New digital and other innovative tools for environmental protection, nature management and environmental safety for the purposes of antimonopoly and financial regulation

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The article is devoted to the development of digitalization of the life of modern society, the problems that this phenomenon creates for modern societies and legal orders, as well as ways to solve them. The authors outline that the level of dynamics of innovative development has led to the introduction of digital technologies in almost all areas of both production and many aspects of a person's private life, the legal regulation of which is not isolated. The authors analyze in detail the initiatives and solutions being implemented in the world, paying special attention at the intersection of the development of information technology and ensuring environmental safety. In particular, the authors note that the advancement of information technology has led to greater transparency of information in commodity markets and suggest using this transparency to ensure greater protection of the population and states from environmental offenses and information abuse by businesses affecting the production of environmentally friendly goods, as well as the development environmentally friendly industries. The sustainable development of any country in modern conditions is seen by the authors of this research in finding a balance between establishing conditions for free technological advancement and minimizing the negative effect of such advancement by stimulating the honesty and openness of companies, rather than classical prohibitions and restrictions, which is possible with the use of modern information technologies.

Keywords: environmental safety, environmental protection, environmental governance, social governance, sustainable development, digitalization, public procurement, greenwashing, unfair competition.

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1. Introduction

The level of dynamics of innovative development has led to the introduction of digital technologies in almost all areas of both production and many aspects of a person's private life, the legal regulation of which is not isolated. At all stages and levels digital technological developments and their implementation form the basis for the economic, social and environmental advancement of the state and law, open up new opportunities for humanity when using innovative technologies in production and consumption. An integral factor and condition for ensuring growth and competitiveness of the economy is the full support of research, science and innovation. Innovations and technological growth do not make a revolution in law, denoting only certain areas of legal regulation that require improvement and updating.

As socio-economic ties become more complex, the meaning of digitalization has also changed. Initially, digital technologies were used as a means of communication and information transfer. To date, digital technologies are both a tangible and intangible asset that is integrated into complex and innovative business strategies and capital structuring. In the conditions of modern intensive innovative development, it is possible to single out the coordinating significance of digital technologies in the mechanism of building partnership relations and interaction between market participants and the state.

A natural and still unanswered question arises — how new functions of digital and other innovative technologies can contribute to the development of the economy and, conversely, how they will affect unfair practices and abuses in their application.

Legal and interdisciplinary research specifically focus on considering the results of intellectual activity created through digital technologies, not only as objects of law, but also as strategic multidisciplinary resources that allow coordinating: the movement and limitation of the innovation process; protecting and gaining access to technology; collaboration and competition; risk management of production and promotion of goods. The rapid development of scientific and technological progress observed in modern conditions predetermined a change in the direction of legal regulation, taking into account the fact that the interests of the modern market and business are focused not so much on the turnover and ownership of individual material goods, but on the appropriation of intangible assets: from information resources to artificial intelligence technologies, whose presence or absence of their own legal personality is currently not clear.

In general, history and experience confirm that technological and scientific progress is based on the interconnection of innovations, economics and law, ensuring the improvement of living conditions and continuous social development (Seckelmann 2016, 9).

The boundaries between the physical and digital worlds are becoming increasingly blurred. Rapid digitalization is changing the natural environment. This, in turn, changes the processes of observation, understanding, human interaction with the ecosystem, as well as the algorithm for solving environmental problems.

As digital aspects and the environment interact more and more, the fundamental questions emerge. How can digital technologies help us better protect the environment? What is the impact of digitalization on the environment? Can digital transformation be sustainable? How can technology contribute to the development of a circular economy?

These are just some of the issues that society is beginning to address as the interplay between digital and technology grows ever stronger.

2. Basic research

2.1. Global and supranational regulation

Today, digital technologies and environmental issues are important topics of public policy around the world. However, it cannot be claimed that this is a modern problem.

In 1853, at the Brussels Maritime Conference, the task was set to establish a "unified system of meteorological observations at sea". The Conference set international maritime standards and called for the exchange of ocean data. To exchange information, the Conference participants decided to use Morse code, which was developed 10 years before the event in Brussels. Since then, technology has evolved. The radio and fax were replaced by computers, but the problems remained the same. Since the 19th century, the International Meteorological Organization, and later the World Meteorological Organization (WMO), has coordinated the global system for collecting, processing and using data. Meteorological data was transmitted across the national border even at the height of the Cold War in the 1960s[1].

Today, the WMO system coordinates more than 10 000 land[2], sea and air observing stations, which allow the collection of huge amounts of weather-related data.

They collect real-time data and share it around the world to make weather and climate forecasts. In addition, through numerical analysis, WMO pioneered the development of algorithms and other applications based on artificial intelligence (AI) long before the topic became known. Much can be learned about data and artificial intelligence from a unique WMO-managed system that operates almost invisibly and provides vital information ranging from evening weather forecasts to global warming forecasts[3].

