

RESEARCH ARTICLE

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Assessment of the Sustainable Development of Regions: the Case of Kazakhstan

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Abstract

This research work is devoted to assessing the sustainable development of regions in the example of Kazakhstan. Sustainable development is a strategically important aspect of the country, balancing economic growth, social well-being and environmental protection. The paper considers the key indicators used to assess the sustainable development of the regions of Kazakhstan. The Sustainable Development Goal Index (SDI) was calculated based on seven statistical indicators: gross regional product per capita, food security, unemployment rate, poverty rate, crime rate, education level, and environmental pollution in 14 regions and three cities from 2011 to 2021. The data was collected from the Bureau of National Statistics of Kazakhstan. The initial data of stability indicators were used as a matrix with dimensions $m * n$ to calculate the weight coefficients. Further indicators were scaled and standardized. In addition, to evaluate the weighted index, a measure of the entropy of the indicator was calculated. As a result of the index calculation, it was revealed that the rating leaders are the regions with the lowest normalized poverty level, and these regions take the first place - the cities of Almaty, Astana and Shymkent. In comparison, the highest normalized poverty rate with the lowest positions are Turkestan, North Kazakhstan and Zhambyl regions. This work is essential for making effective decisions and developing targeted strategies for the sustainable development of Kazakhstan. It can be used as a basis for further research in the regional development sustainability field.

Keywords: Economy, Economic Indicators, Sustainable Development Goals, Region, Regional Development, Kazakhstan

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1. INTRODUCTION

Sustainable development today is becoming one of the most relevant and significant global and regional topics. In the face of rapid changes in the world caused by social, economic, and environmental challenges. The biological crisis and pandemic, which led to the stagnation and decline of the world economies, both developing and developed countries, caused severe damage to humanity. The current situation on the world stage was deepened by the political crisis, which led the world economies into imminent economic and social crises. There was a need for a qualitative transformation of all economic system elements. These cardinal transformations necessitate the adjustment of the national economy development concept and revising the state management system.

Worldwide threats, which have an ambiguous impact on the economy, exacerbate the issue of adjusting strategic goals and alternatives for Kazakhstan's economic development. The problem of improving the model of the socio-economic prospects of Kazakhstan, with the still raw material sector of the economy, is paramount. In turn, the UN Global Sustainable Development Goals are aimed at solving several social, environmental, and economic problems on the principle of "leave no one behind" and cover a wide range of external and internal challenges of each country individually and the world as a whole (Shirazi et al., 2021; Kuanova et al., 2021). At the same time, it should be noted that the increasing external challenges have a worldwide orientation, which necessitates the unification of the efforts of all countries to implement the Global Sustainable Development Goals of the United Nations (GSIA, 2019).

Some countries with developed economies integrate the UN SDGs into plans and programs for strategic economic growth: they adopt legislative frameworks, develop state roadmaps and programs, and create international platforms. Thus, the development of the modern level of globalization and the simultaneous increasing ambiguity not only actualize the issue of diversification of the economy of Kazakhstan and the departure from the raw material vector but also reveals the need to solve social, environmental and economic problems.

Kazakhstan achieved first place in the Central Asian region in terms of its FDI stock per capita and FDI stock to GDP ratio in ranking in 2018. Despite the volatile global investment climate, which reduced foreign investment into emerging markets and transition economies, the country maintained its attractiveness to foreign investors (Shirazi et al., 2021). According to the SSI Kazakhstan ranks 56 of 154 countries with 7.7 scores for Human well-being, 2.8 for Environmental well-being, and 5.3 for Economic well-being (SSI, 2022). There is another rating for SDGs assessment, which the UN compiles and the Bertelsmann Foundation annually – the UN SDG Index is calculated for 163 countries of the world based on 100 indicators related to implementing 17 SDGs. It should be noted that the number of indicators for the index measurement increases year by year to cover the data gap. Thus, it was estimated within 60 indicators in 2016, and 100 in 2022 (Lafortune et al., 2018). According to SDG Index, Kazakhstan ranks 65 with 71.1 scores.

Since sustainable development covers all aspects, economic, social, and environmental, the research results positively impact improving the institutional support and management system of sustainable development in the regions, and territories. Moreover, the improvement of social policy and environmental education, and the effective use of resources through implementation mechanisms based on the principle of "financing according to the needs of the regions" will allow sustainable economic development goals to be achieved.

