



## **Multidimensional Poverty Index 2013: Brief Methodological Note and Results**

Sabina Alkire\*, Adriana Conconi\* and José Manuel Roche\*

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This analysis uses data from the USAID Demographic and Health Surveys (DHS), UNICEF Multiple Indicator Cluster Surveys (MICS), WHO World Health Surveys and national household surveys.

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

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## Introduction

The Multidimensional Poverty Index (MPI) 2013 uses the same parameters (dimensions, indicators, cutoffs and weights) and the same functional form as in previous years. The main innovation this year consists in updating the estimations for a series of countries and providing further possibilities for analysis over time. This brief methodological note outlines specific changes and clarifications concerning the MPI 2013 estimations, and presents the tables with the full results. It first explains the main updates in the MPI 2013 as well as the policies that will govern the MPI updates from 2013. It summarizes the MPI methodology that has been presented in detail in other documents (Alkire and Santos 2010; Alkire, Roche, Santos and Seth 2011). Then it explains the DHS nutritional subsamples and treatment for analysis over time. Finally, brief guidelines on how to undertake accurate analysis of changes over time are presented. The methodologies used to generate the tables on the MPI and the 104 country briefings and interactive maps available on OPHI's website, as well as the results published in the 2013 *Human Development Report*, are presented in this note. The tables are presented as appendices and are available for download as Excel files from <http://www.ophi.org.uk/multidimensional-poverty-index/mpi-data-bank/mpi-data>.

## 1. 2013 Updates to the MPI and Policies for Further Updates

### Updated MPIs from new data and discontinued countries

The MPI 2013 has updated estimations with more recent data for 16 countries. The list of updated countries, surveys used and years considered are:<sup>1</sup> Armenia (DHS 2010), Burkina Faso (DHS 2010), Cambodia (DHS 2010), DR Congo (MICS 2010), Ethiopia (DHS 2011), Guyana (DHS 2009), Malawi (DHS 2010), Nepal (DHS 2011), Peru (DHS 2008), Rwanda (DHS 2010), Senegal (DHS 2010/11), Swaziland (MICS 2010), Tanzania (DHS 2010), Uganda (DHS 2011), Viet Nam (MICS 2010) and Zimbabwe (DHS 2010/11). Our tables include countries with data from 2002–2011, hence we no longer report the MPIs for Myanmar, Gabon, Comoros, Central African Republic and Angola. Now 104 countries have MPI data from 2002 onwards.

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<sup>1</sup> Recent surveys for other countries/years were also considered but eventually dismissed from the calculations of the MPI 2013 because they do not satisfy the policies for updating, as explained in this section (e.g. Nigeria's MIS 2010, Afghanistan's Special DHS 2010, etc.).

## Policies for further updates

The following policies will govern the MPI updates from 2013.

### 1. Data

The MPI will be updated when new data become available from the following sources:

- a. Full DHS (including Continuous DHS such as in Peru)
  - b. Full MICS
- A Malaria Indicators Survey (MIS) will not generally be used if a recent DHS or MICS is available, due to its exclusion of nutritional variables and school attendance, the fact that years of schooling may not be available for the household roster, and its sample size.

### 2. Labelling of survey year

The survey will be dated according to the year in which the fieldwork took place, as detailed in the data report. If the fieldwork took place during two calendar years, the data will be labelled with both years, e.g. 2010/11.<sup>2</sup>

### 3. Improvements in data sources or survey instruments

Naturally, DHS and MICS surveys improve over time, for example in the way in which improved water or improved sanitation is measured. The policy is to always use the maximum information that is available for the 10 indicators and incorporate improvement in the questionnaire in new years. For example, if nutritional information is available only for children in one survey round, for women and children in the next round, and in the third, for a male subsample as well, then each round of MPI calculations will take advantage of the maximum available information in the given survey. Similarly when data on mobile telephones or any hitherto missing assets becomes available, this will be incorporated into the asset indicator. As a result, the MPI estimation for a given year will be the most accurate possible figure with the available data at hand. For a discussion of how to compare MPIs across time, as well as for a country-by-country analysis of comparisons, please see Section 4.

