STRATEGIC PRIORITIES TO DEVELOP AN ADAPTIVE MECHANISM FOR AGRO-INDUSTRIAL COMPLEX SUSTAINABLE DEVELOPMENT

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Abstract. The increase of food security level requires the solution of a key problem on interaction effectiveness increase between a state and business in the direction of emerging contradiction smoothing and dampening, taking into account the provision of strategic priorities of food security and the trajectory of sustainable social and economic development for territorial and sectoral complexes. The results of the research demonstrate the expediency of taking into account three groups of factors that affect the effectiveness of the state program implementation concerning the support of the agro-industrial complex: financial, economic, social and environmental one. The proposed economic-mathematical model allows to perform a poly-criteria adaptation in accordance with the strategic priorities for an acceptable food security level provision, and also develop the procedure of target adjustment if they do not match the current socio-economic situation. Further adaptation of government programs for food security provision must take place and can be implemented on the basis of a wide range of instruments, the expediency of their use directly depends on a number of factors, both objective and subjective ones.

Keywords: food security, strategy, investment project, agro-industrial complex, economic interests

1 Introduction

The provision of food security is one of the key trends for the socio-economic development of the country and directly depends on the accumulated potential of territorial-branch complex import substitution. The increase of interaction effectiveness between public authorities in hierarchy levels at the federal and regional levels, as well as the harmonization of state interests with business representatives is a key problem, the solution of which will increase the level of food security to an acceptable level (Gavrilov V.V. 2009). The dual nature of private business interests on the one hand (Isaeva E.M. 2013), and the representatives of public authorities on the other creates the most crucial systemic contradiction that is related to the specific functioning of economic entities maximizing their profits, often to the detriment of socioeconomic development strategic goals for meso-level systems (V.M. Kruglyakova. 2012), which creates the need for regulation by public authorities in the direction of emerging contradiction smoothing and dampening, especially taking into account the strategic priorities of food security provision, as well as the progressive and the sustainable growth of the agro-industrial complex.

It is rather obvious that the regional authorities are directly interested in economic potential increase of the industrial complexes located on its territory, in the attraction of investment resources aimed at new competitive industry creation. As the number of works shows (Altukhov A.I. 2006, Leksin V.N. 2007), the agro-industrial complex of southern Russia regions acts as the so-called "growth pole" and is the systemic point of growth not only in the context of food security increase, but also for the development of the entire regional economy. It is obvious that the strategic priorities of the agro-industrial complex development should correspond to the social and economic potential of a region, the priorities of spatial and territorial development, to promote the diversified growth of industries, to stimulate the introduction of high-tech and competitive technologies, and to ensure the growth of population living standards.

2 The problems of state and business interest harmonization in the process of food security provision

A significant role in food security provision and the functioning efficiency increase of the territorial agro-industrial complex is played by the growth of domestic agricultural product competitiveness, not only in the domestic but also in global markets (8), therefore, a special role belongs to export-oriented development strategy of the agroindustrial complex and the related optimization of parameters by the foreign economic policy of the state in the context of national economic security provision, also implemented in the context of imports substitution, which was reflected not only in the federal target programs, but also in the socio-economic development strategies of RF subjects.

It should be borne in mind that a private investor always seeks to ensure the highest possible level of profit from the implementation of his projects. From these positions, the investment attractiveness of the territorial and sectoral complexes is seen as a key factor that influences the decision on the implementation of each particular investment project. Obviously, the tasks that are the key ones for regional and federal authorities (The Doctrine of Food Security in Russian Federation (Electronic resource): The Decree of Russian Federation President № 120 issued on January 30, 2010 URL: http://www.scrf.gov.ru/documents/15/108.html) such as the raise of population living standard or food security provision, are not the priority for business. In this regard, it is necessary to develop a mechanism to coordinate the interests of representatives among business and public authorities. In our opinion, the search for a tactical compromise in the interaction of economic agents within the system of food security provision will be ineffective. It is necessary to develop an effective organizational and economic system that will operate within the framework of the current concept for economic security provision, will reflect the strategic priorities and the tasks for business and state, and will allow to create a mechanism for contradiction elimination by the integration of private business to solve the issue of food security increase based on the implementation of government programs for domestic agricultural producer support.

As the analysis showed, the effectiveness and the expediency of such interaction will depend directly on three groups of factors that can be represented in the form of a competitive diamond by M. Porter:

- financial and economic efficiency of economic activities among agricultural producers;
- the availability of necessary production factors;
- the effectiveness of the state program implementation to support domestic agro-industrial complex.

