Multidimensional Poverty Index - 2015: Brief Methodological Note and Results

Sabina Alkire* and Gisela Robles*

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* The Oxford Poverty and Human Development Initiative (OPHI), Oxford Department of International Development, University of Oxford. Contact details: ophi@qeh.ox.ac.uk Tel +44 1865 271915 Fax +44 (0)1865 281801

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Introduction

The Multidimensional Poverty Index (MPI) (released June 2015, henceforth MPI 2015) uses the same parameters (dimensions, indicators, cutoffs and weights) and the same functional form (Alkire and Foster Adjusted Headcount Ratio M_0) as in previous years.[1] The main innovations in 2015 consisted in: updating the estimations for a larger series of countries than any previous year, providing further disaggregation of the estimations of MPI, destitution and inequality among the poor to regional level, providing the standard errors and confidence intervals of MPI and the headcount ratio (H), and providing a list of previous estimations. This brief methodological note presents the 2015 MPI updates, and the tables with the full results. It first explains the main updates in the 2015 MPI, following the guidelines for updates presented in the 2014 Methodological Note (Alkire, Conconi and Seth 2014b). It summarizes the MPI methodology that has been presented in detail in previous methodological notes (Alkire and Santos 2010; Alkire, Roche, Santos and Seth 2011; Alkire, Conconi and Roche 2013; Alkire, Conconi and Seth 2014b). Then it briefly describes the methodological assumptions considered for the estimation of each dataset. The results of such estimation are presented in the form of 6 main tables, 101 country briefings and the interactive Databank, all available on OPHI's website.

1. 2015 MPI Updates

Updated MPIs from new data and discontinued countries

The 2015 MPI has new and updated estimations with 38 most recent datasets for 37 countries. Thirty three countries were updated in 2014; in 2013 there were updates for 16 countries and in 2011, for 25 countries. MPI estimations for 13 countries are carried out with data that predates 2006, 30 estimations are carried out with data collected between 2007 and 2010, and the number of analysis with data from 2011 onwards has increased to 58.

The countries in 2014/2015, together with the surveys used and years are as follows.[2] **New countries:** Barbados (MICS 2012), Comoros (DHS - MICS 2012), Jamaica (JSLC 2010), Libya (PAPFAM 2007), Saint Lucia (MICS 2012), South Sudan (MICS 2010), Sudan (MICS 2010). **Updated countries:** Benin (DHS 2011-12), Chad (MICS 2010), China (CFPS 2012), Democratic Republic of the Congo (DHS 2013-14),

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[1] From January 2015, the global MPI estimations is updated twice per year. This methodological note appends the considerations for the new country estimations.

[2] Recent surveys for other countries/years were also considered but eventually dismissed from the calculations of the MPI 2015 because they do not satisfy the policies for updating, as explained in the 2013 Methodological Note (Argentina MICS 2011, Costa Rica MICS 2011, Jamaica MICS 2011, Djibouti PAPFAM 2011, Chile CASEN 2013, and Lebanon PAPFAM 2004).

Dominican Republic (DHS 2013), Ecuador (ECV 2013/14), Egypt (DHS 2014), Gambia (DHS 2013), Guinea (DHS-MICS 2012), Jordan (DHS 2012), Kyrgyzstan (DHS 2012), Liberia (DHS 2013), Mali (DHS 2012-13), Mauritania (MICS 2011), Moldova (MICS 2012), Mongolia (MICS 2010), Montenegro (MICS 2013), Morocco (PAPFAM 2010/11), Namibia (DHS 2013), Nigeria (DHS 2013), State of Palestine (MICS 2010), Philippines (DHS 2013), Senegal (DHS-Continuous 2012-13 and 2014), Serbia (MICS 2014), Sierra Leone (DHS 2013), Syrian Arab Republic (PAPFAM 2007), Togo (DHS 2013/14), Ukraine (MICS 2012), Zambia (DHS 2013/14), Zimbabwe (MICS 2014). In order to enhance international comparability, the survey data used to estimate the MPI is dated from 2004 to 2014. In 2014, the MPI reported estimations from 2003 to 2013 along with China WHS 2002. In 2013, MPI estimations were carried out using data from 2002-2011; in 2011 from 2000-2010; and in 2010 from 2000-2008.

Policies regarding population figures and complementary information

As stated in the 2014 Methodological Note, the surveys are dated according to the year in which the fieldwork took place, as detailed in the survey report. If the fieldwork took place during two calendar years, the data will be labelled with both years, e.g. 2010/11.

In this case, the population figures indicated as those of the year of the survey, as well as the complementary information, will correspond to the second calendar year, or the closest available year with information.

Population figures are reported for 2010 and 2011, using the 2012 Revision of World Population Prospects (UNDESA 2012). When, for illustrative purposes, regional aggregates are presented, 2011 population data are employed. Aggregate estimates in 2014 used 2010 population data, and in 2013 used 2009 population data. The population year used for aggregate estimates changes by one year annually in the summer updates.

