

Improving the methodological support of the processes of functioning and development of the food market in the region

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Abstract — In this article, the authors systematized and proposed a system of methodological support for the study of the processes of formation, efficiency of mechanisms of functioning and prospects of development of the regional food market. The researchers believe that a complete system of indicators of living standards should include not only quantitative but also qualitative indicators, grouped according to the proposed features. Also, the analysis of the market of food products of the Republic of Crimea was carried out. It is noted that to assess the level of food security in a particular region, it is necessary to substantiate the system of criteria and indicators that comprehensively characterize its current state, dynamics, trends and compare its status with other actors. The authors believe that the key to the effectiveness of the regional food security system is the availability of procedures for a comprehensive diagnosis of its condition, which makes it possible to take into account the relationship of various factors. The procedure of system diagnostics of the level of food security in the region is proposed. It is concluded that the category of food security should be considered systematically and integrated, both within the country as a whole and in the regional aspect in particular, due to the diversity of natural and climatic conditions, socio-economic situation of individual territories, the demographic situation.

Keywords — *food market, food security, development, methodical ware, functioning, living standard*

I. INTRODUCTION

Food refers to the first vital human needs, on the satisfaction of which depends their lives. In this regard, in modern conditions of the economy, a deep and comprehensive

analysis of food security of the country as a whole and its regions is getting a great relevance.

Questions of formation and development of the food market were investigated by such scientists as Altukhova A., Balabanova V., Lenhart K., Janda, K., Viyalih, O. V., Gurov V. V., Suslov A. I., Sergeev V. V., Lukach V. A., Zinchuk G. M., Chayanova A., Cherdantsev P.V., Vlasov M. K., Ovchinnikova I. A. and others. But the general concept that determines the patterns of functioning and development of the food market is not fully formed. That, in its turn, emphasizes the relevance of our study.

The aim of our study is to develop an improved system of methodological support for the study of the formation processes, the effectiveness of the mechanisms of functioning and prospects for the development of the regional food market.

This goal involves the following tasks:

- analysis of the regional market of food products (on the example of the Republic of Crimea) and identification of the main problems in modern conditions;
- development of prospects for the development of the regional food market;
- analysis and assessment of food security of the market of the Republic of Crimea;
- development and proposal of a modified procedure for system diagnostics of the level of food.

II. MATERIALS AND METHODS (MODEL)

The methodological basis of the study was based on the principles of a systematic approach to the study of economic reality, general scientific research methods (comparison, analysis and synthesis, induction and deduction, analogy). In the course of the research economical and statistical methods are used (the analysis of ranks of dynamics, index, graphic, abstract and logical, etc.). The authors used the Microsoft Excel spreadsheet processing program to process the initial information and graphically present the results.

III. RESULTS AND DISCUSSION

The processes of functioning and development of the food market of the region, as a set of enterprises, industries, sub-sectors and industries for the production of homogeneous products for economic purposes, should be considered in essence and content plan as a process of quantitative and qualitative changes in the production and bringing food goods to the consumer. The multi-structural system of functioning of the regional food market, which has a synergetic effect, should be considered in several aspects, among which the most important are: spatial, temporal, functional, complexing, institutional, innovative, etc.

As a set of theoretical and methodological aspects of the problem of food market research in modern economic conditions, we highlight the following:

- substantiation of scientific aspects of food industry development, in particular, methodological and methodical bases of assessment of the level and effectiveness of its development in differentiated dimensions (global, state and regional);
- formation of science-based methodological apparatus of objective monitoring, quantitative and qualitative measurement of the market of agricultural and regional food industry products;
- timely provision of development and implementation of the system of long-, medium - and short-term forecasts, programs and development plans that determine the main directions of balancing social needs and resources of production, consumption of food products, their scientific, technological, organizational, managerial, raw material and technical support in accordance with the specific conditions and requirements of socio-economic development of the country and its regions;
- ensuring the formation of a stable, developed raw material base for the development of the food industry in the region;
- substantiation of balanced development of social forms of organization of production in the industrial economic links of the food industry (concentration, specialization, diversification, cooperation and combination of production);
- formation of an effective organizational structure of the food industry and its components;
- formation of science-based, effective management mechanism for the development of the regional food market and its structural components [1].

