementation, including financial and economic justifications;
- on the acts of the legislation of the Republic of Belarus, on territorial integrated schemes, programs and measures for the rational (sustainable) use of natural resources and environmental protection, concepts, strategies, schemes, action plans, programs and measures, the implementation of which has or may have an impact on the environment, as well as justifications for their adoption, including financial and economic justifications; about the state of health and safety of citizens, about their living conditions, about the state of cultural objects, buildings and structures to the extent that they are affected or can be affected by the environment or through the environment by the above factors, activities and measures.

The composition of general-purpose environmental information subject to mandatory dissemination was approved by the Resolution of the Council of Ministers of the Republic of Belarus No. 734 of 24.05.2008.

Environmental information is specialized if it is necessary to obtain additional data that requires special collection, processing and analysis. Specialized environmental information is not included in the state data fund on the state of the environment and its impacts. The legislation prohibits the attribution of information about the fact of causing environmental damage to specialized environmental information.

Environmental information is provided and disseminated in oral, written, electronic, audio-visual or other forms. In the Republic of Belarus, the procedure for providing information, including environmental information, is generally established as the implementation of the right of citizens to apply. According to Article 4 of the Law of the Republic of Belarus "On Citizens 'Appeals", the right of citizens of the Republic of Belarus to apply applies to foreign citizens and stateless persons located on the territory of our state. The right to appeal can be exercised in person or through a representative. In the latter case, representation is carried out on the basis of an act of the legislation of the Republic of Belarus, or an act of an authorized state body or local self-government body, or a power of attorney issued in accordance with the procedure established by the civil legislation of the Republic of Belarus (Law of the Republic of Belarus No. 1982-XII 1992).

For Russia, the issues of access to environmental information, the definition of the legal regime of environmental information, the very formulation of the concept of environmental information, as well as the regulation of access procedures to it are very acute. The main problem of the public is not that environmental information obtained from various sources is closed and inaccessible. The problem lies rather in the fact that there is no legitimate concept of "environmental information", specialized legislation, a clear legal regime for different types of environmental information, the procedure for classifying information specifically to the category of environmental information with all the legal consequences that follow (Federal Law of the Russian Federation N 3-FZ 1996).

The basis for understanding environmental information is determined by the basic provisions of the Federal Law of the Russian Federation of July 27, 2006, No. 24-FZ "On Information, Information Technologies and Information Protection" contains a general definition of information as information (messages, data), regardless of the form of their presentation (Federal Law of the Russian Federation No. 149-FZ 2006).

Article 29, Part 4 of the Constitution of Russia states that everyone has the right to freely seek, receive, transmit, produce and distribute information in any legal way. The list of information constituting a state secret is determined by federal law. The provisions of Article 42 of the Constitution specify the right to access to environmental information, according to which everyone has the right to a favorable environment, reliable information about its condition (The Constitution of the Russian Federation 1993).

General management in the field of environmental protection is carried out by State authorities and local self-government bodies. The powers in the sphere of relations related to environmental protection are divided into three levels: the powers of state authorities of the Russian Federation; the powers of state authorities of the

subjects of the Russian Federation; and the powers of local self-government bodies. Some of the most important powers, such as environmental protection, specially protected natural territories, as well as legislation on environmental protection, are assigned by the Constitution of the Russian Federation to the joint jurisdiction of the Russian Federation and its subjects.

The public has the right to submit a statement or complaint about the illegality of decisions taken on environmental issues to the body that made the decision and, or to a higher body in accordance with the Federal Law "On the Procedure for Considering Appeals of Citizens of the Russian Federation". Citizens can submit a proposal, application, or complaint.

Also, the Federal Law "On Appeal to the Court of Actions and Decisions that Violate the Rights and Freedoms of Citizens" (1993) it provides for the right of the public to file a complaint against actions (decisions) that violate its rights and freedoms to a higher-ranking state body, local self-government body, institution, enterprise or association, public association, official, or civil servant. The body, association, or official that is higher in the order of subordination is obliged to consider the complaint within a month. If a citizen's complaint is denied or he has not received a response within a month from the date of its submission, he has the right to file a complaint with the court.

