Methodology of Strategic Planning of Socio-Economic Development of the Agricultural Sector of the Region

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ABSTRACT

The strategic development of the agricultural sector in any region should focus on the effective use of production and resource potential to achieve the long-term visualization of "desired" future in the context of global economic, technological, social and political challenges. Current socio-economic conditions (urbanization, globalization, digitalization, innovativeness, etc.) require a revision of traditional strategic planning for the development of the agricultural sector in the light of new innovative ways to design regional strategies. The purpose of the study is to improve the methodology of strategic planning in the regional agro-industry based on innovative approaches and its practical testing on the example of one of the regions. The study is conducted on the basis cluster, scenario and project approaches in designing a strategy for the region's agricultural sector. The study solves the following tasks: analysis of methodological approaches and best practices of regional planning; development of a methodological model to design regional strategy for agriculture; testing the proposed methodological approaches and development of possible scenarios for agriculture to achieve the "desired" future on the example of one of the regions. As a result of the study, there is a comprehensive methodological model of regional agro-industry strategy, containing a logical sequence of the strategy designing process and justification for the use of variable approaches at each stage. The practical significance of the research results lies in the possible application of the proposed methodological model to design the agro-industry strategy in any region worldwide with similar conditions of development..

INTRODUCTION

In so-called "agricultural" regions (with a significant share of the rural population, traditional rural way of life, a high share of agriculture in the gross regional product), agro-industry and its basic branch agriculture are the leading system-forming spheres of the regional economy. They constitute food and economic security of the region; enhance the development of rural areas and socio-economic status of the region as a whole. The strategy should take into account that the region is considered as a complex, diversified individual economic entity of the country with its mentality, cultural and regional traditions of farming, policy, objectives, different basic natural resource potential, competing relations for investments with neighboring regions (Kotov et al., 2017, Bartkowiak-Bakun, 2017; Mazurek, 2018). In this regard, issues to elaborate a systematic and science-based methodology for regional strategy design, adapted to the above- mentioned conditions, become especially relevant. Currently, there is no systematic scientific methodology of strategy development that causes difficulties in its designing (Kotov et al., 2017).

There is a developed method of strategy planning on the example of agriculture and the food sector. It analyzes similar scientific and strategic documents, as well as coincidences in them for a certain period to explore the relationship between science and strategy (Bakhtin, et al., 2017). Strategy planning was focused on the analysis of the key trends in the transformation of the functional-territorial structure of agriculture and the impact of agro-industrial integration processes (Bogachev, 2015; Reif et al., 2016). The strategy designing involved research and development of leading scientists in different branches of agriculture: agronomy, farm engineering, animal science, veterinary medicine, adapted to a particular region (Gabitov et al., 2018; Khamaletdinov et al., 2018; Lubova et al., 2018). When developing a methodological model of agro-industry strategy at the regional level, the experience of strategic planning in foreign countries was taken into account.

The economy of some African countries is focused on agriculture as a priority. One of the key strategic issues there is to attract investment in agriculture. However, innovative farming, capable to attract investment, cannot rely on common agricultural practices in many parts of Africa. Hence, African scientists develop different scenarios based on science, research, and innovation adapted to prevailing conditions on the continent (Ajilore and Fatunbi, 2018). Some authors believe that in the uncertain socio-economic and climatic context, sustainable agricultural production needs for scenario approaches and tools to support long-term decision-making (Hammouda, 2018; Chmielewska and Horváthová, 2016). There are prospects to apply the cluster approach and the so-called "smart specialization strategy", known for their role in the Horizon 2020 program. They are used by politicians as building blocks to implement different strategies, such as research and innovation, industrial and regional policies. The application of the cluster concept in the strategy of smart specialization is the cornerstone of creating a unique center for knowledge-based entrepreneurship and innovation (Saha et al., 2018; Rogalska; 2018; Zygmunt, 2018; Kaczmarczyk, 2018).

