

# “Inclusive development: Assessment of regional inequality in Kazakhstan and measures to reduce it”

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# INCLUSIVE DEVELOPMENT: ASSESSMENT OF REGIONAL INEQUALITY IN KAZAKHSTAN AND MEASURES TO REDUCE IT

## Abstract

In recent years, inequality in the economic and social development of regions and population has increased in Kazakhstan. The purpose of this paper is to assess the level of differences between the regions of Kazakhstan in the field of social, economic, innovation, and infrastructural inclusion and offer recommendations for reducing regional inequality. The research hypothesis is that the high level of economic inequality of the regions determines the high level of differences in the field of social inclusion, inclusion in the field of infrastructure and innovation. The assessment of regional differences was carried out according to four groups of economic, social, innovative, and infrastructural indicators; private and integral indices of inclusive development of regions were calculated. The gaps between the highest and lowest index by groups were revealed: social inclusion – 3.37; economic inclusion – 7.45; infrastructure inclusion – 2.96; innovative inclusion – 6.67. A map of inclusive development of the regions of Kazakhstan is developed. Estimates showed that despite the large gap in the economic development of the regions, the gap in social and infrastructural development remained smaller. In cases where the gap between the maximum and minimum values of the index in the regions increased, more and more regions found themselves in the group with a low level of inclusive development.

## Keywords

inclusion, inequality, region, ranking, index of inclusive development, regional policy, Kazakhstan

## JEL Classification

R11, I31

## INTRODUCTION

In the conditions of global economic and geopolitical instability in many countries of the world, the trends of significant differentiation of individual territories in terms of social, economic, and innovative development are increasing. The inequality of countries and regions (developed, developing and poor) is also increasing under the influence of Industry 4.0 and the promotion of new technologies, which, on the one hand, contribute to economic growth, but on the other hand, can lead to the concentration of wealth in local territories with a developed high-tech sector.

The increasing socio-economic inequality in different regions of the country is evidenced by scientific research and practice of world development. However, despite many studies, scientists do not have a consensus on the causes and consequences of inequality in countries, regions, and cities. There are no clear and unified recommendations in the scientific literature on assessing the level of inequality and specific measures to reduce it and ensure inclusive development in the regional aspect. In many works, it is argued that inequality can be the engine of economic growth, while in others; it is proved that it will be a destabilizing factor, as it contributes to social tension in society and

the subsequent economic downturn. Therefore, the problem of overcoming excessive inequality of territories is on the agenda in many countries.

In Kazakhstan, the problem of regional inequality is very acute. The country occupies a large territory, its regions have different climatic and resource capabilities, different industry specialization. For example, western regions specialize in gas and oil production (Atyrau, Aktobe, West Kazakhstan, Mangystau regions), southern regions (Almaty, Zhambyl, Turkestan regions) specialize in agriculture, in the central and eastern regions (East Kazakhstan, Karaganda, Pavlodar regions) industry is developed, in megacities (the cities of Almaty and Astana) – service and high-tech sectors of the economy. Therefore, in Kazakhstan for many years there has been an increase in differences in the levels of socio-economic development of central and peripheral regions.

## 1. LITERATURE REVIEW

Significant differences of territories in terms of social and economic indicators in many countries of the world can lead to a critical recession of the economy and a decrease in its competitiveness, a violation of social stability. Therefore, many theorists, economists and analysts study the phenomena of economic growth and social inequality. Researchers analyse the factors, causes and sources of inequality in the development of territories, ranging from fundamental statements to the development of inclusive regional development policy.

There is an opinion that the essence of inclusive development fully corresponds with Sustainable Development Goal 8 – “Promote sustained, inclusive and sustainable economic growth”. IMF and the Asian Development Bank (ADB) experts take a broader view on the nature of inclusive growth, who believe that this growth not only covers wide economic sectors, promotes productive employment, but also provides equal opportunities for access to markets and resources and protects vulnerable population (Ali & Son, 2007; IMF, 2017).

The concept of inclusiveness has been criticized for being conceptually vague, utopian, and limited in its evidence base and practical implementation (Lee, 2019; Eskelinen, 2021; Skotnicka, 2019; Ranieri & Ramos, 2013). At the same time, utopian thinking is seen as a necessary condition for a sustainable development policy (Hedren & Linner, 2009), as a general orientation towards a better society (Eskelinen, 2021). The imperfection of the inclusive development model seems to be preferable than models that ignore the problems of fair distribution (Lee, 2019; Skotnicka, 2019), and

the growth of research into the causes and consequences of inequality (Cavanaugh & Breaux, 2017).

