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The Assessment of the Effectiveness of the Implementation of Scenarios for the Sustainable Development of Agriculture

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Abstract*: In the following article, the advantage of the scenario analysis of the development of agriculture at assessment of effective management of its sustainable development, taking into account realization of possible strategic objectives is disclosed. Comparative characteristic of three scenarios of development of agriculture is given. Their differences are specified. The system of indicators that allows determining the effect of the complex processes of use of natural and production resources on effectiveness of management of sustainable development of agriculture is characterized. Its perspective growth parameters in the sectoral context are analyzed. The conclusion is drawn that the effective scenario at which the Russian agrarian economic policy has to be aimed is optimistic. It is this vector of effective management, which can ensure the achievement of strategic landmarks for the development of the agro-industrial complex for a ten-year perspective.

***Index Terms*: scenario analysis, agriculture, sustainable development, management effectiveness.**

I. INTRODUCTION

One of the modern problems of Russian agriculture is the ineffective management of its sustainable development both at the sectoral level, and at the regional and national levels. In general, the sustainability of agriculture is achieved by implementing a sound system of goals, determined by an effective development of strategy. The target vector of strategic development is the growth of labor productivity, the increase of the competitiveness of the country's agricultural products in the domestic and foreign markets, as well as the creation of the infrastructure of modern agribusiness, which includes legal, institutional, financial and technological aspects [1].

The effectiveness of management of sustainable development of agriculture is one of the most important factors for increasing the competitiveness of the agro industrial complex as an economic system. However, the emphasis only on the strategic development of agriculture will not ensure an absolute increase in the sustainability of agriculture, since this indicator depends on a number of factors, one of which is the choice of the optimal scenario for the development of the industry [2].

The scenarios allow determining the prospects for the development of a particular market situation in the presence of factors that differ in the degree of certainty, affecting the pace of development of the industry (the amount of state support, trends in the structure of consumption of the industry's products, personnel, technological support of industry enterprises) and in their absence. On the other hand, the scenarios for the development of the situation make it possible to understand the dangers, posed by bad management or adverse effects of the development of market or macroeconomic situation [3].

An absolute advantage of the scenario analysis of the development of agriculture is the consideration of not only the subjective factor, determined by the current and forecasted state of the level of agricultural management, but also the possibility of taking into account scenarios of medium- and long-term development.

II. PROPOSED METHODOLOGY

The analysis of a number of developments of modern scientists on the long-term forecast of the development of the agro-industrial complex, carried out by various methods of forecasting, as well as our studies, allowed us to identify three main scenarios for the development of the Russian agro-industrial complex: pessimistic, optimal and optimistic. In the context of each scenario, it is planned to implement the following growth strategies, both individual components of the AIC components, and it is in the system of the complex: strategies for intensive growth, strategies for prudent reduction and strategies for integrative growth.

A. Algorithm

The first scenario is pessimistic - it assumes a slowdown in the pace of development of the country's agriculture in connection with the world trends.

The second one (optimal) implies the preservation of current trends in agriculture, limited investment opportunities and the size of the state support for the agro-industrial complex.

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The third one is optimistic - provides for the functioning of agriculture in conditions of the intensification of production, the implementation of the state program for the development of agriculture until 2030. In addition, it provides for the regulation of markets of the agricultural products, the raw materials and foodstuffs in accordance with the parameters laid down in the Concept of Long-Term Social and Economic Development of the Russian Federation until 2020 [3].

The comparative assessment of the development of scenarios of agriculture in aggregated form is given in the following table 1.

Table 1. The Comparative Assessment Of The Development Of Scenarios Of Agriculture

Designation	Scenario		
	pessimistic	optimal	optimistic
1.Competitive advantages	Reduction of industry price advantages	Reducing of energy intensity and, as a result, increasing of technological competitiveness	Competitiveness has limited parameters
2.State support of innovation activities	Choice of an extensive way of development of agriculture. Reduction in the pace and volume of support for innovation.	Transition of agriculture to an innovative way of development	Increasing of the efficiency of production based on the latest achievements of agrarian science, turning into the most profitable and attractive areas of business. The application of modern forms and methods of management.
3. Status and trends of socio-economic development in Russia	Decrease in indicators of the state of the economy in the agricultural sector in comparison with the planned ones	Achievement and the exceeding of indicators of the forecast of social and economic development of agriculture	Significant excess of forecasted indicators of social and economic development of agriculture
4. Strategic development vectors	Stabilization of market relations, parity of prices for labor and energy resources.	Attraction of investments, creation of new agro-industrial structures with simultaneous investment of means for purchase of agricultural machinery. Capital acquisition, the vocational education reform, spatial development, removal of infrastructure constraints	Cluster policy, tax incentives and benefits, ensuring a balance in the labor market, removing infrastructure constraints
5. Economic factors	Growth in the inflation rate, slowdown in production and solvency of the population	At the level of officially projected indicators	Stabilization of inflation, growth of production rates, increase in incomes of the population above the forecast indicators
6. Financial factors	The decline in extrabudgetary funds in agribusiness	The increase of extra-budgetary funds in agribusiness	Significant investment flows into the agrarian economy. Modernization of fixed assets. The transition of most agricultural enterprises to an innovative development way.
7.Investational attractiveness	The investments are aimed at maintaining the infrastructure and developing the production base	Inflow of capital into priority areas	Investments are aimed at developing infrastructure and developing the production base
8. Analysis of the impact of risks	Growth of the influence of production, economic and environmental risks on the performance of agribusiness.	Decrease in the rate of development of human capital in the agrarian economy.	Increased demand for skilled personnel in agricultural production. Financial shortage for the import of new technologies.