2. The MPI Methodology: Poverty, Vulnerability, and Severe Poverty

The MPI is a measure of acute global poverty developed by the Oxford Poverty and Human Development Initiative (OPHI) with the United Nations Development Programme's *Human Development Report* (Alkire and Santos 2010, 2014; UNDP 2010 and previous methodological notes). The index belongs to the family of measures developed by Alkire and Foster (2007, 2011; Alkire, Foster, Roche, Seth, Santos, Roche and Ballon (2015). In particular, it is an application of the adjusted headcount ratio, M_0. This methodology requires determining the unit of analysis (i.e. household), identifying the set of indicators in which they are deprived at the same time and summarizing their poverty profile in a weighted deprivation score. They are identified as multidimensionally poor if their deprivation score exceeds a cross-dimensional poverty cutoff. The proportion of poor people and their average deprivation score (i.e. the 'intensity' of poverty or percentage of simultaneous deprivations they experience) become part of the final poverty measure. A more formal explanation of the methodology is presented in Alkire and Santos (2014) and in Alkire and Foster (2011).

Table 1: The dimensions, indicators, deprivation cutoffs and weights of the MPI

Dimensions of poverty	Indicator	Deprived if…	Weight
Education	Years of Schooling	No household member aged 10 years or older has completed five years of schooling.	1/6
	Child School Attendance	Any school-aged child is not attending school up to class 8.	1/6
Health	Child Mortality	Any child has died in the family in the five-year period preceding the survey	1/6
	Nutrition	Any adult aged 70 or youger or any child for whom there is nutritional information is malnourished.	1/6
Living Standard	Electricity	The household has no electricity.	1/18
	Improved Sanitation	The household's sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households.	1/18
	Improved Drinking Water	The household does not have access to improved drinking water (according to MDG guidelines) or safe drinking water is equal or more than a 30-minute walk from home, roundtrip.	1/18
	Flooring	The household has a dirt, sand, dung or 'other' (unspecified) type of floor.	1/18
	Cooking Fuel	The household cooks with dung, wood or charcoal.	1/18
	Assets ownership	The household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck.	1/18

Note: Further details in Table Annex A.1.

The 2015 global MPI assesses multidimensional poverty for people in 101 countries for which data from 2004 onwards are available.[3] As summarized in Table 1, the MPI uses information from 10 indicators which are organised into three dimensions:[4] health, education and living standards, following the same dimensions and weights as the Human Development Index (HDI). Each person is identified as deprived or non-deprived in each indicator based on a deprivation cutoff (more details in Alkire and Santos 2010). Health and Education indicators reflect achievements of all household members. Then, each person's deprivation score is constructed based on a weighted average of the deprivations they experience using a nested weight structure: equal weight across dimension and equal weight for each indicator within dimensions. Finally, a poverty cutoff of 33.33% identifies as multidimensionally poor those people whose deprivation score meets or exceeds this threshold.

The MPI reflects both the **incidence** or headcount ratio (*H*) of poverty – the proportion of the population that is multidimensionally poor – and the average **intensity** (*A*) of their poverty – the average proportion of indicators in which poor people are deprived. The MPI is calculated by multiplying the incidence of poverty by the average intensity across the poor ($H \times A$). A person is identified as poor if he or she is deprived in at least one third of the weighted indicators. Those identified as 'Vulnerable to Poverty' are deprived in 20% – 33.33% of weighted indicators and those identified as in 'Severe Poverty' are deprived in 50% or more of the dimensions.

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[3] MPI estimations prior to 2004 are available upon request..

[4] For a more detailed description of the indicator definitions, see Alkire and Santos (2010) and Alkire Roche Santos and Seth (2011).

Fine-tuning of thresholds to make analysis richer and comparable

In 2015, in consultation and agreement with UNDP's Human Development Report Office, and due to changes in the surveys since 2010, and to harmonisation carried out in the survey reports, we have fine-tuned the deprivation thresholds for certain indicators. These changes have very minor empirical impacts from the 2014 estimations unless otherwise specified. Specifically, starting in 2015, the MPI indicators:

- follow the DHS and MICS survey reports' definitions if these differ from our ordinary thresholds for non-improved sanitation, drinking water and cooking fuel. For example, we consider 'no food cooked at home' and 'other' (unspecified) type of cooking fuel as deprived, if they are considered as such in the survey report.
- consider the threshold for 'time to water' to be greater or equal to 30 mins, in order to make the MPI's definition comparable to MDG non-improved sanitation (previously it was strictly greater than 30 min).
- consider 'other' (unspecified) type of flooring as non-improved.

Additional minor improvements were included in the education dimension.

- We consider individuals aged 10 years and older as the reference population for the indicator of years of schooling.
- We consider the 'years of schooling' indicator to be missing if more than 2/3 of the usual residents of the household have missing information on years of schooling.

And both health indicators were fine-tuned in order to take advantage of the richness of the data available.

