


DIAGNOSTICS OF REGIONS RESOURCE POTENTIAL IN THE CONTEXT OF SOCIO-ECONOMIC DEVELOPMENT

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 10 July 2023</p> <p>Accepted 12 October 2023</p>	<p>Purpose: The purpose of the study is to study the possibilities for diagnosing the resource potential of the regions, taking into account the indicators of their socio-economic development.</p>
<p>Keywords:</p> <p>Resource Potential; Rent Generating Factors; Regional Analysis; Socio-Economic Development; Resource Usage; Regional Efficiency.</p>	<p>Theoretical framework: To conduct the study, the indicators characterizing the socio-economic development of the regions were analyzed; Based on the selected indicators, indices of sub-potentials and integral estimates of the resource potential of the regions were calculated.</p>
	<p>Design/methodology/approach: The diagnostics of the resource potential of the regions is carried out by means of an integral assessment of sub-potentials through an indicative analysis, where the average values for the country are the standard. The obtained indicative estimates (indices) for the sub-potentials of the resource potential make it possible to identify rent-forming conditions in the regions. It is proposed to use a "simplified" diagnostic model for the study, which contains the main indicators for analysis; in the "enlarged" model, it is planned to use an expanded range of indicators to identify dependencies, taking into account their dynamic changes. Approbation was carried out in the Russian region - Novgorod region.</p>
<p>Findings: As a result of the study, indicative estimates (indices) of the subpotentials of the resource potential of the analyzed regions were obtained, and their integral estimates of the resource potential were determined. The diagnostics of the resource potential made it possible to rank the regions according to the factor conditions of socio-economic development, as well as to lay the basis for assessing the effectiveness of the use of regional resource opportunities.</p>	<p>Research, Practical & Social implications: The study expands scientific knowledge in the field of formation and use of the resource potential of the regions. Improving the assessment system within the proposed approach for conducting diagnostics for specific regional tasks will allow for a competent regional policy with a focus on the strengths and weaknesses of the socio-economic development of the region.</p>
<p>Originality/value: The value of the study lies in the ranking of regions depending on resource conditions, which can help determine rent-forming factors and build an assessment of the efficiency of using resource potential.</p>	<p>Doi: https://doi.org/10.26668/businessreview/2023.v8i10.3162</p>

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DIAGNÓSTICO DO POTENCIAL DE RECURSOS DAS REGIÕES NO CONTEXTO DO DESENVOLVIMENTO SOCIOECONÔMICO

RESUMO

Objetivo: O objetivo do estudo é estudar as possibilidades de diagnóstico do potencial de recursos das regiões, levando em conta os indicadores de seu desenvolvimento socioeconômico.

Estrutura teórica: Para realizar o estudo, foram analisados os indicadores característicos do desenvolvimento socioeconômico das regiões; Com base nos indicadores selecionados, foram calculados índices de subpotenciais e estimativas integrais do potencial de recursos das regiões.

Concepção/metodologia/abordagem: O diagnóstico do potencial de recursos das regiões é realizado por meio de uma avaliação integral dos subpotenciais através de uma análise indicativa, em que os valores médios para o país são o padrão. As estimativas indicativas (índices) obtidas para os subpotenciais do potencial de recursos permitem identificar as condições de renda nas regiões. Propõe-se o uso de um modelo diagnóstico "simplificado" para o estudo, que contém os principais indicadores de análise; no modelo "ampliado", prevê-se o uso de uma gama ampliada de indicadores para identificar dependências, levando em conta suas mudanças dinâmicas. A aprovação foi realizada na região russa - região de Novgorod.

Constatações: Como resultado do estudo, foram obtidas estimativas indicativas (índices) dos subpotenciais do potencial de recursos das regiões analisadas e determinadas suas estimativas integrais do potencial de recursos. O diagnóstico do potencial de recursos permitiu classificar as regiões de acordo com as condições dos fatores de desenvolvimento socioeconômico, bem como estabelecer a base para avaliar a eficácia da utilização das oportunidades de recursos regionais.

Investigação, implicações práticas e sociais: O estudo amplia o conhecimento científico no campo da formação e utilização do potencial de recursos das regiões. A melhoria do sistema de avaliação no âmbito da abordagem proposta para a realização de diagnósticos para tarefas regionais específicas permitirá uma política regional competente, centrada nos pontos fortes e fracos do desenvolvimento socioeconômico da região.

Originalidade/valor: O valor do estudo está no ranking de regiões dependendo das condições de recursos, o que pode ajudar a determinar fatores de formação de renda e construir uma avaliação da eficiência da utilização do potencial de recursos.

Palavras-chave: Potencial de Recursos, Fatores Geradores de Aluguel, Análise Regional, Desenvolvimento Socioeconômico, Utilização de Recursos, Eficiência Regional.

DIAGNÓSTICO DEL POTENCIAL DE RECURSOS DE LAS REGIONES EN EL CONTEXTO DEL DESARROLLO SOCIOECONÓMICO

RESUMEN

Objetivo: El objetivo del estudio es estudiar las posibilidades de diagnosticar el potencial de recursos de las regiones, teniendo en cuenta los indicadores de su desarrollo socioeconómico.

Marco teórico: Para llevar a cabo el estudio se analizaron los indicadores que caracterizan el desarrollo socioeconómico de las regiones, con base en los indicadores seleccionados se calcularon índices de sub-potenciales y estimaciones integrales del potencial de recursos de las regiones.

Diseño/metodología/enfoque: El diagnóstico del potencial de recursos de las regiones se lleva a cabo mediante una evaluación integral de los subpotenciales mediante un análisis indicativo, donde los valores medios para el país son la norma. Las estimaciones indicativas (índices) obtenidas para los subpotenciales del potencial de recursos permiten identificar las condiciones de formación de rentas en las regiones. Se propone utilizar un modelo diagnóstico "simplificado" para el estudio, que contiene los principales indicadores para el análisis; en el modelo "ampliado", se planea utilizar un rango ampliado de indicadores para identificar dependencias, teniendo en cuenta sus cambios dinámicos. La aprobación se llevó a cabo en la región rusa - región de Novgorod.

Resultados: Como resultado del estudio se obtuvieron estimaciones indicativas (índices) de los subpotenciales del potencial de recursos de las regiones analizadas, y se determinaron sus estimaciones integrales del potencial de recursos. El diagnóstico del potencial de recursos permitió clasificar las regiones según las condiciones de los factores de desarrollo socioeconómico, así como sentar las bases para evaluar la eficacia del uso de las oportunidades de recursos regionales.