### 4. Nutritional data and subsamples

In some countries, the DHS capture information in nutrition only for a subsample of the eligible population.<sup>3</sup> The MPI will be computed based on the subsample when:

- a. the subsample for anthropometrics was designed to be nationally representative, and
- b. the sampling weights were appropriately designed to generate unbiased nationally representative MPI estimates, and
- c. bias analysis shows that there is no statistically significant difference in the remaining MPI indicators between the whole sample and the subsamples.

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<sup>2</sup> The labelling of some surveys' years, presented in previous rounds of the MPI, was modified following this criteria. These include Albania, China, the Czech Republic, Gambia, Haiti, Honduras, India, Kenya, Kyrgyzstan, Macedonia, Madagascar, Montenegro, Namibia, Nicaragua, Occupied Palestinian Territory, Pakistan, Paraguay, Sao Tome and Principe, Serbia, Thailand, Timor-Leste and Uruguay. The MPI estimations were not altered.

<sup>3</sup> The eligible population are normally children under 5 years of age, and adults in reproductive age (only women or both genders). When a subsample is taken for anthropometric indicators, only a percentage of eligible households are included for anthropometric measures (usually 50% or 1/3 of the whole national sample). Technically, this subsample is also nationally representative, but it incurs a higher standard error due to a smaller size.

Rural and urban breakdowns of MPI will be computed, if the sample size permits according to the sample design. Where valid, further decomposition will be undertaken by geographic regions.

If the above conditions are not met, then the MPI will be estimated using the full sample and considering all information contained in the survey. If nutrition is measured only for a subgroup of the whole sample, the MPI estimations will be a 'lower bound', because the assumption will be made that households in which no woman or child has been measured for nutritional status are non-deprived in nutrition. More comments on this are presented in section 3.

## 5. Interpretation of changes in MPI

The cross-sectional MPI results published online in OPHI's MPI Data Bank at [www.ophi.org.uk/multidimensional-poverty-index/](http://www.ophi.org.uk/multidimensional-poverty-index/) correspond to the best estimation with the data at hand for the given year. Comparable figures and technical explanations for analysis over time will be provided separately. Section 4 discusses this aspect in more detail.

## 6. Changes in 'complementary' information

If the complementary information used to compute the MPI is updated, then the MPI will be computed using the most up-to-date complementary information relevant for the survey year. For example, if the compulsory starting age at which children enter school changes (as reported in the official tables of UNESCO), then the MPI indicator for school attendance will reflect the appropriate compulsory starting age that was in effect during the year(s) of the survey. Similarly, if other standards such as BMI or reference groups for child malnutrition change, the corresponding MPI indicator will change, though this has not been modified for the MPI 2013.<sup>4</sup>

## 2. Briefing on MPI Methodology

The MPI is a measure of acute global poverty developed by the Oxford Poverty and Human Development Initiative (OPHI) for the United Nations Development Programme's *Human Development Report* (see for details, Alkire and Santos 2010, 2013; Alkire et al. 2011; UNDP 2010). The index belongs to the family of measures developed by Alkire and Foster (2007, 2011). In particular, it is an application of the adjusted headcount ratio,  $M_0$ . This methodology requires determining the unit of analysis (i.e. person or household), identifying the set of indicators in which they are deprived at the same time and summarizing their poverty profile in a deprivation score. They are identified as multidimensionally poor if their deprivation score exceeds a cross-dimensional poverty cutoff. The number of poor people and their 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 (2010) and in Alkire and Foster (2011).

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<sup>4</sup> As explained in Alkire and Santos (2010) and Alkire et al. (2011), the nutritional indicator for children is weight-for-age. A child is considered to be underweight if he or she is two or more standard deviations below the median of the reference population. To guarantee strict comparability of the nutritional indicators for children across surveys, they are estimated in all cases (DHS, MICS or other surveys considered in every round) following the algorithm provided by the WHO Child Growth Standards (<http://www.who.int/childgrowth/software/en/>). The reference population from which the median is calculated has recently been updated by the WHO, as has the methodology used to construct the growth curves (WHO 2006).

