Report on the Provision of Technical Training on Multidimensional Poverty Measurement in the Republic of Kazakhstan

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Table of Contents

Introduction

While poverty measures have historically defined poverty as a lack of income, the lived experiences of poor people suggest that poverty encompasses many more dimensions. A person who is poor can suffer from multiple overlapping deprivations simultaneously. For example, they may have poor health, lack access to clean water or electricity, or have insufficient schooling. A multidimensional poverty measure can complement monetary poverty measures by presenting a more comprehensive picture of the many deprivations experienced by the poor.

Multidimensional Poverty Indices (MPIs) based on the Alkire-Foster method allow the analysis of both the incidence and breadth of poverty, as well as comparisons of the levels and composition of poverty for different groups of populations, such as rural and urban areas, sub-national regions and age groups. This reflects the commitment in the Sustainable Development Goals (SDGs) to "*leave no one behind*" as well as the first area of priority of the National Development Plan of Kazakhstan until 2025, that is to ensure the "well-being of the citizens" through three priorities: *"fair social policy"*, *"affordable and effective health care system"*, and *"quality education"*.[1]

The preamble for the 2030 Agenda for Sustainable Development states: "We recognize that eradicating poverty in all its forms and dimensions… is the greatest global challenge and an indispensable requirement for sustainable development.". In this context, the development of a national MPI would enable Kazakhstan to monitor and track poverty in all its forms and dimensions, based on the national context and development priorities. This can be used for reporting towards SDG target 1.2 and SDG indicator 1.2.2, which specifically urges countries to "by 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions". The MPI could then report progress on this target, as well as guide Kazakhstan's own poverty reduction strategy.

Different countries around the world have designed and computed national MPIs with different goals or purposes, some of which would include monitoring multidimensional poverty and helping to coordinate social policies aiming to reduce poverty and deprivations. Depending on the context (and the data available), countries have included a specific list of dimensions and indicators, which reflect the needs of people living in the country. The final measure always reflects the situation of the country and provides important information to monitor poverty and other development goals. In the case of Kazakhstan, the National Development Plan until 2025, for instance, calls for improvements in the budget allocation system, public administration plans, and monitoring and evaluation of the development strategy, preserving the basic principle of state of planning *"human-centeredness"* to build the national projects *"around the needs and requirements of citizens"*. In this context, a national MPI would be a useful tool to guide these reforms. In addition, given the flexibility of the Alkire-Foster method, it is possible to design and compute a national MPI that identifies the poorest population of the country, provides information for social policies to target them, and identifies potential priorities to reduce their levels of poverty.

The National Development Plan 2025 has 10 nationwide priorities grouped into three key areas: well-being of citizens, quality of institutions and strong economy. The well-being of citizens direction includes the following three priorities:

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[1] The National Development Plan of Kazakhstan until 2025 is a document of the first level of the State Planning System and is developed to implement the long-term Development Strategy of Kazakhstan until 2050 and National Priorities: https://primeminister.kz/en/news/kazakstan-damuynyn-ulttyk-zhospary-aleumettik-al-aukat-mykty-ekonomika-zhane-kolzhetimdi-densaulyk-saktau-1725726

- Fair Social Policy: *"provides for the implementation of systemic measures aimed at promoting productive employment and ensuring social well-being"*.
- Affordable and Effective Health Care System: *"envisions the development of the concept of a sustainable health care system that contributes to the improvement, maintenance and restoration of people's health, as well as the well-being of present and future generations"*.
- Quality of Education: *"provides for the development of competitive human capital for the implementation of the new economic course* [where] *the modernization of the education system will be aimed at improving its quality and accessibility"*.

These priorities are related to the provision of services and opportunities to the entire population in Kazakhstan. However, to guarantee the right distribution of resources, it is necessary to identify who the poor and most disadvantaged in Kazakhstan are. A national MPI will provide important evidence on this topic, not only to identify the poor, but also to inform about the severity of their poverty and the dimensions and indicators that contribute to create this situation. These priorities and the additional strategies that are listed in the National Development Plan 2025, but also in other national documents such as the "Strategy "Kazakhstan-2050""[2], propose a list of targets that can be incorporated as dimensions and indicators of the national MPI, so that it can serve as an official and permanent statistic to monitor progress towards the achievement of the specific national goals.

This report is a summary of the mission undertaken by the consultant, Juliana Milovich, in Nur-Sultan as part of the process to develop a National Multidimensional Poverty Index (MPI) for Kazakhstan. The first section provides a description of the activities performed and the results achieved during the technical workshop in Nur-Sultan; the second section discusses the preliminary structure of the pilot MPI and the steps to build it using the Household Budget Survey 2021; and the final section provides conclusions and recommendations for the next policy and technical steps towards the construction and adoption of a MPI for Kazakhstan as an official and permanent statistic.

Goals and activities according to the Terms of Reference (ToRs)

The goal and main activities of the project were to:

- Provide methodological training to the staff of the Bureau of National Statistics (BNS) of Kazakhstan for developing a national MPI in Kazakhstan.

- Review of the methodological materials available at BNS and UN Economic Commission for Europe (UNECE), such as overview of data sources, the 2021 census questionnaire and household budget survey (HBS) questionnaires, to identify the considerations and reasoning behind the possible choices for the dimensions to be included in the MPI.

- Prepare a package of training material and deliver training to BNS staff on the development and use of a national MPI during a technical assistance mission to Nur-Sultan. The training should cover the following:
    - Overall counting based on the dual cut-off method (Alkire-Foster), including an exercise;
    - Indicator computation;

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[2] https://strategy2050.kz/en/

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- o Generation of deprivation matrix and weighted deprivation score at household level;
- o Aggregation to create the information platform comprising MPI, Headcount Ratio, Intensity, and Indicator composition of multidimensional poverty;
- o Disaggregation by age, disability status, region etc;
- o Robustness analysis;
- o Trends over time.

- Provide and explain the programming code for each learning area and share relevant online resources.

- Review the experimental calculations of MPI carried out by BNS and provide comments and recommendations

- Make a presentation at the meeting of statisticians and policymakers to show the possibilities of using MPI in different policy contexts and the process of finalization and authorisation of the index for use as an official statistic. Examples of various models in other countries will be shared. Provide guidance on the practical steps needed for presenting to policymakers how the MPI should be used and in what context.

- Draft a report summarising the results of the work. The report should include a description of the activities conducted, an analysis of the practical steps to be undertaken in presenting and sharing with policy leaders how MPI should be used and in what contexts. Finally, it should also provide conclusions and recommendations to BNS concerning further work on the use of the MPI, including a consultation process with stakeholders on determining the dimensions for the MPI, and on the interpretation of results.

Section 1: Description of the MPI technical workshop and the results achieved

This section describes in detail the activities during each day of the technical workshop, as well as some notes on the first meeting with policymakers that took place on Friday 8th July 2022 and the main challenges that were discussed. The Agenda of the technical workshop is found in the Appendix.

Description of the daily activities

Day 1
Due to travel disruptions, the consultant, Juliana Milovich, was unable to join the first day of the workshop. Rafkat Fagamzianovich, an independent consultant of UNECE, facilitated the presentations and together with the team from BNS, spent the first session of the workshop watching the training videos from James Foster and Sabina Alkire on the AF method and the interpretation of its results. They had a lively discussion on the methodology and noted some questions on how the poverty cut-off can be selected and how to interpret the censored headcount ratios. In the afternoon, they discussed the indicators and dimensions that could be considered in the structure of the pilot MPI for Kazakhstan, based on the review of the variables available in the 2021 Household Budget Survey (HBS) and how they could be improved. They decided to take out electricity because deprivation is 0%, as well as income poverty in order to keep the latter for a complementary analysis and exercise. They also identified four additional indicators: satisfaction with cleanliness of air, cleanliness of territory and satisfaction with the quality of water. After extensive exchange with Rafkat, the team was made aware that satisfaction variables are not ideal to accurately measure the

deprivations that people might face, but they decided to keep them for now, due to lack of other relevant questions in the survey. In future surveys they will try to add more objective questions to measure the indicators.

⊹ Day 2

Rafkat and I went to the Bureau of National Statistics (BNS) where I met Natalia Belonosova, Gulzhan Daurenbekova, Marzhan Amerzhanova, Samal Kereibayeva, Rymzhan Kassenova, Dana Malikova, Nagima Zhumanova, and Aizhan Makshayeva, from the Department of Labour Statistics and Living Standards of the Bureau of National Statistics; Laura Kyndybai and Gulnar Dilmagambetova, from the Department of Information Support of Household Statistics (Computer Centre); Nauryz Baizakov, an econometrician-analyst from the Analytical Centre of the Information and Computing Centre of BNS; Bakbergen Toktasyn, analyst of the Centre for Macroanalytics and Forecasting of the Institute of Economic Research of the Ministry of National Economy of the Republic of Kazakhstan; and the two interpreters, Azhar Suleimenova and Raushan Nukeshanova.[3]

We started the morning by addressing some doubts regarding the AF method, particularly on the interpretation of the censored headcount ratios, the definition of the deprivation cut-offs and how to set the poverty cut-off. We analysed these questions through an example using a matrix with four indicators and four people, as well as the example of the global MPI on how we build and interpret a deprivation profile. We reviewed the steps of the method, the interpretation of main results, and how they can easily be communicated.

After the tea break, I presented the codes of the deprivation matrix, using the example of access to a safe source of drinking water and the number of years of schooling. We went step by step first on a white board and then on the Stata browser and the do.file of Stata, to show how we build the variables for the applicable population at the individual and household level, how we build the indicator at the individual and household level and how to deal with missing values in particular. We had a very interactive session and all technical and non-technical participants familiarised themselves with the methodology steps and the reasoning behind them and gained a good understanding on how to interpret the results.

In the afternoon, we divided the participants in two: one technical working group comprising Laura and Gulnar, and one non-technical, more policy-focused working group with Natalia, Gulzhan, Marzhan, Samal, Dana, Rhymzan, Nagima and Aizhan. The policy team started working on a policy table identifying the deprivation cut-offs of the indicators, linking the indicators to national and international documents and the SDGs, identifying the policy/programmes in place that could track the evolution of each indicator over time and the institutions that could be responsible for each indicator. This was really good because they got involved in the work and felt very much motivated, acknowledging that they play an important role in this process to provide the policymakers with the accurate information that justifies the structure of the pilot MPI and how important this process is to track poverty over time. On the technical side, Laura and Gulnar started cleaning the HBS data to retain the variables that would be needed to build the MPI.

Rafkat did a tremendous work in complementing clarifications, organising the working groups, and supporting Gulzhan and Marzhan with the more policy activities. And the whole day went by with the wonderful support of the two interpreters who were translating continuously as we spoke, even during lunch!

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[3] Refer to the List of participants in the Appendix for more detail.

➕ Day 3

On Wednesday, we had a very intensive day, where everyone - divided in two working groups (policy and technical) – was engaged and worked very hard. The policy group, supported by Rafkat, worked on justifying the indicators with policy documentation, linking them to the SDGs, searching for policies and programmes that could impact each indicator and the government institutions that needed to be engaged. The technical group, supported by myself, worked together with the excellent support of Raushan and Azhar (the interpreters), on cleaning, translating and merging the datasets, and on specifying the deprivation cut-offs and applicable population of each indicator in the Pilot structure. We ended the day with a final single database of the HBS 2021 survey, ready to be used the next day to start building the indicators. At the end of the day, Gulzhan thanked everyone for the hard work and their engagement. She felt the environment was lively, interactive and that they had made significant progress.

