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Journal of Environmental Management and Tourism is an interdisciplinary research journal, aimed to publish articles and original research papers that should contribute to the development of both experimental and theoretical nature in the field of Environmental Management and Tourism Sciences.

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Environmental and Socio-Economic Development Strategy of Depressed Regions. Case of Kazakhstan

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Abstract:

Strategic priorities for the development of regions are one of the elements of the economic policy of Kazakhstan. The appearance of depressed regions is often associated with an incorrect choice of a system of economic development priorities. In this research work, the authors present the factors of depressiveness of the regions due to the decrease in the competitiveness of the main industrial products, the reduction in the level of investment demand, the depletion of the mineral resource base or the implementation of structural changes in the economy, etc. A stable socio-economic economy of the region requires increasing the efficiency of resource use, encouraging the development of innovations, introducing regional mechanisms and tools for the sustainable development of territorial subjects. It is necessary to develop conceptual approaches to increase the interest of the subjects of the regions in the implementation of environmentally significant measures of the system, based on the stimulation of innovation. Measures are needed to solve the key problems of choosing the most effective incentive measures for a particular region, in conjunction with its features of socio-economic development, natural and climatic conditions, the state of the environment, etc.

Keywords: depressed regions; environmental; competitiveness; sustainable; socio-economic.

JEL Classification: Q56; Q57; R11.

Introduction

Under the conditions of a number of transformations of the domestic economy, for quite a long time there is a set of regional economic systems of a backward type, which creates threats of disintegration of the national economy of the country, loss of competitiveness and the emergence of acute socio-economic problems of the regions. The

dependency attitude of local executive bodies is growing, the diversion of republican budget resources to solving the problems of regions of a depressed type.

The uneven socio-economic development of the regions of Kazakhstan was determined by the specifics of modern processes and transformations. The depression of the regions was one of the consequences of the uneven large-scale transformations of the domestic economy and the modernization of the socio-economic systems of the territories. In this regard, the definition of strategic priorities for the development of regions is an important condition for ensuring the sustainable development of the entire state.

The importance and acuteness of a number of environmental and economic problems of the territories determine the special status of the regime of environmental protection and greening of the regions.

The search for an environmentally oriented model of socio-economic development of the regions involves a close partnership of key actors - the state, business and enterprises. In this regard, in the context of limited ecosystem factors, the focus of technological patterns on energy-saving production, innovativeness of economic development, require a theoretical and applied justification for the introduction of environmentally oriented technologies that determine the development of the economic space of depressed regions and a new qualitative state of the Kazakhstani economy.

1. Research Background

The current situation of depressed regions (DR) is the result of many years of lag in socio-economic processes, which in many important areas has only intensified during the pandemic and crises. Deep differentiation of macroeconomic parameters of the regions of modern Kazakhstan has become one of the main characteristics of the economy, which inevitably led to an increase in the number of problematic depressed areas.

The need to improve the regional policy of the state in the context of the post-pandemic is the main task of reducing the level of negative consequences of the depressiveness of the regions. These aspects contribute to the actualization of the issues of development and implementation of long-term socio-economic programs of the regions in order to improve the living standards of the population through the effective use of their resource potential.

To develop measures for the strategic regulation of regional socio-economic processes, it is necessary to identify their problematic situations. The insufficiency of theoretical and methodological developments in studies of the regional dynamics of socio-economic processes hinder the solution of the problems of improving the strategies for the development of regions. These issues of theory and methodology of formation of strategies for the development of depressed regions attract the views of many modern scientists.

The concept of the competitiveness of a depressed region, which describes the development of the region in the long term and includes a system of ideas about the goals and priorities of sustainable regional development as a set of economic, social, and environmental directions, should become the basis for developing a strategy for the development of depressed regions. The goal is to achieve sustainable economic growth while reducing the level of social and environmental problems, that is, bringing the region onto a sustainable development path, in which the basic sectors of the economy are developed on the basis of knowledge-intensive environmentally friendly industries.

The study of the scientific problem of functional deformations and tools for the development of regional economic systems of the depressive type of modern Kazakhstan is due to the growth of the scale of this phenomenon, the threat of disintegration of the entire economy of the country, loss of competitiveness and the emergence of socio-economic conflicts between regions. It leads to an increase in allocated budget funds to solve the problems of regional economic systems of a depressive type, accelerate the outflow of capital, the destruction of territorial infrastructure and the loss of skilled labor. In this regard, the relevance of the identified problems, their practical and theoretical significance predetermined the need to develop tools for the development of depressive-type regional economic systems, focused on overcoming these deformations, ensuring the competitiveness and investment attractiveness of the regions.

Various aspects of the problem of revealing functional deformations and developing tools for the development of depressive-type regional economic systems have been studied in many domestic and foreign sources. The research methodology is based on modern scientific approaches to the study of the regional economy, the mechanisms of systemic transformation of regional economic systems of the depressive type. They examine the economics of urbanization, explore the economic basis of urban areas, the urban real estate market and urban land use patterns, as well as the factors influencing expansion patterns and choice of place to live, and the definition of urban land use patterns (Goodall 1972).

The need to create a multi-level complex system of social and economic development planning of the territory includes a system of organizational, economic, financial and legal measures that determine the activities of government bodies aimed at diversifying and improving the efficiency of the local economy, the level and quality of life of residents, as well as the rational use and reproduction of natural resources resource potential of territories (Papelo *et al.* 2022).

Improving the management of the development of depressed regions should be aimed at developing state support tools that stimulate the development of a complex of enterprises in the regions. Along with the implementation of national projects for the development of small businesses, increasing labor productivity, supporting innovations and development institutions for depressed regions, projects should be developed to develop large businesses and integrate them with medium and small businesses based on cooperation maps. A new approach to the development of depressed regions based on the creation of regional profit centers will contribute to the formation of the stability of the complex of enterprises in depressed regions, which will allow the rational distribution of funds from national projects (Kuznetsov *et al.* 2019, Lebedeva *et al.* 2019)

Priority directions for the development of environmentally oriented innovative projects based on the development and improvement of the management system and production and technological processes, minimizing the risks of critical environmental problems in the face of climate change and degradation of natural resources are one of the important problems of the territories.

The development of modern sustainable megacities should include strategic measures to address the issues of urban improvement, the preservation of cultural and historical heritage and the formation of sustainable ecosystem planning (Klychova *et al.* 2018, Gorb *et al.* 2017, Ospangaliyev 2022).

