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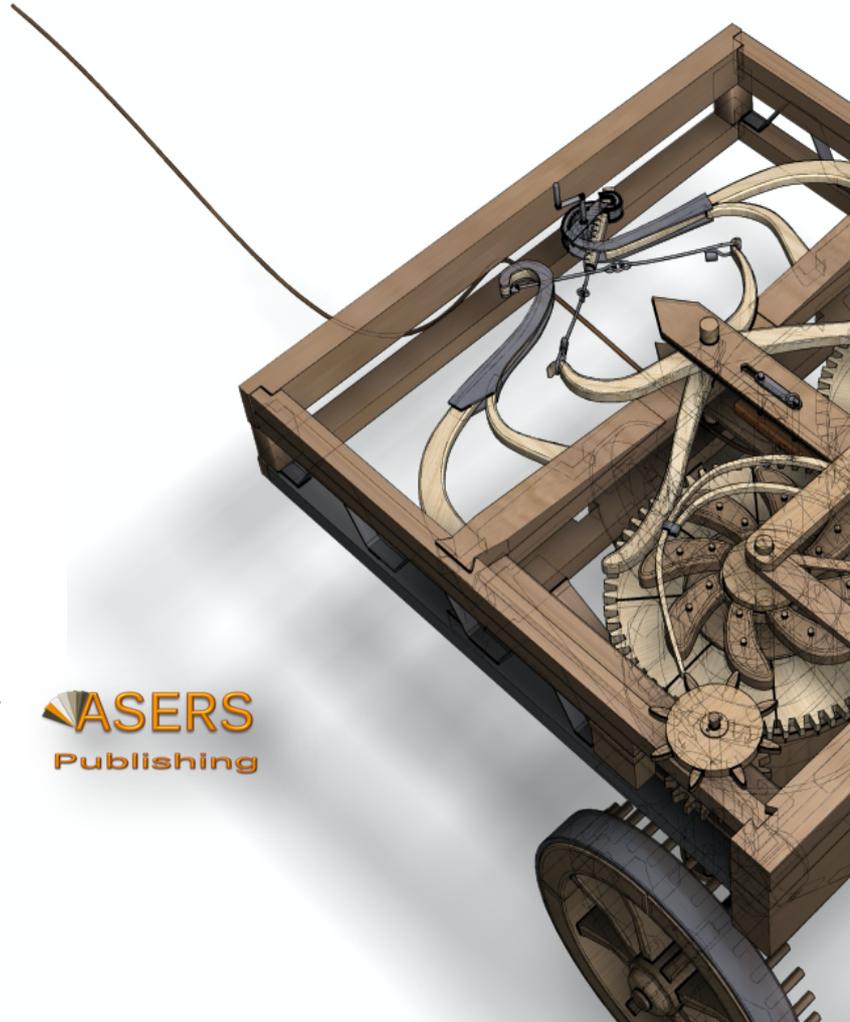
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Social Investing as Tool to Improve the Quality of Life. Implications for the Sustainable Development and Environmental Vulnerability

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Abstract:

In recent years, social investment has become a tool for solving economic problems, improving the level and quality of life of the population, increasing life expectancy, leading to conditions for creating new environmentally friendly jobs, expanding the availability of social services, medicine and education, as well as a mechanism for redistributing temporarily free funds between business entities. Active implementation of the social investment mechanism based on the experience of developed countries in the direction of the efficient use of financial resources will lead to the growth of sustainable socio-economic development of Kazakhstan. In the course of the analysis, the authors found that a decrease in the population's monetary income, that is, the level of well-being, a characteristic increase in consumer spending, a decrease in purchasing power, as well as a propensity to save money, require the speedy introduction of social investment mechanisms in order to improve the quality of life of the population of the regions of Kazakhstan to prevent possible social threats. Social investment for the sustainable development of the economy involves the effective interaction of subjects in the process of providing financial resources in order to solve social problems and obtain material benefits for investors.

Keywords: social investment; sustainable development; environmentally oriented; quality of life.

JEL Classification: O29; Q56; Q57.

Introduction

Active processes taking place in the modern economy contribute to solving the problems of the social and economic spheres, since these processes are aimed at solving either social or only economic problems. The main activity and function of the state is to solve the problems of the social sphere, which requires the development and implementation of new, improved regulatory mechanisms in order to form a sustainable socio-economic development of the state.

Social investment will widely contribute to increasing the infusion of investors' capital into the social sphere and, as a result, raising the level of socio-economic development. Research shows that social investment is considered in the following aspects:

- these funds are not invested in goods and services that are harmful to health and the environment (for example, excisable goods, goods of a secondary nature, *etc.*);
- investments are innovative in nature and solve the socio-economic problems of the object, and also imply investments in the development of individual territories, *etc.*

That is, social investment implies active government intervention through economic instruments and financial methods of regulation.

Sustainable development of the economy in order to adjust socio-economic processes should involve social investment by the state of the regions, that is, through the processes of providing financial resources in order to solve social problems and obtain material benefits for the investor. That is, social investment is aimed at improving the mechanism for regulating social and economic processes. Social investment in the economy will help increase investment activity, attract investors to solve existing social and environmental problems, which will lead to the formation of sustainable development of the entire state. The above, actualizes the direction of the study of this problem.

1. Literature Review

Sustainability factors fall into the categories of environmental, social and corporate governance, which will encourage investors to invest in companies or investment strategies that combine both social and financial returns. In this regard, the impact of the strategy of sustainable social investment will increase significantly in the coming years through the impact on the global socio-economic industry.

Social investment is an effective (profitable) method of obtaining a certain social effect (ideal), that is, it shows the investor's experience in an unlimited investment environment. The study of the complex interactions between human (social and economic) as well as natural (environmental) systems is necessary for the development of sustainable development policies, which requires interdisciplinary approaches to research, appropriate investment policies that combine adequate social infrastructure with improved institutional and economic capacities to solve existing problems improving the quality of life of the population, including environmental vulnerability.

The broad economic, social and environmental impacts of investing in public transport on a micro scale have been explored in the scientific foreign literature to measure their affordability as well as social impact. It has been proven that the social impact of public transport can increase the social capital of communities, new transport infrastructure can generate social capital, which will require studying the social impact on individual income and preferences in creating social benefits. The economy will respond to the creation of jobs, which will lead to access to new jobs, and in general to the efficiency and well-being of the population.

Economic resilience can be improved by realizing the opportunities offered by green investment, digitalization, and financial regulation. The relationship between these building blocks of the economy and sustainable development has yet to be thoroughly explored. It will be necessary to create a roadmap for developing countries to use technological innovations, "green" investments in productive sectors to achieve sustainable development goals.

Expanding the green economy through social bonds will be essential and will successfully promote energy efficiency financing and green growth, political benefits for stakeholders.

The impact of the pandemic on social activity and the global economy, as well as the enthusiasm of many countries for green transformation, is still active. In fact, most countries have launched green recovery plans after 2020. Innovation in green technologies has attracted a lot of attention, and many countries have introduced a range of subsidy policies to support innovative transformation into green technologies. The impact of government subsidies on environmental protection, R&D and talent can greatly contribute to the sustainable development of enterprises with a low asset-liability ratio and will encourage enterprises to increase their investment in R&D.