➕ Day 4

On Thursday morning, 7th July, I went through the codes in Stata that enable to compute the aggregate measures of the incidence of multidimensional poverty (H), the intensity (A) and the Multidimensional Poverty Index (MPI), recalling the detailed steps. I also presented the codes to perform the decomposition analysis of multidimensional poverty by each of the indicators considered, and the codes required to do the disaggregation analysis by subgroup of population, using as example the regions of the country.

It was essential that the technical team understood how each line of code is translated to a specific step of the process of measuring multidimensional poverty, so they can easily reproduce the codes in SPSS using the syntax that OPHI shared. The interpretation of the results produced in each of the steps of the process was also analysed, which is key for the policy-focused team to be able to explain it to a wider audience.

In the afternoon, the working groups continued their respective work - policy and technical - and we succeeded in finalising both tasks assigned. The policy-focused team searched to complete the policy table, linking each indicator with policy documents, SDGs, government policies/programmes and institutions in charge. The policy team also worked on preparing the presentation for the meeting with the policymakers that was scheduled for the next day, Friday, 8th July. On their side, Gulnar and Laura in the technical team computed all the indicators, except from the indicator on unemployment, which required additional steps to consider. In this case, I guided them through its construction, accounting for the applicable population (individuals aged 15 years old or more), and building first the indicator at the individual level, to then build the final indicator at the household level.[4] Most of the indicators they had chosen were mainly identified with "level of satisfaction" questions and all questions were answered by one person in the household, representing the whole household. According to Laura and Gulnar, there was no missing information in most variables, everyone answered and there was no option "don't know". However, in two or three questions, the option "don't know" was present, and a high percent of missing values (up to 7%) was found. This will need to be reviewed to check for any possible bias in the data, and in the case this bias exists, the indicator might need to be re-considered. Since the MPI is built using complete information for all

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[4] See the sub-section of the "Practical steps to calculate the deprivation matrix" for detailed related information.

the indicators, the data observations that had missing information for at least one indicator were dropped. This was performed for the time being, to be able to make progress in producing the preliminary results. However, the team still needs to do a proper analysis on this.

For the computations of the indicators, Gulnar and Laura worked on SPSS, directly using the toolbox, and I worked on Stata, building the syntax in the do.file. Each time an indicator was computed, we compared results to check that the number of observations identified as deprived and non-deprived were the same. All results matched. Now, with a bit more time and the SPSS syntax available to them, it is recommended that they write the syntax in SPSS, so it will be easier to follow the computations and also to transfer their knowledge to other members of their team in the future.

By the end of the working day all the indicators of the pilot MPI structure were built together with the corresponding policy justifications and the presentation of the policy team for the meeting with the policymakers was ready. I worked on the aggregation, dimensional breakdown, and regional disaggregation, and prepared some figures for their presentation. Before leaving the office, we received the visit from the Director General of the BNS, who was debriefed about all the work that had been done by the team and was very keen in learning from the final preliminary results and the continuity of the work towards the finalisation of the MPI.

Day 5

On Friday morning, the policy team worked on finalising their presentation for the meeting, including the preliminary results that were produced for the preliminary structure of the pilot MPI. Between 11:00 and 1:30pm we had the meeting with the policymakers, and in the afternoon we had a wrap-up meeting to discuss and agree on the next steps. We decided to continue working with recurring meetings and clear to-do tasks, both on the policy and technical fronts.

All in all, it was a very intensive and memorable week, where the BNS team and the computer centre team made herculean efforts to learn and work and prepare themselves for the important presentation to the policymakers, which seems to have been a great success.

First meeting with the statisticians and policymakers: Friday 8th July 2022[5]

Representatives from the Ministry of Labour and Social Protection of the Population, the Ministry of National Economy, the Agency for Strategic Planning and Reforms and the Analytical Centre of the Information and Computing Centre of BNS, were present during the meeting, as well as colleagues from UNICEF. Natalia made the welcoming remarks, and I did a short presentation on the importance of measuring multidimensional poverty and the policy use of the MPI. Afterwards, Samal and Marzhan presented the work the BNS team had done on developing a national MPI for Kazakhstan, including the need for an MPI in the country, the review of the questionnaire and policy documents and the preliminary selection of the indicators, and finally the preliminary results. The presentation was followed by a lively discussion and the BNS team received much constructive and positive feedback from all the participants. Afterwards, the UNICEF team presented some observations from the additional questions they collected on children. The session ended with a separate discussion between the ministerial representatives and the BNS team on how they will proceed for further exchange. A short exchange took place between UNICEF, Natalia, and myself on the possibility of joining forces between the process of building a national MPI and that of

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[5] See the Appendix for the Agenda (in Russian) of this meeting.

measuring child poverty, so that the measures can effectively be used to guide policy action in Kazakhstan.

Challenges

The main challenges we faced during the workshop had to do with language, type of software and time. Myself not being a Russian speaker, I depended on the support of the interpreters to be able to communicate with the team and the policymakers. This was nonetheless easily overcome thanks to the fantastic work of the interpreters and the great synergies that the whole team built in such a short time, which made the communication easy and fluent. The statistical software used for the computation of the MPI posed a challenge too, since the technical team in Kazakhstan is expert in the use of SPSS and FoxPro, and myself in the use of Stata. However, this challenge was overcome through the detailed analysis of the codes that enable to compute each of the steps to build the MPI and perform its corresponding analysis Moreover, as previously mentioned, when building the deprivation matrix, the work was simultaneously done in SPSS by the BNS team and in Stata by myself. The BNS team performed the main calculations and I reviewed them afterwards, sharing comments and recommendations. This procedure also made it possible to compare the results obtained through both software and ensure that they matched. In addition, the entire syntaxis to build the MPI and perform the composition and disaggregation analysis in SPSS, has also been made available to the entire team, so that the technical team can work in adapting it according to the structure of the MPI for Kazakhstan and its analysis. Finally, time was very short, and it was essential to build capacity on the AF method, the computation of the pilot MPI for Kazakhstan and the interpretation of its preliminary results. However, the BNS team worked steadily and intensively during the entire week, entirely committed and engaged with the work they were developing. This was key for the smooth running of all activities in the time that was available. Therefore, as detailed above, we managed to overcome these challenges and make steady progress on all fronts.

Section 2: The AF method and its steps

This section introduces the AF method through a very simple example using four indicators and four people in an example society. It also presents the detailed steps of the coding process to build the deprivation matrix and the aggregation, dimensional breakdown, and disaggregation steps for the production of results and analysis.

Example of the AF method

Suppose there is a hypothetical society containing four people and multidimensional poverty is analysed using four indicators: hectares of land, years of schooling, malnourishment, and access to improved sanitation. The 4x4 matrix X contains the achievements of the four people in the four indicators.

	Hectares of Land	Years of Schooling	Body Mass Index	Access to Improved Sanitation	
$X =$	7	14	19	Yes	Person 1
	3	13	19.5	No	Person 2
	4	3	17	No	Person 3
	8	1	22	Yes	Person 4
$z =$	5	5	18.5	Yes	

For example, Person 3 owns 4 hectares of land, whereas Person 4 owns 8 hectares. Person 1 has completed 14 years of schooling, whereas Person 2 has completed 13 years of schooling. Person 3 is the only one who is malnourished of all four persons. Two persons in our example have access to improved sanitation.

Thus, each row of matrix X contains the achievements of each person in each of the four indicators. The deprivation cut-off vector is denoted by $z = $ (5, 5, Not malnourished, Has access to improved sanitation), which is used to identify who is deprived in each indicator. The achievement matrix X has three people who are deprived (see the underlined entries) in one or more indicators. Person 1 has no deprivation at all.

Based on the deprivation status, we construct the deprivation matrix g_0, where a deprivation status score of 1 is assigned if a person is deprived in an indicator and a status score of 0 is given otherwise.

	Hectares of Land	Years of Schooling	Body Mass Index	Access to Improved Sanitation	
$g_0 =$	0	0	0	0	Person 1
	1	0	0	1	Person 2
	1	1	1	1	Person 3
	0	1	0	0	Person 4
$w =$	0.25	0.25	0.25	0.25	

All indicators are equally weighted and thus the weight vector is $w = $ (0.25, 0.25, 0.25, 0.25). We then apply these weights to the deprivation matrix to obtain the weighted deprivation matrix. The weighted sum of these status scores is the deprivation score (c_i) of each person. For example, the first person has no deprivation and so the deprivation score is 0, whereas the third person is deprived in all indicators and thus has the highest deprivation score of 1. Similarly, the deprivation score of the second person is 0.5 (0.25 + 0.25).

	Hectares of Land	Years of Schooling	Body Mass Index	Access to Improved Sanitation	Deprivation score, c_i
$\bar{g}_0 =$	0	0	0	0	0
	0.25	0	0	0.25	0.5
	0.25	0.25	0.25	0.25	1
	0	0.25	0	0	0.25

The union identification approach identifies a person as poor if she is deprived in any of the four indicators. In that case, three of the four people in this example are identified as poor (i.e. persons 2, 3 and 4). On the other hand, the intersection approach requires that a person is identified as poor if she is deprived in all indicators simultaneously. In that case, only one of the four people is identified as poor in this example (i.e. person 3). An intermediate approach sets a cut-off between the union and intersection approaches, say, $k = 0.5$, which is equivalent to being deprived in two out of four equally weighted dimensions. This strategy identifies a person as poor if she is deprived in half or more of the weighted indicators, which in this case means that two of the four people are identified as poor (i.e. persons 2 and 3).

Once the poor have been identified, the weighted deprivation matrix is censored so that the measure can focus only on the deprivations of the poor – that is, deprivations of those identified as non-poor

are replaced with a zero. This leads to the censored deprivation matrix and the censored deprivation score, as shown below for $k = 0.5$.

	Hectares of Land	Years of Schooling	Body Mass Index	Access to Improved Sanitation	Censored deprivation score, $c_i(k)$
$g_0(k) =$	0	0	0	0	0
	0.25	0	0	0.25	0.5
	0.25	0.25	0.25	0.25	1
	0	0	0	0	0

Note that there is one case where the censoring is not relevant: when the poverty cut-off corresponds to the union approach, then any person who is deprived in any dimension is considered poor and the censored and original matrices are identical.

As discussed above, the headcount ratio H is the proportion of people who are poor, which is two out of four persons in the above matrix. That is, $H = 2/4 = 1/2$ or 50%.

The intensity A is the average deprivation share among the poor, which in this example is the average of 0.5 and 1 (i.e. the deprivation scores of the two people that are poor, persons 2 and 3). That is, A = 0.75 or 75%.

It is easy to see that the multidimensional headcount ratio or MPI is $M_0 = H \times A = 0.5 \times 0.75 = 0.375$. It is also straightforward to verify that M_0 is the average of all elements in the censored deprivation score vector $c(k)$, i.e. $M_0 = (0 + 0.5 + 1 + 0)/4 = 0.375$. Analogously, it is equivalent to compute as the weighted sum of deprivation status values divided by the total number of people: $M_0 = (0.25*2 + 0.25*1 + 0.25*1 + 0.25*2)/4 = 0.375$.