In the face of population growth, epidemiological danger, climate risks, lack of clear prospects for safe energy and increasing environmental pollution, food production systems must develop in a sustainable way, while ensuring the quantitative and qualitative demand for food, which is steadily growing. To identify the main determinants of the participation of agricultural enterprises in regional economic systems. The way to enhance the synergistic effect arising from strategic cooperation in food chains is, first of all, to increase the participation of farms in regional economic systems (Nasalski 2021).

The importance of analyzing the green economy has long been recognized by the international scientific community. However, there is a strong demand for a comprehensive model that would serve as a scoreboard to assess a country's progress towards a green path and identify regional changes through the use of the EEPSE Green Economy Index, which combines educational, economic, political, social and environmental indicators (Rybalkin *et al.* 2021).

Key features and factors of inhibition, as well as tools for the transformation of regional economic systems of a depressive type, represented in the territorial space, were studied in the papers, as: Balakina (2019, 2021), Krupin (2018), Bzasezheva (2018), Zhamaldaev (2019), Shatalov (2018), Khaibullin (2021) Aimurzina and Kamenova 2022). Thus, the following systemically interconnected components of the region's modernization susceptibility can be distinguished: economic and technological, investment and financial, innovative, intellectual.

2. Methodology

At the present stage, all world countries are experiencing the consequences of a pandemic, the impact of global economic crises, which are uncertain and probably long-term. All this leads to the inability of the modern model of state regulation to fully implement its functions in the financial and economic spheres. To further improve the mechanism of sustainable development of the state, it is necessary to carry out high-quality measures aimed at promoting effective public administration, saving resources and state assets.

The continued decline in the economy, the decline in production efficiency, significant imbalances in the national economy, the non-competitiveness of most of the products, low investment in the real sector of the economy, minimization of resource opportunities for the implementation of state functions determine the urgent need to revise the methods of management and improve the organizational forms of economic management. All this requires a scientific approach to the system of state regulation of the regions for the sustainable development of socio-economic processes in Kazakhstan.

There are three types of regions that have a certain combination of various aspects of the standard of living of the population. Firstly, these are the "capital" regions with a powerful financial sector. A high level of income has developed here, exceeding (in relative terms) the level of consumer prices. The purchasing power of income and the degree of stratification for regions of this type are above the average for Kazakhstan. Secondly, it is a number of areas with a relatively low (middle) level of income and low prices. The purchasing power here is quite high, and the degree of property stratification, as a rule, does not exceed the average for Kazakhstan.

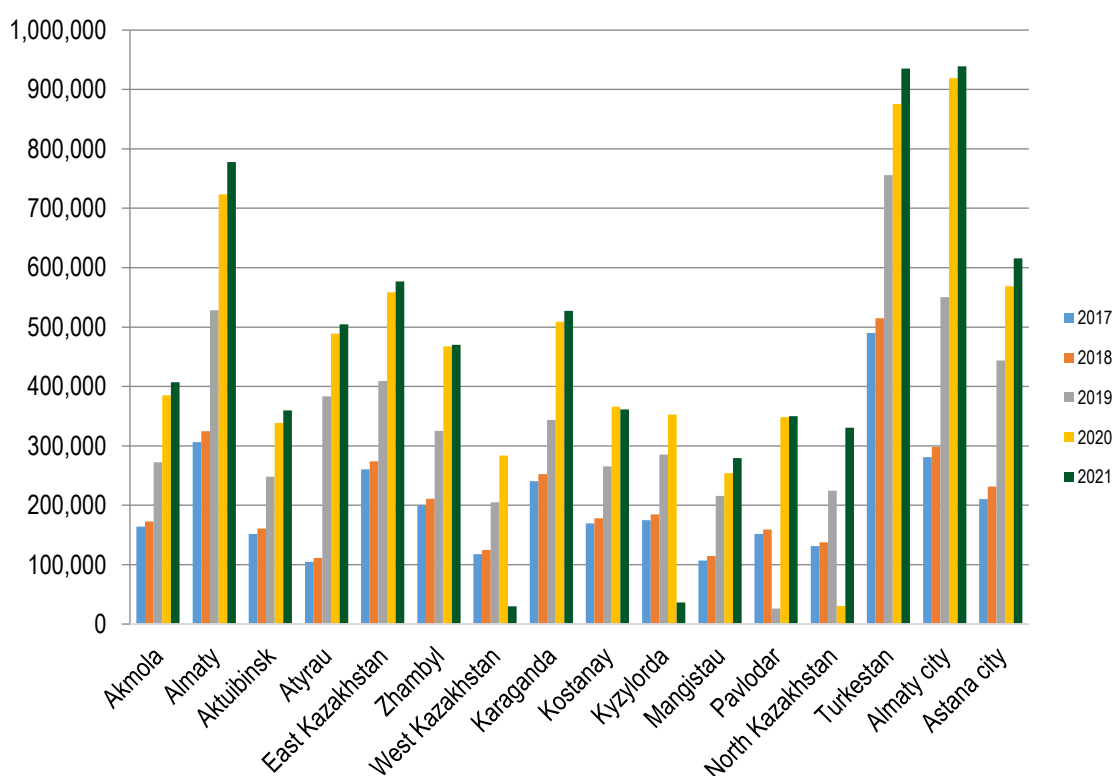
Finally, thirdly, these are economically underdeveloped regions with low purchasing power, which can be combined with both a high and a low degree of property stratification. The price level here does not exceed the average Kazakhstan's level; however, per capita incomes are minimal due to reduced economic activity and high demographic burden on the working population. Regions are grouped according to the so-called problematic principle, *i.e.*, groups of regions are identified that have similar problems and economic potential and economic structure; average indicators of regions in terms of gross regional product, population. This grouping of the regions of Kazakhstan is still relevant today.

The constraining factors of the socio-economic development of the region include:

- general crisis phenomena in the economy;
- a small part of taxes and fees collected remains at the regional level;
- low level of tax collection;
- transfer to the regional level of expenses not supported by sources of financing;
- inefficient use of budgetary funds, etc.

At the expense of local budgets, education, health care, housing and communal services, as well as transport are financed, considering the dynamics of regional spending, including social security for period 2017-2021, see Figure 1.