Other initiatives combining technology and environmental protection can also be seen within other international organizations. In January 2020, the International Telecommunication Union (ITU) published Recommendation ITU-T L.1470 (01/2020) Greenhouse Gas Emission Pathways for the Information and Communications Technology Sector, Compatible with the UNFCCC Paris Agreement[4]. The recommendation sets out a path for information and communications technology (ICT) companies to reduce greenhouse gas (GHG) emissions. Further details on trajectories are provided in the Guidance document for ICT companies setting evidence-based goals, which accompanies the recommendation.

The European Union and its European Green Deal[5] also link digital and environmental policy efforts. Among other things, it highlights that the EU Commission will examine measures to ensure that digital technologies such as artificial intelligence (AI), 5G, cloud

[1] "Digital aspects and the environment". *DigWatch. Geneva Internet Platform.* 2023. Accessed May 30, 2024. https://dig.watch/trends/digital-and-environment.

[2] "Our mandate". *World Meteorological Organization.* N. d. Accessed May 30, 2024. https://public-old.wmo.int/en/our-mandate/weather.

[3] "Origin, impact and aftermath of WMO Resolution 40". *World Meteorological Organization.* 2019. Accessed May 30, 2024. https://library.wmo.int/doc_num.php?explnum_id=10140.

[4] Greenhouse gas emissions trajectories for the information and communication technology sector compatible with the UNFCCC Paris Agreement. 2020. Accessed May 30, 2024. https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=14084.

[5] "A European Green Deal. Striving to be the first climate-neutral continent". *European Commission.* N. d. Accessed May 30, 2024. https://commission.europa.eu/strategy-and-policy/priorities-2019–2024/european-green-deal_en.

and edge computing, and the Internet of Things can accelerate and maximize the impact of anti-change policies on climate and environmental protection. The Deal also announces the adoption of a European Industrial Strategy that will specifically address the dual challenges of green and digital transformation.

Similarly, the recently released Shaping Europe's Digital Future touches on the relationship between technology and the environment, emphasizing that technology can "decarbonize all sectors and reduce the environmental and social impact of products placed on the EU market"[6].

Digital technologies are not necessarily good or bad, and they have both direct and indirect impacts on the environment. On the positive side, digital technologies such as artificial intelligence, big data, the internet of things and blockchain are revolutionizing our approach to biodiversity conservation, clean energy development and disaster management. They also allow the use of a more accurate method in the use of natural resources, for example, in organic farming. This significantly reduces the burden on the environment and natural resources used in the production of agricultural products, while ensuring food and environmental security.

The use of digital technologies forms a new digital environment in environmental legal relations. Such an environment plays a certain and increasingly significant role in the relationship between the technosphere and the natural environment.

2.2. Russian legislation

In the Russian Federation, it is relevant to determine the areas of digitalization of nature management and environmental protection, in which the solution of global problems is linked to the national interests of our country.

According to Para. 25 of the National Security Strategy, approved by Decree of the President of the Russian Federation of July 2, 2021, No. 400, among the national interests at the present stage are the development of human potential, improving the quality of life and welfare of citizens; sustainable development of the Russian economy on a new technological basis; environmental protection, conservation of natural resources and rational use of natural resources, adaptation to climate change[7].

On July 14, 2021, the Government of the Russian Federation determined the directions for sustainable economic development[8]. It is envisaged that when carrying out anthropogenic activities, it is necessary to ensure the preservation, protection or improvement of the state of the environment; reduction of emissions and discharges of pollutants or prevention of their impact on the environment; reducing greenhouse gas emissions; energy saving and increasing the efficiency of resource use.

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[6] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Shaping Europe's digital future. COM/2020/67 final. Accessed May 30, 2024. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0067&from=EN.

[7] On the National Security Strategy of the Russian Federation: Decree of the President of the Russian Federation of July 2, 2021, No. 400. Hereinafter all references to Russian regulations and court practice are given according to the data from the "ConsultantPlus" system. Accessed May 30, 2024. http://www.consultant.ru.

[8] On approval of the goals and main directions of sustainable (including green) development of the Russian Federation: Decree of the Government of the Russian Federation of July 14, 2021, No. 1912-r.

Decree of the Government of the Russian Federation of February 8, 2022 No. 133 approved the Federal Scientific and Technical Program in the field of environmental development of the Russian Federation and climate change for 2021–2030[9]. One of its directions is the adaptation of natural systems, population and economic sectors to climate change. Systemic adaptation measures are in demand, taking into account regional and sectoral specifics. This will ensure environmental and climate services for the sectors of the economy; optimization of climate-driven decisions in terms of strategic planning for adaptation to climate change in various sectors of the economy; making decisions in terms of strategic planning and security; development of recommendations for decision-making in investment policy and effective consideration of social risks and opportunities.

The solution of these problems is possible, among other things, using digital technologies.

