

On the strategic development of the mining regions of Russia

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Abstract. The regions' development specializing in the minerals extraction has certain features, primarily due to the region's economy mono-dependence on its structure diversifying possibility. In modern conditions, the study of the problem of an innovative approach to the strategic development of mining regions in Russia becomes obvious and logical. The article examines the issues of a conceptually new approach to the elaboration of the strategy for the mining region development as the main prerequisites for increasing its socio-economic condition efficiency. The use of marketing technologies in the region development strategy, as well as clustering based on the territorial production placement forms, taking into account the placement principles, the region subjects integration both inside and outside the national economic network, contributes to accelerating the solution of the tasks faced by all participants in the regional development process. A coal mining region SWOT-analysis was carried out. The main result of the work is the assessment of the synergetic effect value that manifests itself in the provision of resources combining the region's spheres and industries. The results of the study can be recommended for use in the strategy development for the "mono-regions" sustainable development.

1 Introduction

Modern economic problems caused by a number of changes taking place in the world and in Russia, both political and economic, require an urgent search for new solutions, innovative approaches in the development of regional strategic development strategies. At the same time, it is important to adopt measures in the regional strategy that are adequate to the market situation, acting as conditions for increasing its socio-economic condition's effectiveness.

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Today, the Russian Federation's regions should become promising territories for the competitive certain goods' (works, services) production, work places and favorable living conditions for the population. This approach, in our opinion, will contribute to ensuring the effective functioning and the most complex structural territories' long-term development.

A comprehensive innovative approach to the development of regional development strategies using marketing technologies implies its implementation mechanism's systematization. Such transformations' concentration centers are the regions where all components' set for such manipulations' implementation is concentrated.

The main task is to choose a strategy for the region's development, where it acts as a single economic system and as a complex territorial product. It is important that when developing such a development strategy, not only the region's specifics are taken into account, but also its resource, socio-economic and other features. We believe that the development and further implementation of such a strategy should be based on an innovative approach, the rational regional management policy's implementation, which should be aimed at introducing an innovative mechanism, taking into account the multidimensional nature and importance of its role in the region's economy development.

The work's scientific novelty lies in the need's theoretical and practical justification to diversify the industry structure with parrying in the development strategy through clustering and obtaining a synergistic effect when combining all the region's resources.

2 Results and Discussion

The need for an innovative approach to the development of a regional development strategy is dictated by the transformations taking place both inside and outside the territory. It should be emphasized that this problem is currently quite popular in the scientific literature, researchers pay attention to the study of regions' strategic development issues, while a number of these and other problems remain debatable. [1-4]

The study's relevance in connection with the unsolved problem of the region's efficiency weak growth or even stagnation is obvious and natural, especially for "monoregions". At the same time, it is necessary to take into account all the factors that affect the territory's development, including environmental ones, since today it is one of the most important, which provides a balance between the society's needs and natural resources.

When developing a development strategy, it is necessary to take into account the region's individuality, its features and specifics, as well as existing threats and opportunities. Currently, development strategies have been developed for all regions, the essence of which is aimed at ensuring the territory's socio-economic indicators growth, while not defining it as a complex product that can represent its individual specifics on the market.

In this regard, we emphasize that the solution of the region's sustainable development problem is possible only with an integrated approach in the economy's strategic management, as a result of which it becomes objectively necessary to develop region's promotion and development concept that would structurally reflect and take into account all economy's sectors and spheres. In addition, the concept should take into account the territories' differentiation, their difference not only in the resources' availability, specialization, but also based on the assessment of the regional economy's innovative development reserves.

The most important in this aspect is the conceptual approach for the regions where heavy industries were and still are the basic ones. Without detracting from these industries' role and their importance in the economy's development, we consider it necessary to pay attention to the diversification approach to the strategy development for the region's

economy development in terms of efficiency growth. Such regions, in our opinion, should include Russia's mining regions. In the Russian Federation, various types of coal are extracted: brown, anthracite, and stone. 95% of coal reserves in Russia are concentrated in the country's East, more than 60% are in the Siberian Federal District (SFD), so the country is one of the leading economies in the world for the fuel and energy sector's development.

More than half of the total volume is coal, in production terms, Russia is in fifth place, while it is important to note that a significant amount of coal (half of all-Russian production) is concentrated in the Kuznetsk basin – Kuzbass. This region occupies the largest share in the coal production's structure in coal basins, this is due to the fact that the total coal geological reserves in the region amount to 319 billion tons, of which 80% is coking coal (fig. 1).