This study focuses on Kazakhstan's sustainable regional development and its importance in ensuring equal and sustainable progress in various parts of the country. Kazakhstan, one of Central Asia's largest countries, has a diverse geography, unique natural resources, and rich cultural heritage, providing unique opportunities and particular challenges for the sustainable development of all its regions. Assessing the sustainable development of areas becomes critical

in the context of rapid growth in urbanization and global sustainability issues. The integrated approach will help develop more effective strategies and innovative solutions to manage regional development and create more sustainable regional environments.

In the context of rapid changes in the global economy and the environment, sustainable development is becoming the task of the government, authorities, and society. Only the interaction of the state, the business sector, scientific and educational institutions, and civil society can ensure the successful implementation and support of sustainable development at all levels.

The purpose of this study is to analyze the current state of sustainable development in the regions of Kazakhstan based on the latest available data. Key indicators that affect the sustainability of regions, such as GRP per capita, unemployment, poverty, food security, and environmental and social aspects, were considered.

The study results help identify priority areas and develop effective strategies to achieve sustainable development in all regions of Kazakhstan. The paper aims at supporting and strengthening the sustainability of the economy, social justice, and environmental protection because there is a prosperous future for Kazakhstan and its people by taking joint actions.

2. LITERATURE REVIEW

Countries with developed economies, such as the United Kingdom, Sweden, Germany, and Japan, have implemented the SDG in strategic programs and justified them in the legislative framework, which allowed for improving indicators covering sustainable development. However, the contradictory challenges and uncertainty of the external situation caused by the pandemic, and lockdowns, in turn, exacerbated many social problems, such as hunger, poverty, and inequality in health and education. These negative consequences have caused the need for concerted efforts for a qualitative transformation of the world economy. According to some estimates, 231 indicators are used officially for the SDGs' progress and rankings toward sustainable development. The essential function of the indicators is the target and goal identification, resource distribution, and impact behavior. Two hundred thirty-one indicators seem insufficient for all 169 targets of the SDGs, as some marks have 12 target tree indicators and 105 targets tracked using one indicator for each target (Steingard et al., 2023). According to Kim (2023), to ensure effective governance, it is crucial to have a collective understanding of indicators and their purpose. Indicators act as boundary objects and should be designed in a way that includes the viewpoints of all stakeholders involved. Monitoring progress towards sustainable development goals goes beyond just collecting statistical data; it involves an ongoing dialogue process between scientists and policymakers. This dialogue revolves around questions such as what needs to be measured, why it is essential to measure specific aspects, and who should be responsible for measuring them. These discussions play a vital role in shaping the monitoring process for SDGs.

The transition to sustainable development of the country's economy at the present stage largely depends on the diversification of the economy, which is the most constructive for the current post-pandemic situation. Since sustainable development is a complex and interdisciplinary field of research (Urbaniec et al., 2017) and a dynamic process influenced by various factors and their complex interaction (Zhang et al., 2017), it was used a weighted index assessment method in this study, which is an effective tool implemented by international and domestic assessments (Cheng et al., 2018). Reliable results of the empirical analysis will allow evaluation of the effectiveness of institutional support for sustainable development, economic growth, and economic and social indicators that influence the sustainable development of regions (Luo et al., 2023; Ullah et al., 2023).

In the study by Kwatra et al. (2016), they considered the possibility to induce the development of various regions and to identify stable and unstable indices of regions. However, the creation of the index faced difficulties due to complexity, stability assessment, data limitations, the need for

methodologies to maintain estimates, and adherence to the details of information on the specific problems of each region.

In the study by Maranghi et al. (2020), sustainable development assessment includes an analysis of the interaction of regions with the environment and social and economic factors. The study focuses on the level of energy consumption, resource efficiency, greenhouse gas emissions and other aspects that affect the sustainability of the regional environment. A set of six regional sub-dimensions is defined, considering flows and their interdependence in infrastructure and quality of life. The combined approach considers different levels of data granularity, including information flows and quality-of-life data.

Borowski and Patuk (2021) draw attention to food security, conservation of species and ecosystems, availability of energy and capacity sources, and parameters that determine the positive impact of climate change and environmental regulation on the energy and economic development sectors. Moreover, sustainable development becomes necessary to achieve a high standard of living and well-being and ensure food security. Here, the emphasis is on the urgency of action and attention to pursuing sustainable development. For instance, innovative approaches to sustainable development in agriculture, including the search for new production methods and technologies consistent with environmental requirements, environmental, economic valuation, animal welfare and improved working conditions for farmers.