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

Dimensions of poverty	Indicator	Deprived if...
Education	Years of Schooling	No household member has completed five years of schooling.
	Child School Attendance	Any school-aged child is not attending school up to class 8.
Health	Child Mortality	Any child has died in the family.
	Nutrition	Any adult or child for whom there is nutritional information is malnourished.
Living Standard	Electricity	The household has no electricity.
	Improved Sanitation	The household's sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households.
	Improved Drinking Water	The household does not have access to improved drinking water (according to MDG guidelines) or safe drinking water is more than a 30-minute walk from home, roundtrip.
	Flooring	The household has a dirt, sand or dung floor.
	Cooking Fuel	The household cooks with dung, wood or charcoal.
	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.

Note: Further details in Table Annex A.1.

The 2013 global MPI assesses multidimensional poverty for people in 104 developing countries for which data from 2002 onwards are available.<sup>5</sup> As summarized in Table 1, the MPI uses information from 10 indicators which are organised into three dimensions:<sup>6</sup> health, education and living standards, following the same three dimensions as the Human Development Index (HDI). Each individual is identified as deprived in each dimension based on a deprivation cutoff (more details in Alkire and Santos 2010). 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.

Thus 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\*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% of weighted indicators and those identified as in 'Severe Poverty' are deprived in 50% or more of the indicators.

<sup>5</sup> MPI estimations prior to 2002 are available for an additional five countries, which were excluded from the tables published in the 2013 HDR.

<sup>6</sup> For a more detailed description of the indicator definitions, see Alkire and Santos (2010) and Alkire et al. (2011).

### 3. DHS Nutritional Subsamples

Even though all the DHS surveys used for the update of the MPI 2013 have some information on nutritional status,<sup>7</sup> in some cases this topic is only assessed for a nationally representative subsample of the total households interviewed. This implies that only that subsample has all the information required to compute the MPI, while the remaining households do not have information on nutritional status. If such families were included in the analysis, it would be necessary to assume that they were non-deprived in this indicator. This would underestimate the health deprivations and the final MPI.

In order to compute the best possible measure of multidimensional poverty, the MPI 2013 only uses the information of those households that are included in the nutritional subsample in the corresponding countries (following the criteria presented in section 2). According to official documentation for the DHS data,<sup>8</sup> these subsamples are representative of the whole sample and in most cases they also allow for sub-national representativeness.

In previous rounds of the MPI (2010 and 2011) the subsamples in nutritional data were not taken into account. This was not a concern for most surveys in the past, but, given the increased number of nutritional subsamples (seven countries in 2013), this has become a relevant methodological issue. Therefore, there is a need to account for it when estimating the MPI from 2013.

#### Considerations by country

This section describes the nutritional data availability for the 16 updated countries in the MPI 2013.

**Armenia** (DHS 2010): The survey only assesses nutrition for children between 0 and 59 months of age.

**Burkina Faso** (DHS 2010), **Cambodia** (DHS 2010), **Nepal** (DHS 2011): A subsample of 50% of the households was selected to conduct anthropometric measures for eligible women age 15–49 and children 0–59 months old.

**DR Congo** (MICS 2010), **Swaziland** (MICS 2010), **Viet Nam** (MICS 2010): The MICS conducts anthropometric measures for all children under five, including those whose mothers may have died or are living elsewhere.<sup>9</sup>

**Ethiopia** (DHS 2011): Anthropometric measures were taken for the whole sample of women age 15–49, men 15–59 and children 0–59 months old.

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<sup>7</sup> Armenia's DHS only assesses the nutritional status of children, while all the other countries also have information for women 15–49 at the time of the survey.

