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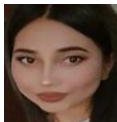
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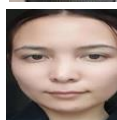
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CONCEPTUAL PROBLEMS OF INTENSIVE FOREST INDUSTRIES IN MACRO AND MICRO LEVELS

Abstract: The vast territory of the Republic of Kazakhstan, the diversity of its climatic and economic conditions, the composition and multifunctionality of forests determine the diversity of forms of forestry, technologies and methods of forest cultivation. The transition from extensive to intensive forest management, from "gathering" to

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civilized forest cultivation, is the inevitable and only way to further develop forestry in conditions of increasing demand for wood. Depletion of natural forest resources, increase in the cost of timber processing products, as well as the competition in the timber markets, which is becoming tougher due to the wide supply of plantation timber from "warm" tropical countries, today forces the world's leading forest powers to make decisions on the intensification of forest cultivation, to direct a significant amount of investment in forestry.

Key words: forest, trees, grass, flowers, ground, in-vitro, sun radiation, ecosystem, locality, agroforestry.

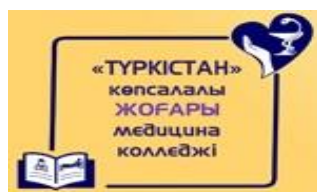
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Introduction



По результатам технического задания грантового проекта КН МОН РК утвержденного приказом Председателя КН МОН РК от «2» марта 2022 года № 27-нж

The forests of the Republic of Kazakhstan have a huge resource potential, perform important ecological and socio-economic functions. The processes of formation of the national forest policy, regulatory framework, state forest management require complete and reliable information about the state of forests, the dynamics of their development. The organization of multi-purpose and non-depleting use of forests, forest planning and forestry regulation are impossible without detailed knowledge of forest resources, their quantity and quality. Along with national priorities, Kazakhstan's forests are also of global importance. Ensuring sustainable forest management, monitoring the state of forests, timely identification and forecasting of processes that have a negative impact on forests are international obligations of the Republic of Kazakhstan adopted within the framework of global and regional forest negotiation processes. Ensuring the existing needs for reliable information about forests and forest resources are the main tasks of forest survey work, which is currently based on forest management and state forest inventory. The choice of forest accounting works and their composition are determined by the tasks at various levels of forest management, as well as the tasks of organizing the economic use of forests. At the republican level, information on forests and forest resources should provide information support for strategic planning and regulatory legal regulation of the sphere of forest

relations, assess the effectiveness of the use, protection, protection and reproduction of forests, as well as ensure the fulfillment of international obligations assumed by the Republic of Kazakhstan. At the regional level, information on forests and forest resources is necessary to ensure the protection, protection and reproduction of forests, the organization of the use of forest resources, high-quality forest planning and forestry regulation. Forest users need a more detailed description of forests at the forest site level. In order to develop and implement forest development projects, ensure economic management of forests, they need knowledge about the root stocks of wood, its quality and assortment structure. The main tools for obtaining information about the state of forests and the availability of forest resources are forest management measures. In the interpretation of modern forest legislation, forest management includes: the design of forestry, the design of operational, protective and reserve forests, especially protective forest areas, the design of forest areas, fixing the boundaries of forests on the ground, the design of measures for the protection, protection and reproduction of forests, as well as forest taxation. When conducting forest taxation, qualitative and quantitative characteristics of forest resources are identified, on the basis of which the design and organization of forest use are provided.

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| 1 | AP09561600 | Лесопроектирование: конструкция уникального образца лесного массива по системе in-vitro | Частное учреждение "Шымкентский университет" | Битемиров Кайрат Турлыбаевич | 2022 - 2024 | Конкурс на грантовое финансирование исследований молодых ученых по проекту «Жас галым» на 2022-2024 годы | Создано | 100% | Действие |

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II. RESEARCH METHODOLOGY AND ETHICAL QUESTIONS.