Improving data quality and developing methodologies allow for a more accurate consideration of sustainable development. A review of various approaches for the sustainability assessment of territories used in practice has shown that the main complexity in choosing a methodology and approach is the choice of tools for generalizing (normalization) data, bringing them to a single measurement system, the choice of coefficients of significance (weight) of indicators and their evaluation (Tolstykh et al., 2020; Bilgaev et al., 2023).

There are few studies with an appropriate number of sustainability assessments at the local and regional levels. The reason is mainly based on methodologies directed at the national level and limited data availability. The conventional method for conducting a sustainability assessment involves creating a list of indicators, which can be derived from statistical data or expert opinions. These indicators are then converted into the appropriate format for assessment and used to estimate a composite sustainability index (Anelli et al., 2022). The Sustainable Society Index (SSI) is structured along the lines of the Triple Bottom Line of social, environmental, and economic sustainability. It measures a country's achievements in terms of sustainability of social development on a scale from 0 (the lowest degree of sustainability) to 10 (the highest degree of sustainability) based on 24 indicators (Nogueira et al., 2022). Most scholarly articles on how COVID-19 and other threats have affected Sustainable Development Goals have a worldwide perspective. However, it is essential to note that most policies related to achieving these SDGs are under the jurisdiction of individual nation-states. Given this context, there is an increasing urgency for national policymakers to reconsider and redesign their policies about anticipating and recovering (Gostin et al., 2019; Buckley, 2022).

The study of mechanisms for implementing and integrating goals into state development programs at the international scientific level has a fairly extensive range. The state policy of Kazakhstan in achieving the Sustainable Development Goals was defined in the Strategy of Kazakhstan – 2050 and partially outlined by the Concept of transition to a "green economy". However, the results achieved are moderate, have a "focal mosaic appearance" (Satybaldin et al., 2019), and do not have a systematic structure for implementation. 17 SDGs were adopted in 2015 with 169 targets for solving problems in all aspects of human life, social, environmental, and economic, and are wired for all member countries of the organization, of which Kazakhstan is also a member.

Despite the number of studies of Sustainable Development Goals by authors worldwide, a gap

in research related to achieving the goals in the regional context, in the context of worldwide threats, and the renewal of the Concept needs to be sufficiently studied. Based on the conducted literature review, seven main indicators were selected (gross regional product per capita, food security, unemployment rate, poverty rate, crime, education, and pollution) to assess the sustainable development of regions of Kazakhstan.

3. RESEARCH METHODS

The primary type of research used to achieve the main goal and objectives of the research is fundamental to the use of theoretical and empirical scientific research methods. The methods implement the research. The method of studying theoretical and methodological foundations of sustainable development, considering global threats and challenges based on international research. And the method is based on a comprehensive analysis of the current state and prospects of sustainable development of Kazakhstan's regions in the context of global threats using quantitative research tools. The research consists of the following stages:

- (1) Selection of indicators and assessment methodology;
- (2) Calculation and analysis of sustainable development of regions and cities of Kazakhstan.

Thus, for the study, there have been used several criteria for selection indicators for the regions' sustainability estimation (ESDR, 2022):

- (1) The total number of indicators was limited by the main seven indicators, including Gross regional product;
- (2) The indicators are single-variable and simple. The regions without available information were excluded.

The indicators are statistically valid and robust.

Within the framework of the key existing international sustainability assessment instruments, statistical data is the primary source for comparing and ranking different territories and regions (SGM, 2023). The system of collecting statistical data at the regional level is developed less than needed for Kazakhstan's sustainability assessment. At the same time, many important aspects of sustainable development still need to be adequately reflected. Therefore, the set of indicators is partly limited by the possibility of collecting open statistical data on the scale of all regions.

The authors selected seven indicators describing the country's regions' economic, social, and environmental or ecological situation. There was a limitation while researching the available statistical data for the regions. The indicators have been selected by similarities of the world bank data for the countries and have been used as official secondary data of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, Bureau of National Statistics. There is a lack of data for many indicators and some regions. Nevertheless, the authors decided to reach the goal and assess the sustainability of the country's regions.

For this reason, this study analyzes the impact of the quality of institutional support, economic growth, employment, and social welfare (the main grouped SDGs) on improving the economic model of sustainable development using statistical data on regions and cities of Kazakhstan from 2012 to 2021.

