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**TOPICAL ISSUES OF FORECASTING THE PROCESSES OF
TRANSFORMATION OF REGIONAL POLICY AND SECTORAL
DEVELOPMENT IN THE SYSTEM OF GLOBAL FOOD SECURITY GOALS**

**АКТУАЛЬНЫЕ ВОПРОСЫ ПРОГНОЗИРОВАНИЯ ПРОЦЕССОВ
ТРАНСФОРМАЦИИ РЕГИОНАЛЬНОЙ ПОЛИТИКИ И ОТРАСЛЕВОГО
РАЗВИТИЯ В СИСТЕМЕ ЦЕЛЕЙ ГЛОБАЛЬНОЙ ПРОДОВОЛЬСТВЕННОЙ
БЕЗОПАСНОСТИ**



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Abstract. Scientists of the Kabardino-Balkarian Republic are implementing those aimed at determining the conditions for a qualitative increase in the resource and production of the peripheral agro-industrial complex with a significant intensification of investment and innovation activities based on improving its methodology, studying

the frequency of occurrence and development of clusters in the agricultural sector, as well as developing functions for the frequency of detection. rational investment factors and agricultural resources.

The scientific novelty of the study lies in the further development of the conceptual foundations for the formation of an effective innovative strategy for the development of the regional agro-industrial complex based on the methods of modeling and optimizing the processes of modernization of the regional structural policy, in the face of global challenges and the need to ensure food security.

The conclusions and generalizations obtained during the study are necessary for the development of an innovative strategy for the development of the agro-industrial complex at the national and regional levels in the face of threats to food security and new geopolitical attitudes. Entering the values of spatial and territorial development into the system of initial data changes the angle of view in relation to forecasting and preventing technogenic impact on the ecology of the region.

Аннотация. Ученые Кабардино-Балкарской Республики реализуют направленные на определение условий качественного увеличения ресурсной и производственной базы периферийного агропромышленного комплекса при значительной интенсификации инвестиционно-инновационной деятельности на основе совершенствования ее методологии, изучения периодичности возникновения и развития кластеров в аграрном секторе, а также разработка функций частоты обнаружения. рациональные инвестиционные факторы и сельскохозяйственные ресурсы.

Научная новизна исследования заключается в дальнейшей разработке концептуальных основ формирования эффективной инновационной стратегии развития АПК региона на основе методов моделирования и оптимизации процессов модернизации региональной структурной политики, перед лицом глобальных вызовов и необходимости обеспечения продовольственной безопасности.

Выводы и обобщения, полученные в ходе исследования, необходимы для разработки инновационной стратегии развития АПК на национальном и

региональном уровнях в условиях угроз продовольственной безопасности и новых геополитических установок. Введение значений пространственно-территориального развития в систему исходных данных меняет угол зрения в отношении прогнозирования и предотвращения техногенного воздействия на экологию региона.

Keywords: forecasting, strategy, territory, global challenges, security, food, agro-industrial complex, transformation, development drivers

Ключевые слова: прогнозирование, стратегия, территория, глобальные вызовы, безопасность, продовольствие, агропромышленный комплекс, трансформация, драйверы развития.

Introduction. The study is based on an effective mechanism of regional cluster diversification and modern forecasting methods based on the modeling of global, macro- and micro-threats, including food security, and their timely assessment. The degree of participation and influence of expert communities was assessed, preliminary strategic forecasts were evaluated. This will make it possible to formalize challenges that have not yet received public recognition, which, in the absence of a strategy and mechanisms for an absolute long-term forecast of science and agricultural technologies, is of particular relevance. A striking example of the significance of the topic and the results of the study was the COVID-19 pandemic, which caused a profound transformation not only of the world, national and regional economies, social processes, but also of human consciousness.

The purpose of the study is to form an effective organizational and economic mechanism for forecasting and assessing the risks and threats to the food security of the region with the aim of establishing and developing agro-industrial clusters in the context of the revival of agricultural engineering and agricultural cooperation, the introduction of resource-saving technologies as the most important factors in solving the problems of import substitution in "sanctions" conditions.

The relevance of the study is determined by the urgent need to move from the mega-project type of management of the socio-economic development of regions to

the regulatory one, the need to improve the instrumental, methodological, institutional and organizational support of the regional structural policy in the process of forming agro-industrial clusters.

In modern conditions, it is necessary to consolidate the positions of countries, businesses, and communities on the implementation of the 2030 Agenda in the paradigm of the trinity of sustainable (economically prosperous, socially just and environmentally harmonious) development and improving the quality of life as basic directions in the context of digital transformation. Achieving these goals of transition to a new technological, low-carbon ecosystem digital order can and should be ensured on the basis of basic innovative solutions.

The International Program of Action for Water Resources and Sustainable Agricultural Development (WAA - WSAAD) reflects the fundamentals of “sustainable use of water resources in the agricultural sector and has established priority areas for action at the national, regional and global levels”. The quantitative targets of the program in 130 developing countries are set taking into account food needs, agro-climatic zones and the availability of water and land [1].