As a statement of clarity of the scientific research question, it is possible to identify the question according to which the interdisciplinary norms of rational monitoring of green technologies through applied forest design will have a positive impact on the environmental, economic and social situation in the region. This formulation clearly reflects the purpose, question, assumptions and hypotheses of the research plan, justifying their degree of scientific significance systematically and systematically. To answer this question, an attempt was made to justify the present using three hypotheses, the realism of which is associated with the goal and expected results of the research plan. The primary hypothesis assumes that interdisciplinary norms of rational monitoring of green technologies through applied forest design have a positive impact on the ecological situation in the region, since a large number of deciduous trees emit a sufficiently large amount of oxygen, a large number of coniferous trees a large number of phytoncites, and mountain air is an excellent wind tunnel for correct propagation. The secondary hypothesis suggests that interdisciplinary norms of rational monitoring of green technologies through applied forest design have a positive impact on the economic situation in the region, since in the future nearby villages will be able to collect and sell such berries as blackberries, raspberries, blueberries, cranberries, blueberries, sea buckthorn, as well as nuts, mulberries and pine nuts, not counting the organization of tourist centers and shops where tourists can buy. The tertiary hypothesis assumes that interdisciplinary norms of rational monitoring of green technologies through applied forest design have a positive impact on the social situation in the region, since it will immediately provide a large number of jobs, organize the infrastructure of service personnel, and other favorable changes for the region. To prove the hypotheses, an attempt was made to justify them using research strategies and approaches that are supposed to be used in the program and descriptive, correlation, and experimental studies depending on the periodicity of tasks, the sequence of which varies depending on a particular stage of the program implementation. The study has a clear planned achievement of the goal through specific actions for a systematic transition

from one task to another. In addition to a certain periodicity, this report also illustrates how the resources, timing, and content of the work performed correspond to the goals, objectives, methodology, and expected results of the study. As a research strategy, this can be defined by the use of one methodological tool in one task, the use of other techniques in the second, and the use of other techniques in the third task. Research approaches in research are experimental in nature, where project participants try various methodological tools in accordance with the results obtained. A number of approaches have been developed, as indicated in this section, for which sequences will be defined. These approaches in the framework of the research plan include experiments that are completely new and have not previously been used in such studies. Due to the urgency of the need for such an experiment, it can be considered quite modern. All experiments are planned with a certain frequency and systematics, encoded in a certain algorithm, which justifies the correctness of the design of experiments for its subsequent statistical data processing.

III. RESULTS.

As a result of extensive forestry in many regions of the forest zone of Kazakhstan, indigenous formations are changing at an increasing pace to derived forests formed by soft-leaved species, which are fixed as the main forest-forming species (1). This entails the loss of the gene pool of valuable coniferous species, a decrease in the commercial, qualitative, sanitary characteristics of forests and, most unfortunately, the loss of the culture of forestry for the reproduction and cultivation of sustainable forests and high-grade business timber (2). In Kazakhstan, the need to intensify forestry the economy is also caused by difficult natural and climatic conditions. The bioclimatic potential (the aggregate indicator of heat and moisture availability) of our country is 2.7 times lower than in the USA and 2.2-2.4 times lower than in Western European countries (3). Of the total forest area in the Republic of Kazakhstan, only 10.8% are characterized by II and higher bonitet. In the most common types of forests of the North Kazakhstan and Eastern regions of the Republic of Kazakhstan, the actual productivity of pine and spruce stands ranges from 35% to 53% of the potential. The intensive

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model of forestry, first of all, allows achieving high economic efficiency of the forest sector, increasing forest productivity and the volume of timber harvesting, primarily in areas with developed social and transport infrastructure, which will fully meet the needs for wood while preserving protected forests, specially protected and intact natural territories. The ways of intensification of forestry have been sufficiently studied and confirmed by the practice of world and domestic forestry (4). Kazakhstan has a huge positive experience in artificial and natural ways of creating high-performance forest plantations, increasing the genetic value of forest seed material and soil fertility, introduction tests and cultivation of woody exotics (5). Reproduction of forests with economically valuable species, systematic care of growing forests, forest breeding and genetics are those tools intensification, which can significantly increase the "removal" of wood from a unit of forest area in a shorter period of time, maintain the stand at maximum growth and radically improve the quality and commodity structure of forests (6). Intensive forestry management is a complex process from a technological point of view, which can be successfully carried out only by highly qualified forestry specialists (7). For example, as a result of commercial logging of forest care, the main result should be achieved – the maximum a liquid stock of wood of the highest value by the age of the main felling, and not stands upset by felling to obtain momentary income (8). Such specialists should have deep theoretical knowledge and practical training, which can be provided only in specialized forestry universities with educational and experimental forestry (9). Important for the implementation of an intensive forestry model (10) The role of forestry is played by high-precision, scientifically-based, modern forest management, which should ensure maximum economic, environmental and social efficiency of forestry in the long term, including the calculation of scientifically based norms for the use of forests, all its utilities and services (11). As a result of forest management design, all forestry measures are tied in kind to specific allotments, which requires an error-free determination of their tax characteristics, which can only be achieved by applying modern methods and technologies of forest inventory, including various methods of remote sensing of the Earth (12).