Figure 1. Costs of the regions, including social security, for 2017-2021, in million tenge



Source: compiled by authors according to <http://www.stat.gov.kz>

In 2021, compared to 2019, the expenses of the regions, including social security, increased by almost 1.5 times or 2614.0 billion tenge. At the same time, we see that the significant expenses of the Turkestan region are 935.0 billion tenge or 9.1% of total expenses, the Almaty region is 778.0 billion tenge or 9.4%, the city of Almaty is 938.8 billion tenge or 11.0%.

One of the main problems for this period is that the financing of public services in the regions provided by local budgets is accompanied by the fact that local budgets' own revenues do not cover a third of the needs of local authorities. In general, in the republic, the share of subventions in 2021 amounted to 54.4% and in 2017 - 31.5%, targeted transfers 30.0% in 2021 and 21.9% in 2017. That is, the funds of the republican budget in total revenues in the form of subventions and targeted transfers average 57.0% of the budgets of the regions (Table 1). The share of budget credits for the analyzed period in the total volume of receipts was on average 2.0%.

That is, with a high level of centralization of funds in the republican budget, the main direction of the effectiveness of inter-budgetary relations is the motivation of the regions to develop their own tax base. The

formation of financial resources largely depends on the scale and efficiency of the economy of the country and its regions.

Table 1. Dependence of local budgets on funds from the Republic of Belarus (in million tenge)

Indicator	2017	2018	2019	2020	2021
LB Receipts - Total	4.731.597,0	4.771.179,0	6.039.951,0	7.721.256,0	8.742.646,0
Targeted transfers, of which:	1.037.992,8	765.361,4	3.474.782,0	4.530.714,0	4.754.940,0
% of targeted transfers in total receipts	21,9	16,0	57,5	58,7	54,4
Budget loans	86.041,9	103.151,3	145.643,0	140.949,0	165.991,0
Share of budget loans in total revenues	1,8	2,2	2,4	1,8	1,9

Source: compiled by authors according to <http://www.stat.gov.kz>

Among the main indicators that directly determine the volume of financial resources created at the regional level are:

- regions' sectoral structure, which determines level of their profitability, and, consequently, taxable base;
- the level of development of the production infrastructure of the regions;
- the level of development of the social infrastructure of the regions;
- efficient use of resources (labor, land, water);
- the level of pollution of the natural environment, which leads to differentiation in the amount of costs in the provision of public services and prices for these services.

Table 2. The share of regions in the gross regional product, in %

Region	2017	2018	2019	2020	2021
Republic of Kazakhstan	100,0	100,0	100,0	100,0	100,0
Akmola	2,9	2,8	2,8	3,2	3,2
Aktuibinsk	4,3	4,4	4,3	4,2	4,3
Almaty	4,5	4,5	4,7	5,3	5,5
Atyrau	10,9	12,6	13,4	11,0	12,7
West Kazakhstan	4,3	4,5	4,2	3,9	4,2
Zhambyl	2,5	2,5	2,5	2,7	2,7
Karaganda	7,9	7,7	7,8	8,6	8,9
Kostanay	3,4	3,3	3,5	4,1	4,2
Kyzylorda	2,6	2,7	2,6	2,3	2,3
Mangistau	6,1	6,2	5,3	4,3	4,3
Pavlodar	4,4	4,4	4,4	4,4	4,6
North Kazakhstan	2,0	2,0	2,0	2,2	2,1
Turkestan	...	2,7	2,9	3,4	3,3
East Kazakhstan	5,8	5,8	5,8	6,5	6,0
Astana city	10,6	10,8	11,3	11,3	10,6
Almaty city	21,9	19,6	19,5	19,1	17,9
Shymkent city	...	3,5	3,2	3,5	3,2

Source: compiled by authors according to <http://www.stat.gov.kz>

It can be seen from Table 2 that since 2017, the largest producers of GRP on average are five regions of the republic: Atyrau, Karaganda, Mangistau regions, the cities of Astana and Almaty. In 2021, these five regions, home to about 30% of the population, produced 56.1% of the country's GDP. The smallest shares in the total GDP of 13.5% were in the Zhambyl, North Kazakhstan, Akmola, Kyzylorda and Shymkent regions

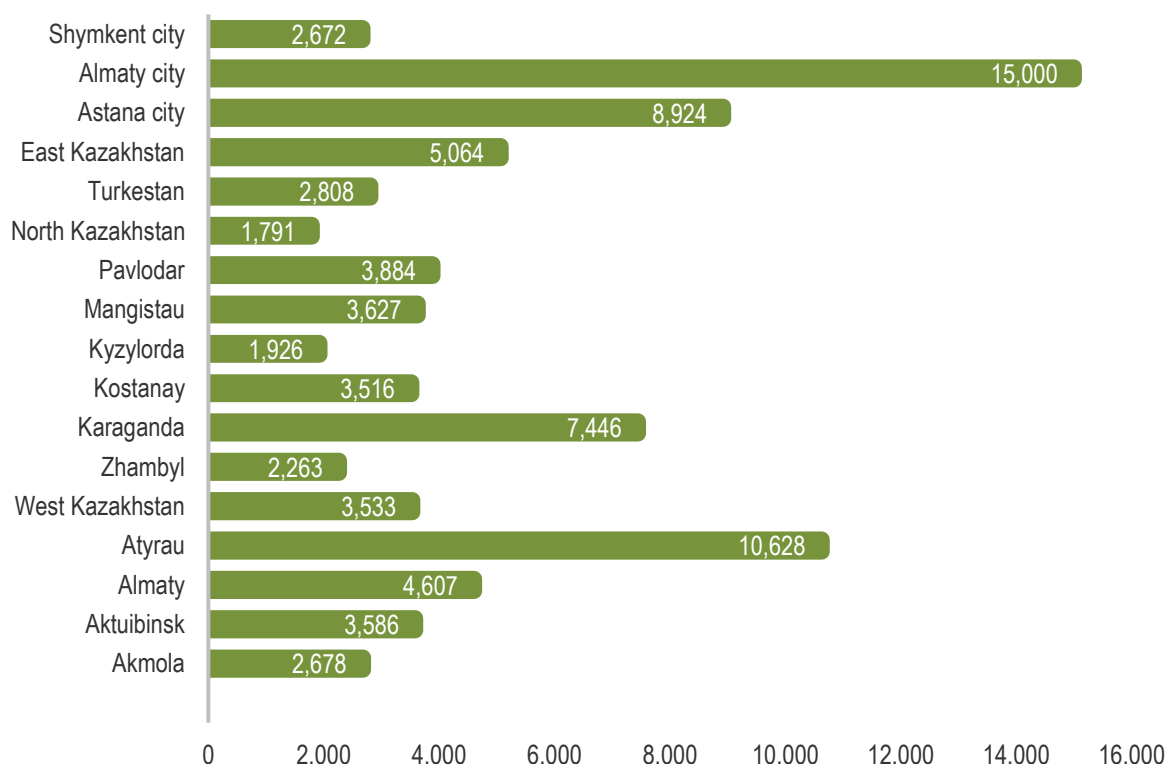
As a result of the structural restructuring of the economy, there was a shift in the distribution of GRP, so regions with a powerful mineral resource base, as well as large cities with high investment potential, significantly increased their shares in GDP. The indicators of the regions producing agricultural products, food and light industry (North-Kazakhstan, Almaty, Kostanay, South-Kazakhstan and others) have decreased. The results of the development of the Strategy for the Territorial Development of the Republic of Kazakhstan, attention to the development of non-primary sectors of the economy, agriculture ensured a reduction in the gap between the maximum and minimum GRP in five regions. However, in recent years, this gap has begun to widen again. Regional disproportions are also observed in the production of GRP per capita (Figure 2).