- Recent DHS and MICS surveys often include the date of an unfortunate child death. Hence the occurrence of child mortality is considered as a deprivation if it happened in the last five years before the survey. If the survey does not include this information, all child deaths are included.
- In some 2015 surveys, the nutrition indicator includes information on BMI for all survey respondents. In that case we use BMI for all household members aged up to 70 years old. This has been possible in China CFPS 2012 and Ecuador ECV 2013/14.

3. The Measurement of Destitution and of Inequality among the poor.

In 2014, to illustrate the ability of the MPI to consider the 'depth' of deprivations rigorously although data may be ordinal, we estimate a linked poverty measure which we call destitution. The destitution measure has precisely the same dimensions, indicators, weights, and poverty cutoff as the MPI. Only one set of parameters changes: the deprivation cutoffs. The cutoffs for 8 of the 10 indicators reflect more extreme deprivations. As a result, the destitution measure identifies a strict subset of the MPI poor who are also deprived in at least one-third of the indicators according to the destitution cutoffs.

That is, those identified as 'destitute' are deprived in at least one third or more of the same weighted indicators with more extreme deprivation cutoffs (as described in Table 2). Data on destitution is available for 82 of the 101 countries analysed in the 2015 MPI. For details, see Alkire, Conconi & Seth (2014b).

Table 2: The dimensions, indicators, deprivation cutoffs and weights of the Destitute

Dimensions of poverty (same as for standard MPI)	Indicator (same as for standard MPI)	Deprived if…

Education	Years of Schooling	No household member has completed **at least one** year of schooling.
	Child School Attendance	**No children** are attending school up to the age at which they should finish **class 6.**
Health	Child Mortality	**2 or more children have died** in the household.
	Nutrition	**Severe undernourishment** of any adult (**BMI<17kg/m²**) or any child (**-3 standard deviations** from the median).
Living Standard	Electricity	The household has no electricity (**no change**).
	Improved Sanitation	There is **no sanitation facility (open defecation).**
	Improved Drinking Water	The household does not have access to safe drinking water, or safe water is more than a **45-minute** walk (round trip).
	Flooring	The household has a dirt, sand, or dung floor (**no change**).
	Cooking Fuel	The household cooks with dung or wood (**coal/lignite/charcoal are now non-deprived**).
	Assets ownership	The household has **no assets (radio, mobile phone, refrigerator, etc.)** and no car.

Note: Further details in Table Annex A.2.

Since 2014 we have also measured the level of inequality in deprivation scores among the poor, both at the national level and within subnational regions, by using a separate, decomposable inequality measure. We also use the measure to assess disparity across subnational MPIs. Seth and Alkire (2014) proposed an additively decomposable inequality measure which is a positive multiple of "variance" and which can be broken down into a within-group and a between-group component. For measuring inequality among the poor at the national or subnational level, the inequality measure I^q uses the vector of deprivation scores of the q poor people $c_i(k)$.

$$I^q = \frac{\tilde{\beta}}{q} \sum_{i=1}^{q} [c_i(k) - A]^2.$$

The difference between each poor person's deprivation score and average intensity is squared, and the squared distances summed and multiplied by a constant $\tilde{\beta}$ to create the measure of inequality. The deprivation scores of the poor range between 1/3 and 1, and so we set $\tilde{\beta} = 1/9$. This is the maximum possible value the inequality measure can take given the range of deprivation scores and thus ensures that the inequality measure is bounded between zero and one. In the 2015 MPI estimations, inequality among the poor at the national level varies from 0.006 to 0.300, and inequality among the poor at the subnational level varies from 0 to 0.351.

A lower level of inequality among the poor or a reduction in the level of inequality among the poor, however, may not mean that poverty has uniformly gone down in all regions or population subgroups.

For further details of the measure and how it is applied, see Seth and Alkire (2014), available at http://www.ophi.org.uk/measuring-and-decomposing-inequality-among-the-multidimensionally-poor-using-ordinal-data-a-counting-approach/.

4. Considerations by country

This section comments on methodological issues in the 38 country datasets updated in 2015.

Barbados (MICS 2012): Nutritional information was collected for every child under 5. No information on child mortality was collected. Table CH.2 on p. 42 of the report only considers wood as solid fuel, and so it did this MPI estimation. Table WS.1 on p. 44 of the report establishes that bottled water is an unimproved source of water if the source of water for other purposes was protected spring, other and missing, and this estimation followed such approach. The MPI is not disaggregated at regional level due to the very low incidence of poverty in the country. This MPI was first published in 2015.

Benin (DHS 2011-2012): The DHS 2011-2012 report establishes that that the proportion of eligible children for whom the anthropometric measures are 'acceptable' is only 59% (p. 14) and that such proportion is not representative of the population of children in Benin. The DHS/ICFI colleagues advised us to estimate the MPI without using information on child malnutrition. Hence, the nutrition indicator contains information on the BMI of women aged 15 to 49 and eligible to be measured according to the report. Moreover, the report does not consider coal and lignite or other types of fuel as solid fuel, nor does it consider no food cooked at home as comparable to solid fuel (p. 21), so the MPI estimation does not consider these categories as non-improved fuel. The DHS report considers toilets that 'flush to somewhere else' and 'flush don't know where' as non-improved toilet (p. 12), and this estimation of MPI considers the same category as non-improved sanitation. Finally, the start age of school was considered to be 6 according to UNESCO, as the school age is unclear in the report.