An important aspect is to ensure its competitiveness at the national and regional levels. Thus, Italian scientists analyzed the differences between factors (endogenous and exogenous), potentially affecting the competitiveness of Italian agriculture and assessed their impact on the economic performance of agriculture at the level of provinces (Coppola et al., 2018). The Chinese strategy system relies on the spatial and temporal changes as well as dynamic characteristics of agricultural development in present-day conditions. The strategy brings to a focus a set of indicators on the interrelation between agricultural natural factors and the regional function, the zoning principles and the scientific method of modern agricultural regionalization. Based on the cluster approach and qualitative analysis, scientists have developed a modern scheme for regionalization in agriculture that divides China into15 first-class agricultural regions and 53 sub-regions (Liu et al., 2018). In Taiwan, industrial clusters and regional innovation systems are studied to define the way they influence on knowledge-driven innovations in scientific parks (Coppola et al., 2018). At the same time, the strategic development of agro-industry in East Asia is based on digital technologies (Liebenau et al., 2019), long-term foresight, initiatives in the field of sustainable supply chains, their management and reverse logistics (Luthra and Mangla, 2018). Two large representative con-

figurations of development conditions are established in the Amazon on different models of inter-relations between technological trajectories: a rural economy based on animal breeding; economy based on agroforestry systems (Costa and Fernandes, 2016). The integrated agricultural and food sector of the European Union accounts for 15 million jobs (8.3% of total employment) and 4.4% of GDP.

Today, 12 million operating farmers across Europe have an average farm size of 15 hectares (Leal Filho et al., 2017). In this regard, the desire of the EU countries to have real science-based strategies for agricultural development is quite obvious. Studies by Swiss scientists have made a significant contribution to the modern understanding of agricultural land as a part of the public interest (Jarrige, 2018). Great attention is paid to the analysis of terminological issues of the terri-torial impact of other industries' strategies on agriculture (Pelucha and Kveton, 2017). Cooperation in regional development plays a special role in designing strategies for Eastern Europe. The im-portance of cooperation is debated based on the analysis of regional innovation strategies applied in Poland until 2020 (the so-called RIS3). These are one of the most important tools to promote innovation and competitiveness of the region (Szewczuk-Stępień and Klemens, 2019; Zajkowski, and Domańska, 2019). Several authors discuss the issues of cooperation, integration of regional policy for enterprises and innovations based on the clustering approach with fuzzy sets (Bogachev, 2015). In spite of the conducted researches, scientists don't pay enough attention to the complexi-ty and consistency of the regional strategy methodology. It could justify the use of certain ap-proaches adaptively depending on the conditions of the regions of different countries of the world. The research goal is to improve the methodology of strategic planning for agribusiness according to innovative approaches based on the principles of complexity, consistency, and adaptability. Re-search problem: development of a methodological model of a regional agro-industry strategy; vis-ualization of the "desired" image of the region's agro-industry on the basis of the foresight ap-proach; testing of the proposed methodological approaches and development of possible scenari-os to achieve the "desired" image of the agro-industry on the example of one of the regions.

1. DATA AND METHODS

The theoretical and methodological basis of the study is made up of objective economic laws, regularities, fundamental provisions on the problems of the regional economy, strategy, strategic planning and forecasting of agricultural development, reflected in the scientific and practical works of the world's leading scientists and experts. The research relied on methodological recommenda-tions and developments of leading Russian and foreign research institutes and universities on the issues under study. The following research methods were used in the work: monographic, compu-tational-constructive, abstract-logical, system analysis, regional strategy planning, cluster analysis, scenario method, and foresight technologies. The results of the study are presented by forecasting methods using scenario and cluster approaches, the key priorities of the regional state policy in the field of agribusiness. The information base of the study includes official statistical materials; ap-proved regional strategies in the field of socio-economic development, the advancement of agri-business and its branches in the regions of different countries; the results of strategic expert in-quiries, strategic foresight sessions, and public discussions. The study of the experience in design-ing development strategies for regional agribusiness highlighted two priority conceptual approach-es:

- Designing development strategy for agro-industry and its separate branches by regional author-ities, in some cases with involvement of experts and scientists;
- Involvement of all key stakeholders in the strategy implementation process (agribusiness, state and municipal agro-industry management, prominent scientists, experts, public figures and population).