It should be noted that the main document in the field of digitalization of ecology is the Strategic Direction in the field of digital transformation of the industry of ecology and nature management[10]. The document was drafted in pursuance of the Decree of the President of the Russian Federation of July 21, 2020, No. 474 "On the national development goals of the Russian Federation for the period up to 2030" and provides for the introduction of the following technologies:

— artificial intelligence — to analyze monitoring information, predict dangerous meteorological phenomena, fire danger in forests, automate decision-making in real time, detect and identify objects of flora and fauna in a complex environment;

— remote sensing of the Earth and an unmanned aerial vehicle — for survey, planning for efficient use and reproduction, protection of natural resources, environmental protection and climate change control;

— Internet of things technology, which is used as part of the development of the state observation network by Roshydromet to improve the efficiency of collecting and transmitting data from stationary and mobile observation points;

— big data and analytical data processing — for the accumulation, storage, analysis and processing of data in the established federal state information systems and digital platforms;

— digital twin — to update and establish a database of a new generation of natural objects (ecosystems), including subsoil, water bodies, forests, habitats for wildlife objects.

2.3. Digitalization and ecological policy: legal aspects

The possibilities of digital technologies have also been explored in the context of the circular economy, namely how artificial intelligence, 3D printing and other new technologies can facilitate the transition from the current linear economic model to a more responsible one. For example, augmented reality can help repair, rather than replace, damaged products, while artificial intelligence can accelerate the development of new mass-produced products that are free of hazardous chemicals and materials and optimize

[9] On approval of the Federal scientific and technical program in the field of environmental development of the Russian Federation and climate change for 2021–2030: Decree of the Government of the Russian Federation of February 8, 2022, No. 133.

[10] Approved by Decree of the Government of the Russian Federation of December 8, 2021, No. 3496-r.

infrastructure to ensure a circular flow of products. In other words, digital technologies can help stimulate the economy and increase resource efficiency while reducing waste.

To illustrate this, a PwC research on How Artificial Intelligence Can Enable a Sustainable Future shows that the use of AI technologies in the context of environmental protection can have a positive impact on global gross domestic product (GDP), carbon emissions, as well as net employment. Staying within the concept of sustainable development, the report explores how "more informed and targeted digitalization can stimulate environmental action". It predicts that ICTs will have the potential to reduce greenhouse gas emissions by 20 % by 2030, which is still short of the 45 % needed to meet the targets set out in the Paris Agreement. However, there are high hopes for artificial intelligence and big data[11].

Big data and artificial intelligence algorithms can be used to monitor and conserve endangered species on land, as well as provide early warning of natural disasters such as earthquakes, wildfires, floods and droughts. Data collection and satellite imagery tools can also help ensure ocean resilience by preventing overfishing and monitoring the health of marine ecosystems and ocean habitats and pollution levels. However, this is not the full potential of AI and big data. AI-powered smart grids can help track trends in energy consumption and ultimately reduce greenhouse gas emissions.

Blockchain is another digital technology that could revolutionize the environment. According to the report titled Building Blockchain for a Better Planet[12], blockchain technologies can have multiple applications for environmental sustainability. For example, blockchain could enable decentralized and sustainable resource management, including water and energy consumption. In addition, it could help conserve marine biodiversity by preventing practices such as overfishing through traceable and transparent supply chains.

No discussion of new technologies would be complete without a focus on the Internet of Things. Internet-connected sensors can help control and prevent deforestation, which accounts for 15 % of global greenhouse gas emissions (Guttman 2023). The Internet of Things can also be used to combat poaching by tracking endangered animals, monitoring animal behavior, and implementing smart security and surveillance systems.

While recognizing the clear benefits of using digital technologies in all sectors of the economy, there is a growing discussion about the short and long-term negative effects of digital technologies on the environment. The creative initiative and freedom of restructuring the surrounding world by man has limitations, predetermined primarily by the interests of the survival of mankind as the highest form of life on Earth. In this regard, the moral foundations of legal restrictions should not be understood as abstract and often unattainable ideals. Understanding the moral restrictions in the legislation on environmental protection and environmental law is predetermined by the task of preserving the set of humanitarian values that have advanced over the millennia, which are necessary for the life support of future generations. In the conditions of intensive development of digital technologies, the concerns of V. I. Vernadsky are seemed relevant: "Will humanity be able to use this power, direct it to good, and not to self-destruction… has it grown to the ability to use this power, which science must inevitably give it?" (Vernadskii 1981, 167).

[11] "How AI can enable a sustainable future". Accessed May 30, 2024. https://www.pwc.co.uk/sustainability-climate-change/assets/pdf/how-ai-can-enable-a-sustainable-future.pdf.

[12] "Building block(chain)s for a better planet". *World Economic Forum.* 2018. Accessed May 30, 2024. https://www3.weforum.org/docs/WEF_Building-Blockchains.pdf.

It is required to assess the impact on natural forces not only in terms of the scale of human behavior, but also in relation to the opportunities provided to him by the norms of environmental protection legislation. The issue of the impact of digital technologies on the environment is considered within the framework of an environmental analysis of law, which evaluates the effectiveness of each rule in relation to solutions to the problem of reducing the harmful impact of anthropogenic origin on the environment (Henry 2013).