The public concerned has the right to appeal directly to the court at any time. The procedure of pre-trial challenge to a higher or other body is not mandatory. The pre-trial complaint review body meets the criteria of "independence, impartiality" only formally. Despite the fact that the law" On the procedure for Considering Appeals of Citizens of the Russian Federation "provides for a ban for bodies that have accepted a public complaint to send it for consideration to a state body, local government body or official, a decision or action (inaction) which is being appealed. However, often the complaint is sent directly to the body or official whose actions are being appealed. In such cases, the consideration of the complaint may not meet the criteria of "independence, impartiality".

In practice, there are no differences in the order of appeals of individuals and legal entities with an administrative complaint. In accordance with the norms of the Constitution of the Russian Federation, citizens have the right to apply personally, as well as to send individual and collective appeals to state bodies and local self-government bodies.

A citizen sends a written appeal directly to the state body, local self-government body or to the official whose competence includes the solution of the issues raised in the appeal. The application is subject to mandatory registration within three days from the date of receipt. The response to the request, in the form of an electronic document, is sent to the e-mail address specified in the request, or in writing to the postal address specified in the request. Only the applicant is informed of the decision on the complaint, and the general public is informed sporadically. The concept of "environmental information": in Russian law, it is one of the central and rather controversial issues. There is no legally defined definition of environmental information.

As we can see, both Kazakhstan and Belarus have ratified the Aarhus Convention, a lot has been done on their part to implement it, and the legislative consolidation of the right to a favorable environment was influenced by international legal norms and principles. While the Russian Federation, which participated in the development and discussion of its draft, has not yet joined the Aarhus Convention, although the environmental legislation of Russia fully complies with the provisions of this Convention, the issue of ratification of the Aarhus Convention is currently being discussed again in the Ministry of Natural Resources and Ecology of the Russian Federation. In order to improve cooperation on the convergence and harmonization of national legislation, one of the most relevant and promising areas for these states is to ensure the improvement and unification of environmental legislation.

International environmental conventions regulate all major natural resources (water, land, plant and animal resources, and the atmosphere). With the declaration of independence, the countries of Central Asia are actively involved in the global process of cooperation, the countries join the United Nations, and the activities of international organizations are expanding in the region. By the decision of the heads of State of Central Asia, such regional platforms as the International Fund for Saving the Aral Sea (IFAS) were established in 1993, the Interstate Commission for Sustainable Development of the Countries of the Aral Region (ICSD) in 1995 and the Regional Environmental Center of Central Asia in 2001. The involvement of the Central Asian countries in international cooperation is also due to their wider participation in agreements in the field of environmental protection at the global and regional levels (Fairbrother *et al.* 2019, 1606).

In 2011, the Law of the Republic of Tajikistan "On Environmental Information" was adopted, according to which environmental information is documented information containing information about the state of the environment and its impact, measures to protect it, as well as about the effects of the environment on humans,

the composition of which is regulated by law. Paragraph 3 of Article 8 provides that it is not allowed to restrict access to environmental information: on emissions of pollutants into the atmospheric air and wastewater discharges into water bodies that exceed the standards in the field of environmental protection or in the absence of such standards, if their establishment is required by the legislation of the Republic of Tajikistan; on discharges into a water body of chemical or other substances, their mixtures, objects or waste; on the introduction of chemical or other substances into the earth and soil, which led to a deterioration in its quality or the quality of underground water; on ionizing and electromagnetic radiation, noise or other physical effects that exceed the standards in the field of environmental protection or in the absence of such standards, if their establishment is required by the legislation of the Republic of Tajikistan (Law of the Republic of Tajikistan No. 705 2011).

We are impressed by the norms that "the attribution of environmental information about the fact of causing harm to the environment to specialize environmental information is prohibited." At the same time, the law under consideration contains an exhaustive list of restrictions on the provision of environmental information. We believe that these provisions are progressive in nature, allow people to be informed and apply for the protection of their rights and interests in the judicial and other bodies, and can be used in the legislative practice of our country.