The second approach is considered to be a priority. Here state authorities act as one of the stakeholders with the functions of coordinating the development of strategic documents in the

field of agriculture. This is since the sphere of agriculture is closely linked with many related industries, including trade, chemical industry, engineering, and others. It has a pronounced social character and affects almost all segments of the population and business. Recently, foresight technologies as a tool for strategic planning of rural development in the region (Gusmanov et al., 2018), scenario forecasting (Stovba, 2017a), cluster method (Stovba, 2017b) are often used in practice and discussed in scientific papers. Forecasts based on economic and mathematical methods and digitalization are still being relevant (Askarov and Stovba, 2018; Balezentis and Novickyte, 2018).

2. RESULTS

The prominent characteristics in improving the methodology of strategic planning for regional agro-industry is a clear scientific, theoretical and systematic approach, the use of innovative tools of strategy, best practices of strategic development of agro-industry in regions, maximum coordination and synergy with strategic documents on socio-economic development of the region. To achieve a synergetic effect in the strategic planning of agro-industry development, the authors elaborated a system of interconnected and consistent design of strategic documents to enhance agro-industry and socio-economic development on the whole (Figure 1).
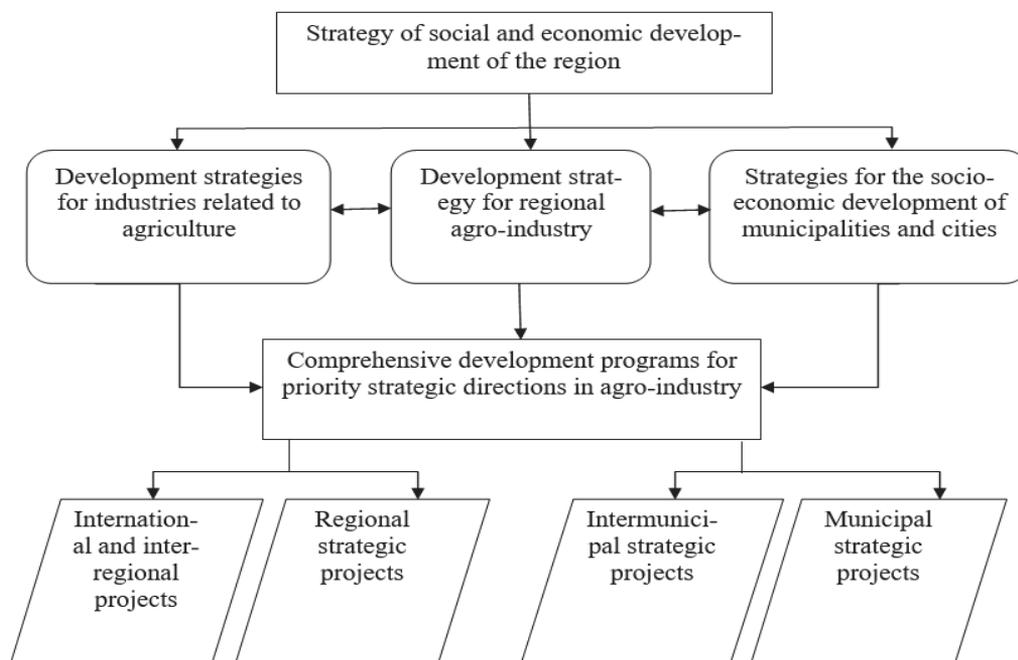

Figure 1. The interaction system of strategic documents on agricultural development in synergy with the socio-economic development of the region

