

Multidimensional poverty

using IFAD

Impact Assessment data

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Introduction

The Sustainable Development Goals (SDG) call for elimination of global extreme poverty by 2030. In particular, the target of SDG 1.2 is to reduce, by 2030, “at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions”. While the widely used monetary measures of poverty capture an important aspect of welfare, it remains essential to highlight the multidimensional nature of poverty by delving deeper into challenges faced by households in different aspects of living standards. In addition, the low association between reduction in income poverty and progress on non-income indicators of welfare shown in the recent literature (Alkire et al., 2015) makes it even more important to broaden the definition of poverty beyond monetary measures.

This report summarizes the findings from the estimation of Multidimensional Poverty Index (MPI) using household-level data collected in 18 countries by the Research and Impact Assessment Division of the International Fund for Agricultural Development (IFAD). The methodology proposed by the Oxford Policy and Human Development Initiative (OPHI) and the Human Development Report Office of the United Nations Development Programme (UNDP) is applied to estimate MPI and its contributing factors for each country.

Methodology

Identifying poor households entails considering indicators and dimensions that affect welfare of households and combining this information into a measure of multidimensional poverty. As such, there are several methodologies to estimate multidimensional poverty and they differ in the type of indicators included to capture simultaneous deprivations. The most widely used methodology is the Alkire-Foster method (Alkire and Foster, 2011), which was developed by the OPHI and UNDP to produce cross-country comparisons of multidimensional poverty (national, rural and urban) for over 100 developing countries and updated at least yearly since 2010. Subsequently, The World Bank added a monetary dimension of poverty to its MPI while the Food and Agriculture Organization (FAO) proposed a rural dimension to estimate MPI. Many countries have adopted the Global MPI methodology as originally proposed by the OPHI, while others have found it best to adjust it to their specificities (removing or adding some dimensions), developing their own National MPI.

Table 1 provides details of the dimensions and indicators used by OPHI and FAO in their respective methodologies. The OPHI methodology considers three dimensions namely living standards, education and health and nutrition. FAO, in collaboration with OPHI, recently extended the OPHI approach to develop an MPI focusing on rural populations by including two additional dimensions, that is, rural livelihoods and risk. Within each dimension, multiple indicators of deprivation are estimated using household-level data. Dimensions are weighted equally, and within each dimension, each indicator is also weighted equally. The result is that each indicator has a different weight depending on the number of elements within the dimension.

Between 2019 and 2021, IFAD engaged in evaluating the impact of its interventions in 25 individual projects, which were randomly selected from its entire portfolio of 96 projects completed over these 3 years. The evaluation of impact entails large household surveys administered to beneficiary households of IFAD intervention and a comparable group of non-beneficiary households². Outcomes between these two groups are then compared using rigorous econometric analysis to attribute the impact of the IFAD intervention. Using microdata from the 18 individual impact assessments carried out by IFAD³, we estimate MPI using the approach developed by OPHI and define a household as MPI poor if their estimated MPI is greater or equal to 0.33. While estimating the MPI, we incorporate certain changes. First, the health and nutrition dimension is proxied by a binary variable of whether a household is food insecure or not, as proposed by FAO using the food insecurity experience scale indicators⁴. Second, we adjust the weights of individual indicators within each dimension in case there is a missing indicator⁵. For more information on the definition used for each indicator in the IFAD methodology, please refer to the Annex.

² The sample size of households surveyed in each country range from 800- 3300.

³ We dropped 7 countries from this exercise because of missing data on a few key indicators.

⁴ IFAD impact assessment surveys do not contain information on mortality and malnutrition.

⁵ For instance, a few of the IFAD surveys did not collect data on cooking fuel (living standard dimension), thus, we reweighted the rest of the indicators such that the aggregated weight (1/3) remains the same at the living standard dimension level.

Results

Results show that the average MPI poverty rate is 47 percent in our sample. It is evident that countries in Africa have the highest rate of MPI among all countries for which we have data. In particular, a striking 60 to 80 percent of households in Malawi, Mali, Zambia and Nigeria are estimated to be multidimensionally poor (Figure 1, panel a). Among others, Papua New Guinea (PNG), Djibouti, Ghana, Tanzania and Kenya have more than 50 percent multidimensional poverty rates. The lowest poverty rates are observed for Kyrgyzstan, Philippines and Tunisia at 15 to 21 percent. It is also observed that deprivations in living standards are most dominant in accounting for multidimensional poverty for all 18 countries, followed by education and health (Figure 1, panel b). Nevertheless, food insecurity seems to contribute about one-third of the MPI in Zambia, Lesotho, Malawi and India.