Chad (MICS 2010): Nutritional information was collected for every child under 5, but not for adults. P. 82 of the MICS report does not consider other types of fuel as solid fuel, so this category was not considered as non-improved fuel for MPI estimations. Page 102 of the report considers rainwater as unimproved source of drinking water and so does this estimation of MPI. Page 111 of the report also considers toilets that 'flush to somewhere else' as non-improved, and this estimation of MPI considers the same category as non-improved. The same page of the document reports open defecation as neither improved nor non-improved toilet. However, MPI estimation has considered open defecation as non-improved. The analysis of missing information subnationally shows that Chad MICS 2010 has a sample loss between 10-15% for some regions. One of the indicators mostly affected by missing information is school attendance. However, there was no significant bias when comparing multidimensional poor households with non-poor households. Hence, MPI may be slightly underestimating deprivations in school attendance, but it is not significantly biased.

China (CFPS 2012) Anthropometric information was collected from children under 5 and men and women aged 15 to 70 years old. Child mortality information was available for women aged 15-49 and men aged 15-59 years old. Children school aged is defined from 6 to 14 years old. Years of schooling was derived from the highest level of education attained. Information on the main source water used for cooking was considered as the main source for drinking water, and rain and cellar water were considered as non-improved. Solar energy is considered as an improved source of cooking fuel. No information on type of floor, radio and landline ownership was collected. This MPI was first published in 2015.

Comoros (DHS-MICS 2012): A previous MPI estimation for Comoros dated from 2000 and it was not reported in 2013 and 2014 due to being outdated. This country's new estimation uses data collected in 2012. All women aged 15 to 49 and children younger than 5 years old were eligible for anthropometric measures. The DHS report considers toilets that 'flush to somewhere else' or that flush to unknown place as non-improved (p. 11), and this estimation of MPI considers the same categories as non-improved sanitation. The report also considers rainwater as non-improved source of drinking water and so does this estimation of MPI. Moreover, the report considers 'no food cooked in household' and other types of fuel as non-solid fuel, and this MPI estimation

considers those as improved source of cooking fuel. P. 10 of the report considers rainwater as non-improved source of drinking water, and so does this MPI estimation.

Democratic Republic of the Congo (DHS 2013-14): Anthropometric measures were gathered among 50% of eligible women aged 15 to 49 years old and their children aged younger than five. Following guidelines from the Methodological Note 2013 (Alkire, Conconi and Roche 2013), the MPI estimation is based on this subsample. Moreover, the report does not consider 'no food cooked in household' and other types of fuel as solid fuel and this estimation of MPI does not consider the latter category as non-improved. Page 20 of DHS report considers 'no facility/bush/field' as an ambiguous category, but this MPI estimation has considered as non-improved. The report also considers toilets that 'flush to somewhere else' or that flush to an unknown place as non-improved sanitation (p. 20), and so does this estimation of MPI.

Dominican Republic (DHS 2013): Anthropometric information was collected from all women aged 15-49, men aged 15-59 years old and children under 5 living in households selected for interviewing.Toilets that 'flush somewhere' are considered as non-improved sanitation in the survey report. Source of water 'pozo' (tube well) was considered as unimproved source of drinking water on p.40 of the survey report.Table 2.14.2 on p. 41 of the survey report considers no food cooked at home as non solid fuel. The latter definitions of the report were followed in this estimation. This MPI was first published in 2015.

Ecuador (ECV 2013/14): Kindergarden and education for adults were not considered in the indicator of years of schooling. The survey collected information on the total number of children ever born and the number of those who are still alive among women aged 12 - 49 years old who have ever been pregnant, and the indicator of child mortality is formed as the difference between these two numbers. The survey collected antrhopromentric information from every children aged 0-59 months and from member of the household 12 years or older.In this estimation the BMI of household members aged between 12 and 70 years old was considered. The indicator of television considers color, plasma, LCD and black/white TV. The indicator of radio considers both radio and sound equipment. Usual residents are defined as all members who were reported as relatives living in the household. The indicator of children's schooling considers enrollment rather than attendance.The indicator of electricity considers solar panel as improved source of electricity. The indicator of cooking fuel considers wood/charcoal and other as unimproved sources of fuel for both the MPI and destitution. The indicator of sanitation assumes that all latrines are protected. The indicator of water assumes that all wells are protected. The This MPI was first published in 2015.

Egypt (DHS 2014): The questionnaire collected information from every child and all ever-married women age 15-49 who were usual or de *facto* residents. No information on cooking fuel was collected in the survey. Page 15 of the survey report considers the following as non-improved sources of sanitation and so it did this MPI estimation:'flush to pit latrine / to pipe connected to canal / groundwater' and 'flush, dont know where'. This MPI was first published in 2015.

