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Multidimensional Poverty Index 2013

Sabina Alkire, José Manuel Roche and Suman Seth, March 2013

The Multidimensional Poverty Index or MPI is an international poverty measure developed by the Oxford Poverty and Human Development Initiative (OPHI) for the United Nations Development Programme's flagship *Human Development Report* in 2010. The innovative index reflects the multiple deprivations that a poor person faces with respect to education, health and living standards. This brief summarises a number of analyses of the MPI figures published in the *HDR* 2013, and shows how the MPI can be used.

OPHI's analyses of multidimensional poverty in 2013 span four topics, each covered in this brief:

Key Findings

Dynamics (Pages 2-3): Of 22 countries for which we analysed changes in MPI poverty over time, 18 reduced poverty significantly. Most 'top performing' countries reduced multidimensional poverty as fast or faster than they reduced income poverty (see graph below). Nepal, Rwanda and Bangladesh had the largest absolute reductions in MPI poverty, followed by Ghana, Tanzania, Cambodia and Bolivia. *See also Alkire and Roche (2013)*

India (Page 4): India reduced multidimensional poverty significantly between 1999 and 2005/6, but the reduction was uneven across states and social groups, and much slower than in poorer neighbours Bangladesh and Nepal. *See also Alkire and Seth (2013)*

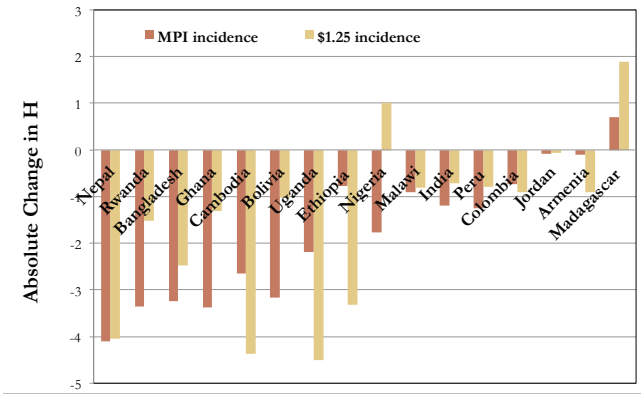
MPI 2013 (Page 5): In 2013, we found that a total of 1.6 billion people are living in multidimensional poverty; more than 30% of the combined populations of the 104 countries analysed.

Bottom Billion (Page 6-7): An analysis of where the poorest 'Bottom Billion' live using national data finds they are located in just 30 countries; an analysis using individual poverty profiles finds they are actually spread across 100 countries, underscoring the importance of going beyond national averages. We also found that 51% of the world's MPI poor live in South Asia, and 29% in Sub-Saharan Africa. Most MPI poor people - 72% - live in Middle Income Countries. *See also Alkire, Roche and Seth (2013)*

MPI 2013: Updates and Coverage

- In 2013, the MPI has been updated for 16 countries and includes 104 countries with data from 2002-2011
- The MPI has been calculated for 663 subnational regions across 65 countries
- Changes in MPI over time have been analysed for 22 countries and 189 regions covering 2 billion people
- The 104 countries analysed include 29 Low Income Countries, 67 Middle Income Countries and 8 High Income Countries
- These countries have a total population of 5.4 billion people, which is 78% of the world's population

Figure 1: Absolute Reduction of MPI and $1.25/day Incidence Per Year



How Multidimensional Poverty went down: Dynamics and Comparisons

In 2013, we analysed changes in MPI poverty for 22 countries from every region of the world. We found significant reductions in multidimensional poverty, but striking variations in the rate of reduction and how it was achieved.

Top performers and progress at different paces

Of the 22 countries analysed, 18 reduced multidimensional poverty significantly. The biggest absolute reductions in multidimensional poverty were seen in countries with relatively high poverty levels. Nepal, Rwanda and Bangladesh were the top performers of our analysis, followed by Ghana, Tanzania, Cambodia and Bolivia. Colombia and Armenia also did very well, from much lower initial poverty levels.

The percentage of poor people in Nepal dropped from 64.7% to 44.2% between 2006 and 2011, 4.1 percentage points per year; in Rwanda, MPI poverty fell by 3.4 percentage points per year during 2005-2010; and in Bangladesh, by 3.2 percentage points per year from 2004-2007.

At the other end of the scale, Jordan, Peru, Madagascar and Senegal showed no significant reduction in multidimensional poverty. In India 1999-06, MPI poverty fell considerably faster than income poverty but at a rate that was less than one-third of the speed its poorer neighbours Nepal and Bangladesh achieved more recently (see page 4).

Countries with low poverty levels to begin with can't make as large reductions in absolute terms. The top performers in relative terms include Bolivia and Colombia, with annualized reductions of 8% to 10% of the original level of poverty. The seven star performers mentioned above all did well in relative as well as absolute terms.

