

Establishing Agro-Industrial Complex Innovative Development Mechanism

Oksana Vaganova

Department of Economic Innovation and Finance
Belgorod State National Research University
Belgorod, Russia
vaganova@bsu.edu.ru

Viktor Zakharov

Department of Social Technologies and Public Service
Belgorod State National Research University
Belgorod, Russia
zakharov@bsu.edu.ru

Natalya Solovjeva

Department of Economic Innovation and Finance
Belgorod State National Research University
Belgorod, Russia
solovjeva@bsu.edu.ru

Mahamadou Sidibe

Independent Researcher
Bamako, Mali
sidibemahamadou@windowslive.com

Abstract—The Agro-Industrial Complex of the Russian Federation, like any other complex, cannot function without investment. The authors propose a model of the mechanism of innovation in the Agro-Industrial Complex. The article analyzes investment in fixed assets, reveals the dynamics of export of agricultural products in 2010-2019. The results of the analysis demonstrate stable dynamics of investment growth and prove that investors highly appreciate the opportunities provided for the development of agribusiness in the southern regions of Russia. But like any other way of investing money, investing in agriculture has its positive and negative aspects. The authors determine the positive aspects, which are state support, stable demand and the impact of sanctions, while the negative factors include long payback period, high risks, and territorial and climatic conditions of the region. The article analyzes the Strategy for the Development of the Agro-industrial Complex and the Fisheries Complex by 2030, which should ensure the country's food security and increase the export of agricultural products. Particular attention is paid to the financing of state programs for the development of agriculture, and a forecast of the development of the Agro-Industrial Complex is proposed for two options, taking into account the implementation of the strategy and without it.

Keywords—agro-industrial complex, state support, innovations, innovative development, management mechanism, agriculture.

I. INTRODUCTION

In modern conditions, the mechanisms for conducting innovation policy have been constantly changing. As a result, the tools for their implementation have changed multiple times. Numerous changes have resulted in decrease in efficiency and new challenges. These problematic processes proceeded in different ways in different industries and industry complexes obviously. This article is devoted to one of the main complexes affecting the economic security of the country, the agro-industrial complex of the Russian Federation, and its innovative development.

The issues related to the management of the investment process and the development of investment policy in the agro-

industrial complex of the Russian Federation were addressed by the following researchers: A.I. Altukhov, G.V. Bepakhotny, V.V. Bocharov, V.I. Gaiduk, O.S. Glushchenko, D.A. Endovitsky, S.A. Kalitko, M. A. Korobeynikova, V.D. Shapiro, U.F. Sharp, et al.

In recent years, in addition to the problem of choosing priority areas and making investments, the Russian enterprises of the agro-industrial complex constantly face the problem of finding sources of investment financing with an acute shortage of their own financial resources. Therefore, all processes occurring in the agro-industrial complex (especially investment ones) are required to be managed on a national level. In connection with the importance of this issue, the authors of the article set the goal to investigate the fundamental aspects of establishing agro-industrial complex innovative development mechanism.

II. METHODS

General scientific methods of analysis and synthesis were used as research tools, as well as specific research methods such as: monographic method, abstract-logical, calculation-graphic, economic-statistical, comparative financial-economic analysis, etc.

III. MAIN PART

The modern agrarian sector of the Russian economy is one of the effectively developing sectors of the state's national economy. The innovative development of the agro-industrial complex has an influencing factor on the level of import dependence of the state's economy, therefore, the conduct of agricultural production should be based on innovative aspects of activities and focus on the rational use of the natural, production, scientific and technical potentials of the economy. The innovative aspects in the management of the agro-industrial complex are recognized as a prerequisite for ensuring economic growth and increasing the country's competitiveness, therefore, issues related to the development of mechanisms for enhancing innovation processes in this area are strategically important, require methodological refinement and methodological justification. To organize the formation of

a mechanism for managing innovative activities in the agro-industrial complex, it is necessary to form a management process, i.e. an algorithm, and determine the elements, objects and subjects of management, factors and trends of influence.

To reveal the process of establishing the mechanism of innovative activity, it is necessary to trace and determine the conditions for activating innovative processes (Fig. 1).

The presented scheme for enhancing innovation in the agro-industrial complex, being an adaptation version, can be close to the system of functioning of the agro-industrial complex.

