

## METHODOLOGICAL TOOLKIT FOR DIAGNOSING THE DIVERSIFICATION OF RURAL ECONOMY

*The article proposes methodological toolkit that takes into account using rural areas' potential for transition from sectoral to multi-industry economy. The research hypothesis suggests the possibility of creating the system of socio-economic indicators for diagnosing the diversification level in rural economy and providing recommendations for its further development. The research methodology of this problem is highly developed. However, the studies of the opportunities for rural economy diversification are impeded due to the lack of the necessary information and statistical base, which reflect sectoral and resource aspects. Moreover, a unified methodological approach is lacking. We have developed a diagnostic technique of rural economy diversification, which evaluates human, economic and social resources and identifies the priority areas for agricultural and non-agricultural activities and services based on the statistical and expert methods. The proposed technique includes the following stages. The first stage is the selection of indicators characterizing the availability and use of rural areas' resources. Secondly, we calculate the individual indexes of resource availability. Thirdly, we identify indicators' weighting factors based on correlation and regression analysis. Fourthly, we measure the levels of the indicators using statistical data. The fifth stage is the expert assessment of the diversification potential directions and choosing the most appropriate one. On the six stage, we define the diversification integrity level. Lastly, we elaborate measures for the rural economy development and forecast their implementation. The conclusions of diversification diagnosis reflect the real situation and allow selecting alternative activities to increase the employment and living standards of rural population. The study's results can be used by the governing bodies in developing a differentiated policy of rural development.*

**Keywords:** rural economy diversification, methods for assessing regional diversification, rural resources, rural diversification, rural sectoral structure, diagnostic methodology, additive model, expert assessment, alternative activities, diversification integrity level

### Introduction

Over the last few years, the rural development has been singled out as a special direction of Russia's economic and social policy; therefore, there has been an increase in domestic agricultural production and an improvement in the social infrastructure of rural areas. However, a number of significant problems characterizes the current state of the village: degradation of environment and demographic setting; a high level of unemployment and an outflow of labour resources; the population's significant differentiation in terms of income bracket; poor availability of public amenity and low quality of provided services. In addition, the village faces such problems as reduction of the intellectual, educational and professional, cultural and ethical capabilities of rural community; low competitiveness and high expenditures for agricultural production; low volume of investments in rural economy [1].

The existing disequilibrium in the economic and social development results in the breakdown of social equity, as evidenced by a significant gap in the standard of living between the urban and rural population. For example, in 2016, the average monthly wage paid in the agriculture sector was 58 % of the national average monthly wage paid; the average income of rural community is 1,5 times lower than that of urban residents; the unemployment rate in the rural area is 1,6 times higher than in the city. Moreover, the poverty rate within the city is 11,1 %, whereas in the village it is 19,5 %, which is 2 times higher than international maximum admissible level; the level of conveniences of rural areas is 2,5 times lower than in urban areas<sup>1</sup>.

In addition, the question concerning the formation of the economic strength sufficient to maintain and develop the living environment and natural space of rural areas remains unresolved. The insignificant contribution of basic industries for the rural economy to the development of the state's economy confirm that problem. The total turnover of enterprises and organizations of Agriculture,

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<sup>1</sup> The data of the Federal State Statistics Service. Retrieved from: <http://www.gks.ru> (Date of access: 01.20.2018).

Forestry and Fisheries of the Russian Federation is about 1,8 %; the share of gross value added is 4,4 %; the share of gross profit within the economy of the Russian Federation is 6,0 %. At the same time, however, agriculture continues to be a strategic sector of the rural economy due to the current Russian mentality.

In this regard, for solving the identified problem it is necessary to develop rural areas based on the diversification of the rural economy. This strategy ensures the development of a variety of economic forms and activities, the integrated use of the territory's resources within the rural areas and the employment of the rural population. However, there are no methodological tools for assessing diversification processes occurring in rural areas. Therefore, it is necessary to develop a new methodology for diagnosing diversification that would consider the territory's potential and ensure the elimination of the disequilibrium in the process of the resources' production and re-distribution.

### **Theoretical framework of the research**

The existing territorial disequilibrium in the economic and social development of the Russian regions, accompanied by a significant social stratification and the increased inter- and intra-regional differentiation, poses a serious threat to the country's security and social sustainability. Therefore, one of the primary strategic tasks is the diversification of the economy aimed at reducing the unreasonably high differentiation of spatial development. Diversification of the economy is the first-order condition for maintaining the country's economic unity and security that involves absorption of unused resources in order to develop steady market demand industries.