Figure 2a: Annualized Absolute Change in MPI

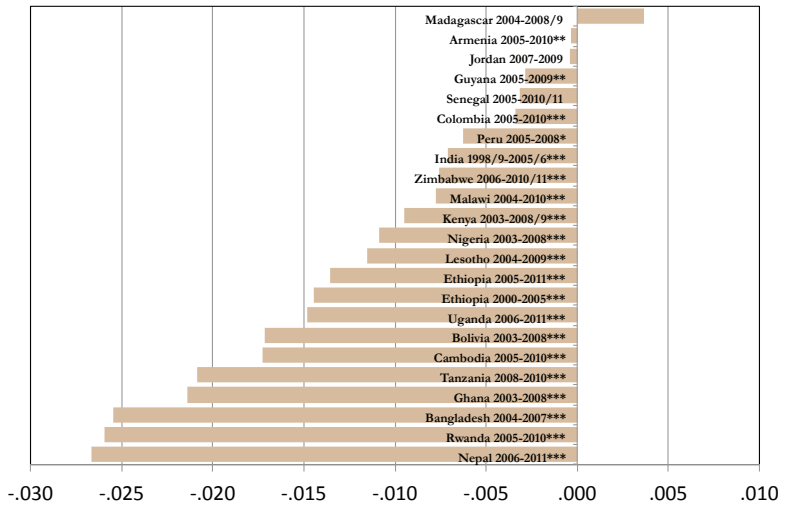
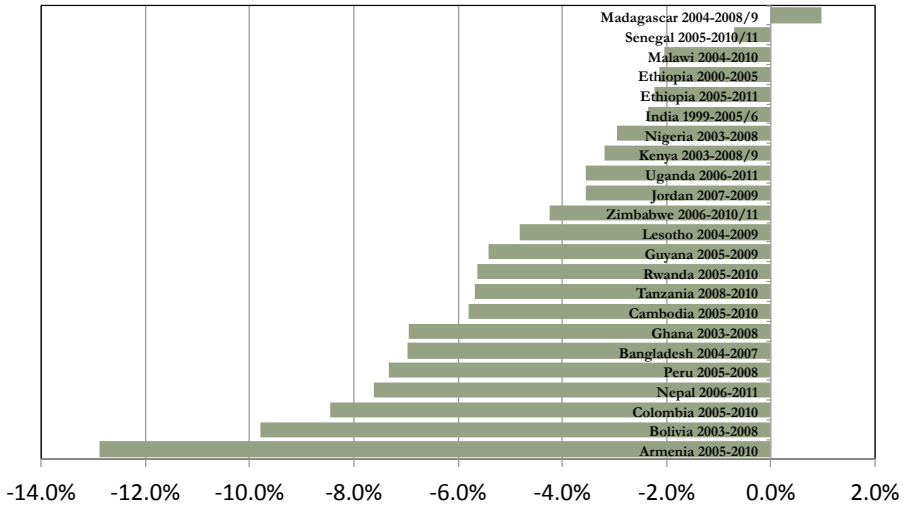


Figure 2b: Annualized Percent Relative Change



Reductions in MPI poverty vs. $1.25/day poverty: Not identical twins

Most 'star performers' in our study reduced multidimensional poverty as fast or faster than they reduced income poverty (see graph on page one), including the top five MPI-reducing countries in our study for which we have income poverty data. Other countries, such as Cambodia, Uganda and Armenia, saw income poverty cut faster than MPI poverty. So the two measures didn't necessarily move together.

If income and multidimensional poverty measures moved together, we wouldn't need two measures. One would suffice. But for at least 20 of these countries, that didn't happen. If we had only looked at progress in reducing income poverty, our leaders would have been Uganda, Cambodia, Nepal, and Ethiopia. The tremendous gains of Rwanda, Ghana, and Bolivia, for example, would have been invisible. The MPI makes their progress visible – and can furnish details to those who want to know more.

Incidence and Intensity: different paths to poverty reduction

The top performing countries reduced MPI by reducing both the incidence of poverty and the intensity of poverty among the poor. The intensity of poverty is the percentage of deprivations that poor people experience at the same time in health, education and living standards indicators (see page 7).

If we compared only changes in the percentage of poor people, Malawi would be doing as well as Ethiopia, and Bolivia, Ghana, and Rwanda as well as Bangladesh. The MPI thus provides incentives to address those groups that have the highest proportion of deprivations, even if they remain poor for now.

Reductions in intensity were strongest in relatively poorer countries, such as Ethiopia, Malawi and Senegal, demonstrating the vital importance of using MPI to document and celebrate progress in the poorest countries and give a more balanced picture of poverty.

Reductions by indicator: different dimensions of poverty reduction

The MPI can be broken down to show how poverty has been reduced, or which aspects of health, education and living standards have improved and how people's lives are changing. In this study, reductions in all ten indicators (see figure 10 on page 7) contributed to the falls in MPI poverty; countries managed to cut poverty by tackling a range of different deprivations, with no single formula for success emerging.