Source: Designed by authors

As the figure shows, the basic document that should contain the expected strategic results (targets) is the Strategy of socio-economic development of the region for a certain long-term horizon (from the experience of regional strategy until 2030). This program should include 8-10 main indicators of agribusiness development (indicators of the first level) that have the greatest impact on the economic and social conditions of the region and correspond to the strategic challenges and objectives of the state policy. Strategy planning is carried out from the top. The targets and strategic initiatives of the regional strategy planning for the socio-economic development provide the basis for strategies of individual municipal districts and cities, the development strategy of the

regional agro-industry, development strategies of industries, adjacent to agriculture. The regional development strategy for agriculture should include the mission, the desired future, the targets of the second level, contributing to the achievement of indicators of the first level, as well as priorities for the development of agriculture and strategic initiatives. Based on the agro-industry development strategy, a package of integrated programs and subprograms for the development of individual areas of agriculture with detailed targets (third-level indicators) are designed. These programs involve elaborating a portfolio of strategic and investment projects for the development of agriculture at the international, national, interregional, regional, inter-municipal and municipal levels. The authors developed a methodological model of agro-industry strategy at the regional level (Table 1). This methodology stipulates a division of projects into types: alpha, beta, and gamma. Beta projects are developed branches of agriculture with a high level of technology and labour productivity: poultry industry, large pig-breeding, dairy and fattening complexes. They will be the driver of agricultural development in the region, integrating into national and international economic chains.

Table 1. Methodological model of agro-industry strategy planning at the regional level

Methodological sequence	Stages of designing development strategy of the region's agro-industry	Methodological tools
1	Involving executives, designating stakeholders, coordinating their interests	Competence selection. Involved selection. Snowball method.
2	Visioning a desirable future of agro-industry in the region	Strategic foresight sessions. Guides of strategic interviews of experts, stakeholders, leaders
3	Analysis of current trends, socio-economic forecast of agricultural development in the region, evaluation of production and resource potential and competitive advantages	Forecasting methods. Integrated approach. Econometric and statistical methods. Computational-constructive and graphical methods.
4	Evaluating distant horizons and, if necessary, the desirable future of agriculture in the region	Expert survey. Brainstorming.
5	Identifying target indicators of agricultural development	Calculation-constructive method. Abstract-logical method.
6	Designing strategic initiatives, the strategic choice of priority development fields in agriculture	Foresight sessions. Public hearing. Expert sessions.
7	Developing scenarios to achieve target indicators	Scenario approach.
8	Building a portfolio of strategic projects in the framework of priority development fields in agriculture	Project method - alpha, beta and gamma projects. Dynamic models of Wagner, Layer, Seelbach. Nonlinear models of Bumba, Mentzen-Scholz, Jakob, Dikla, Peters, etc.
9	Territorial projection of strategy planning for rational allocation in sub-regions, municipalities, and districts.	Cluster approach. "Smart specialization".
10	Strategy implementation management: assessment, management, adjustment. Building a project office.	Project management. Smart control technology. Digital economy technologies.

Source: Designed by authors

Alpha projects are projects, industries with high prospects for further development: processing of agricultural products, agro-tourism, consumer cooperation, beekeeping. Gamma projects are

projects aimed at the development of regions after the strategic planning period (after 2030): promising scientific developments that will determine the vector of development of regional agriculture in the future: technology initiatives within the Foodnet market development, the digitalization of agriculture, "smart" control systems for agricultural production and others. Basic provisions of the proposed model: a systematic approach to the analysis of agro-industry development in the region; involving all stakeholders in the process of strategy planning and its implementation through their joint interests, cooperation, clustering and territorial distribution on the basis of "smart specialization", the priority of regional development strategies for agriculture over municipal, the priority of the strategy for socio-economic development of the region over development strategies of other branches. The developed model is adapted to the example of the agrarian region of Russia – the Republic of Bashkortostan (RB). One of the basic principles of the proposed methodology is the priority of the strategy of socio-economic development of the region as the main strategic document containing the generally preferred targets for the development of all areas of the region's economy. The region approved the Strategy of socio-economic development for the period up to 2030, aimed at achieving the main strategic goal: the competitive region with a stable economy and developed social infrastructure, one of the national leaders with export potential. The mission of the agro-industry in the region is to provide the population of the Republic with quality food, to maintain sustainable development of rural areas, to improve living standards of the rural population and to enhance the competitiveness of the region by producing demanded agricultural products to be realized at regional and outside markets. The strategy of socio-economic development of the region for the period up to 2030 sets strategic development targets for agriculture. As Table 2 shows, the strategy for agro-industry provides a steady growth of indicators and advanced development concerning other regions of the country.