The regions of the republic in terms of GRP per capita can be divided into 3 groups. The first group includes regions with GRP per capita significantly exceeding the national average: Almaty city (15.000 billion

tenge), Atyrau region (10.627,6 billion tenge), Astana city (8.923,7 billion tenge) and Karaganda region (7.446,3 billion tenge).

The regions of the second group have GRP per capita in the zone of the average republican level: West Kazakhstan region (3.533 billion tenge), Pavlodar region (3.883 billion tenge), Aktobe region (3.586,2 billion tenge), Kostanay region (3.516,2 billion tenge), East Kazakhstan region 5.063,7 billion tenge), Almaty region (4.606,8 billion tenge). The third group includes regions with GRP per capita much lower than the national average: North Kazakhstan region (1.790,8 billion tenge), Akmola region (2678.1 billion tenge), Zhambyl region (2.268 billion tenge), Turkestan (2.808 billion tenge).

Figure 2. GRP per capita in 2017-2021, in billion tenge



Source: compiled by authors according to <http://www.stat.gov.kz>

The main indicators of the socio-economic development of the regions in 2021 are shown in Table 3.

In accordance with the data given in Table 3, the cities of republican significance: Astana and Almaty are regions with a high level of average per capita income, a diversified industry, a developed financial sector and high technical potential. High indicators of socio-economic development are shown by Atyrau and Mangistau regions, rich in hydrocarbon mineral resources. The average per capita incomes of the population in these areas are the highest.

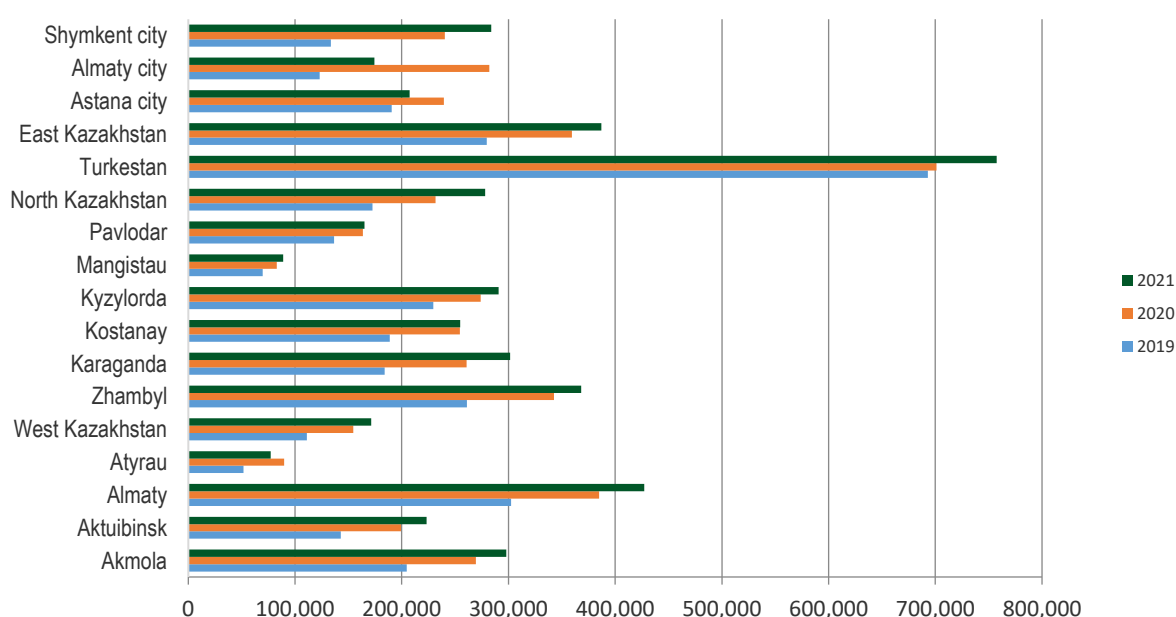
Low rates are typical for Akmola, Zhambyl, Kyzylorda, North Kazakhstan and Turkestan regions, where they specialize mainly in agricultural production. The average per capita income of the population here is below the national average. As can be seen from Figure 6, these regions are characterized by a high share of transfers in the revenue side of budgets. The highest values are typical for Turkestan, Kyzylorda, Zhambyl, North Kazakhstan regions (Figure 3). In the same regions, the smallest increase in tax revenues compared to other regions is observed, that is, in these regions, transfers from the republican budget are received in large volumes for the purposes of budget equalization.