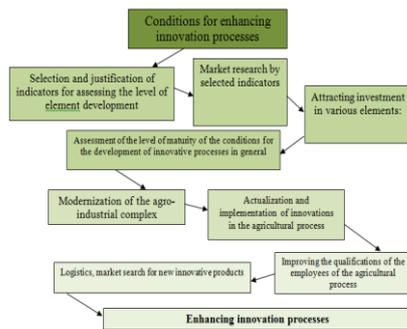


Fig. 1. Scheme of enhancing innovative processes in the agro-industrial complex

For a more intensive development of the Russia’s agro-industrial complex, the Government of the Russian Federation has developed and adopted the Strategy for the Development of the Agro-industrial Complex and the Fisheries Complex by 2030 [10], which sets tasks for the agro-industrial sector to ensure the state's food security and increase exports from the supply of agricultural products. As part of the implementation of the above strategy, the volume of exports of products of the agro-industrial complex began to increase, as evidenced by the data in the diagram presented in Figure 2 [9].



Fig. 2. Export of agricultural products in 2010-2019 (billion USD)

The fundamental fact of creating conditions for the development of innovativeness in the agro-industrial complex is the attraction of investments that will provide the domestic market with food and will contribute to an increase in the share of exports from supplies in GDP [1].

The Russian Federation is currently ranked 20th among the world's major food exporters. In 2019, the export of agricultural products amounted to more than 25 billion USD. Compared to 2010, exports increased 3 times, and almost 19 times as compared to 2000 (1.3 billion). The volume of supplies amounted to more than 60 million tons (Fig. 3) [6]. The main consumers of the Russian food products are presented in Table 1.

The article has been completed as part of the activities of REC “Innovative Solutions in the Agro-Industrial Complex” of Belgorod State National Research University

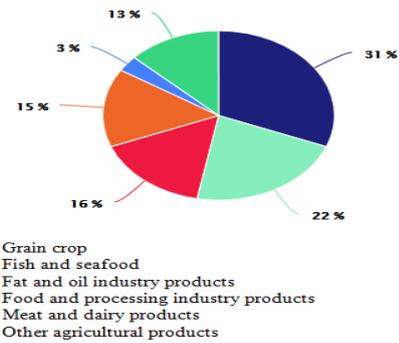


Fig. 3. Structure of exports of products of the agro-industrial complex of Russia in 2019, %

TABLE I. TOP-10 LARGEST BUYERS OF RUSSIAN FOOD PRODUCTS [8]

Position in 2019	Country	Volume of agricultural products imported from Russia (mln \$)
1	China	3202
2	Turkey	2491
3	Kazakhstan	1809
4	South Korea	1560
5	Egypt	1470
6	Belarus	1352
7	Netherlands	1033
8	Iran	974
9	Ukraine	711
10	Azerbaijan	623

Like any other way of investing money, investing in agriculture has its own pros and cons. In Russia, the pros include:

- state support;
- stable demand;
- impact of sanctions.
- The disadvantages of investing in the domestic agro-industrial complex are:
- long payback;
- high risks;
- region dependence.

According to the research “200 Largest Investment Projects for the Construction of Agricultural Complexes in the Russian Federation. Projects 2020-2023”, prepared by INFOLine specialists, the largest investors in the Russian agro-industrial complex are the agro-industrial holding “Miratorg” and the agro-industrial holding “ECO-Culture”, the companies are implementing a number of investment projects with the total value exceeding 100 billion RUB [4]. At the same time, high investment activity in dairy farming should be noted, where 65 large projects are being implemented with a total investment of 241.5 billion RUB, but the largest amount of investments was noted in the segment of beef cattle breeding: almost 325 billion RUB (Fig. 4).

The leading agricultural regions of the south of Russia demonstrate the greatest efficiency from the influence of investments in the agro-industrial complex. The experience of the Rostov region is especially interesting, where the

maximum growth and production volume per RUB of investments in fixed assets of agricultural organizations is observed.



Fig. 4. Investment in the fixed assets according to type of economic activity

In other federal districts, the Lipetsk, the Kursk and the Belgorod regions are leaders in terms of investment efficiency [7].

Investment in agriculture in Russia relies on comprehensive government support (Figure 5). In this regard, it is fundamentally important to provide constant feedback with the investor through a long-term planning horizon, monitoring the effectiveness of investment projects. An important tool for supporting investments in the agro-industrial complex can be the creation of a unified information system of the investment potential of the regions [3]. This will solve several problems at once:

- improve the quality of investment planning;

- improve the efficiency of the industry management due to the possibility of identifying priority areas for the investments;
- ensure transparency and controllability of the allocation and use of state support funds for the industry;
- reduce the risks of project implementation through monitoring and early detection of problems [3].