<sup>8</sup> The Online Guide to DHS statistics indicates that “there is only a need for the additional sample weights if there is a differential probability in selecting the subsamples.” Equally, it explains that “all comparisons between surveys, either over time or between countries, should take into account the possible differences in the defined population base” which results from the subsample in anthropometrics. For more details, see Rutstein and Rojas (2006) at <http://legacy.measuredhs.com/help/Datasets/index.htm>

<sup>9</sup> This is an important difference with respect to the DHS where information on children under five is collected only if the mother is interviewed.

**Guyana** (DHS 2009): Anthropometric information is available for the whole sample of women and men age 15–49 and children 0–59 months old.

**Malawi** (DHS 2010): A subsample of one-third of the households was selected to conduct anthropometric measures for eligible women age 15–49 and children 0–59 months old.

**Peru** (DHS 2008), **Tanzania** (DHS 2010): Anthropometric measures were taken for the whole sample of women age 15–49 and children 0–59 months old.

**Rwanda** (DHS 2010): A subsample of 50% of the households was selected to conduct anthropometric measures for eligible women age 15–49, men 15–59 and children 0–59 months old.

**Senegal** (DHS 2010/11): Eight of every 21 households were selected to take nutritional measurements for women age 15–49, men 15–59 and children 0–59 months old.

**Uganda** (DHS 2011): A subsample of one-third of the households was selected to conduct anthropometric measures for eligible women age 15–49, men 15–54 and children 0–59 months old.

**Zimbabwe** (DHS 2010/11): Anthropometric measures were taken for the whole sample of women age 15–49, men 15–54 and children 0–59 months old.

#### 4. Comparison and Analysis over Time

The MPI estimations for each country use the maximum information available in the survey on which the estimation is based. As a result, improvements in the questionnaire or survey design imply improvements in the MPI estimation. While this methodological strategy allows us to produce the most accurate estimation for a given year, it creates challenges of comparability over time. We have undertaken a systematic analysis of changes in poverty over time for a total of 22 countries reported in the MPI 2013 (Alkire and Roche, 2013). In the case of 19 of these countries, figures for both periods have been published in previous Human Development Reports; the other analyses are based on back computations.<sup>10</sup>

The analysis is undertaken only with DHS surveys as they follow a similar survey design which facilitates comparability.<sup>11</sup> In order to compare the trends in MPI over time, we have further standardized the MPI parameters for those countries for which changes in the survey design may affect comparability across time. Tables with the outputs of this analysis will be posted on the OPHI website, accompanied by a full academic paper (Alkire and Roche, 2013). We provide here a summary of the adjustments to facilitate an interpretation over time.

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<sup>10</sup> For Bangladesh, Ethiopia, Ghana and India we have done back computations for previous years to those published. These are part of the analyses over time in Alkire and Roche (2013), but are not mentioned in this report. In the case of Ethiopia, there are estimations for two periods (2000/2005 and 2005/2010).

<sup>11</sup> The MICS surveys have improved considerably over time, which is positive in terms of data quality, but implies difficulties for comparability. Analysis comparing across MICS and between MICS and DHS are underway.

## Summary of adjustments for MPI analysis over time

This section provides *essential* information for comparing MPIs across time (Alkire & Roche 2013) for those countries where figures for both periods have been published in previous *Human Development Reports*. The reason this section is essential is that, as mentioned above, only these time-adjusted MPI figures ( $MPI_T$ ) can be used for comparisons.

### ✓ Armenia (2005–2010):

- Published MPI figures indicate a fall from .004 to .001 between these years, while figures adjusted for comparability indicate a non-statistically significant difference with a fall from .003 to .001.
- The differences are due to the fact that women’s BMI was available for 2005 but not for 2010. For comparability, the 2005 adjusted  $MPI_T$  was recomputed without BMI to match the data used for the 2010 survey.