The market law and the development of both the productive power and the production relations caused the emergence of diversification in the economy [2]. Being a tool of transition from traditional to alternative activities, diversification determines the direction of restructuring the rural economy and, ultimately, focuses on improving the quality of the rural population's life. Therefore, the rural diversification is much more influenced not only by the structure and the composition of the territory's available resources but by the need for their appropriate use [3–5].

The problem of diversifying the rural economy is multi-faceted and scientifically related to the solution of methodological issues of its diagnosis. At the same time, there are no the developed approaches to assessing the diversification level of rural municipalities. Although, such assessments have been carried out at the regional level.

As a general matter, foreign scientific works assess the level of regional diversification based on indicators characterizing the sectoral composition of the economy. One of the main indicators is employment, which reflects the current economic trends and does not depend on cost indicators. In the context of Russian, there might be some difficulties in using this indicator, as it does not fully reflect the current economic situation due to the labour market characteristics, the low level of population mobility and the significant level of the off-the-books employment. The statistical data at free access on the composition of employment in the regional context is taken together for a few areas of economic activities that does not change significantly over time. The regional differences mainly relate to mining, manufacturing, and agriculture.

Gross value added might be another indicator for assessing the level of diversification of the regional economy. However, the application of this indicator is somewhat difficult due to the problems of ensuring data commensurability. As a general practice in Russia, there is another indicator used, i.e. gross regional product, which is the total gross value added in basic price. The difficulty of accounting for the regional value added is related to the fact that it is not always registered at the place of its reception. However, there is no alternative to gross value added in regional calculations.

Currently, scientists have concluded that it is important to assess the level of the regional diversification, as it reveals the disequilibrium in the structure of the economy, taking into account the occurring changes [6–10]. In this regard, the most widely used approaches while conducting econometric evaluations according to the regional studies of foreign authors are the following: the shift-share analysis, the entropy index, the Herfindahl index, the Hachman index [11].

The shift-share analysis is one of the popular methods for analysing regional development [12–13]. In this approach, the growth of the regional indicator is divided into three main categories: the national index (national shift), the index of the sectoral structure (branch shift) and the regional index (regional shift).

The national index  $NY_{if}^t$  for each sector ( $i$ ) is calculated as a part of the growth in year  $t$  of each indicator at the meso-level ( $E_p$ ) in proportion to the growth of the same indicator at the macro level ( $E_F$ ).

$$NY_{if}^t = E_{if}^{t-1} \frac{E_F^t}{E_F^{t-1}}. \quad (1)$$

The index of the sectoral structure  $OY_{if}^t$  is the share of growth of specific sectoral indicators at the regional level, reflecting their possible growth for each sector of the economy at the meso-level, if the rates of change of indicators correspond to the macroeconomic growth rates:

$$OY_{if}^t = E_{if}^{t-1} \left( \frac{E_{iF}^t}{E_{iF}^{t-1}} - \frac{E_F^t}{E_F^{t-1}} \right). \quad (2)$$

The regional index  $RY_{if}^t$  shows the difference between both values, the indicator's real and the predicted growth, with an equal increase in the sector share at the meso- and macro levels:

$$RY_{if}^t = E_{if}^{t-1} \left( \frac{E_{if}^t}{E_{if}^{t-1}} - \frac{E_{iF}^t}{E_{iF}^{t-1}} \right). \quad (3)$$

The regional compound growth rate is the total amount of three main indexes:

$$E_{if}^t - E_{if}^{t-1} = NY_{if}^t + OY_{if}^t + RY_{if}^t. \quad (4)$$

Conducting such an assessment considering sectors allows to work out the components of the total regional index and to evaluate each of the components of the analysed indicator: national, regional and sectoral.

The other common way to assess the diversification of the economy is the entropy index, calculated using the following formula:

$$S = \sum_{i=1}^m Y_i \ln \frac{1}{Y_i}, \quad (5)$$

where  $m$  is the total number of sectors of the economy;  $Y_i$  is the share of each sector in their total volume.

This rate assesses the degree of diversification of the economy, focusing on the proportional distribution of its sectors. A high value of the index indicates a significant level of diversification; a low one indicates a specialization of the economy. The minimum value of the entropy index (zero) can be obtained in case of the maximum specialization when all activities concentrate in one sector. On the contrary, the maximum value of the index is achieved with a balanced distribution, when the shares of all sectors are equal.