Following the explanations above, the analysis can be completed by computing decompositions by populations subgroups and dimensional breakdowns.

Practical steps to calculate the deprivation matrix

The deprivation matrix is composed of various vectors, where each one provides information on the deprivation conditions of each individual in a specific indicator. To build the deprivation matrix, one needs to create each of the indicators that are considered in the structure of the MPI, by identifying the deprivation or non-deprivation of each person and household in the dataset.

To create each of the indicators, there are five main considerations:

1- **Unit of identification:** it is essential to clearly specify the unit of identification, that is, *who* is identified as poor or non-poor, which is the same as *who* is identified as deprived and non-deprived (a person, a household, an institution, a geographic region, for instance). This differs from the unit of analysis, which refers to how data are reported (often at the individual level in percentage of people).
2- **Applicable population:** it is also key to precisely define the applicable population, which is the group of people for which the indicator is relevant.
3- **Deprivation cut-off:** it is also essential to clearly specify the deprivation cut-off, which is the minimum realisation that a person needs to satisfy in order not to be identified as deprived.
4- **Coding/Labels/Answers of the raw variable(s):** it is important to check the answers of each of the raw variables that will be used to build the indicator of the deprivation matrix.

5- Filter(s) in the questionnaire: it is also necessary to check whether there are any jumps or filters between questions within the survey questionnaire, that need to be taken into consideration when building a specific indicator of the deprivation matrix.

We can see this with the following example. Suppose we would like to consider in the MPI an indicator of *School Attendance*, to measure whether children are attending school or not. The definition of the indicator is the following: *A household is deprived if any school-aged child (6-14 years old) is not currently attending school.*

1- **Unit of identification**: the unit of identification is the household. That is, all the members in the household are going to be deprived if at least one school-aged child, between 6 and 14 years old, is not currently attending school.
2- **Applicable population**: in this example, the applicable population is school-aged children, between 6 and 14 years old. First, we are going to identify the individuals between 6 and 14 years old who are deprived or non-deprived in this indicator
3- **Deprivation cut-off**: we identify whether a child between 6 and 14 years old is deprived or not in this indicator, using the deprivation cut-off. In this example, this is *"not currently attending school"*. If a school-aged child is not currently attending school, she or he are going to be identified as deprived. On the other hand, if a child between 6 and 14 years old is currently attending school, then this child is going to be identified as non-deprived.
4- **Coding/Labels/Answers of the raw variable(s):** the answers to the question used in the data differs between surveys and countries. It could be for example: 0 for non-attending; 1 for attending. In some surveys, the non-response is coded with a number 8 or a number 9. It's essential to check these answers and identify which of them are identified as a deprivation, which as a non-deprivation, which as a missing value (non-response).
5- **Filter(s) in the questionnaire:** there could be some filters in the questionnaire. For instance, in some surveys children who never ever attended school may not answer the questions related to *current* school attendance. In this case, these children might have a non-response or missing value in the indicator, and it is important to decide whether they would be identified as deprived or non-deprived.

Once these considerations are taken into account, the main steps in practice to code the indicator using the statistical software are the following:

a. **Create a variable for the applicable population:** in the example of the School Attendance indicator, we would create a variable equal to 1 if the individual is between 6 and 14 years old, and 0 otherwise. If a person doesn't have information on the age, then this variable will have a missing value for this person.
b. **Create a variable for the applicable population at the household level:** we identify the households who have children between 6 and 14 years old and those who doesn't. We would create a variable equal to 1 for all the members of a household where there is a child between 6 and 14 years, and equal to 0 for all the members of a household where there is not a child between 6 and 14 years old.
c. **Create a variable for the deprivation at the individual level:** we create a variable that identifies whether a school-aged child is currently attending school or not. This variable will take the value of 1 if a child between 6-14 years old is not attending school, thus she or he is deprived, and equal to 0 otherwise, thus non-deprived. Note that this variable has missing values for all the members of the household who are younger than 6 years or older than 14 years. It is only created for the applicable population.

d. **Create a variable for the deprivation at the household level:** we identify the households who have at least one school-aged child[6] who is deprived and those where all school-aged children are non-deprived. We create then a variable equal to 1 for all members of a household where there is at least a child 6-14 years old who is deprived, and equal to 0 for all the members of a household where all the children 6-14 years old are non-deprived. Note that this variable will have missing values for all the members of a household where there are no children aged 6-14 years old. This variable is the one that corresponds to the indicator of the deprivation matrix.

e. **Replace with a non-deprivation the individuals living in a household where there is no applicable population:** if in the household there is no member aged 6-14 years old, the previous variable will have missing values. A normative decision would need to be taken on whether these individuals should be identified as deprived or non-deprived or be left as missing. Note that if they are left as missing, they will not be considered in the final calculations of the MPI. Since we would like to keep as many observations of the dataset as possible for the final calculations, we may want to identify these individuals with a non-deprivation. In this case, we replace the indicator with a 0 for all members of a household where there is no child 6-14 years old. We have then the final indicator.

f. **Analyse and properly identify the missing values:** once we have computed the final indicator, we want to analyse the number of observations who are deprived, those who are non-deprived and those who have missing information. This enables to check whether the numbers are correct according to the country context and study which are the individuals for which there is no information on the indicator. If the percentage of observations who doesn't have information on the indicator is sufficiently large[7], then it is recommended to study whether there is bias in the data -for instance, the missing information corresponds to individuals living in rural areas-, or whether this missing information is randomly assigned. If there is a doubt about possible bias in the data, it's recommended to reconsider the definition of this indicator, in order to account for a more complete source of information.

Note that some of these steps are not required when the indicator that is built uses information that is the same for all the members of the household, such as an indicator to measure a deprivation on the type of source of drinking water, for instance. In this case, there is no need to build the variables for the applicable population and the indicator at the individual level. The indicator at the household level can be directly created by identifying the answers to the questions used that correspond to a deprivation, those that correspond to a non-deprivation, and those that don't have an answer and thus are missing values.

The deprivation matrix is then made up of different vectors, each corresponding to an indicator of the structure of the MPI, and with values equal to 1 for a deprivation and equal to 0 for a non-deprivation.

Practical steps to aggregation, dimensional breakdown, and disaggregation by groups

Once the deprivation matrix is built, there are several steps to implement in practice in order to compute the incidence of multidimensional poverty (H), the intensity of multidimensional poverty (A) and the MPI:

1- **Keep relevant sample:** we keep only the observations for which we have information in all indicators. The observations that don't have information (have missing values) in at least one

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[6] In this example all household members are identified with a deprivation if at least one school-aged child is deprived. But it is important to note that this can be different, for instance, it can be *all children*, or *half the children* or other definition that corresponds best to the country context.

[7] There is no golden rule to identify how much is sufficiently large, but in OPHI we usually consider 2% as a maximum percent of missing values to consider the indicator.

indicator will be dropped from the final sample. It is also important to check in this step whether there are members of the household who are non-permanent and might not need to be considered in the final calculations.

2- **Declare the sampling design of the survey:** if the data source used to build the MPI is a survey and not a census, then the sample of the survey is considered to be representative of the entire country population by using three variables of the sampling design: the sampling weight, the strata, and the primary sampling unit (psu). It is key to identify these three variables that guide the sampling design of the survey, so that all the results will be estimated accurately and will be representative of the national population.

3- **Define the weights of each indicator:** for each indicator, a variable will be created with the relative value of the weight[8] that is given to the specific indicator. For instance, if the School Attendance indicator is given a value of 1/6, then the variable of the weight will be equal to 1/6 for all the observations in the dataset. Note that if there are, for instance, 10 indicators in the structure of the MPI, there has to be 10 variables for the indicators, each one measuring the deprivations and non-deprivations of each person in the sample; and 10 variables for the weights, each one capturing the relative value of each indicator within the structure of the MPI.

4- **Build the weighted deprivation matrix:** once the deprivation matrix is built and the relative weights of the indicators are set, we create the weighted deprivation matrix by multiplying each vector of the deprivation matrix (each indicator) by its corresponding weight. We will obtain a matrix equal to the deprivation matrix, but instead of having a number equal to 1 for a deprivation, we will have a number equal to the value of the relative weight of that specific indicator (1/6 for the current example of School Attendance), and a number equal to 0 for those individuals who are non-deprived.

5- **Create the counting vector:** once the weighted deprivation matrix is built, we create a variable called the counting vector, by adding up all the weighted deprivation of each person in the sample. This variable provides the deprivation profile of each person in the sample. This deprivation profile can take a value between 0 (not deprived in anything) and 1 (deprived in everything).

6- **Identify the poor persons:** once the deprivation profile of each person is built, we identify who is poor and who is not by comparing the value of the counting vector of each person to the value of the poverty cut-off. A person is identified as multidimensionally poor if her/his deprivation profile is equal or higher than the poverty cut-off. For instance, if the deprivation profile of a person is equal to 1/2 (or 50%) and the poverty cut-off is equal to 1/3 (or 33%), this person is identified as multidimensionally poor because her/his deprivation profile is higher than the poverty cut-off. We then create a variable equal to 1 if the person is identified as multidimensionally poor, and equal to 0 if the person is not multidimensionally poor.

7- **Create the censored counting vector and the censored deprivation matrix:** once the multidimensionally poor people are identified, we build a variable equal to the counting vector, but we replace with a 0 (a non-deprivation) the deprivation profile of the individuals who are not identified as multidimensionally poor. We do this because, when building the MPI, we only consider the deprivation profile of the persons who are identified as multidimensionally poor. The minimum value of this censored counting vector can be at least equal to the poverty cut-off (in this example 1/3) and at most equal to 1 if a poor person is deprived in every indicator. We do the same with the deprivation matrix and we create the same indicators that we have in the deprivation matrix, but we censor or replace with a 0 the deprivations of non-poor people.

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[8] Note that this is the weight of the indicator within the MPI structure. That is, the relative value that is given to a specific indicator. It does not correspond to the sampling weight of the survey.

8- **Calculate the incidence and the intensity of multidimensional poverty, and the MPI:** we can then calculate the incidence of multidimensional poverty by taking the average of the identification vector built in step 6, using the sampling design of the survey. Recall that this vector of identification takes the value equal to 1 if the person is identified as multidimensionally poor, and equal to 0 otherwise. Therefore, by taking the average of this vector and using the sampling design of the survey, we count the number of people who are poor in the society, and we divide it by the total population, obtaining the percentage of people who are multidimensionally poor – the incidence (H). To calculate the intensity of multidimensional poverty (A), we take the average of the censored counting vector only for the poor people in the society. Recall that this vector contains the sum of the weighted deprivations experienced by each poor person in the sample and is equal to 0 for non-poor people. To calculate the average of this vector only for poor people, we sum the total weighted deprivations of all poor people, and we divide it by the total number of poor people. Using the sampling design of the survey, we identify the average share of deprivations that poor people experience in the society. The MPI, which is the multiplication of H and A, is calculated with the statistical software as the average of the censored counting vector for the entire population (poor and non-poor). To calculate the average of this vector for the entire population, we sum the total weighted deprivations of all persons in the sample (poor and non-poor[9]), and we divide it by the total number of people in the sample. Using the sampling design of the survey, we obtain the MPI, which is interpreted as the share of *possible* deprivations experienced by poor people in the society.