Probably for this reason, studies of inclusive development unite a wide range of areas: the definition of attributes of an inclusive economy (Shipton et al., 2021); adaptation of institutions to a socially inclusive economy; the formation of an inclusive social security system (Tarko, 2020); overcoming inequality in the labour market (Etherington & Jones, 2004); inequality in health (Raheem et al., 2018); knowledge, innovation and Industry 4.0 for inclusive growth (Bogolib, 2016); inclusive social innovation, innovation gap (Dnishev et al., 2017).

By inclusive social innovations, Dnishev et al. (2017) understand technological innovations that introduced to improve the lives of different segments of the population by increasing access to various services. Their main features are availability for different group of population, sustainable production, providing a livelihood. Main stakeholders are local communities, rural population, and population groups with limited access to technology, poor people, women, elderly people, and people with disabilities. Priority sectors are agricultural industry, crafts, education, health-care, solar and wind energy.

Kouton (2019) and Betila (2023) examine the relationship between inclusive growth, economic freedom, and the business environment. Kouton (2019) draws attention to the relevance of the issue of inclusive growth for countries whose economies depend on oil, as well as in connection with the growth of cities. Kouton (2019) relies on components of economic freedom such as freedom of trade, investment, financial freedom and well-be-

ing, freedom of work, business, property rights, good faith of the government and the judiciary. Among the key determinants of inclusive growth, he highlights investment in human capital, social protection, decent employment, structural transformation, and strong institutions.

With the expansion of information technology, attention for the problem of digital inclusion has increased. Digitalization, along with new positive opportunities, brings new risks, including the risks of creating new vulnerable social strata, digital dependence, “netocracy”, new forms of digital power and digital inequality (Bard & Soderquist, 2003). Therefore, studies of the inclusive economy consider the problems of the digital divide (Pawluczuk & Gamundani, 2021; Mihai et al., 2018), digital dividends (World Bank, 2016). By itself, digital technologies will not increase productivity or reduce inequality until the business climate, education, and health care improve. It is especially important to create such conditions and disseminate information and communication technologies in rural areas.

In recent years, ADB (2010), EU (2020), OECD (2014), World Bank (2020), WEF (2017), and IMF (2013) have developed many methods for cross-country measurement of sustainable development and inclusive growth. Scientists at the Centre for Study of Living Standards in 1998 developed a methodology of the Index of Sustainable Economic Well-being (Salzman, 2003). Osberg and Sharpe (2010) estimates showed that as consumption and wealth increased, economic equity and security declined. This methodology is adapted for regional studies, based on a wide range of indicators with a large time coverage.

According to the WEF Inclusive Development Index in 2018, Kazakhstan ranked 15th among 74 emerging economies with an index value of 4.26, showing an increase of 0.35 points over five years. According to the composite index of inclusive growth, developed by the Eurasian Economic Commission, in 2018 Kazakhstan ranked 30th among 86 countries. The strengths of the Kazakhstani economy include overall enrolment in secondary education and its accessibility for boys and girls, as well as the ratio of women to men in the labour force (EEC & UNCTAD, 2019).

However, in Kazakhstan there are large differences in many aspects of development.

The purpose of this paper is to assess the level of differences between the regions of Kazakhstan in the field of social, economic, innovation, and infrastructural inclusion and offer recommendations for reducing regional inequality. The research hypothesis is that the high level of economic inequality of the regions determines the high level of differences in the field of social inclusion, inclusion in the field of infrastructure and innovation.

## 2. METHODOLOGY

To assess the level and regional differences in inclusive development, based on the generalization and adaptation of existing methods, available data for the regions of Kazakhstan, an assessment methodology developed. The proposed assessment model consists of 22 indicators, which are grouped into 4 groups that characterize regional differences in the levels of socio-economic, infrastructural and innovative development (Table 1).

Min-max normalization (feature scaling) method (World Economic Forum, 2017). All values of the indicators were normalized on a scale from 1 (lowest score) to 9 (highest score). Formula (1) is used to normalize indicators, the greater value of which is a positive phenomenon. Formula (2) is used to normalize indicators whose higher value is a negative phenomenon.

$$X_{scaled} = 8 \cdot \frac{X_n - X_{min}}{X_{max} - X_{min}} + 1, \quad (1)$$

$$X_{scaled} = -8 \cdot \frac{X_n - X_{min}}{X_{max} - X_{min}} + 9, \quad (2)$$

where  $X_{scaled}$  – normalized indicator;  $X_n$  – value of the current indicator;  $X_{max}$  – maximum value of the indicator;  $X_{min}$  – minimum value of the indicator.