Nepal, Rwanda, Bolivia, India and Colombia showed statistically significant changes in all indicators. Nepal did best in areas such as nutrition, child mortality, electricity, improved flooring and assets. Rwanda showed the biggest improvement in sanitation and water, and Bangladesh did better in sanitation and school attendance. Remember that reductions in health and education indicators have a stronger impact on MPI poverty because of their greater weights in the index (see figure 10 on page 7 again).

In general, countries with high levels of reduction in some indicators tended to have relatively balanced reductions in others. This underscores to policymakers the effectiveness of addressing interconnected deprivations together.

Subnational variations: uneven progress in poverty reduction

The MPI has been broken down to reveal the varying rates of progress in different regions of a country. In this study, we cover 189 subnational regions, across which patterns of poverty differ a great deal.

In Nepal, for example, despite its stellar performance, three of the 13 regions lagged behind the rest of the country and did not see any statistically significant reduction in MPI (see Figure 5, right). In contrast, both Rwanda and Bangladesh achieved significant reductions in both the scale and intensity of multidimensional poverty in every one of their regions.

Going inside countries unearthed some heartening stories of success: Bolivia had significant poverty reduction in all areas, but its three poorest regions originally – Chuquisaca, Potosi and Beni – made the fastest progress of all. A similar tale of strong progress in the poorest regions could be told for Colombia's region of Litral Pacifico, Kenya's Northeastern region, Cambodia's Mondol Kiri/Rattanak Kiri, or Lesotho's Qacha's-Nek region.

Figure 3: Absolute Change in indicators

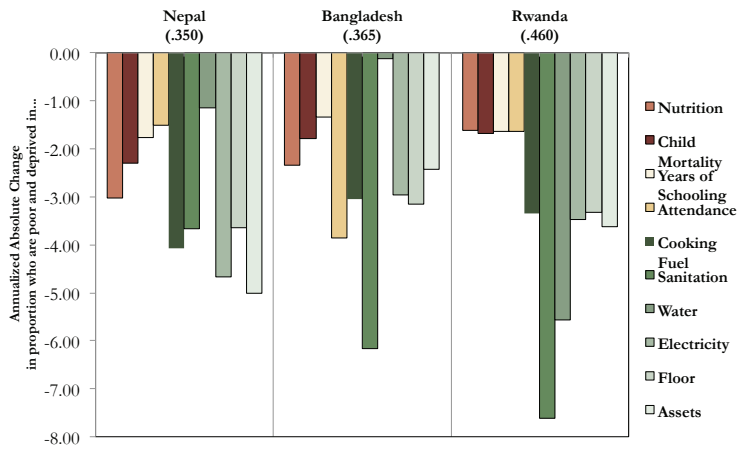


Figure 4: Absolute Change in Incidence and Intensity

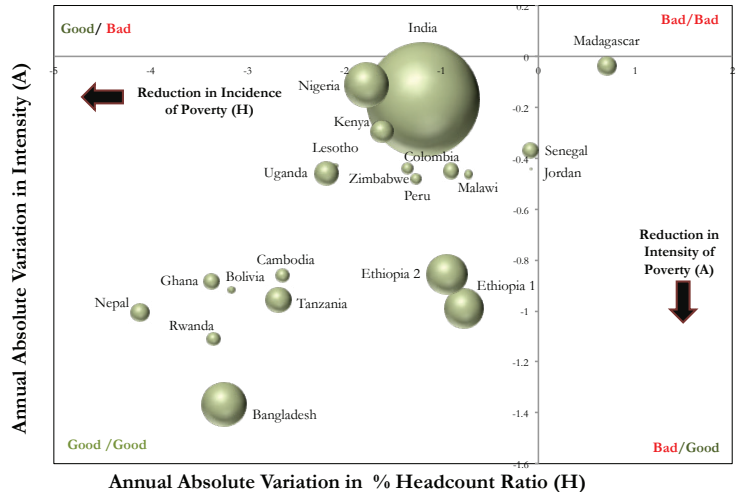
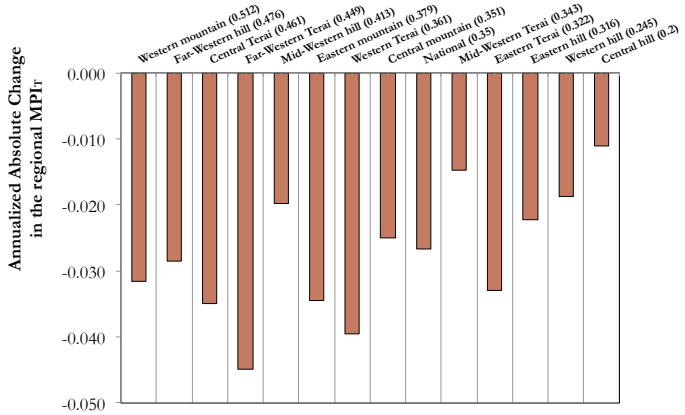


Figure 5: Nepal 2006-2011: Annualized Absolute Changes in Regional MPI_T



Eradicating acute multidimensional poverty

Where is all this leading? The good news is that in some countries, if progress continues at the same rate, current generations may see the eradication of acute multidimensional poverty. For example, if the study's 'star' performers, continue to reduce poverty at the current rate, they will halve MPI in less than 10 years and eradicate it within 20.