Investigación, implicaciones prácticas y sociales: El estudio amplía el conocimiento científico en el campo de la formación y el uso del potencial de recursos de las regiones. La mejora del sistema de evaluación dentro del enfoque propuesto para realizar diagnósticos para tareas regionales específicas permitirá una política regional competente que se centre en los puntos fuertes y débiles del desarrollo socioeconómico de la región.

Originalidad/valor: El valor del estudio radica en la clasificación de las regiones en función de las condiciones de los recursos, lo que puede ayudar a determinar los factores de formación de rentas y construir una evaluación de la eficiencia del uso del potencial de los recursos.

Palabras clave: Potencial de Recursos, Factores Generadores de Rentas, Análisis Regional, Desarrollo Socioeconómico, Uso de Recursos, Eficiencia Regional.

INTRODUCTION

Regulation of the resource potential of the regions is a necessary condition for the implementation of the socio-economic development of countries and territories. In the context of the reorganization of the world economic system and the toughening of the struggle for the transition to a new technological order, the rational use of resource potential is the basic direction for maintaining the competitiveness of the national economy. State regulation is based on the tools for regulating the resource potential, one of which is its diagnostics at the regional level. The development of a mechanism for diagnosing the resource potential of a region makes it possible to improve the system of regional management in order to determine trajectories for expanding the reproduction of the resource potential of regions in the context of socio-economic development.

The resource potential of the regions creates the structure of the rental income of the regions, taking into account the uneven state of the socio-economic development of the territories. Consequently, as a result of diagnosing the resource potential, the regional authorities have the opportunity to determine the direction and structural conditions of socio-economic relations. The difficulty in determining the resource potential of regions lies in the practical impossibility of obtaining objective cost or natural data on available and disposable resources in a particular area (Chebykina & Bobkova, 2014; Filimonenko et al., 2017; Zaytsev, 2020). Without adapting approaches to the processes of formation and use of the resource potential of the regions, difficulties arise in the development of measures for its strategic increase in the interests of the subjects of socio-economic development.

Accelerating the socio-economic development of regions through the formation and intensification of the use of their resource potential helps to increase the competitiveness of the country and territories in the face of increased competition (Kotler et al., 2019; Porter, 1998; Roy, 2013). Thus, the diagnostics of the resource potential of the region becomes an effective tool for state regulation of socio-economic development, determining the trajectories of this development depending on the available resources and the opportunities to increase the return from intensifying their use (Avramchikova & Ivanov, 2022; Zaytsev et al., 2019).

The purpose of this study is to study the possibilities for diagnosing the resource potential of regions, taking into account aspects of their socio-economic development. For this, a theoretical analysis of the resource potential of the region was carried out, a model for diagnosing the resource potential of the region was proposed, and the developed model for diagnosing the resource potential was tested in a particular region.

THEORETICAL FRAMEWORK

At the first stage, it is proposed to consider the theoretical aspects of the formation of the resource potential of the region. If we turn to the essence of the resource potential, then we should consider a more extended category - economic potential, which is commonly understood as the combined ability of subjects of different levels of economic aggregation to carry out production and economic activities, using their hidden opportunities to maximize results. The following relationship between economic and resource potential is observed: "Resource potential forms the basis of economic potential and is its component. If the resource potential is a set of resources (formed and involved in economic processes, potentially available for use in the future), then the economic potential still takes into account the mechanisms for the effective organization of these resources" (Camagni, 2017; Kosenko et al., 2019; North, 1990).

The analysis of the economic potential is carried out from the standpoint of the basic approaches: strategic, productive, resource. The strategic approach singles out the operational resource base and potential reserves as part of the economic potential, as well as mechanisms that contribute to ensuring the functioning of economic systems in the long term through the organization of the use of available resources and reserves. From the standpoint of an effective approach, a certain set of production capabilities of managing in organizational conditions is distinguished as part of the economic potential, ensuring the most complete (optimal) use of the resource base. In accordance with the resource approach, a set of resources that are at the direct or indirect disposal of subjects is allocated as part of the economic potential.

The listed approaches specify the resource potential as part of the economic potential, predetermining the implementation of the development of subjects of different levels of economic aggregation, including the socio-economic development of regions. Direct approaches to economic potential make it possible to identify the abilities and possibilities of social reproduction, the national economy, regions and business entities, as well as to identify private sub-potentials as part of the resource potential. An interesting direction in this direction is to ensure accounting, analysis and evaluation of the effectiveness of the use of the available

resource potential of the regions, which can be carried out on the basis of diagnostic mechanisms, which includes monitoring tools for selected indicators to identify weaknesses and build forecasts for the socio-economic development of regions on perspective.

Directly under the resource potential should be understood the integral result of the development of production forces and production relations in the system of socio-economic relations of the regions. In the classical sense, the development of productive forces inevitably leads to a change in production relations and is a necessary condition for the transition to new formations and technological structures (Coase, 2012; Marshall, 1890; North, 1990). In the 21st century, there is an intensified restructuring of the resource potential of countries and economic units in connection with turbulent and destructive shifts and transitional processes that are generated by factors of socio-economic development and institutional circumstances. Consequently, questions arise regarding the disclosure of new conditions for the formation and use of resource potential, taking into account the accelerated change in capital-forming systems (Chebykina & Bobkova, 2014; Pike et al., 2016).

The aggravation of world competition leads to the need to identify within the framework of the national economy the whole range of available methods for the development of revolutionary ways of doing business. Advanced technologies and achievements of scientific and technological progress make it possible to move away from the extensive use of resource potential and form the basis for intensive development. Since the relationship between the productive forces and production relations can be characterized as the relationship between the content and social form of production, there is a need to revise approaches to the exploitation of the resource potential of territories.

The scientific community confirms the need to search for new conceptual approaches to managing the spatial development of territories to counteract global challenges. If we consider the practice of Russian resource regions, researchers note problems in organizing territorial development due to the difficulties in ensuring the synchronization of technologies in advanced industries, promoting convergence in science and technology, transforming existing value chains, organizing the transition to network models of social economic development. As a result, there has been a decrease in the effectiveness of regional governance systems, prompting the development of approaches aimed at moving away from traditional methods of governance. To model new approaches to regional governance, resource potential should be identified (Filimonenko et al., 2017).