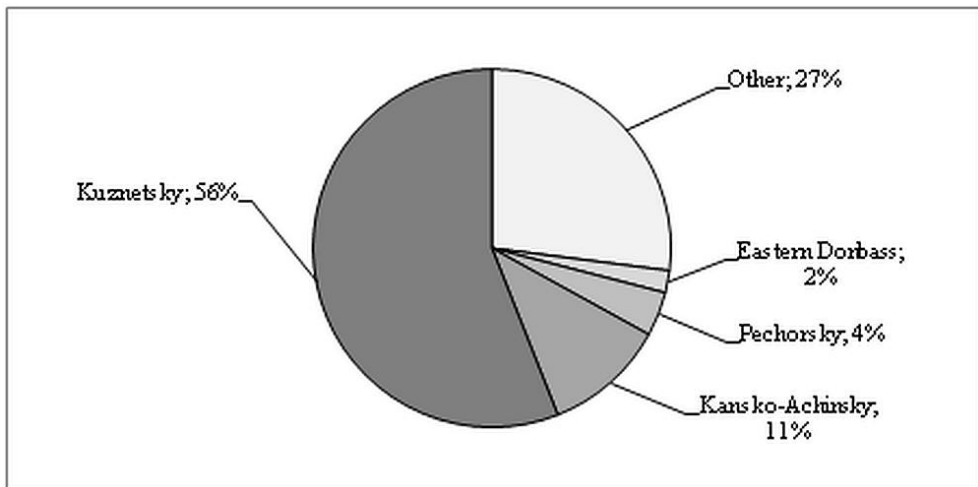


Fig. 1. Coal production's structure in the Russian Federation's coal basins, % of the total number

In the Siberian Federal District (SFD) in 2019, more than 85% of the coal's total amount was produced, while the remaining 15% was produced in the Far Eastern Federal District, in the North-Western Federal District, in the Southern Federal District, in the Ural Federal District, in the Volga Federal District, in the Central Federal District. In other words, more than half of them are located in Kuzbass. The leading positions among the coal companies of the SFD are occupied by SUEK, Kuzbassrazrezugol, SDS-Coal (fig. 2).