Here it is important to turn again to the Strategic Directions in the field of digital transformation of the ecology and nature management industry[13], where the problems and challenges of the digital transformation of the sphere under consideration are identified. There are the following problems of the current state of the industry of ecology and nature management, solved with digitalization:

— focus on the collection and circulation of information on paper and in non-standardized digital formats;

— document-centric management system, multi-link vertical, complex system of distribution of powers and responsibilities;

— lack of unified transparent business processes for the implementation of functions by public authorities;

— low awareness of citizens in terms of monitoring the state of the environment and measures taken by the executive authorities to reduce the negative impact;

— lack of unified platform solutions;

— lack of a unified technical policy and strategy for implementing the digital transformation of executive authorities exercising powers in the field of ecology, subsoil use and nature management, etc.

Other uses of digital technologies such as online platforms and mobile applications include awareness raising, early warning and information sharing.

The other, more destructive side of digital technology is far from trivial. There is a growing debate about the short- and long-term negative environmental impacts of digital technologies.

There is a lot of talk these days about the "hidden" or "invisible" pollution caused by the Internet. Some estimates suggest that if the Internet were a country, it would rank 5th or 6th in the world in terms of electricity consumption. Google alone accounts for approximately 40 % of carbon dioxide emissions, which explains why it is considered the largest polluter among the Internet giants. Other digital technologies are no different. They currently account for 4 % of global emissions, more than emissions from much more talked about industries such as aviation[14].

Unfortunately, the impact of digital transformation on the environment does not end there.

According to 2019 data, bitcoin mining required 64,15 TWh of electricity per year, which exceeds the energy consumption of entire countries such as Chile, Switzerland, New Zealand or Bangladesh. A very large amount of electricity is also consumed by domain name servers and the approximately 7000 data centers around the world that are running continuously. These data centers consume about 2 % of the world's electricity and projections show that their energy consumption will rise to 8 % by 2030. Similarly, forecasts

[13] Approved by Decree of the Government of the Russian Federation of December 8, 2021, No. 3496-r.

[14] "Climate crisis: The unsustainable use of online video. The practical case for digital sobriety". *The Shift Project*. 2019. Accessed May 30, 2024. https://theshiftproject.org/wp-content/uploads/2019/07/2019–02.pdf.

indicate that the advent of 5G technology is expected to triple the energy consumption of mobile operators in the next five years. Online video streaming is also among the biggest environmental polluters. It is estimated that over 300 million tonnes of carbon dioxide were released into the atmosphere from these activities in 2018, equivalent to Spain's total annual greenhouse gas emissions[15].

It should be emphasized that, according to the methods used, the damage caused to the environment is calculated in terms of value only according to the degree of damage to natural objects, which makes it impossible to use economic instruments adequate to the damage caused. At the same time, according to foreign studies, 94–96 % of the damage from environmental pollution falls on the damage caused by morbidity and mortality due to emissions of pollutants into the atmosphere (Medvedeva, Artmenkov 2019). In the domestic environmental system, damage to public health caused by pollution of atmospheric air, water bodies and soils is not included in the assessment of damage caused to the environment. There is no methodology for assessing damage from air pollution. The environmental damage caused by atmospheric air pollution, as such, is not assessed and measured in terms of value. At the same time, when establishing by the courts the facts of exceeding the established standards of permissible environmental impact by legal entities, individual entrepreneurs, a presumption is applied that there are facts of causing harm as a result of such actions[16]. Also, the applied official methods for assessing the harm from pollution of soils and water bodies from the standpoint of reflecting damage to health in them raise questions. An analysis of the magnitude of damage to the country as a whole is not carried out systematically.

In Russia, the damage from air pollution by emissions from stationary sources is very significant. A conservative assessment of damage from pollutants emitted only by stationary sources of pollution, without taking into account damage from vehicle emissions and fuel used in residential buildings, carried out on the basis of specific cost indicators of damage determined in the latest studies of this issue in European countries (European Union countries, Great Britain, Ireland) and the United States, taking into account the harm to public health, in 2017 amounted to 1182 billion rubles (about 1,8 % of GDP) (Bobylev et al. 2002). Estimates of harm from atmospheric pollution have become relevant in the context of the technological transformation of Russian industry.

From 2023, the European Union introduces a carbon tax on imported products with large greenhouse gas emissions. The tax applies to products with a high carbon footprint imported into the countries of the European Union, such as oil, gas, metals, cement, fertilizers, etc. For them, limits on greenhouse gas emissions will be set in accordance with EU standards. If they are exceeded, the exporter will have to pay tax (Zhavoronkova, Shpakovskii 2021, 56).

In many foreign countries, in addition to administrative measures, various financial instruments are actively used. According to the European Environment Agency, the following market instruments for regulating environmental impact are used in the practice of state environmental regulation in European countries:

— commercially tradable permits (produced to reduce pollution (pollutant emission license) or use resources (fishing quota) by providing market incentives for trade);

[15] Climate crisis: The unsustainable use of online video. The practical case for digital sobriety.