Gambia (DHS 2013): Anthropometric information was collected from children under 5, women age 15-49 and men age 15-59 in a subsample of half of the households. Information on child mortality was provided by all women age 15-49 and men age 15-59 in half of the households. Page 14 of the survey report indicates that 'no food cooked at home' and 'other' (unspecified) sources are improved sources of cooking fuel. 'Other' sources of sanitation and water were considered as non-improved by the report. This MPI estimation follows such approach and was first published in 2015.

Guinea (DHS-MICS 2012): Anthropometrics were taken for a subsample of women aged 15 to 49 and children younger than 5 in 50% of eligible households. Following guidelines from the Methodological Note 2013 (Alkire, Conconi and Roche 2013), the MPI estimation is based on this subsample. The report considers toilets that 'flush to somewhere else' or that flush to unknown place as non-improved (p. 18), and this estimation of MPI considers the same categories as non-improved. The report considers 'no food cooked in household' and other types of fuel as non-solid fuel, and this MPI estimation considers those as improved source of cooking fuel. Finally, the report also considers water 'piped into neighbour' as improved source of drinking water and so does the MPI estimation.

Jamaica (JSLC 2010): The survey can provide representative information if disaggregated only at two different urban areas and rural areas, so MPI estimations are presented for such areas although they cannot be portrayed in a suitable shapefile. The MPI estimation is based on *de facto* household members as only those have information on education. Information on child mortality and type of floor was absent from the survey. Kindergarden and adult education are not considered as part of the years of schooling indicator. Distance to water equal or larger than 1000 meters is considered as non-MDG standard. Distances equal or larger than 100,000 meters are considered as missing information. It is assumed that the household has no reliable access to electricity when its main source of lightening is kerosene or other. This MPI was first published in 2015.

Jordan (DHS 2012): Anthropometrics were taken for a subsample, i.e. half of the households. Following guidelines from the Methodological Note 2013 (Alkire, Conconi and Roche 2013), the MPI estimation is based on this subsample. The DHS report considers toilets that 'flush to somewhere else' as non-improved (p. 12), and this estimation of MPI considers the same category as non-improved. Moreover, coal and wood as sources of cooking fuel are grouped together in the same category, so both are considered as solid fuels for MPI and destitution estimations. Unfortunately, the dataset does not contain information on the presence of bicycles or motorcycles in the household.

Kyrgyzstan (DHS 2012): Anthropometric measures are available for all children under five and women aged 15 to 49. Toilets that 'flush to somewhere else' or flush to unknown place were considered as non-improved following p. 15 of the report; additionally, the categories of 'no facility/bush/field' and 'bucket toilet' were considered as non-improved for the purposes of destitution.

Liberia (DHS 2013): Anthropometrics were taken from eligible women (aged 15-49), men (aged 15-49) and children (0-59 months) living in a 50% subsample of households. Following guidelines from the Methodological Note 2013 (Alkire, Conconi and Roche 2013), the MPI estimation is based on this subsample. The DHS report considers toilets that 'flush to somewhere else' or that flush to unknown place as non-improved and so does this MPI estimation. Moreover, the report considers 'no food cooked in household' as non-solid fuel, and this MPI estimation considers those as improved access to cooking fuel. Regional comparability with past estimations may be limited due to the fact that the South Central region now includes Morovia but did not in the past. The survey does not include information on access to landline telephone, so access to mobile telephone was used to assess access to telephone.

Lybia (PAPFAM 2007): The survey considers nuanced information on level and grade of education only for ever-married women aged 15-49 and this information was used when available. Yet, for the other members of the household, the only information available is on the highest level or degree of education completed. In such cases, this limited information was assumed to account for a highest number of years of schooling attained by each household members. Information on child mortality was collected from ever-married women. No information on distance or time to water

source was present, nor on the availability of motorbike. This survey data cannot be disaggregated into urban and rural areas, nor at regional level, following advice from PAPFAM. This MPI was first published in 2015.

Mali (DHS 2012-2013): Anthropometrics were taken from a subsample of eligible women and children in half of the households. Following guidelines from the Methodological Note 2013 (Alkire, Conconi and Roche 2013), the MPI estimation is based on this subsample. The DHS report considers toilets that 'flush to somewhere else' or that flush to unknown place as non-improved and so does this MPI estimation. Moreover, the report considers 'no food cooked in household' as non-solid fuel, and this MPI estimation considers those as improved access to cooking fuel. These results have limited comparability to those from previous rounds, as the North of the country was not surveyed due to an ongoing conflict in the area (p. 11).

Mauritania (MICS 2011): Anthropometric information was collected for children under 5. Child mortality information was collected only from ever-married women 15-49 years old. Coraquine, traditional and adult education are not considered as part of years of schooling nor school attendance indicators. Analysis for households with missing information on children's nutrition and school attendance do not show a statistically significant bias against poorer houseoholds. The States of Inchiri and Trimis Zemmour are presented together in the disaggregation of MPI estimations due to the missing information on childrens weight and age, as the survey report does. 'No food cooked in household' is considered as improved source of cooking fuel according to the report and this approach was followed in this estimation. This MPI was first published in 2015.