### ✓ Bangladesh (2004–2007)<sup>12</sup>:

- Published MPI figures exist only for 2007, while 2004 is a back computation.
- According to the published figure, MPI fell from .365 to .292 between these years, but when adjusted for comparability, MPI figures show a higher fall from .365 to .289.
- The differences are due to improvements in the survey questionnaire in 2007 to include information on “shared toilet”, “mobile phone”, “refrigerator” and “car/truck” that was not available in 2005. The second round also includes improvements in the categories used to measure flooring, source of water and sanitation but they do not affect the deprivation cutoff or the comparability of the MPI estimates.
- To create strictly comparable measures, the 2007 adjusted  $MPI_T$  was re-computed to match the one generated from 2004 data, by excluding “shared toilet”, “mobile phone”, “refrigerator” and “car/truck”.

### ✓ Bolivia (2003–2008):

- Published MPI figures indicate a fall from .175 to .089 between these years and are comparable.
- The second round includes improvements in the categories used to measure sanitation, but they do not affect the deprivation cutoff or the comparability of the MPI estimates.
- The second round includes improvements in the categories used to measure source of water, making it possible to distinguish between a protected well (1.74% of pop.) and an unprotected well (6.42% of pop.). The 2005 surveys distinguish only between a “well with electrical pump” (2.6% of pop.) and a “well without electrical pump” (8.63% of pop.). For the 2005 MPI, only those with a “well with electrical pump” are considered as not deprived. Hence, the comparability in changes in deprivation in water should be

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<sup>12</sup> The figures for Bangladesh in 2004 are back calculations previous to the HDR2010.



interpreted with care and in light of detailed information by category.<sup>13</sup> However, no re-computation was undertaken.

✓ **Cambodia (2005–2010):**

- Published MPI figures indicate a fall from .251 to .212 between these years while MPI<sub>T</sub> figures adjusted for comparability show a higher fall from .298 to .212.
- The differences are due to the fact that the survey in 2005 only measured anthropometrics for a 50% subsample but the published figure for 2005 included the full sample, hence assuming that all those non measured were not deprived. For comparability, the 2005 adjusted estimate is based only on the nutritional subsample.

✓ **Colombia (2005–2010):**

- Published MPI figures indicate a fall from .040 to .022 between these years, while MPI<sub>T</sub> figures adjusted for comparability show a non-statistically significant difference with a fall from .040 to .023.
- The differences are due to improvements in the survey questionnaire in 2010, creating information that was not available in 2005 on the assets “mobile phone” and “bicycle”. For comparability, parameters in the adjusted 2010 MPI were defined using the same indicators as in 2005.
- In addition, the age range for compulsory primary education changed in 2010 (to 6–14 years, while it had been 5–13 in 2005). For comparability, parameters in the adjusted 2010 were defined as in 2005.

✓ **Ethiopia (2000–2005) <sup>14</sup>:**

- Published MPI figures exist only for 2005, while 2000 is a back computation.
- According to the published figure, MPI fell from .677 to .562 between these years, while MPI<sub>T</sub> figures adjusted for comparability show a lower fall from .677 to .605.
- The differences are due to the fact that the 2005 survey measured anthropometrics for a 50% subsample and the published figure for 2005 includes the full sample, hence assuming that all those non measured were not deprived. For comparability, the 2005 adjusted MPI is based only on the nutritional subsample.
- In addition, improvements in the survey questionnaire were undertaken in 2005, which generated information that was not available in 2000 on “source of non- drinking water”, “time to water”, “mobile phone” and “refrigerator”. For comparability, the adjusted 2005 MPI used parameters that were defined as in 2000. The second round also includes improvements in the categories used to measure source of water and sanitation, but they do not affect the deprivation cutoff or the comparability of MPI estimates.

✓ **Ethiopia (2005–2010):**

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<sup>13</sup> The reduction in the water raw headcount falls from 21% to 14% while the reduction in the water censored headcount falls from 16% to 8%.

<sup>14</sup> The figures for Ethiopia in 2000 are back calculations previous to the HDR2010.