Table 2. Expected strategic results in agricultural production by 2030

Indicator name	Country, region	Fact for 2010	Fact for 2016	Fact for 2017	Target by 2030
Agricultural products in all categories of farms, billion rubles	The Republic of Bashkortostan	88.6	168.8	157.3	305
	place in Russia	5	7	7	top 5 regions
Share of products produced by agricultural enterprises and peasant farms in gross agricultural output, %	Russian Federation	51.7	65.3	67.5	-
	The Republic of Bashkortostan	32.6	48.6	50.2	56.0
The profitability of agricultural enterprises, %	Russian Federation	8.3	20.3	12.0	23.0
	The Republic of Bashkortostan	4.5	13.0	3.6	17.5
Milk productivity of 1 cow in the agricultural enterprises not belonging to subjects of small business, kg per 1 milking cow	The Republic of Bashkortostan	3979	5379	4963	7000
	place in Russia	56	40	50	10
Average daily gain on cattle growing and fattening in agricultural enterprises not relating to subjects of small business, grams	The Republic of Bashkortostan	505	583	565	635
	place in Russia	34	23	25	5
Exports of agricultural products, USD / US Dollar, mln	The Republic of Bashkortostan	n/a	24.4	37.0	150

Source: The government resolution of the Republic of Bashkortostan "On the Strategy of socio-economic development of the Republic of Bashkortostan for the period up to 2030" of December 20, 2018

The region does not have an overall long-term development strategy for agriculture until 2030. Therefore, there are long-term comprehensive programs to advance individual branches adopted or being developed. According to the proposed methodology, based on the analysis of the existing resource potential of agricultural enterprises in the region, as well as the current state of the economy, ongoing projects, and future challenges, we have predicted target development indicators of agriculture in the region. As part of the scenario method implementation, four scenarios (inertial, extensive, intensive, extensive-intensive) to enhance agro-industry in the region are proposed. As the inertial scenario assumes prolongation of the existing trends of agricultural production development in the region and preservation of basic infrastructure problems of the agro-food market, it is not a priority. The forecast results for the other three scenarios are presented in Table 3.

Table 3. Production of agricultural products in the region, a thousand tons

Name	On average in 2013 - 2017*	2017*	2030 forecast**		
			extensive	intensive	extensive-intensive
Grain	2914.4	3783	3251	3944	4132
Sugar beet	1458.8	1594	1595	1620	1664
Sunflower	234.0	274	350	458	491
Vegetables	360.0	368	491	565	604.8
Livestock and poultry (in live weight)	393.6	410.2	485	506	564.4
Milk	1749.1	1718.4	1852	1935	2036.4
Eggs, million pcs.	1068.9	1121.6	1170	1235	1282
Honey, t	5973	5390	6600	7920	8369

Source: * Main indicators of agriculture of the Republic of Bashkortostan in 2017: statistical Bulletin – Ufa: Bashkortostan, 2018, p. 60 ** Designed by authors

The extensive-intensive scenario of agribusiness development is fully consistent with the stated strategic goal.

3. DISCUSSION OF RESULTS

The analyzed region is self-sufficient and one of the most advanced in the country in terms of agricultural development, but there are a number of complex problems: low supply of own-produced food, in particular vegetables, pork, poultry; backward structure of agricultural production; deterioration of soil fertility; lack of equipment and agrotechnologies; insufficient activity of investment and business activity; reduced number of employable rural population, outflow of qualified personnel, etc. Modern economic conditions have resulted in a number of strategic challenges to the region's agro-industry: sustainable agriculture on the basis of new technologies and institutional solutions; ensuring food security; creating comfortable conditions for rural residents; overcoming the quantitative and qualification shortage of personnel; adapting the development of agricultural infrastructure to modern realities; preserving the diversity in the industry; increasing the competitiveness of agricultural production in the region.

