



# **Refinement of indicators of the pilot national multidimensional poverty index of the Republic of Kazakhstan**

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## Introduction

This report has been prepared in accordance with the terms of reference, which involves work for computing the pilot MPI for targeting and monitoring socio-economic policies in the country, as well as the implementation of computing the pilot MPI using the data available at the BNS.

It should be noted that work on the above areas involved a technical mission to the Bureau of National Statistics (BNS) of Kazakhstan together with OPHI expert Juliana Milovich. In addition to these activities, during the mission, a training was provided on methods for developing and computing the multidimensional poverty index. Due to the delay in the arrival of the OPHI expert, the author held the first half day of training, in particular on the theory underlying the development of the multidimensional poverty index.

During the technical mission to make the consulting work more productive, both consultants agreed to share responsibilities to develop the multidimensional poverty index. In particular, the author took responsibility for the in-depth justification of the index indicators based on the socio-economic policy carried out in Kazakhstan, and the OPHI expert took responsibility for the computations of the index and implemented this successfully. At the same time, the author assisted in understanding the peculiarities of computing individual indicators, including poverty cut-offs and the characteristics of a sample for the selected indicators.

### 1. Preparatory work for calculating the pilot MPI for targeting and monitoring socio-economic policies in the country

For the pilot MPI, the author recommended in the previous report<sup>1</sup> the following indicators aggregated in dimensions according to the table below.

Table 1 – Variables of the pilot national MPI of Kazakhstan

Dimension	Variable	Deprivation cut-off	Form and Question
<i>Education</i>	Level of satisfaction with the quality of education	Dissatisfaction with the quality of education (1–3 points) at the secondary level (general and special) if there are children of the appropriate age	Form D002 Part 1 Question 17
	The level of satisfaction of the population with the availability of educational services	Dissatisfaction with the availability of educational services (1–3 points) at the secondary level (general and special) if there are children of the appropriate age	FormD002 Part 1 Question 18
	Achieved level of education for adults or children	For an adult – if there is no secondary education, for a child – if the appropriate level of education has not been completed (primary education or basic secondary education)	Form D008 Question 7
<i>Health</i>	Level of satisfaction with the quality of healthcare services	Dissatisfaction with the quality of health care services (1–3 points)	Form D002 Part 1 Question 15

<sup>1</sup> The consultant’s report “Further improvement of the Kazakhstan HBS questionnaires to better poverty measurement” developed in April 2022

Dimension	Variable	Deprivation cut-off	Form and Question
	The level of satisfaction of the population with the availability of services	Dissatisfaction with the availability of health care services (1–3 points)	Form D002 Part 1 Question 16
	Inability to access healthcare services	Inability to access health care services for reasons	Form D002 Part 3 Questions 19-20
<i>Housing</i>	Non-compliance with living standards (sq. m per person)	Below the established norm (15 square meters) per person	Form D006 Question 3
	Access to electricity	No electricity	Form D006 Question 5
	Fuel for heating	Solid or liquid fuel used	Form D006 Question 5
	Source of drinking water	Source – water carrier, spring, river, lake, pond	Form D006 Question 5
	Sewer access	Pit latrine, no toilet, other sewerage	Form D006 Question 5
	Personal internet access	No provider / Can't afford / Don't know anything about it	Form D002 Part 3 Questions 15-16
<i>Standard of living / Financial affordability</i>	Absolute poverty	By national poverty rate	Calculation according to the Forms D003 and D004
	Household debt on payments	Positive answer "yes, two or more times" for the payments: 1. rent or mortgage payments 2. utility bills 3. interest payments, loan debt 4. installment payments	Form D002 Part 3 Question 1

In the process of discussion with officials of the Department of Labor Statistics and Living Standards of the BNS (hereinafter - Department), several changes were made to this list based on an additional research of socio-economic policy documents and proposals of the Department itself. The justification for all indicators is given in the summary table (Annex 1), which includes both new indicators and old ones. In particular, the following indicators were changed:

### Education Dimension

1. *Education achieved indicator* was excluded due to the low proportion of individuals who did not achieve any level of education, which was 0.1% in 2021. This value was determined based on the data of the statistical bulletin "Quality of life of the population of Kazakhstan", and further, when calculating individual variables of the NMI, this low figure was confirmed.

2. *The Preschool attendance indicator was included additionally* since the National Project «Quality Education "Educated Nation"» as the Objective 1 indicates the need to "...ensure the availability of quality and preschool education". The model of preschool education and training, adopted by the Decree of the Government of the Republic of Kazakhstan dated March 15, 2021, No. 127, indicates in chapter 2, para 7 that the state policy in the system of preschool education should be aimed at ensuring accessibility. It should also be emphasized that the National SDG Platform includes the national SDG indicator 4.2.2.1 "School readiness (% proportion of children attending Grade 1 of primary school who attended a preschool education institution in the previous year) ".