In accordance with the Federal Law No. 172-FL "On Strategic Planning in Russian Federation" issued on June 28, 2014 (On strategic planning in Russian Federation. Federal Law of Russian Federation No. 172-FL issued on June 28, 2014) the list of requirements was approved to assess the effectiveness of state programs implemented in Russian Federation, which include not only certain indicators and targets, but also the algorithms of their phased implementation analysis. This allows to use it as a starting point for further improvement and modernization of existing approaches and the methodologies for state program efficiency evaluation with the view of their possible adaptation to the current specifics of territorial-sectoral complex functioning, which is characterized by the increase of negative exogenous impact and low economic growth in key sectors of the domestic economy.

3 The algorithm of an adaptive strategy development for food security provision

The declared priority directions of state support and target indicators are perceived by the regional authorities as static indicators (Kulagina N.A. 2014), the achievement of which does not require a permanent modernization of the public administration system, as well as the construction of a well-established system of interrelations not only within state structures, but also with the business community representatives.

There is a significant differentiation on the evaluation of individual instrument use at the regional and federal levels, which makes it difficult to replicate the successful experience of the territorial agro-industrial complex support to other RF subjects.

In this regard, it is necessary to develop an adaptive strategy on the basis of existing approach generalization and the testing of successful experience concerning the state support of territorial agro-industrial complex taking into account the identified basic trends of socio-economic development for meso-level systems, as well as the accumulated territorial and branch potential of import substitution.

The following problems can be identified as the main problems in the field of strategic planning and food security provision (Beketov N.V. 2009, Food security in Russia: monitoring, trends, threats. - Moscow: FSBEI HPE RANHiGS, 2014.):

- a low level of regulatory and legal regulation of economic entity and public authority activities in the agro-industrial complex, and thus, the lack of a single generally accepted methodological base in the field of strategic planning and food security provision;
- the mismatch of interests between the representatives of government authorities at the federal and regional levels, which leads to the lack of a clear relation between the available resources of state programs implemented in RF subjects and real needs;
- an ineffective interaction of executive authorities with private business leads to the fact that agricultural producers are not interested in long-term investment project implementation aimed at food security level improvement;
- a relatively low level of approved programs and concepts in the field of economic security and its food component provision, which leads to the discrepancy between goals, objectives, tools, planned results, indicative characteristics of their implementation effectiveness, and an ineffective system for the monitoring of such program implementation.

It is obvious that in modern conditions, when a negative external impact is accompanied by the lack of sustained rates for socio-economic development of the country, a joint coordination of efforts between the federal center and the regions, and also between the state and business is a necessary condition for an effective implementation of food security increase strategy (5). Such coordination will facilitate an effective implementation of planned investment projects in the agro-industrial complex by creating the mechanism for their multicriteria adaptation in accordance with the strategic priorities ensuring an acceptable level of food security. In this regard, in our opinion, it is advisable to develop and approve an algorithm for agro-industrial complex support program adaptation with the existing strategies and programs, and to develop a procedure for medium- and long-term goal and priority adjustment in the event of their inconsistency with a current socioeconomic situation.

A key aspect in an adaptation strategy development for food security provision will be the formation of a mechanism for the harmonization of economic agent interests, which is implemented on the basis of the following algorithm.

1. The determination of key areas for the development of territorial agro-industrial complex in the context of food security provision and the determination of state support instruments with the view to selected investment project implementation. The following options for private investor attraction are possible (Davnis V.V. 2006):

- The realization of an investment project by the representatives of private business independently without a stimulating influence of the state;
- The attraction of investors external to a region, i.e. from other RF subjects, and from foreign states;
- The attraction of local investors.

The second option associated with the attraction of external investors involves an active policy to promote the investment image of a region, the positioning of the Stavropol Territory as a subject with a favorable investment climate. For example, the stavinvest.ru portal (Investment portal of the Stavropol Territory) presents a number of investment projects in the implementation of which a region is interested, and the executive authorities of the area participate in business forums actively, organize their own sites for the promotion of projects, and interact with the representatives of the Chamber of Commerce and Industry.

At the second stage of the algorithm, it is necessary to conduct a comprehensive assessment of an investment project for its conformity with food security provision and its economic social efficiency. The evaluation results make it possible to decide whether it should be supported by the regional authorities if it meets the specified criteria, and its implementation will fit into the system of strategic priorities of the regional agricultural business development. In addition to the standard criteria that characterize the existence of a socio-economic effect, it is also necessary to take into account the indicators identified by federal program-target documents. These criteria can have both a quantitative and a qualitative assessment and can be classified as follows (Vertakova Yu.V. 2006):

- the criteria of general economic efficiency, including the growth of agricultural production, the improvement of produced product quality, the increase of value added, the growth of GRP, etc.;
- the criteria of budgetary efficiency that allow to assess the potential growth of tax revenues in the budgetary system due to the increase of RF subject taxable base in a medium and a long term;
- the criteria of social efficiency, including the prediction dynamics in terms of new job number, the increase of population income level, the increase of quality food product availability according to price parameters, etc.;
- criteria that characterize the environmental component of a project implementation, for example, the introduction of new energy and resource-saving technologies, the production of environmentally friendly food, etc.