- The published MPI figure increased slightly from .562 to .564 between these years. However, importantly, when figures are adjusted for comparability, we find that the MPI<sub>T</sub> shows a fall from .605 to .523.
- The differences are due to the fact that the 2005 survey only measures anthropometrics for a 50% subsample and the published figure for 2005 included the full sample, hence assuming that all those non measured were not deprived. For comparability, the 2005 adjusted MPI is based only on the nutritional subsample.
- In addition, improvements in the survey questionnaire were undertaken in 2005, so for 2005 and 2010 we include information on “source of non-drinking water”, “time to water”, “mobile phone” and “refrigerator” that was not available in 2000. In order to obtain a three-period comparison with 2000, parameters in both 2005 and 2010 were adjusted as in 2000. During this time, there were improvements in the categories used to measure source of water and sanitation, but they do not affect the deprivation cutoff or the comparability of the MPI estimates.

✓ **Ghana (2002–2008) 15:**

- Published MPI figures exist only for 2005, while 2000 is a back computation.
- According to the published figure, MPI fell from .309 to .144 between these years, while MPI<sub>T</sub> figures adjusted for comparability show a lower fall from .309 to .202.
- The differences are due to the fact that the 2008 survey only measures anthropometrics for a 50% subsample and the published figure for 2008 included the full sample, hence assuming that all those non measured were not deprived. For comparability, the 2008 adjusted MPI is based only on the nutritional subsample.
- In addition, improvements in the survey questionnaire were undertaken in 2008, so for this year we have information on the “mobile phone” asset that was not available in 2002. For comparability with 2002, parameters in 2008 were defined as in 2002. During this time, there were improvements in the categories used to measure source of water and sanitation, but they do not affect the deprivation cutoffs. There were also changes in “source of non-drinking water” and “BW/television”, but they do not affect the comparability of MPI estimates.

✓ **Guyana (2005–2009):**

- The published MPI figures indicate a fall from .053 to .030 between these years, while MPI<sub>T</sub> figures adjusted for comparability show a lower fall from .053 to .041.
- The differences are due to the fact that the 2009 survey includes information on nutrition (child under-nutrition, female and male BMI) and also information on child mortality from the male recode. To create comparable estimates, the 2009 adjusted MPI was computed without these additional variables, as in 2005.
- In 2009 there is also information on “BW/television”, but it does not affect the results or the comparability of the MPI estimates.

✓ **India (1998/99–2005/06) 16:**

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15 The figures for Ghana in 2002 are back calculations previous to the HDR2010.

- Published MPI figures exist only for 2005/2006 (.283), while 1998/1999 is a back computation.
- According to figures adjusted for comparability,  $MPI_T$  fell from .300 to .251.
- Parameters are different for the adjusted India MPI in order to allow comparison over time. In particular, the 2005/6 figure used differs from that published in the *HDR*. For the precise definition of the adjusted MPI indicators, please see Alkire and Seth (2013).

✓ **Jordan (2007–2009):**

- Published MPI figures indicate a fall from .010 to .008 between these years, while figures adjusted for comparability do not show a fall but rather show MPI as unchanged at .011.
- The differences are due to the fact that both 2007 and 2009 surveys only measured anthropometrics for a 50% subsample but the published figure for both years included the full sample, hence assuming that all those not measured were not deprived. Following the same criteria as in other countries, the 2007 and 2009 adjusted estimates are based only on the nutritional subsample.

✓ **Kenya (2003–2008/9):**

- Published figures show a fall from .302 to .229 between these years, while  $MPI_T$  figures adjusted for comparability show a lower fall from .296 to .244.
- The survey in 2009 includes information on the “mobile phone” asset, which was not available in 2003. For comparability, the 2008/9 adjusted MPI uses asset parameters defined as in 2003.
- During this time, there were improvements in the categories used to measure source of water and sanitation, but they do not affect the deprivation cutoff or the comparability of the MPI estimates.

