Features of Adaptation of Regional Agro-Industrial Complexes to Changing Conditions of Demand in the Context of the Transition to a New Economic Formation

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Abstract. The article examines the main aspects of the functioning of the branches of the regional agro-industrial complex, the peculiarities of their adaptation to changing conditions of demand in the context of the transition to a new economic formation. The main problems and features of the functioning of agricultural and processing industries in the context of adaptation to global sanctions and emerging restrictions due to the pandemic and its consequences are highlighted. The results of the study of changes in demand for agricultural products are presented, the main factors are identified. The main recommendations are formulated related to the peculiarities of the development of the branches of the regional agro-industrial complex in the medium and long term in the conditions of a new economic formation in order to maintain progressive development, ensure territorial food security and maintain the economic and social stability of the relevant industries.

1. Introduction
The ongoing changes in the structure of consumption of products of the agro-industrial complex have significantly intensified not only in the process of the ongoing globalization of the market, but also in the adaptation of industries in the pandemic and post-pandemic period [1]. The changes recorded by statistics affected virtually all territories of the countries of the world, were associated not only with global climatic and political changes, but also with sharply emerging restrictive conditions in connection with the global pandemic; forced ruptures of world economic ties between the main links of production in the branches of the agro-industrial complex [2]. This was reflected in the change in demand for the main types of agricultural products in the respective territories, enabling local businesses to actively develop. It was also reflected in the process of meeting the new needs of the population, manifested as a result of the consequences of the pandemic and new priorities based on stimulating the development of regional and local production complexes.

2. Problem statement
Global changes in production processes taking place over the past five years, dictated not only by globalization, but also by the complex adaptation of the agro-industrial complex to the economic sanctions imposed by various countries of the world against each other and other third countries; the consequences of the global pandemic and the violations that arose in this process, the ruptures of world economic ties and the interaction of territorial complexes and industries – all this significantly influenced the production processes of the branches of the regional agro-industrial complex [3].
Changing conditions of demand for agricultural products in various countries [4], as well as changes in world economic relations due to economic sanctions and a pandemic, contributed to a significant change in the production of agricultural sectors in a number of territories [5]. That actualizes the need to study the relevant processes in order to foresee and manage them for the implementation of progressive development in the medium and long term [6]. Creation of a system to support and stimulate the development, growth of regional complexes of the agro-industrial complex; differentiation of production; improving the processing of agricultural products in order to better preserve and deliver to the end consumer, incl. outside the territory of the region.

3. Research questions
The main research questions are related to the structure of demand for the products of the regional agro-industrial complex, its changes in connection not only with the introduction of global sanctions and overcoming the global pandemic, but also the processes of support and development of the economy of the respective territories. This is accomplished not only through the implementation of regional development programs, but also through priority national projects aimed at the development of infrastructure, raising the standard of living of the population and stimulating the development of branches of regional entrepreneurship [7]. Aspects concerning the change in the structure of agricultural production, both by industry and in the context of the respective territories – regions of the North-West Federal District.

4. Purpose of the study
The main purpose of the study will be the peculiarities of adaptation of regional agro-industrial complexes to changing conditions of demand in the context of the transition to a new economic formation, in the context of sanctions, post-pandemic restrictions, active digitalization of the economy and changes in the consumption structure of the respective territories.

5. Research methods
In the course of the implementation of the set goal of the study, we used methodological approaches based on the analysis of statistical data on the sectors of the agro-industrial complex, using economic and mathematical modeling methods. We also used a number of expert methods to predict changes in the main indicators of the agro-industrial complex sectors for the medium term, taking into account changing factors of the external and internal environment.

6. Findings
To substantiate the recorded changes in the production of branches of the regional agro-industrial complex, we will consider the indices of agricultural production by regions of the North-Western Federal District (NWFD), as a spatial location of territories with similar conditions from the standpoint of geographic and climatic position for agribusiness industries. For clarity, we investigate complex data on the production of crop and livestock products in farms of all categories (without diversification for specific types of farms), based on data from the Federal Statistics Service of the Russian Federation [8] (table 1).
Table 1. Indices of agricultural production by regions of the NWFD and probable forecast until 2025 (in farms of all categories; in comparable prices; as a percentage of the previous year (based on data from the Federal Statistics Service [8]).