[16] On some issues of application of legislation on compensation for damage caused to the environment: resolution of the Plenum of the Supreme Court of the Russian Federation dated November 30, 2017, No. 49.

— environmental taxes (introduced to change the cost of influencing the behavior of producers and consumers, as well as to increase the revenue items of the state budget);

— environmental payments (introduced to partially or fully cover the costs of environmental services and the costs of reducing the level of environmental pollution;

— environmental subsidies and incentives (used to stimulate the development of new technologies, ensure the formation of new markets for environmental goods and services, including technologies, encourage changes in consumer behavior, as well as to provide temporary support to companies that strive for a higher level of environmental protection);

— liability and compensation schemes (developed in order to ensure adequate compensation for damage caused as a result of activities hazardous to the environment.

It should be noted that the largest players in the digital market are paying increased attention to the climate agenda.

On September 19, 2019, Amazon announced its climate commitment, in which it is obliged to meet the Paris Agreement targets 10 years ahead of schedule. The company also plans to be 100 % renewable by 2030 (Dolsak, Prakash 2019). The world's largest buyer of renewable energy, Google, has been carbon neutral since 2007 and has taken steps to recycle equipment, including replacing old servers with new ones (Dreyfuss 2018).

As a carbon-neutral enterprise, Microsoft, for its part, has announced its plan to become a carbon-negative enterprise (that is, eliminate more carbon dioxide than it emits by 2030). To step up its efforts, the company created the Climate Innovation Fund, dedicated to developing technologies that fight greenhouse gas emissions, while its AI for the Earth program provides actors working on environmental issues with access to artificial intelligence technologies and their cloud[17].

Apple has also made strides in the field of environmental conservation. Since 2014, its data centers have been powered by 100 % renewable energy, which in turn has reduced the greenhouse gas emissions of its facilities by 54 % worldwide[18].

The gaming industry is also taking steps towards environmental awareness, as outlined in the Playing for the Planet report. With over 2,3 billion users, the industry provides ample opportunity to expand outreach and raise awareness on environmental issues. Video games such as World Rescue, supported by UNESCO and the Mahatma Gandhi Institute for Education for Peace and Sustainable Development, and My Green World give players the opportunity to tackle the challenges of deforestation, drought and pollution[19].

Using advanced technologies to build or upgrade infrastructure can help mitigate climate-related risks. Climate resilient technology is already being implemented not only in the construction industry, but also in the business processes of many different industries. According to The Guardian, if every new building over the next 30 years were built from a material that absorbs carbon dioxide, people could eliminate pollution caused

[17] "AI for Earth". *Microsoft.* 2017. Accessed May 30, 2024. https://www.microsoft.com/en-us/ai/ai-for-earth.

[18] "Apple now globally powered by 100 % renewable energy". *Apple Media.* 2018. Accessed June 25, 2023 May 30, 2024. https://www.apple.com/newsroom/2018/04/apple-now-globally-powered-by-100-percent-renewable-energy.

[19] "Digital aspects and the environment". *World Meteorological Organization.* 2023. Accessed June 25, 2023 May 30, 2024. https://public-old.wmo.int/en/our-mandate/weather.

by a warming globe, but automation and robotics are still the key to solving this issue (Holden 2018).

This can have a huge impact on making businesses more resilient to the variability of the planet's warmer climate. Rapid advances in robotics are proving to be a key driver of the current surge in technological innovation, driven by both corporations and early-stage startups. Robotics is already a multibillion-dollar industry, based on factory automation.

The link between energy efficiency, renewable energy and climate change is clear, but the way in which automation can help is not clear. This applies in particular to the fight against climate change, where robots can provide some advantages. Pollution and emissions prevention through monitoring emissions of harmful greenhouse gases or optimizing manufacturing processes are forces that can definitely change the way the modern world works.

In recent years, the recycling industry has begun to introduce new software and innovations to reduce operating costs and reduce the negative impact of waste on the environment. The use of robots in waste handling and recycling has many advantages. Automated processes can reduce the amount of carbon dioxide emissions from final incineration by reducing the amount of waste, or increase the amount of materials that can be captured in the sorting process and, as a result, be returned to the market.

The tasks of improving the quality of life can be solved with a strict management system. New technologies are coming to support efforts in this direction, a truly innovative role lies in the use of advanced self-guided robotics. For example, a household waste collection process can be carried out using GPS tracking and smart containers that can provide content and weight information. This data is provided in real time to a system that can store it to predict collection or create optimal collection routes.

The system can also be widely used in other industries, not only reducing costs and local budget estimates, but also reducing pollutant emissions produced by vehicles.