✓ **Lesotho (2004–2009):**

- Published MPI figures indicate a fall from .220 to .156 between these years while  $MPI_T$  figures adjusted for comparability show a higher fall from .239 to .182.
- The differences are due to the fact that the surveys in 2004 and 2009 only measure anthropometrics for a 50% subsample but the published figure for both years included the full sample, hence assuming that all those not measured were not deprived. Following the same criteria as in other countries, the 2004 and 2009 adjusted estimates are based only on the nutritional subsample.
- In addition, improvements in the survey questionnaire were undertaken in 2009, creating additional information on child mortality in the male recode and the asset “mobile phone”. For comparability, parameters in the 2009 adjusted MPI were defined as in 2004. During this time there were improvements in the categories used to measure source of water and sanitation, but they do not affect the deprivation cutoffs or the comparability of MPI estimates.

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<sup>16</sup> The figures for India in 1998/99 are back calculations previous to the HDR2010 corresponding to a specific analysis for India (Alkire and Seth 2013).

- ✓ **Madagascar (2004–2008/9):**
  - Published MPI figures indicate a fall from .413 to .357 between these years while figures adjusted for comparability show a non-statistically significant increase from .383 to .400.
  - The differences are due to the fact that the surveys in 2004 and 2008/9 only measured anthropometrics for a subsample (33% and 50% respectively), but the published figure for both years included the full sample, hence assuming that all those not measured were not deprived. Following the same criteria as in other countries, the adjusted estimates for both surveys are based only on the nutritional subsample.
  - In addition, the survey in 2008/9 includes information on “mobile phone” which was not available in 2004. For comparability, parameters in the 2008/9 adjusted MPI were defined as in 2004.
  - During this time there were improvements in the categories used to measure source of water and sanitation, but they do not affect the deprivation cutoff or the comparability of the MPI estimates.
  
- ✓ **Malawi (2004–2010):**
  - Published MPI figures indicate a fall from .381 to .334 between these years, and these are comparable.
  - The second round includes improvements in the categories used to measure sanitation, but they do not affect the deprivation cutoff or the comparability of MPI estimates.
  
- ✓ **Nepal (2006–2011):**
  - Published MPI figures indicate a fall from .350 to .217 between these years and are comparable.
  - The only difference between the surveys is that the 2006 survey does not include a question on the “source of non-drinking water”, but when a 2011 adjusted MPI was computed excluding this indicator, the results remained unchanged.
  
- ✓ **Nigeria (2003–2008):**
  - Published MPI figures indicate a fall from .368 to .310 between these years, while MPI<sub>T</sub> figures adjusted for comparability show a fall from .368 to .313.
  - The differences are due to the fact that the 2008 survey includes information on the “mobile phone” asset, which was not available in 2003. For comparability, parameters in the 2008 adjusted MPI were defined as in 2003.
  - During this time, there were improvements in the categories used to measure source of water and sanitation, but they do not affect the deprivation cutoff or the comparability of the MPI estimates.
  
- ✓ **Peru (2005–2008):**
  - Published MPI figures indicate a fall from .086 to .066 and these are accurate.
  
- ✓ **Rwanda (2005–2010):**

- Published MPI figures indicate a fall from .426 to .350 between these years, while  $MPI_T$  figures adjusted for comparability show a larger decrease from .460 to .330.
- The differences are due to the fact that the surveys in 2005 and 2010 only measure anthropometrics for a 50% subsample, but the published figure for both years included the full sample, hence assuming that all those not measured were not deprived. Following the same criteria as in other countries, the adjusted estimates for both surveys are based only on the nutritional subsample.
- In addition, the survey in 2010 includes information on the “mobile phone” asset and “Male BMI”, which was not available in 2005. For comparability, parameters in the 2010 adjusted MPI were defined as in 2005.
- During this time there were improvements in the categories used to measure source of water and sanitation, but they do not affect the deprivation cutoff or the comparability of the MPI estimates.

