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**IMPACT OF AGRARIAN SCIENCE IN UKRAINE ON INSTITUTIONAL TRENDS IN AIC  
DEVELOPMENT: GLOBAL CONTEXT**

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*Abstract - attention is focused on the insufficient amount of state funding for the agrarian science of Ukraine in comparison with competing countries. The reasons for the weak level of development of the commercial sector of agricultural science and the insufficient volume of private investment in R&D are established. The key barriers to the innovative transformation of the agricultural sector of Ukraine are formulated (imperfection of the legislative framework with an emphasis on the bureaucratic nature of the problems, lack of dialogue between agricultural business and science, inefficiency of the technology transfer support system). The predominance of funding for scientific and technical (experimental) developments over fundamental and applied areas of research has been determined. A significant gap has been established between the tasks set by departmental institutions and the tasks facing the agricultural sector. The indicators were analyzed and a low level of quality of the scientific product was established (the level of demand for developments, the contribution to the global volume of publications, the share of patent applications in key areas of research). A model for the development of the agro-industrial complex, focused on rapid adaptation to global conditions, is proposed.*

*Key words: agrarian sector, agro-industrial complex, expenses, innovative transformations, countries of the world, model, science.*

**Introduction.** The agri-food sector is one of the most stable sectors of the national economy, and the production of certain products shows positive results. Having a strong position in the international export of agricultural raw materials and products of a low degree of processing and localizing import dependence on certain commodity groups, Ukraine remains dependent on the means of their production. This state of affairs is not only a serious problem in ensuring national food security, but also hinders the growth of competitiveness even within the current technological arrangement.

The key barriers to the innovative transformation of the agricultural sector correlate with the systemic problem of inefficient communications between business, science and State executive bodies in the following manifestations: b) the unwillingness of officials to understand new issues, the backlog in making managerial decisions; c) the lack of dialogue between agribusiness and science, the causes of which are a complex of objective factors (low level of equipment of research institutes, shortage of personnel and competencies) and subjective (different vision of goals and results, agribusiness often cannot formulate tasks understandable to science, science presents its developments in a language that is not always understandable for agribusiness, d) the inefficiency of the technology transfer support system: the existing support measures are aimed at the conventional path of development of the agro-industrial complex and are not focused on progressive and innovative directions [1].

**Main part.** Ukraine, as one of the leading agricultural states, lags far behind its competitors in terms of the quality of the scientific product. The lag is due to the insufficient efficiency of investments in agricultural science, as well as the imbalance in their structure. In particular:

a) the dominance of the public sector as the customer and executor of R&D. The share of total spending in Ukraine's GDP on R&D in 2020 amounted to 0.41%, and in 2010 - 0.75%, in 2013 - 0.70% and in 2018 - 0.47% respectively [2]. In terms of the amount of state support for agricultural science, Ukraine is an outsider compared to the leading countries of the world (in 2018, the share of spending on R&D in the GDP of the EU countries averaged 2.06%. More than the average share of spending on research and development in Sweden – 3.34 %, Austria - 3.17%, Denmark - 3.06%, Germany - 3.09%, Finland - 2.77%, Belgium - 2.82% and France - 2.20% respectively; less in Romania, Latvia, Malta, Cyprus and Bulgaria (from 0.5% to 0.75%). Moreover, among the considered countries of the world, the largest share of expenditures on R&D in the GDP of such countries as Japan - 3.26% and Israel - 4.95%, respectively [3].

In 2018, 22.4% (UAH 3,756.5 million) of the total expenditures were directed to the implementation of fundamental scientific research, which was financed by 91.9% from the budget (in 2020, this figure was 25% (4,259 0 million UAH), for applied scientific research - 23.3% (3971.4 million UAH) and 51.7% (8792.1 million UAH) for scientific and technical (experimental) developments, respectively [2]. In 2018, almost half of the spending on basic scientific research was in the natural sciences, 24.8% in technical sciences, and only 8.7% in agriculture. In 2018, 37.8% of the expenses of the technical sciences sector, 23.2% - natural sciences, 12.9% each - medical and agricultural, were directed to the implementation of applied scientific research. In 2018, most (88.9%) of the costs are related to the implementation of scientific and technical (experimental) developments in the field of technical sciences [2].

