

The Global Multidimensional Poverty Index

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Composite Indicators and Scoreboards

COMMUNITY of PRACTICE

EC Joint Research Centre

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Outline

- 1 Measurement Approach: The Alkire-Foster Method
- 2 The Global Multidimensional Poverty Index
- 3 Policy Use
- 4 Communication to the Wider Public

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OPHI Activities

The scope of OPHI's activities *includes*:

① Research

- Measurement methodology (foundations, applications)
- Missing dimensions of poverty
- Impact evaluation, determinants of poverty

② Computation of the Global MPI

- Annual updates as data become available

③ Policy and outreach activities

- Secretariat to the Multidimensional Poverty Peer Network
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- Online: www.ophi.org.uk, www.mppn.org, social media
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The Alkire-Foster Method

Alkire, S., & Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics* 95(7), 476-487.

Framework:

- Information about n people, $i = 1, \dots, n$, in d dimensions $j = 1, \dots, d$.
- x_{ij} is achievement of person i in dimension j :

$$X = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1d} \\ x_{21} & x_{22} & \cdots & x_{2d} \\ \vdots & \vdots & \ddots & \vdots \\ x_{n1} & x_{n2} & \cdots & x_{nd} \end{bmatrix}$$

- **Order of aggregation:** over dimensions (within row) first, **then** over people.
- **Compare composite indicators:** over people (within column) then dimensions.

The Alkire-Foster Method

Step 1: set **deprivation cutoffs** and determine whether each individual is deprived in each dimension. Deprivation matrix:

$$D = \begin{bmatrix} 1 & (\text{deprived}) & 1 & (\text{deprived}) & 0 & (\text{non-dep}) \\ 0 & (\text{non-dep}) & 1 & (\text{deprived}) & 0 & (\text{non-dep}) \\ 1 & (\text{deprived}) & 1 & (\text{deprived}) & 1 & (\text{deprived}) \end{bmatrix}$$

Step 2 (**Identification** of the poor): set identification cutoff k (eg $k = 1/2$) and determine **censored** deprivation score $c_i(k)$ for each individual:

$$c(\frac{1}{2}) = \begin{bmatrix} \frac{2}{3} & (\text{poor}) \\ 0 & (\text{non-poor}) \\ 1 & (\text{poor}) \end{bmatrix}$$

Step 3 (**Aggregation**): average censored deprivation score over the sample to obtain the poverty index: $M_0 = \frac{1}{n} \sum_{i=1}^n c_i(k) = 5/9$

The Alkire-Foster Method

Key properties of M_0 :

- May be decomposed $M_0 = H \times A$
 - H **headcount**, proportion of sample who are poor
 - A **intensity**, average number of deprivations among the poor
- **Subgroup decomposability**: meaningful and consistent decomposition by subgroups (gender, rural/urban, regions)
 - Consistent decompositions not generally feasible for composite indicators
- Other properties include symmetry/anonymity, replication invariance, poverty/deprivation focus, dimensional breakdown, weak monotonicity

The Alkire-Foster Method

Data requirements:

- Representative survey at the level of the unit of analysis (individual, household)
- Does not require cardinal achievement indicators
 - Compare composite indicators: underlying indicators must have a cardinal interpretation
- Note that all indicators must be available from the **same survey**
- (Or data sources must be **matched** at the level of unit of analysis)
 - Compare composite indicators: indicators based on different data sources may be combined

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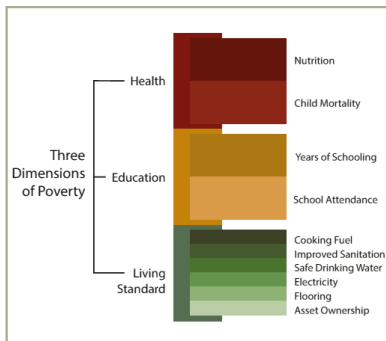
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The Global MPI

- Implementation of the Alkire-Foster Method
- Launched in the **Human Development Report 2010**
- Documented by **Alkire and Santos, *World Development*, 2014**
- Computed from nationally representative survey data: DHS, MICS
 - MPI estimates give poverty 'snapshot' at a precise point in time
 - Compare composite indicators that combine indicators from different data sources: ambiguities when monitoring changes over time
- Comparable across countries and over time
- Sampling errors computed, *total* error explored and risks documented