Republic of Moldova (MICS 2012): This survey provides information on child mortality from men and women age 15-49 years old; anthropometric information on children under 5 years old and information only on mobile telephone instead of landline. 'Flush to somwerhre else / uknown' type of sanitation is considered as non-improved sanitation according to the report. 'No food cooked in household' is considered as improved source of cooking fuel. Dissaggregation at regional level is not estimated due to the low incidence of poverty in the country. This MPI was first published in 2015.

Mongolia (MICS 2010): Anthropometric measures were taken for all children in eligible households, but not for adults.

Montenegro (MICS 2013): All children under 5 were eligible for anthropometric measures. Information on child mortality was collected from all women age 15–49 years and from men age 15–49in half of the households interviewed. According to the survey report, 'no food cooked in household' and 'other' (unspecified) types of cooking are regarded as improved sources of cooking fuel.'Flush to somwerhre else or uknown is not considered as part of sanitation to MDG according to the report. Dissaggregation at regional level is not estimated due to low incidence of poverty. This MPI was first published in 2015.

Morocco (PAPFAM 2011): The survey considers nuanced information on education (last level and grade attended) only for ever-married women aged 15-49. When available, this information was used. For the remaining members of the household, the only information available was on the highest level of education completed. It was assumed that the highest level of education conveys information on the minimum number of years of schooling attained. However, there were important discrepancies between the education information included in the female and household recodes. These inconsistencies cast some doubt on the accuracy of the variable eduyears for the sample of men, as well as women not included in the women recode. Information on child mortality was collected only from ever-married women. Information on floor has more than 15%

of missing values for the regions of Casa Blanca and Rabat-Salé-Zemmour-Zair, but analysis show no significant bias towards poorer households. This MPI was first published in 2015.

Namibia (DHS 2013): Anthropometric measures were collected in a subsample of half of the survey householdsfrom all women and men aged 15-64 years old and from all children younger than 5. P. 13 of the report says that 'flush somewhere else' and 'flush do not know where' are non-improved toilet. In the same tune, p. 14 of the report establishes that 'no food cooked in household' and 'other' types of cooking fuel are not considered as solid fuel. We followed the report's definition of sanitation and cooking fuel. This MPI was first published in 2015.

Nigeria (DHS 2013): Anthropometric measures are available for all children under five and eligible women aged 15-49. Sachet water has been coded as non-improved source of water following the country report (p. 12).

State of Palestine (MICS 2010): Anthropometric measures are available for all children under five, but not for adults. The DHS report considers toilets that 'flush to somewhere else' or that flush to unknown place as non-improved source of sanitation and so does this MPI estimation. Two categories for source of drinking water, 'purchased gallons' and 'protected spring' were considered in the report as non-improved; however, 'purchased gallons' was considered non-improved while 'protected spring' was considered as improved source of drinking water in MPI estimations. Unfortunately, the dataset does not contain information on the presence of bicycles or motorcycles in the household. Following our guidelines to compute subnational figures (Alkire, Roche and Seth 2011), subnational decomposition is not reported since they presented a sample loss greater than 15% in several regions.

Philippines (DHS 2013): Unfortunately, this survey did not gather information on school attendance and nutrition, and these indicators have been omitted from the estimation. Page 9 of the report considers toilets that 'flush to somewhere else' or that flush to unknown place as non-improved and so does this MPI estimation. The report also establishes that public toilet is neither improved nor non-improved. Most of the households with access to public toilet are classified as non-improved due to sharing. Finally, p. 8 of the report considers 'semi-protected well' as a source of improved drinking water and so does the MPI estimation.

Saint Lucia (MICS 2012): MPI 2015 is the first estimation for Saint Lucia. Anthropometric measures are available for all children under five but not for adults. Unfortunately, the survey did not gather information on child mortality, and this indicator has been omitted from this estimation. The MICS report considers 'no food cooked at home' as improved cooking fuel, and so does this MPI estimation. Subnational decomposition cannot be obtained from this survey data.

Senegal (DHS-Continuous 2012-2013): Following the survey report, the category 'other fuel' was considered as an improved source of cooking fuel. Anthropometric information was gathered from children younger than 5.

Senegal (DHS-Cont. 2014): Anthropometric information was collected from all children younger than 5. Information on child mortality was gathered among all women age 15-49 and all men age 15-59 years old. Dissaggregation of results is presented at 'Grandes Regions' according to the report. No low bmi but all were measured. This MPI was first published in 2015.

Serbia (MICS 2014): Anthropometric information was collected from all children younger than 5. Information on child mortality was gathered among all women age 15-49. . P. 87 of the report says that 'flush somewhere else' and 'flush do not know where' are non-improved toilet. In the same tune, p. 71 of the report establishes that 'no food cooked in household' and 'other' types of cooking

fuel are not considered as solid fuel. We followed the report on its definition of sanitation and cooking fuel. This MPI was first published in 2015.