The third stage of the algorithm assumes the completion of the preparatory work for a project and it is aimed at the coordination of a potential investor and regional authority interests on the basis of signing an investment memorandum between the parties and in legal drawing up of the party rights and obligations.

The following investor duties can be identified as the main ones:

- economic efficiency provision for an investment project implementation;
- the fulfillment of social obligations;
- the compliance with the requirements of standards for the production of high-quality environmentally friendly food;
- the coordination of project implementation objectives with the strategic priorities for food security provision at the level of regional authorities;
- the priority development of industries with high added value and the introduction of modern technologies with the aim of import dependence overcoming in key areas;
- the production of export-oriented agricultural products with a high level of competitiveness in global markets and the development of foreign economic relations.

At the fourth stage of the proposed algorithm, the adaptive function is introduced, which consists in the process of strategy adjustment for food security provision or in the adjustment of an investment project technical and economic indicators. The coordination of business project participant interests must take place considering the existing industry potential (Kleiner G. 2006), which will allow to form a dynamically developing territorial and branch system that will allow the most efficient use of potential opportunities and will allow to satisfy the social and economic needs of the territories on the one hand, and will make an investment project economically attractive for business, on the other, especially taking into account the provision of tax incentives (Molodykh V. A., Rubezhnoy A. A. 2017).

It should be noted that the proposed algorithm is a universal one and its implementation allows to perform a phased adaptation of investment projects to the strategic goals and objectives of social and economic development in regions. However, it is necessary to note a number of specific features in the context of food security provision.

4 The model of investment project efficiency evaluation in the context of food security provision

Comprehensive comparative assessments of project options and the activities for the development of regional AIC, aimed at food security provision, are determined by the following formula:

$$Q_{ПР} = \alpha_1 \varphi_{экон} + \alpha_2 g_{соц} + \alpha_3 h_{экол} \quad (1)$$

Here $\varphi_{экон}$, $g_{соц}$ and $h_{экол}$ are calculated as the arithmetic mean values from the dimensionless coefficients of project contributions according to private contribution indicators:

$$\varphi_{экон} = \frac{1}{3}(\varphi_1 + \varphi_2 + \varphi_3);$$

$$g_{соц} = \frac{1}{2}(g_1 + g_2); \; h_{экол} = \frac{1}{m}\sum_{i=1}^{m_1} h^s. \quad (2)$$

α_1, α_2, α_3, $\alpha_1+\alpha_2+\alpha_3=1$, are the relative coefficients of the growth significance concerning economic, social and environmental benefits for food security provision. If α are set in %, then $Q_{ПР}$ indicates the amount of percent according to which this development project of the agroindustrial complex corresponds to the goals of food security.

The practical implementation of the developed model, as well as the methodology of investment project complex comparative assessments, were carried out on the basis of the leading agricultural producers of the Stavropol Territory with the use of the specialized software product "Project Expert".

Three agricultural organizations in the region were selected as investment projects, the implementation of which can lead to food security level increase.

1. The construction of the agro-industrial park "Stavropol". The private investor of LLC "Agro-industrial park" Stavropol". The aim of the project is the creation of a modern production and sale infrastructure that unites several links in the chain of agro-industrial production. For this purpose, the development of the following key areas is planned on the territory of the Regional Industrial Park: a meat processing plant, fruit and vegetable facility, vehicle repair facility, the plant for frozen vegetables and sublimed product manufacture, corn deep processing plant and related industries. The project implementation period is 9 years, the amount of investments is 9.3 billion rubles. It is planned to create 150 jobs with an average salary of 27.0 thousand rubles;
2. The development of intensive plant growing "IRRICO". Private investor LLC "Agricultural Industrial Holding "Agroinvest". They plan to grow 60,000 ha of corn, soybeans and potatoes (using irrigation), as well as wheat, rapeseed and sunflower (without irrigation), using advanced agricultural technologies and high-performance equipment. The cost of the investment project is 3.63 billion rubles, the number of created jobs makes 135, the project implementation period is 6 years.
3. The construction of a 4-hectare greenhouse complex. The private investor LLC "AgroVostokGrup". A year-round production of vegetable crops (tomato / cucumber) is planned in the volume of about 8 thousand tons per year. The cost of sales makes 1.2 billion rubles, the implementation period is 4 years.