Other countries are closing in more slowly. At the current rate of reduction, it will take Ethiopia 45 years to halve multidimensional poverty, while India will need 41 years and Malawi 74 years to eradicate acute poverty as measured by the MPI.

Poverty Reduction in India 1999-2006: Slower Progress for the Poorest Groups

Between 1999 and 2006, multidimensional poverty in India fell faster than income poverty. Using an adaptation of the MPI, we examined the extent of poverty reduction, and looked at where and how it took place.

To measure changes in multidimensional poverty in India using the National Family Health Survey (NFHS) datasets for 1999 and 2006, we created an adaptation of the MPI: the MPI_I, or MPI for India.[1] The MPI_I is calculated using the same method as the global MPI, but with slightly different indicators; please see the Research Brief 'Multidimensional Poverty Reduction in India 1999-2006' or Alkire and Seth (2013) for details.

From 1999 to 2006, MPI poverty in India fell by **16%**, from 0.300 to 0.251. This was mainly due to a statistically significant reduction in the **percentage** of people identified as poor (H); the reduction in the **intensity** of poverty (A) was smaller, but still statistically significant.

This fall in MPI poverty was faster than the decrease in income poverty. Significant reductions were made in all ten indicators, and the biggest absolute improvements were seen in access to electricity, housing conditions, access to safe drinking water, and improved sanitation facilities, rather than in education and health indicators (Figure 6).

The reduction in MPI poverty in India has been positive, but much slower than that achieved by some of her neighbours Nepal and Bangladesh, which are poorer in terms of income (see pp 2-3). Unfortunately, we are unable to analyse more recent progress made in India, because updated data are not available.

Figure 6: Changes in Deprivations Among the Poor

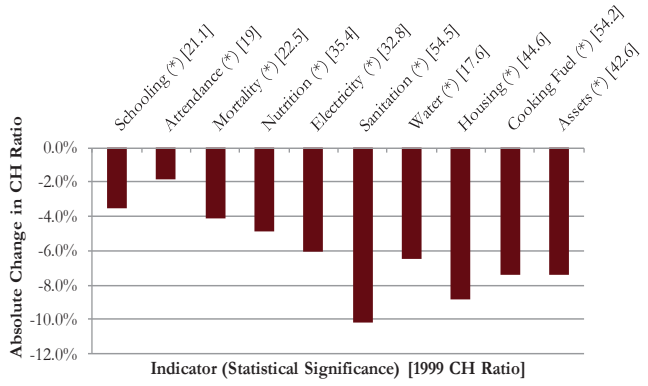
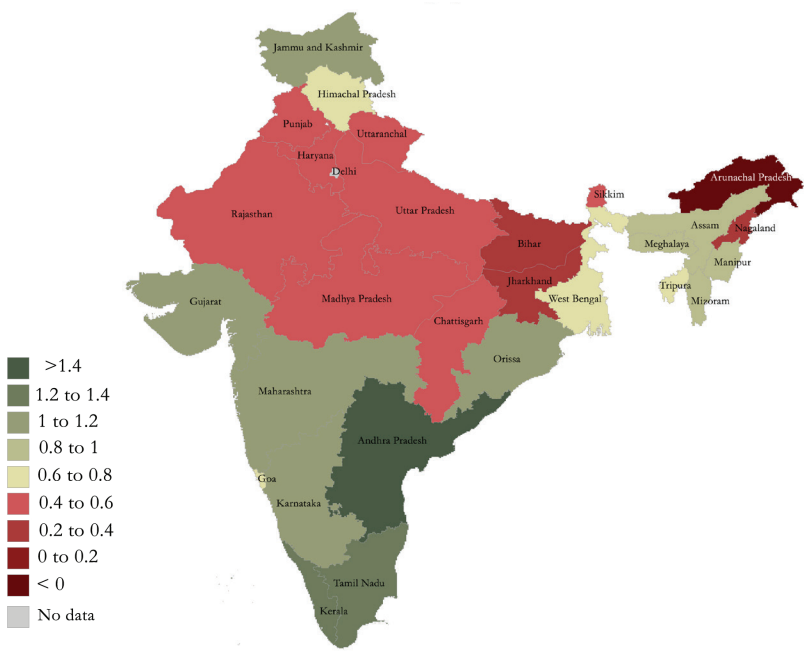


Figure 7: Absolute Change in MPI_I Per Annum Across States



Trends by state

Poverty reduction varied widely across 25 states,[3] with 17 states achieving statistically significant reductions in MPI poverty and in the incidence of multidimensional poverty (see figure 7). Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh, and West Bengal, in which more than 60% of people were poor in 1999, all showed relatively small reductions. In contrast, four less-poor South Indian states – Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu – reduced the percentage of poor people by more than 13 percentage points each in absolute terms. However, while poorer states managed to reduce multidimensional poverty the least, they **reduced income poverty more** than rich states, highlighting the need to measure and analyse both types of poverty.