Table 3. Main socio-economic indicators of regional development

Regions	Volume of industrial output (goods, services), billion tenge	Gross output of products (services) of agriculture, forestry and fisheries, billion tenge	Investments in fixed capital, billion tenge	Retail trade volume, billion tenge	Transportation of goods by all means of transport, million tons*	Employed population, thousand people	Average monthly nominal wage, tenge
Republic of Kazakhstan	37.606,2	7.549,8	13.242	13.709,3	4.013,7	8.807,1	250.311
Akmola	1.138,9	744,3	515	298,0	163,6	397,0	203.006
Aktuibinsk	2.247,4	376,5	817	722,3	128,4	419,8	217.597
Almaty	1.500,8	1.092,5	733	567,8	243,0	973,0	207.592
Atyrau	8.557,6	115,2	2.910	388,3	158,5	317,7	406.166
West Kazakhstan	2.843,1	242,1	429	380,2	67,7	322,3	226.537
Zhambyl	639,1	479,2	399	370,7	143,3	502,7	195.922
Karaganda	4.353,6	494,1	797	1.168,1	827,7	643,4	240.608
Kostanay	2.333,1	605,8	431	506,4	342,2	475,2	201.923
Kyzylorda	808,6	172,9	309	347,0	130,0	330,1	212.777
Mangistau	2.726,7	22,8	629	332,6	241,3	331,7	349.503
Pavlodar	2.783,3	429,2	572	477,6	123,1	383,7	220.291
North Kazakhstan	394,7	902,9	333	301,5	69,8	287,3	187.501
Turkestan	738,3	936,7	659	241,9	102,7	777,6	195.302
East Kazakhstan	2.763,4	879,2	834	1.274,6	661,7	668,3	224.700
Astana city	1.543,9	3,3	1.225	1.692,7	195,4	580,3	344.691
Almaty city	1.420,8	8,6	1.188	4.044,5	288,7	982,8	295.985
Shymkent City	812,9	44,5	462	595,1	126,7	414,3	193.682

Source: compiled by authors according to <http://www.stat.gov.kz>

Figure 3. Receipt of transfers to the revenue side of the regions, mln. tenge



Source: compiled by authors according to <http://www.stat.gov.kz>

The differentiation of regions in terms of socio-economic development still tends to deepen it and is most characteristically manifested in the execution of local budgets, the level of budget deficit. The data in Table 4 show that they have a large level of deficit. that is, the excess of expenses over income in the following regions: Turkestan region - 64 billion tenge, Shymkent -16 billion tenge, Zhambyl region -11.1 billion tenge, Akmola region -5.6 billion tenge.

Table 4. Execution of regional budgets in 2021, in million tenge

Region	Income	Expenses	Deficit (-), Surplus (+)
Akmola	407.409,2	407.291,4	-5.568,7
Aktuibinsk	373.646,1	359.921,5	9.527,7
Almaty	800.485,5	778.019,9	12.446,1
Atyrau	502.667,6	504.487,7	-2.857,2
West Kazakhstan	295.655,1	297.782,1	-7.150,7
Zhambyl	464.910,9	470.326,1	-11.184,2
Karaganda	556.621,8	527.058,7	5.932,5
Kostanay	380.891,4	361.296,6	-932,3
Kyzylorda	362.335,3	364.220,4	-5.139,7
Mangistau	271.375,4	279.182,8	-18.392,5
Pavlodar	350.779,0	349.814,7	-4.526,2
North Kazakhstan	349.064,5	330.750,4	-3.975,5
Turkestan	876.399,7	934.994,1	-64.461,1
East Kazakhstan	587.517,2	576.815,7	-57,7
Astana city	703.738,5	615.804,2	38.280,7
Almaty city	1.000.710,3	938.826,7	19.772,6
Shymkent city	458.439,4	468.369,8	-16.532,4

Source: compiled by authors according to <http://www.stat.gov.kz>

The activation of innovative processes in the modern economy of Kazakhstan leads to an aggravated environmental crisis, leads to negative changes in the ecosystem of the Republic of Kazakhstan. All this leads to the need to address the issues of environmental orientation of innovation. To date, there are no special mechanisms for taking into account the environmental factor in the development of innovative processes, an insufficient level of funding for environmentally oriented processes in the regions (Kiseleva 2018, Alenkova 2019, Falko *et al.* 2018). The data in Table 5 show that the cost of environmental protection in 2021 decreased by 8.7% or 36,377 million tenge.

Table 5. Total costs for environmental protection, thousand tenge

Region	2017	2018	2019	2020	2021
Republic of Kazakhstan	196.142.530	262.407.175	302.177.008	420.392.105	384.015.734
Akmola	3.817.609	7.731.558	30.083.852	22.128.905	63.945.393
Aktuibinsk	19.811.714	19.730.783	27.272.350	54.121.971	38.153.904
Almaty	1.872.835	1.932.064	3.258.301	1.360.312	2.397.183
Atyrau	31.435.792	42.713.118	39.720.005	55.376.398	43.869.542
West Kazakhstan	13.135.156	18.896.624	14.776.661	13.329.572	16.593.098
Zhambyl	3.616.243	17.407.721	22.240.684	52.768.246	12.148.355
Karaganda	18.379.310	27.573.500	36.305.472	49.034.032	33.797.385
Kostanay	8.368.940	7.365.475	8.508.370	9.404.196	23.327.794
Kyzylorda	4.559.193	4.266.409	3.086.699	34.534.401	16.131.739
Mangistau	21.364.918	24.664.284	27.268.698	20.167.295	16.727.282
Pavlodar	5.685.479	9.314.289	-	-	-
North Kazakhstan	21.498.823	25.457.810	34.640.550	37.133.277	40.474.833
Turkestan	6.523.385	2.488.085	2.818.568	3.892.011	4.328.499
East Kazakhstan	-	-	7.005.406	20.466.213	2.768.430
Astana city	21.391.317	24.726.539	26.455.558	30.135.498	39.516.518
Almaty city	8.742.314	23.694.574	8.393.430	4.781.433	17.222.878
Shymkent city	5.939.502	4.444.342	4.984.642	5.115.686	5.060.060

Source: compiled by according to <http://www.stat.gov.kz>

3. Key Indicators Socio-Economic of Regional Development

Currently, in terms of socio-economic development, regional differences reach times. The analysis of expenses for the production of industrial products (goods, services) shows that the differentiation between the maximum and minimum values reaches almost 21.7 times. The leader in the production of industrial products (goods, services) is the Atyrau region 8557.6 billion tenge, and the minimum value of the North Kazakhstan region is 394.6 billion tenge.

The regions have a large differentiation coefficient in terms of the gross output of products (services) of agriculture, forestry and fisheries, 47.9 times. The agrarian region is the Almaty region with the output of agricultural products in the amount of 1092.5 billion tenge and the Mangistau region occupies the last place with a volume of 22.8 billion tenge. In terms of financing costs for environmental protection, the differentiation is 27.7 times. The leader is Akmola region with an amount of almost 64 billion tenge and the last position is occupied by the city of Almaty 2.4 billion tenge.