The strategic foresight sessions with leading universities, business, state legislative and executive authorities, public organizations, as well as strategic interviews, made it possible to build the "desirable" future of the region's agro-industry by 2030. This is a high-tech innovation complex that combines synergetic interaction of science, production, business, agricultural education and the state that provides food security of the region, an attractive living standard of the rural population

based on full use of its resource and export potential. The methodology of strategic planning of agribusiness development from the desired goals determines the format and method of setting goals for a regional strategy. Implementation of this goal-setting method enables to distinguish between levels, balance the development goals by resources and performers, and define tasks. Modeling interconnection of strategic development projects helps to build development scenarios and choose the one that allows achieving the set goals (Maggio et al., 2016).

The strategic development plan for the region's agro-industry includes the following priority directions: enhancing the production of grain and leguminous crops, sugar beet production, vegetable growing in greenhouses, intensification of oilseed crops production; increased production of marketable milk; developing traditional branches of agriculture (beekeeping, horse-breeding) and small farms. There is an obvious need for innovative entrepreneurship in farming, production of organic products, innovative agro-food clusters. Following the methodology, it is expedient to elaborate a complex science-based territorial cluster model of priority areas of agricultural development, taking into account the concept of rural development. The region lacks agro-food and scientific-industrial clusters on breeding (cattle, pigs, sheep, waterfowl); producing new adaptive high-yielding varieties of crops (selection); study and implementation of conservation technologies in crop production (No-till, Strip-till, etc.); development of new functional products for specialized purposes; creating modern soft drinks (cider, balms, syrups, etc.) and their implementation in the production.

In the first stage the model was successfully implemented by foresight technologies (to understand strategic target indicators of agricultural development), in the second stage it was well applied by the scenario-based approach to determine target achievement trajectories (with current developments of African and French scientists on the adaptation of scenarios to the dominant internal and external conditions being relevant (Ajilore and Fatunbi, 2018; Hammouda et al., 2018). The priority scenario required the cluster approach as well as the concept of "smart" specialization (Saha et al., 2018). In turn, cluster construction requires a project approach, that is, the development of an optimal portfolio of strategic projects taking into account regional cooperation (Caloffi and Mariani, 2018; Szewczuk-Stępień and Klemens, 2019). Thus, the proposed methodological model of the regional agro-industry strategy involves a complex and adaptive combination of innovative approaches developed by the world's leading scientists and practitioners.

CONCLUSIONS

The conducted study drives to the conclusion that there is no or undeveloped methodology as well as theoretical and methodological recommendations for strategic development planning in agriculture and this issue is still relevant. On the other hand, it is a challenge for science to improve the methodology of regional strategy of agro-industry development, taking into account its specifics, features, priority areas, traditional specialization. Thus, the basis of the methodology of regional strategies of agricultural development must be based on the principle of synergy and priority of strategies of socio-economic development of the region, based on domestic and international practices through the lens of methodological tools of leading scientific schools in strategy development.

The developed methodological model of regional agro-industry strategy differs in logical sequence (determines the strategy stages and their sequence), adaptability (at each stage possible strategic tools are scientifically justified, their choice depends on the dominant factors), consistency (involves using not one methodological approach but their rational combination, for example, foresight, scenario, cluster and project approaches), complexity (implies a synergetic relationship with the socio-economic development of the region, the development of rural areas, with the strategies of leading and rapidly developing enterprises in the region).

The elaborated methodological model of regional strategy planning and scientific provisions can be used to build long-term and medium-term strategies to develop agro-industry in regions of different countries, identify and use competitive advantages, trends and strategic priorities to advance specific rural areas. The proposed model is partially tested on the example of one of the agricultural regions and has shown its effectiveness. The results of the study are of methodological and applied importance in building and adjusting complex programs to develop agro-industry in the regions.

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