Trends by social group and household characteristics

Some poor groups - for example, people in rural areas, the Scheduled Castes or households whose head had only 1-5 years of education - experienced strong reductions in poverty. **Yet most of the very poorest groups** – such as Scheduled Tribes, Muslims, female-headed households, and households whose head had no education – **saw slower reductions in poverty**. At the same time, the poorest of the poor – **the deeply poor**, as measured by more stringent deprivation criteria[2] – decreased from **26.4%** of the population in 1999 to **19.3%** in 2006. That is a very heartening trend, because it shows that the reduction in overall poverty in India has been obtained largely by reducing the percentage of people who are truly destitute. That said, there is still a long way to go: nearly a fifth of India's population – more than two hundred million people – was still deeply poor in 2006, and millions more remained acutely poor.

1. Data limitations in 1999 mean that the MPI_I estimates are lower than the global MPI estimates for India.

2. See the Research Brief 'Multidimensional Poverty Reduction in India 1999-2006' or www.ophi.org.uk/multidimensional-poverty-index for details of deprivation cut-offs for the deeply poor.

3. We have combined Bihar with Jharkhand, Madhya Pradesh with Chhattisgarh, and Uttar Pradesh with Uttarakhand, as these three new states did not exist in 1999. Delhi is included in national and urban/rural analyses of MPII in India, but it is not reported as a state because it is technically a union territory.

Visualising Inequality among the poor

The MPI 2013 covers 104 countries which are home to 5.4 billion people, using 2010 population data. In 2013, we found that a total of 1.6 billion people are living in multidimensional poverty; more than 30% of people living in these countries.

Where do the world's poor call home? Of these 1.6 billion people, 51% live in South Asia, and 29% in Sub-Saharan Africa. Most MPI poor people - 72% - live in Middle Income Countries.

We also focus this year on disparities – between income poverty and acute multidimensional poverty, and among the MPI poor. What do we find?

There are large discrepancies between the percentage of the population who are MPI poor and the percentage of people who are income poor, **as shown in the graph at the back of this briefing**. The height of the bars shows the proportion of MPI poor and the height of the dots shows the level of $1.25/day poverty rates.

We also find disparities in the intensities of poverty experienced among the MPI poor within that country. Each MPI bar has been divided into four different categories, which reflect the percentage of people who live in progressively higher-intensity categories of poverty. The top section (beige) shows the people who are **MPI poor** only. The next section (light green) shows people who are also part of the **bottom billion**, as identified using individual poverty profiles. The following stripe (dark green) shows those among the bottom billion who are also in **severe poverty**. The lowest stripe (dark red) shows those whose intensity is the same or greater than the **intensity of the poorest country**, Niger – all of whom are among the bottom billion and also in severe poverty.

So, in addition to showing the consistency or discrepancy between multidimensional poverty rates and income poverty rates, the graph gives a visual depiction of inequality in intensity among the poor.

It's possible to divide the percentage of people who are MPI poor within each country even further by the degree of poverty intensity they are experiencing. Each country briefing provides this information; see www.ophi.org.uk/multidimensional-poverty-index. Figures 8a and 8b illustrate this for two countries: Burkina Faso and Liberia. In both countries, nearly 84 percent of the population are multidimensionally poor. However, the distribution of the different intensities of poverty being experienced is quite different. Over a third of those in Burkina Faso experience intensities above 70%, while this intensity of poverty affects less than one-quarter of the poor in Liberia.

Further information on these MPI 2013 results is available in the *Human Development Report* 2013. Full data tables are available on OPHI's website, as are additional analyses.

Figure 8a: Burkina Faso

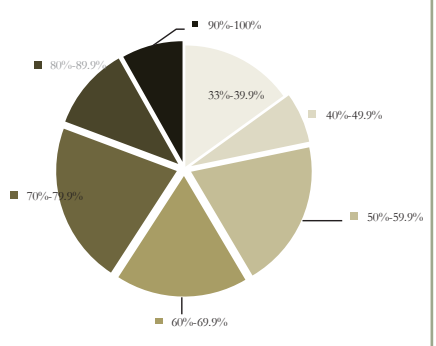
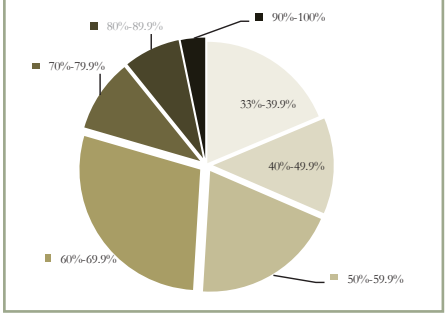


Figure 8b: Liberia



Data Sources

The MPI relies on the most recent data available, mainly from three datasets that are publicly available and comparable for most developing countries: USAID's Demographic and Health Survey (DHS), UNICEF's Multiple Indicators Cluster Survey (MICS), and the WHO's World Health Survey (WHS).