Research in the field of theory and practice of social investment, as well as in the field of socio-economic development, is reflected in many publications of domestic and foreign scientists and practitioners: (Harvie, Lightfoot, Lilley, Weir 2021, Deng, Alvarado and Cuesta 2022, Dmuchowski, Baczewska-Dąbrowska and Gworek 2023, Boulton 2022, Lapanan 2018, Lyneis, Sterman 2018, Jie, Khan, Alharthi, Zafar, Saeed 2023, Tolstykh, Gamidullaeva, Shmeleva, Gromov, Ermolenko 2022, Wu 2023, Sharma, Tiwari, Talan, Jain 2021, Mahn 2018, Adler and Kritzman 2018, Battamo, *et al.* 2021). A large number of publications devoted to the problems of social investment are also confirmed by domestic researchers: (Aimurzina, Omarova 2019, Nurgaliyeva 2022 *et al.*).

The study of issues of managing the quality of life of the population as a result of the impact of social, economic, environmental opportunities to meet the needs of the population, the impact of social globalization, the influx of investments for sustainable development is gaining momentum as a basic basis for decision-making and actions in the field of environmental management. The implementation of the development of problematic aspects of sustainability in environmental management remains a matter of debate (Chen 2020, Deng, Alvarado, Cuesta, Tillaguango, Murshed, Rehman, Işık, López-Sánchez. 2022, Panzarella, Turcanu, Abelshausen, Cappuyens 2023, Huang, Ke, Chiang, Jhong 2023, Becchetti, Cordella, Morone 2022).

Insufficient knowledge and elaboration of theoretical and methodological foundations in the studies of foreign and domestic authors have shown the need to study the practical side of the issue of sustainable development through social investment. This is due, first of all, to the lack of clear final goals and sub-goals implemented in the process of social investment; these issues served as a topical topic for this study.

The aim of the study is to develop the theoretical and methodological provisions of social investment in the field of improving the quality of life of the population as the basis for the formation of sustainable socio-economic development, as well as to develop proposals and recommendations for its use. The following tasks were set in the work:

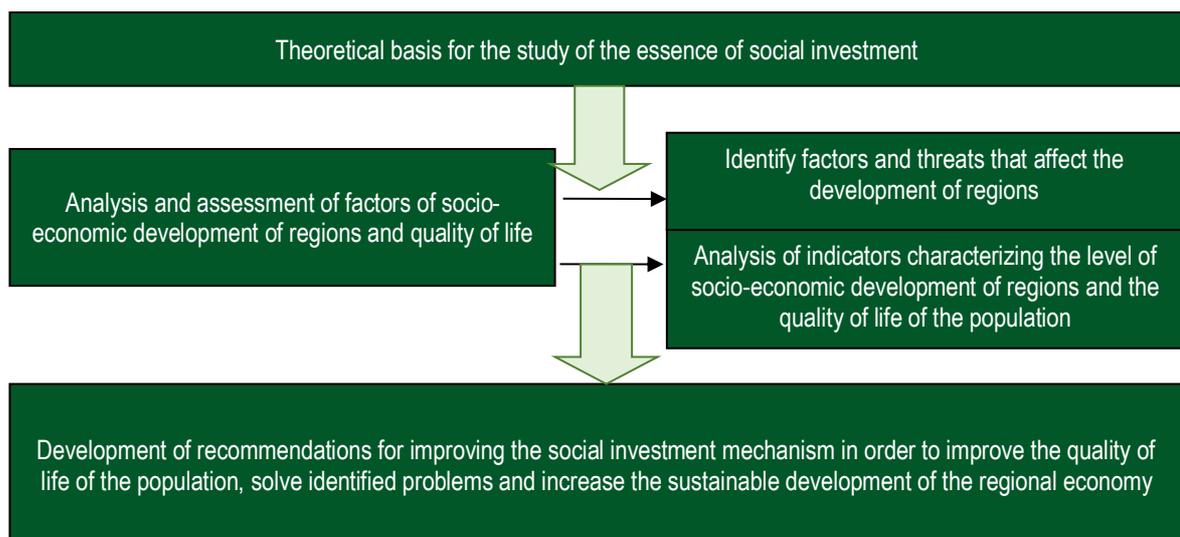
- to deepen theoretical studies of social investment as a factor of sustainable socio-economic development;
- to analyze and evaluate the factors of socio-economic development on the example of regions;
- develop a mechanism for improving social investment to improve the quality of life of the population as a factor in sustainable socio-economic development of the region.

During the study, methods of comparative analysis, economic and mathematical methods, *etc.* were used.

2. Research Methodology in Evaluating Socio-Development

The algorithm for analyzing and evaluating the factors of socio-economic development of regions, in our opinion, should include the following steps (Figure 1).

Figure 1. Methodology for analyzing and evaluating the factors of socio-economic development of regions



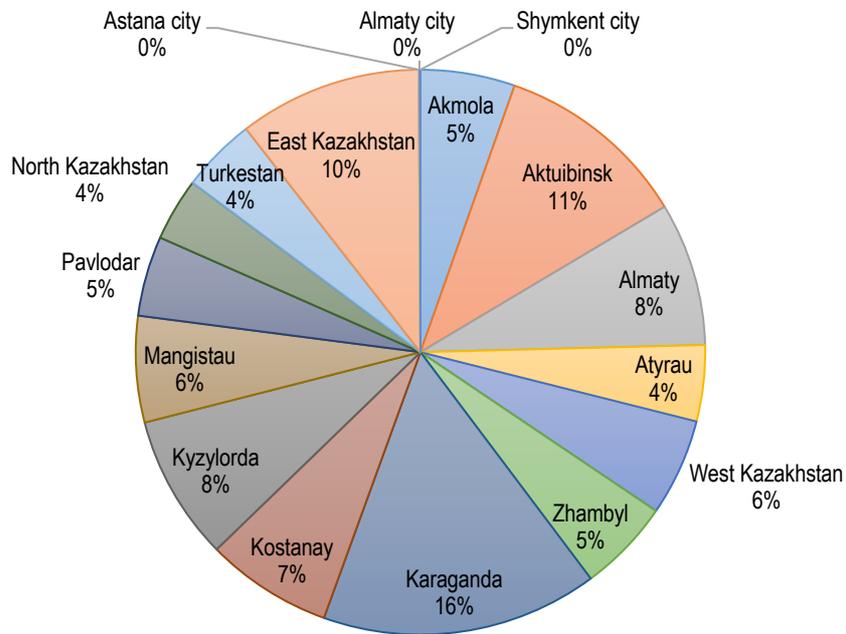
Source: compiled by authors

The study of the main trends in the development of territories in order to identify factors influencing their development will be carried out on the basis of statistical data "Regions of Kazakhstan: socio-economic

indicators". We will analyze the factors that have an impact on socio-economic development for a group of quantitative indicators (shares):

- occupied territories by area;
- living population;
- employed population in the total number.