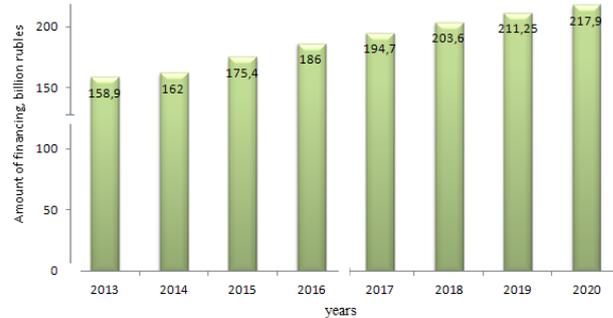


Fig. 5. Financing of the state program for the development of agriculture for 2013-2020 from the Federal budget

As the results of the analysis show, in general, investments in the agro-industrial complex of Russia over the last three years have shown a stable growth dynamics. The investors highly appreciate the opportunities provided for the development of agribusiness by the southern regions of Russia.

The investors who buy agricultural assets at the current prices insure their investments against inflationary trends in the long term, and create an excellent reserve for generating good returns in the future.

TABLE II. FORECAST VALUES OF THE DEVELOPMENT OF THE AGRO-INDUSTRIAL COMPLEX FOR TWO DEVELOPMENT OPTIONS (WITH AND WITHOUT THE IMPLEMENTATION OF THE STRATEGY)

Product	2011	2020		2030		2020		2030	
		Option 1	Option 2						
Agricultural production index, %	123.0	101.7	102.3	101.7	102.1	113.2	121.7	131.2	148.0
Grain, million tons	94.2	017.0	119.0	127.0	141.0	113.6	126.3	143.8	149.7
Livestock and poultry, million tons	11.0	14.4	14.6	15.2	16.4	131.1	132.8	138.8	149.6
Milk, million tons	31.6	37.6	38.9	42.5	46.3	118.8	123.0	134.4	146.3
Index of production of food products, including beverages, and tobacco, %	101.0	104.3	105.0	101.0	101.0	143.7	152.2	172.9	191.3

As part of the implementation of the strategy, the Ministry of Economic Development of the Russian Federation predicts an increase in agricultural production by 2030 compared to 2011 up to 31.2%, and up to 72.9% in the food industry (Table 2). The forecasted value is that grain production by 2030 will

increase to 127 million tons due to the expansion of the area for grain crops to 46.7 million hectares (the current level is 43-45 million hectares), as well as an increase in the average yield from 21.4 centners/ha (2008-2011) up to 28.8 centners/ha.

The growth in grain production will be due to both an increase in domestic consumption from 72.2 million tons to 81.3 million tons (including 46 million tons for fodder purposes), and due to an increase in external demand for Russian grain from 27, 2 million tons to 46 million tons. [6].

Tougher competition in the domestic and world markets is a catalyst for attracting investment, both in agricultural production and in the processing complex. In 2030, as compared to 2011, the investments in fixed assets in agriculture, according to estimates, will grow by 1.7-2.1 times, and by 1.4-1.7 times in the food industry. To carry out an effective investment process for agroindustrial enterprises, the authors have developed a mechanism for innovative development, which is based on establishing conditions that take into account the external and internal environment of the enterprise (Fig. 6).

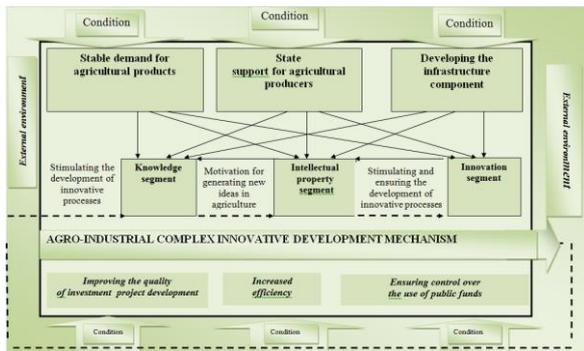


Fig. 6. Agro-industrial complex innovative development mechanism

IV. CONCLUSION

The agro-industrial complex of Russia needs constant state support. Today, the state pays attention to this industry, develops various development programs, which has a beneficial effect on agriculture. The industry becomes profitable, and thus attracts investors. The investors who have invested in quality agricultural assets are likely to be in a better position due to major fundamental trends, namely population growth and economic development. Therefore, the issues of establishing mechanisms for enhancing innovation in the agro-industrial complex will continue to occupy the minds of scientists and leaders who are trying to combine public and private funding for a long time.