Table 6. Differentiation of key indicators socio-economic of regional development

Indicators	Average value, (X)	X max	X min	Gap (R)=max-min	Differentiation coefficient (R ₁)= max/min), times	Oscillation coefficient VR=(R)/(X)
Volume of industrial output (goods, services), <i>billion tenge</i>	2.212,13	8.557,6	394,7	8.162,9	21,7	3,7
Gross output of products (services) of agriculture, forestry and fisheries, <i>billion tenge</i>	444,11	1.092,5	22,8	1.069,7	47,9	2,4
Investments in fixed capital, <i>billion tenge</i>	778,94	2.910	333	2577	8,7	3,3
Retail trade volume, <i>billion tenge</i>	806,43	4.044,5	241,9	3.802,6	16,7	4,7
Goods Transportation by all means of transport, <i>million tons</i>	236,11	827,7	67,7	760	12,2	3,2
Employed population, <i>thousand people</i>	518,07	982,8	287,3	695,5	3,4	1,3
Average monthly nominal wage, <i>tenge</i>	242.575,47	406.166	187.501	218.665	2,2	0,90
Costs Financing for environmental protection, <i>thousand tenge</i>	20.004.396,31	63.945.393	2.397.183	61.548.210	27,7	3,1

Source: compiled by authors according to <http://www.stat.gov.kz>

The coefficient of differentiation in terms of retail trade amounted to 16,7. Here, the southern capital of Almaty occupies a leading position with a volume of 4,044.5 billion tenge, and the Turkestan region closes the position. In terms of attracting investment in fixed capital, the most attractive is Atyrau region – 2.910 billion tenge and less North Kazakhstan region - 333 billion tenge. The range of differentiation was 8.7 times. In terms of employment, Almaty city ranks first with 982.8 thousand people and the last is the North Kazakhstan region with 287.3 thousand people. The differentiation coefficient was 3.4 times (Figure 4).

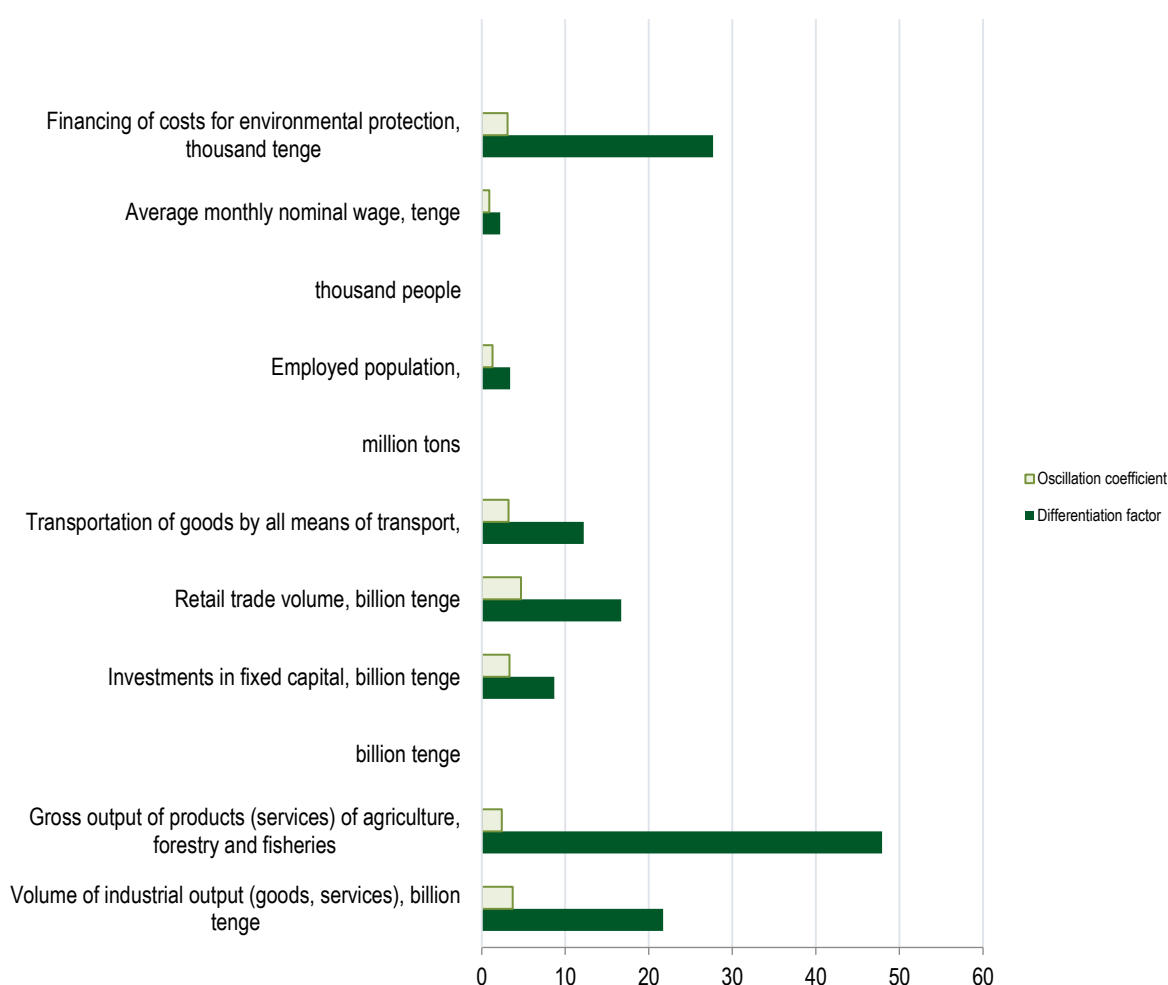
The oscillation coefficient (vR) is calculated by the formula and reflects the relative measure of fluctuation of the extreme values of the attribute around the average.

$$v_R = \frac{R}{\bar{X}} \times 100\%$$

3.1

The highest oscillation coefficients (vR) are typical for the volume of retail trade - 4.7 times, industrial output - 3.7 times and the level of investment - 3.3 times. That is, such differentiation in the socio-economic indicators of the development of regions leads to a gap between the regions in terms of the level and quality of life of the population