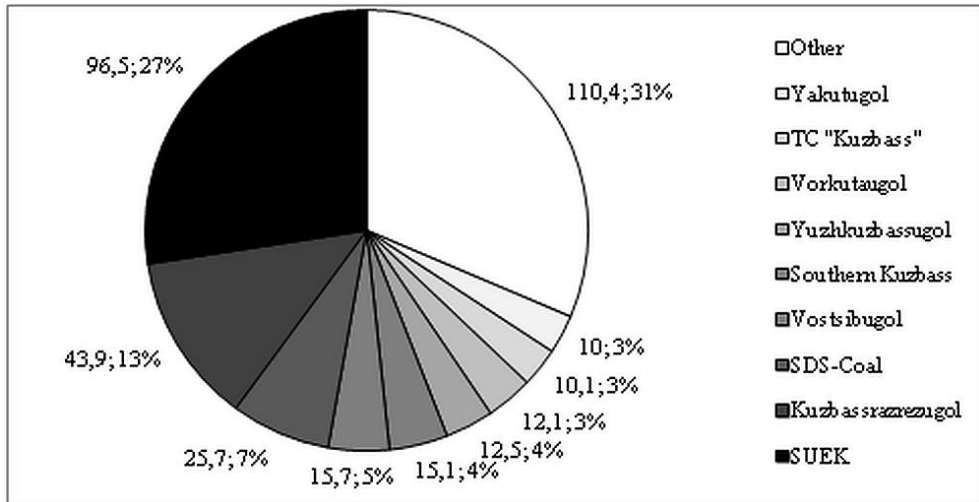


Fig 2. Structure of Russian companies' coal production in 2019, million tons

For example, in the company "SUEK" over the past 5 years has been steadily increasing the coal production's volume, SUEK enterprises specialize in the hard coals' production of grades D, DG, G, SS, as well as brown coals. In total, open-pit coal production accounts for 68%, and underground – 32%. The number of employees of the company exceeds 33 thousand people. The second largest coal company in the Russian Federation is OJSC "Kuzbassrazrezugol". The company specializes in open-pit coal mining and operates in 6 coal mines. All this testifies to the coal industry's development positive dynamics, which is currently a factor determining the Kemerovo Region's economy growth as a coal-mining region. However, despite the positive trend in the coal industry development in Russia as a whole, according to analysts' forecasts, the demand for coal and its consumption will gradually decrease, possibly due to an increase in natural gas consumption. This circumstance and, accordingly, the prospects for changes in the market situation not in favor of the coal mining industry may lead to risks and threats to the coal-mining regions' "mono-dependent" economy development. To determine the Kuzbass economic development strategy's innovative concept elements, we use the marketing tools SWOT-analysis in table 1.

Table 1. Kuzbass region's SWOT-analysis matrix

Strengths	Opportunities
<ul style="list-style-type: none"> - Improving the population and the economic life's level and quality development of the region - Unique recreational and resource potential - Developed fuel and energy complex - Availability of internal and external economic infrastructure - Acceleration of the construction complex's growth rate - Developed financial and credit institutions' system - The presence of a higher education's multisectoral system, the industry research organizations' specifics - High level of administrative participation, developed regulatory framework 	<ul style="list-style-type: none"> - Activation of innovation activities - Increase in the share of raw materials' deep processing - Activation of investment activities, including foreign investors - Interregional and international trade turnover structures - Small businesses' development, including through the growth of financial support - Tourism industry's development

- Social and political stability	
Weaknesses	Threats
<ul style="list-style-type: none"> - Single-industry structure of the economy - Depletion of traditionally developed natural resources - Distance from world markets - Disproportion in the municipalities' development level in the region - The "industrial" nature of the economy's sectoral structure - The presence of risky farming zone - Fixed assets' high depreciation in the field of material production and housing and communal services - Low level of small business development - Low development of knowledge-intensive production - Decline of leading industries, fixed assets and equipment's depreciation, enterprises' bankruptcy - Significant excess of mortality over birth rate - Growth of migration flows, labor resources' outflow from the region - Increasing the social burden on the regional budget, - Lack of a positive image component in the region's reputation 	<ul style="list-style-type: none"> - Reduction of world prices on the coal market - Reduced demand for coal on the world market - Increased investment risks - Increase in prices for natural monopolies' products - The fuel and raw materials orientation of the Russian economy's structure as a whole, the high-tech industries' weak development - Environmental degradation - Deterioration of the demographic situation - Non-renewable natural resources - Negative consequences of the region's current image

The analysis made it possible to identify both positive and negative risks of impact on the situation in the region. These include "opportunities" and "threats". Based on this analysis, we will build a correlation SWOT-analysis' matrix, which includes various strategy options implemented depending on the correlation of the factors "strength", "weakness", "opportunities", "threats". In the future, assessing possible threats that reduce the region's competitiveness, we will build a threat matrix based on the SWOT-analysis (table 2).

Effective use of the region's competitive advantages and its strengths should form the basis for the regional development strategy's formation in order to eliminate weaknesses and threats.

The continued region's economy dependence on the mining industry's results and the decline in global demand for coal may be too negative risk for the region, so it is important to provide a set of measures focused on creating conditions for economic diversification.

Effective region's unique natural resource potential integrated use, its scientific and industrial potential will increase the its economy's competitiveness as a whole.

Table 2. Matrix of Kuzbass development's negative factors

Possible negative effect	Probability of occurrence		
	High	Medium	Low
Weak	<ul style="list-style-type: none"> - Aggravation of imbalances in the region's territories economic development level - The economy is highly dependent on raw materials industries and the global situation on the raw materials 	<ul style="list-style-type: none"> - Decrease in world prices on the coal market - Increase in the region's consolidated budget expenditures 	<ul style="list-style-type: none"> - Reduction in investment activity

	market		
Average	<ul style="list-style-type: none"> - Monopolization of the coal industry, rising prices for products and services - The imbalance of labor resources in the economy 	<ul style="list-style-type: none"> - Reduction the regional commodity producers' competitiveness 	<ul style="list-style-type: none"> - Low level of incentives for entrepreneurship - Increased fixed assets' depreciation in production sectors
Strong	<ul style="list-style-type: none"> - Strengthening of waste processing's problems in the coal industry - Deterioration of the environmental situation. 	<ul style="list-style-type: none"> - Growth of migration activity in the direction of outflow, the natural decline of the region's population 	<ul style="list-style-type: none"> - Probability of infrastructure facilities' deterioration in the region most exposed to wear and tear

An analysis is presented of the matrix allowed us to identify the most negative factors affecting the region's socio-economic situation, which appear with high probability, among them: "the Increasing problems of coal industry's waste processing" and "environmental degradation" (table 2).