For the study were selected 14 regions and three big cities of the country, 17 overall. However, for the South Kazakhstan region, the data for the last 12 years has not been found from official sources, and the indexes have not been estimated for the region. The authors tried to cover the main SDGs, for regional sustainability assessment, but the accent was made to the social and economic indicators presented in Table 1.

TABLE 1. Indicators for sustainability assessment

No.	Indicator	Description
1	Gross regional product per capita	The growth rate of the GRP per capita
2	Food security	The proportion of the population at risk of malnutrition (hunger) in the total population
3	Unemployment rate	The unemployment rate of the population, the unemployed population within the economically active population
4	Poverty rate	Proportion of the population with incomes used to consumption that below the national subsistence line
5	Crime	Crime index, the total number of registered crimes for 1000 divided to total population of the region
6	Education	Gross secondary education enrolment ratio of the total population
7	Pollution	The number of sources of pollutant emissions from the total amount divided by the total population of the region
<i>Note:</i> compiled by authors		

This is a limitation of using only seven indicators for the sustainability assessment of 15 regions and three big cities of Kazakhstan. The reason for the limitation is difficulties with statistical data obtaining for every region. Mostly there is a lack of data. But the authors believe it is the start of further research it could develop by including newly available sustainability indicators. Furthermore, by assessing the regions for different periods, the progress of regress in the sustainable development of the regions could be estimated.

For the assessment of the sustainable development of regions, the Sustainable Development foals index (SDI) was estimated. This index was calculated based on seven statistical indicators characterizing the region's sustainable development in three main directions: economic development, social infrastructure, and environment.

The first stage of the sustainability assessment of the regions is primary data processing.

For calculating the weighting coefficients, raw data of sustainability indicators are used as a matrix with dimension $m \times n$, where m is the number of assessment objects (regions), and n is the number of indicators (criteria or indicators of sustainability), which calculated by formula (1).

$$X = \begin{pmatrix} x_{11} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots \\ x_{m1} & \cdots & a_{mn} \end{pmatrix} \quad (1)$$

where x_{ij} is the initial value of the sustainability indicator.

As the next step, the indicators undergo linear scaling (normalization) operations, for making the data comparable across indicators determining the position of a particular region or city among others with the assignment of a private index from 0 to 1, where 1 characterizes the region as an absolute leader in terms of the indicator, and 0 – as an absolute outsider, which calculated by formula (2).

$$z_{ij} = x_{ij} - x_{ij} \min(x) / x_{ij} \max(x) - x_{ij} \min(x) \quad (2)$$

where, x_{ij} – initial value of the indicator (sustainability indicator) for a specific region, and z_{ij} – normalized value of the indicators.

The following step is the standardization of the normalized indicators regarding the sum of values for the number of research object (regions), which calculated by formula (3).

$$s_{ij} = z_{ij} / \sum_{t=1}^m z_{ij} \quad (3)$$

where,

s_{ij} – standardized value of the indicator (sustainability indicator),

z_{ij} – normalized value of the indicators for the specified object (regions).

The second stage in the sustainability assessment of the regions is the evaluation of weighting coefficients (significance coefficients) of sustainability indicators.

For the estimation weighted index, it is needed to calculate the measure of the entropy of the indicator (the measure of the deviation of the given value from the ideal), which calculated by formula (4).

$$\varepsilon_j = -\alpha \sum_{t=1}^m (s_{ij} \ln s_{ij}) \quad (4)$$

where,

ε_j – a measure of the entropy of the indicator,

α - coefficient is equal to “1-ln m”; and

s_{ij} - standardized value of the indicator.

And finally, it is the calculation of the weighted coefficient of the sustainability indicator (index), which calculated by formula (5).

$$\delta_j = (1 - \varepsilon_j) / \sum_{j=1}^n (1 - \varepsilon_j) \quad (5)$$

where,

δ_j – the weighted coefficient of the sustainability indicator (index), and

ε_j – a measure of the entropy of the indicator.

For the research, the authors have estimated the Sustainability development index for every region by using the described methodology and ranked the results from the most sustainable region to the unsustainable region of the country.

4. FINDINGS AND DISCUSSION

It must be mentioned the reason for the regional sustainability identification. There is a need to consider every region separately because the country's territory is large – 2,724 million square kilometres and the terrain is varied: steppes – 63%, deserts and semi-deserts - 25%, mountains - 10%, forests – 2% (Bimendiyeva et al. 2018). As a result, there are different industries and infrastructures across the country. It means there is a need for separate management and budget economic strategies.