For each group, intermediate indices are calculated using the arithmetic mean method, so the values of private indices also range from 1 to 9. All intermediate indices have an equal weight in the final grade. The integral indicator is calculated by formula (3).

**Table 1.** Indicators of inclusive development of Kazakhstan’s regions and their coding

Social inclusion (SI)	Economic inclusion (EI)	Inclusion of social innovation infrastructure (ISI)	Innovative inclusion (InI)
(X1) Average per capita nominal monetary income, thousand tenge. (X2) Poverty level, share of population with income below the subsistence minimum, %. (X3) Median income of population, thousand tenge. (X4) Funds ratio, the ratio of 10% of the most and 10% of the least affluent population. (X5) Disability, the number of persons with disabilities per 1000 population. (X6) Availability of housing, Sq. m for 1 person. (X7) Availability of doctors, number of doctors per 1,000 population.	(X8) Gross regional product per capita, thousand tenge. (X9) Investment in fixed assets per capita, thousand tenge. (X10) Average monthly salary, thousand tenge. (X11) Budgetary self-sufficiency of the region, ratio of income minus transfers of the higher budget to expenses, %. (X12) Loans issued by banks to the population, loans per capita, thousand tenge. (X13) Vulnerable employment, the share of self-employed in employed population, %.	(X14) Availability of ATMs, units per 10,000 people. (X15) Number of debit payment cards, for 1 person 15+ years. (X16) Level of digital literacy of the population aged 6-74 years, % of the population with digital skills. (X17), Internet access, the level of penetration of home broadband Internet access networks, %. (X18) Percentage of schools that have conditions for inclusive education, %	(X19) Expenses for research and development, % in GRP. (X20) Gross coverage of higher education, ratio of the number of university students to the population of 18-22 years, % (X21) Accessibility of scientists, number of R&D employees per 10,000 population. (X22) Costs of technological innovation, share in Gross regional product, %.

$$\left\{ \begin{aligned}
 IIDR &= SI \cdot 0.25 + EI \cdot 0.25 + \\
 &+ ISI \cdot 0.25 + InI \cdot 0.25 \\
 SI &= \frac{\sum_{i=1}^n X_i}{n} \\
 EI &= \frac{\sum_{j=1}^n X_j}{n} \\
 ISI &= \frac{\sum_{k=1}^n X_k}{n} \\
 InI &= \frac{\sum_{m=1}^n X_m}{n}
 \end{aligned} \right. , \quad (3)$$

Where, *IIDR* – index of inclusive development of regions; *SI* – index of social inclusion;  $X_i$  – normalized indicator of social inclusion ( $i = 1, \dots, 7$ ); *EI* – index of economic inclusion;  $X_j$  – normalized indicator of economic inclusion ( $j = 1, \dots, 6$ ); *ISI* – Index of inclusion of social innovation infrastructure;  $X_k$  – normalized indicator infrastructure of social innovation ( $k = 1, \dots, 5$ ); *InI* – Index of innovative inclusion;  $X_m$  – normalized indicator of innovative inclusion ( $m = 1, \dots, 4$ ); *n* – number of indicators in the group.

The set of criteria and indicators can be expanded by including primary data for assessments of inclusive development by type of locality (city-village, cities), by gender, by macro regions.

### 3. RESULTS

The analysis of regional differences in the level of inclusiveness carried out in 14 regions and 3 megacities of Kazakhstan based on data from The Bureau of National Statistics of the Republic of Kazakhstan. The results of calculations of private and integral indices of inclusive development, the rating of regions and the gap of regions in by groups presented in Table 2.

Because of calculations of private indices reflecting the level of inequality of regions in terms of social, economic, infrastructural, and innovative development, an Integral index of inclusive development of regions obtained. The analysis made it possible, firstly, to test the proposed methodology for assessing the level of inequality of regions by four groups of indicators, which will allow recommending its use both for public administration agencies and in further research. Secondly, the calculated private and integral indices of inclusive development of regions allowed the regions to be ranked according to this indicator and to compile a matrix of inclusive development of the regions of Kazakhstan. For this purpose, according to the results of the assessment, all regions grouped into three groups with high, medium and low levels of inclusive development (Table 3).