The factor of "monopolization of the coal industry, the rising production prices" reflects the average effect, however, has a high degree of probability and including the growing influence of "the imbalance of labor in the economy".

The factors "growth of migration activity in the direction of outflow, natural decline of the region's population" and "reduction of the regional commodity producers' competitiveness" have a high negative effect with an average probability of occurrence.

Therefore, when forming the region's socio-economic strategy, taking into account the importance and the high probability level of these negative factors' occurrence, it is necessary to develop a number of measures to counteract these threats.

Determining the innovative vector in the emerging strategy, we consider it necessary to take into account the fact that based on the Kemerovo region's development strategy objectives and goals, it should be attributed to a number of the Russian Federation's export-oriented regions, the basic sector in the region's economy structure remains the raw materials' – coal – extraction and primary processing.

At the same time, we consider it important to emphasize that the Kemerovo region's strategic development, as well as other coal-producing territories, will primarily depend on the socio-economic situation's dynamics in the country, on the situation on world markets and the region's economy basic branch products' competitiveness, that is, coal. This means that in the near future, the most likely region's inertial development is only due to the coal industry's competitiveness strengthening. Understanding the importance of maintaining the coal industry as a base for the region's economy, we believe that in the long term it becomes especially important to take into account the risks that may arise with one-sided production specialization, for example, the entire regional economy's dependence on the particular market segment's (coal) situation, primarily at the global level and others (table 2).

In addition, such a region's economy development restriction within the only heavy industries' framework will lead to a disproportionate structural shift in the future as a whole and an increasing economy's "mono-dependence".

Based on the above, it should be emphasized that the Kemerovo region is particularly "vulnerable" in this sense, which, as already noted, still has a branch structure with a pronounced "mono-dependence" on the coal mining industry.

We have already noted that about one-third of Western Siberia's main production assets are concentrated in the Kemerovo Region, and there is a heavy, mainly mining and metallurgical industries' high level concentration. As before, the contribution of Kuzbass' heavy industries dominates in the region's GRP structure, which already today makes us think about the region's "rehabilitation" with the help of a comprehensive solution to the problem of removing the primary severity of the problem. One of the limiting factors for the Kemerovo region's development is the low degree of diversification and "innovation" in the region's economy strategic development, which, as already noted, has a clear resource orientation (coal mining and a low degree of natural resources' processing). This was confirmed by the behavioral SWOT-analysis.

We believe that the diversification approach to the "monoregion's" development strategy is becoming particularly relevant in the context of the Russian economy's recession. Modern problems determine the need for the innovations' development and implementation that should contribute to the territory's integrated development. In this case, the service sector will undoubtedly be one of the conditions for sustainable regional development.

It should be emphasized that diversification in this case should be aimed not just at re-profiling the region's economy, but rather at rationalizing the economy's structure. In this sense, we consider it necessary to shift the gravity center from the region's traditional metallurgy, coal mining, and petrochemicals, without detracting from the importance of the latter, to new and promising areas, in particular, such as the service sector and business development. Moreover, such a factor as a "low level of incentive to entrepreneurship" has an average negative effect in the matrix (table 2).

This approach will allow us to solve the problems of promoting the territory as a complex product, including both basic and additional sectors of the economy.

The regions' differentiation in various social and production-economic aspects, the monostructure, as well as the low volatility of most of their development processes make it necessary to apply individual forms, methods and approaches to the development of a development strategy to identify, use and diversify each specific territory's competitive advantages. We believe that in order to solve the problem of promoting the territory, improving its investment climate and innovative approach in the region's development strategy, it is necessary to use the territorial marketing technologies, using the latter to develop an innovative diversified socio-economic strategy for the region's development. The application of this approach becomes natural for territories that have a "mono-dependent" economy, which for a long time developed narrowly within the framework of only heavy industries.

