

# Reproductive Approach to the Implementation of the Concept of Regional Sustainable Development

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**Abstract.** The article examines the problems of sustainable development of the regional economy from the position of the reproductive approach. The expediency of using the reproductive approach as a methodological tool for studying the sustainability and efficiency of economic systems, both at the level of the region and the country as a whole, is noted. Sustainable development of the economic system involves the consideration of reproduction processes from the social, economic and environmental points of view, which makes it possible to assess the sustainability of the processes of production, distribution, exchange and consumption. A system of indicators for assessing the economic, social and environmental sustainability of the development of the region is proposed, based on the sustainability of reproduction processes.

## 1 Introduction

The problem of sustainable socio-economic development of regions and the country as a whole continues to remain relevant for decades. This is due to the uneven functioning of economic systems and environmental management at the regional and national levels.

The concept of sustainable development implies an assessment of the sustainability of the development of the economic system from three points of view of social, economic, and environmental. The social side of sustainable development implies the active participation of a person in solving key issues related to the development of socio-economic systems at all levels of government. At the forefront is the well-being of a person as a subject of development, participating in the processes that form the sphere of his life, making decisions and controlling their implementation [1, 2].

From the economic point of view, sustainable development presupposes the rational use of resources aimed at meeting the needs of present and future generations without harming the environment.

The ecological component of sustainable development is aimed at ensuring the viability of ecosystems and the stability of the biosphere. Sustainability of development in this case

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is associated with the ability of systems to dynamically adapt and self-restore, which is facilitated by an orientation towards material, energy and nature-saving technologies.

For the sustainable development of Russian regions and the country as a whole, in our opinion, the reproduction approach should be used as a methodological research tool, since economic growth, proportionality and stability of the socio-economic system of the country and its regions are achieved through reproduction processes [3].

## **2 Materials and Methods**

The methodological approach to the study of the stability of regional and national economic systems is based on the reproductive approach, which allows representing expanded reproduction at the meso- and macro levels as a system and assessing the stability of the processes of production, distribution, exchange and consumption.

The mechanism of functioning of the country's socio-economic system as dynamic processes undergoes significant changes. The direction of these changes largely depends on economic relations and leads to disruption of reproductive processes at the macro-, meso- and micro-levels.

Achieving the stability and efficiency of the socio-economic system of the region is possible only in conditions of proportionality of reproduction processes. Of great importance in achieving the goals of socio-economic development is the implementation of national projects of the state, which reflect the main directions of reproduction processes at all levels. The reproduction approach takes into account all stages of the reproduction process (production, distribution, exchange, consumption), allows giving a systematic assessment of the economic, social, environmental sustainability, and efficiency of the functioning of the region's system.

The reproduction approach in economics was first applied by F. Quesnay, the founder of the school of physiocrats, who proposed a scheme of simple reproduction in the form of an "Economic Table" representing the process of simple reproduction in the field of agriculture as a constantly repeating process of production [4]. The theory of reproduction was further developed in the works of K. Marx, who distinguished two divisions – the output of means of production and consumer goods, noting the importance of maintaining the proportionality of these divisions. Marx put forward the idea of a distinction between simple and extended reproduction.

The model of input-output balance of W. Leontief is also based on the reproductive approach [6]. The model describes the structure of the economy, the use of resources, affecting the stages of the process of production, distribution, exchange and consumption, and also characterizes the reproduction process in the national economy in terms of material and cost composition. This model represents the structure of the country's economic system.

Russian scientists L. Kantorovich [7], V. Nemchinov [8], V. Novozhilov [9] and other researchers, whose object of study was the reproduction process within the framework of the socialist economy, raised the problem of optimal planning of expanded reproduction using methods of economic and mathematical modeling. K. Khubiev [10] notes in his writings that in the Russian economy, the raw materials sectors of the economy developed to a greater extent, but at the same time, the creation of new industries was not stimulated. The reproduction approach, according to the scientist, should be a priority in the implementation of the concept of sustainable development, in the search for factors of inhibition and catalysis. This approach is more effective in the context of restructuring. In the works of V. Maevsky, interest in studying the influence of the reproduction process on economic growth is actualized, the idea of a switching mode of reproduction is proposed.