IV. DISCUSSION.

In recent decades, there has been a sharp reduction in the volume of forest management work, primarily forest taxation, which has led to a significant decrease in the level of information support for the industry (13). As of January 1, 2021, information about only 18% of forests with a taxing period of less than 10 years can be considered relatively reliable. 71% of Kazakhstan's forests are characterized by 17 forest management materials dating back 20 years or

more. At the same time, the critical indicator of the reliability of forest taxation materials used for forest development comes after 10-12 years from the moment of its implementation (14), and when conducting intensive forestry – after 5-7 years (15). The decrease in the volume of forest management was not the result of changes in regulatory regulation or the implementation of government decisions. It took place against the background of an increase in the volume of cadastral works in forests (16). Of the funds provided by the republican budget for forest survey work – more than 70% (at least 3 billion rubles) were annually sent for cadastral registration of forests, the expediency and relevance of which is highly questionable, especially for reserve forests and forests not involved in intensive use (17). Along with the decline in the volume of forest management, there was also a decrease in its quality everywhere. Since the beginning of the 2000s, high-precision measuring and eye-measuring methods of forest taxation have been replaced by less expensive ones (18). Already by 2010, more than 70% of forest taxing works began to be carried out without conducting a full-scale survey of forest plantations, using methods of updating early forest management materials (19). This state of affairs persists today. The decision to grant forest users the rights to carry out forest taxation did not lead to a way out of the current crisis (20). Moreover, due to the uncertainty of regulatory regulation of forest management issues and the lack of control by forest management bodies over the quality of forest management work, "custom-made" forest management has become widespread, as a result of which classical forest management has been replaced by a mine of plantations suitable for logging (21). Unskilled and 18 uncontrolled performers of forest taxing works began to overestimate the calculation of use for valuable species everywhere, to "optimize" the age of plantings, their composition and completeness (22). And all this is solely for the purpose of obtaining additional profit from the exploitation of forests. The tasks of the state forest inventory (GIL) include the assessment of quantitative and qualitative characteristics of forests, applicable at high spatial levels: the Republic of Kazakhstan, the forest district, the subject of the Republic of Kazakhstan. Obtaining information about forests at the level of a forest allotment, forest quarter or forestry during the state forest inventory is not provided (23). During the state forest inventory, along with quantitative and qualitative characteristics of forests, indicators are determined, the need for which is due to the fulfillment by the Republic of Kazakhstan of international obligations related to the solution of global tasks on adaptation of forests to climate change and their mitigation, conservation of forest biological diversity. The information obtained during the state forest inventory is used for the purpose of timely identification and forecasting of the development of

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processes that have a negative impact on forests, evaluating the effectiveness of measures for the protection, protection and reproduction of forests, as well as for information support of forest management and the establishment of permissible norms for the withdrawal of forest resources (24). When conducting the state forest inventory, techniques are used, as well as methods of accounting and evaluation of forest resources laid down in the basis of forest taxation. With the use of technologies of forest taxation works on the test areas of GIL, the characteristics of forest plantations are determined: area, breed composition, total and average stock, taxation indicators and others. Quantitative and qualitative characteristics of forests are determined on the basis of 19 statistical data processing of sample areas. The GIL system in Kazakhstan began to take shape with the adoption of the Forest Code of 2006. The formation of the system was preceded by a business trip of specialists of FSUE "Kazlesinform" to the Czech Republic, according to the results of which it was decided to adopt the model developed by the specified working group based on the materials of the study of the Czech experience as the basis of the introduced working rules of the GIL. Further development and improvement of the GIL system was carried out behind the scenes in the depths of the FSUE "Kazlesinform". The Republican Forestry Agency did not conduct any scientific research, meetings of the Scientific and Technical Council of the Kazleskhoz, the Ministry of Natural Resources and the Ministry of Agriculture on the development of a GIL model applicable to the conditions of the Republic of Kazakhstan. A very serious strategic mistake was the introduction of GIL throughout the country without its development in pilot regions. The first results of the state forest inventory showed that the principles of grouping (stratification) of forest taxing allotments into relatively homogeneous groups (strata) based on forest management materials, laid down in the basis of the working rules of the GIL (since 2011 methodological guidelines), lead to unreliable results. The updating of forest management materials on economic activity and the impact of natural factors provided for by the composition of the work could not be carried out by decrypting high-resolution aerospace images, since it would require a full-fledged decryption of forests in vast territories. Thus, the introduction into the model of the state forest inventory of algorithms based on the stratification of forest allotments into 20 homogeneous groups (strata) based on forest management materials made the process of forest inventory dependent on the availability of relevant forest management materials, and the tasks of conducting GIL impossible. The existing model of the state forest inventory completely ignores the developed and tested remote methods of forest inventory, previously widely used in the domestic practice of forest survey work (photostat method).