Next, we compare multidimensional poverty rates using IFAD data and methodology with that estimated by OPHI for rural areas using representative household surveys (Figure A1 in Annex). It is notable that the OPHI methodology also estimates highest multidimensional poverty rates for African countries. Nevertheless, for some countries, OPHI rural MPI rates are quite different from that estimated using IFAD data such as Malawi, Ghana, Tajikistan, Lesotho and Tunisia. This implies that the sample households in IFAD surveys may not be representative of the rural population in the country but rather only IFAD beneficiaries from certain rural regions/areas.

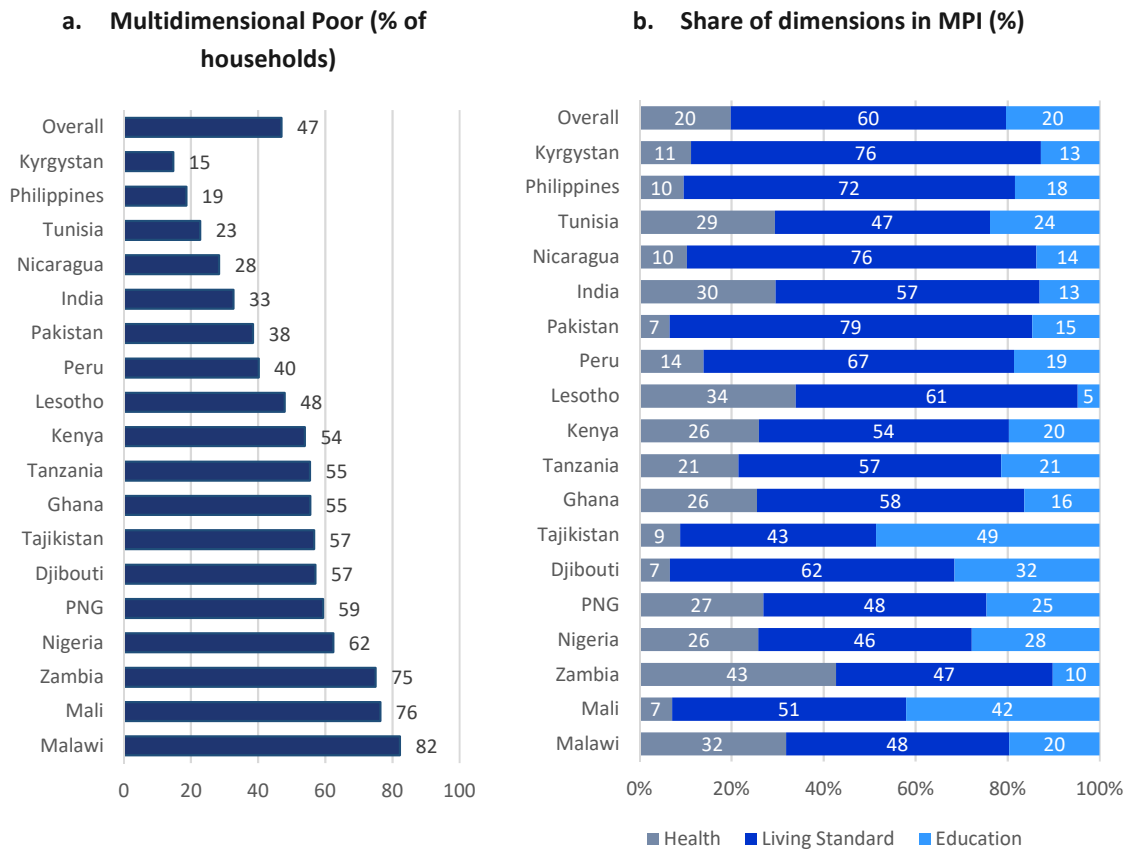
Table 2 shows deprivations across various indicators that constitute the MPI. It is evident that lack of access to cooking fuel and inadequate housing materials are the most prevalent deprivations among households in African countries, which seems to be driving the high multidimensional poverty in these countries. Food insecurity is highest in Zambia (69 percent), followed by Malawi (66 percent) while lack of access to drinking water and electricity is striking at 91 percent and 82 percent, respectively, in Malawi. Improvements in these aspects are thus likely to reduce multidimensional poverty. Children school attainment is estimated to be low in Mali and Tajikistan with deprivation rates of 51 and 48 percent respectively. In addition to African countries, PNG, Peru and Nicaragua have high rates of of households lacking access to cooking fuels. Finally, lack of access to sanitation seems very high in Mali (93 percent) and Djibouti (85 percent).