Sierra Leone (DHS 2013): Anthropometric measures were gathered for eligible women (aged 15 to 49), men (aged 15 to 59) and children younger than 5 in 50% of households selected for interview. The DHS report considers toilets that 'flush to somewhere else' or that flush to unknown place as non-improved and so does this MPI estimation. Moreover, the report considers 'no food cooked in household' and 'other sources' as non-solid fuel, and this MPI estimation considers those as improved access to cooking fuel.

South Sudan (MICS 2010): Nutritional information was analysed only for those children with a valid date of birth. Cases with oedema were considered as being lower than 3 standard deviations from the mean, following WHO recommendations. Flagged cases according to WHO recommendations were also considered in the analysis. Cases lost due to missing information on nutrition reached 10.5% of the sample. Despite this, no significant bias was identified among those households with missing information. Child mortality was assessed among currently or ever married or in union women in the age group 15-49. Although the survey was planned to collect information from men, we did not have access to a male recode. Adult and Khalwa type of education were not considered in the years of schooling indicator. Table WS5 on p. 85 explainss that 'flush somewhere else' is an unimproved sanitation facility. On the same tune, table CH8 on p. 62 presents that 'no food cooked' and 'other' types of fuel are considered as improved. This MPI follows the definitions established in the rport. Important number of missing values were found in the State of Unity, and following UNICEF's advice we report estimates for Jonglei and Unity States together. This MPI was first published in 2015.

Sudan (MICS 2010): Nutritional information was analysed only for those children with a valid date of birth. One of the indicators affected by missing information was nutrition, and missing values were important in the Red Sea region. However, there was no significant bias when comparing multidimensional poor households with non-poor households. 'Khalwa' and adult education were not considered as part of the years of schooling indicators. Page 127 of the report established that flush to unknown place; ventialted improved pit latrine and compositing toilet are improved sources of sanitation. P. 117 of the report stablishes that unfiltered rain water and snow water are unimproved sources of drinking water. The report did not consider 'other' types of fuel as solid fuel on p. 82. MPI estimations followed the latter definitions of non-improved sanitation, drinking water and cooking fuel. This MPI was first published in 2015.

Syrian Arab Republic (PAPFAM 2007): Anthropometric information was collected for every children under 5. Information on child mortality was collected from ever-married women aged 15-49. The survey considers nuanced information on education of ever-married women aged 15-49. When available, the latter information was used to assess the years of schooling. For the remaining members of the household, the only information available on education was the highest level of education completed.For them, it was assumed that the highest level of education completed conveyed information on the minimum amount of years of schooling that person has. 1 year of education was assumed to have been achieved if the person attended education at some point in her life. Public toilet; open air and 'other' types of toilet were considered as non-improved. The survey collected no information on the availability of motorbike. This MPI was first published in 2015.

Togo (DHS 2013/14): Anthropometric information was collected for a 50% subsample, and women aged 15-49 and children younger than 5. Information on child mortality was collected among men aged 15 to 59 and women aged 15 to 49. The survey report considers 'flush to pit latrine / dont know

where' as non-improved sources of sanitation, and so does this MPI estimation. This MPI was first published in 2015.

Ukraine (MICS 2012): Following our guidelines to compute subnational figures (Alkire, Roche and Seth 2011), subnational results are not reported for this country since the headcount ratio of multidimensional poverty is below 1.5%. Unfortunately, the survey did not gather information on nutrition, and this indicator has been omitted from the estimation.

Zambia (DHS 2013/14) Anthropometric information was collected from all children under 5 and women aged 15-49. Information on child mortality was available from men aged 15-59 and women aged 15-49. Solar power, no food cooked in household and 'other' types of fuel were considered as imiproved sources of cooking fuel according to page 18 of the survey report. This MPI was firt published in 2015.

Zimbabwe (MICS 2014) Anthropometric information was collected from all children under 5. Information on child mortality was collected from women aged 15-49. The survey report stablishes 'flush to unknown' and 'Pit latrine (UBVIP)' as improved sanitation on p. 122, as well as 'no food cooked in household' and 'other' types of fuel as improved cooking fuel. The MPI follows this definitions. This MPI was firstly published in 2015.

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Table Annex A.1: The dimensions, indicators, deprivation thresholds and weights of the MPI

Dimension	Indicator	Deprived if…	Related to…	Relative Weight
Education	Years of Schooling	No household member has completed five years of schooling.	MDG2	1/6
	Child School Attendance	Any school-aged child is not attending school up to class 8.	MDG2	1/6
Health	Child Mortality	Any child has died in the family.	MDG4	1/6
	Nutrition	Any adult or child for whom there is nutritional information is malnourished.[*]	MDG1	1/6
Living Standard	Electricity	The household has no electricity.		1/18
	Improved Sanitation	The household's sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households.[**]	MDG7	1/18
	Safe Drinking Water	The household does not have access to safe drinking water (according to MDG guidelines) or safe drinking water is more than a 30-minute walk from home, roundtrip.[***]	MDG7	1/18
	Flooring	The household has a dirt, sand or dung floor.		1/18
	Cooking Fuel	The household cooks with dung, wood or charcoal.	MDG7	1/18
	Assets Ownership	The household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck.	MDG7	1/18

Note: MDG1 is Eradicate Extreme Poverty and Hunger; MDG2 is Achieve Universal Primary Education; MDG4 is Reduce Child Mortality; MDG7 is Ensure Environmental Sustainability.

