

Sustainable Development of Industrial Regions: Economic Aspect (the Case of the Kemerovo Region)

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Abstract: Sustainable development of the Russian Federation, including its individual territorial entities, is a strategic area of socio-economic development. The Kemerovo Region is an old-industry region with a traditional techno-economic paradigm, where degradation of natural landscapes, environmental pollution, and morbidity of the population act as “sore” points of sustainable development and generate an outflow of a significant part of the population. Structural analysis of the gross regional product of the Kemerovo region - Kuzbass revealed imbalances in favor of mining during the post-Soviet period. It is also a regrettable fact that the share of investments aimed at environmental protection and rational use of natural resources in the total investments is extremely small, which has a disturbing effect in the further implementation of the concept of sustainable development. We believe that it is the quality of structural changes that determines the sustainability of economic development and the stabilization of its growth in the long term. The presented indicators characterizing the sectoral makeup of the economy of the Kemerovo region - Kuzbass demonstrate the transition of the economy from the late industrial type with a predominance in its structure of industries producing goods with high added value to the early industrial type, specializing in the extraction of natural resources. Increasing production potential is limited by the growth of the extractive industries, which poses a threat to environmental safety and, in general, limits the potential for sustainable development.

1 INTRODUCTION

The concept of sustainable development appeared almost 30 years ago and has received worldwide recognition in connection with the need for a coordinated and joint solution of global problems. The problem for humanity is that economic growth destroys and depletes the natural environment, leads to environmental degradation, and this, in turn, undermines the very process of economic growth. Currently, humanity is facing the risk of irreversible destruction of the environment, which can lead to the destruction of the mainstays of civilization and the extinction of living nature (Safonov et al, 2013). It concerns not particular crises - energy, economic, social, etc., but the global world crisis of the "man-environment" relationship.

Sustainable development involves finding a compromise between the exploitation of the natural

environment and the ability to meet the needs of current and future generations. The very definition of sustainable development raises questions: What environmental impact can be considered acceptable? How to quantify the limit of anthropogenic impact on the environment? We believe that the rate of destruction of the environment by humans exceeds the capabilities of modern science in understanding them and does not allow fully assessing what is happening (Barkhatov and Benz, 2020). In this connection, the way out of the crisis is seen, first of all, in a change in techno-economic paradigm by modernizing primary industries, the formation and development of processing industries that create a product with high added value, as well as in the development of the service sector.

Environmental, social and economic factors have become drivers of growth on the path to sustainable development in accordance with the Decree of the President of the Russian Federation of 04.02.1994

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No. 236 "On the Concept of the Russian Federation's Transition to Sustainable Development". Currently, within the framework of the concept of sustainable development, 12 national projects are being implemented, including "Environment", "Demography", "Digital Economy of the Russian Federation". It should be noted that the institutional environment in the Russian Federation is being formed, and the global trend of further development has been identified (Barkhatov and Benz, 2020). It is possible that the strengthening and reforming of the institutional framework for sustainable development should be more stringent, since for almost 30 years the current situation has not been resolved, but is somewhat aggravated.

2 METHODS

The study is based on the use of a dialectical system method, which allows describing both the current state of an object and the process of its development. Consideration of the current state of an object involves the study of structural and functional elements that internally interact with each other. Whereas the characteristic of the development process consists in describing the level of functioning and changes in the object of research (Mingaleva and Oborin, 2017).

Also, we consider it important to apply a systems approach to the analysis of sustainable development of the region. It involves taking into account the historically established specialization of the region, in connection with which, when planning the prospects

for further sustainable development of the region, it is necessary to identify precisely the problems of modernization and structural transformation of its economy. In the process of analysis, it is necessary to identify the main driving forces (resources) for further socio-economic development and conditions that have a disturbing effect (Mingaleva and Oborin, 2017).

We consider it expedient to apply the anthropocentric approach, which prevails in the works of most researchers of sustainable development of territories. The use of this approach is explained by several circumstances:

- improving the quality of life is the goal of the strategic development of the state, as well as the goal of sustainable development;
- human activity is aimed at meeting her/his needs, which is also closely related to sustainable development issues.

3 RESULTS AND DISCUSSION

The object of the research is the concept of sustainable development of an industrial region. The subject of the research is economic limitations on the implementation of the concept of sustainable development.

The Kemerovo Region is a typical industrial region with a conventional sectoral makeup that requires serious restructuring and modernization of the economy to implement the principles of sustainable development, which is currently happening at a fairly low rate (Table 1).