Table 3 presents multidimensional poverty rates by household head characteristics and household size. It appears that male-headed households have a lower poverty rate (45 percent) than female-headed households (57 percent). Furthermore, poverty rates are lower for households headed by older individuals (age 35+) compared to those headed by younger individuals (47 percent compared to 51 percent). Finally, medium-sized households (4-6 members) are less likely to be poor (43 percent) than small- (1-3 members) and large-sized (7+ members) households (54 and 48 percent, respectively).

Table 1. Comparison of indicators (and dimensions) used to estimate multidimensional poverty and the corresponding weights, using different approaches

	OPHI MPI		FAO and OPHI Rural-MPI		IFAD MPI	
	Dimensions	Weight	Dimensions	Weight	Dimensions	Weight
LIVING STANDARD	Housing	1/18	Housing	1/30	Housing	1/18
	Assets	1/18	Assets	1/30	Assets	1/18
	Electricity	1/18	Electricity	1/30	Electricity	1/18
	Drinking water	1/18	Drinking water	1/30	Drinking water	1/18
	Sanitation	1/18	Sanitation	1/30	Sanitation	1/18
	Cooking fuel	1/18	Cooking fuel	1/30	Cooking fuel	1/18
EDUCATION	Adult school attainment (years of schooling)	1/6	Years of schooling	1/10	Adult school attainment (years of schooling)	1/6
	Child school attendance	1/6	School attendance	1/10	Child school attendance	1/6
HEALTH AND NUTRITION	Child mortality	1/6	Child mortality	1/10	Food insecure	1/3
	Nutrition (children and adults)	1/6	Food insecure	1/10		
RURAL LIVELIHOODS AND RESOURCES			Agricultural assets adequacy	1/25		
			Low pay rate	1/25		
			Social protection	1/25		
			Child labour	1/25		
			Extension services	1/25		
RISK			Credit denial	1/13		
			Risk exposure and coping strategies	1/13		
			Risk of climate shocks	1/13		

Figure 1. Multidimensional poverty rates and shares of dimensions, across 18 countries



Source: Authors' calculations based on IFAD11 Impact Assessment data of 18 countries

Table 2. Deprivation in various indicators (percentage of households)

Dimension →	LIVING STANDARDS % of households without access						EDUCATION % of households deprived		HEALTH
	Indicator →	Cooking fuel	Sanitation	Drinking water	Electricity	Housing materials	Assets	Child school enrolment	Adult school attainment
Malawi	98	18	91	82	76	51	9	59	66
Mali	100	93	14	30	89	17	51	70	16
Zambia	99	1	26	67	76	20	30	8	69
Nigeria	76	39	39	36	28	11	11	53	41
PNG	0	39	7	9	80	67	37	35	44
Djibouti	72	85	19	51	46	59	23	53	13
Tajikistan	38	10	21	1	70	51	48	64	18
Ghana	89	50	15	24	61	14	10	34	42
Tanzania	99	39	40	16	58	20	11	41	38
Kenya	92	8	20	10	55	19	1	40	42
Lesotho	74	3	21	35	58	14	2	9	46
Peru	86	21	10	8	88	17	9	28	22
Pakistan	99	24	58	38	70	74	27	19	11
India	15	25	6	2	30	23	2	12	24
Nicaragua	83	27	26	7	56	6	3	20	15
Tunisia	0	0	1	1	22	1	0	11	13
Philippines	0	6	8	12	11	48	4	14	8
Kyrgystan	41	1	16	1	61	1	19	4	11
All	73	26	25	23	59	32	19	29	29

Source: Authors' calculations based on IFAD11 Impact Assessment data of 18 countries

Table 3. Multidimensional poverty rates, by characteristics of household head

	SEX of household head			AGE of household head			SIZE of household		
	OVERALL	FEMALE headed	MALE headed	YOUNG 15-34	MIDDLE 35-54	OLDER 55 +	SMALL 1-3 members	MEDIUM 4 -6 members	LARGE 7+ members
Malawi	82	89	79	87	79	85	88	81	81
Mali	76	80	76	77	77	75	82	76	71
Zambia	75	83	73	74	75	75	78	74	75
Nigeria	62	75	61	66	61	63	73	62	59
PNG	59	70	58	60	59	59	68	60	50
Djibouti	57	47	58	56	59	52	65	44	29
Tajikistan	57	68	55	67	59	54	70	60	51
Ghana	55	65	53	55	55	57	60	52	56
Tanzania	55	66	53	53	49	63	71	50	50
Kenya	54	66	50	57	51	56	60	50	56
Lesotho	48	54	45	38	42	53	44	47	57
Peru	40	49	39	31	35	52	50	28	37
Pakistan	38	33	39	41	39	36	42	37	39
India	33	43	29	20	30	42	48	24	25
Nicaragua	28	32	27	21	24	34	42	23	24
Tunisia	23	47	21	26	25	21	41	17	17
Philippines	19	22	18	20	17	20	39	10	8
Kyrgystan	15	17	15	26	15	14	12	15	16
All	47	57	45	51	46	47	54	43	48