The regional development of the food industry is a transformation of the territorial organization of food

production, aimed at ensuring the satisfaction of the needs of the population of the country and regions in accordance with scientifically sound physiological norms of their consumption, and the formation of a powerful export potential of food products on the basis of rational use of natural resource, production potential and the advantages of the territorial division of labour [2].

An important generalizing criterion indicator of the regional development of the food market is a generalizing indicator of the development of the industry, the quantitative value of which is determined by the formula:

$$IRG = (IT + IN) / 2 \quad (1)$$

where IRG is a generalizing indicator of regional development of the food industry; IT is the ratio of food production per unit of territory in a particular region and in the country as a whole; IN is the ratio of food production per capita in a particular region and in the country as a whole.

This indicator is easy to calculate and useful at the initial stage of the study, especially in combination with other indicators, since the quantitative ratio of individual, although important indicators, does not allow to obtain a sufficiently justified assessment of the level of development of the food industry in the region, the real size of which can be determined only taking into account the diversity of the prerequisites and factors of regional development of the structural components of the food market.

To carry out a comprehensive assessment of the potential and prospects of the regional development of the food market, it is advisable to use a system of indicators, which can be divided into three groups:

- 1) general economic indicators (territory, population, urban population);
- 2) indicators of the development of the raw material base of the food industry (the area of agricultural land, the number of people employed in agriculture, the volume of production, etc.);
- 3) technical and economic indicators of production of the main types of industrial food products (the number of enterprises, the number of employees, the volume of production, the cost of fixed assets, profit and profitability of the industry) [3].

For an in-depth assessment of the level of development of the regional food market, along with these indicators, it is necessary to use additional indicators to characterize the work of the sectoral components of the food market more fully. In particular, special attention should be paid to such indicators as: the share of the food industry in the number of employees, the cost of fixed assets, the share of the food industry in the formation of the food fund of the region and the country as a whole; the volume of imports and exports of food products; meeting the needs of the population in the consumption of basic food products; the share of the food industry in certain regions in the national volume of production and sale of basic food products.

The categorical apparatus of the regional efficiency of the food market development is formed under the influence of natural-geographical, socio-economic and scientific-technological factors, the influence of which on the efficiency of development and placement of production is not carried out

separately, but always due to their interrelation at the regional level, as a result of which there is a differentiation of costs and results of production processes. Therefore, the effectiveness of the development of agro-industrial production and food industry in the region should be determined by the interrelated quantitative and qualitative assessment of the totality of the above factors.

As a rule, qualitative assessments are based on quantitative characteristics of the main market processes. Qualitative assessments are formed, both with the help of expert modeling and visual perception of digital material. However, such estimates are often subjective and have blurred boundaries.

As instruments of measurement and evaluation of the agricultural regional market we use the following market indicators: prices, production, sales, exports, imports, inventories, business activity, etc., as well as specific qualitative and attribute market assessments based on the experience and opinions of experts. In our opinion, a differentiated system of methodological support should be used to study the processes of formation, efficiency of functioning and prospects of development of the regional food market (table. 1).

To analyze the potential of the market, it is necessary to determine its capacity which is estimated as the actual or projected sales volume. For correct calculations of the market capacity, it is important to accurately determine: the characteristics of the goods, which are analyzed in order to identify the necessary commodity item (group); calendar period of time for which the capacity is estimated; geographical boundaries of the market.

The formula for determining the market capacity on the basis of its structural features can be represented as follows:

$$M = B - E + I + (3mm - 3mk) + (3bn - 3bk) \quad (2)$$

where M is the capacity of the market; B is the volume of production; E - exports; I - imports; 3mm, 3mk - inventory trade organizations; 3bn, 3bk - inventories of manufacturers.

It should be noted that the agricultural (food) market is very flexible in its development, it is sensitive to many socio-economic factors, moreover, it is very dependent on political and psychological influences, rumors, expectations, etc.

It is impossible to assess the state and develop prospects for the development of the regional food market without taking into account such a categorical component as the "standard of living", which, along with the above-described indicators, is a priority.

The category "standard of living" in a broad sense is characterized by a set of conditions and relations that determine the life, work, life and intellectual and cultural development of people. This category States the degree of satisfaction of various needs of the population (not only physical, but also social, intellectual, spiritual) reached in society for a certain period of time, and also defines and estimates real economic sources and social and legal guarantees of ensuring activity of the population [5,6,7].