The values for this MPI indicator are received from the answers to the questions 17 and 18 of the Form D002, Part 3:

17. Does your household have a child of preschool age who is not attending preschool?

Answers: yes/no

18. If yes, what is the reason for not attending? (there may be several answers)

Answers: too expensive / no preschool institutions at the place of residence / unsuitable age / illness / relatives look after the child / a nanny looks after the child / no registration / no need / other reasons

The deprivation cut-off for this indicator was identified as there is at least one child of preschool age in the household who does not attend a preschool institution for the following reasons: it is expensive / there are no preschool institutions / relatives look after the child / there is no registration.

### **Health and Environment Dimension**

The Health Dimension was modified by supplementing it with several indicators related to environmental monitoring. Accordingly, the name of the dimension was clarified, as indicated in the subheading. The following three variables have been added:

3. *Cleanliness of the territory adjacent to housing (absence of household garbage (waste))* is included based on the provisions of the Concept for the transition of the Republic of Kazakhstan to a "green economy" for 2021-2030, containing section 3.5. Waste management system. The approaches outlined in the section aim, among other things, at achieving waste disposal and recycling.

This approach is mentioned in the Action Plan for the implementation of the Concept for the transition of the Republic of Kazakhstan to a "green economy" for 2021-2030: for example, in the section 6.1. Coverage of the population with the removal of municipal solid waste, paragraphs 38-40 are aimed, among other things, at increasing the level of cleanliness of territories. The National SDG Platform includes SDG indicator 11.6.1. Proportion of municipal solid waste that is collected and disposed of at controlled facilities, as a percentage of the total mass of municipal solid waste, by city.

Values for this MPI indicator are received from the answers to the question 10 of the form D002, part 1:

Please rate your satisfaction with the situation at your place of residence:

10.1. Cleanliness of the area adjacent to the housing (absence of household garbage (waste))

Answers are given on a scale of satisfaction: not satisfied (1-3), partially satisfied (4-7), satisfied (8-10).

The answers from 1 to 3 are accepted as a deprivation cut-off for this indicator.

4. *The Clean Air indicator was also included* since the Concept for the transition of the Republic of Kazakhstan to a "green economy" for 2021-2030 contains the section 3.6. Reducing Air Pollution. The adopted action plan for the implementation of the Concept for the transition of the Republic of Kazakhstan to a "green economy" for 2021-2030 also includes the section 5. Air Pollution, in which paragraphs 35-37 are directly related to monitoring the reduction of air pollution. The National SDG Platform includes three indicators in this area: 9.4.1.1 CO2 emissions per capita; 13.2.2. Total annual greenhouse gas emissions; and 11.6.2 Annual average level of fine particulate matter (class PM 2.5 and PM 10) in the atmosphere of cities.

Values for this MPI indicator are received from the answers to the question 10 of the form D002, part 1:

Please rate your satisfaction with the situation in your place of residence:

10.2. Clean air (no emissions, smoke, dust, and dirt)

Answers are given on a scale of satisfaction: not satisfied (1-3), partially satisfied (4-7), satisfied (8-10).

The answers from 1 to 3 are accepted as a deprivation cut-off for this indicator.

5. *The Quality of drinking water indicator was added* because the State Program for Housing and Communal Development "Nurly Zher" for 2020-2025, approved by the Decree of the Government of the Republic of Kazakhstan dated December 31, 2019, No. 1054, determines the need for "Rational provision population with quality drinking water and sanitation services" as the second objective. This program introduces the following target indicator – to ensure 100% access of the population to water supply services in cities and villages by 2025. The program provides for measures to increase the level of water purification, the use of improved types of water purification technologies, the maximum use of the potential of groundwater to provide the population with drinking water and improve the quality of design of the water supply and sanitation system.

It should be noted that the above Action Plan for the implementation of the Concept for the transition of the Republic of Kazakhstan to a "green economy" for 2021-2030 also contains section 1.1.1. Provide water to the population with several activities (1-3). To monitor the implementation of the SDG 6.1 target "By 2030, ensure universal and equitable access to safe and affordable drinking water for all", the SDG 6.1.1. Proportion of the population using water supply services organized in compliance with safety requirements was introduced.