Additionally, we used six special surveys covering urban Argentina (ENNyS), Brazil (PNDS), Mexico (ENSANUT), Morocco (ENNVM), Occupied Palestinian Territory (PAPFAM), and South Africa (NIDS).

MPI – Brief overview

The MPI is an index of acute multidimensional poverty which covers 104 developing countries. It assesses the nature and intensity of poverty at the individual level – measuring how many things poor people go without – to create a vivid picture of how poverty is being experienced within and across countries, regions and the world.

The MPI has three dimensions: health, education, and living standards. These are measured using 10 indicators (see box on page 7: 'Inside the MPI'). The first international measure of its kind, it offers an essential complement to income poverty indices because it measures deprivations directly.

The MPI can be used as an analytical tool to identify multidimensionally poor people, show aspects in which they are deprived and help to reveal the interconnections among deprivations. It can identify the poorest among the poor, reveal poverty patterns within countries by province or social group, and track changes over time, enabling policymakers to target resources and design policies more effectively.

Identifying the 'Bottom Billion': Beyond national averages

Where do the poorest billion people on the planet actually live? Using the MPI's individual poverty profiles, we can zoom in and identify them, including those hidden by national or subnational-level analyses.

Knowing where the poorest people are is essential for policymakers seeking to reduce poverty; it is only when we know **where** people are poor and **how** they are poor that we can use resources effectively to meet targets such as the Millennium Development Goals, and the goals that will succeed them post-2015.

We have identified the 'bottom billion' in three different ways: by country; by subnational regions; and by individual poverty profiles, which show the overlapping deprivations experienced by each person. These three breakdowns produced significantly different results, including the surprising finding that **almost 10% of the poorest billion people live in High Income or upper Middle Income Countries.**

The discrepancies between the findings show the importance of using a poverty measure that can be disaggregated in different ways to reveal the inequalities that exist across regions and among social groups.

National poverty levels

If we rank the 104 countries analysed in the MPI by their MPI values, starting with the poorest countries, we find that the 'bottom billion' according to national poverty live in **30 countries**. We also find that 66% of the poorest billion people live in Lower Middle Income countries, and 34% live in Low Income Countries.

Subnational poverty levels

If we analyse the countries we can by subnational regions and rank those regions from poorest to least poor, according to the MPI, our results change significantly: now we find that the bottom billion live in 265 subnational regions across **44 countries**, including the 30 identified in the previous breakdown. Of the poorest billion by this analysis, 62% live in Lower Middle Income countries and 38% live in Low Income Countries.

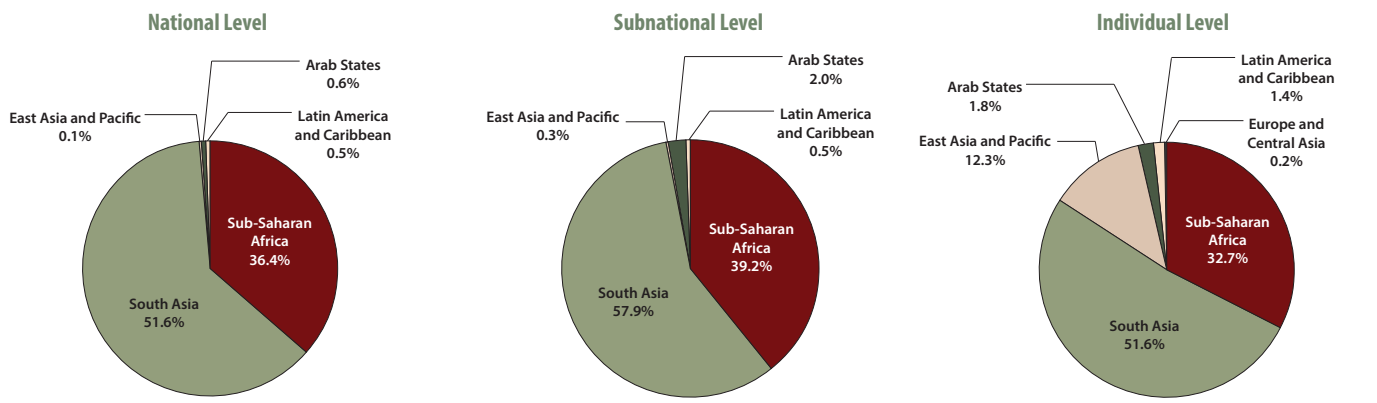
Individual poverty profiles

When we rank the population in the 104 country surveys according to the intensity of their individual poverty profiles, our results change even more dramatically: measured in this way, the poorest billion people are distributed across **100 countries**. Now we find that 60% of the bottom billion live in lower Middle Income Countries, and 31% live in Low Income Countries. Over 9% live in upper Middle Income Countries, and a further 41,000 of the poorest billion people live in High Income Countries: Croatia, Estonia, United Arab Emirates, Trinidad and Tobago and Czech Republic. In fact, of the 104 countries analysed, only four were not home to any of the poorest billion people: Belarus, Hungary, Slovenia and Slovakia.