One of the significant measures of economic incentives in the field of environmental protection, which has positively proven itself in many foreign countries (in particular, in the European Union), is the provision of tax and other benefits to business entities when they introduce the best available technologies (Khludneva 2013). In Directive 2008/1/EC of the European Parliament and of the Council of January 15, 2008, on Integrated Pollution Prevention and Control (codified version)[20], the term "best available technology" means the most efficient and advanced stage in the development of industrial activities and methods operation of facilities that indicate the practical suitability of certain technologies in order to provide a basis for setting emission limit values intended to prevent or, if this is not practicable, reduce emissions and environmental impacts in general. Such technologies are low-waste, allow the use of less harmful substances in production activities, stimulate the regeneration and recycling of substances produced and used in a particular technological process and waste, and are also characterized by other environmentally significant parameters.

In many cases, environmental policy is not only about global warming, but also about the ability to protect animals, rivers, forests and other parts of the human envi-

[20] Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control. Accessed May 30, 2024. https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32008L0001.

ronment. Digitization, automation and robotics are used in many different tasks that can somehow minimize the negative effects of human activity. The integration of automation capabilities opens up great opportunities for environmental protection as well as scientific research.

In turn, this circumstance gives reason to believe that the legislator should avoid excessive regulatory restrictions and prohibitions on the use of digital technologies. Firstly, in connection with the opportunities that are opening up in the development of science and technology, the consequences of the introduction of bans are not clear on the scale of both the economy and the ever-increasing well-being, human well-being. Secondly, the spread of restrictions and prohibitions is fraught with errors in the management and regulation of socio-economic relations, since life has shown that modern digital technologies are often intuitively and emotionally rejected by users at first, but nevertheless, with the discovery of their effectiveness and usefulness later these technologies are actively encouraged. The loss of time due to the effect of the introduced regulatory bans on the use of digital technologies can lead not only to an increase in future costs, but also to lost opportunities in providing the population with modern scientific achievements. Thirdly, the introduction of prohibitions and restrictions on the use of digital technologies is based on unreliable or distorted information.

The Russian Academy of Sciences noted: "Issues of monitoring and forecasting the environmental situation in various regions of the world, Russia and Siberia in particular, are extremely relevant and are one of the global challenges of the 21st century. Since these issues do not belong to the sphere of individual areas of science, they should be considered systematically on an interdisciplinary basis by highly qualified specialists, taking into account legal, socio-economic, and historical aspects. Therefore, the solution of such issues is possible only on the basis of interdisciplinary fundamental and applied research on the interaction between man and nature, while maintaining a balance between increasing the economic potential of the regions and improving (preserving) a comfortable living environment for the population"[21].

In the Fundamentals of State Policy in the field of environmental development of the Russian Federation for the period up to 2030, approved by the President of the Russian Federation on April 30, 2012, the development of economic regulation and market instruments for environmental protection is named one of the main tasks of the national state policy in the field of environmental development, to solve which it is planned to use, among other things, incentive mechanisms:

— establishment of payment for negative impact on the environment, taking into account the costs associated with the implementation of environmental protection measures;

— stimulation of enterprises implementing programs of ecological modernization of production and ecological rehabilitation of the respective territories;

— implementation of support for technological modernization, ensuring the reduction of anthropogenic pressure on the environment, sustainable use of renewable and rational use of non-renewable natural resources;

[21] "On timely approaches to solving the issues of monitoring and forecasting the environmental situation in Siberia". *Nauchnaia Rossiia.* 2021. Accessed June 25, 2023. https://scientificrussia.ru/articles/tsifrovye-tehnologii-v-monitoringe-i-prognozirovanii-ekologicheskoj-situatsii-v-sibiri (In Russian); Decree of the Presidium of the Russian Academy of Sciences dated June 22, 2021, No. 115.

— providing an advantage (ceteris paribus) when placing orders for the supply of goods, performance of works, provision of services for state and municipal needs, goods, works, services that meet established environmental requirements.

2.4. The role of the state in the process of advancement the digital technologies and other innovative tools in the sphere of environmental protection

It should also be noted that the state plays an important role in creating a favorable environment and using renewable energy, recycled and more environmentally friendly raw materials in production processes not as a regulator of social relations, but as one of the largest actors in the economy. In the hands of the state as a customer of goods (works, services), there are essential tools to stimulate the development of production of environmentally friendly products, with the introduction of environmentally friendly production technologies, including using secondary raw materials in production.

The state can influence the development of environmentally friendly industries that produce environmentally friendly products in the above way by placing a state order for the goods (works, services) it needs and establishing environmental requirements for purchased objects. One of the options for such incentives may be the development of special preference programs for participants in public procurement offering an environmentally friendly product to the customer for delivery (Gromova 2021, 31). Technically, the provision of preferential treatment can be established by a separate Decree of the Government of the Russian Federation or a combination of such decrees that fix such a regime, for example, through the so-called "second extra" or "third extra" rule, introduced by the Russian legislator and applied within the framework of the national regime in the implementation of state procurement, when priority in the supply of products is given to a manufacturer from Russia or the EAEU[22].