In order to increase the return on the resource potential of the territories, it is required to provide its diagnostics, which cannot be done without monitoring the processes of its formation and use in the context of socio-economic development. Based on the monitoring results, a fair assessment of the use of the region's resource potential is obtained, and competent diagnostics will help determine key measures to regulate production relations by regional authorities. The relations of production accelerate the development of the productive forces if they correspond to their level and character and give sufficient scope for their development; otherwise, the relations of production will lead to a slowdown in the development of the productive forces. Timely identification of inconsistencies between production relations and productive forces based on the diagnosis of resource potential is recognized not only by the classics of political economy, but also by modern researchers.

The economic content, dominant characteristics, structure and features of the regional resource potential form the level of capitalization of the regional economy, which can be expressed as an optimization element as part of the production function. The components of the resource potential in the course of its diagnostics should be identified, classified, and also subjected to structural and functional decomposition, determining the state of differentiation of subjects, in particular regions, and the deviation of key indicators from normative values (Lyshchikova et al., 2016). Thus, the diagnostics of the region's resource potential characterizes the sources of its formation and the efficiency of its use. The efficiency of the use of the region's resource potential is understood as the rational use of the resources under its control to achieve the set goals. The systematization of the structural elements of the resource potential of the region and approaches to its definition is especially relevant for the Russian economy, as it will determine the directions for using the resource components of the economy. The economic space of most regions of the Russian Federation is characterized by uneven socio-economic development and weak diversification of economic systems, while at the same time there is a significant resource potential. There is a consensus that in order to ensure the competitiveness of regions in the national and world markets, create new import substitution programs and provide innovative content, it is necessary to transform the structure of the resource potential in favor of using advanced technological structures (Avramchikova & Ivanov, 2022).

The productive forces are a mobile and continuously changing element of production, while the relations of production lag behind the development of the productive forces in their development. If in the last century these conditions corresponded to a conflict situation between the socialist and capitalist world economic systems, then in modern conditions this factor is due

to the conflict between developed and developing countries. The current world economic system widens the gap between the technologically advanced and resource-based economies of the planet. To overcome this gap, expanding economies need to ensure the formation of systems of state regulation of the resource potential of socio-economic development at all levels of economic aggregation, which will take into account the orientation towards the appropriation of rental income from innovative and advanced industries, and not focus on the uncontrolled export of natural and raw materials, appropriating rental income as a result of the loss of its resource potential and dependence on the export of low value-added products.

Natural resource rent, in the event that super-incomes are redirected from it into scientific and technological development, allows developing countries to organize a “big push”. If such a situation materializes, rental incomes become catalysts for the rational redistribution of resources in the organizational mechanisms of socioeconomic development (Sachs & Warner, 1999). It should be understood that repeating the success of technologically developed countries is impossible solely through the regulation of resource potential, since in order to obtain a multiplier effect from disposable resources, it is necessary to create a favorable institutional environment. Unfortunately, developing countries are not able to achieve a high level of institutional quality without focusing on an innovative structure of resource potential, in which natural and raw materials are secondary elements. Institutional support for optimizing the resource potential of the country and regions is perceived as a necessity for the transition to innovative development, but it faces problems of non-systematic and short-lived existence of individual institutions, which is also typical of the Russian economy (Amiri et al., 2018; Bondarenko, 2013).

Periodic macroeconomic crises and conflict situations in economic systems do not allow many developing countries to build adaptive management systems and set up effective regulatory and control tools in the organizational mechanisms of socio-economic development. Since global trends have determined the implementation of the transition to the introduction of innovative and digital technologies aimed at optimizing production processes, there have been significant shifts in the resource structure of the national economy. Unfortunately, the technological development of many countries is not sufficient to reorient the resource potential towards the intensive use of resources available for exploitation. To reduce scientific and technological backwardness, developing countries need to increase the intensification of intellectual processes in the economy, which implies identifying bottlenecks in the use of resource potential and promoting the creation of favorable institutional conditions for the

formation of resource potential based on innovative management systems (Ngo, 2016; Shang & Fagan, 2006 Smith & Thomas, 2015)

The resource potential diagnostic process takes into account not only the availability of resources, but also indicators of their increased use (or decrease in use). Depending on the complexity of the chosen diagnostic model, it is possible to lay down both reporting indicators and analyze information flows that characterize the factor formation of economic growth, the state of institutions, political stability, the standard of living of the population, innovative activity, intellectual development, etc. To develop a diagnostic model, it is acceptable to use data coverage analysis (DEA) based on the preference order technique for similarity to an ideal solution (TOPSIS), which will allow us to analyze the innovative capabilities and readiness of countries and territories to accelerate socio-economic development using an effective structure of redistribution of excess income from the exploitation of natural resources, which will take into account the threat of the formation of "resource dependence". High economic dependence on natural resource exports or weak political stability can lead countries to fall into the "resource dependence" problem area (Namazi & Mohammadi, 2018).

Elaboration of the diagnostics of the resource potential implies an analysis of the state of stability of a regional formation, which can be determined through the resource structure of the sub-potentials of the regions. Departure from natural raw materials and limited material production with low added value is a rational way of long-term socio-economic development of subjects of economic relations, and an increase in the share of advanced industries in the structure of sub-potentials of the resource potential allows the transition to new stages of economic and social development, contributing to the construction of a knowledge economy on a national scale. Without state intervention and effective economic policy, it is impossible to increase the intensity of intellectualization, which can lead to a loss of competitiveness of national products in the world market and stagnation of the entire economic system. The above aspects confirm the high importance of diagnosing resource potential to promote scientific and technological breakthroughs that ensure the diffusion of innovations and directly affect sharp shifts in the structure of the resource potential of a country and regions (Zaytsev et al., 2020).

Researchers note the high importance of resource advantages for achieving the goals of economic agents. The type of resource that is used in the implementation of the management of economic objects depends on the position of the subject in the matrix of competition and whether it has the ability to ensure its economic security at a sufficient level. This practice is typical both for subjects at the level of territorial administration (macro-level and meso-level)

and business structures (micro-level). There is a direct correlation between available resources and their effectiveness. However, not every resource has a multiplier return, the achievement of which leads to the formation and development of organizational mechanisms for making managerial decisions from the standpoint of the rational use of the resource potential of subjects to achieve competitiveness. Objectification of management decision-making processes implies a selection of indicators characterizing socio-economic development (Camagni, 2017; Hunt & Madhavaram, 2012; Klychova et al., 2023).