✓ **Senegal (2005–2010/11):**

- Published figures indicate an increase from .384 to .439 between these years, while  $MPI_T$  figures adjusted for comparability show a decrease from .440 to .423.
- The differences are due to the fact that the survey in 2005 only measures anthropometrics for one-third of the subsample, but the published figure included the full sample, hence assuming that all those not measured were not deprived. The 2010/11 survey also follows a subsample for anthropometrics which was considered for the published figure. To create a comparable measure, the adjusted estimates for 2005 are based only on the nutritional subsample.
- In addition, improvements in the survey questionnaire were undertaken in 2010/11, generating information that was not available in 2005 on “male BMI” and the “mobile phone” asset. For comparability, parameters in the 2010/11 adjusted MPI were defined as in 2005.
- During this time, there were improvements in the categories used to measure source of water, but they do not affect the deprivation cutoff or the comparability of the MPI estimates.
- During this time, there were also improvements in the categories used to measure improved sanitation. The 2010/11 MPI includes “latrine with manual flush”, which was not included in 2005. No re-computation or further standardization was required.

✓ **Tanzania (2008–2010):**

- Published MPI figures indicate a decrease from .367 to .332 between these years, while  $MPI_T$  figures adjusted for comparability show a larger decrease from .367 to .326.
- The differences are due to the fact that the survey in 2010 includes information on nutrition (child under-nutrition and women’s BMI), and also information on child mortality from the male recode. For comparability, the 2010 adjusted MPI was computed using the same indicator definitions as in 2008.
- During this time, there were improvements in the categories used to measure source of water and sanitation, but they do not affect the deprivation cutoff or the comparability of the MPI estimates.

**✓ Uganda (2006–2011):**

- The published MPI figures indicate no change at .367 between these years, while  $MPI_T$  figures adjusted for comparability show a higher decrease from .417 to .343.
- The differences are due to the fact that the survey in 2006 only measures anthropometrics for one-third of the subsample, but the published figure included the full sample, hence assuming that all those not measured were not deprived. The 2011 survey also uses a subsample for anthropometrics, but this was considered for the published figure. Following the same criteria as in other countries, the 2006 adjusted MPI is based only on the subsample that is eligible for anthropometrics.
- Also, the survey in 2011 includes information on “male BMI”, although 95% of the information is missing. For comparability, this information is excluded in the adjusted 2011 MPI.

**✓ Zimbabwe (2006–2010/11):**

- Published MPI figures indicate a decrease from .180 to .172 between these years, while  $MPI_T$  figures adjusted for comparability show a higher decrease from .180 to .145.
- The differences are due to the fact that the 2010/11 survey includes information on “male BMI” which is not available in 2006. For comparability, the indicators in the 2011 adjusted MPI were defined as in 2006.
- In addition, the 2010/11 survey includes “source of non-drinking water”, but when a 2010/11 adjusted MPI was computed excluding this indicator, the results remained unchanged.

For more information, including an analysis of changes in  $MPI_T$  over time, and tables showing decompositions by country, as well as breakdown of  $MPI_T$  by incidence and intensity, and by indicator, please see Alkire and Roche (2013).

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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<sup>2</sup>. 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).



**OPHI's Multidimensional Poverty Index Data Bank**

<http://www.ophi.org.uk/multidimensional-poverty-index/mpi-data-bank/>

- ✓ **Country Briefings**  
<http://www.ophi.org.uk/multidimensional-poverty-index/mpi-data-bank/mpi-country-briefings>
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For information on the original MPI methodology, see Alkire, S. and Santos, M.E. (2013), "Measuring Acute Poverty Using the Multidimensional Poverty Index: Robust Comparisons and Future Prospects," OPHI Working Paper 59. Available at [www.ophi.org.uk/wp-content/uploads/ophi-wp59.pdf](http://www.ophi.org.uk/wp-content/uploads/ophi-wp59.pdf)

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For data tables, including updates that took place in 2013 as well as consistent time comparisons, see: Oxford Poverty and Human Development Initiative (2013). "Multidimensional Poverty Index Data Bank". Oxford: University of Oxford. Available at: [www.ophi.org.uk/multidimensional-poverty-index/mpi-country-briefings/](http://www.ophi.org.uk/multidimensional-poverty-index/mpi-country-briefings/)