In terms of geographical regions, we found that South Asia leads the world in poverty, housing between 52 and 62% of the bottom billion, depending on which of the three analyses is used. Most of the rest live in Sub-Saharan Africa, which is home to 33-39% of the poorest billion people on the planet.

In summary, using national poverty levels means we overlook large variations in poverty levels within countries. Using subnational data enables us to see these regional inequalities, and shows the need for varied policies within a country. Individual poverty profiles are a more precise tool still, though with these we lose a sense of the density – the percentage – of people who are poor. What this analysis clearly demonstrates is the importance of using a poverty measure that can be disaggregated to show where and how people are poor, and ensure that no one experiencing poverty is hidden from view.

Figure 9a: By Geographical Region



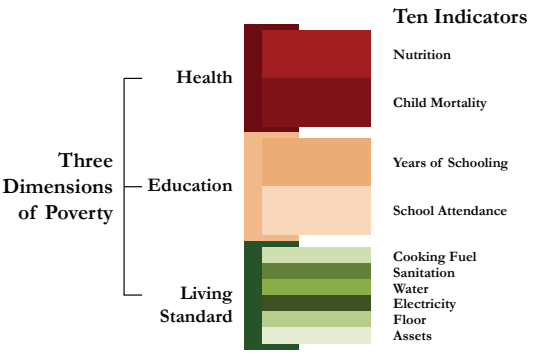
What is the Multidimensional Poverty Index?

The MPI looks at poverty through a 'high-resolution' lens. By directly measuring the nature and magnitude of overlapping deprivations at the household level, the MPI provides information that can help to inform better policies to reduce acute poverty.

The MPI is the first international measure to reflect the **intensity** of poverty – the number of deprivations that each person faces at the same time. It can be broken down by population group (such as ethnicity), geographical area and indicator. It can also be used to track changes to poverty over time.

The MPI was developed in 2010 by OPHI with the UNDP Human Development Report Office (Alkire and Santos 2010). The figures and analysis have been updated using newly released data for each successive *Human Development Report* (Alkire Roche Santos and Seth 2011, Alkire Conconi and Seth 2013). A significant wave of updated data is expected in the coming year.

Figure 10: Three Dimensions, Ten Indicators



Inside the MPI: Three dimensions, ten indicators

Education (each indicator is weighted equally at 1/6)

- **Years of Schooling:** deprived if no household member has completed five years of schooling
- **School Attendance:** deprived if any school-aged child is not attending school in years 1 to 8

Health (each indicator is weighted equally at 1/6)

- **Child Mortality:** deprived if any child in the family has died
- **Nutrition:** deprived if any adult or child for whom there is nutritional information is malnourished

Living standards (each indicator is weighted equally at 1/18)

- **Electricity:** deprived if the household has no electricity
- **Drinking Water:** deprived if the household lacks access to clean drinking water or clean water is more than a 30-minute walk from home, round-trip
- **Sanitation:** deprived if the household does not have adequate sanitation or their toilet is shared
- **Flooring:** deprived if the household has a dirt, sand or dung floor
- **Cooking Fuel:** deprived if the household cooks with wood, charcoal or dung
- **Assets:** deprived if the household does not own more than one of: radio, TV, telephone, bike, motorbike, or refrigerator and does not own a car or tractor

Who is poor? A person is identified as multidimensionally poor if he or she is deprived in one third or more of weighted indicators.

Constructing the MPI

The MPI was created using a method developed by Sabina Alkire, OPHI Director, and James Foster, OPHI Research Associate and Professor of Economics and International Affairs at George Washington University. The **Alkire Foster** dual-cutoff counting approach is flexible and can be used with different dimensions, indicators, weights and cutoffs to create measures specific to different societies and situations.

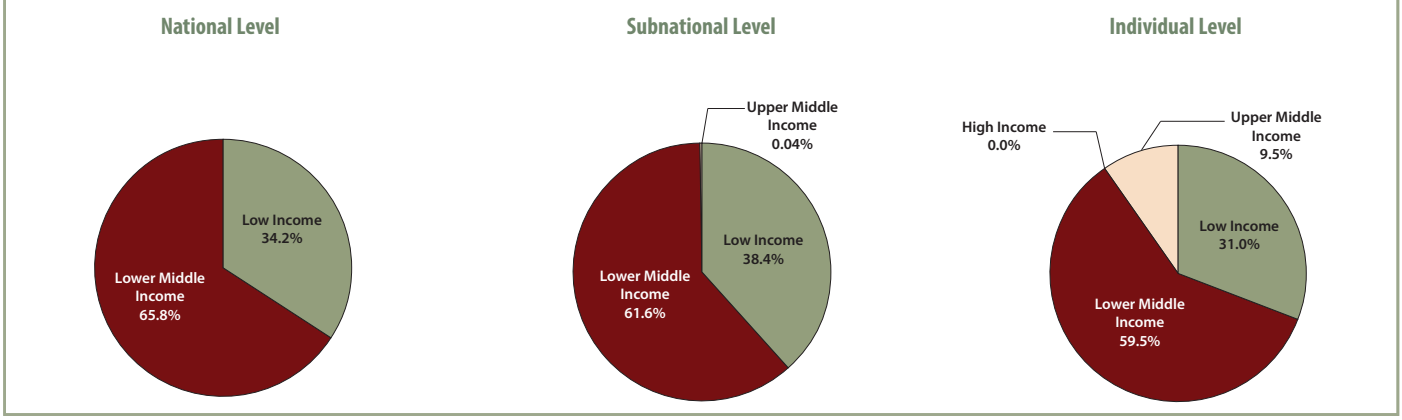
The MPI is the product of two components:

- **Incidence:** the percentage of people who are disadvantaged (or the headcount ratio, **H**);
- **Intensity** of people's deprivation: the average share of dimensions in which disadvantaged people are deprived **(A)**.

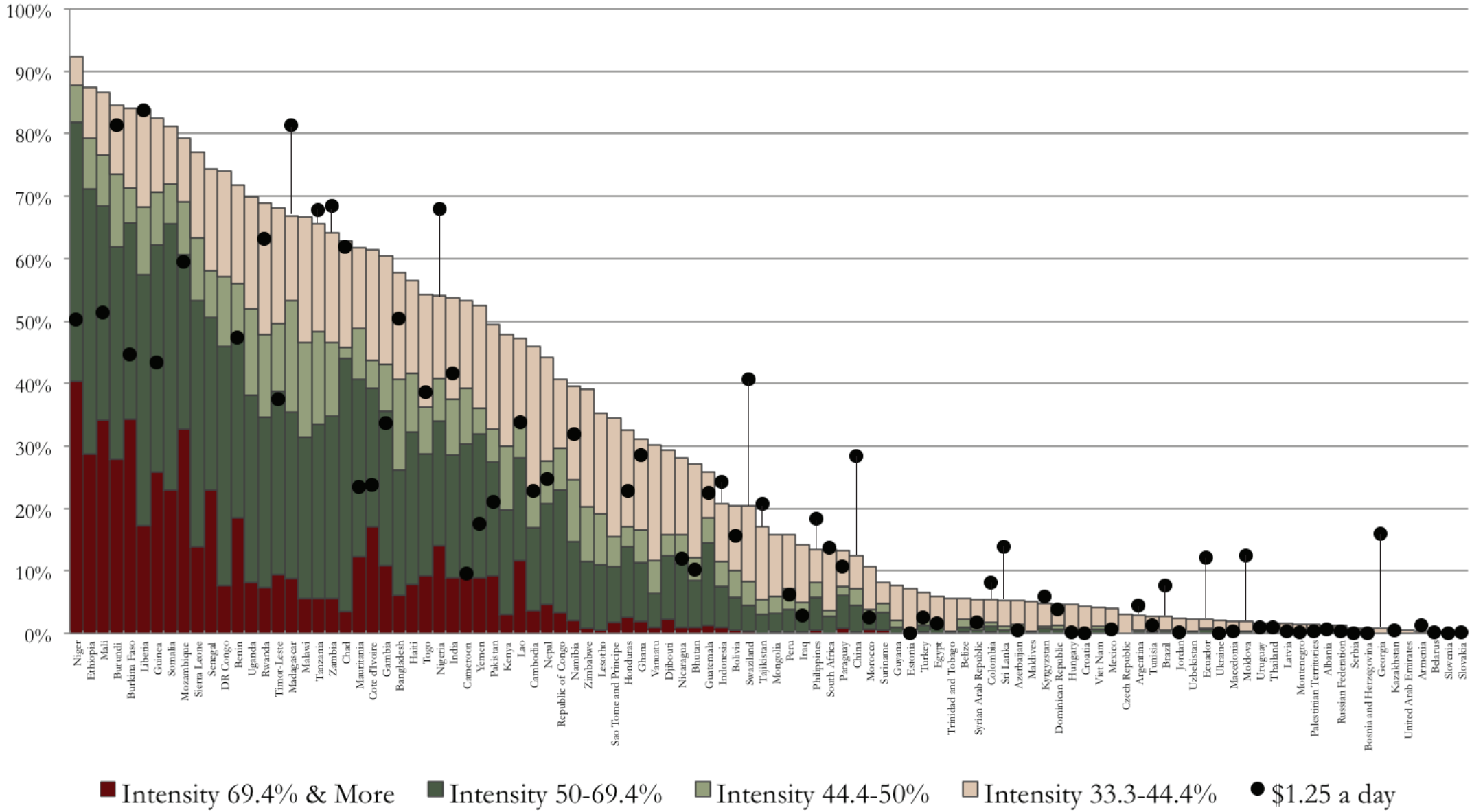
So: **MPI = H x A**

This method can show the incidence, intensity and depth of poverty, as well as inequality among the poor, depending on the data available.

Figure 9b: By Income Category



Comparing the Headcount Ratios of MPI Poor and $1.25/day Poor



For more information, please see:
www.ophi.org.uk/multidimensional-poverty-index/

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