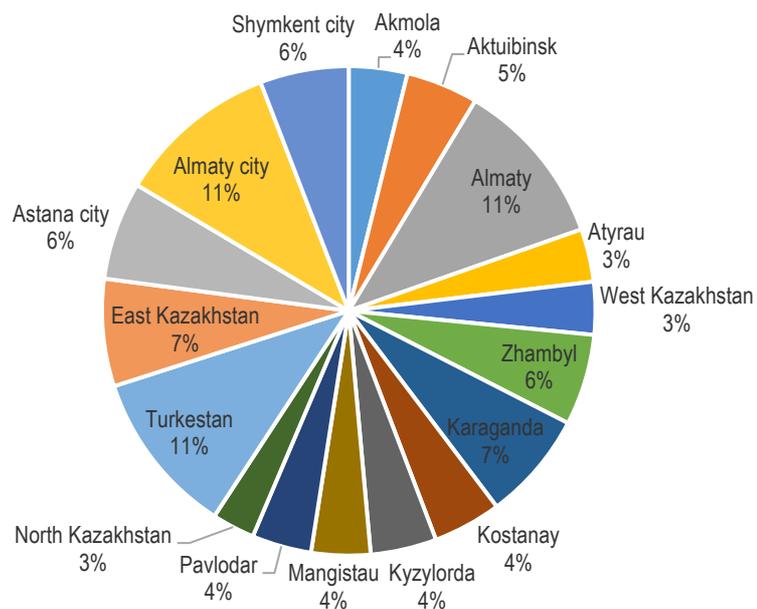
Figure 2. Share of occupied territories, %



Source: compiled by authors according to www.stat.gov.kz

Five regions of the republic have the largest areas of territories: Karaganda (16%), Aktobe (11%), East Kazakhstan (10%), Almaty and Kyzylorda (8%), as shown in Figure 2. The largest share of the population is concentrated in the following regions: Almaty, Turkestan and Almaty regions - 11%, East Kazakhstan and Karaganda - 7%, Astana and Shymkent - 6%. More than 50% of the population lives in these regions. The remaining territories accounted for 3-4% each (Figure 3).

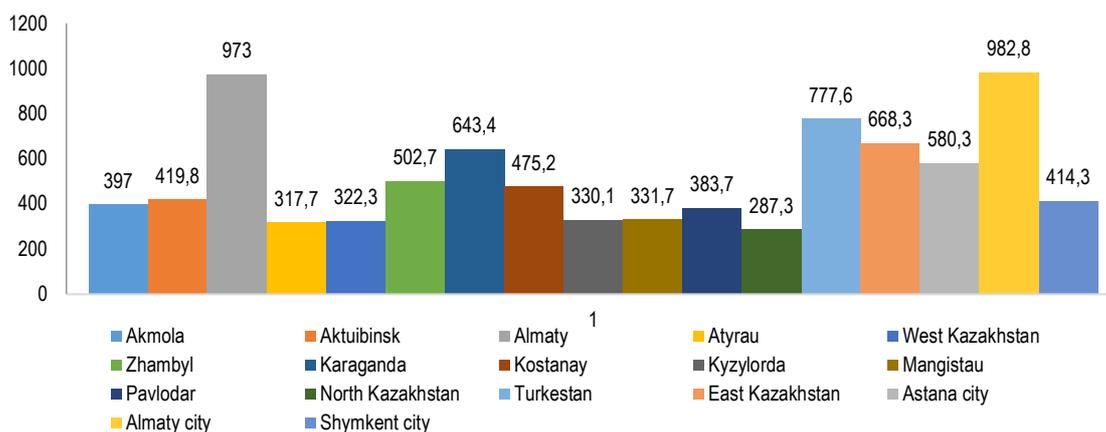
Figure 3. The share of the inhabited population of the territories, %



Source: compiled by authors according to www.stat.gov.kz

From the above Figure 3, it can be observed that in such a metropolis as Almaty, 982.8 thousand people or 11.2% of the total number are employed, Almaty region - 973.0 thousand people (11.0%), East Kazakhstan - 668.3 thousand people (7.6%), Karaganda region - 643.4 thousand people (7.3%), Astana city - 580.3 thousand people (6.6%). Low figures show the following territorial units: North Kazakhstan - 287.3 thousand people (3.3%), Atyrau - 317.7 thousand people (3.6%), West Kazakhstan region - 322.3 thousand people (3.6%). Thus, according to the disposable territories and the inhabited population, 7 leading regions with a population of over 50% are distinguished. This quantitative indicator is of great importance as one of the main factors influencing the socio-economic development of administrative territories (regions).

Figure 4. Employed population by regions, thousand people



Source: compiled by authors according to www.stat.gov.kz

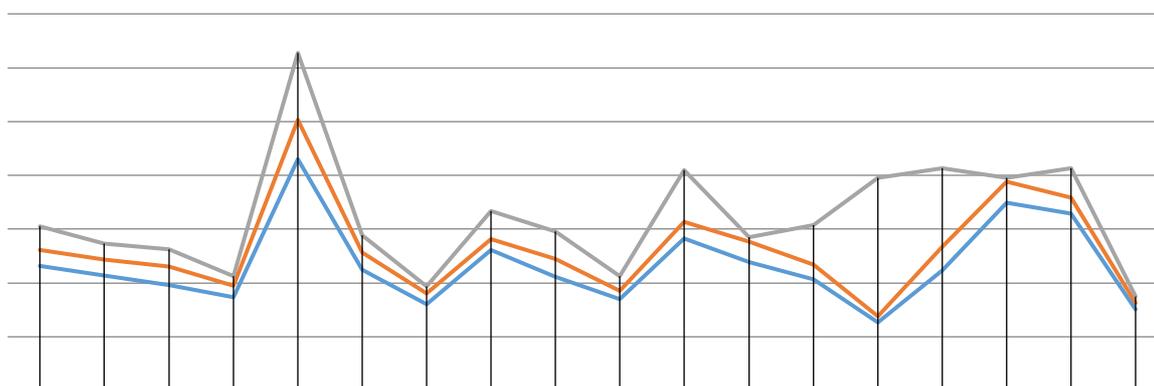
The group of indicators of social development, according to which we will analyze the factors that create favorable conditions for economic growth and social stability, in our opinion, consist of:

- average per capita monetary income of the population;
- consumer spending per capita;
- average monthly salary of employees;
- the pace of social development of the regions.

To assess the material level of the population's well-being, as well as the fundamental criterion for calculating poverty indicators, the indicator of income used for consumption is used.

The analysis shows that the real money income index amounted to 113.4% in 2022. The average per capita nominal cash income of the population in 2022 amounted to 152,519 tenge, in 2021 -130,616 tenge, in 2020 - 116,126 tenge, in 2019 - 104,282 tenge, in 2018 - 93,135 tenge, in 2017 - 83,710 tenge, that is, an increase of 14,490 tenge or by 12.5% compared to the previous year and from 2017 by 56.0%. The increase in the nominal cash income of the population, the rise in prices for consumer goods actively influenced the solvency of the population and the inflationary depreciation of money (Figure 4).

