Directions of innovative development of the forest complex

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Abstract. The article considers the most promising directions of innovative development of the forest complex, the most suitable conditions for the digitalization of the economy. The study was conducted using a complex of General scientific and private methods: dialectical, historical, abstract-logical, as well as systemic, situational and scenario approaches, comparative analysis, empirical generalization. As a result, the efficiency and prospects of using a wide range of digital technologies for the development of the forest complex are proved. It is proposed to create and use a digital platform of the forest complex, aimed at the concentration of resources necessary for the digitalization of the forest complex, as well as the systematization and harmonization of the activities of stakeholders in this direction. The main goal of creating a digital platform of the forest complex is a significant increase in production efficiency due to the large-scale introduction of digital technologies. The goal is concretized by a number of tasks related to theoretical and methodological justification of expediency and efficiency of digital technologies in the forest complex. The implementation of this project will significantly improve the efficiency of economic activity in the forest complex of the country.

1. Introduction
Back in 2016, the President of the Russian Federation Vladimir Putin set a task-to implement a systematic program of digitalization of the economy. He noted that the priority for the Russian economy to reach a new, higher level of development are domestic advanced technologies and innovations. To do this, the state must create the necessary infrastructure, and the authorities – an adequate regulatory framework. Also, within the framework of the seminar-meeting "Digital transformation of regions", held in August 2018, the task of operational development of regional programs of digitalization of the economy was set. Further innovative development of all sectors and complexes of the national economy of the Russian Federation should be focused on the widest possible use of digital technologies. The forest complex is no exception.

The course for innovative development of the economy, determined by the Supreme bodies of state power of the Russian Federation, undoubtedly dictates the reorientation of the work of all economic
structures of the country. As S S Morkovina notes in his works, the Russian Federation needs to ensure not only economic growth, but also fundamentally improve the structure of the economy, making it more harmonious by leveling the socio-economic situation of individual industries and complexes. At the same time, the author points to the important economic importance of the forest complex [1]. As noted in his works I Torzhkov further development of the forest complex of the country is possible only on the basis of diversification, the emergence of new industries, sub-sectors and industries in its composition [2].

At the same time, diversification in the forest complex is not possible without the large-scale introduction of innovative management methods, innovative technologies, and the production of innovative products. Agreeing with the position of Mäkelä M, it is important to note the priority of innovative mechanisms in the further development of the forest complex and increase its economic efficiency [3].

The forest complex occupies one of the most important places in the economy, since forests are the national wealth of Russia, so the transition of the forest industry to innovative development is inevitable. As Aboal D., Rovira F., Veneri F. writes about this, "...the orientation of the forest industry on the innovative path of development is due to modern market relations of economic entities, good resource potential and favorable foreign economic conditions, environmental problems, the presence of scientific innovative developments and projects" [4].

As Koh Jae Myong notes, the use of innovative technologies should ensure the solution of important tasks in the forest complex of the country [5].

At the same time, the considered literature sources do not focus on the use of modern digital technologies [6]. However, in the conditions of digitalization of all spheres of life of modern society, innovative development of the forest complex should be based on advanced achievements in the field of digital technologies. Already at this stage, it is important to define strategic guidelines for the use of digitalization opportunities in the forest sector.

The study was carried out using dialectical, historical, abstract-logical and other General scientific methods of cognition, as well as system, situational and scenario approaches, comparative analysis, empirical generalization, index method, tabular and graphical methods of visualization of statistical and computational data. The aim of the study is to develop proposals to improve the organizational and infrastructural conditions of innovative development of the forest complex.

2. Materials and methods

The study was conducted using dialectical, historical, abstract-logical and other General scientific methods of cognition, as well as system, situational and scenario approaches, comparative analysis, empirical generalization, index method, tabular and graphical methods of visualization of statistical and computational data. The use of the system of the above methods of scientific knowledge allowed the authors to obtain reliable results and come to scientifically based conclusions.