Once the incidence (H) and the intensity of multidimensionally poverty (A) and the MPI are estimated, it is possible to decompose the level of poverty by indicators and analyse:

9- **The censored headcount ratios:** this is the percentage of the population who is poor and simultaneously deprived in each indicator. It is calculated by taking the average of each vector of the censored deprivation matrix. It enables to identify the highest deprivations faced by poor people in the society.

10- **The contributions of each indicator to overall poverty, in absolute value and in percentage:** the absolute value of the contributions of each indicator is calculated by multiplying the value of censored headcount ratio of each indicator with the relative weight of the indicator. The percentage contribution is calculated as the absolute contribution divided by the MPI. It enables to identify which are the deprivations that contribute more to overall poverty and inform policy action accordingly.

Once the results are obtained at the national level, they can also be disaggregated by subgroup of population that is relevant to analyse within the country context. For instance, it could be relevant to analyse the incidence, the intensity, the MPI and its decomposition by age groups. In this analysis, steps 8, 9 and 10 are replicated for each subgroup of population. In the example of the age groups, for instance, this would enable to calculate the incidence and the intensity of multidimensional poverty and the MPI for children, for adults and for the elderly. Then, we could calculate the censored headcount ratios and the contributions of each indicator to the MPI of children, of adults and of the elderly, providing a very detailed and comprehensive picture of poverty in the country.

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[9] Recall that non-poor people have a value of 0 in the censored counting vector because they are either not deprived in anything or their deprivation profile is lower than the poverty cut-off.

Section 3: Calculating the pilot MPI using the Household Budget Survey 2021

This section presents the preliminary structure of the pilot MPI for Kazakhstan, as well as the preliminary results of multidimensional poverty at the national level, its decomposition by indicator and the contribution of each indicator to overall poverty by region.

Preliminary structure of the pilot MPI for Kazakhstan

The preliminary structure of the national MPI for Kazakhstan has four dimensions and 16 indicators (Table 1), carefully discussed, and justified by national and international policy documents.[10]

The MPI is built by using the household deprivation profiles in these indicators.

Weights

For the purpose of the current exercise, all dimensions are weighted equally and each indicator within each dimension is also weighted equally.

Deprivation cut-off and poverty cut-off

The AF method uses a dual cut-off. First, it is determined whether a person is deprived or not in each indicator using an indicator cut-off. If an individual's achievement falls below the indicator cut-off, then he/she is considered as deprived in that indicator. The deprivation cut-offs, which are specified in Table 1, have been decided in a normative way and their justification is detailed in the Policy Table in the Appendix. Secondly, the AF method uses a poverty cut-off (k) to identify whether a person is multidimensionally poor or not. If the deprivation profile of a person – calculated as the sum of the weighted deprivations that the person experiences – is equal or higher than the poverty cut-off, the person is identified as multidimensionally poor.

In the current exercise, the poverty cut-off has been set to 1/4 or 25 percent. This implies that, given that the preliminary structure has four dimensions, and each dimension is weighted equally (25 percent for each one), a person is identified as multidimensionally poor if she/he is deprived in one or more dimensions.

Preliminary results

This sub-section presents the preliminary results for the national MPI of Kazakhstan, using the Household Budget Survey 2021. We first present the national MPI as well as the incidence and intensity of poverty among the poor. We then show *how* people are poor according to each indicator, *who* is poor among different regions in the country and *how* each indicator contributes to overall poverty in each region.

Table 2 shows that the incidence of multidimensional poverty or the poverty rate in Kazakhstan is 23.6%, meaning that nearly one out of four people in Kazakhstan is multidimensionally poor by the national MPI[11]. The intensity of poverty, which reflects the share of weighted deprivations each poor

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[10] See Policy table in Appendix for detailed information.

[11] Since all survey-based estimates are based on a sample, each has a margin of error. Thus, the 95% confidence interval is also presented in the table. In the case of the incidence of the national MPI, we can say with 95% confidence that the true headcount ratio of multidimensional poverty of the entire national population is between 21.0% and 26.2%.

person experiences on average, is 32.2%. This indicates that each poor person in Kazakhstan is, on average, deprived in 32.2% of the weighted indicators. The national MPI has a value of 0.076.

Table 1: Pilot MPI Kazakhstan - Dimensions, indicators, weights, and percent population deprived in each indicator (%)

		Pilot MPI for Kazakhstan			
Dimension	**Indicators**	**Deprivation cutoff** **The household is deprived if…**	**Weight of the indicator**	**Weight of the dimension**	**Percent population deprived (%)**
Education	Quality of education	the level of satisfaction is 1-3 over 10	1/12	1/4	5.0%
	Accessibility of education	the level of satisfaction is 1-3 over 10	1/12		5.0%
	Attendance at preschools	at least one child 1-6 years of age is not attending preschool due to the following reasons: preschool is expensive or preschool is far way or relatives look after the children or the child doesn't have residential registration	1/12		7.4%
Health & Environment	Quality of health services	the level of satisfaction is 1-3 over 10	1/28	1/4	7.7%
	Accessibility of health services	the level of satisfaction is 1-3 over 10	1/28		5.6%
	Inability to access health services	at least one member 15+ who was sick during the year couldn't access the health services due to: services being very expensive or the medicine is too expensive or long queues or absence of specialist or health care facility is too remote/no opportunity to access or absence of medicines or poor quality of services/don't trust	1/28		7.5%
	Clean air	the level of satisfaction is 1-3 over 10 (absent of pollution, smoke, dust, muds)	1/28		5.8%
	Cleanliness of the surrounding area	the level of satisfaction is 1-3 over 10 (Absence of waste or garbage)	1/28		2.5%
	Source of drinking water	the households gets the water from tank truckers or river/ponds/lake	1/28		2.6%
	Quality of drinking water	the level of satisfaction is 1-3 over 10	1/28		7.6%
Housing and Living Conditions	The standard of accommodation (sqm)	a person lives in less than 15 squared meters	1/16	1/4	47.4%
	Fuel for heating	the household uses solid or liquid fuel for heating	1/16		24.3%
	Sewerage (sanitation)	the household has a toilet with pit latrine without slab or no toilet or septic tank	1/16		40.8%
	Access to the internet	the household doesn't have personal access to internet	1/16		33.0%
Living Standards/financial inclusion	Household debt	a person 15+ failed to pay rent/mortgage, loan or utility services twice or more	1/8	1/4	19.1%
	Unemployment	at least one person 15+ if it's not working (unemployed or not searching for job)	1/8		11.6%

Recall that the MPI is calculated by multiplying the percentage of population who is multidimensionally poor (the incidence, H) by the share of weighted deprivations that the poor people face on average (the intensity, A). The value of 0.076 shows that poor people experience 7.6% of the total possible deprivations that could be experienced if everyone was deprived in all

indicators.[12] The national MPI is the official statistic because it is most precise and most sensitive to change - if any deprivation of any poor person goes down, the MPI will go down - but for non-technical users, incidence may be more intuitive, so it is usual to always discuss both.

Table 2: Multidimensional poverty in Kazakhstan

Poverty cut-off (k)	Value	Value	Confidence Interval (95%)	
k-value = 25% (deprived in 1 dimension or more)	**MPI**	0.076	0.067	0.085
	Incidence of multidimensional poverty (H, %)	**23.6%**	21.0%	26.2%
	Intensity of multidimensional poverty (A, %)	32.2%	31.4%	32.9%

Source: Author's calculation based on data from the Household Budget Survey, 2021.

At the regional level, multidimensional poverty varies substantially (see Figure 1). The region of Shymkent City and Pavlodar Province are the least poor regions in Kazakhstan, whereas Kostanay and Turkestan Provinces are the poorest regions in the country.

Figure 1: Multidimensional Poverty Index by region
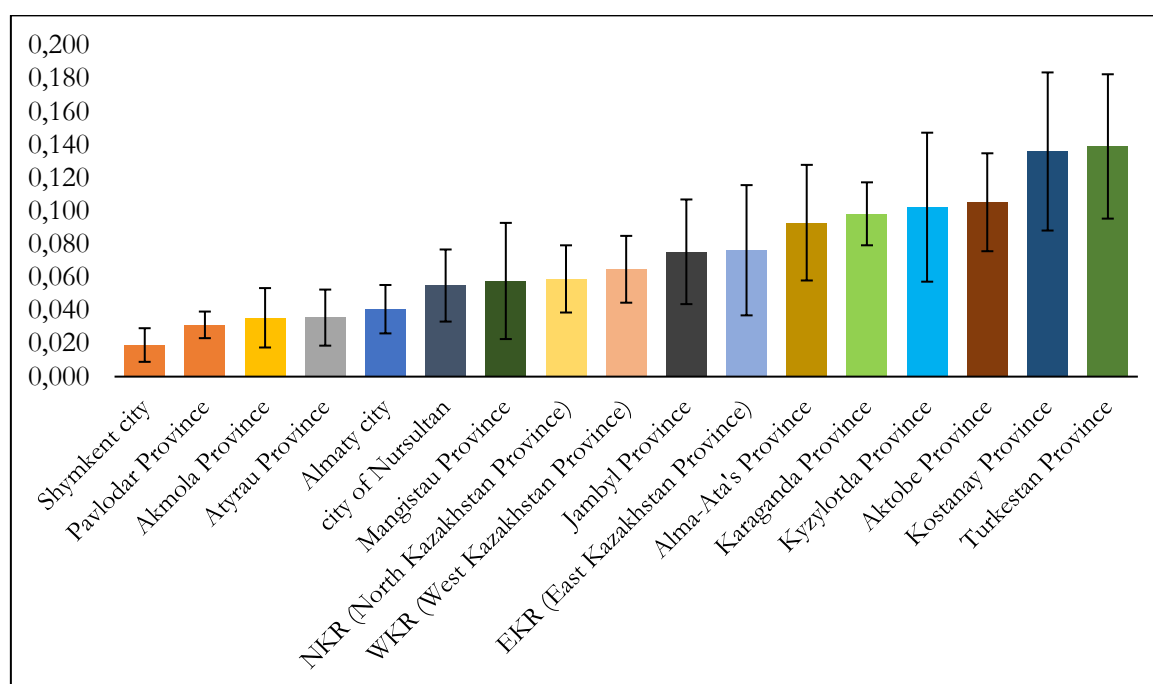
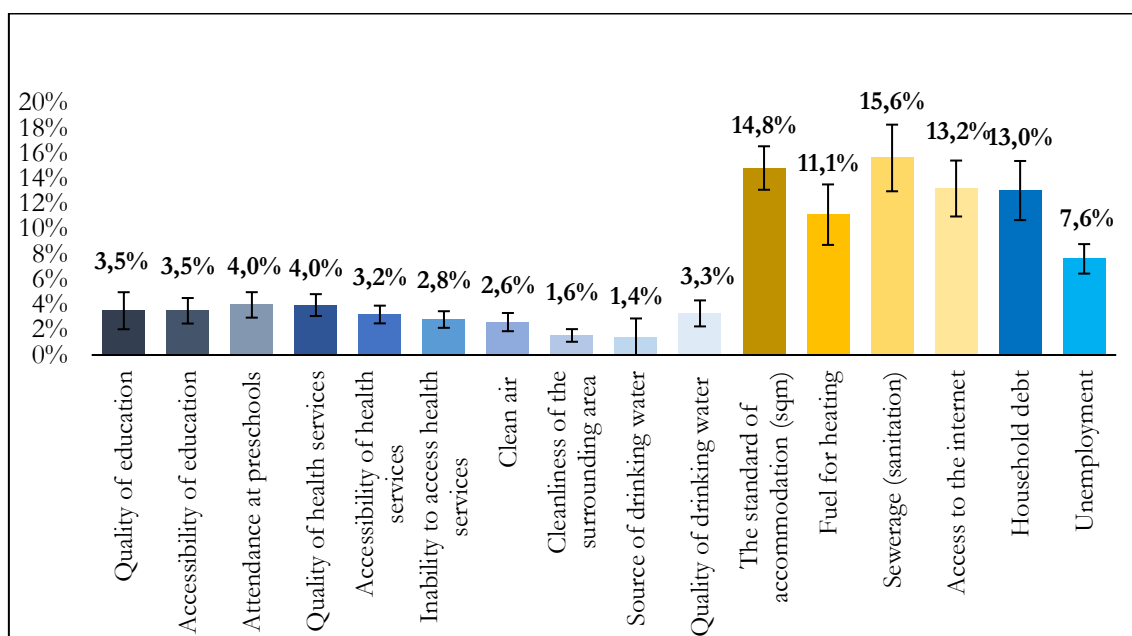Source: Author's calculation based on data from the Household Budget Survey, 2021.