3. Discussion of Results

The study discussed the results of well-known scientists on the implementation of the national strategy for sustainable development, promoting the implementation of the processes of publicity and democratization of society in the field of Environmental Protection and natural resources, creating the necessary conditions for access to environmental information resources, environmental pollution, environmental safety measures. Let's say, for example.

Yerkinbaeva L. argues that digitalization is, first of all, a systematic approach that is the main achievement of environmental policy in the Republic of Kazakhstan (Bekezhanov and Yerkinbaeva 2017, 754).

According to the concept of G. E. Kudinova (2014, 104), "without solving the problems of protecting the ecological balance in the biosphere from the growing virtual threat to protect it from new weapons of mass destruction, the implementation of digital technologies in the world economy is becoming more dangerous than the use of nuclear weapons, but a real threat".

"Digitalization of the environmental protection system is an opportunity to more effectively ensure our constitutional rights to environmental well-being, openness and accessibility of environmental information, as well as transparency of control and supervisory activities" (Quaranta *et al.* 2020, 1).

Environmental startups offer the introduction of digital analogues of the waste market, develop special gadgets and technologies for controlling waste sorting, cleaning the environment, analytics and preventing environmental harm. The transition of environmental business to a digital format allows you to correctly calculate costs, assess how much tariffs in different subjects allow or do not allow you to implement projects. It is important to note that with full digitalization, it is possible to save on transport costs and build some of the facilities by saving transport costs, and therefore the digital role for the solid municipal waste infrastructure is a priority (Bekezhanov *et al.* 2018, 83). At the same time, it is necessary to automate the collection of data on emissions, discharges and waste directly at the sources of their formation, to digitalize their centralized storage and operational use for the implementation of environmental policy (Ang and Fredriksson 2021).

It is necessary to digitalize intra-industry control and supervisory activities, to improve and digitize the system of environmental performance indicators. Similar tasks are faced by all sectors of the economy, both in the CIS and in the world as a whole (Bekezhanov *et al.* 2019, 175).

We know about the cases implemented in large chemical and petrochemical holdings: automation of procurement processes, document management and reporting, robotization of personnel processes (Kuderina *et al.* 2021, 371).

Environmental pollution and green energy sustainability concepts are a hot topic today. As we can see, recycling and reuse of waste is at the top of the trends of many companies and enterprises. However, this is only part of the whole problem. Such topics as air, control and monitoring of the environmental situation are very popular. The Digital Economy Development Fund is the main organizer of the event, which provides assistance in scaling and incorporating domestic digital solutions, increasing the capitalization of corporations through the digitalization of business, as well as creating platforms for the presentation of digital solutions and the exchange of cases of their integration.

It should be noted that the introduction of digital economy technologies in the field of environmental safety is an irreversible process. The scale and scale of the changes taking place explain the severity of today's perception of disruptive innovation. The pace of development and spread of innovations in all industries is

becoming faster than ever. As part of the implementation of the Digital Economy Program, the nature and structure of management processes in the field of environmental safety will change, some familiar procedures will be removed, replaced by artificial intelligence, robots. The main results of research work on environmental and legal regulation of digitalization of Environmental Protection are in the following areas.

- ensuring and improving environmental safety;
- minimize environmental risks;
- biodiversity conservation;
- participation in the fight against climate change;
- improving the quality of life of people;
- reducing the amount of waste entering the environment;
- improving environmental education;
- in the field of environmental digitalization;
- in the activities of state bodies in the field of Environmental Protection.

Conclusion

Summing up the results of the research work, we came to the conclusion that:

1. Do not reduce the quality of life: if a country loses its economic competitiveness, it directly affects the well-being of its citizens. Sooner or later, as a result of the loss of the advantages of the legacy of past periods (such as social and physical infrastructure, environmental potential), the effect of "eating up resources"occurs.

2. Taking into account the experience of comparable countries, it is necessary to reduce the risk of falling into the technological poverty trap. Improvement of the environmental situation revision of environmental legislation and standards based on international practice. Implementation of the "polluter pays" principle based on proven environmental harm. Instead of command and administrative regulation of enterprises that pollute the environment, based on a system of penalties and fines, a system of incentives for integrated environmental permits will be introduced, and it is also important to develop the process of environmental impact assessment.