REFERENCES

[1] D.V. Brazhnichenko, V.I. Gaiduk, O.S. Glushchenko, and S.A. Kalitko, "Improving the mechanisms for managing innovation in the agroindustrial complex. Improvement of mechanisms of innovative activity management in AIC", Moscow Economic Journal, no. 9, 2019, pp. 454-465.

[2] S.A. Dedeeva, "Investments in agriculture: development prospects and risks", Economics, management, finance: proceedings of the III International Scientific Conference. (Perm, February 2014), vol. 0, Perm: Mercury, 2014, pp. 4-6, URL: <https://moluch.ru/conf/econ/archive/93/4867/> (accessed on: 02.09.2020).

[3] I.S. Efimenko, N.A. Lytneva, and P.V. Goncharov, "Retrospective analysis and methods for assessing the development of the mechanism for managing innovation and investment processes in the agricultural sector of the economy", Vestnik OrelGIET, no 4 (34), 2015, pp. 5-12.

[4] N.V. Orlova, E.V. Serova, D.V. Nikolaev, et al., "Innovative development of the agroindustrial complex in Russia. Agriculture 4.0", reports. to XXI Apr. Int. Scientific Conf. on the Issues of Economic and Social Development, ed. by N. V. Orlova, National Research University Higher School of Economics, Moscow: Publishing House of the Higher School of Economics, 2020, 128 p.

[5] I.A. Boldyreva, O.G. Andryushchenko, and I.A. Mitrofanova, "Financial mechanism of the operation agriculture: structured and level aspects", Economics: Yesterday, Today and Tomorrow, vol. 7, is. 2B, 2017, pp. 250-264

[6] Ministry of Economic Development of the Russian Federation, Priority national projects of the Russian Federation "Development of the Agroindustrial Complex", URL: <https://piginfo.ru/news/razvitie-apk-rossii-do-2030-g-prognoz/>(accessed on: 02.09.2020).

[7] Main trends in the development of the digital economy in the financial sector, Legal aspects of regulation and practical application, Moscow: issue of the State Duma, 2019, 160 p.

[8] Forecast of scientific and process development of the agroindustrial complex of the Russian Federation for the period up to 2030, Ministry of Agriculture of Russia, National Research University Higher School of Economics, Moscow: NRU HSE, 2017, 140 p.

[9] Russia in Figures 2020: Brief statistics collection, Rosstat-M., 2020, 550 p.

[10] Federal Center for the Development of Export of Agricultural Products of the Ministry of Agriculture of Russia, URL: <https://aemcx.ru/экспорт-АПК/российский-экспорт/%D1%8D%D0%BA%D1%81%D0%BF%D0%BE%D1%80%D1%82-%D0%B0%D0%BF%D0%BA/%D1%80%D0%BE%D1%81%D1%81%D0%B8%D0%B9%D1%81%D0%BA%D0%B8%D0%B9-%D1%8D%D0%BA%D1%81%D0%BF%D0%BE%D1%80%D1%82/>(accessed on: 02.09.2020).

[11] O.V. Vaganova, "Dynamics of scientific potential and changes in the process structure of the Belgorod region", In the collection: Socio-economic development of organizations and regions of Belarus: efficiency and innovation materials of reports, International scientific and practical conference, Vitebsk State Technological University, 2017, pp. 142-147.

[12] O.V. Vaganova, Methodological aspects of the formation of mechanisms of integration interaction of subjects in regional innovation systems, abstract of a thesis of Doctor of Economics, Saint Petersburg State University of Economics. St. Petersburg, 2016.

[13] S.N. Glagolev, and O.V. Vaganova, "Specific Determinants for Structuring the Economy, Taking into Account the Factor of Integration", World Applied Sciences Journal, vol. 24 (10), 2013, pp. 1322-1329.

[14] S.N. Glagolev, and O.V. Vaganova, "The Financial Mechanism to Ensure the Innovation Process", World Applied Sciences Journal, vol. 25 (12), 2013, pp. 1729-1734.