As a result of the application of such measures, the state and society will receive environmentally friendly goods and objects of transport, social and other infrastructure for use in their activities (if we are talking about the procurement of works for the construction of any objects), due to which the effective expenditure of funds from the budget system will be achieved, as well as the task of introducing into circulation and exploitation of environmental and energy-efficient products, which should have a fruitful effect on the environmental situation of the state.

On the other hand, the state, placing its order for environmental products, stimulates the development of the manufacturing of environmental products and environmentally friendly production, acting as a driver of demand for "green" products, leading to the emergence of an offer of such products for the average consumer, and not only for the state customer, which also has a positive effect on environmental protection and the formation of a state of protection from certain environmental threats.

It should be noted that the Russian legislation on the contract system not only provides for the possibility of such environmental public procurement through the establishment of requirements for the objects of such procurement at the level of acts of the Government of

[22] Federal Law No. 44-FZ of April 5, 2013, "On the contract system in the field of procurement of goods, works, services to meet state and municipal needs".

Russia, but also already provides for specific rules for the procurement of environmental objects, although not yet in a significant amount. So, part 5 of Art. 33 of the Federal Law of April 5, 2013, No. 44-FZ "On the contract system in the field of procurement of goods, works, services to meet state and municipal needs" (hereinafter referred to as the "Law on the contract system") provides that the features of the description of certain types of procurement objects may established by the Government of the Russian Federation.

In pursuance of the above norm of the law on the contract system, the Government of the Russian Federation adopted Decree of the Government of the Russian Federation dated July 8, 2022, No. 1224, which came into force on July 8, 2022. The specified document imposes on state customers the obligation to establish, when describing the objects of procurement, related, incl. to the category of hygienic paper, surface hard and soft coatings for landscaping (paving slabs, roofing, waterproofing materials, etc.), fertilizers, containers and waste bins, the share of secondary raw materials that should be used in the production of the relevant public procurement object.

Also, the purchase of goods produced under a special investment contract (SPIC), life cycle contracts, energy service contracts, contracts with counter investment obligations allow to ensure sustainable development and increase the levels of greening of goods (Andreeva 2022, 50).

Such a measure of the greening of public procurement can only be welcomed and supported, since it will have a positive effect both for the users of the purchased products and for its manufacturers, stimulating the latter to bring high-quality recycled goods to ordinary commodity markets. Manufacturers are not limited to supplies for public procurement on the effect for society, which, as a result of such a measure, receives a lower level of environmental pollution due to the direction of part of the waste for processing for the production of the corresponding groups of goods.

At the same time, we note that the processes of greening put before competition law and legal regulation not only the tasks of stimulating the development of competition in the production of environmental products, but also, as a result, the issues of protecting the rights of bona fide producers of environmental products from the actions of their unscrupulous competitors. And if the first specified task of stimulating the production of environmental products can be solved through the formation of demand for such products from state customers and the establishment of conditions for its supply in the public procurement market, the second one requires a more global and comprehensive approach, taking into account a wide range of antitrust violations that may occur in the markets for the presence of environmental products.

2.5. The legal problems of "greenwashing"

One of the most urgent problems affecting not only the rights and legitimate interests of competing companies of unscrupulous participants in commodity markets, but also consumers of products circulating in the relevant commodity markets is the problem of the so-called "greenwashing" (Mazhorina 2021, 185), which means a false statement by a company about the conformity of its products (and/or such company itself) certain environmental standards, due to which such a company, which made a false statement, benefits, including by expanding the volume of products sold, the audience of consumers of its products, etc.

At the same time, both the consumers of its products, who rely on the integrity of the manufacturer and the compliance of its products with the increased requirements of environmental standards (including the compliance of production processes with the principles of its ESG (Environmental, Social and Governance) strategy[23] declared by the manufacturer), and society as a whole, suffer from the actions of the company because the company does not fulfill its social environmental function, which it declares. The competitors of such a company that sell a truly environmentally friendly product and/or have a truly environmentally friendly production and manufacture products that meet the requirements of increased environmental standards are also victims of this practice.

Speaking about the ESG strategy, it should be recalled that the most active area of institutional development has recently been the topic of the climate agenda and the decarbonization of the economy. 28 out of 36 documents of the Government of the Russian Federation drafted in 2022 are related to it[24]. Most of the documents were developed in order to implement Federal Laws No. 296-FZ "On Limiting Greenhouse Gas Emissions" and No. 34-FZ "On Conducting an Experiment to Limit Greenhouse Gas Emissions in Certain Subjects of the Russian Federation". Also in Russia, the criteria for climate projects, the requirements for reporting on greenhouse gas emissions, the rules for maintaining a register of carbon units, have been approved, and an innovative project of national importance "Unified National Monitoring System for Climate Active Substances" has been launched.

Currently, work is underway to improve the area of sustainable development and ESG in general as well as advance new instruments for financing sustainable development. Thus, the Bank of Russia expanded the range of instruments for financing sustainable development, formed the legal framework for issuing new types of bonds — "adaptation bonds", "bonds related to sustainable development goals", "climate transition bonds", issued recommendations on accounting for ESG by financial institutions-factors, and also approved the Main Directions for the Development of the Financial Market for 2023–2025 with a focus on the advancement of tools and infrastructure, as well as the introduction of sustainable development issues and accounting for ESG factors in corporate governance[25].