Table 3 shows that the inequality between the regions of Kazakhstan has a great variety. The first

**Table 2.** Private and integral indices of inclusive development of the regions of Kazakhstan, 2021

Regions and cities	Private indices								Integral index of inclusive development of regions	
	Social inclusion		Economic inclusion		Inclusion of social innovation infrastructure		Innovative inclusion		IIDR	Rank
	Index	Rank	Index	Rank	Index	Rank	Index	Rank		
Akmola region	3.54	14	2.35	13	3.21	14	3.51	5	3.15	12
Aktobe region	4.49	7	3.49	7	4.56	8	3.88	4	4.11	5
Almaty region	3.44	15	2.48	12	3.53	13	1.38	16	2.71	16
Atyrau region	5.21	3	7.82	1	4.59	7	2.2	12	4.96	3
West Kazakhstan region	4.14	11	3.13	8	2.89	16	2.46	11	3.16	11
Zhambyl region	3.1	16	1.84	16	3.58	10	3.32	8	2.96	14
Karaganda region	5.12	4	3.87	5	3.53	12	3.50	6	4	6
Kostanay region	4.16	10	2.53	11	4.05	9	1.98	14	3.18	10
Kyzylorda region	3.62	13	2.02	15	5.31	5	1.54	15	3.12	13
Mangystau region	4.86	5	5.19	4	5.53	3	3.47	7	4.76	4
Pavlodar region	4.39	9	3.74	6	5.53	4	2.08	13	3.93	7
North Kazakhstan	3.63	12	2.28	14	2.66	17	3.24	9	2.95	15
Turkestan region	2.37	17	1.05	17	3.57	11	1.08	17	2.02	17
East Kazakhstan region	4.47	8	2.78	9	3.17	15	3.92	3	3.59	9
Astana city	7.99	1	6.23	2	7.83	2	5.91	2	6.99	1
Almaty city	6.53	2	6.16	3	7.88	1	7.2	1	6.94	2
Shymkent city	4.58	6	2.62	10	4.75	6	2.72	10	3.67	8
Gap between highest and lowest value	3.37		7.45		2.96		6.67			
Average value of index in the group	4.45		3.50		4.48		3.14			

**Table 3.** Mapping of inclusive development of the regions of Kazakhstan

Index		Social inclusion	Economic inclusion	Inclusion of social innovation infrastructure	Innovative inclusion
		High level (6.51-9)	Astana city, Almaty city	Atyrau region	Astana city, Almaty city
Medium level (3.51 -6.5)	Akmola region Aktobe region Atyrau region Karaganda region Kostanay region Kyzylorda region Mangystau region Pavlodar region North Kazakhstan region East Kazakhstan region West Kazakhstan region Shymkent city	Karaganda region Mangystau region Astana city, Almaty city	Aktobe region Almaty region Atyrau region Karaganda region Kostanay region Kyzylorda region Mangystau region Pavlodar region Turkestan region Zhambyl region Shymkent city	Akmola region Aktobe region East Kazakhstan region Astana city	
Low level (1-3.5)	Almaty region Zhambyl region Turkestan region	Akmola region Aktobe region Almaty region Kostanay region Kyzylorda region Pavlodar region North Kazakhstan region Turkestan region East Kazakhstan region West Kazakhstan region Zhambyl region Shymkent city	Akmola region North Kazakhstan region East Kazakhstan region West Kazakhstan region	Almaty region Atyrau region Karaganda region Kostanay region Kyzylorda region Mangystau region North Kazakhstan region Pavlodar region Turkestan region West Kazakhstan region Zhambyl region Shymkent city	

group with a high level of inclusive development included 2 megacities – Almaty and Astana, as well as Atyrau region. However, the Atyrau region, unlike megacities, represented in all three groups of regions. Many regions are included in the group with an average level of social and infrastructural inclusivity, while most regions of the country characterized by a low level of economic and innovative inclusivity. The reasons for such large differences in the levels of socio-economic, infrastructural, and innovative development of the regions explained below when discussing the results.

## 4. DISCUSSION

This study is a logical continuation of previous research (Nurlanova et al., 2018, 2019, 2020, 2023; Alzhanova et al., 2022). The results of the assessment are largely consistent with the results of previous studies on regional inequality in Kazakhstan. However, the results revealed new aspects of the problem of regional inequality in Kazakhstan and showed a big difference between the levels of regional development in terms of social, economic, infrastructure and innovation indicators. In regional studies, ratings conducted in Kazakhstan, as a rule, these three regions are leaders. A study by Khudaibergenov and Idenov (2022), Forbes Kazakhstan (2019) and others also have similar results. However, they also note that prosperous regions also have many problems that determine a diverse picture of inequality and differentiation, which is associated with the spatial, demographic, and structural specifics of each region. For a more in-depth study of each dimension of inequality, studies focused on a single issue are also useful. So, Alieva and Kovyazina (2022) consider the problem of inequality and access to quality education. Here, too, the three regions (2 megacities – Almaty and Astana, as well as Atyrau region) have visible advantages, but at the same time significant disadvantages. They connected with the unpreparedness of megacities for demographic growth, the gap between the salaries of teachers and the average salary in the regions.