An increasingly acute problem of implementing an innovative way of development of the Ukrainian agro-industrial complex is the reduction of human resources. The trend is typical both for the scientific sector, where there is a decrease in the number of researchers, aging of personnel (which threatens continuity in established scientific schools and the

viability of scientific teams), and in the agro-industrial complex as a whole, which is associated with a shortage of trained personnel. By the way, in the QS global ranking of world universities in 2021 subjects: agriculture and forestry, not a single Ukrainian university; there is only one Russian higher educational institution from the countries of the former USSR - Russian State Agrarian University - Timiryazev Moscow Agricultural Academy, which is included in the group of universities occupying 251-300 places.

Given the above, the vectors of technological development of the Ukrainian agro-industrial complex should be: a) strengthening its own fundamental base for productivity growth: breeding technologies and improving the genetic potential in combination with technologies for ensuring the best realization of this potential (feed additives, fertilizers, plant protection products and animal health), which form so-called package solutions) [4]; b) the introduction of digital technologies and cross-platform solutions in the agro-industrial complex to reduce the gap with developed countries in terms of labor productivity, increase yields or productivity and reduce food losses [5]; c) diversification of the manufactured range of food products with a priority on high-margin segments of healthy, functional and personalized nutrition, deep processing of agricultural raw materials; d) support for the development of indoor farming systems, independent of external agro-climatic and biological factors. Existing technologies make it possible to eliminate the seasonality factor and make it possible to obtain fresh, safe and highly valuable products (berries, herbs, vegetables) in the regions of Ukraine; e) development of the agricultural waste processing sector: the current situation in the field of their generation and disposal is becoming unsatisfactory in many regions of Ukraine. However, already existing technologies prove the possibility of their efficient processing into various products with high added value. This determines the significant advantage of experimental lines of research, but is not accompanied by adequate cost effectiveness.

Fundamental scientific and technological changes and discoveries, the actualization of global problems have created the prerequisites for fundamental transformations in the conditions for the development of the agro-industrial complex, the role of which is no longer limited to the function of food production. This requires the formation of a new model of science, focused on rapid adaptation to new conditions.

**Conclusion.** The proposed model for the development of the agro-industrial complex will determine the impact of the following institutional trends: 1) the transition to a new technological order: food production depends on technologies to increase yields, productivity and prevent losses, but less on the influence of external climatic and biological factors; 2) changes in value chains: value added will be more concentrated in knowledge-intensive sectors (genetics and breeding, IT sector, industrial design and engineering); 3) the growing influence of large agricultural companies-integrators that take control of growing parts of the food systems. Such structures are drivers of innovation and form global value chains: a shift in demand from traditional food raw materials to products that meet the value orientations of new generations. Consumers prefer ready-to-eat foods, products with improved and pre-defined properties, with an emphasis on their benefits and safety, origin, technologies and ethical production; 4) strengthening the role of product safety factors: increasing the number and strengthening of relevant standards and certification systems, which can become a tool for regulating international trade, limiting the circulation of products that do not meet new requirements; 5) the transition to an innovative economy: the process of digitalization and robotization significantly changes the structure of employment: on the one hand, reducing dependence on low-skilled labor and calling into question the relevance of certain professions, on the other hand, putting forward high requirements for rapidly changing key competencies.

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#### ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ ЕВРАЗИЙСКОГО ЭКОНОМИЧЕСКОГО СОЮЗА

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*Резюме – проанализированы существующие проблемы и перспективы развития Евразийского экономического союза. Изучено влияние его расширения на глубину и скорость интеграционного процесса. Выявлены причины и экономико-политические последствия крайней асимметричности ЕАЭС. Показана зависимость интеграционного процесса от трансформаций социокультурных институтов в странах союза за постсоветский период.*

*Ключевые слова: Евразийский экономический союз, постсоветское пространство, интеграция, институциональная среда, социокультурные институты.*