Figure 2 presents the percentage of the population who is multidimensionally poor and deprived in each of the indicators. These are called "censored headcount ratios". The analysis of the censored headcount ratios shows those indicators in which the national MPI poor people face the highest levels of deprivation. A reduction in any deprivation of any poor person (that is, a reduction of any censored headcount ratio) will reduce the national MPI and improve the lives of poor people in Kazakhstan.

Figure 2 shows that a large percentage of people who are multidimensionally poor are also deprived in sanitation (15.6%). Providing an improved sewerage systems will reduce this deprivation, which affects around 2.6 million people in Kazakhstan. Moreover, 14.8% are multidimensionally poor and

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[12] With 95% confidence, the true value of the MPI is between 0.067 and 0.085.

live in a household were each member lives in less than 15 square meters, while 13.2% are multidimensionally poor and don't have access to internet. A similar percentage of the population in Kazakhstan (13%) is poor and lives in a household where at least one person aged 15 years old or more, has failed twice or more times to pay his/her rent or mortgage, or loans, or utility services. Confronting these deprivations are top priorities for poverty reduction in Kazakhstan.

Figure 2: Proportion of population who is poor and deprived in each indicator (%)
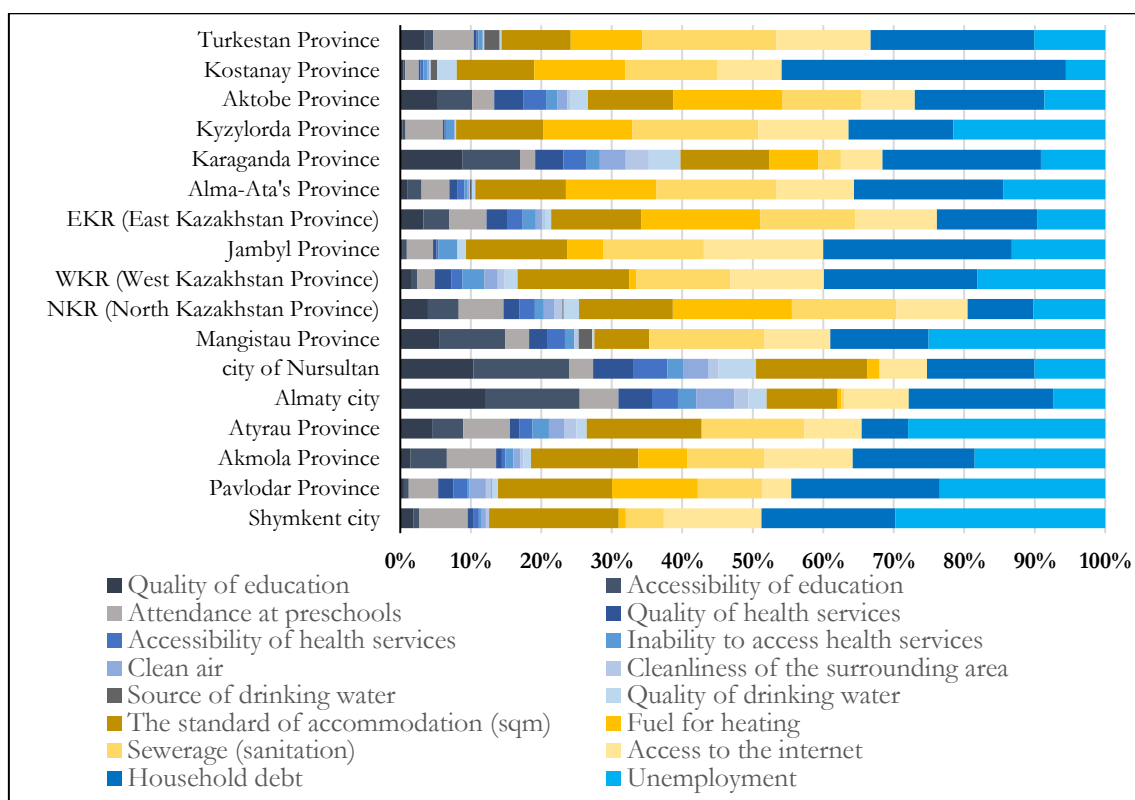

Source: Author's calculation based on data from the Household Budget Survey, 2021.

To chart policy priorities and design high-impact policies in Kazakhstan, Figure 3 shows the percentage contributions of each of the weighted indicators to the national MPI for each region. Regions are ranked from the poorest to the least poor, according to the national MPI numbers presented in Figure 1. In Shymkent City, the region with the lowest level of multidimensional poverty, unemployment has the largest contribution to the MPI. Debt also contributes most significantly to Turkestan and Kostanay poverty, the poorest provinces in Kazakhstan. Inadequate standard of accommodation (<15 square meters per person) contributes equally to poverty in all regions.

To use the percentage contributions for policy, consider the following example. The province of Jambyl and East Kazakhstan (EKR) have nearly the same MPI value, and so one might think that anti-poverty policies would be the same. But unemployment and debt contribute more to poverty in Jambyl Province than in EKR Province, whereas deprivations in the level of satisfaction with the quality of education, attendance of preschool and the level of satisfaction with the quality of health services contribute more to poverty in EKR Province. In terms of policy this means that a uniform approach is not cost-effective, because the different composition of indicators in each province requires different policy and budgetary responses.

Figure 3: Percentage contribution of each indicator to the MPI by region

Source: Author's calculation based on data from the Household Budget Survey, 2021.

Section 4. Recommendations and Next Steps

This section provides some recommendations to consider in the process of development of the national MPI for Kazakhstan. It first adds some recommendations on the indicators and, in a second stage, some recommendations on the follow-up process. The end of this section covers the next technical and policy-focused steps towards the development and finalisation of the MPI for Kazakhstan.

Recommendations on the indicators

As an overall note, it can be mentioned that the subjective 'level of satisfaction' questions are problematic, and this measure uses a lot of these. This is technically a worrying situation, as educated elite have different 'frames of reference' from the poor. We are aware that Kazakhstan is data constrained, which introduces some difficulties on the type of space that can be measured. Usually, the poverty cut-off is used to distinguish false positives, but because subjective satisfaction questions add up to at least 25% (the current poverty cut-off), non-poor people who often answer that they are highly dissatisfied either due to personality (pessimistic or introverted) or to their frame of reference, rather than to an objective situation, will be designated poor. In addition, there is a high likelihood that trends will be distorted by changes in frames of reference. In this sense, poverty would go up if objective deprivations went down but frames of reference changed. For all these reasons, **a key recommendation is to replace these subjective indicators with objective indicators.**

Regarding each of the indicators, some comments and specific recommendations are listed here below:

1. **EDUCATION DIMENSION**

   ★ **Quality and accessibility of education**: Whose satisfaction is it? Who answers the question? Do poorer or less educated or rural people have different 'satisfaction' levels from urban elite? Is the difference between the percentage of population who is deprived in these indicators (uncensored headcount ratios – last column of Table 1 –) and the percentage of population who is poor and deprived in these indicators (censored headcount ratios – Figure 2) high? It is important to understand this and to analyse to what extent the captured information is affected by 'adaptive preferences', especially as these indicators have the same weights as the 'objective' indicators (1/12).

   Note: is there 100% attendance of school-aged children? Are all adults educated or there's no data to measure school attendance?

   ★ **Attendance at preschool** – are preschools safe and of good quality, so that they are always better than family relatives? In occasions, if the preschool is not of good quality or safe for children, being looked after a relative could be a better option.

   ★ **General comment**: all questions pertain to children – none of them capture information on adults' education. What percentage of households lack children, so could not answer any questions in this dimension? Note that the households that only have adults and no children are automatically non-deprived in education. Is this something to which the BNS team agrees on? A possible suggestion could be to name the dimension 'child education' instead.

2. **HEALTH & ENVIRONMENT DIMENSION**

   ★ **Quality and accessibility of health**: same comments as in the same indicators of the Education dimension above.

   ★ **Inability to access health services**: it is recommended to do an analysis on the different reasons across regions and groups of population. This would enable to provide a more detailed information for policy to address the one(s) that are most prevalent in each area.

   ★ **All satisfaction indicators:** same comments as above.

   ★ **Source of drinking water:** the Sustainable Development Goal (SDG) 6 also requires the water source to be 'on site'. Does the information in the indicator capture the 'on site' source of drinking water?

3. **HOUSING & LIVING CONDITIONS DIMENSION**

   ★ **Standard of accommodation (overcrowding):** it has a high weight and a very high uncensored headcount ratio (47.4% – last column of Table 1), making this deprivation very visible. Is the deprivation cut-off (*the household is deprived if a person lives in less than 15 squared metres*) a national standard? It will be scrutinised.

- **Fuel for heating:** the deprivation cut-off identifies a deprivation if the household uses solid or liquid fuel for heating. It will be important to analyse which is the composition of the deprivation according to each type of fuel – solid and liquid –, in order to inform policy more accurately. What is the justification behind considering 'liquid' fuel as a deprivation? Is it kerosene poisoning or fire risk, but LPG does not have those risks? Solid fuel has a health and climate justification. The inclusion of 'liquid' fuel needs to be clearly justified. Is there a policy aiming at only having electric heating or any of the type?

- **Sewerage (sanitation):** a problem with this indicator is that the uncensored headcount ratio (percent of population who is deprived in the indicator) is 40.8%; whereas the censored headcount ratio (percent of population who is poor and deprived in the indicator) is 15.6%. The incidence of multidimensional poverty (H) is 23.6%. So, 66.1% (15.6/23.6) of the poor are deprived in sewerage. But 33% ((40.8-15.6)/(100-23.6)) of the non-poor are also deprived in sewerage. Therefore, this is not discriminating poor from non-poor. A suggestion would be to look into the deprivations of the poor vs non-poor and see if you can 'tighten' the definition, so it definitely indicates poverty.