An analysis of existing approaches to the assessment of regional economic security allows us to conclude that the basic influence of resource elements on the socio-economic development of regions. Control over resource potential in this vein becomes a necessity for achieving strategic priorities. Carrying out control measures cannot be carried out without high-quality state regulation of the resource potential through its diagnostics. The diagnostic mechanism can be built on the basis of integrating into it approaches to economic security, in particular, threshold estimates (standards) that characterize the resource state of the region in the context of socio-economic development. As a result, it becomes possible to identify imbalances in the formation and use of resource potential that threaten the region and the implementation of strategies in the national economy (Bukharova et al., 2017). The Russian economy is characterized by structural changes that lead to the challenges of a new stage of development in the field of import substitution and the intensification of innovative development in all sectors of the national economy. The formation of institutions and the modernization of the national economic system implies the formation of pond mechanisms of state regulation, which should take into account innovative practices for using the resource potential of regions (Zaytsev et al., 2019).

On the basis of theoretical analysis, it is proposed to conclude that the rational and balanced use of resource potential requires their comprehensive consideration. Accounting is defined as the collection, organization, storage, and updating of resource information. At the same time, the resource potential includes not only material aspects, in particular natural and industrial resources, but also intangible aspects, in particular labor, financial, innovation and infrastructure. The economic potential also takes into account the mechanisms for organizing the reproduction of material and intangible benefits, which are expressed by the institutional conditions of socio-economic development. Diagnostics of the resource potential of the regions makes it possible to identify how correctly and reasonably resource conditions are used in the

context of socio-economic development, which contributes to the formation of trajectories for the effective use of production factors in the long term.

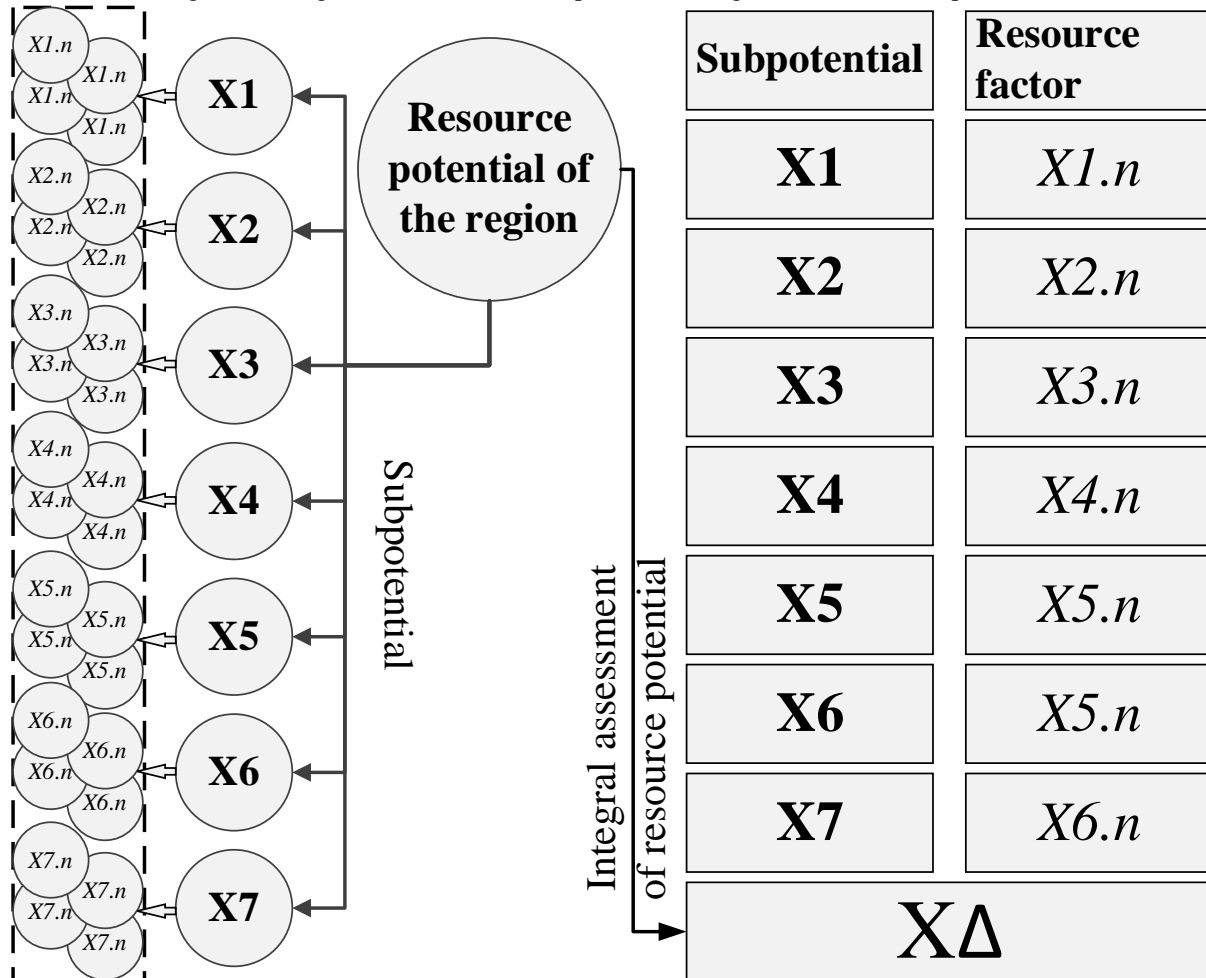
Theoretical analysis has shown the growing importance and relevance of developing methodological approaches to determine the impact of resource conditions on the processes of formation of the resource potential of socio-economic development. The implementation of diagnostics of the resource potential of the region contributes to an assessment of the dynamics of their resource characteristics relative to the normative values, which, in accordance with the rental criteria, can be expressed by averaged indicators. At the regional level, average indicators can be expressed relative to the general conditions of the country's socio-economic development. The author's view of the problem lies in the development of a diagnostic apparatus that will allow creating a system for monitoring the effectiveness of the formation and use of the resource potential of the regions.

METHODOLOGY

To conduct the study, it is proposed to analyze the indicators characterizing the socio-economic development of the regions, the analysis of which contributes to obtaining an objective assessment of the effectiveness of the formation and use of resource potential. On the basis of the selected indicators, it is proposed to form indices of the resource potential of the regions, which allow diagnosing the resource potential of the regions in relation to the standard values accepted as macro-level indicators of the country. The obtained indices for the selected indicators are integrated by blocks into sub-potentials of the resource potential, the calculation of which is reduced to the final integral assessment. Directly for the calculations, an indicative analysis is used, where the average values for the country are the standard. It should be noted that the obtained indicative estimates (indices) for sub-potentials of the resource potential make it possible to identify rent-forming conditions in the regions, laying them in the basis of rent regulation of the socio-economic development of regions.