The other method to assess the economic diversification is the Herfindahl index or the market concentration index that is quite widely used [14]. It allows identifying the prevalence of certain sectors in the structure of the regional economy. The Herfindahl index is defined as the sum of squares of the regional market shares occupied by each of the sectors:

$$H = \sum_{i=1}^m Y_i^2. \quad (6)$$

The Herfindahl index ranges from 0 (when the economy includes various sectors with an insignificant ratio in the aggregate regional indicator) to 1 (when the economy is sector-specific).

The absolute value of the indices considered (entropy index and Herfindahl index) greatly depends on the total number of sectors analysed and is determined based on one statistical indicator. Therefore, it does not fully take into account the degree of diversification of the economy. The main advantage of the above indices is the simplicity of use.

The following method of assessment allows for an inter-regional comparison of the level of diversification of the economy based on a comparison of the region's indicators with a reference value and is implemented by calculating the Hachman index. This indicator is based on the calculation of the index of local content of production, which is defined as the ratio (share) of the selected indicator at the regional level ( $f$ ) in relation to its value at the federal level ( $F$ ).

$$L = \frac{Y_i^f}{Y_i^F}. \quad (7)$$

It is quite widely used in regional studies as the characteristic of both the regional and the sectoral specialization level. If the indicator is higher than 1, then the sector refers to the specialized one. The Hachman index is the sum of the regional localization indices, taken in accordance with their shares in the sector concerning the total regional index.

$$I = \frac{1}{\sum_{i=1}^m (L \times Y_i^f)}. \quad (8)$$

«The Hachman index characterizes the proximity of the regional structure of a certain indicator to the structure of a similar indicator at the federal level. The value of this index ranges from 0 to 1: if it equals one, then the regional structure fully corresponds to the federal one, and if it has zero value, these structures are completely different from each other» [15].

Russian scientists also proposed approaches to assess the level of diversification of the regional economy<sup>2</sup> [16–17]. For example, A. A. Kofanov [18] applies the structural index of the contribution of the value added of a specific economic activity to the gross regional product, which is defined as the

quotient of dividing the share of value added in the gross regional product of a particular region ( $dr$ ) by the share of the value added of this type in the whole country ( $drf$ ):

$$CK = \frac{dr}{drf}. \quad (9)$$

In order to identify the degree of diversification (or specialization) of the regional economy, the author proposes to calculate the likeness of the values of structural indices based on the variance analysis. In this case, the conclusion about the level of diversification is based on the variance ( $D$ ) of the structural index ( $CK$ ): a high value of variance indicates specialization of the economy, and a low value indicates the diversification.

Moreover, V. Salnikov proposed the index of sectoral diversification that assesses the structure of the regional economy by the share of the value added of each type of economic activity<sup>3</sup>. It shows the diversity of activities in the region. The index is calculated as the reciprocal of the Herfindahl index using the following formula:

$$KD = \frac{1}{\sum_{i=1}^m Y_i^2}. \quad (10)$$

The value of the sectoral diversification index takes into account the diversity of types of economic activities in the region and allows conditional evaluation of its development's sustainability and of the existing risks. "The higher is the value of the sectoral diversification index, the greater is the economic sustainability and the lower is the risk. Conversely, the lower is the value of the sectoral diversification index, the more significant is the impact on the economy resulting in the decline in production of the region's leading activities" [15].

At the same time, calculation of the entropy index, Herfindahl index and the sectoral diversification index does not take into account the scale of the estimated economic system. In contrast, the Hachman index and the shift-share analysis allow measuring the level of diversification and the scale of the analysed region with a certain reference value.

Table 1 shows the comparative characteristics of the aforementioned foreign and Russian approaches to the study of the regional level of diversification.

<sup>2</sup> Duzhenko, T. I. (2015). Diversification of the regional economy based on the development of social infrastructure: dis. ... Cand. econ sciences (pp. 13–23). Novosibirsk: IEEPP SB RAS, 170.

<sup>3</sup> Salnikov V. Diversification and export expansion of industrial companies as a factor of economic growth in the long term, TsMAKP. 2008. Retrieved from: <http://www.myshared.ru/slide/109115> (Date of access: 11.10.2017).