Figure 5. Nominal cash income of the population, tenge

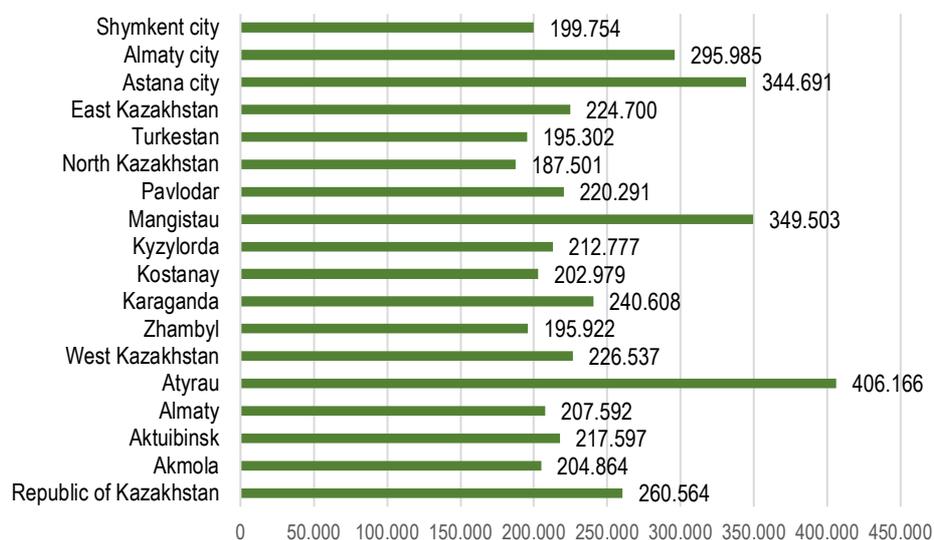


Source: compiled by authors according to www.stat.gov.kz

On average, in the regions, more than 70% is occupied by income from labor activity, namely from work for hire - 61%. Benefits accounted for only 4.1% on average and scholarships for 0.5% (Table 1).

The highest levels of wages were shown by Atyrau region - 406.0 thousand tenge, Mangystau - 349.5 thousand tenge, Astana city - 345.0 thousand tenge, Almaty city - 296.0 tenge. The following regions fell below the republican level in terms of income from labor activity: North Kazakhstan - 187.5 thousand tenge, Zhambyl - 196.0 thousand tenge, Shymkent - 194.0 thousand tenge (Figure 6).

Figure 6. Number of nominal wages in 2022, tenge



Source: compiled by authors according to www.stat.gov.kz

The leaders in consumer spending as a percentage of the national average are: Almaty city - 136.0%, Karaganda region - 126.5%, Astana city - 119.1%, South Kazakhstan region - 116.7%.

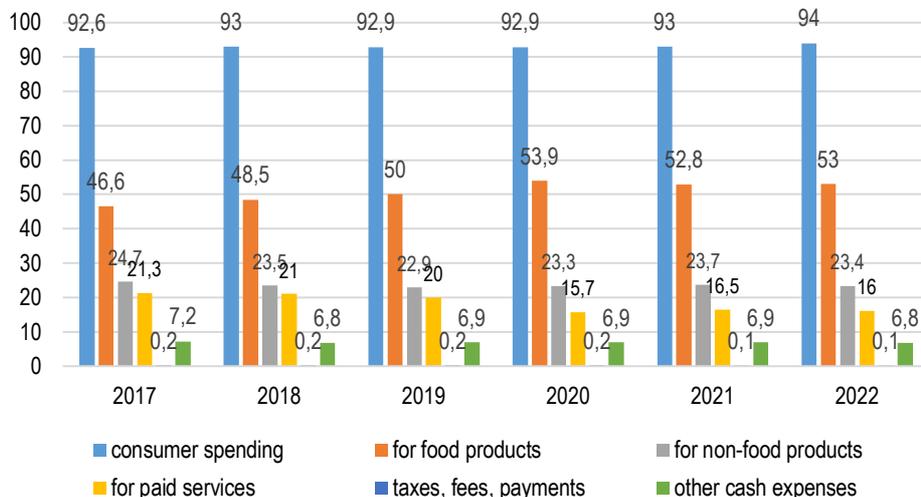
Table 1. Sources of income of the population by regions in 2022, %

| Regions | Labor Income | Employment Income | Self-Employment and Business Income | Pensions | Benefits | Targeted And Social and Housing Assistance | Scholarships | Property Income | Others |
|------------------|--------------|-------------------|-------------------------------------|----------|----------|--|--------------|-----------------|--------|
| Akmola | 70 | 60,7 | 9,3 | 21,4 | 3,9 | 0 | 0,5 | 0,4 | 3,8 |
| Aktuibinsk | 67,4 | 57,2 | 10,2 | 22,8 | 4 | 0 | 0,6 | 0,6 | 4,6 |
| Almaty | 76,3 | 68,2 | 8,1 | 16,2 | 4,1 | ... | 0,4 | 0,1 | 2,9 |
| Atyrau | 68 | 55,5 | 12,5 | 25,3 | 2,7 | 0 | 0,5 | 0 | 3,5 |
| West Kazakhstan | 76,7 | 72,3 | 4,4 | 17,7 | 3,3 | 0 | 0,3 | 0,3 | 1,7 |
| Zhambyl | 70,6 | 62,3 | 8,3 | 20,9 | 4,2 | 0 | 0,9 | 0,4 | 3 |
| Karaganda | 70,5 | 55,8 | 14,7 | 21,5 | 5,1 | 0,1 | 0,1 | 0 | 2,7 |
| Kostanay | 70,4 | 65,8 | 4,6 | 16,9 | 4,6 | 0 | 0,6 | 0,6 | 6,9 |
| Kyzylorda | 69,2 | 61,6 | 7,6 | 21,3 | 2,5 | 0,2 | 0,7 | 0,4 | 5,7 |
| Mangystau | 69,8 | 60,9 | 8,9 | 18,7 | 7,4 | 0,1 | 1,1 | 0 | 2,9 |
| South Kazakhstan | 81,6 | 77,3 | 4,3 | 10,7 | 5,1 | 0 | 0,3 | 0 | 2,3 |
| Pavlodar | 73,9 | 67,2 | 6,7 | 18,8 | 3 | 0 | 0,5 | 0,4 | 3,4 |
| North Kazakhstan | 57,5 | 50,6 | 6,9 | 31,5 | 3,6 | 0 | 0,5 | 1,4 | 5,5 |
| Turkestan | 71,6 | 44,5 | 27,1 | 17,6 | 8 | 0,1 | 0,7 | 0,1 | 1,9 |
| East Kazakhstan | 59,8 | 55,3 | 4,5 | 32,3 | 3 | 0 | 0,7 | 0,1 | 4,1 |
| Astana city | 73,4 | 64,6 | 8,8 | 17,7 | 2,7 | ... | 0,3 | 0,4 | 5,5 |
| Almaty city | 67,7 | 62,7 | 5 | 25,3 | 2,5 | 0 | 0,6 | 1,2 | 2,7 |
| Shymkent city | 73,8 | 55,7 | 18,1 | 19,4 | 3,8 | 0,1 | 0,2 | 0,2 | 2,5 |

Source: compiled by authors according to www.stat.gov.kz

Thus, consumer spending in the Republic of Kazakhstan in 2022 averaged about 94% or 69.0 thousand tenge per capita, while in 2017 they amounted to only 48.6 thousand tenge, that is, the growth occurred by 42.0% or 20.4 thousand tenge. At the same time, more than 56.0% is occupied by the purchase of food products, non-food products accounted for 23.7%, 6.9% of income was directed to repay loans and credits, etc. (Figure 7).