The category "standard of living" is closely interrelated with such concepts as "well-being", "quality of life", "lifestyle", "living conditions", "lifestyle" and others. The category "lifestyle" should be considered on two levels. At the first, integration, it generally characterizes those attitudes that

are most common in society and are due to the objective social, economic and political conditions of life of the population of the country and are determined by the level of development of productive forces and characteristics of the existing mode of production.

At the second, locally differentiated level, the category "lifestyle" generalizes specific life attitudes of a single individual. It reflects certain ways of human action, taking place in the process of direct implementation of those attitudes, which are characterized by personalized motivational behaviour in achieving a certain goal.

Since the manifestations of people's life and their needs are very different, it is impossible to single out one universal indicator for a complete assessment of the living standard of the population, a certain social group or an individual (family). It requires a system of characteristics, indicators and parameters that together can reflect the state of satisfaction of social needs by their individual types, to assess the level of life guarantees as well as the conditions for the formation and distribution of material, spiritual goods and services in the country and its regions.

An integrated system of indicators of living standards of the population should include not only quantitative but also qualitative indicators grouped according to certain criteria. The most complete system of such indicators can be represented by six main groups (table.2).

To assess the dynamics of the living standard of the population in practice, indexes of consumption of material goods, indexes of physical volumes of consumption of services, the coefficients of satisfaction of needs and consumption are quite often used. Indexes of consumption of material goods characterize the dynamics of the level or volume of consumption of material goods by the population. To characterize the dynamics of consumption of individual products and goods in physical units, individual indexes of the Fund (volume) of consumption are calculated [1]:

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$$i_q = \frac{Q_1}{Q_0} \quad (3)$$

and the index of consumption per capita:

$$i_q = \frac{Q_1}{S_1} : \frac{Q_0}{S_0} \quad (4)$$

where Q1, Q0 – respectively, the volume of consumption of individual goods in the current and base periods; S1, S0 – the average annual population in the reporting and base periods.

To characterize the dynamics of consumption of different composition of material goods or total consumption, the total index of physical consumption is calculated [9]:

$$I_q = \frac{\sum q_1 P_0}{\sum q_0 P_0} \quad (5)$$

and the overall per capita consumption of wealth:

$$I_{q_1} = \frac{\sum q_1 P_0}{S_1} : \frac{\sum q_0 P_0}{S_0} \quad (6)$$

where q_1 , q_0 – respectively, natural (physical) volume of consumed life benefits in the current and base periods; P_0 – the average price of goods in the base period.

The fund of consumption of meat and meat products, milk and dairy products in the food market has decreased.

The main indicator of the level of food security is the adequacy of the consumption of a single product. This indicator is defined as the ratio between the actual consumption of an individual product and its rational norm. The level of food security is determined by the following main factors - the consumer potential of the population (which directly depends on the income of the population) and the potential of the agro-industrial complex of the region.

It should be noted that over the past 4 years, the total fund of consumption of basic food products in the region has decreased in most items (and this, despite the increase in the population of the Crimea, caused by unbalanced migration flows). A slight increase (2.2 and 2.4%) was found for meat and dairy products. Funds for consumption of such products as eggs, sugar, vegetable oil decreased by about a third, vegetables and bread – by a quarter.

Comparison of actual and threshold values of food security in the region revealed a relatively negative trend in the consumption of eggs, sugar, potatoes, vegetables – below the level of consumption in 2010. In general, the actual levels of consumption are significantly lower than the critical indicators for almost the entire product set.

Thus, the level of consumption of meat and meat products "falls short" to the minimum threshold of 16.3%, milk and dairy products – 29.6%, eggs – 21%, vegetables – 25.7%. The level of self-sufficiency in food of the Republic of Crimea is defined as average.

The analysis of the balance sheets of the main products produced by the agro-industrial complex of Crimea revealed a relatively positive trend in the formation of food security for fruits, grapes, vegetables, melons.

Thus, the reserve for export of fruits and grapes from the food market of the region is 60.1 thousand tons (which is almost 2.5 times less than in 2010), and the ratio of production to the consumption fund was 125%. The reserve for export of vegetables and melons in 2017 amounted to 161.3 thousand tons (almost 50% of regional production), and the ratio of production and consumption fund amounted to 145.9%.