Global threats, such as pandemics, political instability, financial crisis, and natural disasters, have an essential influence on every country's economic and social situation. SDGs and targets are becoming actual and are requiring more attention, as these circumstances at national and global levels exacerbate the problems of poverty and hunger. Next is provided data on gross regional product per capita by regions (Figure 4).

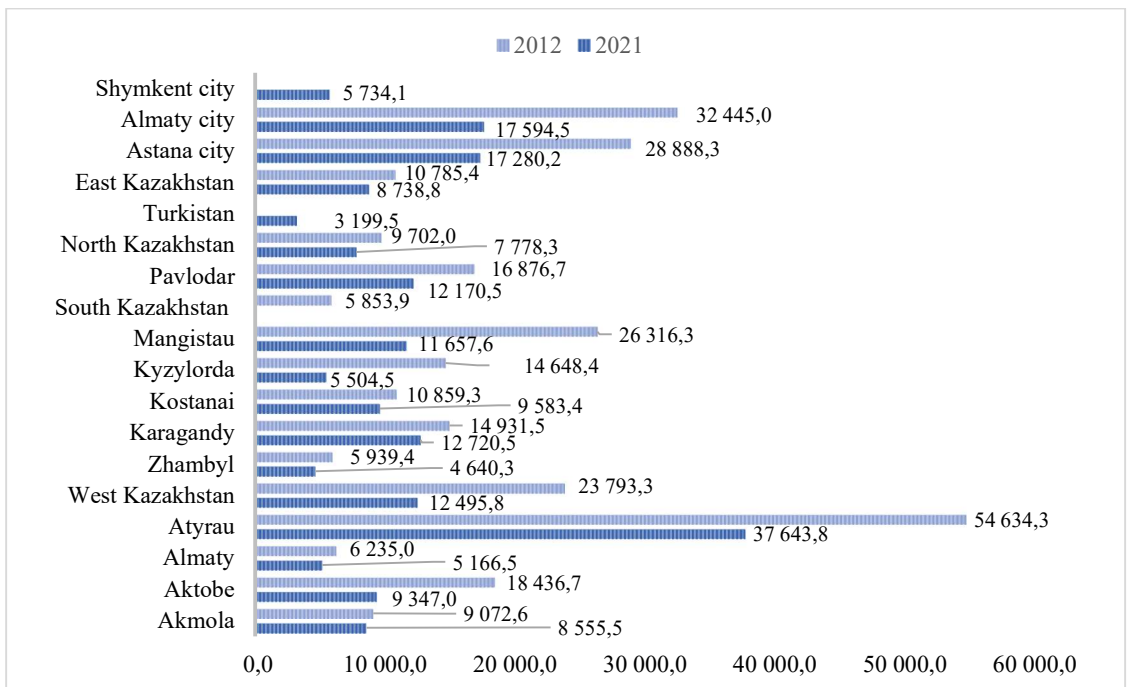


FIGURE 4. Gross Regional product per capita by regions, USD

Note: compiled by authors from the Bureau of National Statistics (2022)

Regarding national statistics, GRP is an excellent indicator of a country's gross domestic market. It represents the value of the final product and services sold in the economy, which are residents of a given region. Gross output is the total value of goods and services produced in the economy in the reporting period.

The highest GRP per capita is in the Atyrau region, and the lowest is in the Turkistan region. At the same time, it should not be considered that the coverage of the population of the Turkistan region is three times larger than that of the Atyrau region (Figure 4).

In general, based on the total of GRP per capita for the generally accepted period, it can be made possible to take:

1. The leaders in terms of GRP per capita are the oil and gas regions of the western region of Kazakhstan, as well as two megacities of the country - Almaty and Astana.
2. High values of GRP are significantly affected by population statistics.
3. High and low values of GRP per capita are in no way connected with the quality of life concerning the formation of a person's future well-being.

Since 2000, Kazakhstan has been using the concept of absolute poverty to determine minimum living costs. This entails calculating the cost of a basic consumer basket, which includes essential food products, goods, and services necessary for survival. The national poverty line in Kazakhstan is established by taking into account the average value of the subsistence minimum per capita as a percentage of the state's economic capabilities. Currently, it stands at 5.5% of the population total (Figure 5). To determine these indicators every quarter, a sample survey is conducted among 12,000 households. Additionally, the estimation method relies on expert and nutritionist input to select items included in this consumer basket rather than household behavior. The resulting list consists of 43 different commodities. Based on the methodology employed by the World Bank, in 2020 approximately 12% of the total population, which amounts to around 724 thousand

individuals, were living below the poverty line. This represents an increase in poor people compared to those recorded in 2019. This data based on PPP is two times more than the national poverty line. Next, there is given data on the proportion of the population at risk of malnutrition (Starvation) and proportion of population with incomes used to consumption that below subsistence line (Poverty) in selected periods.