According to the proposed methodology, they calculated comprehensive assessments of the project contributions to the achievement of the financial, economic and social goals of the agro-industrial complex development of the Stavropol Territory: φ_1, φ_2, φ_3, and g_1 and g_2 and the integral indicators $\varphi_{экон}$ and $g_{соц}$ were calculated.

Table 1 presents multi-dimensional estimates of project contributions and the integral indicators of their financial, economic and social efficiency.

Table 1 The Summary of Multidimensional Estimates for Project Contributions

Indicators	1	2	3
Financial-economic efficiency			
φ_1	1,33	2,60	0,30
φ_2	0,85	0,90	0,92
φ_3	0,31	1,30	00,214
$\varphi_{экон}$	0,890	1,600	0,478
Social efficiency			
g_1	0,007	0	0,03
g_2	1,165	1,418	0,730
$g_{соц}$	0,586	0,709	0,380

According to formula (1), comprehensive comparative assessments of the proposed project efficiency were obtained. At that, the values of the weight coefficients α were taken from the following considerations. In order to solve the problem of food security provision in modern conditions, financial, economic and social problems are equally topical, and they are closely interrelated. Therefore, without large errors, it could be assumed that these benefits are equivalent for a region, i.e. $\alpha_1 = \alpha_2 = 0{,}5;\ \alpha_1 + \alpha_2 = 1$.

Table 2 summarizes the results of calculations.

Thus, according to the developed methodology for the assessment and the selection of projects for their support and incentives, the most preferable of three presented projects are the projects of LLC "Agricultural Enterprise "Agroinvest" and LLC "Agroindustrial Park "Stavropolye", which meet the goals of food security provision at 115,5% and 73.8% respectively.

Table 2 Comprehensive comparisons of projects

Projects	Indicators			Percentage of compliance with the territory development goals, %	Project rating number
	$\varphi_{экон}$	$g_{соц}$	$Q_{пр}$		
	$\alpha_1 = 0{,}5$	$\alpha_2 = 0{,}5$			
1	0,89	0,586	0,738	73,8	2
2	1,60	0,709	1,155	115,5	1
3	0,478	0,380	0,429	42,9	3

With a large number of competitive projects, a threshold level of selection can be established as the percentage of compliance with development goals, depending on available support and incentive resources.

5 Conclusion

The implementation of the proposed adaptive strategy for food security provision does not mean that regional authorities are abstracting from the solution of interaction problem with private investors. On the part of the state, it is necessary to simplify as much as possible the procedure for their interaction with business from the standpoint of bureaucratic procedure minimization, and to offer comfortable conditions to support the investment project anticipated for implementation.

One of the main reasons for the low efficiency of government program implementation to support the domestic economy in general and individual sectors in particular is the rejection of regional authorities from the targets set in the programs and the "free interpretation" of individual support tool use, which does not allow to achieve the planned goals (Rose M.J., Daelenbach U.S. 2003). In our opinion, this discrepancy is related to the specific functioning of individual territorial and sectoral complexes, the existing social and economic potential of the regions and other factors that do not allow a mechanical copying and the use of the tools embedded in federal programs. Moreover, the adaptation of government programs for food security provision must occur and can be implemented on the basis of a wide range of instruments, the expediency of their use depends on a number of factors directly, both objective and subjective ones.

During the consideration and the selection of investment projects aimed at food safety provision an important methodological issue is to determine the strategic objectives for which it is directed. To do this, you can use the following characteristics:

- The scale of implementation: the project should be a large one with long-term goals, the implementation of which will allow to create new trends in the development of regional AIC or modernize the existing technological processes radically within the established chains of production and the sale of agricultural products;
- Social significance: the project implementation will increase the economic potential of the territory on the one hand and will lead to the increase of food quality increase for the population on the other;
- There is a significant multiplicative effect: an investment project will contribute to the development of the entire regional AIC through the subsequent involvement of related industries, for example, the processing of agricultural products or the creation of supply chains to enter global markets.

The implementation of an adaptive strategy implies the need for monitoring and control procedures. At that, all projects included in the list of priority projects are to be monitored and their implementation implies the use of state support tools, and control procedures include, first of all, the overseeing of the targeted expenditure of allocated budget funds for the projects included in a co-financing plan. Also, it is necessary to highlight the current assessment of the effectiveness concerning the implementation of investment projects based on a set of indicative criteria as the main monitoring function.

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Primary Paper Section: A

Secondary Paper Section: AE, GM