The differences between the scenario variants are the following: the level of state support of the agrarian sector, the volumes and directions of investments; the capacity of the domestic market in accordance with the level of the agrarian economy; share of agricultural products and foodstuffs exported; the degree of implementation of the tasks defined by the Doctrine of Food Security of the Russian Federation; the level of the social situation of the rural population and the development of rural areas [3].

Determining the effectiveness of management of sustainable development of agriculture is associated with the difficulties caused by the multiplicity of factors affecting it. In this regard, the effectiveness of agriculture in the long term must be determined by a system of indicators, which will allow determining the effect of complex processes of using natural and productive resources (Table 2.).

The forecasted growth in agricultural efficiency will contribute to the stability of the country's food market under conditions of import substitution and to the growth of solvent demand of the population. It will require the development of industry, as well as the sphere of production services; it will also ensure an increase in the level of employment of the population, thereby strengthening the economic and social position of the RF [4].

The reducing dependence on imports of agricultural products will help meet the growing demand of the Russian population for its products, which will be possible due to the optimal combination of intensive and extensive factors of production growth. In the long term, the labor productivity growth is expected to be about 25-30%. The implementation of the basic principles and a set of measures to update the technologies of agro-industrial production, improving the use and development of its resource potential, improving the quality of products, state of natural ecosystems will allow achieving an optimistic development of agriculture in the forecast periods [5].

Table 2. The Assessment Of The Effectiveness Of The Implementation Of Scenarios For The Development Of Agriculture

Indicators	Scenarios								
	Pessimistic			Optimal			Optimistic		
	2020	2025	2030	2020	2025	2030	2020	2025	2030
1. The index of production of agricultural products in farms of all categories (in comparable prices),%	104,5	106,1	107,0	106,9	107,6	108,2	108,5	109,0	110,9
2. The index of production of livestock products in farms of all categories (in comparable prices),%	109,1	110,6	112,0	112,6	113,6	114,5	115,4	117,2	118,2
3. The index of production of crop production in farms of all categories (in comparable prices),%	103,3	105,9	107,5	103,0	105,6	107,5	105,9	108,9	110,9
4. The index of physical volume of investments in fixed capital of agriculture,%	66,2	69,5	70,3	75,6	81,2	90,1	90,0	95,1	100,0
5. The share of local production in the formation of resources,%: - meat and meat products (in terms of meat) - milk and dairy products (in recalculated on milk)	58,9 45,0	62,5 47,0	75,4 51,0	70,6 56,9	75,5 65,8	85,9 75,0	75,6 65,0	82,6 85,0	90,0 90,0
6. The coefficient of renewal of the main types of agricultural machinery in agricultural organizations,%: - tractors - combine harvesters	12,6 16,5	13,1 17,3	13,4 17,8	13,9 16,7	14,6 17,5	15,6 18,5	14,5 17,6	15,5 18,6	16,5 19,6
7. The energy supply of agricultural organizations per 100 hectares of sown area (total rated engine power tractors, combines and self-propelled machines), hp	202	205	208	210	215	219	218	222	226
8. The labor productivity index in agricultural organizations,%	108,9	110,3	111,5	111,9	112,6	114,0	115,2	116,4	117,5

III. RESULTS AND DISCUSSION

In order to ensure high rates of agricultural development the domestic producers of agrarian products should strengthen their positions primarily in those markets, whose capacity will grow dynamically.

The strategic growth potential is inherent in the internal market of livestock products, first of all meat, and to the external (world) grain market [6].

The rationality of the installation for the accelerated development of domestic livestock production is determined by the following circumstances.

First, in the long term, the trend will continue to increase the population's expenditures on Russian-made meat and dairy products. An increase in the scale of livestock production will lead to an increase in the need for feed and will ensure the expansion of the capacity of the domestic market for crop production. Consequently, in the case of successful development of animal husbandry, a reproduction contour is created. It allows transforming the expected increase in the population's expenditures on meat and dairy products in the factor of increasing the growth rates in both crop production and in agriculture in general and in the complex of the related sectors of the Russian economy. At the same time, effective and dynamic development of animal husbandry will remove a significant part of foreign economic threats to food security.