For such types of products as meat, milk, dairy products, the volume of production is 75 and 51.4% of the actual consumption fund.

The main components of the food market are specific food markets. The main ones for the Crimea are: the production of fruits, vegetables, grapes, wine products, as well as the production of milk and meat. In the development of the national agrarian economy, the problem of increasing competitiveness is one of the key, especially in conditions of low economic openness of markets.

We consider it possible to state that the category of food security should be systematically and integrally considered, both within the country as a whole and in the regional aspect in particular, due to the diversity of natural and climatic conditions, the socio-economic situation of individual territories, the demographic situation. I should be noted that to assess the level of food security of a particular region requires the support of a system of criteria and indicators that comprehensively characterize its current status, dynamics and trends and compare its status with other subjects.

At the same time, food security should be interpreted as a complex problem, which is identified as the physical, economic availability of food, its quality and safety, the level and structure of food consumption by the population, the stability and degree of independence of the food market, the effectiveness of the use of natural resource potential [4].

Under such conditions, the key to the effectiveness of the regional food security system is the availability of procedures for a comprehensive diagnosis of its condition, which allows to take into account the relationship of various factors, the most important of which are the following (Fig. 1).

Today, among domestic scientists there is no single point of view regarding the system of criteria and indicators, which make it possible to comprehensively describe the state of the regional agro-industrial complex and the food market in terms of food security. Thus, these criteria should be reflected in a number of indicators that quantify the state of food security.

IV. CONCLUSION

Thus, the analysis conducted by comparing the actual and threshold values of food security in the region revealed a rather negative trend in the consumption of most food at levels below the critical indicators and allowed to assess the level of food security of the Crimea as an average. Therefore, the development of effective mechanisms for improving the level of food security in the region is an extremely priority and important.

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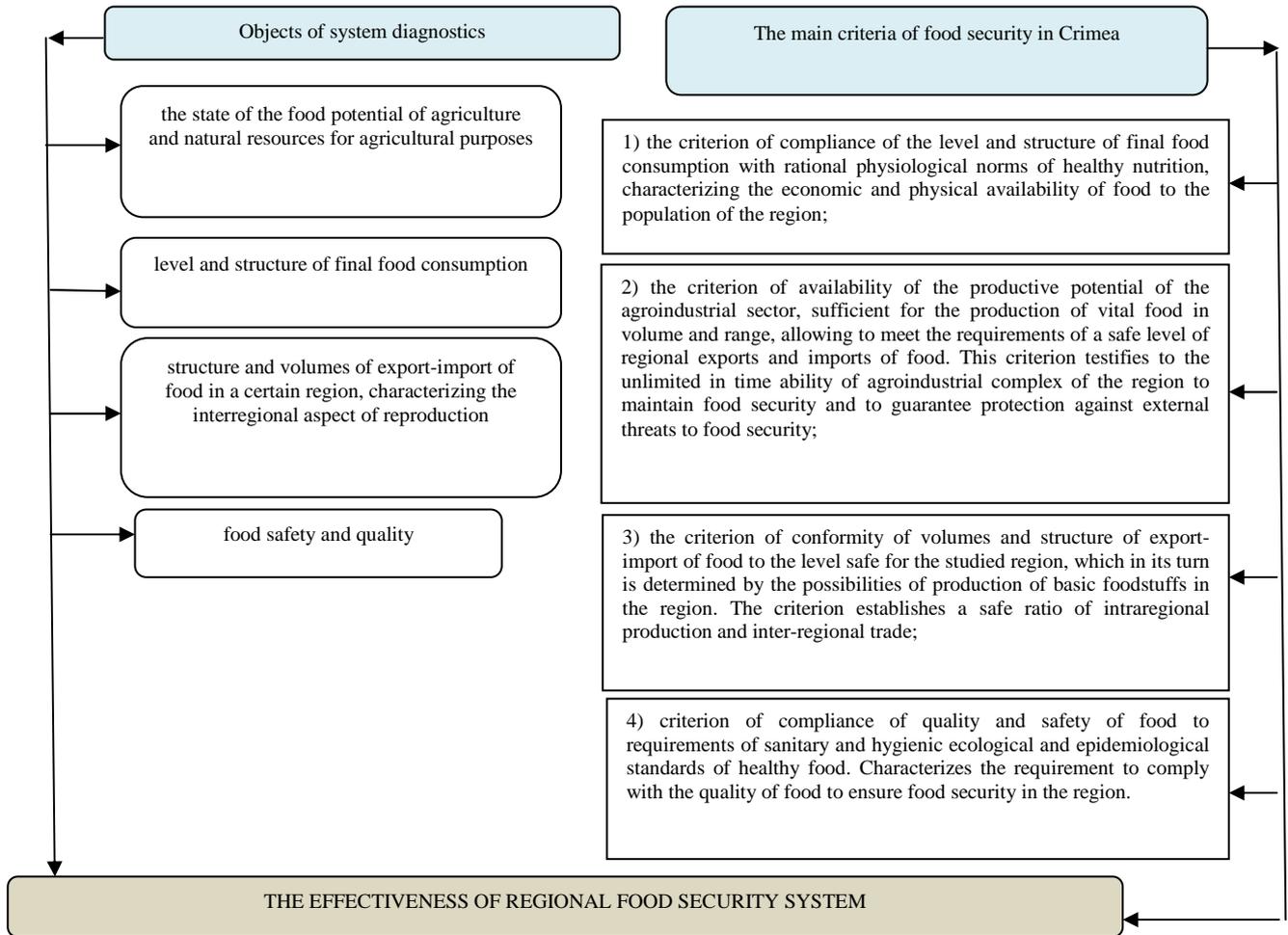