Values for this MPI indicator are received from the answers to the question 10 of the form D002, part 1:

Please rate your satisfaction with the situation in your place of residence:

10.3. Drinking water quality

Answers are given on a scale of satisfaction: not satisfied (1-3), partially satisfied (4-7), satisfied (8-10).

The answers from 1 to 3 are accepted as a deprivation cut-off for this indicator.

### **Housing and Housing Conditions Dimension**

6. *The electricity access indicator was excluded* due to the lack of deprivation for this indicator. Survey data showed that 100% of households have access to electricity.

7. The previously proposed *Fuel for heating indicator*, where the deprivation cut-off is solid or liquid fuel used, was proposed to be excluded, since the definition of fuels in the questionnaire does not correspond to the approaches considered under the SDGs for clean energy. Within the framework of strategic and program documents for the development of Kazakhstan, this issue has not yet been mentioned.

8. It was proposed to include the *Ability to maintain sufficient heat indicator*. This question is included in the 2022 questionnaire and the results will be available shortly.

This approach is in line with the Nurly Zher State Program for Housing and Communal Development for 2020-2025 (the section 5.3.1 Modernization of the heat supply sector). This program involves the improvement of the system of tariff setting for heat supply. It is also supposed to consider the social factor and give priority to projects with a large coverage of the population.

Law "On Housing Relations" of April 16, 1997, No. 94 and, in particular, Article 97. Payment for the housing by low-income families (citizens) assumes subsidizing the poor for public services, including heating services.

Values for this MPI indicator are received from the answers to the Question 2 of the Form D002, Part 3:

Can your household afford to pay for and keep the heat in the house at a sufficient level?

Answers: Yes/No

The answer "No" was accepted as the deprivation cut-off for this indicator.

9. *The Absolute Poverty indicator* was excluded. BNS representatives and consultants agreed that absolute poverty should be measured separately from multidimensional poverty, which in turn provides more tools and opportunities for researching poverty issues in the country.

10. *The Unemployment Indicator* was added. The Strategy 2050 section "New principles of social policy" refers to the need to modernize the policy of employment and labor (paragraph 1.4). It is emphasized that the employment should be provided by all programs implemented in the country, both national and sectoral, and not just some part of them.

NDP 2025 defines the National Priority 1. Fair social policy as the promotion of productive employment of the population as the fulfillment of all obligations on social payments and state benefits aimed at supporting families. Accordingly, the objective 1. Development of productive employment states that to restore the labor market after the pandemic and reduce unemployment, measures will be taken to modernize existing and create new jobs, including through stimulation of employers. The creation of jobs, especially high-tech ones, will become the main criterion for providing state support for the implementation of projects. The strategic indicator of the NDP 2025 is the indicator "Unemployment rate".

Until 2022, the State Program for the Development of Productive Employment and Mass Entrepreneurship for 2017-2021 "Enbek" was in effect, the purpose of which is to promote productive employment of the population and involve citizens in entrepreneurship.

The Comprehensive Plan "Program to increase the income of the population until 2025 was approved by the Decree of the Government of the Republic of Kazakhstan on April 14, 2022, No. 218. The section II. Increasing the income of the population through the creation of new jobs contains measures (from 7 to 22) aimed at creating jobs and reducing unemployment. The target indicator of the program is the Unemployment Rate.

Values for this MPI indicator are received from the answers to the question 9 of the form D008.

Question 9. Status of your main activity (persons aged 15 and over) as of January 1st. Please note the changes in the status of your main activity for 1-4 quarters.

Answers: 1 – employed (under a written contract or oral agreement) / 1.1 – employed by individual / 2 – self-employed (own enterprise, / self-employed) / 3 – unemployed and looking for job (unemployed) / 4 – pensioner (non-working pensioner) / 5 – student / 6 – doing housework, caring for children or other persons / 7 – temporarily or permanently disabled / 8 – not working and not looking for work for other reasons.

As a deprivation cut-off for this indicator, responses 3 (not working and looking for a job (unemployed)) and 7 (temporarily and permanently disabled) were taken.

11. *The Satisfaction with the level of external noise indicator* was considered as a potential additional indicator. However, in the process of studying the strategic and program documents of socio-economic policy, it was revealed that this issue is not considered in these documents.

Thus, as a result of the joint work carried out with representatives of the BNS, the indicators of the pilot national multidimensional poverty index were refined (Table 2).