| Year                      | 2010 | 2015 | 2019 | Growth rate, % | Forecast 2020 | Forecast 2024 | Forecast 2025 |
|---------------------------|------|------|------|----------------|----------------|----------------|----------------|
| Russian Federation        | 87.9 | 102.1| 104.3| 118.6          | 101.8          | 105.4          | 104.3          |
| North-Western Federal District | 100.4 | 104.0 | 105.7 | 105.3 | 104.5 | 104.8 | 104.6 |
| Republic of Karelia       | 97.5 | 97.2 | 93.7 | 96.1 | 95.2 | 101.1 | 101.0 |
| Komi Republic             | 102.7 | 101.6 | 96.5 | 93.9 | 98.7 | 98.7 | 101.3 |
| Arkhangelsk Region        | 96.2 | 84.6 | 96.2 | 100 | 98.1 | 100.4 | 100.9 |
| including:                |      |      |      |      |      |      |      |
| Nenets Autonomous District | 112.1 | 110.6 | 95.3 | 85.0 | 97.7 | 100.1 | 98.7 |
| Arkhangelsk Region without the autonomous district | 95.6 | 83.8 | 96.3 | 100.7 | 98.9 | 100.4 | 101.4 |
| Vologda Region            | 89.6 | 103.7 | 109.4 | 122.1 | 104.3 | 103.3 | 103.1 |
| Kalingrad Region          | 95.5 | 110.1 | 114.4 | 119.8 | 108.1 | 100.8 | 100.3 |
| Leningrad Region          | 102.3 | 101.8 | 101.0 | 98.7 | 98.7 | 103.5 | 101.8 |
| Murmansk Region           | 96.3 | 77.0 | 94.4 | 98.0 | 95.4 | 99.7 | 102.3 |
| Novgorod Region           | 124.8 | 114.4 | 99.6 | 79.8 | 101.2 | 103.8 | 102.6 |
| Pskov Region              | 101.4 | 113.3 | 117.9 | 116.3 | 113.1 | 104.6 | 103.8 |

Crop Products

| Year                      | 2010 | 2015 | 2019 | Growth rate, % | Forecast 2020 | Forecast 2024 | Forecast 2025 |
|---------------------------|------|------|------|----------------|----------------|----------------|----------------|
| Russian Federation        | 74.9 | 102.1| 106.6| 142.3          | 104.1          | 105.4          | 104.8          |
| North-Western Federal District | 95.6 | 105.0 | 108.6 | 113.5 | 104.8 | 105.3 | 104.4 |
| Republic of Karelia       | 101.7 | 92.5 | 98.7 | 97.0 | 98.1 | 101.7 | 100.1 |
| Komi Republic             | 101.1 | 100.0 | 84.7 | 83.7 | 92.3 | 100.4 | 99.7 |
| Arkhangelsk Region        | 88.3 | 94.0 | 94.3 | 106.8 | 101.4 | 103.1 | 101.4 |
| including:                |      |      |      |      |      |      |      |
| Nenets Autonomous District | 92.0 | 94.8 | 98.2 | 106.7 | 98.8 | 100.8 | 101.2 |
| Arkhangelsk Region without the autonomous district | 88.2 | 94.0 | 94.3 | 106.9 | 101.5 | 103.1 | 101.5 |
| Vologda Region            | 79.3 | 104.2 | 109.5 | 138.1 | 110.7 | 108.9 | 106.9 |
| Kalingrad Region          | 96.0 | 112.0 | 119.6 | 124.6 | 104.9 | 107.4 | 104.0 |
| Leningrad Region          | 97.9 | 104.2 | 107.8 | 110.1 | 101.1 | 102.7 | 103.1 |
| Murmansk Region           | 87.5 | 89.3 | 99.2 | 113.3 | 97.6 | 101.5 | 104.6 |
| Novgorod Region           | 115.9 | 113.6 | 104.8 | 90.4 | 103.2 | 104.9 | 103.7 |
| Pskov Region              | 92.8 | 103.9 | 112.2 | 120.9 | 106.1 | 103.6 | 102.8 |