Comparative characteristics of approaches to the study of the regional level of diversification\*

Shift-share analysis	Hachman index	The economic diversification index	Herfindahl index	The economic sectoral diversification index	The entropy index
<i>Method of evaluation</i>					
complex, correlation with reference value			easy, without reference to reference value		
<i>Indicators for calculation</i>					
Indicators characterizing the structure of the economy at the meso- and macro levels	Index of the production localization	The share of value added of a specific type of economic activity in the gross regional product			
Essential feature					
Distribution and assessment of the contribution of components (national, sectoral, regional) to the total regional indicator	Correlation of regional structure with the federal	Determining the degree of diversification (specialization) of the economy based on the variance analysis	Identifying the prevalent sector in the regional structure of the economy	Measuring the sustainability of economic development, taking into account sectoral diversification	Determination of the economic diversification degree, considering the balanced distribution of its sectors
The value of the resulting indicator					
positive value — the structure is more efficient at the meso-scale level, negative value — the structure is more efficient at the macro level	from 0 to 1; 0 — the regional structure is completely different, 1 — the regional structure is fully consistent	high value — specialization of the economy, low value — diversification of the economy	high value — diversified economy, low value — specialized economy	high value — sustainability of economic development, low value — economic instability	from 0 to 1; 0 — various industries are developing, 1 — one industry is developing

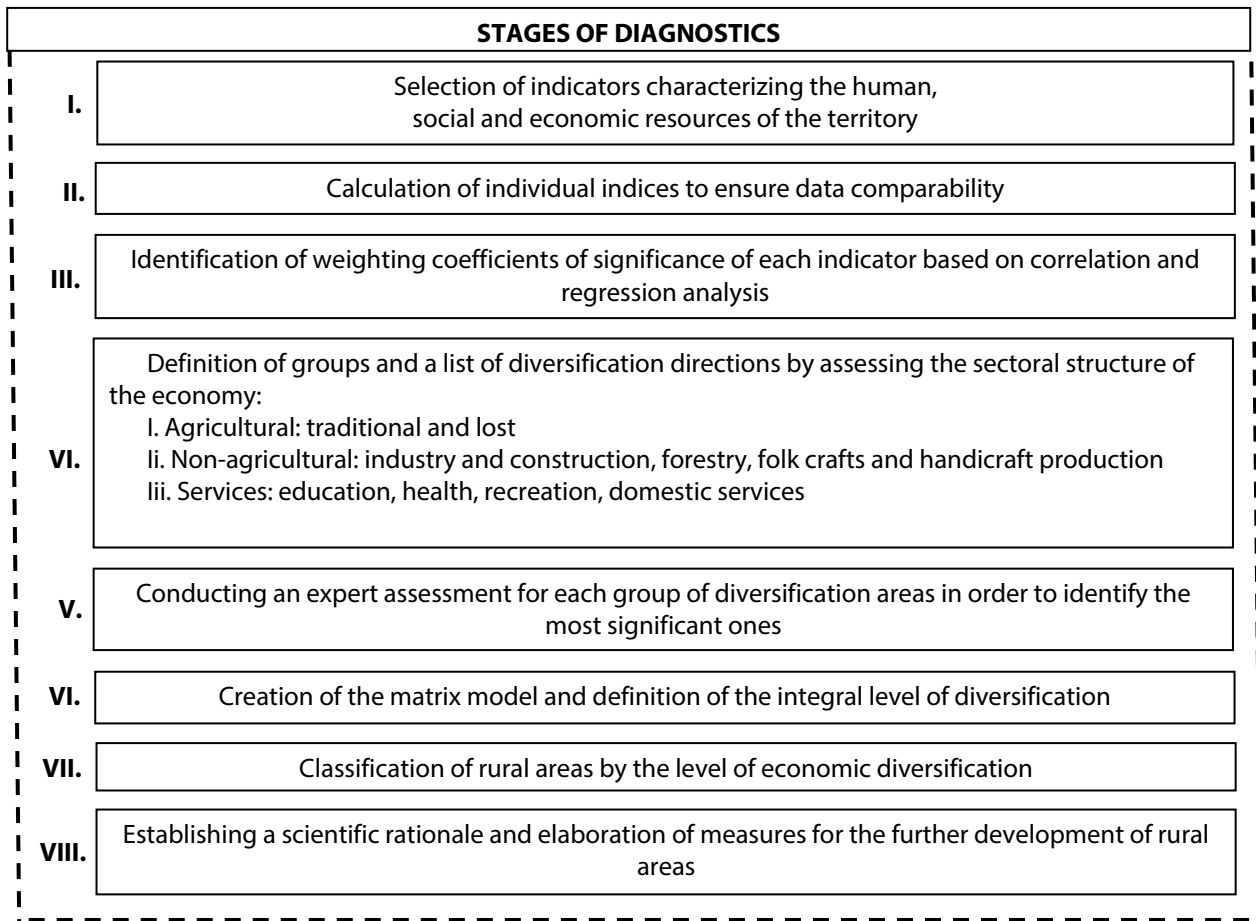
\* Compiled by the authors on the basis of [7, 11–14].