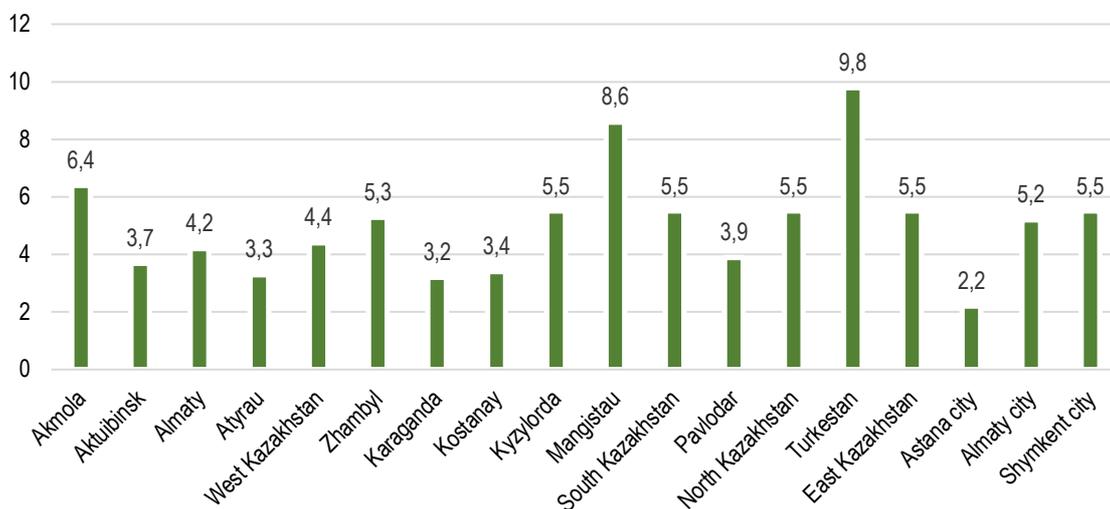
Figure 7. Consumer spending of the population, in %



Source: compiled by authors according to www.stat.gov.kz

As you know, according to the latest data, the cost of food, which is more than 50%, is the main confirming indicator of the depth of poverty of the population (comparison: in Central and Eastern Europe it does not exceed 18%). At the same time, the population with incomes below the subsistence level averaged 5.0% in 2022. In the Turkestan region, this figure exceeded 9.8%, Mangistau - 8.6%, only Astana as the capital shows the lowest figure of 2.2% (Figure 8).

Figure 8. Population with incomes below the subsistence level, %



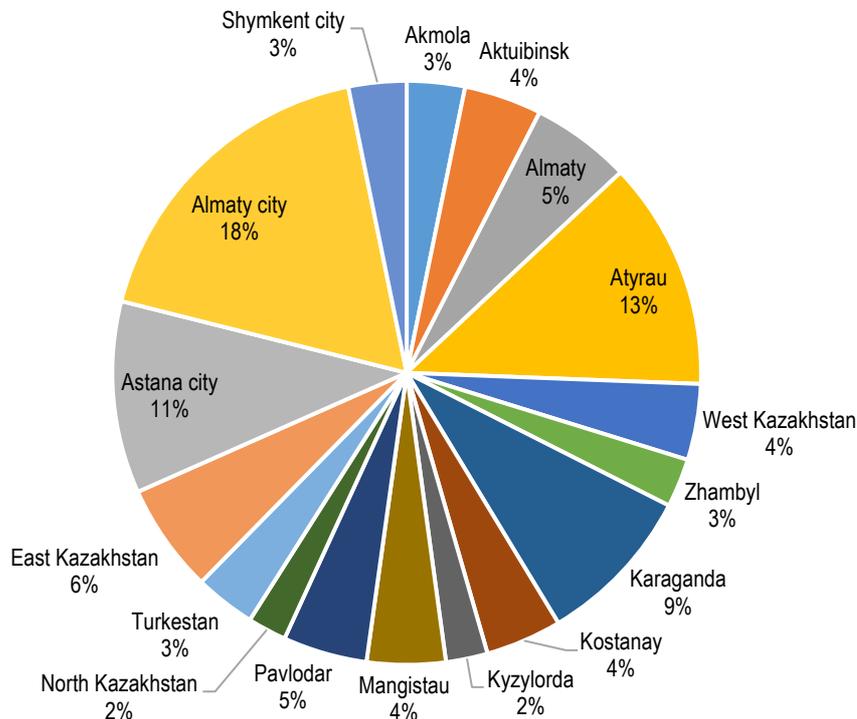
Source: compiled by authors according to www.stat.gov.kz

Thus, the uneven increase (decrease in the share) of the population's cash income on average per capita, a characteristic increase in consumer spending, a decrease in purchasing power, as well as a propensity to save money, a low level of income of the population raises the urgent issue of improving the mechanism for managing the quality of life of the population of the regions of Kazakhstan to prevent possible social threats through economic leverage.

The data in Figure 9 show that in terms of the share of GRP attributable to the regions, and these are regions with a powerful mineral resource base, as well as large cities with high investment inflows: Almaty - 18%,

Atyrauskaya - 13%, Astana - 11 %, Karaganda - 9%, East Kazakhstan region - 8%. Small shares in the total volume of GRP accounted for North Kazakhstan -2%, Kyzylorda -2%, Zhambyl and Shymkent 3% each.