Livestock Products

| Year                      | 2010 | 2015 | 2019 | Growth rate, % | Forecast 2020 | Forecast 2024 | Forecast 2025 |
|---------------------------|------|------|------|----------------|----------------|----------------|----------------|
| Russian Federation        | 100.3 | 102.0 | 101.9 | 101.6 | 101.7 | 102.5 | 101.8 |
| North-Western Federal District | 103.2 | 103.5 | 104.4 | 101.1 | 103.4 | 104.8 | 103.4 |
| Republic of Karelia       | 94.3 | 101.0 | 90.0 | 95.4 | 98.4 | 100.9 | 101.5 |
| Komi Republic             | 103.3 | 102.4 | 100.8 | 97.6 | 99.1 | 102.1 | 100.9 |
| Arkhangelsk Region        | 102.3 | 75.6 | 98.2 | 95.9 | 99.8 | 101.3 | 99.9 |
| including:                |      |      |      |      |      |      |      |
| Nenets Autonomous District | 114.6 | 114.0 | 94.8 | 82.7 | 97.2 | 100.1 | 100.1 |
| Arkhangelsk Region without the autonomous district | 101.5 | 73.4 | 98.6 | 97.1 | 99.8 | 101.4 | 99.8 |
| Vologda Region            | 94.2 | 103.5 | 109.3 | 116.0 | 110.4 | 104.1 | 103.5 |
| Kalingrad Region          | 94.8 | 108.0 | 109.2 | 115.2 | 108.8 | 100.8 | 101.2 |
| Leningrad Region          | 104.3 | 100.7 | 98.4 | 94.3 | 99.5 | 102.7 | 101.9 |
| Murmansk Region           | 98.4 | 73.3 | 92.1 | 93.6 | 101.4 | 103.4 | 104.3 |
| Novgorod Region           | 131.0 | 114.8 | 97.3 | 74.3 | 103.5 | 102.5 | 103.8 |
| Pskov Region              | 105.9 | 116.5 | 118.9 | 112.2 | 109.8 | 103.9 | 102.6 |
The data in the Table indicate an increase in the differentiation of agricultural production, both by industry and by territory (regions, subjects of the Russian Federation), over the past five years of the retrospective period [8]. The main factors influencing the changes taking place, according to our research, were not only external sanctions, but also active stimulation of the development of the agro-industrial complex in a number of regions of the North-Western Federal District, the growth of financial, human and other resources [9]. The recorded negative changes, expressed in the reduction of indices in a number of areas, are mainly due to the processes of adaptation of the current policy of stimulating agribusiness to changing external conditions, as well as certain climatic, economic and social changes that negatively affected production processes. An analysis of statistical data clearly shows a more active growth in crop production. This is due to changes in consumer preferences, the appearance of fresh herbs in the menu, an increase in the share of vegetables and fruits due to an increase in living standards, and the changing needs of individuals. The development of approaches aimed at stimulating the consumption of their own agricultural products in the form of interstate sanctions, and from 2020 a number of protective measures caused by the processes of the global pandemic. That served as a serious impetus for the development of territorial industries, incl. and new types of agricultural products, the production of which in a number of areas has not previously been carried out, due to climatic, spatial and other restrictions. But it began to develop actively thanks to the introduction of new technologies, maintaining a sufficient level of demand for products from the main consumers, and the ability to implement development projects not only under bank, but also state and regional guarantees. The highest growth rates are recorded precisely in those areas where state and territorial programs to support the relevant sectors of the agro-industrial complex are beginning to be implemented, and innovative production and management technologies are being introduced. Since in the new economic order, it is no longer enough to simply produce a product, but considerable efforts should be made based on the use of advanced technologies, including online promotion technologies, in order to ensure a stable level of sales of the corresponding crop, livestock, and processing industries of the regional agro-industrial complex.

7. Conclusion
Summarizing the results of the study, we will formulate the main recommendations for ensuring the integrated progressive development of the regional agro-industrial complex in the medium term:

- stimulating the development of small forms of farming as the most adaptive element of agricultural production processes;
- development of sales infrastructure, incl. by stimulating the conclusion of municipal contracts for the supply of local, environmentally friendly crop and livestock products to socially significant facilities (kindergartens, schools, other facilities) [10];
- organization of collection and promotion of products outside the relevant territory, region, including through the more active use of digital systems, Internet networks, etc.;
- the general development of rural areas, an increase in the standard of living of citizens, the creation of a favorable image of an agricultural producer [11];
- stimulating the introduction of advanced technologies for the production and processing of products to ensure year-round continuous production, incl. and in more northern regions, in order to improve food and economic security [12];
- implementation of measures to stimulate sales not only by government agencies, but also by other consumers, incl. large retail chains with a mandatory focus on the products of local producers and processors.

The presented recommendations and their application in the respective territories of the country will ensure the progressive development of the agro-industrial complex sectors in the medium term. They will ensure the comprehensive development of adjacent territories through differentiation of production facilities and improvement of production technologies and product processing. They will create a stable basis for the development and implementation of the achievements of scientific and technological progress and innovations in the processes of regional production; will increase the level of economic and social stability; in combination with other factors will ensure the growth and
development of territories in a new economic formation. Since it is precisely the differentiation of production, its timely adaptation to the end consumer, and the increasing requirements for product quality that is the main factor in the success of small and medium-sized agribusiness, as the main element of the socio-economic development of territories, increasing the standard of living and food security, ensuring the integrated development of even remote areas. All these aspects will create in the future the basis for the active continuation of economic and social growth, will contribute to the integrated development of territories, contribute to the growth of employment and a more comprehensive use of agricultural land.

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