Figure 4. Differentiation coefficients of the main indicators of socio-economic indicators of regional development



Source: compiled by authors

Table 7. Typology of regions according to socio-economic indicators

Characteristic	Regions
Stable territory with a high level of GRP per capita, a high level of industrial development, retail trade, attractive for investment	Almaty city, Atyrau city, Mangistau region, Astana city
Developing territory, there is a small budget deficit, agriculture is developed, a moderate level of investment	Aktuibinsk, Almaty, Karaganda, Kyzylorda, Kostanay, Pavlodar, West Kazakhstan
A region with a crisis situation is a depressed, subvention region. low level of employment	North Kazakhstan, Turkestan, Zhambyl, Akmola regions

Source: compiled by authors

Classifying regions as depressive allows us to identify a number of the following criteria:

- low share of own tax revenues in the revenue part of the budget (less than 50%);
- growth of subventions from the republican budget in recent years;
- high depreciation of fixed assets;
- the growing level of unemployment and poverty in comparison with the average republican indicators;
- low level of investment activity (Table 8).

Table 8. Indicators of the development of a depressed region, Zhambyl region

Years	Income, million tenge	Expenses, million tenge	Subventions from the state budget, million tenge	GRP, million tenge	Investments in fixed capital, million tenge
2017	241.007,100	241.153,100	200.456,000	1 350.661,600	225.863,000
2018	251.193,000	246.320,900	230.723,000	1 532.118,600	264.520,000
2019	328.619,400	325.012,800	261.169,000	1 712.883,600	296.398,000
2020	421.958,100	467.278,600	342.712,000	1 901.385,000	350.068,000
2021	464.910,900	470.326,100	368.259,000	2 262.750,600	398.609,000
2022	241.007,100	553.809,410	414.942,300	2.409.993,200	436.403,600
2023	251.193,000	640.636,658	466.219,640	2.655.511,060	482.993,180
2024	328.619,400	706.746,271	515.359,862	2.906.663,630	530.752,144
2025	421.958,100	762.533,178	554.475,470	3.148.256,010	573.490,925
2026	464.910,900	848.015,629	605.706,405	3.356.939,280	617.683,488
2027	527.109,510	915.440,917	652.275,947	3.611.463,770	664.181,924
2028	605.195,538	981.937,893	697.545,212	3.844.421,070	708.612,982
2029	667.049,795	1.053.922,070	743.723,932	4.075.165,540	752.868,095
2030	726.385,177	1.127.379,950	791.846,112	4.309.639,390	798.272,633

Source: compiled and calculated by authors

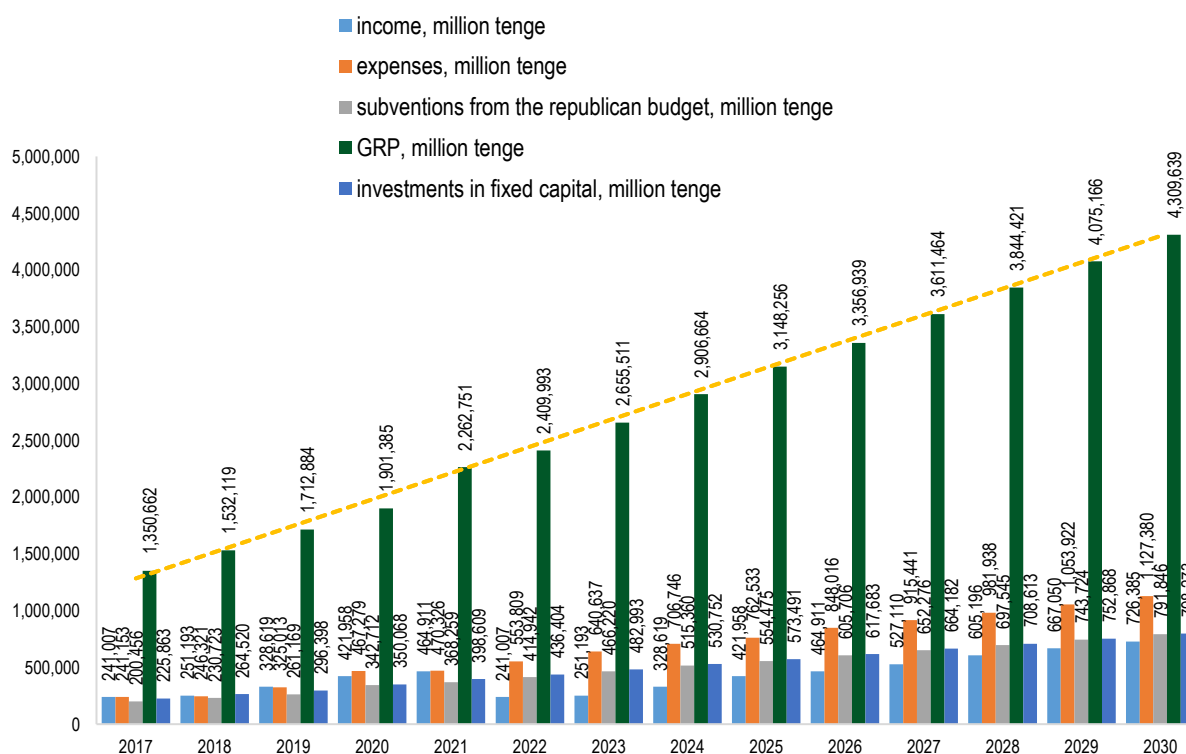
For the forecast, we use an equation of the form:

$$y_2 = y_2^t + a + b(x^{3p} - x^{3t}) + c(x^{6p} - x^{6t}) \quad 3.2$$

where: $y_2^t = 231.937x + 1E + 0,6$ and $R^2 = 0,9986$ is trend equation for the region's GRP

High values of the correlation coefficient confirm the adequacy of the proposed methods for assessing the relationship between the parameters of the conditions. Data processing was carried out using the MS Excel software analysis package; the authors constructed a statistically stable regression equation.

Figure 5. Correlation between the development parameters of Zhambyl region and the GRP of the region



Source: compiled and calculated by authors

Conclusion

Using the obtained trend models, applying it is possible to predict the income and expenses of the region, the amount of subventions, the level of investment for each region, taking into account factors. Economic and mathematical calculations and the constructed multiple regression equation allow us to conclude that the level of the region's GRP strongly depends on these indicators (Table 9).