4. LIVING STANDARDS/FINANCIAL INCLUSION DIMENSION

- **Household debt:** it is recommended to include a recall period in the indicator definition in Table 1. That is, "a person 15+ failed to pay rent/mortgage, loan or utility services twice or more", during which period of time? As this indicator has a weight of 1/8 – which is the highest weight among all the indicators[13] – and has a high censored headcount ratio (13.0% – see Figure 2), its contribution will be very visible. Therefore, it will come up as an important indicator and, for this reason, it needs a good justification.

- **Unemployment**: it's not clear from the definition if the persons are 'not searching for a job'. Are housewives considered deprived, or retired people or people living with disabilities? It is recommended to clarify this information in the description of the indicator in Table 1, in order to have a complete information on *who* could be identified as deprived or not.

Recommendations on the follow-up process

As part of the process of developing a national MPI for Kazakhstan, it would be recommended that:

- Two committees be created:

  - **Technical Committee**: composed of the BNS team and any other institution supporting the BNS team on the technical process of development of the national MPI
  - **Steering Committee:** composed of the policymakers and main stakeholders that will use the measure for policy and/or can provide relevant feedback on its structure, according to their expertise of the national context.

- The Technical Committee reviews the indicators according to the technical recommendations mentioned above, to the extent of data availability.

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[13] Because all the dimensions are weighted equally and all indicators are weighted equally within each dimension (nested weights), and the dimension of Living Standards/financial inclusion has only two indicators, this makes that these two indicators have the highest weights of all the indicators.

- The Technical Committee produces updated results at the national level and conducts a disaggregation analysis by different sub-groups of population (regions, area, age cohorts, …) that are relevant for the context of Kazakhstan and for which data is representative.

- The Technical Committee presents these updated results to the Steering Committee

- The Technical Committee reviews the measure according to the feedback of the Steering Committee.

- Once the measure is agreed, the Technical Committee conducts detailed analysis on disaggregation, robustness, redundancy and multidimensional versus monetary poverty (if data is available) [14] and writes an MPI report that could contain: a description of the process of development of the national MPI; a short description of the method used; a description of the data; the structure and its components (indicators, dimensions, weights, deprivation cut-offs and poverty cut-off), adding the normative justifications behind each elements; the main results; and policy implications.

- Once the report is finalised, it is recommended to organise an official launch, at the national and international spheres, of the MPI as an official and permanent statistic to measure multidimensional poverty in Kazakhstan and guide policy action towards its eradication.

Technical next steps

- It is recommended that the Technical Committee completes the Massive Open Online Course (MOOC) on "Designing a Multidimensional Poverty Index (2022)", prepared by UNDP and OPHI, which is now available in Russian and in a self-paced version under the following hyperlink: https://www.learningfornature.org/ru/courses/designing-a-multidimensional-poverty-index-2022-2/

- OPHI conducts an online session to cover redundancy, robustness, and changes over time analysis: due to the limited time available these topics were not covered during the in-person training workshop and may need to be covered online;

- OPHI conducts an online session to review the interpretation of the results of the MPI for Kazakhstan and cover the communication strategies for dissemination of the MPI concepts and results to wide audiences;

- The Technical Committee needs to complete the syntax for the deprivation matrix, update the aggregation, dimensional breakdown, and disaggregation syntax according to their indicators and sampling variables, and perform missing values analysis;

- The Technical Committee updates the measure following feedback from the Steering Committee;

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[14] If time and data permits, it could be possible to also perform an analysis on the evolution of multidimensional poverty in Kazakhstan over time. This would require specific considerations in data construction and ensure that a) the data source has the same sampling design; b) the indicators of the measure are harmonised throughout each year of the survey – i.e., they are defined in the same way in all the years of the survey. This ensures comparability of results over time.

- Upon agreement on the final structure with the Steering Committee, a detailed analysis of the MPI results at the national level, decomposition of poverty by indicators and disaggregation analysis by sub-groups of population, would be performed by the Technical Committee. An analysis on the evolution through time (changes over time), and an analysis on the complementarity of both the MPI and the national income measure, could also be performed.

- Robustness and redundancy tests: robustness tests using the current structure for different weights and poverty cut-offs are needed, as well as a redundancy analysis to show that each indicator adds new and relevant information to the whole MPI structure;

- Writing of the MPI report to include: the detailed process of developing the MPI for Kazakhstan, the structure, and the normative decisions around which it is built (summary of the information included in the policy table), the detailed final results, policy implications of the results and conclusions.

Policy next steps

- The BNS will send the policy table and work to the policymakers in other ministries for their more detailed feedback on how the structure of the MPI can be improved.

- Coordinate another meeting with the policymakers to present the results of the updated measure.

- Upon agreement on the final structure, final detailed analysis and finalisation of the report, it is recommended to organise an official launch, at the national and international spheres, of the MPI as an official and permanent statistic to measure multidimensional poverty in Kazakhstan and guide policy action towards its eradication.

Conclusions

This report has provided a summary of the main activities that took place during the Technical Workshop on Multidimensional Poverty in Nur-Sultan in the beginning of July 2022, as well as the main challenges and learnings that were drawn from this experience. A succinct but detailed presentation of the Alkire-Foster method and its practical application through precise steps, is covered in the second section of this report. The structure of the pilot national MPI for Kazakhstan, together with the preliminary results at the national and subnational level are also detailed in the third section. And the report ends with a set of actionable recommendations and next steps towards the development and finalisation of the MPI for Kazakhstan.

The main outcome of this project is the learning and knowledge that the BNS team has gained in terms of computation, analysis, and justification, both from a technical and policy point of view, of the structure of the pilot national MPI for Kazakhstan and its importance as an official public policy statistic. The intensive work that the entire BNS team has carried out during the week-long training workshop, has contributed to a very substantial progress in the process of developing the national MPI for Kazakhstan. The different angles of progress range from the technical and interpretative understanding of the Alkire-Foster method, used worldwide to measure multidimensional poverty; to the detailed study of the rationale behind the policy decisions behind each of the indicators considered in the structure of the national MPI; to working with the data to calculate the indicators and obtain the preliminary results of the national MPI; to its presentation and communication to a large group of policy makers from different ministries and governmental institutions.

A key recommendation that emerges from this project is the need to reconsider the indicators that measure the level of satisfaction and replace them with more objective indicators that more accurately measure the deprivations that poor people in Kazakhstan experience. A number of steps, both technical and policy, still need to be carried out as part of the process of developing and finalising the Kazakhstan MPI. Nonetheless, this report enables to already underline that the strong working capacity that characterises the BNS team, and the knowledge acquired during the implementation of this project, will allow the team to continue the development of the MPI towards its institutionalisation as an official and permanent public policy statistic in Kazakhstan.

Appendix

Agenda of the Technical Workshop

Oxford Poverty and Human Development Initiative

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Oxford Dept of International Development,

Queen Elizabeth House, University of Oxford

Technical Workshop

« Towards a Multidimensional Poverty Index (MPI) for Kazakhstan »

4th July – 8th July, 2022

Aim
The aim of this workshop is to provide a conceptual and technical introduction to multidimensional poverty measurement with a strong emphasis on the Alkire-Foster (AF) method. The discussion will revolve around the implementation and use of multidimensional measures for policy purposes. By the end of the workshop participants will also have explored HBS data and generated some optional indicators and structures for the MPI in Kazakhstan.

Audience
The course will target statisticians and technical experts from Kazakhstan, including participants from the Kazakhstan Statistics Office and other relevant organizations. Participants must have previous knowledge of Stata or SPSS. They should have access to computers with the software already installed (Stata or SPSS will not be provided).

Objectives
At the end of the workshop, participants will:

1) Understand why and how multidimensional poverty measures add value to previous poverty approaches and can be used for informing policymaking.
2) Understand how to design, compute, and analyse a Multidimensional Poverty Index (MPI), using the Alkire-Foster method.
3) Understand some possible uses of MPIs for policy and learn about the opportunity to engage with the Multidimensional Poverty Peer Network (MPPN) to participate in regular sessions on methodological aspects and use of MPIs in other countries.

Format
This training will be delivered in person in Nur-Sultan, Kazakhstan at the National Bureau of Statistics Office. The language of teaching is Russian. Hence the sessions will be divided in two parts: 1) participants will be shown videos in class with either Russian subtitles or simultaneous Russian translation, followed by a Q&A session with the (English-speaking) instructor with simultaneous or consecutive translation; 2) practical sessions organised in working groups will be developed with simultaneous or consecutive English-Russian translation

Facilitators   **Dr. Juliana Milovich**

Researcher | Oxford Poverty & Human Development Initiative (OPHI), University of Oxford

Monday 4th July 2022

Lecture 1:
The Alkire-Foster method
(1 hour)
9 :00 – 10 :00
	• 9:00-9:30 Projection of videos (30min)
	    ○ "The Alkire-Foster method", by James Foster (14m)
	    ○ "Interpretation of MPI", by Sabina Alkire (14m)
	• 9:30-9:35 Presentation of highlights to discuss (5min)
	• 9:35-10:00 Discussion & notes to exchange questions and answers on Day 2 (25min)

Highlights to discuss during the lecture	✓ What are the steps to calculate an MPI? ✓ How do we interpret the MPI? and the incidence? and the intensity? ✓ What is the difference between uncensored and censored headcount ratios?
Working groups session (1.5 hours) **10:00 – 11:30**	• 10:00-11:30 Exercise on paper – AF method (90min): the participants (divided into working groups of 3 people max.) will work on Exercise 1 of the AF method
11:30-11:45	*Tea break*

Lecture 2:
Data & Indicators
(1.25 hours)
11:45 – 13:00
	• 11:45-12:05 Projection of videos (20min):
	  ○ "Dimensions and Indicators", by Jakob Dirksen (4min)
	  ○ "Indicator issues", by Usha Kanagaratnam (12min)
	  ○ "Missing value", by Rizwan ul Haq (4min)
	• 12:05-12:10 Presentation of highlights to discuss (5min)
	• 12:10-13:00 Discussion & notes to exchange questions & answers on Day 2 (50min)

Highlights to discuss during the lecture	✓ What are in theory the most important dimensions and indicators for measuring multidimensional poverty in Kazakhstan? Which is their reference population? ✓ Which is the justification to consider them? How are they related to policy documents? And how can policy impact them?
13:00 – 14:00	*Lunch break*
Discussion session **14:00 – 17:00** **(3 hours)**	• 14:00-17:00: Discussion around the relevant indicators for the Pilot MPI of Kazakhstan and the indicators that can be calculated with the HBS data (180min)

Goals for the day: 1. Learn the Alkire-Foster method and its steps to measure multidimensional poverty 2. Identify the relevant indicators for the MPI of Kazakhstan 3. Identify indicators that could be calculated with the data

Tuesday 5th July 2022

Practical session **(1.5 hours)** **9.30 – 11:00**	• 9:30-9:45 Introduction of the participants and presentation of the agenda (15min) • 9:45-10:10 From Lecture 1: Review of the Alkire-Foster method to ensure that everyone understands it before entering into the computation of the deprivation matrix (25min) • 10:10-10:35 From Lecture 1: Discussion, questions, and answers (25min) • 10:35-11:00 From Lecture 2: Discussion, questions, and answers (25min)
11:00 – 11:15	*Tea break*
Practical session **(1.75 hours)** **11:15 – 13:00**	• 11:15-12:45 Presentation of the main steps and codes in Stata to build two examples of indicators of the deprivation matrix using the file 'dofile_0_dataprep_VF2-KAZ2022' (90min) • 12:45-13:00 Discussion, questions and answers (15min)
13:00 – 15:00	*Lunch break*