Their use would significantly reduce the time of the GIL and the costs of its implementation. In addition, remote methods make it possible to take into account reserve and hard-to-reach forests with minimal costs and acceptable accuracy, where the laying of test areas by random placement is not always possible. The state forest inventory in the Republic of Kazakhstan is entrusted to the republican forest management body, which does not correspond to the principles of separation of powers for the management of natural objects and assessment of the effectiveness of their management generally accepted in world practice. In most cases, national forest inventories are conducted by research organizations that are not involved in forest management processes. It is with this approach that the Institute of State Forest Inventory has gained worldwide recognition and proved its effectiveness in achieving sustainable forest management. Since 2008, the state inventory has covered more than 250 million hectares of forests (25). However, in violation of the republican legislation, information about any results of almost eight years of work in the public space did not appear, including on the Internet. The results of the GIL were not brought to the state authorities, 21 ensuring the formation and implementation of the state forest policy, and regulatory legal regulation of forest relations. In the conditions of an information vacuum about the state of forests in 2012-2013, the Government of the Republic of Kazakhstan adopted the "Fundamentals of state policy in the field of use, protection, protection and reproduction of forests in the Republic of Kazakhstan for the period up to 2050", as well as the state program of the Republic of Kazakhstan "Forestry Development" for 2020-2030. Currently, based on the knowledge about forests acquired in the 80-90 years of the last century, the concept of forest intensification is being developed and approved. The lack of proper accounting of forests has led to the non-fulfillment by the Republic of Kazakhstan of international obligations. Due to the lack of periodic monitoring of the state of forests, the report of the Republic of Kazakhstan at the 7th Ministerial Conference of the "Forests of Europe" process, held on October 20-21, 2015 in Madrid, Spain, provided data taken from the 2011 report. There are no data from Kazakhstan in the analytical materials and diagrams of the general report on the state of forests in Europe. The explanation to the report states that "due to the lack of comparable up-to-date data on the Republic of Kazakhstan, in order to preserve the internal integrity of the report, the information provided by the Republic of Kazakhstan in 2011 is not included in the analytics and charts"

V. ACHNOWLEGEMENTS.

This study was carried out on the basis of a private institution "Higher Multidisciplinary Medical College "Turkestan"", which has a certain room and equipment for conducting research. It is also

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necessary to note the high level of involvement of the staff of the college, who have made a significant contribution to the development of this topic. As for the student potential, there were many activists who agreed to take part in the research in various positions listed below. These positions include data and positions from the table below. Thus, as a legal experiment, the research group planned a study with the participation of 16 full-time students in the specialty of nursing. So 8 students participated in an experiment where each of them was given the role of an active stalker and a passive stalker, as well as an active victim and a passive victim. Four students monitored and four students supervised each group of tests.

VI. CONCLUSION.

In conclusion, it can be indicated that the issue of maintaining international obligations in the field of

forest policy, adopted and ratified by the Republic of Kazakhstan, is a mandatory measure of international foreign policy relations of the Republic of Kazakhstan, which has certain obligations to disclose some positive dynamics during a certain time period.

VII. RECOMMENDATION.

As a recommendation, more importance should be given to grant financing, since it is the sector of scientific research that has more versatile tools for monitoring, forest design and adaptation of samples of deciduous and coniferous crops to any conditions. The present is, in principle, possible, given the international obligations of the Republic of Kazakhstan, to direct a certain percentage of industrial facilities that they charge for ecology from industrial enterprises to increase the area of forests.

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