The Global MPI

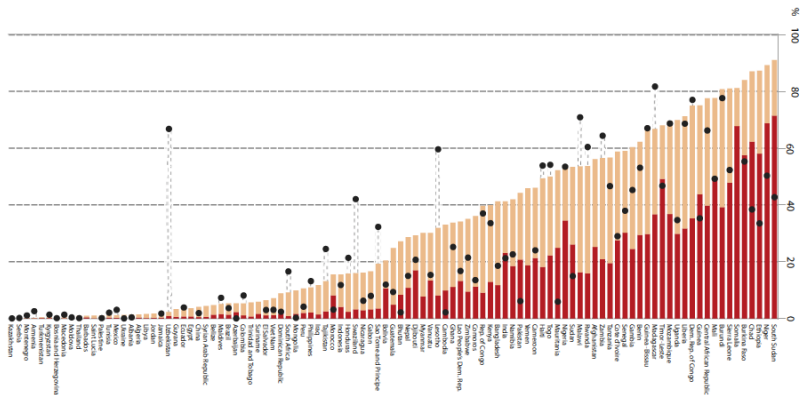
- 10 indicators, 3 dimensions: Health, Education, Living standards
- Weights: Dimensions equally weighted, indicators equal within dimension
- Identification of the poor: if deprivation score 1/3 or more



The Global MPI

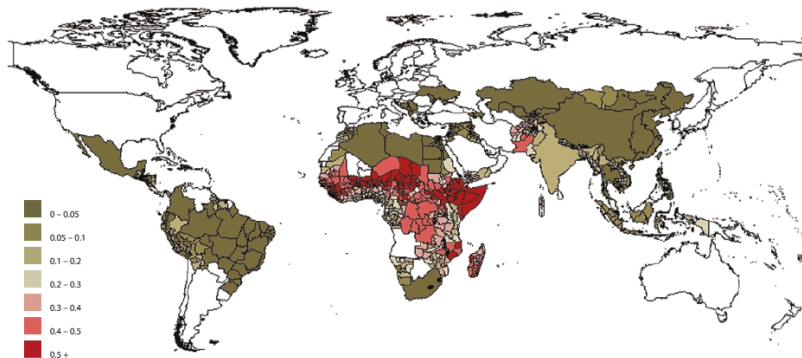
Dimension	Indicator	Deprived if...	Relative weight
Health	Nutrition	Any adult or child for whom there is nutritional information is malnourished	1/6
	Child Mortality	Any child has died in the household within the last five years	1/6
Education	Years of Education	No household member has completed five years of schooling	1/6
	School Attendance	Any school-aged child is not attending school up to the age at which they would complete class 8	1/6
Living Standard	Cooking Fuel	The household cooks with dung, wood or charcoal	1/18
	Sanitation	The household's sanitation facility is not improved (according to SDG guidelines), or it is improved but shared with other households	1/18
	Drinking Water	The household does not have access to safe drinking water (according to SDG guidelines), or safe drinking water is a 30-minute or longer walk from home, roundtrip	1/18
	Electricity	The household has no electricity	1/18
	Floor	The household has a dirt, sand or dung floor	1/18
	Assets	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

The Global MPI 2017



The Global MPI 2017

MULTIDIMENSIONAL POVERTY INDEX ACROSS THE WORLD



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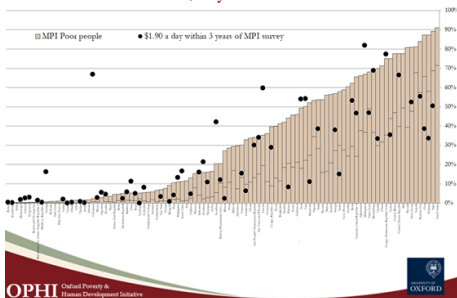
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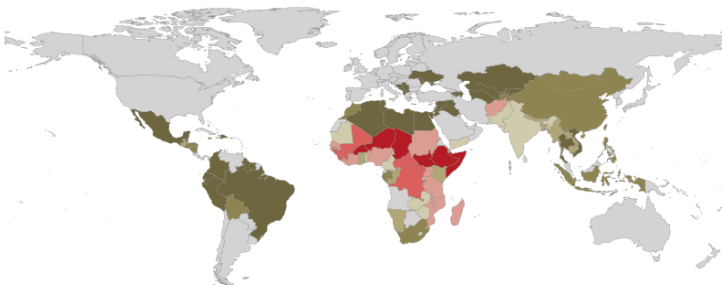
- Tool for monitoring global poverty
- Comparable across countries, over time

The Headcount Ratios of MPI Poor and \$1.90/day Poor differ



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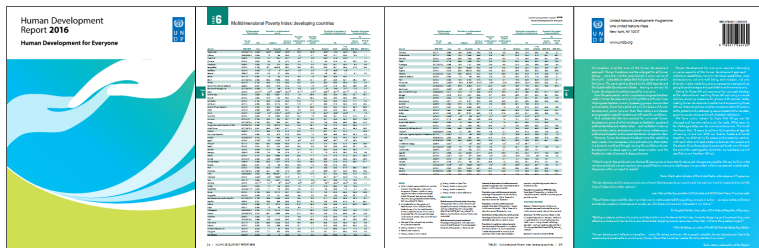


Key

■ 0 - 0.05 ■ 0.05 - 0.1 ■ 0.1 - 0.2 ■ 0.2 - 0.3 ■ 0.3 - 0.4 ■ 0.4 - 0.5 ■ 0.5+ ■ Missing Value