Fig. I. The procedure of system diagnostics of the level of food security in the region [4]

TABLE I THE SYSTEM OF METHODOLOGICAL SUPPORT OF FORMATION PROCESSES RESEARCH, MECHANISMS OF FUNCTIONING AND PROSPECTS OF DEVELOPMENT OF THE REGIONAL FOOD MARKET

| Object | Method | Purpose of the research | Indicators |
|---|--|--|---|
| <i>Research of processes of formation, efficiency of mechanisms of functioning of the food market</i> | | | |
| Market conformity assessment | Balance, index, settlement and constructive | Determination of the nature and degree of market balance, the ratio of supply and demand | Odds ratios, specific gravity, fraction, indexes of growth, structural changes |
| Assessment of the proportions of market | Groups, dispersion index, calculated constructive, pairwise comparisons based on multidimensional scaling | Identification of the relationship of individual factors of market compliance with changes in its indicators | Indicators of environment, their changes in dynamics, the elasticity indexes |
| Assessment of the level of prices | Correlation analysis, index, marketing methods, pricing methods | Statement of the state of prices, their differentiation, structure characteristics | Change indexes, trends |
| Assessment of the level of economic concentration, monopolization and competition in the market | Calculation-constructive, system of marketing methods, methods of statistical extrapolation | Characteristics of the share of total sales, evaluation of uneven distribution of market shares, determining the type of market | Concentration ratio, Gini coefficients, Herfindahl-Hirschman index and Rosenbluth, the index of monopoly power Lerner |
| Assessment of market capacity | Balance, settlement and constructive, methods of forecasting, expert assessments | Determination of market potential analysis | Sales volume, number of transactions, export and import volumes |
| Analysis of the market | System of marketing methods, methods of forecasting, expert estimates, statistical extrapolation, economic and mathematical modeling, methods of risk assessment | Determining the type of market, assessing the impact of market factors, assessing the state of the market, assessing stability (market analysis), etc. | Business activity, system of indicators of the state and efficiency of the food and resource markets |
| Analysis of competitiveness of goods | Groups, calculation-constructive, index, system of marketing methods | Classification of goods, assessment of the competitiveness of the subject of the food market, the attractiveness of the goods for the consumer | System of classification parameters of goods: constructive, ergonomic, aesthetic, normative |
| <i>Development and justification of development prospects</i> | | | |
| Assessment and risk analysis of the formation and functioning of the market | Methods of assessment of fundamental and specific risks | Assessment of the probability and magnitude of the risk system of the considered regional food market and its components | The fundamental criteria of the overall risk, the proportion of the structural components of the overall risk, particular functional criteria, scoring |
| Development of market development forecasts | Quantitative forecasting methods: trend extrapolation, indicator-based forecasting, regression analysis. Qualitative methods: Delphi method, scenario method | Development of variants of forecasts of development of the food market (production, sale, export of production) | Forecast of the balance of production and consumption of basic food products |
| Food security assessment of the regional market | Methods of quantitative assessment of the level and indicators of food and economic security | Substantiation of critical, rational and necessary levels of production, consumption of basic agricultural products and food products in the region, assessment of threats and chances | Critical, rational, necessary level of production, criteria of food and economic security |
| Assessment of the level of living of the population | Methods of determining the level and quality of life | Assessment of the level and quality of life, forecast of the impact of the food market on the standard of living | Indicators reflecting the level of real income, property security; indicators of consumption of material goods, cultural and household services, indicators of health, etc. |