Table 2 – Updated indicators of the pilot national MPI of Kazakhstan

<b>Dimension</b>	<b>Indicator</b>	<b>Deprivation cut-off</b>	<b>Form and Question</b>
<i>Education</i>	Level of satisfaction with the quality of education	Dissatisfaction with the quality of education (1–3) at the secondary level (general and special) if there are children of the appropriate age	Form D002 Part 1 Question 17
	The level of satisfaction of the population with the availability of educational services	Dissatisfaction with the availability of educational services (1–3) at the secondary level (general and special) if there are children of the appropriate age	FormD002 Part 1 Question 18
	Preschool attendance	The household has at least 1 child of preschool age (from one to six years old) who does not attend for the following reasons: – expensive – there are no preschool institutions, – relatives look after them, – no registration	Form D002 Part 3 Questions 17 и 18
<i>Health and environment</i>	Level of satisfaction with the quality of healthcare services	Dissatisfaction with the quality of health care services (1–3)	Form D002 Part 1 Question 15
	The level of satisfaction of the population with the availability of services	Dissatisfaction with the availability of health care services (1–3)	Form D002 Part 1 Question 16



<b>Dimension</b>	<b>Indicator</b>	<b>Deprivation cut-off</b>	<b>Form and Question</b>
	Inability to access healthcare services	At least one household member who was unable to access health services due to: <ul style="list-style-type: none"> <li>– high cost of services,</li> <li>– too expensive medicine</li> <li>– big queues</li> <li>– absence of a specialist,</li> <li>– healthcare facilities are located far away / there is no way to get there,</li> <li>– lack of medicines</li> <li>– bad service / don't trust</li> </ul>	Form D002 Part 3 Questions 19 и 20
	Air purity (no emissions, smoke, dust or dirt)	Dissatisfaction with air purity (1-3)	Form D002 Part 1 Question 10.2
	Cleanliness of the area adjacent to the housing (absence of household garbage (waste))	Dissatisfaction with the cleanliness of the territory (1-3)	Form D002 Part 1 Question 10.1
	Source of drinking water	Source – imported water, spring, river, lake, pond	Form D006 Question 5
	Drinking water quality	Dissatisfaction with the quality of drinking water (1-3)	Form D002 Part 1 Question 10.3
<i>Housing and living conditions</i>	Non-compliance with living standards (sq. m. per person)	Below the established norm (15 square meters) per person	Form D006 Question 3
	Fuel for heating*	Solid or liquid fuel used	Form D006 Question 5
	Ability to maintain heat at a sufficient level*	Answers "no"	Form D002 Part 3 Question 2
	Sewer access	Toilet with pit latrine without slab, no toilet, other sewerage	Form D006 Question 5
	Personal internet access	No provider / Can't afford / Don't know anything about it	Form D002 Part 3 Questions 15 и 16
<i>Standard of living / affordability</i>	Household debt on payments	A positive answer for a person over 15 years of age "yes, two or more times" for at least one of the payments: <ol style="list-style-type: none"> <li>1. rent or mortgage payments</li> <li>2. utility bills</li> <li>3. interest payments, loan debt</li> <li>4. installment payments</li> </ol>	Form D002 Part 3 Question 1

Dimension	Indicator	Deprivation cut-off	Form and Question
	Unemployment	At least one household member over the age of 15 is not working (not working or looking for a job)	Form B008 Question 9

\* *Note:* The Heating Fuel indicator was used for the practical calculation of the pilot index, however, in the future it will be replaced by the Ability to maintain heat at a sufficient level indicator.

## 2. Calculation of the pilot multidimensional poverty index

The practical issues of calculating the deprivation matrix were to identify whether a household is deprived or not, which includes the following steps: (1) identifying the household identification unit as poor or deprived, (2) determining the applicable population for the indicator, (3) determining the deprivation cut-offs, (4) identification of answer codes, (5) identification of filters or characteristics of indicators as a consequence of the characteristics of individual survey questions.

The theoretical and practical issues of the deprivation matrix calculation is well described in the report of Juliana Milovich, who led the technical group. The author of the report assisted in defining the applicable population, identification unit, deprivation cut-offs for each of the indicators, the number of measurement aspects and explaining their features for the BNS team.

- Deprivation cut-offs developed with the participation of the author based on current questionnaires are shown in the Table 2. However, in some cases, deprivation cut-offs need to be refined to reflect improved SDG standards. To do this, several answers must be clarified. Answers on drinking water and sanitation are suggested below (in the Section 3).
- The entire household survey sample was taken as the applicable population for most indicators. For several other indicators, the applicable population was determined based on the relevant questions and government regulatory documents, for example, for attending preschool institutions, the requirements for the age of children were clarified in accordance with the Law on Education, Article 31 of which states that children with six years old should be enrolled into the school. For a few other indicators, the applicable population covered the age from 15 years.
- Regarding the unit of identification, it was clarified that the main unit of the Kazakhstan HBS survey is the household, in which the respondent is the head of household. However, for the Form D002, the respondent is a household member 15 years of age or older. This was taken into account.
- Regarding the number of dimensions for calculating the index, the consultant's proposal on four dimensions and their respective composition was accepted (Table 2).