Working group session
 	
(2 hours)
15 :00 – 17:00 hours
	• 15:00-17:00 Beginning of group work (120min): participants are divided in two groups:
	  ○ Less technical participants: focus on policy-related activities, completing the sheet called "Session 1 – Setting out" of the 'My MPI tracker' file with the relevant indicators. Writing down:
	      a. **Indicators, their deprivation cut-offs, and applicable population**
	      b. **Justification of the relevant indicators** – link to National policy documents
	      c. **Linking indicators and deprivation cut-offs to SDGs and existing policy priorities**
	      d. **Identifying policy actors to be engaged for each specific indicator**
	  ○ More technical participants (computer centre): focus on preparing the HBS data to start building the deprivation matrix in SPSS

	Tasks during the session:
	✓ Start completing the first tab "Session 1 – Setting out" of the excel file "My MPI tracker"
	✓ Prepare the data of the HBS survey to start building the indicators of the deprivation matrix

Goals for the day:
1. Make sure all the participants have learned the Alkire-Foster method and its steps to measure multidimensional poverty
2. Learn the key consideration required to compute the indicators
3. Link the relevant indicators for the MPI of Kazakhstan with policy documents, priorities, SDGs and policy institutions
4. Define the deprivation cut-offs of the indicators and the applicable population
5. Prepare the data of the HBS survey to start building the indicators of the deprivation matrix

Wednesday 6th July 2022

Working group session
 	
(1.5 hours)
9:30 – 11:00 hours
	• 9:30-11:00 Beginning of group work (90min): participants are divided in two groups:
	  o <u>Less technical participants</u>: focus on continuing completing the sheet called "Session 1 – Setting out" of the 'My MPI tracker' file with the relevant indicators. Writing down:
	    a. **Indicators, their deprivation cut-offs, and applicable population**
	    b. **Justification of the relevant indicators** – link to National policy documents
	    c. **Linking indicators and deprivation cut-offs to existing policy priorities**
	    d. **Identifying policy actors to be engaged for each specific indicator**
	  o <u>More technical participants (computer centre)</u>: focus on translating the variables, from Russian to English, in the dataset that need to be used to build the indicators for the MPI
	Tasks during the session:
	✓ Continue filling in the first tab "Session 1 – Setting out" of the excel file "My MPI tracker"
	✓ Translate the variables, from Russian to English, of the different datasets to build the indicators for the MPI

11:00 – 11:15	***Tea break***
Working group session **(1.75 hours)** **11:15 – 13:00**	• 11:15-13:00 Continue working on the previous activities (115min) Tasks during the session: ✓ Continue filling in the first tab "Session 1 – Setting out" of the excel file "My MPI tracker" ✓ Finalize translation of the variables, from Russian to English, of the different datasets to build the indicators for the MPI
13:00 – 14:00	***Lunch break***

Working group session
 	
(3 hours)
14:00 – 17:00
	• 14:00-17:00 Continuity of working groups (180min): participants are divided in two groups:
	  o <u>Less technical participants</u>: focus on the previous policy activities
	  o <u>More technical participants (computer centre)</u>: focus on merging the different datasets and produce the final database to start building the indicators of the deprivation matrix
	Tasks during the session:
	✓ Fill in the first tab "Session 1 – Setting out" of the excel file "My MPI tracker"
	✓ Produce a final single database of the HBS survey, in Russian and also translated from Russian to English

Goals for the day:
1. Link the relevant indicators for the MPI of Kazakhstan with policy documents, priorities, SDGs, and policy institutions
2. Produce a final single database of the HBS survey, in Russian and also translated from Russian to English, that will be used to start building the indicators of the deprivation matrix

Thursday 7th July 2022

Practical session (1.5 hour) <u>9:30 – 11:00</u>	• 9:30-10:45 Presentation of main steps and codes in Stata on aggregation (75min) • 10:45:-11:00 Questions and answers (15min)
<u>11:00 – 11:15</u>	***Tea break***
Practical session (1.75 hour) <u>11:15 – 13:00</u>	• 11:15-12:45 Presentation of main steps and codes on dimensional breakdown and disaggregation analysis (90min) • 12:45-13:00 Questions and answers (15min)
<u>13:00 – 14:00</u>	***Lunch break***

Working group session
 	
 (3 hours)
 <u>14:00 – 17:00</u>
	• 14:00-17:00 Continuity of group work (180min): participants are divided in two groups:
	    o <u>Less technical participants</u>: focus on
	      a. finalizing the policy-related activity on the indicators, completing the sheet called "Session 1 – Setting out" of the 'My MPI tracker' file with the relevant indicators.
	      b. **building the presentation for the policymakers meeting of Friday 8th July**
	    o <u>More technical participants (computer centre)</u>: focus on **coding the indicators to build the deprivation matrix using the HBS data from Kazakhstan** – identify the decisions about deprivation cut-offs, applicable population, missing values, etc., (and how to translate them from Stata to SPSS)
	 <u>Tasks during the session:</u>
	
	 ✓ Finalize building the policy table on the indicators and their justifications
	 ✓ Build the presentation for the meeting with the policymakers of Friday 8th July
	 ✓ Create the deprivation matrix in SPSS and Stata

<u>Goals for the day:</u> 1. Learn the steps to estimate the incidence and the intensity of multidimensional poverty and the MPI, and learn how to interpret the results 2. Learn the steps to decompose poverty levels by indicators and disaggregate results by regions, and learn how to interpret the results 3. Finalize the computation of the deprivation matrix in SPSS and in Stata	

Friday 8h July 2022

Working group session **(1.5 hours)** <u>9:30 – 11:00</u>	9:30-11:00 The BNS team finalises the presentation for the meeting with the policymakers, incorporating the preliminary results of the pilot MPI for Kazakhstan (the incidence and intensity of multidimensional poverty, the MPI, its decomposition by indicators and the contribution of each indicator to overall poverty in each region).
Meeting with stakeholders **(2.5 hours)** <u>11:00 – 13:30</u>	✓ OPHI does a presentation on multidimensional poverty, policy uses and country examples ✓ BNS does a presentation on the process of development of the MPI for Kazakhstan and its preliminary results ✓ Discussion to receive feedback from stakeholders ✓ UNICEF presents analysis on child multidimensional poverty measurement ✓ Final discussion ✓ Closing remarks
<u>13:30 – 14:30</u>	***Lunch break***
Closing the workshop: Wrap-up meeting **(1.5 hour)** <u>14:30 – 16:00</u>	• Discussing impressions from the meeting and any further doubts • Agreeing on next steps • Closing the week of work
<u>Goals for the day:</u> 1. Present the preliminary results of the MPI for Kazakhstan to key stakeholders and receive their feedback 2. Discuss impressions from the meeting 3. Agree on next steps	

List of institutions present during the policy meeting of Friday 8th July 2022

№	Full name	Position and organization
	Foreign experts, consultants:	
	Dr. Juliana Milovich	Oxford Initiative for Poverty Reduction and Human Development (OPHI), University of Oxford, researcher
	Rafkat Hasanov	Independent Consultant of the UN Economic Commission for Europe
	Department of Labor Statistics and Living Standards *Bureau of National Statistics*	
	Natalia Belonossova	Director of the Department of Labor Statistics and Living Standards
	Daurenbekova Gulzhan Kulgazievna	Deputy Director of the Department of Labor Statistics and Living Standards
	Department of Living Standards Statistics	
	Amerzhanova Marzhan Yerzhanovna	Head of the Department
	Kereybayeva Samal Baizakovna	Chief expert of the Department
	Makshaeva Aizhan Sovetovna	Chief expert of the Department
	Office of Household Survey Statistics	
	Malikova Dana Erkenovna	Chief expert of the Department
	Zhumanova Nagima Askarkyzy	Chief expert of the Department
1.	Kasenova Rymzhan Beibitovna	Expert of the Department
	Information and Computing Center of BNS	
2.	Dilmagambetova Gulnar Seipenovna	Chief Specialist of the Department of Information Support of Household Statistics
3.	Kyndybai Laura	Chief Specialist of the Department of Information Support of Household Statistics
	Analytical Center of the Information and Computing Center of BNS	
4.	Bayzakov Nauryz Aybarovich	Econometrician-analyst
5.	Khamitzhan Abylaykhan Aitbayuly	Data Analyst
6.	Kerembayev Alpamys Aidarovich	Business Analyst
7.	Kerembayev Anuar Tolegenovich Керембаев	Project Manager
	Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan	
8.	Zhabagina Galiya Myrzabekovna	Deputy Director of the Department of Social Assistance
9.	Kurmankulova Asiya Kadyrnyazovna	Head of the Department of Targeted Social Assistance
	Institute of Economic Research" of the Ministry of National Economy of the Republic of Kazakhstan	
10.	Toktasyn Bakbergen Bakytzhanuly	Analyst of the Center for Macroanalytics and Forecasting
	Agency for Strategic Planning and Reforms of the Republic of Kazakhstan	
11.	Pernebayeva Zhuldyz Usenovna	Director of the Department of Social Sphere
12.	Maratkyzy Ulzhan	Chief Expert of the Department of Social Sphere

Agenda of the meeting with policymakers on Friday 8th July 2022 (in Russian)

11.00-11.15	Приветственное слово. Белоносова Н. Е. -Директор департамента статистики труда и уровня жизни БНС
	Цели и задачи встречи
	Знакомство

11.15-11.35	Международная практика измерения многомерной бедности. Сабина Алькаир, Директор Оксфордской инициативы по борьбе с бедностью и человеческому развитию Джулиана Милович, исследователь Оксфордской инициативы по борьбе с бедностью и человеческому развитию
11.35-12.10	Подходы для разработки пилотного национального индекса многомерной бедности. Маржан Амержанова, руководитель управления статистики уровня жизни Самал Керейбаева, главный эксперт управления статистики уровня жизни
12.10-12.15	Комментарии к пилотному проекту ИМБ. Рафкат Хасанов, консультант ЕЭК ООН
12.15-13.00	Обсуждение. ЮНИСЕФ, Государственные органы

Policy table: Justification for the Indicators of the Pilot National Multidimensional Poverty Index