The conducted systematisation of methodological approaches has shown a variety of existing indicators and methods for calculating the level of diversification. Additionally, it has revealed the importance of these approaches at the regional level. However, such assessment is rarely used at the level of the municipalities as a whole. It does not practically affect the development of the diversification processes in rural areas, which is primarily due to the lack of statistical information.

As a result, there is a necessity to develop a methodology for assessing the diversification of the rural economy, combining an assessment of the raw material potential of rural areas and identification of the possible diversification directions, taking into account the integrated management of resources [19–21].

### Research methodology

At present, the rural economy is considered to be agrarian, which is explained by the predominance of agriculture in the structure of economic activity. However, as the diversification of the economy in rural areas expands, the role of the agrarian sector gradually decreases. The «agro-centric» understanding of the rural economy becomes unlawful, since its basic sectors (Agriculture and Forestry) are no longer the main areas of employment and income in the rural areas. Thus the basic resources move from the agricultural sector to other economic spheres that propose higher economy returns, better conditions and greater attractiveness of labour and the wider possibilities of applying innovations [22–24].



**Fig. 1.** Algorithm for diagnosing diversification of the rural economy

A method to assess the level of diversification of the economy in rural areas has been proposed taking into account the ongoing changes in the rural sectoral structure. It consists of the several main stages: selection of necessary indicators characterizing the availability and the use of resources in rural areas; identification of various ways of the economic diversification and selection of the most advanced for the village; elaboration of measures for the further rural development. We presented the advanced diagnostic algorithm in Figure 1.

Considering the proposed algorithm, we have chosen the human, social and economic resources that characterize the territory's potential. The use of these resources will result in creating a new structure of a rural economy with various activities [25]. Indicators characterizing each type of resources have been selected taking into account the modern industry structure based on the statistical data at free access.

Then, we applied an additive model in order to assess the resources for the selected groups and to identify the most significant among them taking into account the contribution of each of the private resource assessments into the total for all groups:

$$I_m = \sum_n^p i_{nm}, \quad (11)$$

where  $I_m$  is the total integral resource assessment of the  $m$ -th group;  $i_{nm}$  is the particular integral assessment of the  $n$ -th type of the  $m$ -th group resource;  $p$  is the total number of groups of all resources.

Next, to assess the weighting coefficients for each group of resources, we determined the rates of changes of indicators (individual indices) using the following formula:

$$\varphi_{im} = \frac{x_{im}}{\bar{x}_{im}}, \quad (12)$$

where  $\varphi_{im}$  is the individual index of the  $i$ -th index of the  $m$ -th group;  $x_{im}$  is the value of the  $i$ -th index of the  $m$ -th group;  $\bar{x}_{im}$  is the average value of the  $i$ -th indicator of the  $m$ -th group.

The obtained individual indices were used in the calculation of private integral assessments for each group of resources. The significance of each indicator in the selected groups of resources has also been taken into account by determining its weighting coefficient.

The assessment of significance, shown in points, represents the corresponding rank of the indicator and is carried out using the formula below:

$$d_n = \frac{r_n}{\sum_m^p r_n}, \quad (13)$$

where  $d_n$  is the weighting coefficient of the  $n$ -th resource;  $r_n$  is the assessment of the impact (rank) of the  $n$ -th resource.

After determining the significance of the indicators, the smallest of them has been taken as a unit, and the weighting coefficients were distributed according to the growing values in the regression equation.

The obtained results (priority ratio) have been adjusted using the following formula:

$$z_n = \frac{r_n}{\sum_n^p r_n} \div \sum_n^p \left( \frac{r_n}{\sum_n^p r_n} \right), \quad (14)$$

where  $z_n$  is the weight of the  $n$ -th resource after the adjustment;  $r_n$  is the degree of influence on a significant variable.

Further, the expert-based method we have identified the priority directions of rural diversification. Therefore, the complete list of diversification ways has been worked out, including the corresponding activities that will contribute to the development of rural areas [26–30].