As part of the joint work and under the guidance of Juliana Milovic, the following calculations were carried out and the following results were received:

- the value of the national index of multidimensional poverty was calculated, including the percentage of the multidimensionally poor population and the intensity of poverty;
- percentage of the multidimensionally poor population by region;

- share of the poor and deprived population for each indicator; as well as
- the contribution of indicators to multidimensional poverty for each of the regions.

These values are given in the presentation (Annex 2), which was prepared by BNS together with consultants for a meeting with representatives of ministries and departments of the Republic of Kazakhstan.

### 3. Improving questions to better measure the multidimensional poverty index

This section is mainly devoted to the analysis and improvement of subjective indicators, but some details of other indicators are clarified at the end of this section,

The improvement of the questions had to consider the results of calculating this index in retrospect, which required an analysis of the MPI and its indicators over time. This was not possible due to technical problems linked to the fact that consultants and BNS representatives used different software to calculate the required MPI variables. Thanks to the joint work, this problem was overcome, and the pilot MPI 2021 was calculated, however, within the mission work, it was not possible to carry out similar retrospective calculations.

#### *Improvement of subjective indicators*

This aspect is extremely important because subjective indicators can potentially create problems. As Sabine Alkire rightly pointed out, subjective indicators cannot approximate the objective quality of services. Subjective indicators also complicate the development of socio-economic policies, since it is very difficult to unambiguously identify the factors that determine the subjective opinion of the population about the services provided by state bodies.

Within the proposed updated indicators of the pilot national MPI seven indicators assess satisfaction with the quality and accessibility of services based on the subjective assessments of respondents (Table 3):

- in the education sector – 2;
- in the healthcare sector – 2;
- in the environment sector – 3.

However, despite the absence of calculations of time series indicators within the framework of the MPI, the BNS data make it possible to conduct an appropriate analysis in relation to subjective indicators and determine their weaknesses. Table 3 shows the dynamics of these indicators, data on which are collected on the basis of the bulletin "Quality of life of the population of Kazakhstan". These values are calculated based on the responses of households indicating that they are not satisfied with the relevant services (1-3 points out of 10). These values are, in fact, very close to the uncensored indicators and can provide significant additional information.

Table 3 – Scores of subjective indicators based on BNS data

Indicator name	2017	2018	2019	2020	2021
<b>Education*</b>					
Dissatisfaction with the quality of secondary education	3,2	3,3	2,55	2,15	3,25

Indicator name	2017	2018	2019	2020	2021
Dissatisfaction with the availability of secondary education	2,7	2,6	1,35	1,3	1,55
<b>Healthcare**</b>					
Dissatisfaction with the quality of healthcare	10,9	9,2	8,6	7,2	6,7
Dissatisfaction with the availability of education	n/d***	8,85	7,2	5,75	5,85
<b>Environment</b>					
Dissatisfaction with the cleanliness of the surrounding area	7	5,2	4,4	3,1	2,9
Dissatisfaction with purity air	13,3	10,7	8,8	7,8	7
Dissatisfaction with drinking water quality	14,8	13,5	11	10	9,1

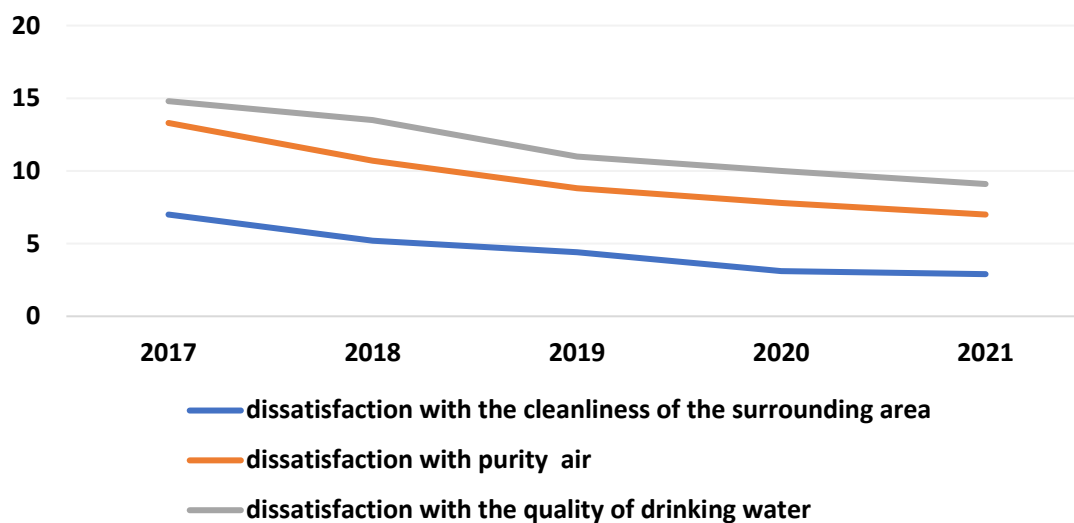
Notes:

- \* education indicators are calculated as the unweighted average of two indicators: dissatisfaction with general secondary education and dissatisfaction with secondary vocational (special) education
- \*\* health indicators are calculated as the unweighted average of two indicators: dissatisfaction with public organizations and dissatisfaction with private organizations in healthcare
- \*\*\* n/d – no data

### ***Characteristics of trends of the environment indicators***

Presented in fig. 1 indicators show a steady downward trend. It can be shown by methods of the mathematical statistics that significant fluctuations are not inherent in these series<sup>2</sup>, although this is clearly visible on the graph itself. However additional analysis shows that there is a significant correlation between the considered indicators, the values of which range from 0.971 to 0.99 (Table 4).

Figure 1 – Percentage of unsatisfied with respect to certain environmental characteristics



<sup>2</sup> These series are well approximated by a logarithmic function over time, while the standard error is very insignificant, which indicates insignificant fluctuations in the data.

Table 4 – Correlation coefficients between environmental quality indicators

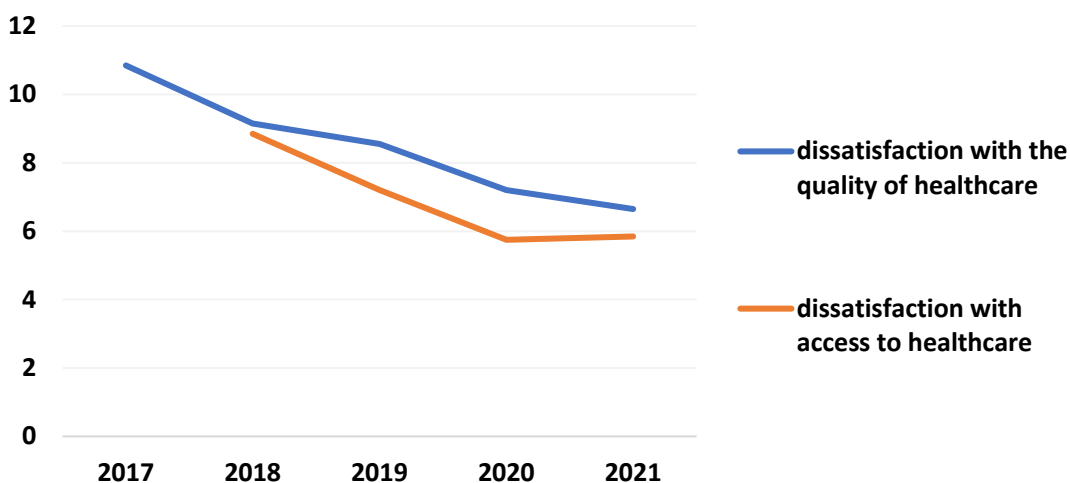
	<b>cleanliness of the territory</b>	<b>air purity</b>	<b>water quality</b>
<b>cleanliness of the territory</b>		0,990	0,971
<b>air purity</b>	0,990		0,984
<b>water quality</b>	0,971	0,984	

Even though the analysis period is only five years, a very high correlation coefficient close to one indicates a non-random relationship between these indicators. One of the reasons may be the implementation of measures prescribed by the government documents, however, the method of conducting the survey cannot be discounted. These three questions are grouped under one introductory sentence: 10. Please rate your satisfaction with the situation in your place of residence, after which questions are asked regarding the cleanliness of the territory, air, and water quality. It is possible that the respondent first evaluates the situation in the place of his residence and then, under the influence of the already formed opinion, gives scores for individual characteristics. This means that with respect to these environmental characteristics, the possible interdependence of answers cannot be ruled out.