Table 1: Pattern of investments in fixed assets, investment accumulation rate and depreciation of fixed assets.

Indicator	2015	2016	2017	2018	2019
Fixed capital investments, million rubles	170470	165666	215237	248665	297946
including by types of fixed assets:					
non-residential buildings, structures	-	-	63122	73217	101513
share of buildings and structures in the fixed assets, %	-	-	29.3	29.4	34.1
machinery, equipment, vehicles	-	-	123453	143136	160879
share of machinery, equipment, vehicles in the fixed assets, %	-	-	57.4	57.6	54.0
intellectual property objects	-	-	524.6	1733	1973
share of intellectual property objects in the fixed assets, %	-	-	0.2	0.7	0.6
including by type of economic activity:					
mining	-	-	80577	94600	123134
share of share of mining in the total volume, %	-	-	53.9	51.7	55.1
processing industries	-	-	14570	19148	25377
share of processing industries in the total volume, %	-	-	9.8	10.5	11.3
Including investments in fixed assets aimed at environmental protection and rational use of natural resources, million rubles	2058	1669	3150	2954	5110
Investment accumulation rate, %	20.2	18.3	19.6	19.6	26.8
Depreciation of fixed assets (in mining), %	-	-	53.4	52.2	50.7

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The economy of the Kemerovo region, as before, is natural capital intensive and the transition to a new qualitative level of economic growth is becoming very problematic. This type of economic development follows an extensive path and in conditions of increasing technological potential of developed and developing countries, it is determined by an extremely unstable macroeconomic trend.

In modern conditions of the development of convergent technologies, the sixth wave of innovations, the sustainability of economic growth and the development of old-industry regions is determined by the direction of shifts occurring in the structure of the economy, and, first of all, in the structure of reproduction. Thus, structural shifts in investment in fixed assets by type of economic activity (Table 1) reveal clear distortions in favor of the extraction of minerals throughout the entire post-Soviet period. It is also a regrettable fact that the share of investments aimed at environmental protection and rational use of natural resources in the investments pattern is extremely small and amounts to no more than 2%, and investments in intellectual property objects - less than 1%.

Thus, it is the quality of structural changes that determines the sustainability of economic development and the stabilization of its growth in the long term (Uskova, 2020). The presented indicators characterizing the sectoral makeup of the economy of the Kemerovo region - Kuzbass demonstrate the transition of the economy from the late industrial type with a predominance in its structure of industries producing goods with high added value to the early industrial type, specializing in the extraction of natural resources. The increase in the production potential of Kuzbass is limited by the growth of the mining sector, which poses a threat to environmental safety and, in general, hinders the potential for sustainable development.

On the other hand, the strengthening of the industrial orientation of economic growth does not have a negative environmental effect if high-tech industries take the lion's share in the structure of industrial production (Stupen and Taratula, 2019). But in the Kemerovo region, the situation is somewhat different.

The rate of accumulation of investments in fixed assets in GRP in 2015-2018 is almost stable and amounts to about 20%. In 2019, the accumulation rate was 26%. Intensive growth and a high rate of gross

fixed capital formation provide only at first high rates of economic growth and are mandatory, but insufficient conditions for the implementation of the concept of sustainable development. The value of this indicator for the Kemerovo region is low. Undoubtedly, when a certain level of economic development is reached, a relatively lower rate of capital investments will be required to ensure a given growth as a result of more efficient use of investments.

The unsatisfactory dynamics of investments in fixed assets is currently one of the main conditions that have a disturbing effect on the transition of the economy to the trajectory of sustainable development. At the same time, the possibilities of production growth due to the better use of fixed assets are extremely limited due to the high level of their depreciation (over 50%).

According to the chosen logic of the study, let us turn to the analysis of the ongoing structural changes in the regional economy (Table 2).

Structural changes in the economy are the drivers of economic growth. Of course, over time, structural changes are inevitable due to the differentiated influence of technological innovations in a number of industries, different elasticities of demand for goods, works and services.

Structural changes in output by sectors of the Kemerovo region's economy in dynamics over 15 years show a decrease in the share of agriculture and processing in GRP, an increase during the analyzed period and a slight decrease by the end of 2019 in the share of mining.

The share of agriculture in the GRP is declining despite the fact that agricultural products can be an export commodity. In the context of forced import substitution due to the imposition of sanctions, consumer preferences shifted towards the support of the domestic producer.

We believe that one of the priority measures for a coal-mining region should be the diversification of exports (as an option, agricultural products, in particular, raw materials or certain types of their primary processing) in order to reduce the dependence on fluctuations in hydrocarbon prices.