For other regions, the situation is as follows. For two groups of private indices (Social inclusion, Inclusiveness of social innovation infrastructure),

the gap between regions is from 2.96 to 3.37. In the other two groups of partial indices (Economic Inclusion and Innovative Inclusion), the gap between regions exceeds 6 times. At the same time, the average group values of indices for groups are higher where the gap is smaller. This is due to the logic of the standardization method, which considers the gap between the maximum and minimum value. Therefore, the regions found themselves in a position with a low level of inclusive development in cases where the gap between the maximum and minimum values of the indices was maximum (7.45 and 6.67 times).

How can explained this distribution of regions? Why are there so many regions in the group with a low level of the index of economic and innovative inclusiveness?

Here, a sufficiently high role of the government in solving social problems, as well as the features and traditions of the development of social infrastructure in the country, can influence. For example, Kazakhstan has a traditionally high level of access to education, the system of compulsory medical insurance and inclusive education is developing. In recent years, the digital infrastructure has been dynamically developing. Therefore, each pensioner, recipient of targeted social assistance or government social benefits has a payment card. Banks have developed mobile applications that provide access to basic government and other social services. However, there remains a challenge in digital knowledge for older people.

Problems in economic and innovation inclusion are closely related. For example, in Kazakhstan, R&D and innovation costs remain low, on the part of both the state and business. This is largely due to the ownership structure, diversification and technological level of industry and services, asymmetry in the development of scientific, technological and economic space.

Five regions of Kazakhstan (Almaty, Zhambyl, Turkestan, North Kazakhstan, and West Kazakhstan) are at a low level of inclusive development in three out of four possible private indices.

A contradictory picture is emerging in the oil-producing regions of Kazakhstan – Atyrau, Aktobe,

Mangistau, West Kazakhstan regions. These regions play an important role in economic growth, exports, and the formation of the state budget, but in terms of inclusive development, their positions look rather weak, including in the field of economic and innovative inclusion. Perhaps for this reason, “Macroregion West Kazakhstan”, especially the Mangistau region, traditionally remains a region of social tension in the country. The level of average wages in Mangistau Atyrau regions is one of the highest, the gap between the median and average per capita income in Atyrau region is 5 times, and in Mangistau – 3 times, which is the highest among the regions. This gap can be explained by the fact that at the enterprises of the oil and gas industry there is a high level of workers on a rotational basis, including those who come from other regions and foreign labour force. Among the regions, the largest number of IRS are attracted to western regions. Thus, 52.5% of attracted foreign labor force was concentrated in the Atyrau

region. The oil and gas sector in the western regions of Kazakhstan is attractive for employment as it creates relatively well-paid permanent jobs. Recent social protests in the region related to the lack of jobs in the oil and gas industry for the local population.

Regional disparities in Kazakhstan are quite diverse. One of the promising areas in the study of issues of inclusive regional development for the purposes of regional policy can be a toolkit for evaluating three groups of indicators – processes, methods, results. However, the complexity of this task lies in the fact that formally it is very difficult to identify indicators that accurately reflect these phenomena. The proposed methodology can be adopted for specific tasks in the field of inclusive development, supplemented with primary data for assessing inclusive development in terms of urban-rural or cities, gender, microregional characteristics.

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## CONCLUSION

The concept of inclusive development, despite the existing discussions, finds practical application to solve the problems of inequality of countries, regions, and populations. The results of the study show that there is a large inequality in the socio-economic, infrastructural, and innovative development of the regions of Kazakhstan. Meanwhile, the study showed that with a high level of economic inequality in the regions, the level of differences in the field of social inclusion, inclusion in the field of infrastructure was smaller. At the same time, in Kazakhstan, in most regions with a high level of economic inequality, significant inequality in innovative development is also noted. According to the matrix of inclusive development, the first group with a high level of inclusive development included two megacities such as Almaty and Astana, as well as the Atyrau region. However, the Atyrau region, unlike megacities, is represented in all three groups of regions.

It can be concluded that economic growth in general, as well as the economic leadership of individual regions, cannot automatically provide the appropriate dynamics in social development, infrastructure and innovation. In the field of social development, the dynamics of smoothing differences is ensured largely by stimulating the development of infrastructure, social policy measures, and support for innovation. Therefore, achieving the goals of inclusive regional development requires coordinated measures covering various aspects of regional development.

## AUTHOR CONTRIBUTIONS

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