***Characteristics of trends of the health satisfaction indicators***

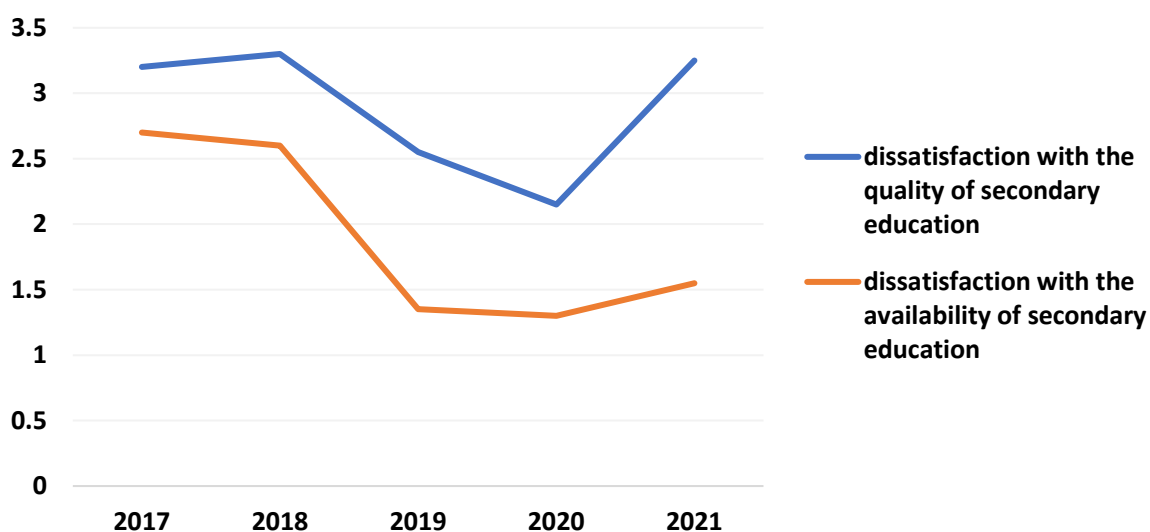
The data show (Fig. 2) that there are no significant fluctuations in the trends of these indicators, which is confirmed by the methods of mathematical statistics. Regarding correlation between them, it is more difficult to unequivocally judge the relationship between these two indicators than in the case of environmental indicators, even though the correlation coefficient is 0.941 since the data series is shorter by one year. In addition, questions about the availability and quality of health services are not combined into one question, although they are asked sequentially.

Figure 2 – Percentage of those dissatisfied with the quality and accessibility of healthcare



### ***Characteristics of trends of the subjective education indicators***

Figure 3 – Percentage of those dissatisfied with the quality and accessibility of secondary education



Even though the shapes of these two indicators is somewhat similar (Fig. 3), the methods of mathematical statistics show that a volatile indicator is the indicator of dissatisfaction with the quality of secondary education - this indicator showed unstable trend from 2017 to 2021. The correlation index of these two indicators is 0.74. Considering the limited period of analysis, one cannot speak of a significant mutual dependence of these two indicators. However, the volatility of the indicator of dissatisfaction with the quality of secondary education highlights the difficulty of designing policies based on indicators of public satisfaction. For example, it is not easy to answer the question of what influenced the growth of dissatisfaction with both the quality and accessibility of secondary education in 2021. More surveys or research will be required to understand this.

The main conclusions from the analysis of the time series of dissatisfaction indicators are as follows:

1. It is difficult to link the development of policies and activities with indicators of public satisfaction with the quality and accessibility of services.
2. Where possible, subjective indicators should be replaced with objective indicators. For example, availability indicators should be measured through the physical definition of availability.

### ***Improving the indicators of access to education and health facilities***

The introduction of an objective indicator of access to education and healthcare facilities requires the definition of the main characteristics of the access to them. Several countries introduce travel times to school or health care facilities. For example, Mozambique, Namibia sets 30 minutes, Armenia – 20 minutes for walking or cycling and one hour for other means of transport; while in Armenia, urban households are considered non-deprived. In Armenia, a pharmacy is also considered a healthcare facility. For example, the HBS question for Armenia regarding access to basic education and health facilities is as follows:

How far are the following establishments from your household, how long will it take you to get there, and by what means of transport?

		Transportation mode 1. Car 2. Minivan/buses 3. Taxi 4. Train 5. Carts 6. Horse/donkey 7. Bicycle 4. Walking	Distance (km)	Duration (minutes)
1	Hospital			
2	Pharmacy			
3	preschool			
4	Primary School			
5	Secondary school			
6	Etc.			

**Recommendation 1.** The question from the HBS of Armenia can be used as the basis for the formulation of the question for the HBS of Kazakhstan, but the details of this question and the answers should be agreed with the Ministry of Education and Science of the Republic of Kazakhstan.