3. Policy in the field of green economy and environmental protection in the field of development of "ecological" culture among the population ensuring sustainable development for the growth of the quality of life of the population.

4. Stimulating and attracting green investments: increasing the share of released technologies, creating favorable conditions for innovative ecosystems to be open to the world and be competitors for human capital, attracting technology entrepreneurs, scientists, and other qualified specialists.

5. Development of Kazakhstan's directions for improving the quality of water and land resources, improving air quality, developing a low-waste economy, and preserving biological diversity.

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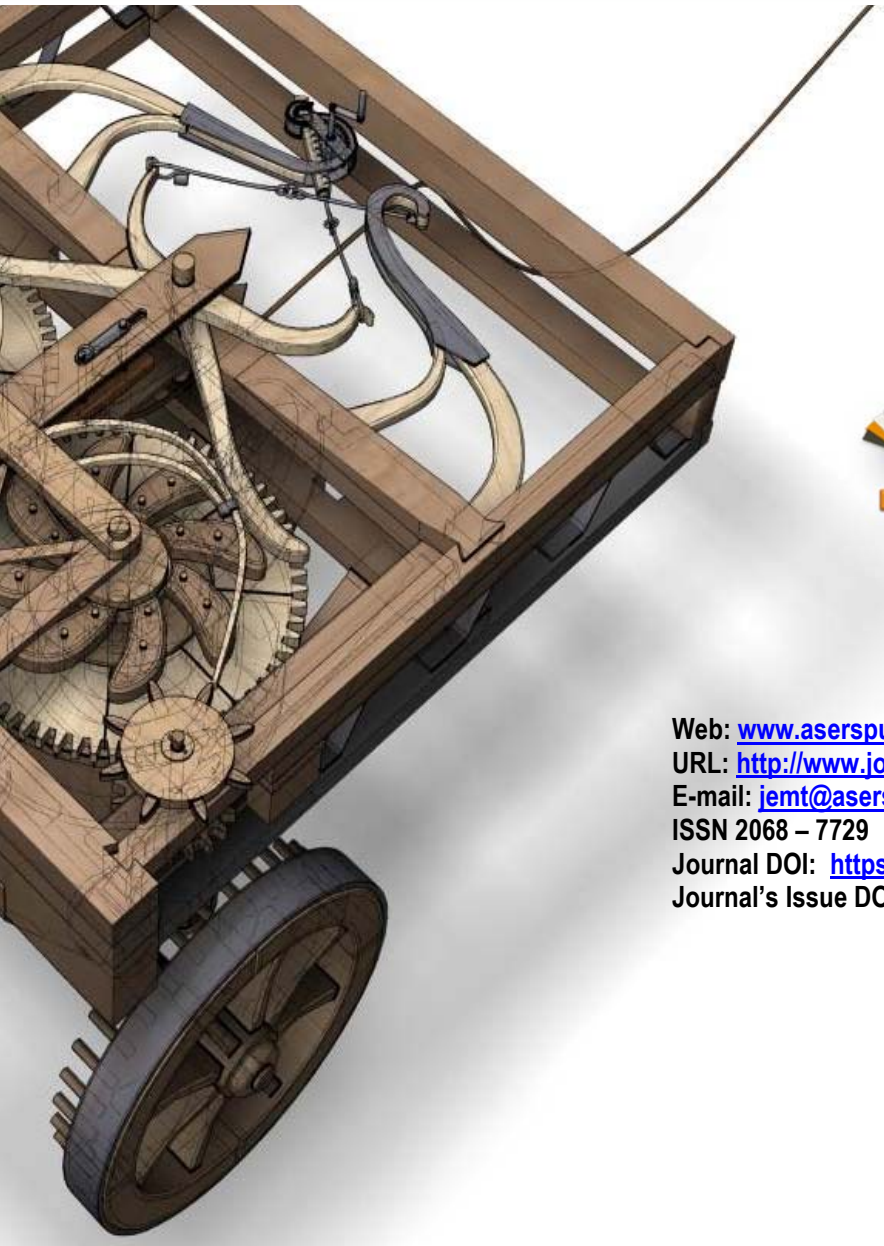

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