Figure 9. The share of GRP of regions, in 2022%



Source: compiled by authors according to www.stat.gov.kz

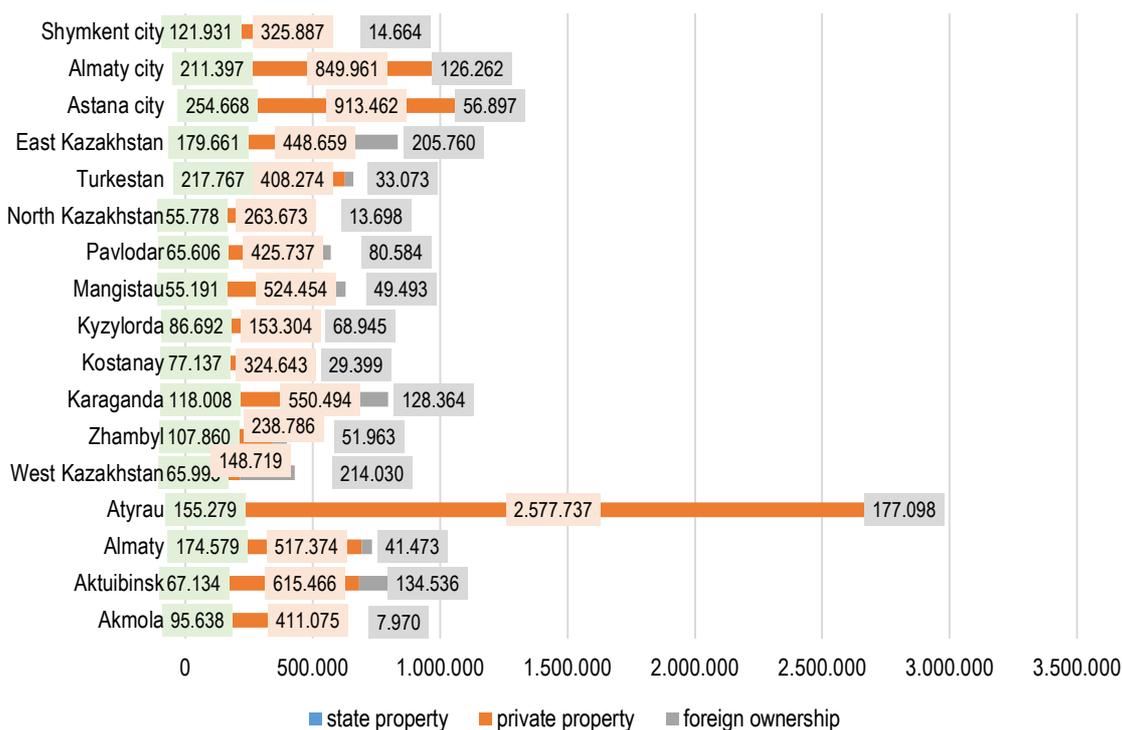
3. Social Investments and Their Social Effect in Relation with Sustainable Development

Considering the dynamics of investments in recent years, depend on the form of ownership. Figure 10 shows that foreign investments amounted to almost 1,434.2 billion tenge, private 9,697.7 billion tenge and state 2,110.3 million tenge. Public investment is only 15.9% of total investment in 2021-2022, 19.1% (2340.0 billion tenge) in 2020, 12.2% in 2019 (1537.9 billion tenge) in 2019.

The most significant investments are expenditures on the functional group "Health and social security" and the volume of investments amounted to 187.2 billion tenge in 2021, 301.9 billion tenge in 2020, and 93.7 billion tenge in 2017. In terms of the amount of funds allocated to this functional group, the first place is occupied by Astana in 2022 (35,943 million tenge), Almaty from 2017-2022 (15,131 million tenge, 13,613 million tenge, 43,314 million tenge, 20,791million tenge, 21,836 million tenge). The lowest investment values are: Mangistau - 618 million tenge, 603 million tenge, North Kazakhstan - 2,620 million tenge in 2019, Atyrau - 2,731 million tenge in 2020 and 2,369 million tenge in 2021, 2,765 million tenge in 2022 (Table 2).

The analysis carried out on the investment of social expenditures shows a significant difference (from 19.9 billion tenge to 32.5 billion tenge) and differentiation between the maximum and minimum values: from 33.2 to 14.7 times (Table 3). That is, the formation of sustainable development of regions, the reduction of the large scope between regions in terms of the standard of living of the population, social security will be promoted by the spread of social investment as a process of financial regulation in the field of socio-economic development of regions.

Figure 10. Investments in fixed capital, million tenge



Source: compiled by authors

Table 2. Social investments by regions, million tenge

| Region | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|--------|--------|--------|--------|--------|--------|
| Akmola | 3.052 | 5.105 | 7.513 | 21.965 | 6.314 | 7.564 |
| Aktuibinsk | 8.254 | 7.088 | 9.050 | 14.313 | 5.870 | 6.798 |
| Almaty | 9.785 | 7.933 | 12.568 | 24.713 | 7.720 | 8.987 |
| Atyrau | 939 | 3.208 | 3.228 | 2.731 | 2.369 | 2.765 |
| West Kazakhstan | 3.191 | 4.234 | 4.825 | 5.343 | 5.953 | 6.586 |
| Zhambyl | 4.063 | 4.996 | 6.749 | 14.327 | 13.056 | 13.985 |
| Karaganda | 8.876 | 7.879 | 6.657 | 26.442 | 15.403 | 16.846 |
| Kostanay | 2.367 | 4.103 | 4.036 | 14.675 | 9.043 | 10.645 |
| Kyzylorda | 5.601 | 8.187 | 8.057 | 15.161 | 5.705 | 6.745 |
| Mangistau | 618 | 603 | 3.637 | 18.870 | 6.365 | 7.956 |
| Pavlodar | 4.876 | 6.006 | 10.339 | 14.307 | 4.594 | 5.683 |
| North Kazakhstan | 2.474 | 2.716 | 2.620 | 14.744 | 11.340 | 12.325 |
| Turkestan | 3.948 | 12.050 | 8.377 | 11.039 | 21.436 | 22.536 |
| East Kazakhstan | 8.172 | 7.459 | 9.938 | 27.416 | 9.582 | 10.584 |
| Astana city | 4.689 | 14.002 | 11.953 | 24.288 | 34.826 | 35.943 |
| Almaty city | 20.540 | 15.131 | 13.613 | 43.314 | 20.791 | 21.836 |
| Shymkent city | 2.272 | 2.529 | 3.333 | 8.263 | 6.920 | 7.563 |
| Average value | 5.513 | 6661 | 7.441 | 17.759 | 11.017 | 12.974 |
| X max. | 20.540 | 15.131 | 13.613 | 43.314 | 34.826 | 35.943 |
| X min. | 618 | 603 | 2.620 | 2.731 | 2.369 | 2.765 |
| Difference (R) = max-min | 19.922 | 14.528 | 10.993 | 40.583 | 32.457 | 33.178 |
| Differentiation (R ₁)=max/min, times | 33,2 | 25,1 | 5,2 | 15,9 | 14,7 | 13,0 |

Source: compiled by authors

Table 3. Difference of regions in terms of social investment

| Characteristic | Regions |
|---|---|
| <ul style="list-style-type: none"> Territories with a large contribution to GRP per capita, high levels of wages | <ul style="list-style-type: none"> Almaty city, Atyrau, Astana city, Karaganda, East Kazakhstan |
| <ul style="list-style-type: none"> Regions with an average level of social development | <ul style="list-style-type: none"> Aktuibinsk, Almaty, Karaganda, Kostanay, Pavlodar, West Kazakhstan |
| <ul style="list-style-type: none"> Regions with a low share of social investment | <ul style="list-style-type: none"> North Kazakhstan, Kyzylorda, Zhambyl, Atyrau, Mangistau, Shymkent city |

Source: compiled by authors

As a result of the investments made in obtaining a social effect, there should be a dynamic change in the quality of life of the population, as well as the environmental situation. The criteria for improving the quality of life include the following social indicators: life expectancy, income level, unemployment reduction, provision of medical care (the number of doctors per 10,000 people), the number of schools, the creation of "green jobs" (environmental safety), etc.