^a Source: systematized on the basis of [3; 4]

TABLE II INDICATORS OF THE STANDARD OF LIVING

| Groups of indicators | Purpose | Indicators |
|--|--|---|
| Integral indicators reflecting the achieved level of real income and property security of the population | Show what financial and material resources (primarily real estate) are available to the population | <ul style="list-style-type: none"> - nominal and average real incomes of the population as a whole and of individual social groups, total incomes per individual or per family member; - the average level of wages in the national economy as a whole, in certain sectors and areas of production and commercial activity; - national income or gross domestic product per capita; - the volume of national wealth and the proportion of personal property of the population; - the volume of organized and unorganized savings at the disposal of the population. |
| Indicators of consumption of material goods, cultural and household services by all population groups | Show how much and what kind of goods and services at a particular stage of development of the country are in the per capita disposal of the population and individual social groups; the structure of material and cultural goods that are used differentially to meet the personal needs of specific people or families | <ul style="list-style-type: none"> - volumes of consumption of the most important food products (volume, structure, caloric balance, rationality of nutrition by composition of minerals, vitamins, amino acids); - the level of security to meet the needs of footwear and clothing; - the volume of consumption of the most important items of cultural and household purposes, hygiene, sanitation, cosmetics and long-term use goods; - the level of public services; - status of provision of trade and catering services; - level of transport service and communication; - housing conditions (provision of housing space, quality of housing and utilities, which are received by certain segments of the population or families); - the share of food in the structure of consumption. |
| Indicators that reveal socio-economic factors that characterize the level of security of workers with appropriate conditions necessary in the production process | They reflect the state of the labour market, allow us to assess at the micro level the working conditions and the nature of labour activity at individual enterprises, institutions and organizations (even at individual workplaces), and at the macro level – the working conditions at the level of the economy as a whole, as well as in certain sectors of social production. | <ul style="list-style-type: none"> - employment rate; - duration of the working week, working day and rest time; - characteristics of the level of productivity and intensity of labour; - state of health and safety; - reliability of the social insurance system and the level of guaranteed social security of workers; - the state of the general culture of production and its technical equipment (the proportion of mechanization and automation of working processes, reducing the proportion of manual labour). |
| Indicators characterizing the state of satisfaction of human needs in the areas of physical, spiritual and social development | Evidence of what the actual level achieved in the field of human development, spiritual culture | <ul style="list-style-type: none"> - conditions and quality of medical care of the population (taking into account age and sex factors); - level of provision of needs of the population in the sphere of physical culture and sports; - conditions of receipt and the general level of education of the population (dynamics and structure of providing the population as a whole and its separate social and sex-age groups); - the presence and nature of the functional use of cultural, educational and other aesthetic institutions (in the city and village); |
| Indicators determining the health status and life expectancy of the population as a whole and individual age groups | Determine such qualitative characteristics of the standard of living, which characterize the state of health and life expectancy | <ul style="list-style-type: none"> - duration of active labour longevity; - dynamics of growth and duration of free time and the characteristic of possibility of its rational use by various groups of the population in the direction of personal harmonious development of the person; - the level of social and political activity of the population, the characteristics of the participation of the individual as a subject-citizen in the public life of the country. |
| Indicators characterizing the level of existing social and legal guarantees that the population of the country and its certain social strata have | Reflect the reliability of the security of political freedoms of citizens in society | <ul style="list-style-type: none"> - the level of legal protection of individual layers and groups of the population; - system of legislative support of human rights; - the real effectiveness of the system of legal guarantees. |

^a Source: systematized on the basis of [4]