3. Discussion of the results

The priority directions of innovations in the field of use, protection, protection and reproduction of forest resources, ensuring sustainable forest management and innovative development of forestry, are set out in the Strategy for the Development of the Forestry Complex of the Russian Federation until 2020. According to this document, these are: development of methods of forest management, state forest inventory and forest pathological monitoring; development of methods for long-term forecasting of forest dynamics and the causes of them; justification of the allowable extent of sustainable use of forests in the face of increasing anthropogenic impacts and global climate change; development of environmentally friendly forest management systems and forest management, forest-ecological requirements for technological processes and technical means, modern technologies and technical means for the protection, reproduction and reproduction of forests and afforestation; development of methods for obtaining fast-growing and highly productive forest species with given economic properties.
based on biotechnology, methods of forest genetics and breeding; development of a system of measures for the conservation of forest biological diversity, increasing their productivity, contribution to the stabilization of global biospheric processes, mitigation of the effects of global climate change; development of technologies for reducing risk and reducing the effects of natural and man-made disasters; development of forestry adaptation technologies in the context of global climate change; development of methods for the use of forest resources in bioenergy.

As noted above, the state program “Digital Economy of the Russian Federation” is currently being implemented in the Russian Federation. Its priority areas for its implementation are: digital public administration; digital technology; Information Security; frames for the digital economy; information infrastructure; regulatory information environment. From our position, the focus should be on the implementation of the Digital Technologies project, which should reflect the strategic guidelines for the structural transformation of the economy under digitalization conditions. We propose to focus on the development of digital technologies in the forestry sector, which will help increase the competitive advantages of the economy. As the main areas of digitalization of the AIC, the following can be proposed (figure 1).

**Figure 1. Directions of digitalization of the forest complex.**
It can be noted that to date, some of these areas have already been successfully implemented in the forest complex of the country, and for the harmonious implementation of all areas it is necessary to create certain organizational conditions. First, it is the creation of a regulatory framework adequate to the requirements of the digital economy. Secondly, the development and implementation of incentive systems for the use of digital technologies at various levels of management. Thirdly, the institutional definition of forest complex digitalization, which means the creation of a Digital Platform for forest complex. It will allow to concentrate the resources necessary for the digitalization of the forest complex, as well as to systematize and harmonize the activities of stakeholders in this direction (figure 2).

**Figure 2.** Logical model of the digital platform operation.

The digital platform is a set of software and hardware necessary for the development of the digital economy, the rules and regulations for their use, as well as models of behavior and interaction of...
stakeholders. The main purpose of creating a digital forest complex platform is a significant increase in production efficiency through large-scale introduction of digital technologies. Based on the objectives of the tasks are:
- theoretical and methodological substantiation of the expediency and efficiency of the use of digital technologies in the forest complex;
- creation and development of infrastructural, organizational, financial and other conditions for wider use of digital technologies in the forest complex;
- ensuring the interaction of stakeholders forest complex;
- development of consulting activities in the use of digital technologies;
- ensuring the logical relationship of the digital platform with the priorities of the socio-economic development of the economy.

The creation of a digital forest complex platform is carried out in several stages:
Stage 1 - Formation of a center of competence, within which it is planned to create an expert group, including representatives of all stakeholder groups of the forest complex, in order to determine the strategic goals, basic principles and mechanisms for the functioning of the platform.
Stage 2 - Technical and technological support of the platform. This stage is implemented in parallel with the first stage.
Stage 3 - Organizational, within which the platform architecture is defined, defining the structural elements of the platform, their functions and the nature of the interaction.
Stage 4 - Operation and improvement of the platform, involving an increase in its scale due to the commercial interest of its participants.

According to experts, the introduction of a digital forest complex platform will allow enterprises of the complex to increase their profits by an average of 20%.

4. Conclusion
Innovative development of the forest complex in modern conditions should be based on advanced digital technologies and correspond to the strategic priorities of the Russian economy. The study showed that the introduction of digital technologies in the activities of the forest complex can significantly increase its efficiency and serve as a basis for increasing competitiveness. As a result of research it is established that the perspective direction of digitalization of a forest complex of the country is creation of the digital platform providing theoretical and methodological justification of expediency and efficiency of use of digital technologies in forest complex; creation and development of infrastructural and organizational conditions for wider application of digital technologies in forest complex; ensuring interaction of stakeholders of forest complex; development of consulting activity in the sphere of use of digital technologies; ensuring the logical relationship of the digital platform with the priorities of socio-economic development of the economy. The creation of a digital platform will increase the communication efficiency of interaction between the main groups of stakeholders, will act as an important direction for improving the organizational and infrastructural conditions of innovation in the forest complex of the country.

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