Using correlation analysis and Excel tools, we will carry out the dependence of these criteria on the quality of life of the population depending on the level of social investment.

Table 4. Quality of life criteria required for correlation analysis by region

| Region | Life expectancy | Depth of poverty | Nominal money income (average per capita/month, tenge) | Provision of the population with medical care, per 10,000 population | General education schools | Employees in "green jobs" (environmental factor), people | Unemployed population, thousand people | Social investments, million tenge |
|------------------|-----------------|------------------|--|--|---------------------------|--|--|-----------------------------------|
| Akmola | 68,86 | 1,2 | 122 039 | 26,2 | 569 | 2 449 | 20,5 | 6 314 |
| Aktuibinsk | 70,83 | 0,6 | 115 009 | 45,4 | 426 | 2 750 | 21,2 | 5 870 |
| Almaty | 70,53 | 0,7 | 97 519 | 25 | 800 | 3 242 | 48,5 | 7 720 |
| Atyrau | 70,01 | 0,2 | 251 597 | 30,9 | 213 | 2 187 | 16,3 | 2 369 |
| West Kazakhstan | 69,69 | 0,7 | 128 077 | 33,3 | 383 | 2 421 | 16,4 | 5 953 |
| Zhambyl | 69,15 | 0,5 | 90 255 | 29,5 | 484 | 1 462 | 25,7 | 13 056 |
| Karaganda | 69,14 | 0,5 | 140 882 | 46,8 | 530 | 4 624 | 30 | 15 403 |
| Kostanay | 69,29 | 0,5 | 122 249 | 28,7 | 496 | 2 294 | 24,1 | 9 043 |
| Kyzylorda | 70,83 | 0,7 | 92 531 | 34,5 | 323 | 2 305 | 17 | 5 705 |
| Mangistau | 70,57 | 1,6 | 156 740 | 33,7 | 172 | 2 057 | 16,9 | 6 365 |
| Pavlodar | 68,93 | 0,6 | 138 244 | 40,4 | 371 | 3 325 | 19,4 | 4 594 |
| North Kazakhstan | 68,57 | 0,8 | - | 31 | 474 | 1 881 | 14,7 | 11 340 |
| Turkestan | 70,18 | 1,3 | 60 105 | 29,2 | 963 | 1 650 | 41,8 | 21 436 |
| East Kazakhstan | 69,33 | 0,9 | 69 105 | 43,9 | 676 | 4 482 | 33,5 | 9 582 |
| Astana city | 72,87 | 0,3 | 133 823 | 76,4 | 147 | 4 289 | 28,1 | 34 826 |
| Almaty city | 71,97 | 1 | 194 398 | 68,6 | 317 | 4 690 | 53,5 | 20 791 |
| Shymkent city | 70,49 | 0,9 | 179 554 | 44,6 | 206 | 1 957 | 21,9 | 6 920 |

| Region | Life expectancy | Depth of poverty | Nominal money income (average per capita/month, tenge) | Provision of the population with medical care, per 10,000 population | General education schools | Employees in "green jobs" (environmental factor), people | Unemployed population, thousand people | Social investments, million tenge |
|-------------------------|--|---------------------------------------|--|--|---|--|---|-----------------------------------|
| Linear forecast | $Y = 3969,5x - 2671,40$ $R^2 = 0,314$ | $Y = 1617x + 12253$ $R^2 = 0,0051$ | $Y = 834,52x + 3506,2$ $R^2 = 0,266$ | $Y = 392,14x - 4394,2$ $R^2 = 0,4744$ | $Y = 1,4136x + 10389$ $R^2 = 0,0015$ | $Y = 55,733x + 2325,8$ $R^2 = 0,675$ | $Y = 0,5909x + 21,123$ $R^2 = 0,653$ | |
| Correlation coefficient | 0,56 | -0,071 | -0,153 | 0,688 | 0,038 | 0,419 | 0,49 | |

Source: compiled by authors

The correlation coefficient shows a linear relationship between random variables (in our case, between indicators of quality of life and social investment).

$$\rho = \frac{cov(X; Y)}{\sigma_x \sigma_y} = \frac{E[(X - \mu_x)(Y - \mu_y)]}{\sigma_x \sigma_y} \tag{3.1}$$

Correlation (example, lifespan) 0,560320335 Covariance = 4969,882698962

The correlation shows that the linear relationship between life expectancy and social investment is 56%. The strongest relationship can be traced between investment and the provision of medical care to the population over 68% (Table 4). The coefficient of covariance once again confirms the unidirectional variability or linear dependence of the two analyzed quantities (Table 5).

Table 5. Analysis tool correlation and covariance

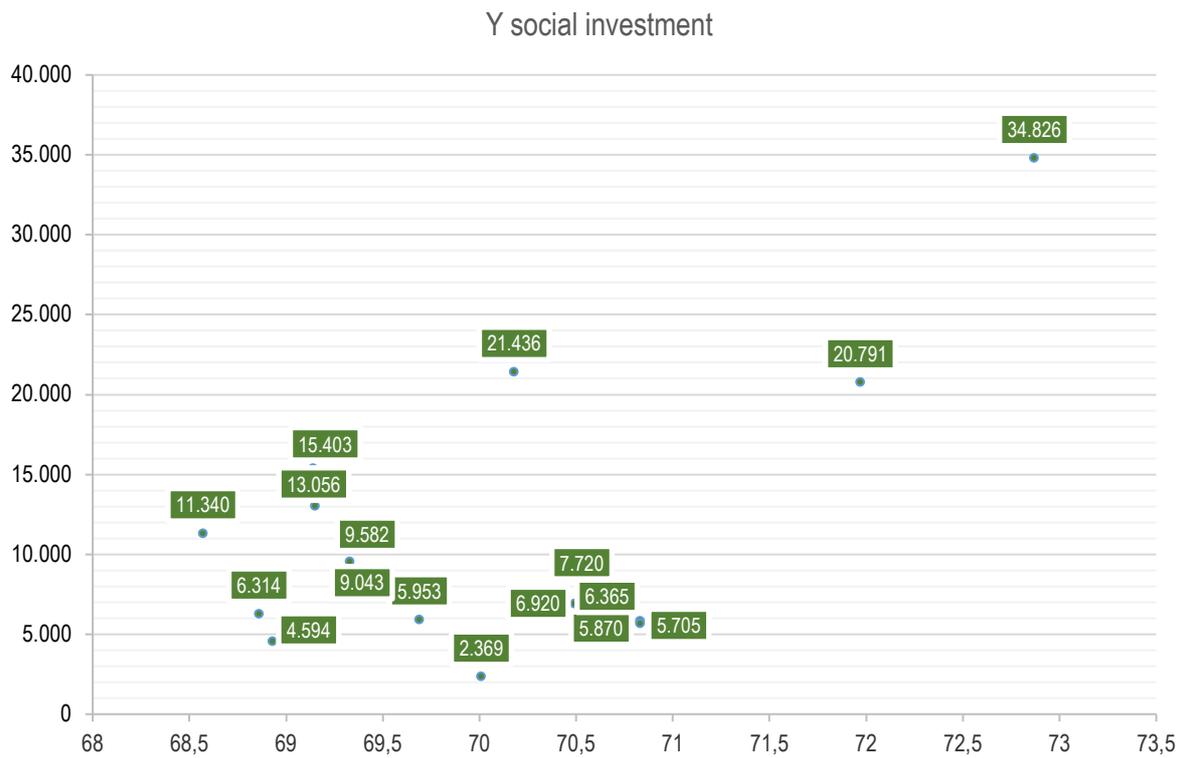
| | Correlation | | | Covariance | |
|---------------------|-------------|---------------------|---|-------------|---------------------|
| | X | Y social investment | | X | Y social investment |
| X | 1 | | X | 1,252008997 | |
| Y social investment | 0,001885026 | 1 | Y | 0,009210146 | 62836510,46 |