Indicator	Rationale	What are the SDG targets related to measurement?	What SDG indicators allow tracking this indicator?	What government agencies/programs are working on this indicator? And how can they influence it?	What political actors should be involved before the launch of the MPI?
Education					
Level of satisfaction with the quality of education	**Strategy 2050:** Section 4. Knowledge and professional skills are key landmarks of the modern education, training and retraining system **NDP 2025**: National Priority 3: Quality Education, Objective 3. Improving the quality of education. **National project Quality Education "Educated Nation":** Objective 1. Ensuring the availability and quality of preschool education and training. Objective 2. Improving the quality of secondary education: reducing the gap in the quality of education between regions, urban and rural schools in Kazakhstan **NDP 2025 and the National project:** both documents have the same strategic indicator - the level of satisfaction of the population with the quality of preschool / secondary education.	4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education	4.1.1 Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex 16.6.2 Proportion of population satisfied with their last experience of public services	MOES: teacher training, improvement of education infrastructure	ASPiR, MOES, MNE, UNICEF, charitable foundations and associations in the education sector
Level of satisfaction with the affordability of education	**Strategy 2050:** Section 4. Knowledge and professional skills are key landmarks of the modern education, training and retraining system **NDP 2025:** National priority 3: Quality education, Objective 1: Ensuring access and equality in education. **National project Quality education "Educated nation":** Objective 1. Ensuring the availability and quality of preschool education and training. Objective 3. Providing schools with a comfortable, safe and modern educational environment. Several outcomes, including: - Coverage of children with additional education, - Coverage of children with special developmental disabilities by psychological and pedagogical support and early correction		4.1.1 Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex 16.6.2 Proportion of population satisfied with their last experience of public services	MOES: building schools and other educational institutions on the principles of inclusiveness	ASPiR, MOES, MNE, UNICEF, charitable foundations and associations in the field of education

Preschool attendance	**Strategy 2050:** Priorities in education: (1) Kazakhstan needs to switch to new methods of preschool education. **NDP 2025**: Objective 1. Ensuring access and equity in education. The physical availability of places in preschool institutions will be ensured at the rate of a potential 100% enrollment of children. **National project Quality education "Educated nation"**: Objective 1: Ensuring the availability of quality and pre-school education. **Model of preschool education and unbringing:** chapter 2, para 7 The state policy in the system of preschool education is aimed at ensuring accessibility.		4.2.2 Participation rate in organized learning (one year before the official primary entry age), by sex 4.2.2.1 Readiness for school (percentage of children attending the first grade of primary school who attended a pre-school in the previous year)	MOES: financial support for households and construction of preschool institutions, improvement of the registration system for children, training of teachers, improvement of the infrastructure of preschool education	ASPiR, MOES, MNE, UNICEF, charitable foundations and associations in the field of education
Health and environment					
Level of satisfaction with the quality of health care services	**Strategy 2050:** section 3. New principles of social policy – social guarantees and personal responsibility. One of the key priorities in healthcare: to provide affordable medical services at high standards of care. **NDP 2025.** Priority 2. Accessible and effective healthcare system. Objective 2. Increasing the availability and quality of medical services. Strategic target indicator - Level of satisfaction of the population with the quality and accessibility of medical services provided by medical institutions **National project "Quality and affordable healthcare for every citizen "Healthy Nation"**: Priority 1. Affordable and high-quality medical care. Objective 1. Ensuring wide coverage of the population with health services. Strategic indicator 4 - Level of satisfaction of the population with the quality and accessibility of medical services provided by medical institutions	3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe , effective , quality and affordable essential medicines and vaccines for all	3.8.1 Coverage of essential health services	MH: training doctors, improving healthcare infrastructure	MH, ASPiR, WHO, Foundations and associations in the healthcare sector

level of satisfaction with the availability of health services	**Strategy 2050:** section 3. New principles of social policy – social guarantees and personal responsibility. One of the key priorities in healthcare: to provide affordable medical services at high standards of care. **NDP 2025**. Priority 2. Accessible and effective healthcare system. Objective 2. Increasing the availability and quality of medical services. Strategic target indicator - Level of satisfaction of the population with the quality and accessibility of medical services provided by medical institutions. **National project "Quality and affordable healthcare for every citizen "Healthy Nation"**: Priority 1. Affordable and high-quality medical care. Objective 1. Ensuring wide coverage of the population with health services Strategic indicator 4 - the level of satisfaction of the population with the quality and accessibility of medical services provided by medical institutions	11.6 By 2030, reduce the adverse per capita environmental impact of cities , including by paying special attention to air quality and municipal and other waste management	3.8.1 Coverage of essential health services	MH: construction of hospitals and other health care facilities	MH, ASPiR, WHO, Foundations and associations in the healthcare sector
Inability to access health care services	**Strategy 2050:** section 3. New principles of social policy – social guarantees and personal responsibility. One of the key priorities in healthcare: to provide affordable medical services at high standards of care. **NDP 2025**. Priority 2. Accessible and effective healthcare system. Objective 2. Increasing the availability and quality of medical services. Strategic target indicator - Level of satisfaction of the population with the quality and accessibility of medical services provided by medical institutions. **National project "Quality and affordable healthcare for every citizen "Healthy Nation"**: Priority 1. Affordable and high-quality medical care. Objective 1. Ensuring wide coverage of the population with health services Strategic indicator 4 - the level of satisfaction of the population with the quality and accessibility of medical services provided by medical institutions		3.8.1 Coverage of essential health services	MH: construction of hospitals and other health facilities, training of doctors, improvement of health infrastructures	MH, ASPiR, WHO, Foundations and associations in the healthcare sector

Cleanliness of the territory adjacent to housing (absence of household garbage (waste))	**Concept for the transition of the Republic of Kazakhstan to a "green economy" for 2021-2030:** section 3.5. Waste management system. **Action plan for the implementation of the Concept for the transition of the Republic of Kazakhstan to a "green economy" for 2021-2030.:** section 6.1, paragraphs 38-40		11.6.1 Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities	MEGNR: implementation of programs for the recycling of MSW	MEGNR
Air purity	**Concept for the transition of the Republic of Kazakhstan to a "green economy" for 2021-2030:** Section 3.6. Reduced air pollution. **Action plan for the implementation of the Concept for the transition of the Republic of Kazakhstan to a "green economy" for 2021-2030:** section 5, paragraphs 35-37		3.9.1 Morality rate attributed to household and ambient air pollution 9.4.1.1 CO_2 emissions per capita 11.6.2 Annual mean levels of fine particulate matter (eg PM2.5 and PM10) in cities (population weighted) 13.2.2 Total greenhouse gas emissions per year	MEGPR RK: implementation of programs to reduce emissions in the main economic sectors of Kazakhstan	MEGNR
Drinking water quality	**The State Program for Housing and Communal Development "Nurly Zher":** objective 2 "Rational provision of the population with high-quality drinking water and sanitation services" **The 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 including several activities (1-3)		3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services) 6.1.1 Proportion of population using safely managed drinking water services	CCHPU: construction of drinking water sources, improvement of water supply, reduction of depreciation of water supply	Committee for Construction and Housing and Public Utilities of the Ministry of Investment and Development of the Republic of Kazakhstan
Housing and living conditions					
Non-compliance with living standards	**NDP 2025:** National Priority 1. Equitable social policy. Objective 2. Ensuring social well-being. Effective social support will be provided to address housing issues. **The State Program for Housing and Communal Development "Nurly Zher" for 2020-2025:** The goal of the program is to increase the availability and comfort of housing and develop housing infrastructure: Objective 1. Implementation of a unified housing policy, Objective 3. Modernization and development of the housing and communal sector. Target indicator - by 2025 to ensure 26 sq. m per one household member	11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums 6.1 By 2030, achieve universal and equitable access to safe and	11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing 11.3.1 Ratio of land consumption rate to population growth rate	CCHPU: implementation of housing programs	Committee for Construction and Housing and Public Utilities of the Ministry of Investment and Development of the Republic of Kazakhstan

		affordable drinking water for all			
Ability to maintain heat at a sufficient level	**State Program for Housing and Communal Development "Nurly Zher for 2020-2025":** **S**ection 5.3.1 Modernization of the heat supply sector focuses on the improvement of the tariffs. Objective 3. Modernization and development of the housing and communal sector: Activities 18-26. Outcome indicator 1 - Wear and tear of heating networks. **Law "On Housing Relations"**and, in particular, Article 97. Payment for housing from the State Housing Fund and housing rented by a local executive body as a private house, and the provision of housing assistance to low-income families (citizens)	6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations 6.3 By 2030, improve water quality by reducing pollution, elimination dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people	11.1.1 Proportion of urban population living in slums, informal settlements, or inadequate housing	CCHPU: changing the structure of consumption, improving equipment for heating	Committee for Construction and Housing and Public Utilities of the Ministry of Investment and Development of the Republic of Kazakhstan
Source of drinking water	**The State Program "Nurly Zher"**: Objective 2 "Rational provision of the population with high-quality drinking water and sanitation services" **The 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 including several activities (para 1-3)		6.1.1 Proportion of population using safely managed drinking water services 3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)	CCHPU: construction of drinking water sources, improvement of water supply, reduction of depreciation of water supply,	Committee for Construction and Housing and Public Utilities of the Ministry of Investment and Development of the Republic of Kazakhstan
Sewer access	**The State Program "Nurly Zher"**: objective 2 "Rational provision of the population with high-quality drinking water and sanitation services", para 3. Coverage of the population with wastewater treatment in cities. Activities 15 and 17 of the program.		6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water 3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)	CCHPU: construction, improvement of infrastructure, reduction of depreciation of water disposal and sewerage	Committee for Construction and Housing and Public Utilities of the Ministry of Investment and Development of the Republic of Kazakhstan

Personal internet access	**NDP 2025**: National Priority 8. Building a diversified and innovative economy. Objective 10. Development of infrastructure and digitalization of basic sectors of the economy: To reduce the digital inequality, work will be carried out to improve the quality of the Internet in all settlements with a population of 250 people and more. Considering urbanization and economic feasibility issues, the remaining villages with a population of less than 250 people will be connected to the Internet. 100% of regional centers and cities of republican significance will be covered by high-speed 5G Internet. **National project "Technological breakthrough through digitalization, science and innovation".** Priority 6. Internet quality and information security. Objective 1. Providing 100% of citizens with high-quality Internet. Development of broadband networks, transition of technology to 3G-4G. Improvement of IT technologies. Providing access to hard-to-reach and sparsely populated areas.	suffering from water scarcity	17.8.1 Proportion of individuals using the Internet 17.6.1 Fixed Internet broadband subscriptions per 100 inhabitants, by speed6	MDDIAI: Expansion of coverage of communication networks, increase of digital literacy of the population.	Ministry of Digital Development, Innovations and Aerospace Industry of the Republic of Kazakhstan
Standards of living		8.5. By 2030, achieve full and productive employment and decent work for all women and men, including young people and persons with disabilities and strengthen their integration into value chains and markets 9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and			
Unemployment	**Strategy 2050:** New principles of social policy. Modernization of the labor policy: Fourthly, we should modernize employment and salary policy. **NDP 2025:** Objective 1. Productive employment. The strategic target indicator - unemployment rate **Comprehensive plan "Program for increasing the income of the population until 2025":** 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 - unemployment rate		8.5.2 Unemployment rate, by sex, age and persons with disabilities	MLSPP: Expansion of program funding. Implementation of state programs in the field of productive employment and entrepreneurship.	MLSPP, ILO, ASPiR RK

Household debt on payments	**Comprehensive plan "Program to increase the income of the population until 2025":** Priority III. Protection of the purchasing power of the population's income, p. 36. Action: Adoption of individual plans of banks for working with problem loans to resolve the problem debts of citizens on loans.	their integration into value chains and markets 1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	1.2.1 Proportion of population living below the national poverty line, by sex and age	ARDFM: development of individual plans for working with problem loans to resolve the debts of citizens.	Agency for Regulation and Development of the Financial Market