Then, we have assessed the ratio of each kind of activity in the general group. Thus, according to the expert-based assessment, the first priority is 10 times more significant than the last one, that is,  $g = A_1 : A_{10} = 10$ . For determining the weight of the group with the lowest priority, the following formulas have been used:

$$A_1 = \frac{2}{v(g+1)}, \quad (15)$$

$$A_l = A_1 \frac{(v-1) \times g + l - 1}{g - 1}. \quad (16)$$

Using the formula (16), we have determined the values from  $A_2$  to  $A_{10}$ .

Since the number of activities in the selected groups has differed, the weight of each of them has been adjusted depending on the number of activities using the formula:

$$A_{v0} = \frac{A_v \times e_v}{e_v}, \quad (17)$$

where  $A_{v0}$  is the weight of the  $v$ -th group after adjustment depending on the number of activities in this group;  $e_v$  is the number of activities in each group;  $\bar{e}_v$  is the average number of activities by groups.

Due to the measures of inaccuracy in the calculations, the results obtained have been corrected using the following formula:

$$A_{v1} = A_{v0} : \sum_l^l A_{v0}, \quad (18)$$

where  $A_{v1}$  is the weight of the  $v$ -th group after the adjustment.

Each expert independently assessed the impact of the above groups on the development of the rural economy based on the list of directions and types of activities provided.

At the next stage of the assessment, the activities have been grouped in accordance with their significance. The number of points has been calculated for each group of activities using the formula:

$$W_l = \sum_{j=1}^v A_v \times O_v, \quad (19)$$

where  $W_l$  is the total score by type of activities;  $v$  is the number of diversification groups;  $A_v$  is the ratio of activities in the direction;  $O_v$  is the impact of activities on the development of the rural economy.

We have applied a matrix model in order to determine the integral level of diversification, which has allowed not only to evaluate the selected groups of resources, but also to reveal their influence on the integral level. The calculations required for this were carried out using the three formulas below:

$$Z_{nv} = W_l \times E_n, \quad (20)$$

where  $Z_{nv}$  is the degree of influence of a particular type of resource on the diversification;  $W_l$  is the total score for the diversification group;  $E_n$  is the ratio of the  $n$ -th resource after the adjustment.

$$U_{ev} = \sum_n^p \sum_v^{ev} Z_{nv}, \quad (21)$$

where  $U_{ev}$  is the degree of influence of all resources on diversification;  $e_v$  is the number of activities in the group;  $p$  is the number of resource groups;  $v$  is the diversification groups.

$$U_{em} = U_{e1} + U_{e2} + U_{e3}, \quad (22)$$

where  $U_{em}$  is the integral level of diversification;  $U_{e1}$ ,  $U_{e2}$ ,  $U_{e3}$  — are the main resources affecting the diversification.

The obtained integral level of the rural diversification allows its quantification and gradation of rural areas with the allocation of 4 groups according to the following qualitative characteristics of the diversification potential:

- 1 group ( $U_{em} < 50,0$ ) — insufficient;
- 2 group ( $50,1 < U_{em} < 100,0$ ) — low;
- 3 group ( $100,1 < U_{em} < 150,0$ ) — medium;
- 4 group ( $U_{em} > 150,1$ ) — high.

Thus, the developed methodology for assessing the diversification of the rural economy, taking into account the existing territory's resources and the possibilities of their use, identifies the main directions of the diversification. This will result in the advanced use of the rural areas' potential, development of alternative sectors of the rural economy, increasing employment and improvement of the quality of life in the countryside.

### The results of the study

We have tested the developed methodology for diagnosing diversification of the economy in rural areas in the Belgorod Region. Firstly, we calculated the indicators for each group of rural areas of the region in accordance with the diagnostics algorithm proposed in Figure 1. The research period is 2010–2016, 2010 has been taken as the reference year<sup>4</sup>.

Each resource group (human, social, economic) affecting the diversification of the rural economy was estimated based on a set of indicators considering the average staff number, average monthly wage paid, output and services rendered in various sectors: agriculture, transport, construction, manufacturing, trade.

Secondly, we have calculated the individual indices and have conducted the private integral assessment for each group of resources in the rural territory since the methodology for assessing the diversification of the rural economy needs to determine the rate of change of each indicator for each year.

Thirdly, we have calculated the weighted coefficients using correlation and regression analysis. This has allowed establishing the relationship between the independent and dependent variables. Then the result for each resource group has been adjusted for the amount of resources studied.