Secondly, at present there are objective opportunities for the development of livestock such as the success in crop production (the possibility of solving the fodder problem). There were also formed large companies in poultry farming and pig farming. These companies are capable of rapid mobilization of financial and material resources that will ensure an elastic build-up of production volumes in the event of the formation of a favorable economic conjuncture.

The opportunities for the development of a grain-based economy with an export orientation are determined by the natural comparative advantages of Russia. They are the availability of the world's largest resources of the arable land, the reserves of water resources, developed industry for the production of mineral fertilizers; the territorial proximity to the growing segments of the world market (the countries of Central and South-East Asia).

The providing a high culture of farming, the increase in the volume of application of mineral and organic fertilizers, the carrying out the measures to restore the material and technical base of agricultural organizations, the introduction of new technologies will increase the yield of crops [7].

The increased investment in agriculture, the implementation of projects of fast-growing industries, and also the support of peasant (farmer) and personal part-time farms will contribute to the development of competitive agricultural production.

The high global and domestic demand for grain creates the conditions for investing in the development of the grain complex and expanding export opportunities.

Thus, the aggregate potential of these two areas of agricultural development proves to be good to ensure a sufficient increase in the gross output of agriculture.

The comparison of the three scenarios demonstrates the advantages of an optimistic scenario for improving a number of indicators. In addition, with the implementation of this scenario, it will be possible to create the prerequisites and conditions for the growth of innovation activity and, accordingly, a significant improvement in the indicators of the socio-economic development of agriculture.

IV. CONCLUSION

Thus, the only acceptable scenario capable of ensuring a stable multifunctional competitiveness and achieving strategic guidelines for the development of the agro industrial complex, for 2030 and beyond, is optimistic. The Russian agrarian economic policy must be aimed at its implementation [8].

The use of methods of scenario forecasting will allow providing higher probability of realization of effective administrative decisions within the framework of the adopted strategy of the industry development in those situations where it is possible and a higher probability of reducing the expected losses to a minimum in those situations when these losses are unavoidable. After all, one cannot ignore the unstable global economic trends and their impact on the Russian economy, as well as negative consequences of adverse weather conditions in the agricultural sector. This can lead to the development of the situation in another, less optimistic version, which can result in a longer period of stagnation of production in some sectors of agriculture and food industry, and the deterioration of the financial situation of agricultural producers and the state of the social sphere of rural areas [3].

REFERENCES

1. S.N. Trunova, A.A. Ananskih. Metodologicheskie aspekty strategicheskogo upravleniya selskim hozyajstvom dlya ustojchivogo rosta proizvodstva selskohozyajstvennoj produkcii i ego effektivnosti. Materials of the XXIII All-Russian Scientific and Practical Conference of Young Scientists of Post-Graduate Students and Students Youth Science 2013: Technology and Innovation 11 - 15 March. Perm State Agricultural Technological Fund, 2013, p. 413.
2. I.P. Shalyapina, S.N. Trunova. Strategiya upravleniya razvitiem agrarnogo proizvodstva: konceptualnye podhody (collective monograph). Michurinsk, 2013.
3. I.P. Shalyapina, S.N. Trunova. Metodologiya ocenki i prognozirovaniya ustojchivogo razvitiya agrarnogo proizvodstva (collective monograph). Michurinsk, 2012.
4. S.N. Trunova, I.A. Trunov. Formirovanie chelovecheskogo kapitala v agrarnom proizvodstve. Scientific works of the Michurinsk state agrarian University, issue 1, volume 3: Economics/ed. by V. A. Babushkin. Michurinsk: publishing house of the Michurinsk SAU, 2017
5. S.N. Trunova, I.A. Trunov. Konceptualnye osobennosti strategicheskogo upravleniya selskim hozyajstvom. Materials of the VIII International Scientific and Practical Conference "Actual Issues of Economics and Agribusiness" March 17, 2017. FSEI HE Bryansk State University
6. S.N. Trunova. Metodicheskij podhod k ocenke effektivnosti upravleniya ustojchivym razvitiem hozyajstvuyushhih subektov agrarnogo sektora ekonomiki. Materials of the Russian correspondence scientific-practical conference (with international participation) "Business. Science. Education: problems. Prospects. Strategies" May 26, 2015 Vologda Institute of Business Vologda.
7. S.N. Trunova. Kompleksnaya metodika ocenki effektivnosti strategicheskogo upravleniya razvitiem selskohozyajstvennoj organizacii . "Technologies of food and processing industry of AIC - healthy food products" Association Technologies of food and processing industry of AIC - healthy food products, Voronezh, 2015, No 2.
8. I.P.Shalyapina, S.N. Trunova et al. Ustojchivoe razvitie agrarnogo proizvodstva: metodologicheskie podhody k ocenke i prognozirovaniyu (collective monograph). Moscow, 2013.

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