The scheme for diagnosing the resource potential through indicators of subpotentials is shown in Figure 1.

Figure 1 - Diagnostics of the resource potential through indicators of sub-potentials



Source: Prepared by the authors (2023)

Indicators in the subpotentials of the resource potential can be natural-material and cost. Such indicators will have a different nature and it will be difficult to compare them with each other. Therefore, it is required to carry out the normalization of quantitative and qualitative indicators. The normalization procedure removes the influence of absolute values and variations in the values of the indicators themselves. Normalization is carried out according to the following algorithm:

1. Calculation of private indicators in the model:

$$X_{N.n} = \frac{X_{N.n}(r)}{X_{N.n}(s)}, \quad (1)$$

Where:

$X_{N.n}$ – private indicator of subpotential in the diagnostic model of the resource potential of the region;

$X_{N.n}(r)$ – the value of the indicator for the analyzed region;

$X_{N,n}$ (s) – normative value of the indicator (average value for the country);
 N - the number of the analyzed subpotential;
 n - the number of the analyzed indicator.

2. Calculation of the indicative value of the subpotential:

$$X_N = \sqrt{\sum_{i=1}^{K,2} X_{N,n}}, \quad (2)$$

Where:

$X_{N,n}$ – indicator of subpotential in the model of diagnostics of the resource potential of the region;
 K.2 – the number of private indicators of each subpotential (second level).

3. Calculation of the integral assessment of the resource potential in the model:

$$X_{\Delta} = \sqrt{\sum_{i=1}^{K,1} X_N}, \quad (3)$$

Where:

X_{Δ} – integral assessment of the resource potential in the diagnostic model of the resource potential of the region;
 K.1 - the number of indicators of each subpotential (the first level).

As indicators of the sub-potential of the first level, it is proposed to single out the basic blocks of the resource potential:

- $X1$ - *Natural sub-potential*;
- $X2$ - *Production sub-potential*;
- $X3$ - *Financial sub-potential*;
- $X4$ - *Infrastructural sub-potential*;
- $X5$ - *Information sub-potential*;
- $X6$ - *Innovative sub-potential*;
- $X7$ - *Human sub-potential*.

As private indicators of the sub-potential of the second level, it is proposed to single out indicators that characterize the significance of each basic block of the resource potential:

- $X1.1$ - *Index of agricultural production (% of the previous year)*;
- $X1.2$ - *Crop area per capita (thousand hectares / thousand people)*;

- *X1.3 - Forest cover of the territory (% of the total territory);*
- *X1.4 - Fresh water use per capita (million cubic meters / thousand people);*
- *X1.5 - Agricultural land (thousand hectares / thousand people);*
- *X1.6 - Number of cattle per capita (thousand heads / thousand people);*
- *X1.7 - Production of livestock and poultry for slaughter per capita (thousand tons / thousand people);*
- *X2.1 - The cost of fixed assets per capita (million rubles / thousand people);*
- *X2.2 - Gross regional product per capita (rubles / person);*
- *X2.3 - The degree of renewal of fixed assets (% of the total number of fixed assets);*
- *X2.4 - Indices of production in the field of manufacturing (% of the previous year);*
- *X2.5 - Indices of industrial production in the field of mining (% of the previous year);*
- *X2.6 - Number of enterprises and organizations per capita (units / thousand people);*
- *X2.7 - Electricity produced per capita ((million kWh) / thousand people);*
- *X3.1 - Receipt of tax payments to the budgets of all levels per capita (million rubles / thousand people);*
- *X3.2 - Consolidated budget revenues per capita (million rubles / thousand people);*
- *X3.3 - Real cash income of the population (% of the previous year);*
- *X3.4 - Deposits (deposits) of legal entities in rubles and foreign currency attracted by credit institutions per capita (million rubles / thousand people);*
- *X3.5 - Deposits (deposits) of individuals in rubles and foreign currency attracted by credit institutions per capita (million rubles / thousand people);*
- *X3.6 - Investments in fixed capital per capita (rubles);*
- *X3.7 - Index of the physical volume of investments in fixed assets (% of the previous year);*
- *X4.1 - Density of public roads with hard surface (kilometres of roads / thousand square kilometers of territory);*

- X4.2 - *Density of public railway tracks (kilometres of roads / thousand square kilometers of territory);*
- X4.3 - *Total construction volume of buildings for residential and non-residential purposes per capita (thousand cubic meters / thousand people);*
- X4.4 - *The total area of residential premises per inhabitant on average (cubic meters / person);*
- X4.5 - *Number of enterprises and organizations in the sphere of transportation and storage per capita (units / thousand people);*
- X4.6 - *Number of enterprises and organizations in the sphere of credit and insurance services per capita (units / thousand people);*
- X4.7 - *Number of enterprises and organizations engaged in operations with real estate, renting and providing services per capita (units / thousand people);*
- X5.1 - *The volume of telecommunications services provided to the population, per capita (rubles);*
- X5.2 - *Number of enterprises and organizations in the field of information and communications per capita (units / thousand people);*
- X5.3 - *Number of active subscribers of fixed broadband access to the Internet per 100 people (units);*
- X5.4 - *Number of active subscribers of mobile broadband access to the Internet per 100 people (units);*
- X5.5 - *Number of personal computers per 100 employees with Internet access (units);*
- X5.6 - *Use of digital technologies in organizations (personal computers) (in % of the total number of organizations);*
- X5.7 - *Organizations that had a website (in % of the total number of organizations);*
- X6.1 - *Number of enterprises and organizations in the sphere of professional, scientific and technical activities per capita (units / thousand people);*
- X6.2 - *Number of organizations that carried out research and development, per capita (units / thousand people);*
- X6.3 - *Domestic spending on research and development per capita (million rubles / person);*

- X6.4 - *Advanced production technologies developed per capita (units / thousand people);*
- X6.5 - *The level of innovative activity of organizations (%);*
- X6.6 - *The share of organizations that carried out technological innovations in the total number of surveyed organizations (%);*
- X6.7 - *The volume of innovative goods, works, services per capita (million rubles / thousand people);*
- X7.1 - *Average annual number of employed in the total number of people (%);*
- X7.2 - *Number of personnel engaged in research and development (people / thousand people);*
- X7.3 - *The number of researchers with scientific degrees (persons / thousand people);*
- X7.4 - *The number of students enrolled in bachelor's, specialist's, and master's programs (persons per 10,000 population);*
- X7.5 - *Graduation of bachelors, specialists, masters per capita (thousand people / thousand people);*
- X7.6 - *Number of enterprises and organizations in the field of healthcare and social services per capita (units / thousand people);*
- X7.7 - *Number of enterprises and organizations in the field of education per capita (units / thousand people).*

The proposed algorithmization is the basis of a "simplified" model for diagnosing the resource potential of the region, which contains the main indicators for analysis. In the future, it is possible to expand the range of indicators to identify dependencies, taking into account their tempo standards, which will make it possible to form an "enlarged" model for diagnosing the resource potential of the region.