Actually, according to the Kazakhstani official statistic, there is no hunger in the country, but there is a meaning of "food security", that is the proportion of the population at risk of malnutrition in the total population. Thus, 6.7% of the population could be at risk of starvation, that is 1.132 million people and it is 562 thousand people more at the risk of malnutrition (Figure 5).

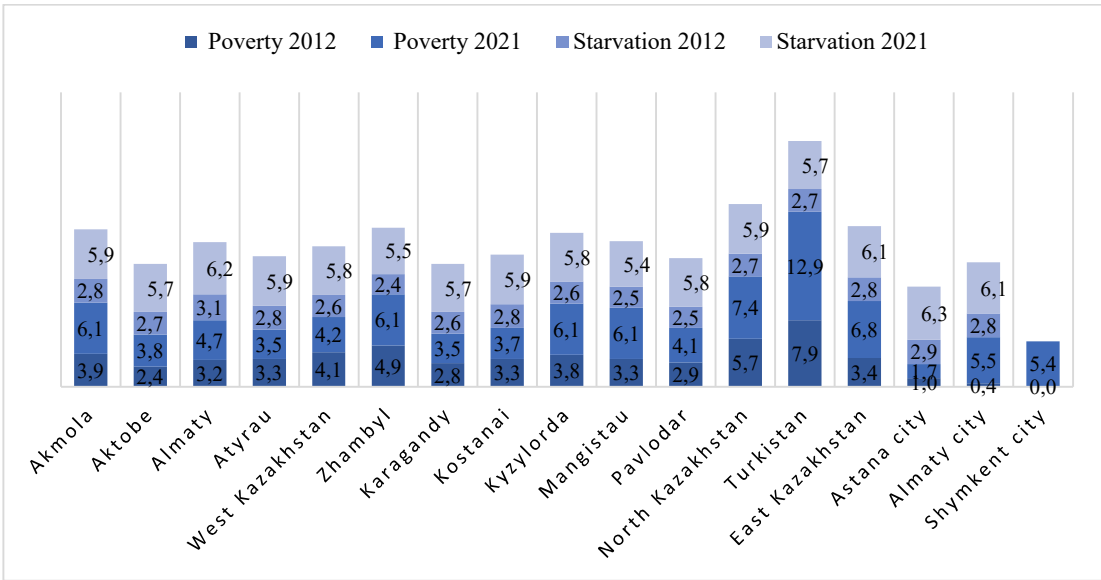


FIGURE 5. The proportion of the population at risk of starvation and poverty for 2012 and 2021, in %

Note: compiled by authors from the Bureau of National Statistics (2022)

Unfortunately, there is traced a negative trend in the labor market, is a result of cutting of expenses by the large employers. As a result, there is a need to form a new mechanism in the labor market for the government. Officially, there are 5.5% unemployed people of the total population (Figure 6).

One of the SDGs is promoting equitable quality education, encouraging lifelong learning opportunities for all. Furthermore, education relates to crime prevention (Martins Filho & Melo, 2023). The pandemic period and distance education had a mixed impact on the quality of education and accessibility, exposing additional problems for society and the state. Kazakhstan has satisfied primary and secondary education indicators, as these levels of education are mandatory and free, provided by the state. In the context of regions, there is a difference in the indicators.

Social tension arising from external and internal threats leads to increased crime. The crime index for the total population was used, estimated by the number of registered crimes in the regions.