### 3 Results and Discussion

Based on the need to overcome the complex of internal environmental and economic problems and external threats that hinder the country's economic growth and sustainable development of the region, it is necessary to strive to achieve national development goals, establishing the proportions of the reproduction process, such as the ratio of capital formation and consumption, the growth rate of wages and labor productivity. The inhibiting factors include technological backwardness, a high level of fixed assets depreciation, and a lack of financial resources. In addition, the rapid introduction of new technologies is often hampered by institutional conditions, hindering the flexibility of establishing socio-economic relations between participants in the reproduction process in the region.

In the regional economy, the same problems can be noted that are characteristic of the country as a whole. This is an irrational use of resources, a high level of differentiation of incomes of the population, a lack of investment in fixed assets of enterprises, a low level of labor productivity, an ineffective structure of exports, and others.

National projects of Russia are aimed at sustainable and effective development of reproduction processes and stimulate sustainable development of the region. The projects stated the following development goals:

- creation of a highly productive and export-oriented sector of the basic industries based on modern technologies and highly qualified personnel;
- acceleration of the technological development of the country and regions;
- increase in the number of organizations carrying out technological innovations up to 50% of their total number;
- growth in real incomes of the population;
- sustainable natural population growth, increased life expectancy, which will ensure Russia's entry into the five largest economies in the world and achieve economic growth rates higher than the world.

Achievement of these goals is impossible without sustainable development of regional economic systems. The system of indicators proposed in Table 1 makes it possible to assess the sustainability of the development of the region from the standpoint of the reproductive approach.

**Table 1.** The system of indicators for assessing the economic, social and environmental sustainability of the development of the region.

Section	Indicators
Indicators of economic sustainability	
Economy	GRP growth rate, % Place of the region according to the human development index in the country Labor productivity, GRP per employee, RUB billion Share of investments in GRP, % Fixed assets renewal ratio, % Index of change in capital productivity, % Gross domestic savings,% of GRP
Science	Internal expenditures on research and development by sector of activity, RUB million The number of organizations that carried out research and development, units Federal budget expenditures on civil science, RUB million
Innovations	Share of organizations implementing technological innovations in the region, % The level of innovative activity in the region, %
Social resilience indicators	

Education	Expenditures on education, % of GRP Number of students studying at the expense of budgetary allocations, thousand people
Standards of living	Real disposable income of the population of the region, % Population with incomes below the subsistence level, % of the total population of the region Unemployment rate in the region, %
Demography	Population in the region, million people Life expectancy at birth, years
Health care	Morbidity of the population (all diseases), thousand people Morbidity in children from 0 to 14 years old (all diseases), thousand people
Environmental sustainability indicators	
Ecology	The volume of expenditures for environmental protection, % of GRP

National projects and programs are aimed at solving the reproductive problems of the Russian economy and at the sustainability and efficiency of the development of regions and the country as a whole. The indicators of the level of sustainable development of the socio-economic system of the region include the gross regional product (GRP), labor productivity in the region, capital productivity, the index of industrial production in the region, the share of investments in GRP, the rate of renewal of fixed assets and gross domestic savings in the region.

Indicators of internal expenditures on research and development by sector of activity, the number of organizations that carried out research and development in the region, expenditures on civil science from the federal budget, expenditures on education, in % of GRP, the number of students studying at the state expense can be used in determining the scientific and technological development.

Innovative activity can be measured by indicators of the proportion of organizations that carry out technological innovations, the coefficient of inventive activity, and the level of innovative activity [11].

Important indicators of the quality of life of the population of the region are the real disposable income of the population, the size of the population with incomes below the subsistence level, the unemployment rate, natural population growth, life expectancy at birth, morbidity of the population (all diseases), morbidity of children from 0 to 14 years old (all diseases), the volume of expenditures on environmental protection, in % to GRP.

All of these indicators provide an assessment of the sustainability and efficiency of reproduction processes in the region and its sustainable social, economic and environmental development.

## 4 Conclusion

The system of indicators for assessing the economic, social and environmental sustainability of the development of the region can be based on the coefficient of deviation of the actual values in a specific period from the indicators obtained for previous period.

The proposed system of indicators can be used to assess the sustainability of reproduction processes in separate blocks: economic, social and environmental sustainability, as well as to compare the processes occurring in different periods of time.

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