Meeting the increased demand for food is putting pressure on the world's water, land and soil resources. Agriculture has a role to play in alleviating these pressures and making a positive contribution to achieving climate and development goals. Sustainable agricultural practices can lead to direct land, soil and water improvements and ecosystem benefits, as well as reduce emissions from the land. It also requires additional efforts outside the realm of natural resource management to maximize synergies and manage trade-offs [2].

The scientific novelty of the study is due to the tasks, the solution of which is defined by us as priority steps to achieve the long-term goals of the innovation policy of the sectoral development of Russia:

1. Analysis and assessment of the goals and intermediate results of the implementation of the goals and objectives of food security at the present stage.
2. Establishing the sources of economic growth and developing scenarios for a scientific and technological breakthrough in promising areas for the development of

the agro-industrial complex of the region based on extrapolating the development trends of world and national agriculture to the regional one.

3. Establishment of existing and socially unrecognized challenges in the development of world agriculture, development of mechanisms for their assessment.

4. Systematization and development of mechanisms for assessing internal and external risks of agricultural development in the region and the development of dominant business models in the process of forming agro-industrial clusters.

5. Formation of a mechanism to stimulate the growth of investment in research and development and development of new technologies and types of competitive agricultural machines.

6. Development of a strategy for the innovative development of the agro-industrial complex of the region in the light of the globalization of the world economy based on an assessment of macro-, micro- and global risks.

7. Assessment of the prospects for the introduction of new technologies, resources, energy sources for the development of rural areas [2].

8. Evaluation of the contribution of the construction of hydraulic structures to the development of the socio-economic situation of the republic, including the agro-industrial complex.

9. Development of recommendations and testing the feasibility of the goals of organizational and institutional improvement of measures of regional structural policy.

Meeting the increased demand for food is putting pressure on the world's water, land and soil resources. Agriculture has a role to play in alleviating these pressures and making a positive contribution to achieving climate and development goals. Sustainable agricultural practices can lead to direct land, soil and water improvements and ecosystem benefits, as well as reduce emissions from the land. It also requires additional efforts outside the realm of natural resource management to maximize synergies and manage trade-offs [2].

Research methods. The methodological basis, subject, object, as well as the empirical base formed an appropriate system of research methods and techniques. In

the course of the study, methods of mathematical statistics, economic and mathematical modeling, graphical, index and others were used. Performing computational and analytical work to substantiate the best options for innovation and investment using new information technologies and the use of special analytical research methods (comparison, grouping, elimination, methods of dynamic, structural and coefficient analysis, methods of expert assessments, system analysis, etc.) made it possible to draw reasonable conclusions about the prospects for the development of the agro-industrial complex of the republic.

The use of specific research tools made it possible to:

- to confirm the dependence of the relationship between the increase in agricultural production and the duration of international sanctions, as well as to establish the forming factors of import substitution and food security (stimulating the growth of R&D for industry, investment in innovation, participation in the implementation of national projects aimed at supporting small and medium-sized businesses, and also on development of rural territories);
- to analyze the structure of agribusiness in the region and identify the dominant business models and locomotive directions for the development of the regional agro-complex;
- assess the dynamics of prices for agricultural products in the context of import substitution;
- to conduct an expert assessment of the region's opportunities in the field of export of agricultural products and its competitiveness, including in the field of animal husbandry, crop production, problems and opportunities for the development of agricultural engineering in the region;
- assess the prospective possibilities of scenario forecasting for the development of regional policy and cluster diversification in the system of the agro-industrial complex;

– conduct a retrospective assessment of the historical experience of using the resources of the socio-economic development of rural areas of the republic, in particular, the water resources of large rivers.

The system of criteria for assessing food security, the methodology for analyzing the impact of structural changes on the dynamics of the development of the agro-industrial complex of the region, as well as the system of existing and potential threats that form new challenges to the development of agriculture at the global, national and regional levels have methodological and practical value. In addition, this system of indicators and the methodology for calculating them will allow us to give a substantive answer to the effectiveness of a particular measure in the system of transformation and modernization of the structural regional economy.

The use of modeling methods, assessment of the development of the agro-industrial complex in the context of a new global threat - the COVID - 19 pandemic, made it possible to predict and assess the high level of probability of new challenges to the development of the economy, which were not established at the time of the start of the study and were not realized by society.

The assessment of the impact of such challenges on the economy, the support measures required by the state population, made it possible to form new approaches in setting promising trends in industry development, including: support for R&D in the selection of plants and animals resistant to changes, concessional lending to small and tax holidays during periods of production downtime, investments in innovative developments of unmanned vehicles delivering drink, food, agricultural raw materials, agrochemicals to hard-to-reach areas, creating conditions for the development of agricultural engineering.