An interesting fact is that, despite the volatility of energy prices, the transition of a number of countries to low-carbon development strategies, reduced demand for coal, the use of renewable energy sources, the share of production in the GRP structure of the Kemerovo region is stable. In our opinion, an alarming trend is the reduction in the share of processing industries in the GRP of the Kemerovo

Region, despite the fact that processing industries are recognized as a powerful driver of economic growth.

At the same time, the focus on the development of processing industries can also limit the possibilities of transition to sustainable development.

Structural change must be multidimensional. We believe that the service sector, including high-tech, also has significant growth potential. However, in the Kemerovo region - Kuzbass, the share of activity in the field of information is stable, being at a rather low level during 2016-2019, and accordingly, there are also opportunities for economic growth.

A positive trend in the implementation of the sustainable development strategy is the increase in the share of education and healthcare in the GRP for the period under study. We believe that investments in human capital are fundamental factors for sustainable growth (Lazareva et al, 2020; Dematteis, 2009; Sheveleva et al, 2019).

As part of the implementation of the concept of sustainable development, it is necessary to take into account not only the needs of the economy, but also the needs of a person (Ostanina, 2020).

Table 2: The structure of the Kemerovo region economy.

Indicator	2005	2010	2015	2016	2017	2018	2019
Share of agriculture and forestry in GRP,%	3.3	3.4	4	3.0	2.2	1.9	22
Share of mining in GRP,%	27.1	31.4	25.8	29.7	36.5	35.9	26.3
Share of processing industries in GRP,%	16.9	18.9	17.9	15.4	13.9	14.6	14.0
Share of construction in GRP,%	5.3	4.6	3.9	3.8	3.3	3.6	5.4
Share of transport and communications in GRP,%	9.4	8.9	9.2	-	-	-	-
Share of transportation and storage in GRP,%	-	-	-	6.0	6.1	6.2	7.1
Share of activities in the field of information and communication in GRP,%	-	-	-	1.3	1.2	1.1	1.4
Share of education in GRP,%	3.0	2.7	3.6	3.3	3.0	3.0	3.6
Share of healthcare in GRP,%	3.8	4.1	5.0	4.6	4.1	4.4	5.4
Share of wholesale and retail trade in GRP,%	13.8	9.4	9.9	9.3	8.7	8.6	10.0
Share of financial services in GRP,%	0.4	0.4	0.2	0.3	0.2	0.2	0.2

The interrelation of economic and social components of sustainable development is extremely close, therefore, further limitations of economic growth can be such social problems as an aging population, a decrease in the number of able-bodied citizens, an increase in morbidity, disability, mortality, a decrease in the birth rate, and migration outflow.

These issues cannot be ignored when implementing the concept of sustainable development, since taking these factors into account can provide an increase in labor productivity, an increase in GRP, and a reduction in financial costs to support the dependent population or persons with disabilities.

Also, a promising direction, in our opinion, is the formation and development of closed-cycle production (Azzahidi et al, 2020; Zonova et al, 2016), which will reduce the burden on the environment through the processing of industrial and household waste. And this, in turn, involves sorting waste, organizing its reception and transportation to the place of direct processing, i.e. development of processing industries.

Thus, it is obvious that the currently implemented regional economic policy does not contain a vector

for sustainable economic development, since it is not aimed at stimulating positive structural changes (Zonova et al, 2016; Bereznev et al, 2017; Sheveleva et al, 2020). We consider structural changes positive if they result in an increase in entrepreneurial activity (especially in the sector of high-tech and information-intensive services), the emergence of new market entities, the development of reproductive relations (the emergence of new forms of investment in high-tech business, modification of connections between entities, the emergence of new sources of capital accumulation, etc.).

4 CONCLUSIONS

The industrial region continues to increase its production potential, structural changes in investment demonstrate the strengthening of extractive industries. Depressing is the fact that there are almost no significant changes in the investment pattern, which testifies to the consolidation of the raw material orientation of the economy.

In industrial regions, the issues of quality of life are most urgent. Degradation of natural landscapes, environmental pollution, morbidity of the population act as "sore points" for further socio-economic

development and generate an outflow of the able-bodied population, in particular the component that has a high innovative potential (scientists, researchers, engineers).

In order to achieve the goals of sustainable development of the Kemerovo Region and typologically homogeneous regions with a predominant mining-type economic activity we consider it necessary to give the regional economic policy a vector aimed at stimulating positive structural changes that ensure the formation of a highly competitive innovation environment.

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