However, it should be noted that the Kemerovo region has not only coal reserves, which laid the foundation for its industrial development (coal, chemical, metallurgical industries), but also significant natural and recreational resources, which, despite some structural turn in the territory's economy, are still not fully used.

We consider it necessary and expedient to direct the Kemerovo region's economic development vector towards all available resources' integrated use, taking into account their specifics and the potential already created. In this case, the Kemerovo region's development strategy should be based on the marketing tools' use, taking into account the possible region's "targeting" and become the basis of the territory's promoting concept.

The importance of applying the marketing approach in the territory's integrated promotion concept formation, its sustainable development is dictated, first of all, by the competition growth, both on the national and international markets. In a number of works,

the authors pointed out the need to use marketing and its tools in the territories' innovative strategic development, taking into account a diversification policy's implementation. [5-7]

At the same time, it is especially important to take into account that it is the competitive positions' strengthening that is the main source of forming a competitive regional strategy in modern conditions. In this sense, we should also take into account the so-called cluster approach (marketing technologies), which, in our opinion, is still not sufficiently used in the region's strategic management. The concept of the regional economy's clusterization allows us to identify the region's competitive advantages' development factors, promotes the priority industries' development that determine the territorial entities' investment attractiveness [8-11].

The application of the cluster approach should be justified, first of all, by the fact that with such management, a regional innovation system is formed, which is based on public - private partnership, which increases the region's economy innovative nature and its investment attractiveness.

The cluster in our understanding will represent the territory (region) as a complex product, the management of which should be based on the territorial concentration and all available resources' combination, integrated subjects of the regional national economic network.

At the same time, it is important to take into account the regional economy's strengths and weaknesses identified during the SWOT-analysis, since elements of the Kuzbass' economic development strategy innovative concept should be taken into account in the cluster approach first of all.

The proposed territorial agglomeration will provide a synergistic effect that will determine its further competitiveness. We believe that the region's clustering will allow us to show a synergistic effect from the mutual combination of all the resources of the region, industries and the economy's sectors [12-14].

The synergy effect can be calculated by appealing to the non-linearity theory, according to which the impact's total effect is not equal to the element's individual impact's effect. Using the regressive analysis method, we will construct a model that takes into account not only the direct contribution to obtaining the impact effect, but also the elements' joint influence of the monoregion management processes' resource support.

As elements, you should use budget items (income and expenses), their combination, obtained as a result of the budget funds' versatile use.

In this case, we can present the following impact model of the budget process' elements of the region's strategic management in the form of:

$$Y_j = F(x_i),$$

where x_1, x_2, \dots, x_n – input variables;

Y_j – output variables in the strategic management system.

Using the regression method, we can represent the model as an equation:

$$Y = a_1x_i + a_2x_j + a_3x_{ij}$$

$x_i, x_j \dots i, j = 1 \dots 5$ (Kemerovo region's budget expenditure items for year 20nn-20nn);

Total expenses (X) = Government-wide expenditures (x_1) + National economy (x_2) + Housing and communal services (x_3) + Environmental protection (x_4) + Social expenses (x_5)

Y – variables –the synergistic effect indicator of the input parameters' combination effects (Kemerovo region's budget items revenues for year 20nn-20nn)

Total revenue (Y_1) = Corporate income tax (Y_2) + Personal income tax (Y_3) + Joint venture tax (Y_4) + Property tax (Y_5)

When recalculating the presented variables, we can get a synergistic effect in the form of a coefficients' set of models of the regional development strategy's elements, which it is advisable to present in tabular form.

To build models, we should use the recalculated values of these variables, on the basis of which we obtain the relative value of the synergy effect according to the formula:

$$Se = \frac{\alpha_3}{\alpha_1 \times \alpha_2}$$

Se – synergistic effect, rub;

$\alpha_1, \alpha_2, \alpha_3$ – recalculated values of output and output variables in the strategic management system/

3 Conclusion

Based on the coal-mining region's development strategy study, the authors came to the following conclusions:

- the logic of scientific research in the field of regional development strategy is carried out;
- the main problems in the economy of the "monoregion" – Kemerovo region are identified on the basis of SWOT-analysis;
- the application of the cluster approach in the strategy development for the coal-mining region's development is proposed;
- a method for calculating the cluster approach's synergistic effect in the development strategy in the region is proposed;
- the effectiveness of the marketing technologies' use in the coal-mining region's strategic management is justified.

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