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**DIGITAL ENVIRONMENTAL TECHNOLOGIES**

*The report describes the ways in which digital technologies are applied in the field of environmental protection and the use of natural resources. The analysis made it possible to determine the main possibilities of using digital technologies in terms of functionality and efficiency. At the same time, the study was aimed at assessing the regulatory and legal consolidation of requirements for the use of digital technologies.*

*In general, the trend of digitalization in environmental protection can be considered as positive, due to the provision of access to obtaining better information about the state of both individual natural resources and objects, and about the state of the environment as a whole. Individual laboratories cease to be the exclusive owners of this information. However, at the same time, it is necessary to carry out high-quality preliminary work to substantiate the methods and characteristics of the implemented digital technology, as well as to assess its effectiveness.*

Digital technologies have penetrated into various spheres of society, due to the fact that they are better suited for storing and transferring large amounts of data, and provide high-speed computing. In this case, information can be transmitted as accurately as possible, without distortion. However, one should not forget that they themselves are characterized by high energy intensity and can have a negative impact on the environment.

Their use, like the use of many other tools, is controversial, along with clear advantages, there are negative side effects. In this regard, it becomes necessary to correlate the goal of introducing a particular digital technology, the achieved result and the costs of its implementation and operation.

It should be noted that in the information technology industry, data centers account for 0.5% of total carbon emissions. The key factors determining this volume of emissions are a significant number of servers, storage devices, ventilation systems, etc. [1]

Large companies are constantly researching this problem and building energy-efficient data centers, including as part of their decarbonization policy.

Digital technologies are of great importance for the implementation of measures for monitoring the state of the environment. Their development makes it possible to equip not only stationary laboratories, the effectiveness of which largely depends on the specific location of the laboratory, but also to create special autonomous mobile devices. For example, in Australia, the Department of Environmental Protection has launched a project to collect environmental data using special sensors. They transmit information about the state of the atmosphere and the level of air pollution, assess the content of ozone, nitrogen dioxide, carbon monoxide, particulate matter, and measure visibility. Data from fourteen different types of sensors are sent to the monitoring and forecasting center, where the AQI is calculated - the air quality index. The data obtained allows you to determine the degree of air pollution, compare the results obtained in different areas of the state, and take measures to reduce the level of pollution. Air quality indicators can be viewed from any mobile device. This is especially convenient for large industrial enterprises, which are considered the main sources of harmful emissions into the atmosphere [2].

Microsoft has launched the Planetary Computer project. It is an open computing platform with artificial intelligence based on the Microsoft Azure cloud, designed to track data on the state of the Earth, which borrowed some approaches to data processing from search engines, adding a number of its "chips". The result is a "geospatial decision-making mechanism" [3], which is able to find problems and propose solutions to optimize the state of the planet. The task of the computer will be not only to highlight the species, biodiversity and ecosystems vital to the health and prosperity of the Earth, but also to assess the various factors that can positively or negatively influence them.

Another interesting example of the application of such technologies is the project for the prevention of forest fires. It is distinguished from other similar solutions by its intellectual component, which deals with forecasting in real time. The presence of a fire is usually recognized by smoke, and the earlier the smoke is detected, the easier it is to extinguish the fire. Within the framework of the project, special cameras are responsible for recognizing smoke, which transmit information to cloud services. By analyzing data from video cameras, you can make accurate forecasts about the occurrence of forest fires and determine their location in a timely manner. The system is automated as much as possible and does not require the participation of a large number of people - for example, in the Chinese province of Guangdong, the work of almost a thousand cameras is controlled by one operator.

Sensors are installed to measure the filling of garbage containers with separate waste collection. All sensors will be connected to the automated waste management system. In addition, all garbage trucks will be connected to the Waste Management system. Thus, a single system will unite all vehicles that carry out garbage collection and solid municipal waste collection sites equipped with sensors, which will make it possible to form the most convenient routes in real time and track problem situations.

At the same time, it is noted that in parallel with the process of the actual creation and implementation of digital technologies, the requirements for these technologies are being integrated and their application is regulated into regulatory legal acts in the field of environmental protection and ensuring rational use of natural resources. So, article 53.2. The RF LC within the framework of monitoring fire hazards in forests and forest fires provides for the organization of a system for detecting and accounting for forest fires, a system for monitoring their development using ground, aviation or space vehicles.

Decree of the Government of the Russian Federation of 10.04.2007 N 219 "On approval of the Regulation on the implementation of state monitoring of water bodies" is aimed at ensuring the development of automated information monitoring systems. Article 25 of the Federal Law of 04.05.1999 N 96-FZ "On the Protection of Atmospheric Air" includes a norm according to which stationary sources of pollutant emissions at facilities of category I must be equipped with automatic means of measuring and accounting for indicators of pollutant emissions, as well as technical means of recording and transmitting information on the indicators of emissions of pollutants to the state register of objects that have a negative impact on the environment, in accordance with the legislation in the field of environmental protection. It provides for the collection, processing of data information using digital technologies and in relation to mobile sources of environmental impact.

**List of sources**

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*2. Babinet Gilles. The Environmental Impact and Potential of Digital Technology // https://www.institutmontaigne.org/en/blog/environmental-impact-and-potential-digital-technology MARCH 2021*

*3. Huwei Wen, Chien-Chiang Lee, Ziyu Song. How Does Industrial Digitalization Affect EnterpriseEnvironmental Performance? // Reseach Square. 2021. https://doi.org/ 10.21203/rs.3.rs-310270/v1.*