The calculations showed that during the analysed period in the Belgorod region economic resources have influenced the development of diversification processes in the rural territories the most (0.378), social resources have turned out to be almost at the same level of importance (0.362), and human resources (0.260) have made the smallest impact.

<sup>4</sup> Statistical compendium “The main indicators of the socio-economic situation of municipal districts and urban districts of the Belgorod region”, published by Belgorodstat in 2014–2017.

Further, at the fourth stage of diagnostics of the diversification of the rural economy, we have identified the main groups of activities: agricultural, non-agricultural, and the services sector. The ways of diversification for each group have been worked out.

At the fifth stage we have conducted an expert assessment of selected groups and diversification areas based on the proposed algorithm. The employees of the administrations of the Belgorod region dealing with the development of rural areas at various levels of management have been considered as the experts of the study.

The experts have identified education and health care, recreation, cultural and leisure services, and personal services that fall within the scope of services as the main types of activity in the rural territories of the Belgorod region. Experts considered the production of lost types of agricultural products, folk crafts and handicraft production, forestry as the least promising for the development of rural areas of the region.

Then, a matrix model was created in order to determine the integral level of diversification of the rural economy based on the calculations conducted during the sixth stage. As a result, the rural areas of the Belgorod region fell into group 4 (with high diversification potential). This indicates that there are great opportunities for effective functioning of different kinds of economic activities, including agricultural ones (Table 2).

Table 2

Assessment of the integral level of diversification of the rural economy in the Belgorod Region\*

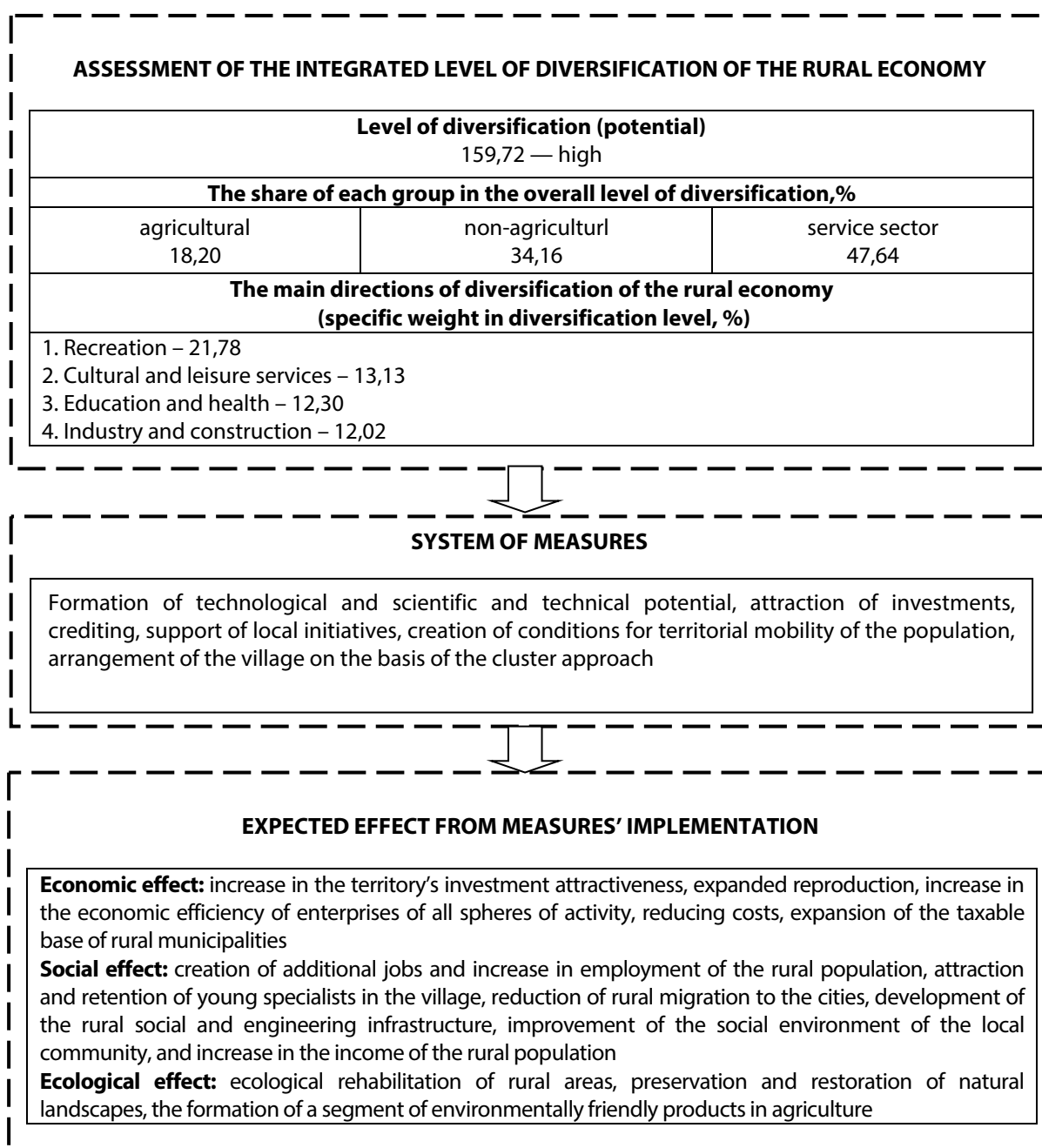
The main types of resources affecting diversification		The main groups to diversify the rural economy							Total by type of resource ( $U_{em}$ )	
		I Agricultural activities		II Non-agricultural activities			III aActivities in service industry			
		production of traditional products	production of lost products	industry and construction	forestry	folk crafts and handicraft production	recreation	education and health		cultural and leisure services
1. Human		4,83	2,90	4,95	4,33	4,87	9,05	5,11	5,45	41,49
2. Social		6,73	5,48	6,95	6,03	6,78	12,59	7,11	7,59	59,26
3. Economic		7,02	4,21	7,26	6,30	7,08	13,15	7,43	7,93	60,38
Total ( $U_{ev}$ )	for each activity	18,58	11,16	19,20	16,66	18,71	34,79	19,65	20,97	159,72
	for each diversification group	29,76		54,56			75,40			
Share in the integral level, %	for each diversification group	11,63	6,99	12,02	10,44	11,72	21,78	12,30	13,13	100,0
	for each activity	18,20		34,16			47,64			