Table 9. Instruments for regulating the socio-economic development of depressed regions

Instruments	Proposals
Organizational, economic, financial and legal	1. Development of a program for the integrated socio-economic development of depressed regions based on their system analysis. Separation of regions to create special economic zones.
	2. Development of a mechanism for activating the processes of forming an entrepreneurial and innovative initiative; definition of long-term rules of relations with investors. Development of long-term programs to regulate the development of depressed regions, creation of new industries in them, providing positive dynamics or a breakthrough in economic growth.
	3. Adoption of regulations on the establishment of special economic regimes in certain territories (special economic zones, zones of a special socio-ecological regime for nature management, etc.)
	4. Systemic transfer for the modernization of the socio-economic systems of depressed regions in the form of a grant on the terms of co-financing of the republican and local budgets to achieve the goals of innovative development of scientific technology parks and clusters.
	5. The introduction of a flexible tax and pricing policy in relation to economic entities producing goods and services that are important for the development of depressed regions, the implementation of financial and credit support programs for projects to improve the transport and logistics infrastructure in depressed regions.
	6. In order to introduce modern technologies, save resources and increase labor productivity, it is mandatory to form an innovation system in the region
	7. Improving the welfare and quality of life of the population of the region, bringing it to the republican level, increasing the number of jobs by opening new enterprises.
	8. Introduction of public-private partnership for the implementation of investment projects. Ecologization of innovative development in order to introduce technological innovations in the field of environmental protection, rational use of natural resources and ensuring environmental safety directly in the life cycle of innovations.
	9. It is necessary to develop an algorithm for strategic planning of environmentally oriented innovative development in depressed regions.
	10. Regions should develop mechanisms and principles of environmentally-oriented management, among which are mandatory, the presence of close feedback from the state and business, harmonization of activities with the external environment and ensuring an innovative nature.
	11. It is necessary to introduce mechanisms for innovative development and encourage regions to introduce innovative developments into practice in order to achieve indicators of environmental and economic efficiency.
	12. Ecological innovations, risk assessment of the effectiveness of innovative and investment projects of enterprises as a special type of innovative activity will become tools for improving the forms and methods of improving the efficiency of various types of natural resources used by the regions subjects

Source: compiled by authors

The development and implementation of the concept of sustainable environmental and economic development of depressed regions is a prerequisite for a further transition to a "green" economy, which will lead to the activation of local executive bodies to develop measures aimed at observing the socio-environmental and economic interests of economic entities in the region.

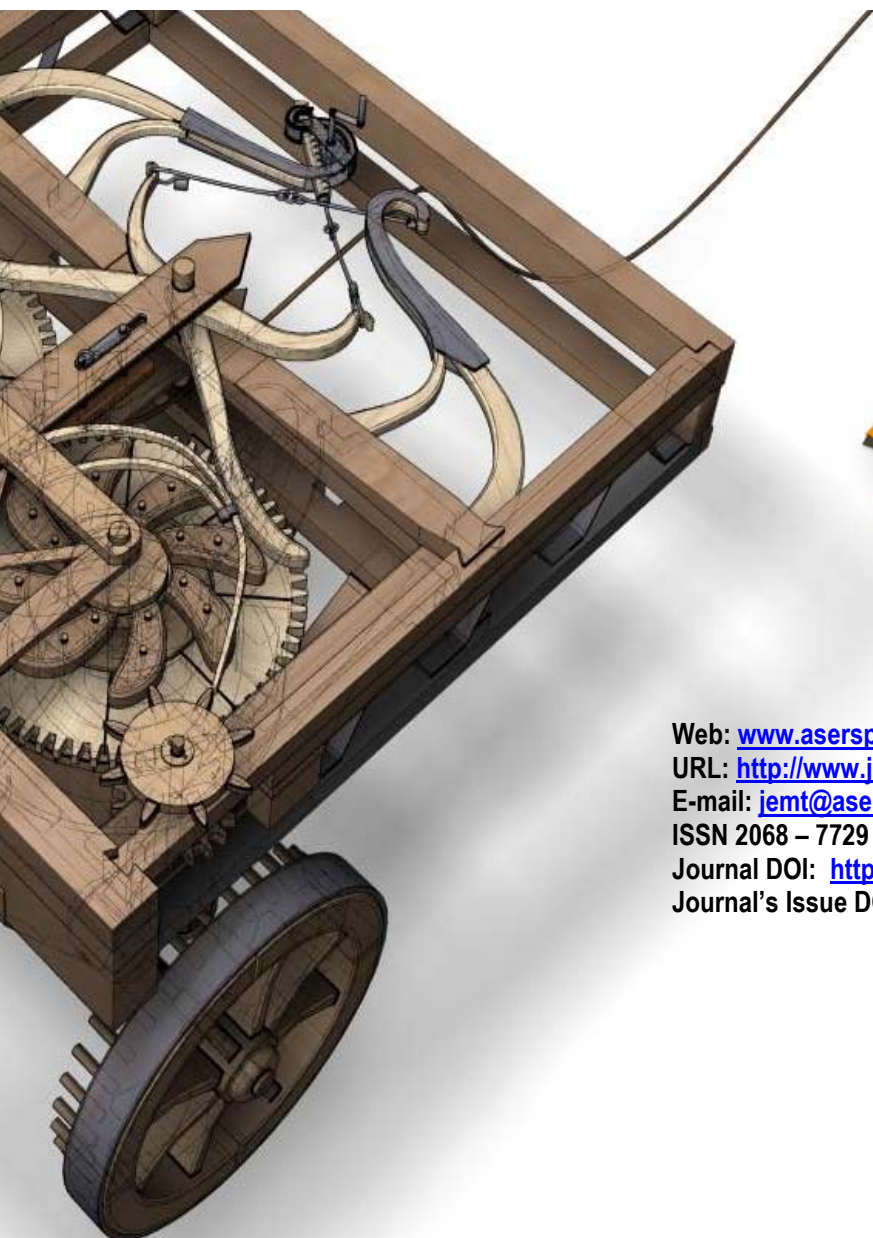
Within the framework of the individuality of the regions, it is necessary to additionally develop indicators that take into account the geographical, climatic and other features of the territory, the share of renewable energy sources in the generation of electricity in the region and processed municipal solid waste, etc.

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