Results and its discussion. In the course of the study, methods of socio-economic forecasting, general scientific methods of cognition (analysis and synthesis) were used, an instrumental-methodological and organizational-institutional basis of regional structural policy was formed, which is necessary for the transition from a mega-project type of management of the country's socio-economic development to a regulatory one.

Separate results planned within the framework of the study were obtained:

- 1) an assessment was made of the goals, results, effectiveness of the strategy for the formation and activation of drivers of economic growth, the strategy of food security;
- 2) implemented a multi-criteria methodological approach to assessing the optimality of the structure of the economy;
- 3) the characteristics of the sectoral structure of the region's economy have been clarified;
- 4) an analysis of the efficiency (productivity) of the sectoral structure of the economy;
- 5) an assessment of the factors and conditions that contribute to the optimization of the sectoral structure of the national economy has been implemented;
- 6) the prerequisites for optimizing the instrumental and methodological support of the regional structural policy in the transition from the mega-project type of reproduction of the country's economy to the regulatory one have been formed;
- 7) proposals for the organizational and institutional modernization of the regional structural policy in the current conditions of severe budget constraints, including in the face of challenges and threats that were not identified at the time of the start of the study and were not realized by society (taking into account the experience of COVID-19), were formed.

Scope of the results. The potential possibilities of using the results of the study in solving applied problems are associated, first of all, with the formation of a mechanism for the innovative development of the agro-industrial complex of the region in the context of import substitution in order to ensure food security.

The significance of the work determines the need to use the results of the study in the work of regional authorities and administrations of the constituent entities of the Russian Federation; in the preparation of regulatory and methodological documents regulating the processes of formation of innovative agricultural clusters; when substantiating and making specific management decisions aimed at modernizing the structure of the economy of problem regions.

The proposed set of practical measures to improve the investment attractiveness of the region is aimed at consulting on promising areas and problematic issues in the development of the agro-industrial complex, support measures from the state, assessing and forecasting risks based on modeling threats and challenges to the development of world agriculture and the national economy.

The results obtained are proposed for use in the practical activities of state authorities in the development and management of regional innovation and investment programs and the adoption of legislative and regulatory acts, and are also included in the investment passport of the region.

Conclusions. The practical significance of the results of the study is due to the provision of recommendations and proposals for specific implementation in the North Caucasus Federal District, in particular:

- in the course of implementing the approved programs for the development of agriculture, the authorities will take into account the conclusions about current trends in the development of world agriculture, the results of assessing risks and threats to the growth of agricultural production;
- management bodies of the agrarian sector of the subjects of the North Caucasus Federal District, as well as directly economic entities, will apply derivative business models for the development of small, medium and large farms, taking into account the emerging agro-industrial complexes;
- practical application of the proposed options for solving the problem of debt obligations, providing budget support and stimulating the innovative development of agricultural clusters;
- a model of interaction between agribusiness, the banking sector and the state in solving problems of food security in the context of import substitution.

According to the Forecast of scientific and technological development of the agro-industrial complex until 2030, global challenges for the entire world economy are the same and include: natural and climatic, technological, social, economic, political and institutional, value and others [3].

The system of external risks of the development of the industry defines the global trends of the protectionist policy of the countries of Europe and America against the national economy, the technological lag behind the world leaders in agricultural engineering, world food prices, differentiation of leadership in the production and consumption of food items, etc. [4, 852].

Only the probabilistic estimates of the occurrence of these challenges vary, which, in the end, are the risks of a threat to food security. In this regard, the main trends and problems in the development of the agro-industrial complex of the regions, identified during the implementation of the study, fully reflect the global trend. The difference is determined by the level of technological development, the existing technological order, and the volume of investments in R&D [5].

The experience of the developed countries of the world in recent years shows that increasing the efficiency of agro-industrial production is achieved mainly through the intensification of innovation, that is, the successful functioning of the scientific and technical sphere of the industry.

Innovative digital technologies are a resource for economic growth, since they, due to accuracy and automation, open up new opportunities for monitoring and managing various processes. Digital transformation affects almost all areas of activity, it is applicable, to a large extent, to agriculture, which is characterized by technological diversity and the complexity of economic processes of agro-industrial production at the regional, national and world level.

In conclusion, turning to Chapter 18. Preserving and supplying freshwater resources: applying integrated approaches to water development, water management and water use United Nations Conference on Environment and Development , Rio de Janeiro, 3-14 June 1992 , we note that "the sustainability of food production to an increasing extent" will be determined by the rationality and efficiency of "the use of water resources and methods of their conservation, which mainly consist in the development and organization of irrigation, including the rational use of water resources for rainfed agriculture, water supply for livestock , inland fisheries and agroforestry"[1].

Achieving food security is a high priority in many countries, and agriculture must not only feed a growing population, but also conserve water resources for other uses. The objective of the ongoing scientific research is to “develop and implement water-saving technologies and management practices and, through capacity building, enable communities to introduce an organizational structure and incentives for the rural population to adopt new approaches to rainfed and irrigated agriculture”, which will ensure, first of all, wide access to drinking water supply [6].

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