\* Calculations are made by the authors in the publication [15].

Aiming at the development of rural diversification, the region began a gradual restructuring of the rural economy. Thus, rural tourism, which is a part of the «recreation» direction, has been successfully developing over the past years. A significant role is played by industry and folk crafts among non-agricultural activities. Considering the agricultural sector, recreational agriculture is reviving.

At the final stage of the methodology, we have substantiated the main perspectives for creating conditions for the development of rural diversification, and determined the results expected from their implementation: economic, social and environmental (Figure 2).

The proposed ways of diversification of the rural economy in the Belgorod region are not strictly regulated, thus, they can be applied in various combinations on each specific territory. The presented new sectoral structure of the rural economy requires the development of managerial and investment mechanisms, as well as ensuring the interaction between the authorities at all levels of government,



**Fig. 2.** Results of diagnostics of the diversification of the rural economy of the Belgorod region

business community and the population. At the same time, the state (namely, federal and regional power structures) should play a decisive role.

### Conclusion

The study has shown that application of various methods for assessing diversification at the regional level does not allow using them to diagnose the rural economy due to the lack of the necessary statistical information adapted to rural development conditions.

We have determined the logical structure of the research process of rural diversification as a system based on an objective-subjective assessment in order to reflect the diversity of the natural, socio-economic and cultural conditions of the village and their disequilibrium within one region. The methodological aspects of the diagnosis of the diversification of the rural economy were determined by the peculiarities of the natural resource potential and the directions for the economy's reorganization.

The developed methodology, based on the calculation of the integral indicator, allows objective assessment of the level of diversification of the rural economy in the Belgorod region. Moreover, the

methodology identifies its parameters, characterized not only quantitatively but also qualitatively, and proposes the ways for combining the results with the allocation of alternative activities.

The results of the studies, taking into account their testing in the Belgorod region, can be used by the authorities, entrepreneurs, and investors in substantiating directions for the prospective development of the rural economy, establishing and implementing development programs for the territories, as well as for forming a coherent management system for municipalities in other regions of Russia.

In further research, we plan to focus on building a cognitive model of a diversified rural economy, reflecting the systemic causal sequence of «goals—functions—structure—functioning—result», theoretical and methodological tools and methods of its use, as well as the main factors that have impact on the development of rural economies. Consequently, in the following studies we are interested in identifying areas with a single-industry and multifunctional configuration of the rural economy, characterized by different uses of the natural resource's potential and sectoral development opportunities.

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