RESULTS AND DISCUSSION

Approbation of the proposed model for diagnosing the resource potential of the region was carried out in the region of the North-Western Federal District of the Russian Federation - Novgorod region. The data for the analysis were taken from the website of the Federal State Statistics Service of the Russian Federation. Table 1 presents the systematization of data on particular indicators of the region, as well as data on average indicators for the country, necessary for normalization. The data is taken for the period 2019-2021. The calculation for

2015 is also presented for comparison of those received for 2019-2021. data with retrospective values, which will make it possible to determine the dynamics of changes in the resource potential and identify trends towards its change.

Table 1 – Data for calculating private indicators and normative values in the resource potential diagnostic model

K1	K2	YEARS OF ANALYSIS OF THE REGION				YEARS OF COUNTRY ANALYSIS			
		2015	2019	2020	2021	2015	2019	2020	2021
Natural Subpotential (X1)	X1.1	114,40	99,60	95,20	91,60	102,10	104,30	101,30	99,60
	X1.2	3,64	3,90	4,05	4,38	0,54	0,54	0,55	0,55
	X1.3	63,80	64,30	64,30	64,30	46,40	46,40	46,40	46,40
	X1.4	0,14	0,16	0,17	0,16	0,37	0,35	0,32	0,33
	X1.5	1,35	1,39	1,40	1,41	1,52	1,51	1,52	1,52
	X1.6	0,06	0,05	0,05	0,05	0,13	0,12	0,12	0,12
	X1.7	0,18	0,21	0,21	0,20	0,06	0,07	0,08	0,08
Production Subpotential (X2)	X2.1	802,71	2234,60	2309,08	2485,38	1096,76	2383,19	2477,86	2749,74
	X2.2	37925,50	457123,30	471333,00	580495,00	449097,90	647708,10	640519,00	830792,70
	X2.3	51,60	49,90	47,10	44,30	51,20	48,70	47,90	47,00
	X2.4	99,00	105,60	103,30	105,70	99,90	103,60	101,30	107,40
	X2.5	259,20	52,40	91,40	133,40	101,30	103,40	93,50	104,20
	X2.6	26,59	21,19	19,87	19,53	34,42	26,08	24,06	22,98
	X2.7	2,65	2,81	3,42	3,52	7,28	7,64	7,45	7,97
Financial Subpotential (X3)	X3.1	15,71	54,11	53,85	82,00	31,58	154,94	143,76	196,01
	X3.2	18,07	71,11	82,74	106,90	20,47	92,49	101,94	120,55
	X3.3	96,50	97,20	96,70	103,10	96,40	101,90	98,60	103,80
	X3.4	6,15	12,09	14,81	21,44	48,83	125,96	137,29	166,69
	X3.5	75,49	116,43	125,34	136,26	115,98	208,04	226,23	239,96
	X3.6	112340,00	83268,00	80318,00	73538,00	94922,00	131701,00	138624,00	157306,00
	X3.7	99,20	76,30	92,50	85,90	89,90	102,10	99,50	107,70
Infrastructure Subpotential (X4)	X4.1	198	203	203	204	61	64	64	65
	X4.2	210	210	210	210	50	51	51	51
	X4.3	3,81	3,06	2,68	3,00	4,25	4,45	4,31	4,57
	X4.4	29,90	32,60	33,30	34,20	24,40	26,30	26,90	27,80
	X4.5	1,09	0,97	0,94	0,87	1,75	1,56	1,46	1,39
	X4.6	0,45	0,38	0,36	0,36	0,61	0,45	0,42	0,39
	X4.7	2,09	1,99	1,94	1,83	2,44	2,20	2,14	2,09
Information Subpotential (X5)	X5.1	6863,00	7207,00	7338,00	7577,00	8767,00	9547,00	9548,00	9814,00
	X5.2	0,53	0,49	0,47	0,41	0,94	0,80	0,76	0,72
	X5.3	15,60	18,20	18,80	18,40	18,30	22,20	23,00	23,70
	X5.4	66,90	85,50	90,00	100,20	68,10	96,40	99,60	107,50
	X5.5	29,00	35,00	39,00	42,00	31,00	36,00	40,00	45,00
	X5.6	93,90	94,80	87,90	86,50	92,30	93,50	80,70	81,80
	X5.7	43,70	54,50	49,40	49,40	42,60	51,90	44,30	46,20
Innovative Subpotential (X6)	X6.1	1,44	1,33	1,32	1,26	2,66	2,26	2,12	2,00
	X6.2	0,02760	0,03183	0,02872	0,02389	0,02849	0,02760	0,02856	0,02868
	X6.3	2,58	3,07	2,54	3,01	6,24	7,73	8,04	8,94
	X6.4	0,04	0,05	0,02	0,02	0,01	0,01	0,01	0,02
	X6.5	8,90	9,80	11,40	9,80	9,30	9,10	10,80	11,90
	X6.6	7,40	21,80	24,00	22,00	8,30	21,60	23,00	23,00
	X6.7	10,80	4,20	7,72	31,21	26,23	33,14	35,50	41,24
Human Subpotential (X7)	X7.1	48,49	46,58	43,72	45,14	49,42	48,43	47,58	48,65
	X7.2	2,659	2,576	2,253	1,901	5,042	4,651	4,648	4,553
	X7.3	0,12	0,07	0,06	0,06	0,76	0,68	0,68	0,67
	X7.4	0,0047	0,0028	0,0027	0,0026	0,0089	0,0062	0,0058	0,0056
	X7.5	203,00	135,00	143,00	141,00	325,00	277,00	277,00	278,00
	X7.6	0,49	0,49	0,48	0,49	0,56	0,56	0,57	0,57
	X7.7	1,13	0,91	0,90	0,91	0,96	0,88	0,87	0,86

Source: Prepared by the authors (2023)

Table 2 presents the necessary data for calculating the indicative values of subpotentials in the model for diagnosing the resource potential of the region. On the basis of the data obtained, it is permissible to normalize particular indicators of subpotentials. Normalization of indicators of the second level was carried out by the ratio of the values of indicators of private indicators for the analyzed region and the normative values of indicators for the country.