Here we should turn to one of the urgent problems that exist in the field of environmental entrepreneurship — greenwashing.

It should be emphasized that greenwashing can take place both in the final markets in the production chain of the product, the consumer in which is an individual (weak side of legal relations), manifesting itself in the form of indicating the designations "organic", "eco", "bio" on product packaging etc. (Sokolova 2022, 49), and at intermediate ones, where the consumer is an economic entity. At the same time, the market where the end consumer of the goods will be an economic entity can also be subject to greenwashing (a vivid example of such a market is the public procurement market, where the customer has tools to verify the accuracy of the information declared by the procurement participant, but in fact, often the contract service does not have a temporary resource to conduct such verification).

[23] In this case, the ESG strategy means a local act elaborated within a specific organization.

[24] National ESG Alliance. 2022. Accessed May 30, 2024. https://esg-a.ru/en.

[25] "Bank of Russia expands range of sustainable finance instruments". *Bank of Russia*. 2022. Accessed May 30, 2024. https://www.cbr.ru/eng/press/event/?id=14330.

It seems that an adequate measure to combat greenwashing, along with increasing the literacy of the population in terms of environmental labeling, will be the creation of an information base in which manufacturers of products positioning it on the market as environmental (their production as environmental) will be required to disclose information confirming the fact that their products are environmentally friendly. To provide additional protection of society from greenwashing, it is possible to impose on such producers the obligation to conduct an independent environmental audit, followed by posting the conclusion of an independent environmental auditor on their website and in the system mentioned above.

For the production of individual products, such an accounting system has already been established in Russia. As an example, for producers of organic products and products with improved characteristics corresponding registries are maintained (Voronina 2023, 28).

At the same time, it is important that information on the environmental friendliness of a product (production) be disclosed publicly not only on the website of the relevant company and a single independent portal (which can be administered both by the state and by an independent organization, by analogy with corporate information disclosure portals), but also be promptly available to the consumer (both an individual and a legal entity) at the time of purchase (receipt) of the goods. To provide an opportunity for an individual consumer to refuse to purchase a product that does not meet his or her environmental preferences directly in the store before purchase, and for a legal entity from interacting with a potential partner who declares in bad faith the environmental friendliness of their products and/or production processes, at the stage before the conclusion of the contract and acceptance of goods, it is necessary to centrally record and systematize information about environmental products and environmentally friendly producers in a single system. At the same time, such a system should have both an input option (data entry by the manufacturer of products) and an output (receiving by the consumer of information about the product he is purchasing or a potential counterparty in a full form loaded into the system and in a revised short form), and the option of independent control over the reliability of data posted in system. Accordingly, the rights of control in such a system should be vested in a public authority (such authorities may be, for example, the Ministry of Industry and Trade, the Ministry of Agriculture, the Ministry of Health, the Ministry of Natural Resources and Ecology of the Russian Federation or their subordinate federal services and agencies).

The environmental accounting system described above can either be created anew, spending enormous financial, organizational and human resources on it, or it can be integrated into already existing and successfully functioning services. It seems that the most suitable for the creation and implementation of such a system of environmental accounting and identification is the service "Honest Sign". This service was created on the basis of the principle of public-private partnership for the traceability of the origin of goods from its manufacturer to the consumer and the fight against counterfeit products (Panova 2022, 52). Similar to the system proposed in this paper, the goal of introducing the system of environmental accounting and identification and the system "Honest sign" allows to conclude that the solution proposed above can be integrated into the "Honest sign" system, the fact of the current operation of the system enables to conclude that the proposed solution will be implemented more quickly.

3. Conclusions

Thus, the development of modern information technologies, on the one hand, creates tasks for society and states to solve new environmental problems and ensure the state of protection of the population of the planet and individual states from environmental threats. On the other hand, modern technologies offer society more convenient and effective methods of protecting the population from such threats, preventing illegal actions of companies that infringe on the environmental safety of citizens by their actions, as well as misleading them and the state. In such conditions, an important factor in the further progressive development of any state is to find a balance between the use of modern technologies for its economic advancement and to minimize the negative impact of such development, encouraging honesty and openness of companies, while not limiting their growth and advancement. The fundamental guidelines for the legal regulation of the use of digital technologies should be, firstly, a favorable environment for the life and health of living beings; second, public welfare; thirdly, the best and optimal stimulation of innovations; fourthly, the most cost-effective legal regulation of the use of digital and other innovative technologies. It is necessary to define the role of legal regulation as a link between scientific and technological progress and the welfare of the whole society and each of its members individually, respectively, "ethics and economics should no longer be presented and perceived as a dichotomy, since they are two sides of the same coin". Many legal branches (constitutional, environmental, civil, and patent law) define the boundary between nature and technology.

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