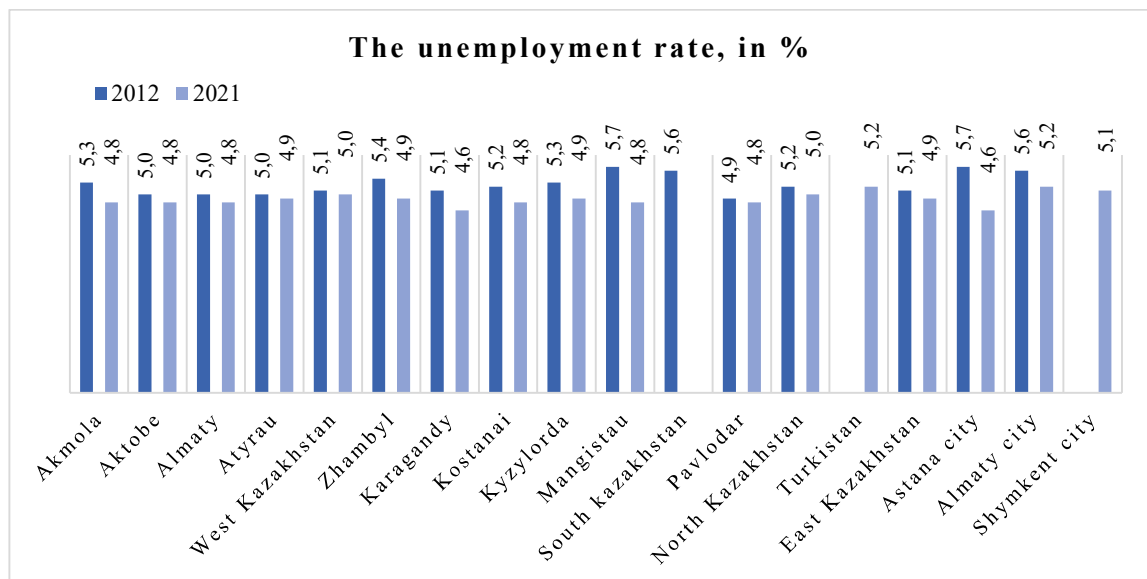


FIGURE 6. The unemployment rate of the population for 2012 and 2021, in %

Note: compiled by authors from the Bureau of National Statistics (2022)

For the environmental direction of the SDGs, it was selected the pollution indicator, in the form of the number of sources of pollutant emissions from the total amount of emissions per person in the region.

Based on the data retrieved from the estimation of the sustainability indexes of the regions, the first finding was the indicators of the selected criteria are various for varied regions of the country and there is a lack of similar results (see Table 2).

TABLE 2. The mean of the indicators of the regions in Kazakhstan

Normalized indicator	RGP	Poverty	Food security	Unempl.	Educ.	Crime	Pollution
Akmola	0,227	4,000	3,770	4,940	7,688	-5,115	5,275
Aktobe	-5,964	2,490	3,580	4,870	5,857	-4,319	5,606
Almaty	-0,923	2,990	3,980	4,820	4,286	-1,306	10,066
Atyrau	-2,047	2,960	3,490	4,930	5,828	-2,911	2,827
West Kazakhstan	-5,099	3,430	3,610	4,980	7,512	-4,030	1,626
Zhambyl	-1,734	4,270	3,420	4,990	0,144	-5,735	4,279
Karagandy	-0,728	2,190	3,440	4,830	-0,023	-6,843	4,687
Kostanai	0,200	3,080	3,720	4,940	-3,598	-9,745	5,229
Kyzylorda	-8,805	4,190	3,750	4,970	-0,739	-9,604	3,125
Mangistau	-6,535	3,860	3,350	5,050	5,837	-0,449	-0,064
Pavlodar	-2,097	2,600	3,590	4,830	1,244	-7,942	4,415
North Kazakhstan	-1,142	4,950	3,410	5,000	-3,259	-4,603	8,198
Turkistan	9,599	7,970	3,540	2,070	1,864	-9,102	-4,421
East Kazakhstan	-1,475	3,970	3,650	4,910	-0,370	-7,257	1,392
Astana city	-4,335	0,920	3,730	4,830	13,852	-0,976	1,269
Almaty city	-5,922	2,000	3,740	5,330	24,775	-4,695	-5,865
Shymkent city	-3,535	2,090	3,630	5,125	9,960	-5,122	-0,369

Note: compiled by authors

Obtained results allow to rank every region by each indicator, and to illustrate the average sustainable development index of the region (see Table 3).