Table 2 – Data for calculating the indicative values of subpotentials in the resource potential diagnostic model

K1	K2	YEARS OF INDEX ANALYSIS			
		2015	2019	2020	2021
Natural Subpotential (X1)	X1.1	1,120	0,955	0,940	0,920
	X1.2	6,791	7,157	7,413	7,932
	X1.3	1,375	1,386	1,386	1,386
	X1.4	0,384	0,447	0,515	0,497
	X1.5	0,889	0,917	0,921	0,927
	X1.6	0,456	0,392	0,393	0,398
	X1.7	2,767	2,789	2,726	2,570
Production Subpotential (X2)	X2.1	0,732	0,938	0,932	0,904
	X2.2	0,084	0,706	0,736	0,699
	X2.3	1,008	1,025	0,983	0,943
	X2.4	0,991	1,019	1,020	0,984
	X2.5	2,559	0,507	0,978	1,280
	X2.6	0,773	0,813	0,826	0,850
	X2.7	0,364	0,368	0,459	0,441
Financial Subpotential (X3)	X3.1	0,497	0,349	0,375	0,418
	X3.2	0,883	0,769	0,812	0,887
	X3.3	1,001	0,954	0,981	0,993
	X3.4	0,126	0,096	0,108	0,129
	X3.5	0,651	0,560	0,554	0,568
	X3.6	1,183	0,632	0,579	0,467
	X3.7	1,103	0,747	0,930	0,798
Infrastructure Subpotential (X4)	X4.1	3,246	3,172	3,172	3,138
	X4.2	4,200	4,118	4,118	4,118
	X4.3	0,895	0,687	0,623	0,658
	X4.4	1,225	1,240	1,238	1,230
	X4.5	0,620	0,623	0,645	0,625
	X4.6	0,732	0,848	0,879	0,927
	X4.7	0,857	0,903	0,906	0,873
Information Subpotential (X5)	X5.1	0,783	0,755	0,769	0,772
	X5.2	0,566	0,608	0,622	0,573
	X5.3	0,852	0,820	0,817	0,776
	X5.4	0,982	0,887	0,904	0,932
	X5.5	0,935	0,972	0,975	0,933
	X5.6	1,017	1,014	1,089	1,057
	X5.7	1,026	1,050	1,115	1,069
Innovative Subpotential (X6)	X6.1	0,541	0,588	0,624	0,630
	X6.2	0,969	1,153	1,005	0,833
	X6.3	0,413	0,397	0,316	0,337
	X6.4	4,254	4,704	1,614	1,250
	X6.5	0,957	1,077	1,056	0,824
	X6.6	0,892	1,009	1,043	0,957
	X6.7	0,412	0,127	0,217	0,757
Human Subpotential (X7)	X7.1	0,981	0,962	0,919	0,928
	X7.2	0,527	0,554	0,485	0,418
	X7.3	0,154	0,098	0,095	0,084
	X7.4	0,530	0,460	0,465	0,458

X7.5	0,625	0,487	0,516	0,507
X7.6	0,873	0,862	0,855	0,861
X7.7	1,177	1,028	1,043	1,069

Source: Prepared by the authors (2023)

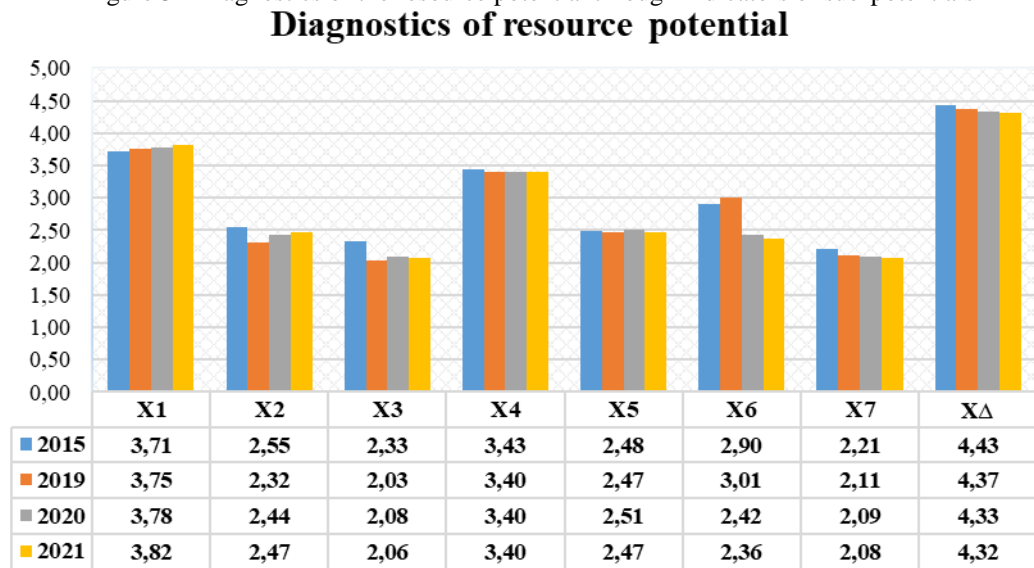
As a result of data normalization by particular indicators, it becomes possible to calculate the indicative values of subpotentials according to formula 2. Figures 2 and 3 show a set of indicative values for each subpotential, and the results of an integral assessment of the resource potential of the region according to formula 3.

Figure 2 - Diagnostics of the resource potential through indicators of sub-potentials

	2015	2019	2020	2021
X1	● 3,71	● 3,75	● 3,78	● 3,82
X2	● 2,55	● 2,32	● 2,44	● 2,47
X3	● 2,33	● 2,03	● 2,08	● 2,06
X4	● 3,43	● 3,40	● 3,40	● 3,40
X5	● 2,48	● 2,47	● 2,51	● 2,47
X6	● 2,90	● 3,01	● 2,42	● 2,36
X7	● 2,21	● 2,11	● 2,09	● 2,08
XΔ	● 4,43	● 4,37	● 4,33	● 4,32

Source: Prepared by the authors (2023)

Figure 3 - Diagnostics of the resource potential through indicators of sub-potentials



Source: Prepared by the authors (2023)

The resulting simplified model for diagnosing the resource potential through indicators of subpotentials made it possible to identify the strengths and weaknesses of the analyzed region in terms of basic resource blocks. The results obtained indicate that the analyzed region had the highest integral level of resource potential in 2015 (a retrospective indicator), and for the entire

period of 2019-2021. there was a decrease in the efficiency of the resource potential, which may indicate an inefficient use of regional resources. It can be noted that the use of natural sub-potential prevails over other sub-potentials, which is also an unfavorable way to create regional efficiency due to the exploitation of natural raw materials. In second place, the infrastructural sub-potential acquires high importance, which is a consequence of the high importance of infrastructure development in creating the resource potential of the regions in the context of socio-economic development. The least important for the analyzed region is the financial and human sub-potential, which can serve as information for conducting a detailed study on each basic resource block in the future.