Source: compiled and calculated by authors

The constructed Figure 11, namely the scatter plot shows the dependence of the two analyzed variables. In the absence of interconnection, the points would be located in the form of a cloud. Thus, the following indicators of quality of life have the greatest dependence on social investment:

- life expectancy;
- providing the population with medical care;
- number of employees in "green jobs" (environmental factor);
- unemployment rate.

Figure 11. Correlation relationship between life expectancy and social investment



Source: compiled and calculated by authors

An analysis of the factors of the relationship between indicators of the quality of life of the population and the level of social investment and possible directions for solving problems are presented in Table 6.

Table 6. Recommendations and expected results of social investment mechanism

| Recommendations | Expected Result |
|---|---|
| <ul style="list-style-type: none"> Under social investment, fix the obligatory receipt of a social effect that affects the quality of life of the population. The criteria for the quality of life should be understood as: life expectancy, income level, unemployment reduction, provision of medical care, the number of schools and the environmental factor (creation of "green jobs", etc.). | <ul style="list-style-type: none"> Local authorities will be interested in attracting social investment, creating conditions that stimulate the development of social investment by providing tax incentives, introducing tax holidays, exempting or completely abolishing the payment of corporate income tax during the implementation of a social project, etc. |
| <ul style="list-style-type: none"> Improving the tools and mechanisms of public-private partnership interaction. | <ul style="list-style-type: none"> Creation of various options for interaction between the state and business by stimulating entrepreneurship with financial instruments (loans, taxes, insurance, leasing, etc.) |
| <ul style="list-style-type: none"> Distribution of social investment products in the form of issuance of securities. | <ul style="list-style-type: none"> Expansion of social investment, active involvement of the population and business entities in the development of the social investment market. |
| <ul style="list-style-type: none"> Analysis of factors affecting the quality of life of the population by raising the level of socio-economic development of the regions, taking into account economic, social and climatic factors. | <ul style="list-style-type: none"> Improving the standards that allow to calculate the provision of social services to the population of the regions. Development of information base of social investment. |
| <ul style="list-style-type: none"> Environmentally oriented, innovative development in the field of environmental protection, creation of environmentally friendly jobs. | <ul style="list-style-type: none"> Improving the quality of life of the population, increasing life expectancy, reducing the incidence of the population as a result of innovative and investment measures for environmental protection, increasing payments for environmental pollution. |

Source: compiled by authors

Conclusion

Thus, the issues of promoting social investment will help in solving economic problems in terms of improving the quality of life of the population, creating new environmentally friendly jobs, protecting the environment, reducing the incidence of the population and increasing life expectancy, access to medicine and education, and will also become a tool for redistributing temporarily free funds between business entities. The introduction of the mechanism of social investment in the direction of the efficient use of financial resources will lead to an increase in the sustainable socio-economic development of the state as a whole.

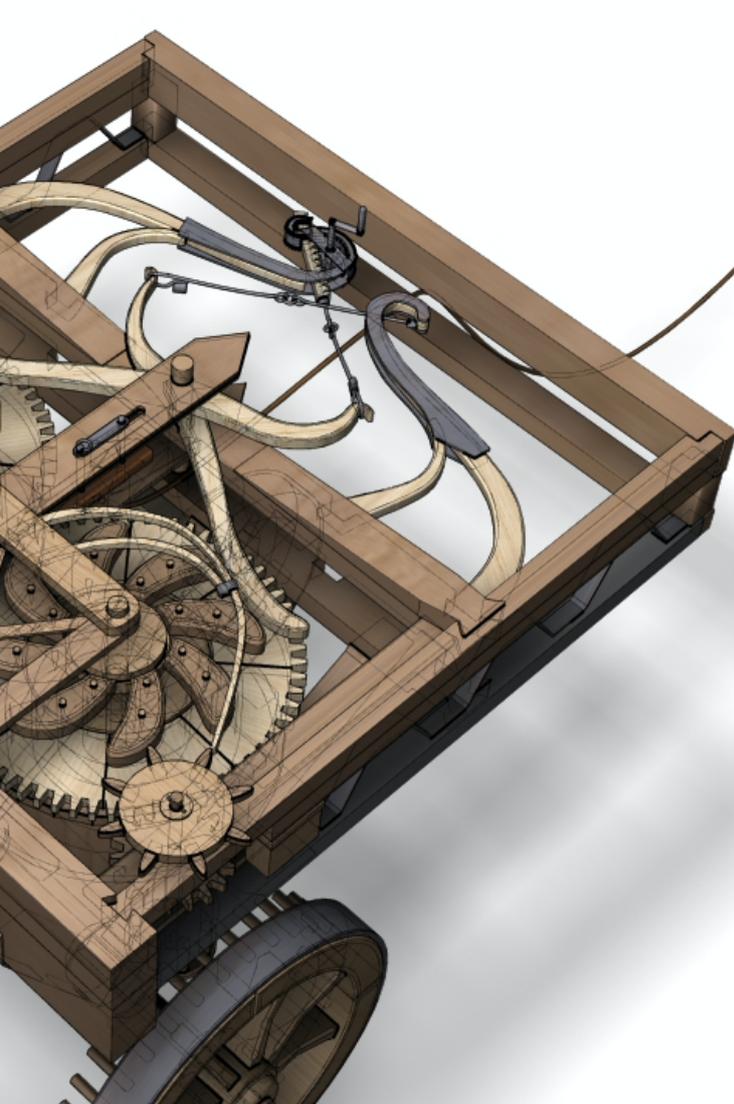
Environmentally oriented, innovative development in the field of environmental protection, the creation of environmentally friendly jobs as a result of the growth of social investment will lead to an increase in the quality of life of the population, an increase in life expectancy, a decrease in environmental pollution, and an increase in payments for environmental pollution.

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