Global MPI

- The Global MPI replaced the HPI in the Human Development Report in 2010
- Continues to be reported in the Human Development Reports (slight modification since 2014)



National MPIs: Tailor made for policy

- Over 50 countries in the **Multidimensional Poverty Peer Network (MPPN)**
- National MPIs reflect national priorities
- Computed as official national statistics
- Policy applications: target, coordinate, monitor
- Comparable over time, groups, regions

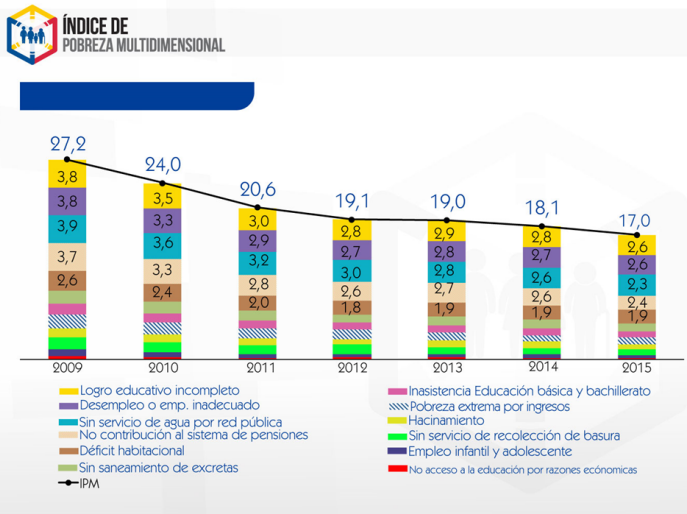
National MPIs: Policy applications

- ➊ **Complement** monetary poverty statistics
- ➋ **Track poverty** over time (official statistics)
- ➌ **Allocate resources** by sector and by region
- ➍ **Target** marginalized regions, groups, or households
- ➎ **Coordinate** policy across sectors and subnational levels
- ➏ **Adjust policies** by what works (measure to manage)
- ➐ **Evaluate policy** – what has worked and why?
- ➑ **Transparent** so all stakeholders engage (NGOs, private Sector, all parts of government)

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National MPIs: Ecuador tracking poverty



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National MPIs: Mexico targeting poverty



Consejo Nacional de Evaluación de la Política de Desarrollo Social

Lo que se mide se puede mejorar

www.coneval.org.mx

Examples of uses in public policy

National Crusade Against Hunger

- Participation of all 17 Federal Ministries**
- Target Population**
 - People in extreme poverty and food deprivation
 - Around 400 municipalities were selected according to extreme poverty and food deprivation indicators (number and %)
- Aim**
 - Progressive eradication of every poverty dimensions and achievement of full exercise of social rights

Fund for Social Infrastructure at the State and Municipality Levels (FAIS, FISMDF)

- Financial priority to overcome poverty dimensions**
- Allocation of the fund based on indicators of extreme poverty (number of people and average deprivations)**

Workshop "Fundamentals of Mexico Multidimensional Poverty Measurement"

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Dimensiones/Dimensions



OPHI
OXFORD POVERTY

Individual Stories

POVERTY PROFILE: NAHATO, UGANDA

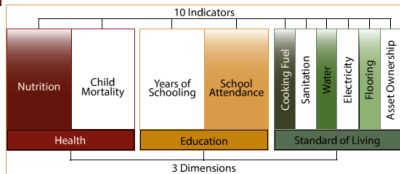


A person who is deprived in 1/3 or more of the weighted indicators is MPI poor. Consider Nahato, from Uganda.

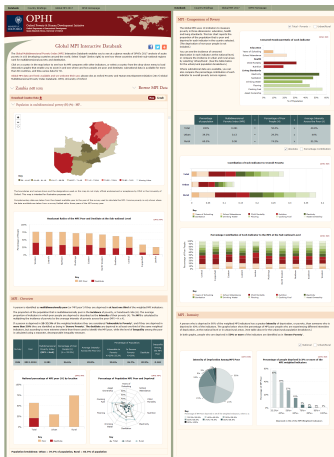
Her home has a dirt floor. The only light is a solar lamp that also charges the phone. Nahato, 3, is one of 10 children of her mother, Nambubi, who is 39 years old. Nahato's elder siblings have dropped out of school as they cannot afford the fees, which are US\$2.75 for four months.

Nambubi goes to the field at 7am to work in a neighbour's field with her children. Often they remain there till 7pm.

Nahato and her family are MPI poor. Yet she and her siblings are outgoing and confident. At night sometimes they dance together to the music from a radio shared between neighbours. The coloured boxes in the chart show the deprivations she faces.



www.dataforall.org/dashboard/ophi/index.php/



Acknowledgements

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- Gisela Robles, who led the 2017 MPI computations