In order to form mechanisms for the strategic management of resource potential, it is required to develop and integrate structural and logical algorithms into the state regulation system, which can be considered according to basic resource blocks or taking into account extended blocks with additional indicators. In the case of detailing the factors and introducing criteria-arguments of the third level, the authorities have the opportunity to develop models of the dependence of subpotentials on various factor conditions, as well as models of resource factor formation.

The work done corresponds to the views of researchers in the field of studying the issues of increasing economic security and organizing the balanced development of regions, taking into account their resource potential. Unfortunately, in the case of an orientation towards unbalanced development of regional systems with a low share of returns on human resources and high-tech business, as well as with a high dependence on the exploitation of natural resources and the industrial sector, conditions arise for the region to become a resource base in the trap of technological inferiority (Bukharova et al. al., 2017; Crow-Slivinskaya, 2018).

It should be taken into account that in the modern economy there is a transfer of production processes from the material sphere to the non-material one, which leads to the formation of resource opportunities that are new in their content and functionality, which determine the increase in efficiency from the innovative and intellectual resource base. In this context, conducting research to diagnose the resource potential corresponds to the directions in the field of studying the use of intellectual capital at the territorial level, which determine the formation of specific conditions for industrial production (Dmitriev et al., 2020). The author's approach corresponds to the information trends that occur in social relations and under institutional transformations form a number of new conditions for regulating the resource potential and creating efficiency. In particular, within the framework of diagnosing the resource

potential of the region, the use of big data in the industrial sphere is of interest, which, under the influence of the revolutionary transformation of modern civilization into the format of a post-industrial state and network thinking, allows us to evaluate digital opportunities to improve the returns on the use of resource potential. At the same time, potential threats from excessive convergence of digitalization into everyday reality and reorientation to intellectual production should be taken into account, since total informatization can lead to the prevalence of information and human sub-potential, leading to a reduction in the influence of other sub-potentials and an imbalance in the organization of the socio-economic development of regions (Agumbayeva et al., 2019; Vlasova et al., 2021).

The author's approach is consistent with the views of research in the field of increasing the importance of human capital and the use of information management models both at the regional level and at the corporate level. Improving the models for diagnosing the resource potential of a region can be built on the basis of using the digital dominant. The importance of high-tech technologies for business systems will increase, which raises questions about the organization of advanced technologies and the involvement of specialists with advanced competencies. To do this, in case of complication of resource potential diagnostic models, it is necessary to single out the role of structural and organizational actions for human resource management, as well as note the factor-forming conditions for improving the living standards of the population in the context of the socio-economic development of society and the state. The development of the proposed system of indicators should work out a qualitative analysis of the sectors of the national economy from the perspective of new categories of the resource base (Keshwan et al., 2022; Kiran et al., 2022; Rodionov et al., 2020).

The development of conceptual models for diagnosing the effectiveness of the formation and use of the resource potential of the region becomes a necessary condition for organizing socio-economic development. Socio-economic development in modern conditions covers a wide range of parameters. In order to select and apply methodological approaches to diagnostics, it is necessary to critically approach the conditions of socio-economic development, which are characterized by transformation and institutionalization. It is required not only to determine the sectoral structure of the economy, basic specialization and sectors, but also to identify the main conditions for socio-economic development, analyzing the consequences of social, institutional, economic and technological effects resulting from growth (Filimonenko et al., 2017; Kotler et al., 2019; Redmond & Nasir, 2020).

The study of the resource base is also related to the investment aspects that determine the speed of development of the regions. Depending on the model of resource-based development and investment opportunities, a set of actions is formed to optimize resource opportunities at different levels of management (Abdulahi et al., 2019; Dmitriev et al., 2022; Maiti et al., 2020). From the standpoint of a strategic approach, improving the diagnostics of the resource potential of the region can improve the quality of management of the resource capabilities of territories, take into account the heterogeneity and usefulness of parametric data. In the context of innovative development, it is required to stab coordinated technical and business decision-making processes focused on achieving the target functions laid down by the systems of regulation of economic systems (Acedo et al., 2006; Kosenko et al., 2019). It should be noted that the diagnostics of the resource potential of the region makes it possible to improve the mechanisms for ensuring regional innovation sustainability based on the selection and parametric study of socio-economic factors that take into account the conditions of inter-regional differentiation. The correct selection of factors will ensure a continuous resource management process based on uninterrupted monitoring of indicators and expanding their number through the introduction of indicators of the third and fourth levels of diagnostics (Kannimuthu et al., 2018; Zaytsev et al., 2021).

CONCLUSION

It should be noted that the author's approach to diagnosing the resource potential of the region expands scientific knowledge in the field of the formation and use of resource opportunities. Improving the assessment system within the proposed method of conducting diagnostics for specific regional tasks will allow for a competent regional policy with a focus on the strong and weak aspects of socio-economic development. The value of the work done lies in the possibility of ranking regions depending on resource conditions, which can help determine rent-forming factors and build an assessment of the efficiency of resource use. Thus, the development of models for diagnosing the effectiveness of the formation and use of resource potential makes it possible to display the relationship between indicators of resource potential development and income factors at the regional level, including rental income among the subjects of socio-economic development of regions.

Approbation of the developed model made it possible to assess the resource potential of the analyzed region. As part of the work, indicative estimates (indices) were obtained for the subpotentials of the resource potential, and its integral assessment was also determined. Thus,

in the case of other diagnostics of the resource potential of the regions, it becomes possible to rank the regions according to the factor conditions of socio-economic development, as well as lay the foundation for assessing the effectiveness of the use of the resource potential of the regions. In the future, it is possible to identify the relationship between indicators of the development of resource potential and factors in the formation of rental incomes among the subjects of socio-economic development of regions.

RECOMMENDATIONS

It is recommended to conduct additional research to study the factors affecting the effectiveness of the formation and use of resource potential in each region. Within the framework of “enlarged” models, it is necessary to adapt specific indicators to the conditions of regional functioning, which will make it possible to identify factorial circumstances influencing obtaining additional efficiency (rent-forming factors).

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