TABLE 3. Rank of the regions for the selected Sustainable Development Index indicators

Indicator	Akmola	Aktobe	Almaty	Atyrau	West KZ	Zhambyl	Karagandy	Kostanai	Kyzylorda	Mangistau	Pavlodar	North KZ	Turkistan	East KZ	Astana city	Almaty city	Shymkent city
RGP	2	15	5	9	13	8	4	3	17	16	10	6	1	7	12	14	11
Poverty	13	5	8	7	10	15	4	9	14	11	6	16	17	12	1	2	3
Food security	16	7	17	5	9	3	4	12	15	1	8	2	6	11	13	14	10
Umempl.	9	6	2	8	12	13	4	10	11	15	5	14	1	7	3	17	16
Education	4	6	9	8	5	12	13	17	15	7	11	16	10	14	2	1	3
Crime	9	12	15	14	13	7	6	1	2	17	4	11	3	5	16	10	8
Pollution	14	15	17	8	7	10	12	13	9	4	11	16	2	6	5	1	3

Note: compiled by authors

As can be seen from Table 3, the variation of the normalized RGP varies from -8.805 in Kyzylorda to 9.599 in the Turkistan region. The poverty indicator varies from 7.970 in Turkistan to 0.920 in Astana city. The food security indicator is approximately equal for all regions and cities: 3.980-3.350. The unemployment indicator starts from 2.070 in Turkistan and ranges to 5.050 in Mangistau. If to turn to the education index, it varies from -3.598 in Kostanai to 24.775 in Almaty, there is the most difference between the growth of education and its decrease. The crime indicator has a negative value, which is the good tendency of decreasing registered crimes in the regions. That is -9.102 in Turkistan and -0.976 in Astana city. The most polluted region is Almaty city with the increase in the source of pollution – 10,066, followed by North Kazakhstan – 8.198

Using the results of the normalized selected indicators for the country's regions, we have ranked every region according estimated value. The RGP indicator showed positive leading positions for Turkistan, Akmola. Kostanai and Karagandy regions, while for Aktobe, Mangistau, and Kyzylorda regions this indicator has demonstrated negative and last positions.

As for the poverty indicator assessment, the proportion of the population with incomes used to consume below the national subsistence line was selected. The leader of the rank are regions with the lowest normalized poverty rate, and these regions are ranked first – Almaty city, Astana city, and Shymkent city. At the same time, the highest normalized poverty rate with the lowest positions are Turkistan, North Kazakhstan, and Zhambyl regions. For the following three indicators also were used the rank of negative effects. The food security indicator is based on the proportion of the population at risk of malnutrition (hunger) in the total population in the study and assessed top ranks for Mangistau, North Kazakhstan, and Zhambyl regions. The normalized food security indicator is varied for 0.63 points, and Almaty, Akmola, and Kyzylorda regions have the highest value. The population's unemployment rate was identified as an unemployed population within the economically active population. The regions were ranked Turkistan, Almaty regions, and Astana city with the lowest normalized unemployment indicator. In contrast, Almaty city, Shymkent city, and Mangistau region ranked last. Almaty, Astana, and Shymkent cities are ranked as the leaders of the education indicator and have significant differences with the regions. Almaty City, Turkistan, and Shymkent City were ranked top of the normalized pollution indicator.

From the assessment of the selected normalized indicators, it is possible to identify leaders and outsiders of the sustainable development index ranking for 14 regions and three cities of the country.

5. CONCLUSIONS

A state strategy is needed for further actions to implement the Sustainable Development Goals. The definition of clear and understandable indicators and the application of world best practices considering the specifics of the current situation in the country. Developing solutions using digital systems will effectively integrate sustainable development goals into the strategic concept of the regions and the country.

It should be noted that the scientific component of implementing the UN Sustainable Development Goals in the development of Kazakhstan's regions needs to be sufficiently explored. Despite understanding the leading role of new socio-environmental goals aimed at economic diversification, there must be more straightforward and more understandable indicators for further tactics and actions in the country.

Identification and assessment of the Sustainable development goals indicators and ranking them allow for the improvement of social policy and environmental education, the effective use of resources through implementation mechanisms based on the principle of "financing according to the needs of the regions". Consequently, it is the instrument for achieving sustainable economic development goals under global threats.

Generally, despite active initiatives on the part of the Government of the Republic of Kazakhstan and the development of relevant legislative documents on the SDGs, it should be noted that their achievement could be better across regions. Some SDG goals are integrated into the strategic development plans of the regions, but there needs to be more systematic management to achieve them.

Given the "focal mosaic" and uneven nature of the achievement of the SDGs in different regions and cities of republican significance, we believe it is necessary to assess the regions' current state with the dynamics of achieving the SDGs. This will allow monitoring of the interim results, adjusting them as necessary, and identifying the most vulnerable regions in the SDGs.

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