***Improvement of environmental quality indicators***

In EU SILC, a similar environment question is asked as a single question; it combines questions about environmental problems and goes like this: Do you have any of the following problems related to the place where you live: pollution, grime or other environmental problems in the local area such as: smoke, dust, unpleasant smells or polluted water? Answer: yes/no

This format of the question removes the above problem that the environmental questions can have mutual correlation. The form of the binary answer allows you to exclude from consideration an answer that is not quite clear – as "partially dissatisfied".

**Recommendation 2:** It is recommended that consideration be given to combining questions on environmental quality into a single question following the EU SILC with yes/no answers. As an alternative, the averaging of questions 10.1-10.3 can be considered, however, here it should be assessed whether the answer “partially dissatisfied” should be included in the deprivation cut-off.

This recommendation does not mean that questions 10.1-10.3 should be excluded, however, in the opinion of the author, these questions should be divided into different parts of the questionnaire to avoid mutual influence of scores of different environmental characteristics.

**Recommendation 3:** Subjective indicators, if they cannot be dispensed with, should be combined with objective indicators of accessibility in the same sector, as this will allow describing two aspects of the provision of the same type of service.

For example, the questionnaire includes a question on the source of drinking water, which indicates where the water comes from and at the same time there is a subjective question on the quality of drinking water. Please note that the correlation between the answers on water quality and water source is rather low and equals 0.719, which increases the informing potential of these two indicators.

### ***Improving the metadata of other indicators***

Although in general most of the other indicators of the pilot MPI meet the requirements, nevertheless, there are some details that should be considered when further improving the index. It relates to the following indicators:

- Source of drinking water
- Access to sewerage
- Attendance preschool institutions.

### ***Source of drinking water and access to sewerage***

The indicators "Source of drinking water" and "Access to sewerage" are determined by question 5 for the main interview (form D 006).

**Recommendation 4. The following wording of the responses for these indicators in the format of the D006 questionnaire is proposed:**

#### **5. What facilities are available in your housing?**

<b>Water supply</b>	x
Piped supply in the house (building or apartment)	
Piped supply outside the home (buildings or apartments)	
Boreholes	
Well, standpipe, or identical source of water supply	
Delivered water	
Is water available from the above sources for a maximum of 30 minutes round trip including queues?	Yes / No
Spring, river, lake, pond	
<b>Toilet</b>	x
Toilet with central sewerage system	
Toilet with individual sewerage system (septic tank)	
Ventilated toilet with pit latrine or pit latrine with a heavy lid	
Biotoilet or container-based toilet	
Are the types of toilets listed above used only by your household?	Yes / No
Another type of toilets	
No toilet	

The response wording uses the global metadata definitions for improved water sources and improved sanitation for the SDGs 6.1.1 and 6.1.2. Important questions have been added to the table, the answers to which must be considered to determine the deprivation cut-offs. So, for drinking water, it should be noted that even if water is delivered from a boreholes, well, standpipe or delivered (from improved sources of drinking water), but the respondent spends more than 30 minutes to get the water, then this respondent



should be considered to be deprived. For sanitation facilities, attention should be paid to the fact that the household should not share them with other households. Otherwise, it should also be considered to be deprived.

One aspect requires further clarification - dug wells or springs can be protected or unprotected, which is determined by the possibility of water contamination by chemical or biological substances. These definitions should be clarified with the relevant national water authorities. At this stage the author proposes to classify wells as protected, and springs as unprotected according to the current questionnaire.

***Preschool Attendance indicator.***

The deprivation cut-off for the pilot index included the answer "relatives look after" to the question why the child does not attend preschool. During the mission, this answer has already been discussed as controversial.

**Recommendation 5. The author believes that, to avoid further discussions on this issue, the answer "relatives look after" should be divided into two – "adult relatives look after" and "other children look after". Accordingly, the answer "other children look after" should be included in the definition of the deprivation cut-off.**

***General recommendations:***

**Recommendation 6. Discussing the indicators of the multidimensional poverty index with ministries and departments should be continued. It is necessary to obtain recommendations from the relevant state institutions regarding the refinement of the indicators of the national index of multidimensional poverty and the definition of deprivation cut-offs.**

**Recommendation 7: Experimental calculations should be carried out on the basis of the proposed refinement of the questions, without waiting for the questions to be included in the questionnaires. It seems that the Department of Labor and Living Standards Statistics can do this through its regional divisions.**

**Annexes**

(attached as separate files)

1. Table of justification of indicators of the pilot national index of multidimensional poverty
2. Presentation at the meeting of statisticians and policymakers on MPI composition and first results