[+] Data Source for age children start school: United Nations Educational, Scientific and Cultural Organization, Institute for Statistics database, Table 1. Education systems [UIS, http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx?ReportId=163].

[*]Adults are considered malnourished if their BMI is below 18.5 m/kg^2. Children are considered malnourished if their z-score of weight-for-age is below minus two standard deviations from the median of the reference population.

[**]A household is considered to have access to improved sanitation if it has some type of flush toilet or latrine, or ventilated improved pit or composting toilet, provided that they are not shared.

[***]A household has access to clean drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring or rainwater, and it is within a distance of 30 minutes' walk (roundtrip).

Source: Alkire and Santos (2010). For details on the rationale behind each indicator, please see Alkire and Santos (2010, 2013).

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Table Annex A.2: The dimensions, indicators, deprivation thresholds and weights of Destitution

Dimension	Indicator	Deprived if…	Related to…	Relative Weight
Education	Years of Schooling	No household member has completed **at least one** year of schooling (>=1).	MDG2	1/6
	Child School Attendance	**No child** is attending school up to the age at which they should finish **class 6.**	MDG2	1/6
Health	Child Mortality	**2 or more children** have died in the household	MDG4	1/6
	Nutrition	**Severe undernourishment** of any adult (**BMI<17kg/m²**) or any child (**-3 standard deviations** from the median).	MDG1	1/6
Living Standard	Electricity	The household has no electricity (**no change**).		1/18
	Improved Sanitation	There is **no facility (open defecation).**	MDG7	1/18
	Safe Drinking Water	The household does not have access to safe drinking water, or safe water is more than a **45-minute** walk (round trip).	MDG7	1/18
	Flooring	The household has a dirt, sand, or dung floor (**no change**).		1/18
	Cooking Fuel	The household cooks with dung or wood (**coal/lignite/charcoal are now non-deprived**).	MDG7	1/18
	Assets Ownership	The household has **no assets (radio, mobile phone, etc.)** and no car.	MDG7	1/18

OPHI's Global MPI Data Bank
www.ophi.org.uk/multidimensional-poverty-index/

OPHI's Global MPI Databank contains a wealth of resources on multidimensional poverty in more than 100 developing countries, enabling users to see how poverty is experienced in different parts of the world, zoom in on sub-national regions, or explore the character of poverty by different indicators. Follow the links below to find out more.

- ✓ **MPI Country Briefings:** Short, country-specific summaries on the results of the MPI analyses. A number of the briefings include data at the sub-national level.

- ✓ **MPI Interactive Databank**: An interactive databank that enables you to navigate the world according to the MPI as a whole or by individual dimensions and indicators of MPI poverty. You can zoom in on individual countries, and choose whether you want to see how multidimensional poverty has changed over time.

- ✓ **MPI 2014 Papers**: The key academic papers from the 2014 analysis include Seth and Alkire (2014) 'Measuring and Decomposing Inequality among the Multidimensionally Poor Using Ordinal Data: A Counting Approach'; Alkire, Roche and Vaz (2014) 'Multidimensional Poverty Dynamics: Methodology and Results for 34 Countries' and Alkire, Conconi and Seth (2014) 'Measuring Destitution in Developing Countries: An Ordinal Approach for Identifying Linked Subsets of the Multidimensionally Poor'.

- ✓ **MPI Data Tables - Main MPI Results**: A table which presents the basic MPI results and sorts 110 countries from low to high.

- ✓ **MPI Data Tables – MPI at the Sub-national Level**: This table reports the MPI, its two components - the Headcount Ratio and the Intensity of Deprivation among the poor - and other indicators of multidimensional poverty for nearly 803 regions of 71 countries.

- ✓ **MPI Data Tables – rural-urban areas**: This table gives a breakdown of MPI results by rural and urban areas for 108 countries.

- ✓ **MPI Methodology**: OPHI's MPI methodological notes explain how the global MPI is calculated and shares the updates that have taken place since it was first reported in 2010.

- ✓ **MPI Resources**: MPI publications collected in one place, including working papers and exchanges, and training material for producing a global or national MPI.

- ✓ **MPI Background**: A brief history of the MPI, including how it came to be developed for publication in UNDP's *Human Development Report*, and how it is being used now.

- ✓ **MPI Case Studies**: Stories of people who are poor according to the MPI in their country: their hopes, strengths and challenges.

- ✓ **Making your own MPI**: Adaptations of the global MPI for other purposes, such as national poverty measurement, targeting, child poverty measurement and empowerment.

- ✓ **Online training portal**: Resources on multidimensional measurement techniques, including video and audio files, lecture slides, exercises and reading lists.

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