Source: Authors' calculations based on IFAD11 Impact Assessment data

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ANNEX

Table A1. Definition of dimensions and indicators used in IFAD's MPI

Dimensions	Indicator	Deprived if...
Living Standards	Cooking fuel	A household cooks using solid fuel such as dung, agricultural crops, shrubs, wood, charcoal or coal.
	Sanitation	The household has unimproved or no sanitation facility or it is improved but shared with other households. ⁶
	Drinking water	The household's source of drinking water is not safe or safe drinking water is a 30-minute or longer walk from home, roundtrip. ⁷
	Electricity	The household has no electricity.
	Housing	The household has inadequate housing materials in any of the three components: floor, roof, or walls. ⁸
	Assets	The household does not own more than one of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorbike, or refrigerator, and does not own a car or truck.
Education	Years of schooling	No eligible household member has completed six years of schooling. ⁹
	School attendance	Any school-aged child is not attending school up to the age at which he/she would complete class 8.
Health	Food security	Probability of being moderate to severely food insecure exceeds 50 percent. ¹⁰

⁶ 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. If the survey report uses other definitions of adequate sanitation, we follow that.

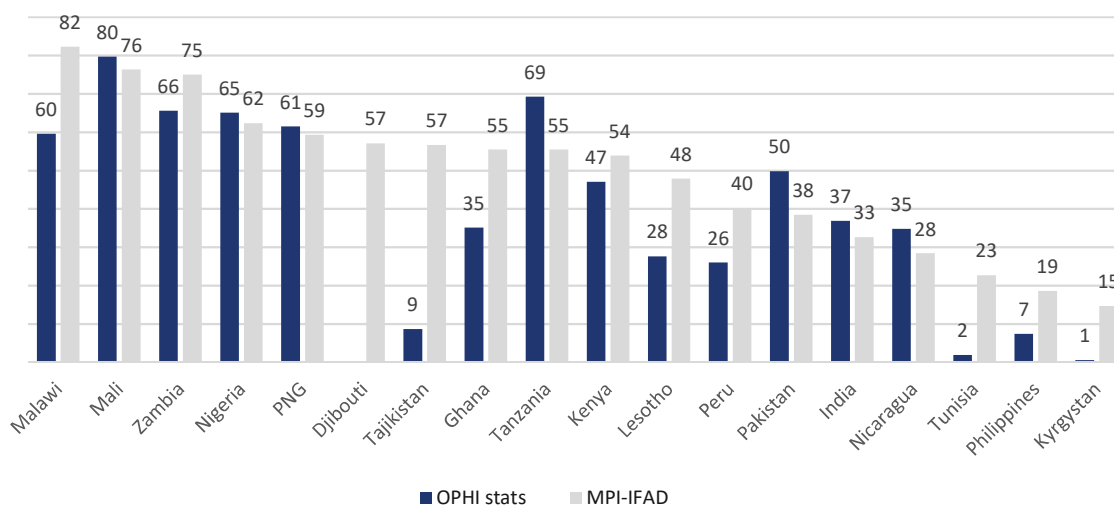
⁷ A household has access to clean drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring, or rainwater, and it is within a 30-minute walk, round trip. If the survey report uses other definitions of clean or safe drinking water, we follow that.

⁸ Deprived if floor is made of natural materials or if dwelling has no roof or walls or if either the roof or walls are constructed using natural or rudimentary materials. The definition of natural and rudimentary materials follows the classification used in country specific DHS or MICS questionnaires.

⁹ If all individuals in the household are in an age group where they should have formally completed 6 or more years of schooling, but none have this achievement, then the household is deprived. However, if any individuals aged 10 years and older reported 6 years or more of schooling, the household is not deprived.

¹⁰ Following FAO, the severe levels of food insecurity imply a high probability of reduced food intake and can therefore lead to more severe forms of undernutrition, including hunger. This estimation is based on FAO's food insecurity experience scale.

Figure A1. Multidimensional poverty rate using methodology of IFAD and OPHI (for rural areas only)



Source: MPI (IFAD) are authors' calculations based on IFAD11 Impact Assessment data. MPI- RURAL (OPHI) is sourced from Country Briefings from OPHI website for 2021 (<https://ophi.org.uk/multidimensional-poverty-index/mpi-country-briefings/>)



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